

INSTRUCTIONS *for* OPERATORS

BURROUGHS
TYPEWRITER
COMPUTING
BILLING
MACHINE
Style
720301

BURROUGHS ADDING MACHINE COMPANY
DETROIT MICHIGAN

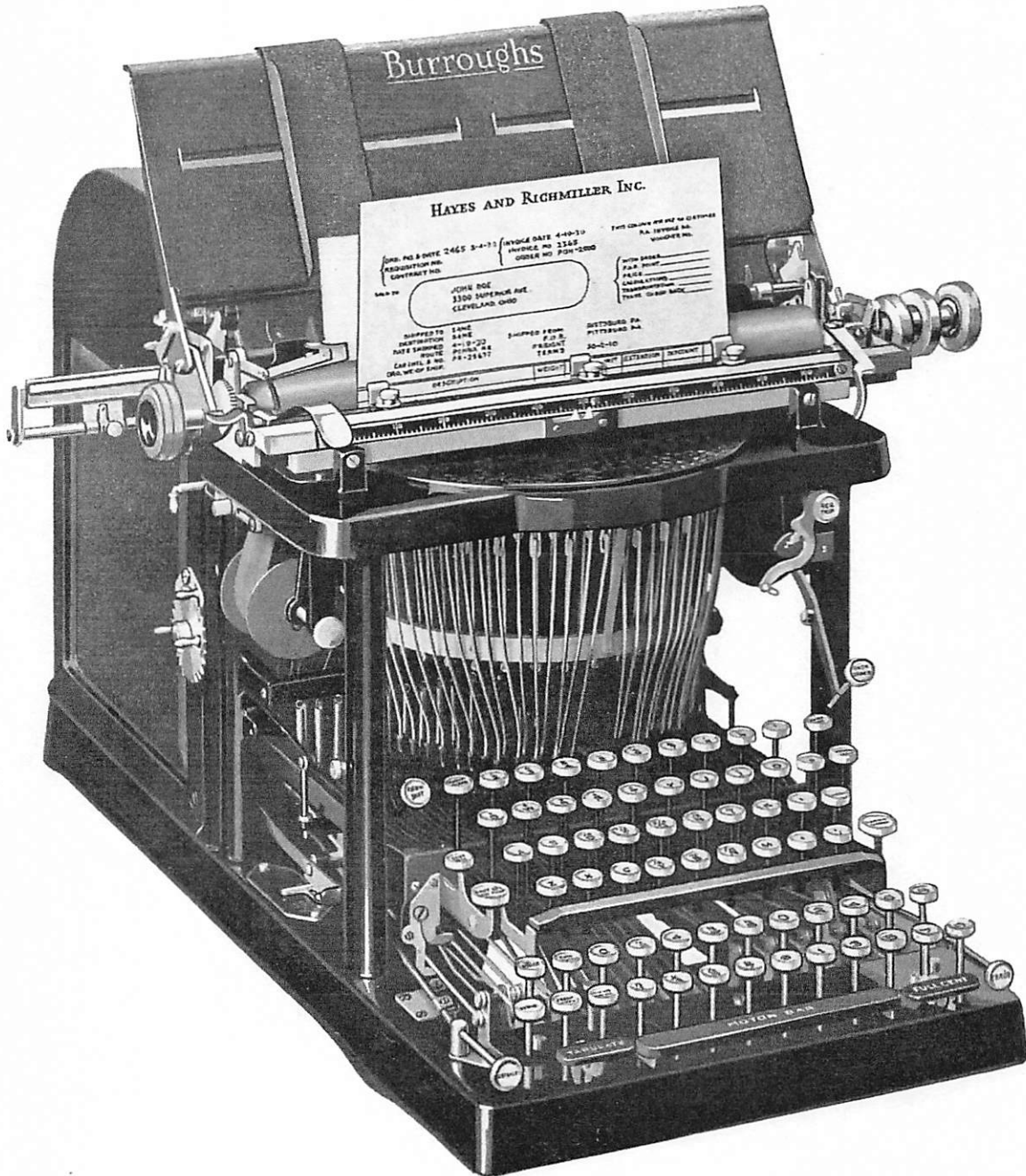
ADDING • CALCULATING • BILLING AND ACCOUNTING MACHINES
TYPEWRITERS • CASH REGISTERS • CORRECT POSTURE CHAIRS

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The Burroughs Typewriter Billing Machine

Performs All Invoicing Operations

Figures comprise the most important part of billing and accounting. The calculating mechanism is constructed to handle figures in the most convenient and efficient way possible. In fact, the Burroughs Typewriter Billing Machine is the

only machine that performs all the operations of invoicing—typing, adding, subtracting, multiplying, accumulating several totals at one time, handling fractions, figuring discounts and extending the net amounts.

Any Manufacturer or Wholesaler				FOR CUSTOMER'S USE ONLY	
CUSTOMER'S ORDER NO. & DATE	2465	REFER TO INVOICE NO.		REGISTER NO.	VOUCHER NO.
REQUISITION NO.		INVOICE DATE	MAY 24	F. O. B. CHECKED	
CONTRACT NO.		VENDOR'S NOS.	2365	TERMS APPROVED	PRICE APPROVED
SOLD TO			A I CUSTOMER ANYWHERE, U S A		
SHIPPED TO AND DESTINATION			SAME		
DATE SHIPPED		FROM	ANYPOINT ANYWHERE	CALCULATIONS CHECKED	
CAR INITIALS AND NO.	NP 235767	F. O. B.	PREPAID	TRANSPORTATION	
HOW SHIPPED AND ROUTE	GT-CB&Q-NP	PREPAID OR COLLECT	PREPAID	FREIGHT BILL NO. AMOUNT	
TERMS	2% 10 DAYS			MATERIAL RECEIVED	
			DATE SIGNATURE TITLE		
			SATISFACTORY AND APPROVED		
			ADJUSTMENTS		
			ACCOUNTING DISTRIBUTION		
			AUDITED		
			FINAL APPROVAL		
QUANTITY	DESCRIPTION	WEIGHT OR YARDAGE	PRICE	GROSS AMOUNT	NET AMOUNT
6	DZ		4 25	25 50	
10	DZ		12 50	125 00	
29	DZ		9 87	286 23	
10 ³ / ₄	DZ		3 12 1/2	33 59	
1/2	DZ		2 25	1 13	
				471 45	
			LESS 60-10-5%		161 24
			112 C		81
72	ONLY				162 05
			LESS FRT 608 LBS AT 26 ³ / ₄ CWT		1 63
					160 42

The arrows point to a few of the remarkable results obtainable with the Burroughs Typewriter Billing Machine. These promote speed, accuracy and simplicity in billing.

1. The machine handles fractions in either price or quantity.
2. Dollars are aligned under dollars and cents under cents, automatically, making decimal tabulation unnecessary.
3. Extensions are computed by direct multiplication (not repeated addition) and are printed by the depression of one key (not copied from dials).

4. The long line above the total is printed by a single depression of the Total Line key.
5. Amounts to be discounted are automatically accumulated, and the total is printed by the depression of only one key.
6. The net extension is computed by direct multiplication and is printed by the depression of only one key.
7. The machine calculates and subtracts freight deductions or adds charges.
8. The total of extensions is automatically accumulated and is printed by the depression of only one key.

General Information

The Burroughs Typewriter Billing Machine has several departments which are so co-ordinated that they form one complete, compact, versatile Billing Machine.

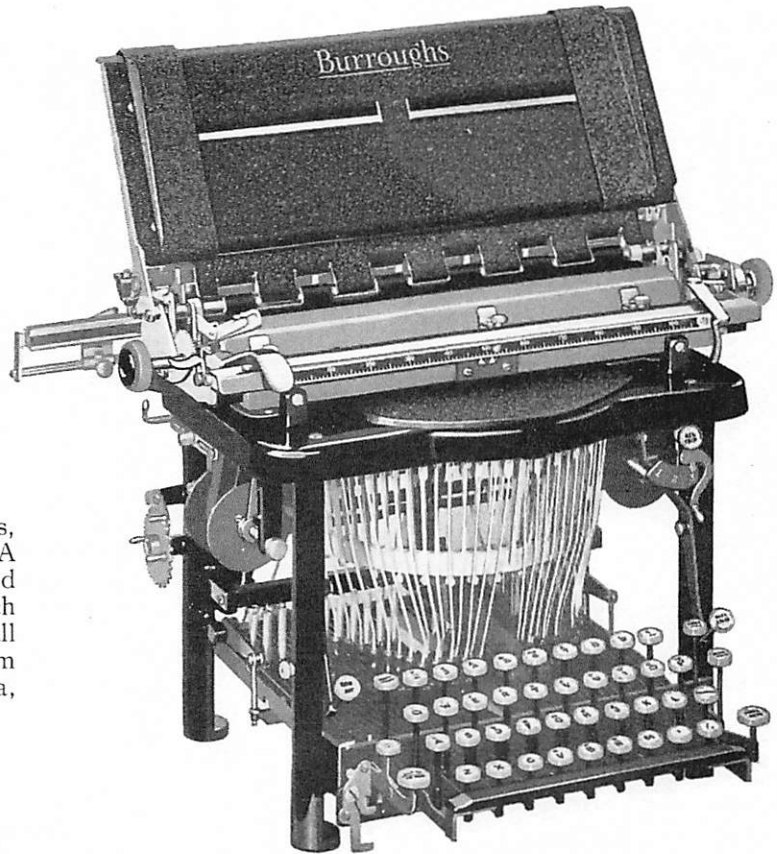
Typewriter Unit

The typewriter has the standard billing type which prints in large, easily-read capital letters.

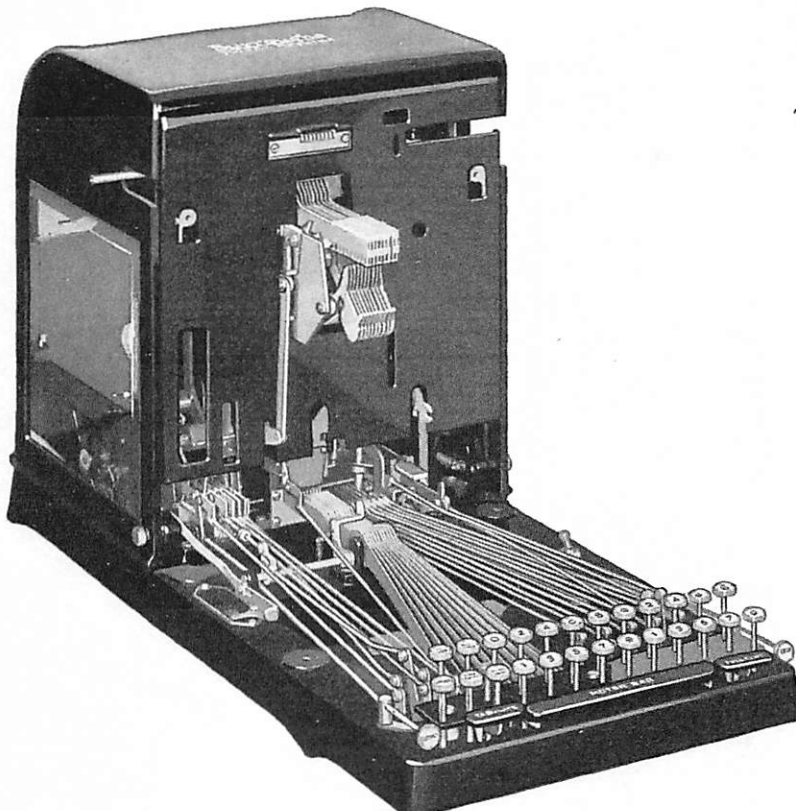
The typewriter unit is used to type addresses, shipping data, description and other information in conjunction with the adding, subtracting or multiplying mechanism, but operates entirely independently of these mechanisms.

Calculating Unit

There are four separate adding machines, three Registers and a Crossfooter. A separate group of figures may be added and printed in each of these and a total of each obtained, as well as a grand total of all groups. Amounts may be transferred from any register to the crossfooter or vice versa, without copying the figures from dials.



The Typewriter Unit ready to be placed in position on the Calculating Mechanism



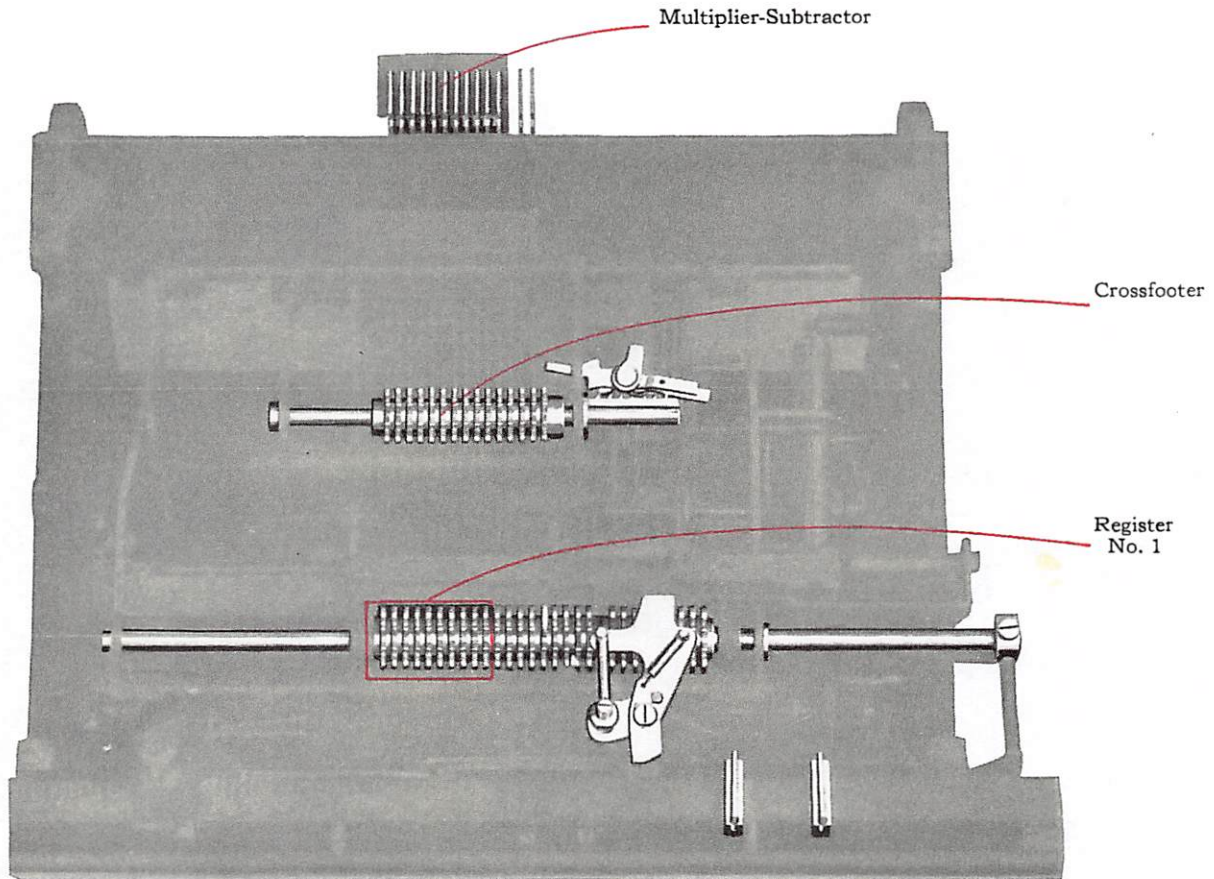
The Electrical Calculating Mechanism

Direct Subtraction is performed by using the Subtract key.

Multiplication comprises a very large part of billing work. On this machine, multiplication is performed quickly and easily. One factor is set up on the Red keys of the calculating mechanism and the other factor is depressed on the Multiplying (black) keys.

All results of addition, subtraction and multiplication are printed by the depression of a result key—not copied from dials. The results of separate calculations may be automatically accumulated to obtain a total.

The Calculating Sections



Register No. 1 Active

There are five sections in the Calculating unit of the standard machine, namely: the Multiplier-Subtractor, the Crossfooter, and three Accumulating Registers.

The Multiplier-Subtractor—The Multiplier-Subtractor is not an adding, or accumulating register, but indexes the subtrahend for subtraction, or one of the factors for multiplication.

Amounts are indexed in the Multiplier-Subtractor by setting up the figures on the Red keys and depressing the Extend key and the Motor Bar. An amount in a Register may be indexed in the Multiplier-Subtractor by depressing the Register Total and Extend keys, then the Motor Bar.

The Crossfooter—The Crossfooter may be used for adding horizontally or vertically. The results of multiplying or subtracting enter directly into this section of the machine. The answer, whether of addition, subtraction or multiplication, may be printed by the use of one of the Product keys.

Amounts are added in the Crossfooter by setting up the figures on the Red keys and holding the Add Crossfooter key depressed while operating the Motor Bar. An amount in a Register may be added

in the Crossfooter by depressing the Register Total key and holding down the Add Crossfooter key while the Motor Bar is operated.

The Multiplier-Subtractor and the Crossfooter are always in active position.

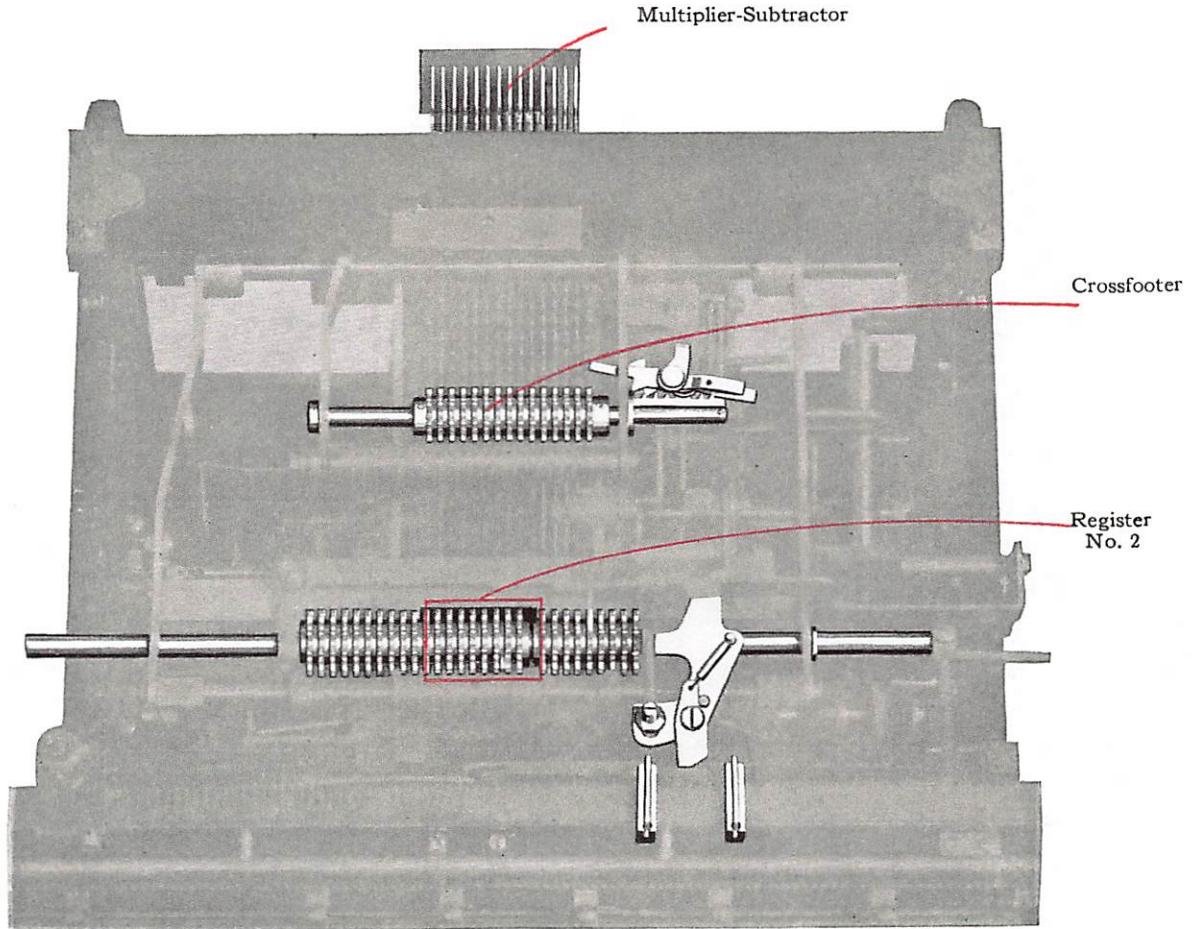
The Accumulating Registers—The three Registers are used for adding figures set up on the Red keys or for accumulating amounts which are automatically transferred from the Crossfooter. The Register Total key is used for totaling any Register.

An amount set up on the Red keys adds in the active Register when the Motor Bar is operated, unless the Add Crossfooter, Extend or Non-add key has also been depressed.

An amount in the Crossfooter may be transferred to the active Register by depressing the Final Product key and the Motor Bar.

In the above illustration, Register No. 1 is in active position. On the next page, Register No. 2 is shown in active position.

Capacities—The largest amount that can be entered in the machine and the largest total that may be printed is 9 999 999 999.



Register No. 2 Active

The Carriage

1. Paper Release—Depressing both of the Paper Release levers at the same time releases the pressure rolls so that the paper can be adjusted. The front lever, when depressed alone, locks them in released position. To unlock, the rear lever must be pressed.

2. Margin Block—The Margin Block is generally used in invoicing to stop the carriage at the left margin. The carriage cannot pass the Margin Block.

3. Releasable Margin Block—This block is used to stop the carriage at the left margin. Depressing the Margin Release key permits the carriage to pass the Releasable Margin Block until stopped by the Margin Block (2). The Releasable Margin Block is inoperative when the knurled knob at the top of it is raised and turned slightly so that it locks in the raised position. The Releasable Margin Block should be set (gauging from its right side) four spaces to the right of the position desired, as indicated on the Front Scale (12-13).

4. Tabulator Stops—These can be set to stop

the carriage at any point when it is tabulated. The scale on the tabulator stop bar corresponds with the Front Scale (12).

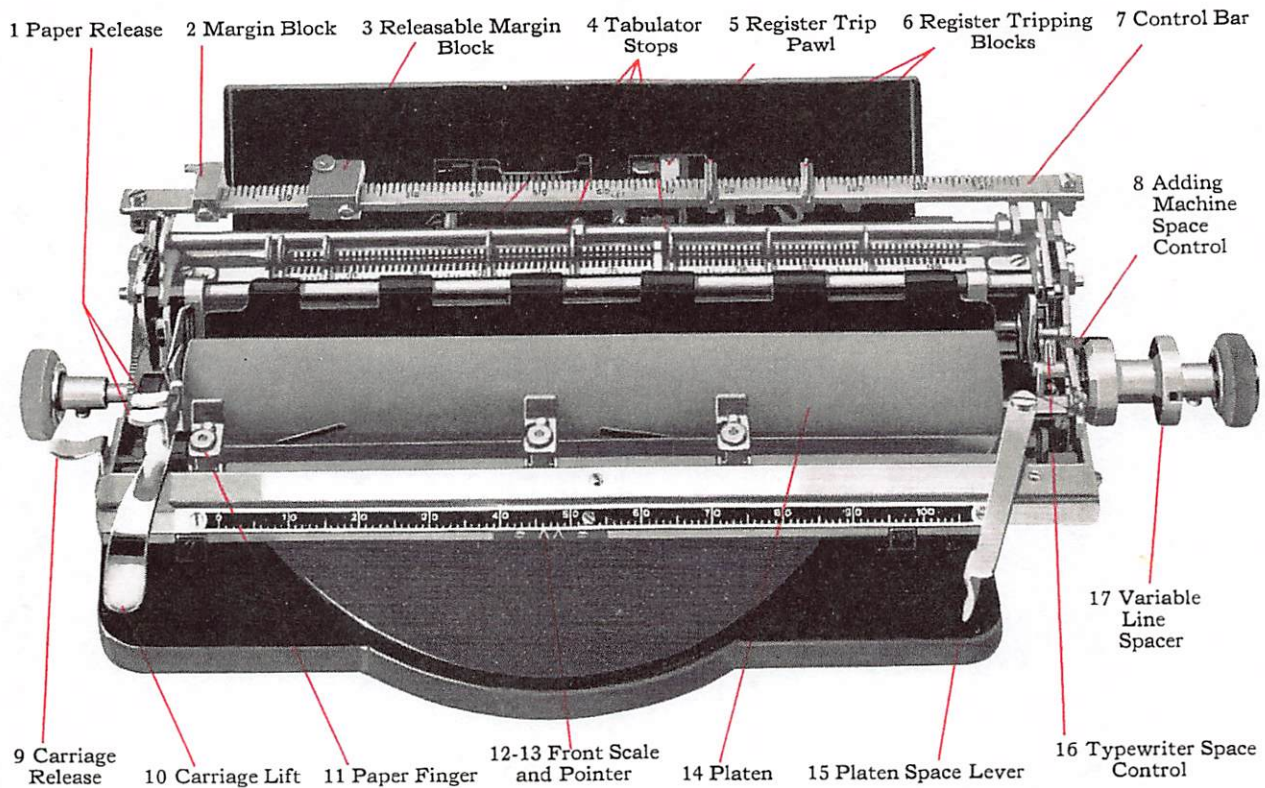
5. Register Trip Pawl—See Register Tripping Blocks (6).

6. Register Tripping Blocks—When a Tripping Block strikes the Register Trip Pawl (5) as the carriage tabulates, the next Register, No. 2 or No. 3, is automatically tripped into active position. (See page 13.)

In the illustration on page 5, Register No. 1 is active and the first Register Tripping Block is to the right of the Register Trip Pawl. In the above illustration the carriage has been tabulated so that the first Register Tripping Block has passed the Register Trip Pawl, thus causing Register No. 2 to be tripped into active position. When the carriage is again tabulated, the second Register Tripping Block will pass the Register Trip Pawl and cause Register No. 3 to trip into active position.

There are two types of Register Tripping Blocks,

The Carriage



but they function in the same manner. The one shown in the above illustration is not detachable; the other type is clamped to the control rail and is easily detachable.

7. Control Bar—On this bar are located the Margin Block, the Releasable Margin Block, and the Register Tripping Blocks.

8. Adding Machine Space Control—The position of this control determines whether the Platen spaces up one or two spaces when the Motor Bar is operated. If it is pushed in, as in the illustration, the Platen turns up one space. When it is pulled out, the Platen turns up two spaces. The Vertical Adding Machine Space Lever at the left of the machine (see 30 on page 11) must be turned up in order to have this feature function.

9. Carriage Release—Depressing this lever permits free movement of the carriage by hand.

10. Carriage Lift—This is used for raising or lowering the carriage.

11. Paper Fingers—These fingers hold the paper smoothly against the Platen. They are movable for different widths of paper.

12-13. Front Scale and Pointer—This scale corresponds to a scale under the Platen (not illus-

trated) and with the scale on the Tabulator Stop Bar. The Pointer (13) indicates the point on the paper that is in printing position. Some machines have a single pointer which indicates the typewriter printing position; the units of cents of the calculating mechanism print two spaces to the left of the typewriter printing position. Other machines have double pointers which indicate both the typewriter and the calculating mechanism printing positions.

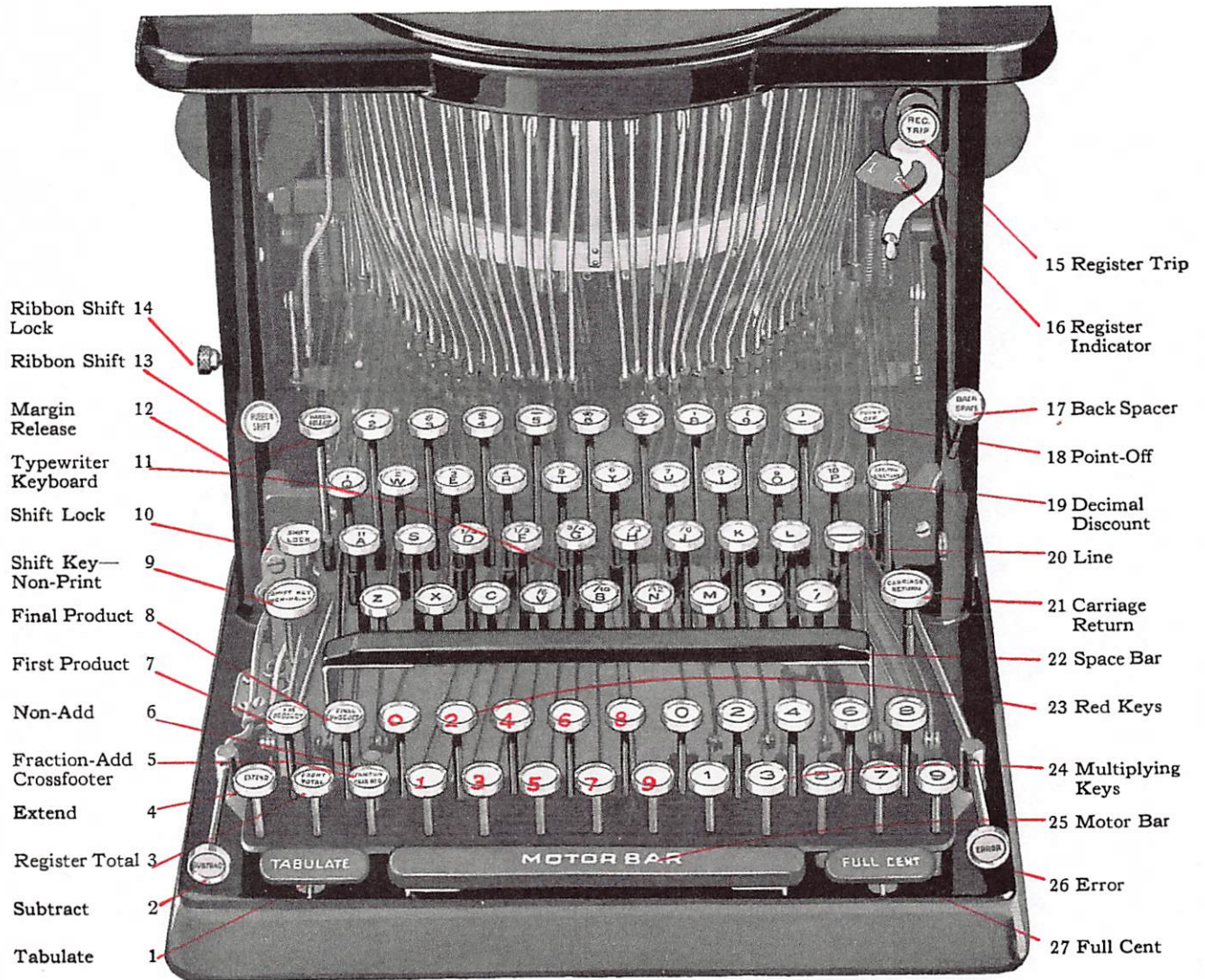
14. Platen—This provides a writing surface.

15. Platen Space Lever—This may be used to return the carriage to the right, by hand, at the same time spacing up the paper either one or two spaces, according to the position of the Typewriter Space Control (16). The Carriage Return key eliminates the necessity of using the Platen Space Lever after completing a line of invoicing.

16. Typewriter Space Control—The position of this control determines whether the platen spaces up one or two spaces when the Platen Space Lever (15) is used. When it is rearward as in the illustration the Platen turns up one space; when forward the Platen turns up two spaces.

17. Variable Line Spacer—By pulling out the Variable Line Spacer, the Platen may be turned a fraction of a regular space.

The Keyboard and Other Controls



- Ribbon Shift Lock 14
- Ribbon Shift 13
- Margin Release 12
- Typewriter Keyboard 11
- Shift Lock 10
- Shift Key—Non-Print 9
- Final Product 8
- First Product 7
- Non-Add 6
- Fraction-Add Crossfooter 5
- Extend 4
- Register Total 3
- Subtract 2
- Tabulate 1

- 15 Register Trip
- 16 Register Indicator
- 17 Back Spacer
- 18 Point-Off
- 19 Decimal Discount
- 20 Line
- 21 Carriage Return
- 22 Space Bar
- 23 Red Keys
- 24 Multiplying Keys
- 25 Motor Bar
- 26 Error
- 27 Full Cent

1. **Tabulating Bar**—Depressing this bar causes the carriage to tabulate to the next stop position.

2. **Subtract Key**—Subtraction is performed by this key. The larger amount is added in the Crossfooter by setting it up on the Red keys and holding down the Add Crossfooter key while operating the Motor Bar. The amount to be subtracted is indexed in the (Multiplier)-Subtractor by setting it up on the Red keys, depressing the Extend key and the Motor Bar. The Subtract key is then operated. Depressing the Final Product key and the Motor Bar prints the difference and transfers it to the active Register.

An amount may be subtracted from the active Register by indexing it in the (Multiplier)-Subtractor, operating the Subtract key, then depressing the Final Product key and operating the Motor Bar. The Non-Print key should be held down while the Motor Bar is operated.

3. **Register Total Key**—This key (sometimes called Front Total) is the total key for any Register. Depressing this key and operating the Motor Bar prints the amount and clears the active Register.

If the Register Total key is held down while the Motor Bar is operated, and then restored with the Error key, it acts as a Sub-Total key for the Register, printing the amount but not clearing the register.

Depressing the Register Total and Extend keys together and then operating the Motor Bar, clears the active Register, prints the amount and indexes it in the Multiplier-Subtractor.

Depressing the Register Total key and holding down the Add Crossfooter key while the Motor Bar is operated, clears the active Register, prints the amount and transfers it to the Crossfooter.

4. **Extend Key**—To index an amount in the Multiplier-Subtractor, the amount is set up on the Red keys, the Extend key is depressed and the Motor Bar is operated. The amount thus indexed in the Multiplier-Subtractor may be subtracted from an amount in the Crossfooter by depressing the Subtract key, or the amount indexed may be multiplied by another amount by using the Multiplying keys.

A second amount cannot be indexed in the Multiplier-Subtractor until the first amount has been cleared out by depressing the Final Product key and the Motor Bar. The Extend key is locked if the Multiplier-Subtractor is not clear.

An amount may be added in the active Register at the same time it is indexed in the Multiplier-Subtractor if the machine is set to "Add on Extend." (See paragraph 33.)

By depressing the Register Total and Extend keys together, and operating the Motor Bar the active Register is cleared, the amount is printed and at the

same time is indexed in the Multiplier-Subtractor.

The Extend key should never be held down while the Motor Bar is operated. If held down the amount will not be indexed.

5. **Fraction-Add Crossfooter Key**—This key (sometimes called Fraction-Rear Register) has three separate uses:

(a) It is used to add tenth fractions. By holding down the Fraction-(Add Crossfooter) key while a Red Numeral key, representing a fraction, is depressed, the fraction is set up, and it is added when the Motor Bar is operated. Register No. 1 must be in active position when it is desired to print fractions. Fractions can be added only in Register No. 1 and in the Crossfooter.

(b) It is used to add amounts in the Crossfooter. After an amount is set up on the Red keys, holding down the (Fraction)-Add Crossfooter key while the Motor Bar is operated will cause the amount to add in the Crossfooter.

By depressing the Register Total key and holding down the (Fraction)-Add Crossfooter key while operating the Motor Bar, an amount in the active Register is transferred to the Crossfooter.

(c) The third use of the Fraction-Add Crossfooter keys is in combination with the Non-Add key. (See following paragraph.)

6. **Non-Add Key**—An amount set up on the Red keys may be printed without adding in any of the registers. This is done by holding down the Non-Add key in conjunction with the Add Crossfooter key while operating the Motor Bar.

7. **First Product Key**—This is the total key for the Crossfooter. It does not transfer the amount to the Register, and does not clear the Multiplier-Subtractor. If the key is held down while the machine operates, it prints a sub-total of the Crossfooter, that is, it prints the total but retains it in the Crossfooter. It is then restored with the Error key.

In case the machine is equipped with the optional feature "Add on First Product," this key functions as a Transfer Total key, transferring the amount from the Crossfooter to the active register. It does not clear the Multiplier-Subtractor, however.

8. **Final Product Key**—This key clears the Multiplier-Subtractor and the Crossfooter, prints the amount which is in the Crossfooter, and transfers it to the active Register.

If this key is held down while the Motor Bar is operated, it clears the Multiplier-Subtractor, prints but retains the amount in the Crossfooter, and transfers the amount to the active Register. The Final Product key is then restored with the Error key. This is called a sub-transfer total of the Crossfooter.

9. Shift Key—Non-Print—This key has two functions when depressed:

(a) It shifts the carriage so that the characters in the upper half of the typewriter keys may be printed.

(b) It prevents the printing of amounts by the calculating section of the machine.

10. Shift Lock—This key locks the Shift key in a depressed position. Touching the Shift key releases it.

11. Typewriter Keyboard—The typewriter is used for writing headings, description and other data.

12. Margin Release Key—When it is desired to print to the left of the usual margin, depressing the Marginal Release key releases the Releasable Margin Block and permits the carriage to pass until stopped by the Margin Block.

13. Ribbon Shift Key—This key is used to shift the ribbon from black to red.

14. Ribbon Shift Lock—The Ribbon Shift key may be locked into shift position with this button.

15. Register Trip Key—Registers No. 2 and No. 3 may be tripped into active position by pressing this key. (See page 1.)

16. Register Indicator—The position of the pointer indicates which one of the three Registers is in active position. The Register Indicator is used to manually shift the registers from No. 3 to No. 2, or No. 2 to No. 1.

17. Back Spacer—Depressing this key moves the carriage one space to the right.

18. Point-Off Key—When the factors in a multiplication contain decimals, each depression of this key moves the decimal point in the answer one place to the left. The maximum number of places that can be pointed off is the same as the number of Multiplying keys which have been depressed in multiplying.

19. Decimal-Discount Key—One depression of this key points off as many places as there were

Multiplying keys depressed. It is always used to point off after multiplying by a discount or a decimal which does not have a whole number preceding the decimal point.

20. Line Key—One stroke of this key prints a line five spaces long. It is used immediately before printing the total under a column of figures.

21. Carriage Return Key—Depressing this key causes the carriage to return to the starting point and automatically space the paper up to the next writing line.

22. Typewriter Space Bar—The Space Bar is used for moving the carriage one space to the left.

23. The Red Keys—These keys are used for setting up amounts to be added either in the Cross-footer or in one of the Registers. They are also used in conjunction with the Extend key for indexing amounts in the Multiplier-Subtractor.

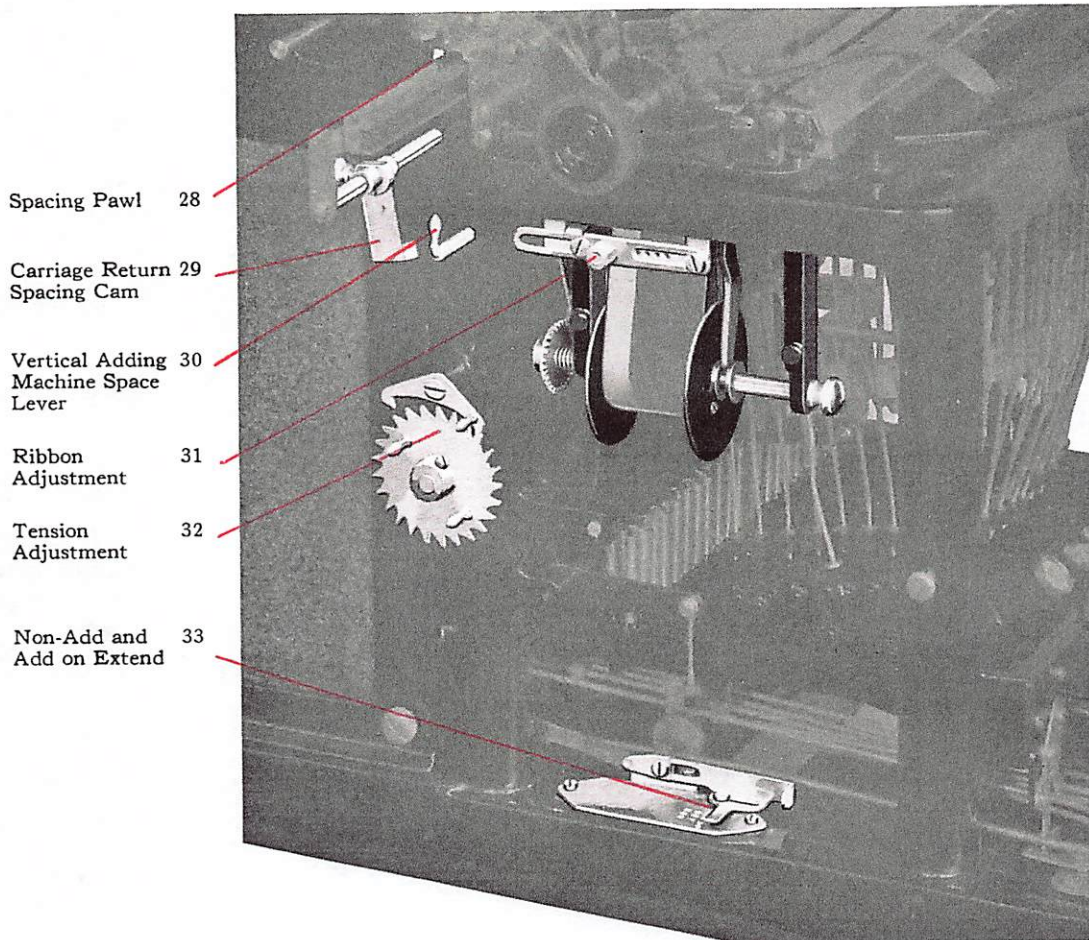
24. Multiplying Keys—After one factor is indexed for multiplication (Red keys—Extend key), the Multiplying keys are depressed for the other factor. The machine automatically enters the result of the multiplication into the Crossfooter.

25. Motor Bar—Depressing the Motor Bar causes the machine to operate.

26. Error Key—An amount set up on the Red keys in error may be cancelled before operating the Motor Bar by using the Error key. The Error key will also restore the Extend, First Product, Final Product, or Register Total key.

27. Full Cent Bar—If the result of a multiplication contains a fraction of a cent amounting to five mills or more, depressing the Full Cent bar increases the fraction to a whole figure. If the result of a multiplication contains a fraction of less than five mills, depressing the Full Cent bar has no effect on the result. This bar should be used after a multiplication involving a fraction in the quantity or the price, or whenever the Point-Off or Decimal-Discount key is depressed.

The Full Cent bar should never be used when the result is to be printed with Register No. 1 in active position as fractions print and add when that register is active.



Controls on left side of machine

28. Spacing Pawl—See paragraph 29.

29. Carriage Return Spacing Cams—When the carriage returns by the depression of the Carriage Return key, the paper automatically spaces up. This is caused by the spacing pawl (28) passing over the spacing cams. Double spacing is obtained when both spacing cams are turned up. If only single spacing is required, one cam is turned down, as in the illustration.

In order to space automatically, it is necessary for the carriage to travel far enough to permit the pawl to pass the spacing cams.

30. Vertical Adding Machine Space Lever—When this lever is turned upward as in the illustration, the paper spaces up each time the Motor Bar is operated. It spaces up one space if the Adding Machine Space Control (paragraph 17, page 7) is pushed in, and two spaces if it is pulled out. For cross addition or making invoices, the paper should not space up from the Motor Bar, hence the Vertical Adding Machine Space Lever should be turned down.

31. Ribbon Adjustment—After a portion of the ribbon becomes worn, it may be shifted with this adjustment so that the entire width of the ribbon may be utilized.

32. Tension Adjustment Gear—This adjustment is for the carriage spring which pulls the carriage when tabulating or when the Typewriter Space Bar is used. (It should be adjusted by a Burroughs representative, only.)

33. Non-Add and Add on Extend—This lever, located on the left side of the machine, is usually set for "Non-Add on Extend." If it is desired to accumulate a total of amounts as they are indexed in the Multiplier-Subtractor, the lever should be set to "Add on Extend." When this is done, amounts indexed in the Multiplier-Subtractor from the Red keys add in the active Register. If the lever is set to "Add on Extend" and it is desired to non-add an amount indexed in the Multiplier-Subtractor, the Non-add key must be held down while the Motor Bar is operated. (See paragraph 6.)

Setting the Machine To a Form

Insert the form in about the middle of the carriage or a little to the left.

Note on a piece of paper the desired stop positions for the different columns as indicated on the scale underneath the platen, keeping in mind that the stop positions on the stop bar scale are the points

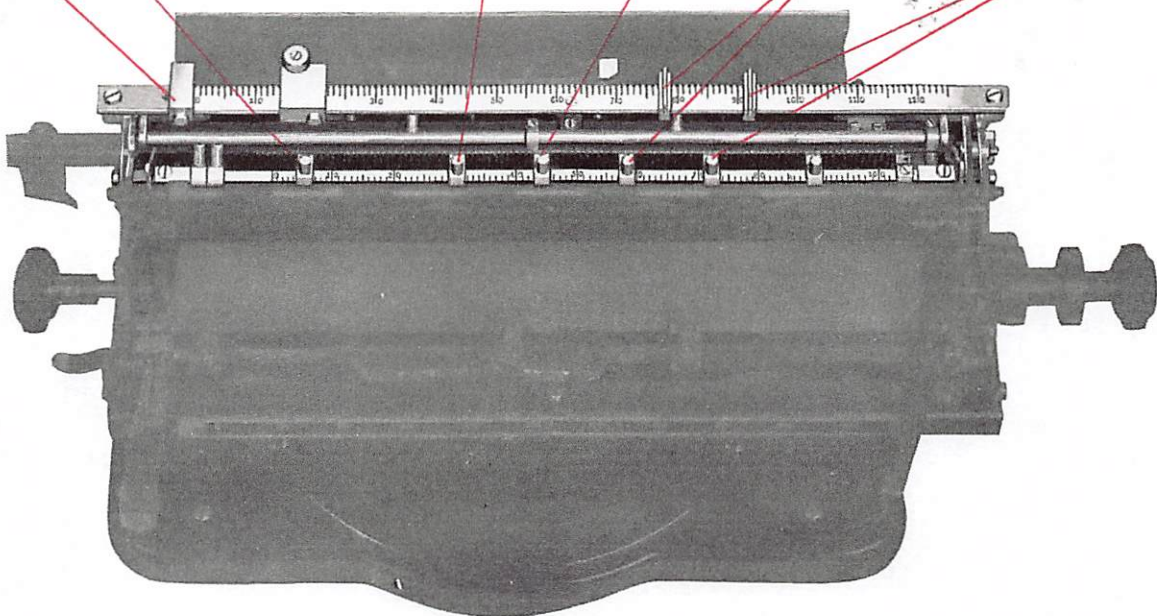
at which the typewriter prints, but the units of cents column of the calculating mechanism prints two places to the left of those positions.

For most of the examples in billing contained in this book and for all examples in addition and subtraction, the carriage positions can be as follows:

	Location of Stop		Location of Stop
Quantity.....	0	Price.....	46
Description.....	7	Gross Amount.....	60
Discount.....	32	Net Amount.....	74

The above carriage positions will also be used for all examples in addition and subtraction.

Ship Via A T & S F		Our Order 4233 Your Order C 671		
QUANTITY	DESCRIPTION	PRICE	GROSS AMOUNT	NET AMOUNT
5	DZ BLACK SILK HOSE	9 00 LESS 15 %	45 00	38 25



Paper Guides—Insert and properly position the form in the carriage, then slide the paper guides on the carriage back plate into place so that they will fit closely the edges of the form but not so tightly as to bind it. Remove the carriage back plate for setting the stop and controls by lifting up on the latches at either side.

Margin—Set the margin stop at the zero position, which is the margin position for the billing problems in this book. The margin stop is moved by pressing the plunger button, then sliding it until the position desired (0) is at the right edge. For

some of the adding problems in this book, the left-hand position is at 32. The releasable margin stop is used for this position. To set this stop, place the carriage in the position desired (32), make the releasable margin stop operative by turning the knurled knob on the top of it until it drops down, press the plunger button and slide the stop to the right until stopped. The scale position at the right edge of the releasable margin stop will be four places to the right of the stop position, or 36. To make the releasable margin stop inoperative, the knurled knob is pulled up, then partly turned. (Note: One type

of releasable margin block sometimes used has, instead of the knurled knob, a small lever in front which, when pressed down and inward, makes the stop inoperative.)

Tabulating Stops—There are two kinds of tabulating stops. The kind illustrated in this book is moved by tilting backward, sliding to the position desired, then tilting forward. The other kind of stop is removed by pulling upward. It is replaced at any position desired by pushing firmly into place. A slight tilt forward facilitates both the removal and the replacement. The scale position at the right edge of the stop indicates the point at which the carriage will stop when tabulated.

Register Trips—To set the register tripping block, the carriage is placed at the position at which Register No. 2 is to be active (60) and the first register tripping block is placed just to the left of the register trip pawl. The carriage is then positioned where Register No. 3 is to be active (74) and the second block placed just to the left of the register tripping pawl. One type of register trip may be removed by gripping the top levers. It may then be re-clamped on the control bar at any

position desired. The type of register trip illustrated in this book is not removable; it can be shifted to the desired position by pressing the latch at the top.

The minimum distance from the left margin required to trip Register No. 2 into active position is 14 spaces; for Register No. 3 the minimum distance is 26 spaces.

Paper Spacing—For billing, the paper is spaced only when the carriage is returned; for adding in a single column, the paper should space each time the machine is operated. To cause the paper to space each time an amount is added, the adding machine space lever (30 on Page 11) should be turned up; to prevent spacing except when the carriage is returned, the lever should be turned down.

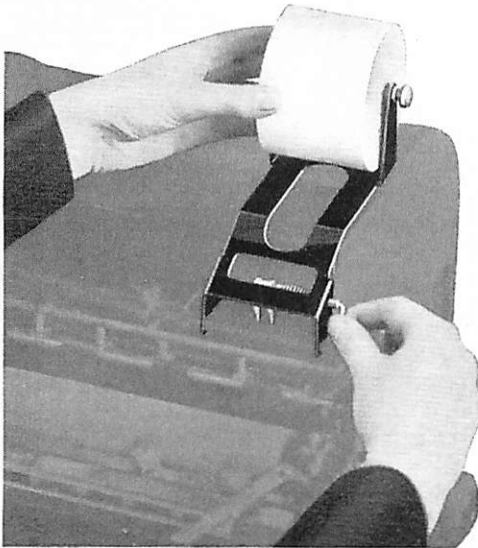
Paper Fingers—The paper fingers should be placed so as to hold the form in place against the platen, but care should be taken that they are not placed where the type may strike against them. For an invoice form, the center paper finger is usually placed between the Price and Gross Amount columns. The other two paper fingers are placed at the edges of the form.

Using Roll Paper

When amounts are to be listed and added in a single column, the roll paper provided for that purpose, may be used.

To place the roll of paper in the holder, remove the shaft which extends through the holder; place the roll in the holder so that the paper will feed from the bottom; push the shaft through the wooden core of the roll and screw it firmly into place.

To fasten the holder on the carriage, depress the lever on the right side of the holder, and hook the holder on the control bar.

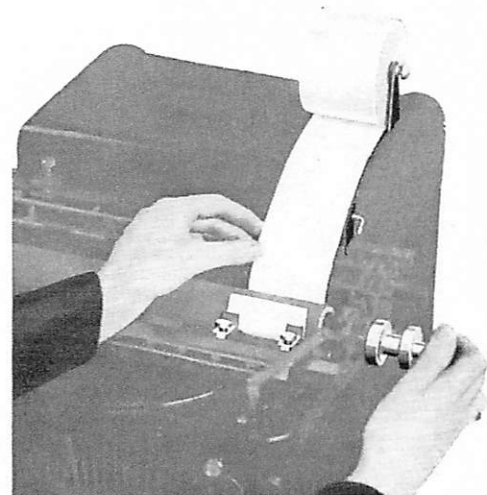


Fastening the Paper Holder to the Carriage

Place the paper fingers close together so they will hold the paper against the platen; then insert the paper behind the Platen and turn the Platen Knob to feed the paper to printing position.

When roll paper is not being used, the paper holder may be left on the carriage as it does not interfere with the use of wide forms.

The roll paper is usually used at the right of the center of the platen, so that any register may be shifted into active position. See illustration.



Inserting Roll Paper

Clearing the Machine

Always clear the machine before using it.

Move the carriage to the extreme left, and raise it so as not to print on the paper or Platen.

Pull the Register Indicator to the left so that Register No. 1 is in active position.

Depress the Final Product key and the Motor Bar*. This clears the Multiplier-Subtractor and the Crossfooter, transferring the amount in the Crossfooter, if any, to Register No. 1.

Depress the Register Total key and the Motor Bar. This clears Register No. 1.

Trip Register No. 2 into active position by pressing the Register Trip Button. Depress the Register Total key and the Motor Bar. This clears Register No. 2.

Trip Register No. 3 into active position. Depress the Register Total key and the Motor Bar. This clears Register No. 3.

All sections of the machine are now clear and work may be started.

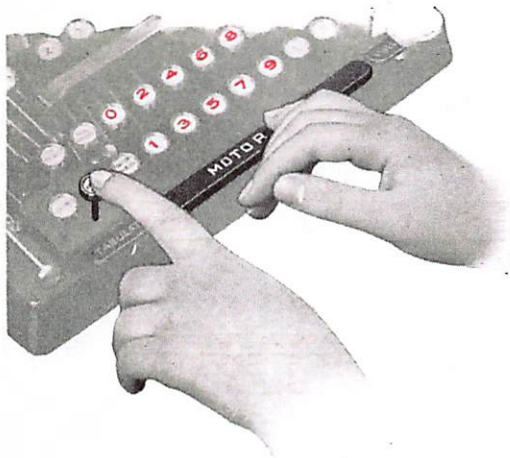
Set the Carriage at 32, the position desired for the left margin, and move the Releasable Margin Block to the right until it is stopped. The right side of the block will then be at position 36.

Insert roll paper and position the carriage for printing on the paper. This may be in any position, and any register may be active.

Turn up the Vertical Adding Machine Space Lever on the left side of the machine to cause the paper to space vertically. (Paragraph 30, page 11.)

*Normally one operation of the Final Product key and the Motor Bar clears the Crossfooter, but if the machine is mis-operated by multiplying in excess of its capacity without pointing off afterwards, a second operation of the Final Product key and the Motor Bar is necessary to completely clear the Crossfooter.

Single Column Addition



Totaling a Register

Clear the machine.

Set up the first amount in the example on the Red keys and depress the Motor Bar. The amount will print, and add in Register No. 1. Set up each of the remaining amounts on the Red keys and depress the Motor Bar as for the first amount. After the last amount is printed, strike the Line key. To print the total and clear the Register, depress the Register Total key and then the Motor Bar.

EXAMPLE

246 00
24 87
13 65
359 77
87 66
354 44
675 66
8765 55
67 88
<u>97 55</u>
10693 03

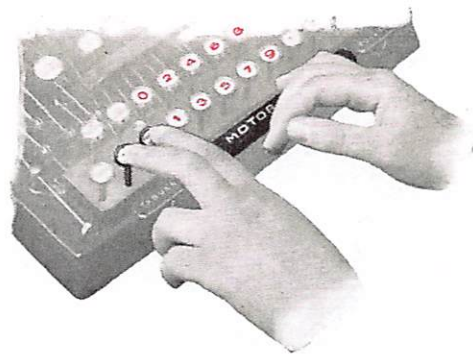
Transferring Amounts from One Section to Another

To transfer an amount from a Register to the Crossfooter—The Register, containing the amount to be transferred, must be in active position. Depress the Register Total key and hold down the Add Crossfooter key while operating the Motor Bar.

To transfer an amount from the Crossfooter to a Register—Shift the desired Register into active position, depress the Final Product key and then the Motor Bar.

To transfer an amount from one Register to another Register—This transfer must be made through the Crossfooter. Shift into active position the Register containing the amount to be transferred, and transfer the amount to the Crossfooter by depressing the Register Total key and holding down the Add Crossfooter key while operating the Motor Bar. Then shift the desired Register into active position and depress the Final Product key and the Motor Bar.

To transfer an amount from a Register to the Multiplier-Subtractor—Shift the desired Register into active position, depress the Register Total key and the Extend key, and operate the Motor Bar.



Transferring from Register to Crossfooter.

To transfer an amount from the Crossfooter to the Multiplier-Subtractor—Depress the First Product and Extend keys and then operate the Motor Bar. This is possible only when the Multiplier-Subtractor is clear. Otherwise, shift a Register which is clear into active position and depress the Final Product key. This will clear the Multiplier-Subtractor and transfer the amount from the Crossfooter to the Register. Then transfer the amount from the Register to the Multiplier-Subtractor by depressing the Register Total and Extend keys and the Motor Bar.

Duplex Addition in One Column

In Duplex addition the total of each group of figures is transferred to the Crossfooter; thus the grand total is accumulated in the Crossfooter.

This work is done with the carriage in the same position as for single-column addition.

Operating Instructions

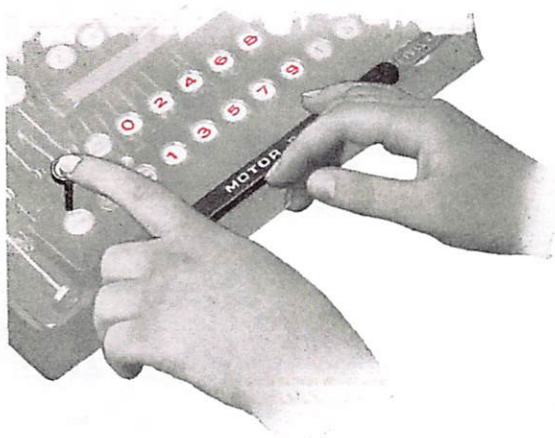
Clear the machine, if not certain that it is already clear.

List the first group of amounts as in single-column addition and strike the Line key after the last amount is printed. To print the total and transfer it to the Crossfooter, depress the Register Total key and hold down the Add Crossfooter key while operating the Motor Bar. This transfers the amount of the first group from Register No. 1 to the Crossfooter.

List the second group of amounts and take a "transfer total" in the same way. The grand total is thus accumulated in the Crossfooter. To print this and clear the Crossfooter depress the First Product key and the Motor Bar.

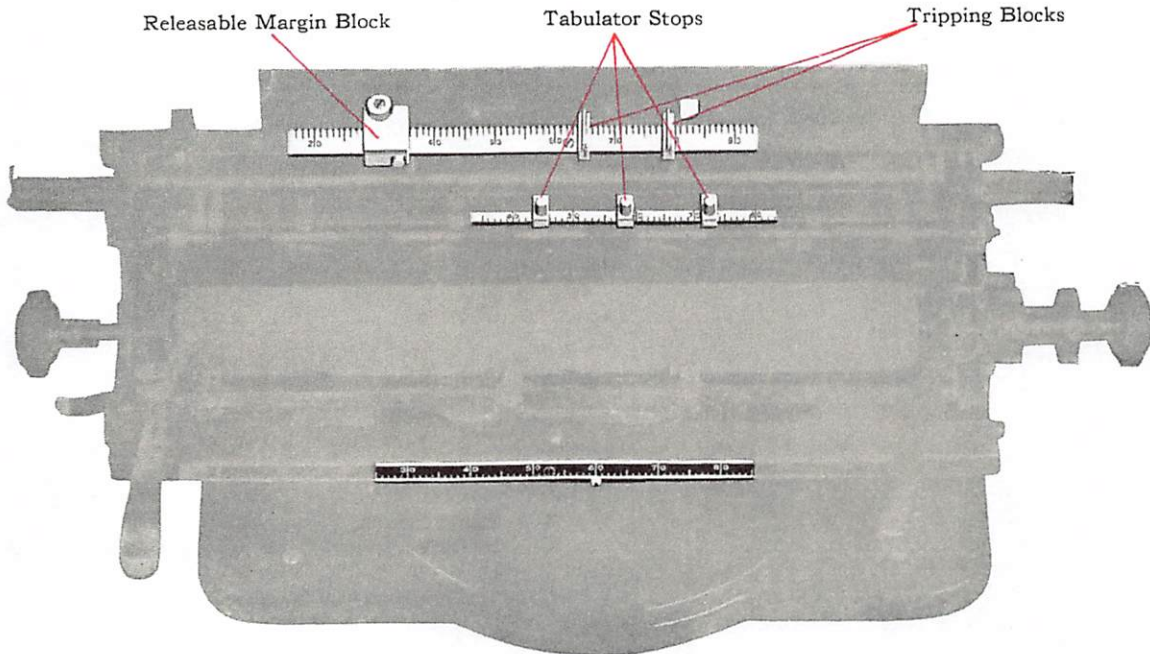
EXAMPLE

134 00
2465 00
13 87
246 75
<u>3566 00</u>
6425 62
8765 00
125 75
135 65
42 75
<u>2675 89</u>
11745 04
18170 66



Totaling the Crossfooter

Duplex Addition in Three Columns



Retain the carriage set-up used in the previous example. Set an additional Tabulator Stop at 74 and

move the other Tripping Block so that Register No. 3 will trip into active position at 60.

Operating Instructions

Clear the machine, if not certain that it is already clear.

Amounts in the first column are printed when the carriage is at 32 and are automatically added in Register No. 1. The second column is printed at 46 and the amounts are added in Register No. 2. The third column is printed at 60 and the amounts are added in Register No. 3.

After listing the first amount in the first column, 247.58, depress the Tabulator bar to tabulate the carriage to 46, where the first amount of the second column, 362.78, is listed. Depress the Tabulator bar to tabulate to 60, list the first amount of the

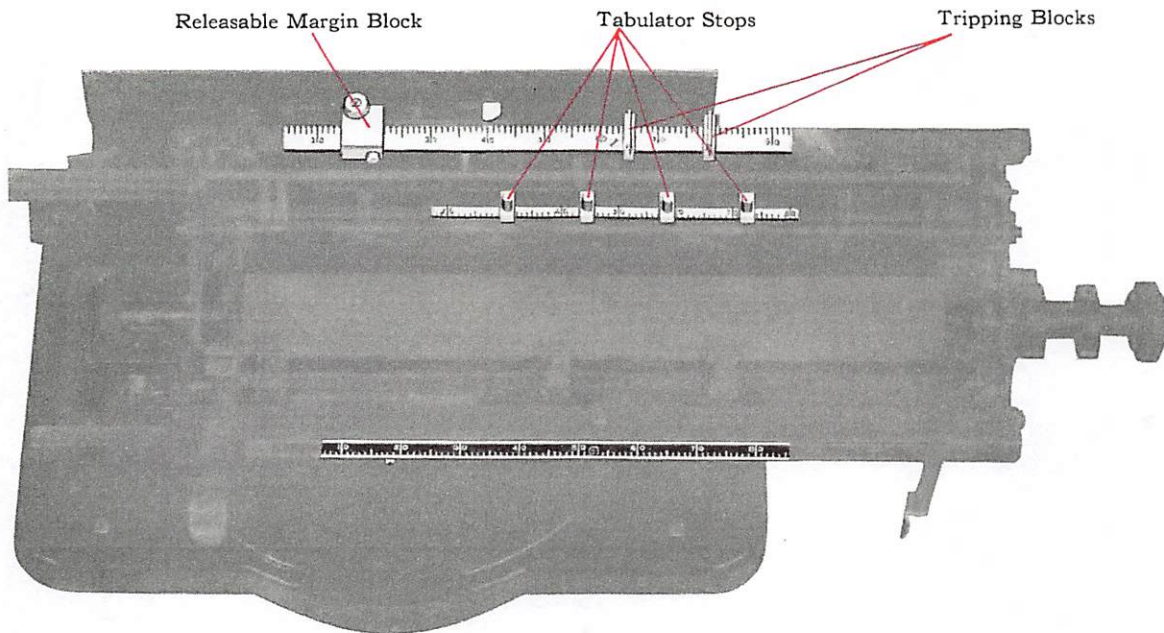
third column, 408.25, then touch the Carriage Return key to return the carriage to the first column and to space up the paper. List the remaining amounts in the same manner.

After all amounts have been listed, strike the Line key; then transfer the total of the first column to the Crossfooter by depressing the Register Total key and holding down the Add Crossfooter key while operating the Motor Bar. In the same manner, transfer the totals of the second and third columns to the Crossfooter. To print the grand total, tabulate to 74 and depress the First Product key and the Motor Bar.

EXAMPLE

"32"	"46"	"60"	"74"
247 58	362 78	408 25	
73 64	438 52	197 50	
482 75	34 27	546 43	
1249 27	265 50	37 28	
496 31	923 75	876 40	
<u>673 95</u>	<u>42 96</u>	<u>827 45</u>	
3223 50	2067 78	2893 31	8184 59

Duplex Addition in Four Columns



Retain the carriage set-up used in the previous example. Set a Tabulator Stop at 32. Move the

Releasable Margin Block to 22 so that when the carriage is returned it will stop at 18 on the Front Scale.

Operating Instructions

Clear the machine, if not certain that it is already clear.

The first column of figures is printed at 18 and is added in the Crossfooter. The next three columns are listed and added as in the previous example. Set up the first amount on the Red keys and hold down the Add Crossfooter key while operating the Motor Bar to add the amount in the Crossfooter; tabulate to the second column and add the first amount in Register No. 1. The third column is added in Register No. 2, and the fourth column in Register No. 3. Depress the Carriage Return key and repeat the operations for the remaining lines.

To print the total of the first column (which was added in the Crossfooter), strike the Line key and hold down the First Product key while operating the Motor Bar. This causes the amount to be retained in the Crossfooter (same as Sub-Total). Restore the First Product key with the Error key.

Transfer the totals of the other columns from the respective Registers to the Crossfooter in the same manner as in the previous examples.

To print the grand total, which is now in the Crossfooter, tabulate to 74 and depress the First Product key and the Motor Bar.

EXAMPLE

"18"	"32"	"46"	"60"	"74"
362 45	76 21	278 64	586 54	
1228 61	943 65	64 92	372 47	
506 85	314 96	274 80	628 96	
1297 46	87 59	573 28	59 75	
<u>91 25</u>	<u>355 00</u>	<u>206 04</u>	<u>724 83</u>	
3486 62	1777 41	1397 68	2372 55	9034 26

Printing and Adding Fractions

EXAMPLE

$$\begin{array}{r} 3\frac{1}{2} \\ 47 \\ \underline{4} \\ 86 \end{array}$$

Tenth fractions are handled in the same way as whole numbers except in the manner in which they are set up on the keyboard. The example illustrated can be listed as follows: Clear the machine. Turn up the Vertical Adding Machine Space Lever. Move Register No. 1 into active position, depress the red 3 for the whole number and then hold down the Fraction-(Add Crossfooter) key and strike the red 5. (This opera-

tion sets up .5 ($\frac{1}{2}$) in the machine.) Release the Fraction-(Add Crossfooter) key and operate the Motor Bar. The machine then prints and adds $3\frac{1}{2}$ (3.5).

List the second amount in the same way, depressing the red 7 while the Fraction-(Add Crossfooter) key is held down. The third amount does not contain a whole number and it is set up on the machine by holding down the Fraction-(Add Crossfooter) key while the red 4 is depressed. Release the Fraction-(Add Crossfooter) key and operate the Motor Bar. To print the total, depress the Register Total key and then the Motor Bar in the regular manner.

Entering Fractions in the Crossfooter and Multiplier-Subtractor

In the above example, the Fraction-(Add Crossfooter) key has functioned as a Fraction key only. When fractions are to be added directly in the Crossfooter, the key will also function as an Add Crossfooter key. To add the same list of figures in the Crossfooter, operate as follows: (Register No. 1 must be in active position.) Depress 3 on the Red keys, hold down the Fraction-(Add Crossfooter) key and depress the red 5; continue to hold down the Fraction-Add Crossfooter key and operate the

Motor Bar. List the other amounts in the same manner, and print the total with the First Product key.

Fractions may be indexed in the Multiplier-Subtractor as follows: Set up the amounts on the keyboard in the same manner as explained above and then depress the Extend key and the Motor Bar.

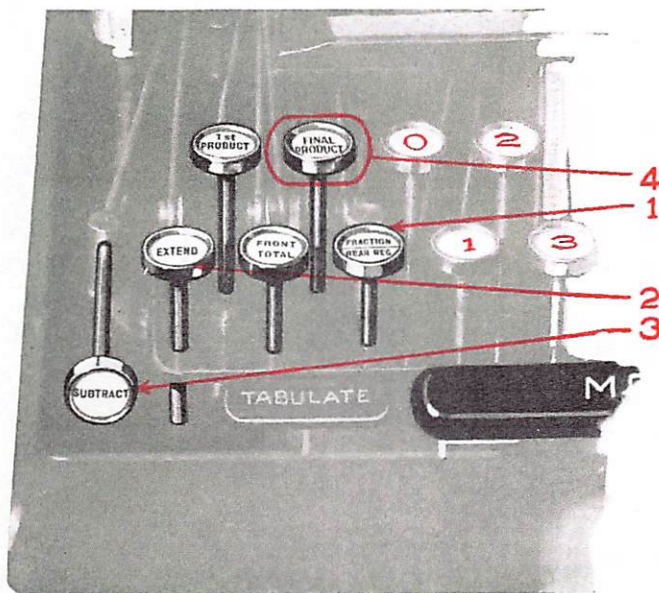
This style of machine calculates tenth fractions only, but other fractions can also be easily handled by using their decimal equivalents.

Subtraction

Subtraction in Crossfooter—Operating Instructions

EXAMPLE

$$\begin{array}{r} 24685 \\ \underline{9765} \\ 14920 \end{array} \quad \begin{array}{l} (1) \\ (2) \\ (3 \text{ and } 4) \end{array}$$



Clear the machine.

1. Add the larger amount in the Crossfooter—Set it up on the Red keys and hold down the Add Crossfooter key while operating the Motor Bar.

2. Index the smaller amount in the (Multiplier)-Subtractor—Set it up on the Red keys, depress the Extend key (do not hold down) and operate the Motor Bar.

3. Depress the Subtract Key.

4. Depress the Final Product key and the Motor Bar—This prints the difference, clears the Crossfooter and the (Multiplier)-Subtractor and transfers the amount to the active Register.

Note: To prevent the difference from transferring to the active Register, use the First Product instead of the Final Product key, and then clear the (Multiplier)-Subtractor by using the Final Product key and the Motor Bar.

Subtraction in Registers

To subtract from a Register, the Crossfooter must be clear, as it is used in making the subtraction.

Index in the (Multiplier)-Subtractor the smaller amount. (Set it up on the Red keys, depress the Extend key and the Motor Bar.) Depress the Subtract key; then depress the Final Product key and the Motor Bar. This transfers the complement of the smaller amount to the Register, thus subtracting it from the larger amount already in the Register. To avoid printing the complement

of the smaller amount, hold down the Non-Print key when the Final Product key is used. A subtotal or a total of the Register will print the net amount, if desired.

Note: The Add on Extend lever must be set to Non-Add on Extend, or the Non-Add key must be depressed when an amount is indexed in the (Multiplier)-Subtractor for subtraction in the Register.

Listing Debits and Credits and Obtaining the Difference

Move the Releasable Margin Block to 36. Use the Tabulator Stops at 46 and 60 and set a Register Tripping Block so that Register No. 2 trips into

active position at 46. Turn down the Vertical Adding Machine Space Lever.

Operating Instructions

Clear the machine if not certain that it is already clear.

Print debits in the first column, adding them in Register No. 1. After listing the first debit, tabulate to the second column at 46, where Register No. 2 will be in active position, and list the first credit. To return the carriage to the first column and space up the paper, depress the Carriage Return key.

After all amounts are listed, transfer the total of the debits to the Crossfooter by depressing the Register Total key and holding down the Add

Crossfooter key while operating the Motor Bar.

Transfer the total of the credits to the (Multiplier)-Subtractor by depressing the Register Total key and the Extend key together and then operating the Motor Bar.

Operate the Subtract key to make the subtraction; then print the difference between the total debits and the total credits by depressing the Final Product key and the Motor Bar. This clears the Crossfooter and the (Multiplier)-Subtractor, and transfers the difference to the active Register.

EXAMPLE

"32"	"46"	"60"
2749 68	1345 60	
4354 75	987 45	
<u>456 89</u>	<u>2256 27</u>	
7561 32	4589 32	2972 00

Multiplication

Multiplication on this machine is simple and rapid; furthermore, one key depression and a Motor Bar operation prints the answer.

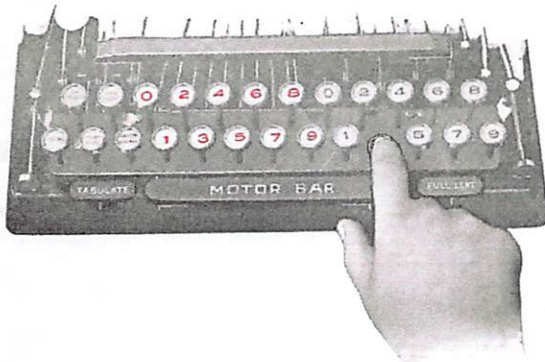
One factor, the multiplicand, is indexed in the Multiplier -(Subtractor) by setting it up on the Red

keys and depressing the Extend key and the Motor Bar. The other Factor, the multiplier, is depressed on the Multiplying keys, and the machine enters the answer (product) into the Crossfooter.

Example: Multiply 466 by 23.

Operating Instructions

Clear the machine if not certain that it is clear. Turn up the Vertical Adding Machine Space Lever.



Indexing and Multiplying

1. Set up 466 on the Red Keys, depress the Extend key (do not hold down) and operate the Motor Bar. 466 is now indexed in the Multiplier-(Subtractor).

2. To perform the multiplication, depress the 2 and then the 3 on the Multiplying keys. The machine enters the answer into the Crossfooter.

3. This answer (product) may be printed either by using the Final Product key or the First Product key.

Depressing the Final Product key and the Motor Bar clears both the Multiplier- (Subtractor) and the Crossfooter and transfers the product to the active Register.

Depressing the First Product key and the Motor Bar prints the total of the Crossfooter and clears it. It does not transfer the amount to the Register and does not clear the Multiplier- (Subtractor). The amount, 466, would thus be left indexed in the Multiplier- (Subtractor) and subsequent multiplications of 466 with other multipliers could be performed without having to re-index the multiplicand each time.

The operator should acquire the habit of keeping the Multiplying keys in continuous operation. This can be done with a little practice. After depressing the first Multiplying key, place the finger on the next key with a slight pressure and it easily depresses as soon as the last key has functioned. (The "0" and the "1" keys cause the machine to operate once only; all the other keys, twice.) In billing work, it is desirable, wherever possible, to tabulate while multiplying, to save time.

Division

By the aid of reciprocals, any problem in division may be handled by simple multiplication. For example, multiplying any number by .25 (which is the reciprocal of 4) is the same as dividing by 4.

The reciprocal of any number may be found by dividing "1" by the number. Reciprocals of divisors most frequently used are easily memorized. Reciprocal tables are commonly used.

Writing and Computing an Invoice

Set the machine for the invoice form as described on page 12, with the left margin at 0, tabulating stops at positions 7, 32, 46, 60 and 74, Register No. 1 active in position 60 and Register No. 3 active in position 74. Clear the machine and then depress the Carriage Return key.

INVOICE				
<i>Sold to</i>	A MERCHANT ANYWHERE U S A			
<i>Ship Via</i>	B & O	<i>Our Order</i>	1590	<i>Your Order</i> 131
QUANTITY	DESCRIPTION	PRICE	GROSS AMOUNT	NET AMOUNT
5	DZ BLACK HOSE	8 75		43 75
9	DZ CORD	9 45		85 05
27	DZ WHITE	9 45		255 15
11	DZ SILVER	19 25		211 75
6	DZ NUDE	20 00		120 00
				715 70

Operating Instructions

Type Name and Address, beginning at 7. Space up the invoice with the Platen Space Lever.

Type Shipping Instructions, beginning at 7.

Type "Our Order Number," beginning at 46.

Type "Your Order Number," beginning at 60. Depress the Carriage Return key and space up the Platen to the correct position for writing the body of the invoice. The writing line is two spaces above the scale which is against the platen. The operator should learn to space up to the correct writing position without raising the carriage. This may be done by noting some point in the heading which is approximately on a line with the top of the Paper Fingers when the form is in position for writing the first line of the body of the invoice.

Type the Quantity, beginning at 0.

Type the Description, beginning at 7.

Price—Index the price in the Multiplier-(Subtractor) by depressing 875 on the Red keys, then depressing the Extend key and the Motor Bar. Multiply by the quantity, 5, on the Multiplying keys, tabulating to 74.

Net Amount—Print the result of the multiplication by depressing the Final Product key and the Motor Bar. This clears the Multiplier -(Subtractor) and the Crossfooter, transferring the amount to Register No. 3 in order to accumulate the total of the invoice.

Complete each of the other lines in the same manner.

Total of Invoice—When the last extension has been printed at 74, space up the invoice with the Platen Space Lever, depress the Line key and print the total of the invoice by depressing the Register Total key and the Motor Bar. This clears Register No. 3.

Use of the Full Cent Bar

When there is a fraction in either factor (quantity or price), the product (extension) may contain a fraction of a cent. If this fraction is less than five mills, it should be eliminated, but if it is five mills or more, it should be increased to a full cent. This is accomplished automatically by a depression of the Full Cent bar.

Always use the Full Cent bar before printing the final result when there is a fraction in either the quantity or the price, or whenever the Point-Off or Decimal-Discount key is used.

The Full Cent bar is used only when the result is to be printed with Register No. 2 or No. 3 in active position.

INVOICE				
<i>Sold to</i> A MERCHANT ANYWHERE				
<i>Ship Via</i> C R I & P		<i>Our Order</i> 324 <i>AYour Order</i> 4723		
QUANTITY	DESCRIPTION	PRICE	GROSS AMOUNT	NET AMOUNT
27	ONLY SHAWL STRAPS	38 ½		10 40
235	DZ ORNAMENTS	12 ½		29 38
37	DZ ORNAMENTS	1 37 ½		50 88
28	DZ ORNAMENTS	4 65 ½		<u>130 34</u>
				221 00

Fractions in the Price Which Can Be Printed with the Calculating Mechanism

The operations required for this invoice are the same as in the previous example, except that in setting up the price the instructions given on page 21 for indexing fractions should be followed, and the Full Cent bar should be used before printing the net amount of each item.

Operating Instructions

Quantity and Description—Use the typewriter. Tabulate to 46.

Price—Index this into the Multiplier -(Subtractor) (Set up on the Red keys, as explained on page 21 for fractions, depress the Extend key and the Motor Bar.) Multiply by the quantity. While multiplying, tabulate to 74.

Net Amount—Depress the Full Cent bar. Then

depress the Final Product key and operate the Motor Bar; this prints the net amount and transfers it to Register No. 3.

Total of Bill—After the last line has been completed at 74, space up the invoice, depress the Line key and then depress the Register Total key and operate the Motor Bar. This prints the total amount of the bill and clears Register No. 3.

Use of Point-Off Key

Each depression of the Point-Off key moves the decimal point one place to the left (points off one place). The rule for pointing off in mental multiplication is to point off as many places as there are decimal places in both factors. The machine automatically points off between dollars and cents. Therefore it is not necessary to point off the two places for cents.

Rule for Pointing off in Calculating on the Burroughs Typewriter Billing Machine

Depress the Point-Off key as many times as there are decimal places in both factors, not counting the cents and fractions of cents printed with the Calculating mechanism. The Point-Off key will not point off more places than there are digits in the multiplying factor (number of Multiplying keys depressed). Therefore when more places are desired, it is necessary to prefix one cipher to the multiplier for each additional place required.

Example:

9 items @ 5.00 per C = .45

Two places must be pointed off because the price is per 100. 09 instead of 9 must be used as the multiplying factor on the Multiplying keys in order to point off two places.

Fractions in the Quantity

INVOICE				
Sold to	A MERCHANT ANYWHERE			
Ship Via	N Y C	Our Order	3789	Your Order 822
QUANTITY	DESCRIPTION	PRICE	GROSS AMOUNT	NET AMOUNT
5¾	DZ BONA IR	25 20		144 90
9½	DZ PELHAM	31 20		296 40
14¾	DZ WILLARD	55 20		814 20
4½	DZ PELHAM	25 20		111 30
				1366 80

In the above invoice the quantity is expressed in fractional amounts. **When calculating, use the decimal equivalent of the fraction.** For example, the decimal equivalent of ¾ is .75. Thus when calculating the first line, the price is multiplied by 5.75 on the Multiplying keys.

A table giving the decimal equivalents of common fractions is on page 37.

Operating Instructions

Quantity and Description—Use the typewriter. Tabulate to 46.

Price—Index this into the Multiplier-(Subtractor). (Set up on the Red keys, depress the Extend key and operate the Motor Bar.) Multiply by the quantity, with the fraction expressed as a decimal, as explained above and at the same time, tabulate to 74. Not counting the cents, there are two decimal places in the factors; therefore, point off two places.

Net Amount—Depress the Full Cent bar; then depress the Final Product key and operate the Motor Bar to print the net amount and transfer it to Register No. 3.

Calculate each of the other lines in the same manner.

Total of Invoice—After the last line has been written, space up and print the total with the Register Total key.

Fractions in the Price which Cannot be Printed by the Calculating Mechanism

INVOICE				
<i>Sold to</i> A MERCHANT ANYWHERE				
<i>Ship Via</i> M C		<i>Our Order</i> 1280 <i>Your Order</i> B 964		
QUANTITY	DESCRIPTION	PRICE	GROSS AMOUNT	NET AMOUNT
17 $\frac{3}{4}$	DZ FILE HANDLES	1 12 $\frac{3}{4}$ DZ		20 01
5 $\frac{1}{4}$	DZ 1" SET SCREWS	2 25 $\frac{3}{4}$ DZ		11 85
8 $\frac{3}{4}$	DZ ASSORTED DRILLS	6 45 $\frac{1}{4}$ DZ		56 46
				88 32

Point off as many places as there are decimals in the factors, less the two places for cents. (See rules on the previous page.) Example, first line: 17 $\frac{3}{4}$ doz. @ \$1.12 $\frac{3}{4}$. Since the fraction in the price cannot be printed by the Calculating Mechanism, it is necessary to use the decimal equivalents of the fractions in both the quantity and price. The factors are therefore, 17.75 x 1.1275. There are two decimal places in the quantity, and two places in the price, besides the cents. Consequently, there are four places to point off.

In the second line in this invoice, the factors, expressed decimally, are 2.2575 x 5.25. Four places are to be pointed off, but there are only three digits in the multiplying factor. **Since it is not possible to point off more places than the number of digits in the multiplying factor (number of Multiplying keys depressed), ciphers must be prefixed.** In this example, therefore, use 0525 on the Multiplying keys.

Printing the Price

Tabulate to the price column and set up the price, except the fraction, on the Red keys. Hold down the Non-Add keys while operating the Motor Bar to non-add the price. Then type the fraction with the typewriter keys. It is not necessary to use the typewriter space bar before typing the fraction.

The typewriter keyboard is constructed so that many common fractions may be printed in less space than is usually required for printing them with a typewriter—also with fewer operations.

The numerators are indicated by the small figures (1 to 11) on the keys in the second and third rows from the bottom; the denominators are indicated by the small figures with oblique lines at the left of them (/3, /6, /8, /10, /12) on the keys in the first and second rows from the bottom.

Fractions are printed by holding down the Shift-Non-Print key and striking, first the key representing the desired numerator and then the key representing the desired denominator. The fractions $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$ are printed with one key-stroke.

Note: One style of Burroughs Typewriter Billing Machine is designed to handle eighth fractions in the same manner as tenth fractions are handled by the machine described in this book, making it unnecessary to type the fractions and then use the decimal equivalent as described above.

Operating Instructions

Quantity and Description—Use the typewriter.

Price—Tabulate to 46, print the dollars and cents with the Calculating mechanism (Non-Add) and the fractions with the typewriter, as explained above. This merely prints the price. It is therefore necessary to extend the price, using the decimal equivalent of the fraction. Set it up on the Red keys, depress the Extend key and hold down the Non-Print key while operating the Motor Bar. Multiply by the quantity, 17.75, while multiplying tabulate to 74.

Net Amount—Point off (see rule on page 21), depress the Full Cent bar, the Final Product key and then operate the Motor Bar.

In calculating the second and third lines, it will be necessary to prefix one cipher, using 0525 and 0875, respectively, as multipliers. (See above.)

Total of Bill—Space up, strike the Line key, then depress the Register Total key and the Motor Bar.

Calculating Discounts The Use of the Decimal-Discount Key

Like the Point-Off key, the Decimal-Discount key is used for pointing off. One depression of the Point-Off key points off one decimal place; one depression of the Decimal-Discount key points off the same number of places as there are digits in the multiplier. It saves time to use the Decimal-Discount key when the multiplier is a decimal fraction without a whole number, as, for instance, .875. This is always the case in calculating discounts; hence the name, Decimal-Discount key. This key is used instead of the Point-Off key for pointing off for discounts.

Calculating the Net Amount—Modern business practice favors printing the gross and net amounts only and not the amount of the discount. It is therefore, usually necessary to calculate the net amount only. This is done by multiplying the gross amount by the complement of the per cent of discount.

The complement of any rate of discount is the rate of discount deducted from 100%.

Examples:

- To find the net amount when the discount is 2%, multiply the gross amount by .98.
- To find the net amount when the discount is 25%, multiply the gross amount by .75.

Note: In pointing off for mixed numbers when one or two whole numbers are followed by a long decimal fraction, it is sometimes faster and more accurate to depress the Decimal-Discount key, then depress the cipher multiplying key once for each whole number than to depress the Point-Off key for each decimal figure.

INVOICE				
<i>Sold to</i>	A MERCHANT ANYWHERE			
<i>Ship Via</i>	M P	<i>Our Order</i> 916	<i>Your Order</i> 522	
QUANTITY	DESCRIPTION	PRICE	GROSS AMOUNT	NET AMOUNT
5	DZ 6" FILES	8 75	43 75	
	LESS 15 %			37 19
9	DZ #27 TWIST DRILLS	2 35	21 15	
27 ³ / ₄	DZ 12" TUNGSTEN H S BLADES	7 90	219 23	
			240 38	
	LESS 35 %			156 25
49 ¹ / ₂	DZ 2" BOLTS	1 25	61 77	
	LESS 2 %			60 53
				253 97

Operating Instructions

Quantity and Description—Use the typewriter.

Price—Index the price in the Multiplier-(Subtractor). (Set it up on the Red keys, depress the Extend key and operate the Motor Bar.) Multiply by the quantity and at the same time tabulate to 60.

Gross Amount—If there are fractions in the quantity or price, use the Point-Off key and the Full Cent bar as previously instructed. Print the gross amount with the Final Product key and the Motor Bar, transferring the amount to Register No. 2. Index the gross amount in the Multiplier-(Subtractor) by depressing the Register Total and Extend keys and then hold down the non-print key while operating the Motor Bar. (When there are two or more items subject to the same discount,

they are usually grouped together as shown above, then the total gross amount is indexed in the Multiplier-(Subtractor) by using the Register Total and Extend keys, the same as a single amount except that the Non-Print key is not used.)

Discount—Depress the Carriage Return key, tabulate to 32 and type in "Less 15%" with the typewriter keys. Multiply by the complement of the discount (.85) and at the same time tabulate to 74.

Net Amount—Depress the Decimal-Discount key and the Full Cent bar; print the net amount with the Final Product key to transfer it to Register No. 3.

Total of Bill—Space up, strike the Line key; then depress the Register Total key and the Motor Bar.

Chain Discounts

When there is a chain discount, the net amount can be obtained by successive multiplications; that is, by taking off one discount at a time, following the same procedure as previously described for a single discount. The more rapid way, however, is to multiply the gross amount by the Net Decimal Equivalent of the series or chain of discounts. See table on page 27.

INVOICE				
<i>Sold to</i> A MERCHANT ANYWHERE				
<i>Ship Via</i> OUR		<i>Our Order</i> 545	<i>Your Order</i> D 663	
QUANTITY	DESCRIPTION	PRICE	GROSS AMOUNT	NET AMOUNT
25½	DZ ½" SET SCREWS	96	24 48	
28	DZ 1" SET SCREWS	1 25	35 00	
			<u>59 48</u>	
		LESS 70-10 %		16 06
95½	DZ ASSORTED DRILLS	2 45	235 00	
		LESS 15-10-5 %		<u>170 79</u>
				<u>186 85</u>

Operating Instructions

Quantity and Description—Use the typewriter.

Price—Index this in the Multiplier-(Subtractor). (Set it up on the Red keys and then depress the Extend key and operate the Motor Bar.) Multiply by the quantity and at the same time tabulate to 60.

Gross Amount—Point off and use the Full Cent bar, if necessary. Use the Final Product key to transfer the gross amount to Register No. 2. After completing the last item in a group, space up, and strike the Line key. Index the total in the Multiplier-(Subtractor). (Depress the Register Total and the Extend keys; then operate the Motor Bar.) Depress the Carriage Return key.

Discount—Tabulate to 32 and type the rate of discount.

Net Amount When the Decimal Equivalent of the Chain Discount is Known—While tabulating to 74, multiply by the decimal equivalent, taken from the table on the next page. (For 70-10%, multiply by 27.; for 15-10-5%, multiply by .72675.) Depress the Decimal-Discount key and Full Cent bar; then print the net amount with the Final

Product key, transferring the amount to Register No. 3.

Complete the invoice as in the previous examples.

Net Amount When Decimal Equivalent of Discount is Not Known—When a table of net decimal equivalents of chain discounts is not available or the chain discount desired is not included in a table, each discount in the chain is deducted separately. After typing the discount, but before tabulating, so as to keep Register No. 1 in active position, latch down the Non-Print key, then multiply by the complement of the first discount.

Depress the Decimal-Discount key, then the Final Product key and the Motor Bar. (The Full Cent bar is not used in this operation because Register No. 1 is active.) Index the result in the Multiplier-(Subtractor) and multiply by the complement of the next discount. This is repeated if there are any additional discounts. While multiplying by the last discount, release the Non-Print key and tabulate to the net amount column. Depress the Decimal-Discount key and the Full Cent bar, then print the net amount with the Final Product key, transferring it to Register No. 3.

Complete the invoice as in the previous examples.

Table of Net Decimal Equivalents of Chain Discounts

Multiplying the gross amount by the net decimal equivalent for a chain discount gives the net amount of the invoice. In discounting amounts of less than \$100.00, it is not necessary to use more than five figures.

Rate %	5	7½	10	12½	15	16⅔	20	25	30	33⅓	35	37½
	.95	.925	.90	.875	.85	.83333	.80	.75	.70	.66667	.65	.625
2½	.92625	.90188	.8775	.85313	.82875	.8125	.78	.73125	.6825	.65	.63375	.60938
5	.9025	.87875	.855	.83125	.8075	.79166	.76	.7125	.665	.63333	.6175	.59375
5 2½	.87994	.85678	.83363	.81047	.78731	.77187	.741	.69469	.64838	.6175	.60206	.57891
5 5	.85738	.83481	.81225	.78969	.76713	.75208	.722	.67688	.63175	.60167	.58663	.56406
5 5 2½	.83594	.81394	.79194	.76995	.74795	.73328	.70395	.65995	.61596	.58663	.57196	.54996
7½	.87875	.85563	.8325	.80938	.78625	.77083	.74	.69375	.6475	.61667	.60125	.57813
7½ 2½	.85678	.83423	.81169	.78914	.76659	.75156	.7215	.67641	.63131	.60125	.58622	.56367
7½ 5	.83481	.81284	.79088	.76891	.74694	.73229	.703	.65906	.61513	.58583	.57119	.54922
10	.855	.8325	.81	.7875	.765	.75	.72	.675	.63	.6	.585	.5625
10 2½	.83363	.81169	.78975	.76781	.74588	.73125	.702	.65813	.61425	.585	.57038	.54844
10 5	.81225	.79088	.7695	.74813	.72675	.7125	.684	.64125	.5985	.57	.55575	.53438
10 5 2½	.79194	.7711	.75026	.72942	.70858	.69469	.6669	.62522	.58354	.55575	.54186	.52102
10 7½	.79088	.77006	.74925	.72844	.70763	.69375	.666	.62438	.58275	.555	.54113	.52031
10 10	.7695	.74925	.729	.70875	.6885	.675	.648	.6075	.567	.54	.5265	.50625
10 10 5	.73103	.71179	.69255	.67331	.65408	.64125	.6156	.57713	.53865	.513	.50018	.48094
10 10 5 2½	.71275	.69399	.67524	.65648	.63772	.62522	.60021	.5627	.52518	.50018	.48767	.46891
Rate %	40	50	60	62½	65	66⅔	70	75	80	85	87½	90
	.60	.50	.40	.375	.35	.33333	.30	.25	.20	.15	.125	.10
2½	.585	.4875	.39	.36563	.34125	.325	.2925	.24375	.195	.14625	.12188	.0975
5	.57	.475	.38	.35625	.3325	.31667	.285	.2375	.19	.1425	.11875	.095
5 2½	.55575	.46313	.3705	.34734	.32419	.30875	.27788	.23156	.18525	.13894	.11578	.09263
5 5	.5415	.45125	.361	.33844	.31588	.30083	.27075	.22563	.1805	.13538	.11281	.09025
5 5 2½	.52796	.43997	.35198	.32998	.30798	.29331	.26398	.21998	.17599	.13199	.10999	.08799
7½	.555	.4625	.37	.34688	.32375	.30833	.2775	.23125	.185	.13875	.11563	.0925
7½ 2½	.54113	.45094	.36075	.3382	.31566	.30063	.27056	.22547	.18038	.13528	.11273	.09019
7½ 5	.52725	.43938	.3515	.32953	.30756	.29292	.26363	.21969	.17575	.13181	.10984	.08788
10	.54	.45	.36	.3375	.315	.3	.27	.225	.18	.135	.1125	.09
10 2½	.5265	.43875	.351	.32906	.30713	.2925	.26325	.21938	.1755	.13163	.10969	.08775
10 5	.513	.4275	.342	.32063	.29925	.285	.2565	.21375	.171	.12825	.10688	.0855
10 5 2½	.50018	.41681	.33345	.31261	.29177	.27788	.25009	.20841	.16673	.12504	.1042	.08336
10 7½	.4995	.41625	.333	.31219	.29138	.2775	.24975	.20813	.1665	.12488	.10406	.08325
10 10	.486	.405	.324	.30375	.2835	.27	.243	.2025	.162	.1215	.10125	.081
10 10 5	.4617	.38475	.3078	.28856	.26933	.2565	.23085	.19238	.1539	.11543	.09619	.07695
10 10 5 2½	.45016	.37513	.30011	.28135	.26259	.25009	.22508	.18757	.15005	.11254	.09378	.07503

The net equivalent of a chain discount is the same regardless of the sequence of the separate discounts. Example: 60-10-5% is the same as 10-5-60%.

Computing Net Decimal Equivalents

Net decimal equivalents not shown in this table may be found as follows:

Rule: Multiply the complements of the discount rates. The product will be the net decimal equivalent.

Discount: 45-20-10%

Complements: .55 x .80 x .90 = .396—net decimal equivalent.

Machine Operation: Register No. 1 must be in active position. The first complement is indexed in the Multiplier-(Subtractor). Multiply by the second complement on the Multiplying keys; depress the Final Product key and the Motor Bar; depress the Register Total and Extend keys and the Motor Bar. Multiply by the third complement, etc.

After multiplying by the last complement, print the result with the Final Product key and the Motor Bar. The carriage may be raised during the calculation and lowered to print the final answer only, if desired.

Adding the Quantity (weight) and Calculating the Freight to be Charged in the Invoice

INVOICE				
<i>Sold to</i> A MERCHANT ANYWHERE				
<i>Ship Via</i> M P		<i>Our Order</i> D 118 <i>Your Order</i> 715 C		
QUANTITY	DESCRIPTION	PRICE	GROSS AMOUNT	NET AMOUNT
2 45	LBS SILVER STAR HAMS	24 65 PER C		60 39
1 65	LBS PACIERS SPECIAL HAMS	23 75 " "		39 19
<hr style="width: 100%;"/>	4 10 LBS AT 23¾ PER CWT			<hr style="width: 100%;"/> 97 100 55

For this invoice move the Margin Block to 7, or the Releasable Margin Block to 11, so the carriage will return to 7.

Operating Instructions

Quantity—Enter at 7, adding in Register No. 1. (Set up the amount on the Red keys and operate the Motor Bar.)

Description—Without tabulating, type the description and then tabulate to 46.

Price—Index in the Multiplier-(Subtractor). (Set it up on the Red keys, depress the Extend key and then the Motor Bar.) Type in "Per C." Multiply by the quantity and at the same time tabulate to 74.

Net Amount—Since the price is per hundred, two decimals are to be pointed off for the hundreds. Depress the Point-off key twice and the Full Cent bar; then depress the Final Product key and operate

the Motor Bar, transferring the amount to Register No. 3.

Calculating Freight—After the last item is completed, depress the Carriage Return key. At 7 index the total weight in the Multiplier-(Subtractor). (Depress the Register Total key and the Extend key and then operate the Motor Bar.) Without tabulating, type the rate; then multiply by the rate and at the same time tabulate to 74. Depress the Decimal-Discount key (see Remarks below) and print the total with the Final Product key, transferring the amount to Register No. 3 so as to be included in the total of the bill.

Total of Bill—Space up, strike the Line key; then depress the Register Total key and the Motor Bar.

Remarks: When the freight rate is used as the multiplying factor and is less than \$1.00 per hundred, the Decimal-Discount key may be used for pointing off the required number of decimal places with one depression. Otherwise, use the Point-Off key, following the rule on page 23.

Rules for Correcting Operating Errors

It is easy to correct errors made in operating the Calculating mechanism because they are usually detected before the incorrect amounts have been printed and consequently most of them may be corrected with the Error key. However, it always takes less time and less work to do a thing right the first time. Therefore, operate slowly in the beginning, so as to avoid forming careless habits. Strive, also, to develop a smooth and rhythmic operation. The best way to obtain speed is practice and the best practice is secured by doing the work accurately.

To prevent printing when making corrections, depress the Non-Print key.

Incorrect Adding or Result key depressed—Motor Bar not operated—Depression of the Error key restores any one of these keys. If, however, the Error key is used to restore the Extend key, remember that the Error key also eliminates the amount set up on the Red keys.

Incorrect amount added, or amount added in incorrect register—Correction is made in the same way as when a result or total is transferred to the wrong register. (See below.)

Extend key locked—This indicates that the Multiplier-Subtractor is not clear. Same correction as the following.

Incorrect amount indexed in the Multiplier-Subtractor—

- (a) **If no Multiplying key has been depressed**—Depress the Final Product key and the Motor Bar, then index the correct amount.
- (b) **If a Multiplying key has been depressed**—Depress the First Product key and the Motor Bar; then depress the Final Product key and the Motor Bar. Index the correct amount in the Multiplier-Subtractor.

Note—If the lever is set to "Add on Extend," the incorrect amount must also be deducted from the active Register.

Holding the Extend key down—This prevents the amount from indexing in the Multiplier-Sub-

tractor. Leave the Extend key depressed, set up the correct amount, and depress the Motor Bar. If the lever is set to "Add on Extend," the incorrect amount must be deducted from the active register.

Incorrect Multiplying key depressed—Clear the Crossfooter by depressing the First Product key and the Motor Bar. Then depress the correct Multiplying keys.

Pointing off too many places (Or if in doubt as to how many places have been pointed off)—This may be corrected in the same way as the preceding. It may also be corrected by depressing the Decimal-Discount key, which points off as many places as the number of Multiplying keys depressed, then depressing the black "O" key once for each whole number in the multiplier.

The Result does not print after multiplying—The multiplicand was not indexed in the Multiplier or the Multiplying keys were not depressed. Set up the correct amount on the Red keys, depress the Extend key and the Motor Bar. Then multiply again.

Depressing the First Product key instead of the Final Product key—The First Product key merely clears the Crossfooter. Multiply again and use the Final Product key in order to clear the Multiplier-Subtractor, and transfer the amount to the Register.

Depressing the Final Product key instead of the First Product key—The Final Product key clears the Crossfooter and transfers the amount to the Register, and also clears the Multiplier-Subtractor. Subtract the amount from the active Register, index the multiplicand again and re-multiply.

Result or Total Transferred to Wrong Register—Subtract the amount from the Register in question (see page 19), then add it in the correct Register. In many cases it is practical to clear the Register instead of subtracting the error.

Incorrect Result or Total Transferred to Register—Subtract the incorrect amount from the Register. (See page 19.)

Table of Decimal Equivalents of Common Fractions

3rds	6ths	12ths	Decimal Equivalent	4ths	8ths	16ths	Decimal Equivalent
		1	.08334*			1	.0625
	1	2	.16667*		1	2	.125
		3	.25			3	.1875
1	2	4	.33334*	1	2	4	.25
		5	.41667*			5	.3125
	3	6	.5		3	6	.375
		7	.58334*			7	.4375
2	4	8	.66667*	2	4	8	.5
		9	.75			9	.5625
	5	10	.83334*		5	10	.625
		11	.91667*			11	.6875
				3	6	12	.75
					7	13	.8125
						14	.875
						15	.9375

* All decimal equivalents in this table ending in 4 or 7 will give accurate results when multiplied by amounts less than \$100.00. All other decimal equivalents are complete and will give accurate results when multiplied by any amount. For amounts less than \$10.00, only four digits of the decimal equivalent need be used. However, when the entire decimal equivalent shown in the table is not used, add 1 to the last digit used; for instance, use .3334 for 1/3.

Reciprocals Frequently Used

Dozen	12	.0833334	
Gross	144	.0069445	
Sq. Ft.	144 Sq. In.	.0069445	
Cu. Ft.	1728 Cu. In.	.0005787	
Mile	5280 Ft.	.00018939	
Long Ton	2240 Lbs.	.00044643	
Ton	2000 Lbs.	.0005	
Bushels		Months	
60 Lbs.	.016667	28 Days	.035714
56 "	.017857	29 "	.034483
48 "	.020833	30 "	.033333
32 "	.03125	31 "	.032258
	Years		
360 Days	.0027778	365 Days	.0027397

When the price is less than \$100.00, it is unnecessary to multiply by more than five figures.

Tables

Below is a partial list of tables that may be obtained from any Burroughs salesman. Each is printed on a separate card.

- Reciprocals of numbers.
- Decimal equivalents of common fractions.
- Decimal equivalents of fractional parts of a gross.
- Decimal equivalents of fractional parts of a gross ton.
- Decimal equivalents of fractional parts of an hour, fractional parts of a day, and fractional parts of a month.
- Months and days expressed in decimal equivalents of a year.
- Decimal equivalents of chain discounts.
- Constants for computing interest on the basis of 360 days in a year
- Constants for computing interest on the basis of 365 days in a year
- Table for figuring brokerage interest.
- Decimal equivalents of fractional part of a bushel.
- Lumber table.
- Table for figuring steel beams.
- Turnover table.
- Mark-up table.

Special Billing Problems

Quantity Larger than the Price and Extra Charges Added to the Total

When the quantity is in most cases larger than the price, the operation may be shortened by indexing the quantity in the Multiplier-(Subtractor) and multiplying by the price, as illustrated in the invoice below.

If desired, the Add on Extend lever may be set to "Add on Extend" to cause each quantity to add in Register No. 1 as it is indexed in the Multiplier-(Subtractor), so a total of the quantity may be obtained.

INVOICE				
QUANTITY	DESCRIPTION	PRICE	GROSS AMOUNT	NET AMOUNT
24 65	LBS WHITE LEAD	12 1/2		308 13
<u>46 75</u>	LBS PUTTY	8 1/2		<u>397 38</u>
71 40				705 51
	DRAYAGE			<u>2 50</u>
				708 01

Operating Instructions

Place the Margin Block at 7, or the Marginal Release Block at 11.

Quantity—Index this in the Multiplier-(Subtractor). The quantity will at the same time add in Register No. 1 if the lever is set to "Add on Extend."

Description—Use the typewriter. Tabulate to the price column. Write the price on the Red keys, non-add. Depress the Multiplying keys for the price, and at the same time tabulate to the net amount column.

Amount—If there are fractions in the price, depress the Point-Off key and the Full Cent bar. The Final Product key will print the amount and transfer it to the active Register.

Total Quantity—When the last item has been

completed, depress the Carriage Return key. Print the total "quantity" with the Register Total key. Tabulate to the amount column.

Total Amount—Depress the Line key and print a Sub-total of the Register.

Adding Extra Charge (Drayage)—Depress the Carriage Return key, tabulate, and type the description of the extra charge. Tabulate to the amount column and add the extra charge into the Register with the Red keys.

Total of Bill—Print the total of the bill with the Register Total key.

Both Discount and Net Shown

The usual practice in billing is to show the net amount only, as illustrated in the examples in this book. This eliminates unnecessary figures on the invoice, and also eliminates the calculations required to figure the amount of the discount. In some cases, however, it may be desired to show both the amount of the discount and the net amount. Instructions are given below for handling such invoices.

INVOICE				
QUANTITY	DESCRIPTION	PRICE	GROSS AMOUNT	NET AMOUNT
7	34 X 4½ TIRES	37 50	262 50	
14	34 X 4½ TUBES	6 75	94 50	
5	BOXES F S PATCHES	4 25	21 25	
			378 25	
		LESS 15%	56 74	321 51

Operating Instructions

Quantity—Use the typewriter.

Description—Use the typewriter.

Price—Index this in the Multiplier -(Subtractor). Multiply by the quantity, and at the same time tabulate to the gross amount column.

Gross Amount—Print the gross amount, transferring it to Register No. 2 with the Final Product key and the Motor Bar. When the last item of a group, having the same discount, has been completed, space up, strike the Line key, print the total and index it in the Multiplier-(Subtractor) by depressing the Register Total and Extend keys and

the Motor Bar. Depress the Carriage Return key.

Discount—Tabulate to 32 and type the rate of discount. Multiply by the rate of discount, .15, tabulating at the same time to the "gross amount" column. Depress the Decimal-Discount key and Full Cent bar; then print the amount with the First Product key.*

Multiply by the complement of the discount (100% minus 15%), .85, tabulating at the same time to the "net amount" column.

Net Amount—Depress the Decimal-Discount key and Full Cent bar; then print the net amount with the Final Product key.

***Note:** When the combination of figures is such that, after multiplying the gross amount by the rate of discount, the result ends in exactly five mills ($\frac{1}{2}$), a discrepancy will occur. This is due to the fact that a full cent is taken for both the amount of the discount and the net amount, making the sum of the two one cent more than the gross amount. The net amount, however, will be correct in every case.

The discrepancy may be practically eliminated by use of the following rule for single discount rates which do not contain fractions:

When the discount rate ends in 5 and the gross amount in an even figure or vice versa, *add four mills (.4) in the Crossfooter (instead of using the Full Cent bar) before printing the amount of the discount.* The .4 will not print because Register No. 1 is not active. The Full Cent bar is then used only before printing the net amount.

This rule may be used without reference to the gross amount when the discount rate is a multiple of 10 or 25.

The Full Cent bar is used both before printing the amount of the discount and before printing the net amount for all other discounts, including chain discounts and single discounts containing fractions.

Quantity in Units—Priced Per Hundred

When the price is per hundred, it is usually indicated by "C." A price per hundred has the same effect as two decimal places in the quantity, consequently point off two places after multiplying by the quantity.

Quantity in Units—Priced Per Thousand

This is usually indicated by "M." A price per thousand has the same effect as three decimal places in the quantity, consequently point off three places after multiplying by the quantity.

Plus Percentage and Deductions from the Net

INVOICE				
QUANTITY	DESCRIPTION	PRICE	GROSS AMOUNT	NET AMOUNT
422	$\frac{7}{8}$ X $6\frac{1}{2}$ MACH BOLTS THD	16 25 C NT		68 58
375	$\frac{7}{8}$ X $4\frac{1}{4}$ MACH BOLTS THD H X N	17 50 C	65 63	
	PLUS 10 %			<u>72 19</u>
	LESS FRT 385 LBS	20 CWT		<u>140 77</u>
				<u>77</u>
				<u>140 00</u>

Operating Instructions for Second Line

Price—Index this in the Multiplier-(Subtractor). Write "C" with the typewriter key, multiply by the quantity, and at the same time tabulate to the "gross amount" column.

Gross Amount—Depress the Point-Off key twice (as the price is per hundred) and the Full Cent bar, then print the "gross amount," transferring it to Register No. 2 with the Final Product key and the Motor Bar. Index the result in the Multiplier-(Subtractor). Depress the Carriage Return key.

Plus Percentage—Tabulate and type the plus percentage. Multiply by 1.10 (100% plus 10%) and at the same time tabulate to the net amount column.

Net Amount—Point off two places, depress the Full Cent bar, then print the amount with the Final Product key, transferring it to Register No. 3.

Total—Space up and print a Sub-Total of the Register (hold down the Register Total key while

operating the Motor Bar, then release it with the Error key). Depress the Carriage Return key.

Freight Deduction—Type "Less Frt., 385 lbs.," tabulate to the price column and index the freight rates in the Multiplier - (Subtractor). Multiply by the number of pounds and at the same time tabulate to the "net amount" column.

Shift Register No. 2 into active position by pulling the Register Indicator Lever to the left. Depress the Decimal-Discount key to point off two places. Depress the Full Cent bar, then print the amount with the Final Product key, transferring it to Register No. 2. Index this result in the Multiplier-(Subtractor) (depress the Total and Extend keys and the Motor Bar).

Net Amount—Shift Register No. 3 into active position by depressing the Register Trip key. Depress the Subtract key. Depress the Final Product key and hold down the Non-Print key while operating the Motor Bar. Space up, and print the total of the invoice with the Register Total key.

Quantity in Units—Priced Per Dozen

In this case it is necessary to divide the quantity by 12. Do this by multiplying by the reciprocal, 083334.

Quantity in Dozens—Priced Per Unit

In this case it is necessary to multiply the quantity by 12.

INVOICE				
QUANTITY	DESCRIPTION	PRICE	GROSS AMOUNT	NET AMOUNT
126	ONLY GOLD TASSELS	6 75 DZ		70 88
6 $\frac{3}{4}$	DZ GOLD TASSELS	18 EA		14 58
				<u>85 46</u>

Operating Instructions

First Line

Price—Index this in the Multiplier-(Subtractor). Multiply by the quantity, latch down the Non-Print key and transfer the result to Register No. 1 (Final Product key). Index the result in the Multiplier-(Subtractor). Multiply by .083334, the reciprocal of 12, and at the same time release the Non-Print key and tabulate to the net amount column.

Amount—Depress the Decimal-Discount key and the Full Cent bar; then print the amount, transferring it to Register No. 3 with the Final Product key and the Motor Bar.

Second Line

Price—Index this in the Multiplier-(Subtractor). Multiply by the quantity. Latch down the Non-Print key. Use the Point-Off key if the quantity contains a fraction. Transfer the result to Register No. 1 with the Final Product key.

Index this result in the Multiplier-(Subtractor). Multiply by 12, and at the same time release the Non-Print key and tabulate to the "amount" column.

Amount—Depress the Full Cent bar; then print the amount, transferring it to Register No. 3 with the Final Product key and the Motor Bar.

Total of Bill—Depress the Register Total key

Quantity in Units—Priced Per Gross

In this case the quantity must be divided by 144 (number of units contained in a gross). This is done by multiplying by the reciprocal, .0069445.

INVOICE				
QUANTITY	DESCRIPTION	PRICE	GROSS AMOUNT	NET AMOUNT
178	YDS COL GIMP	3 50 GR YD		4 33
234	YDS WHITE FRINGE	45 75 " "		74 34
				<u>78 67</u>

Operating Instructions

Price—Index this in the Multiplier-(Subtractor). Multiply by the quantity, and then transfer the result to Register No. 1 with the Final Product key (Non-Print) and the Motor Bar.

Index the result in the Multiplier-(Subtractor). Multiply by .0069445, the reciprocal of 144, tabulat-

ing at the same time to the amount column.

Amount—Depress the Decimal-Discount key and the Full Cent bar. Print the amount, transferring it to Register No. 3 with the Final Product key and the Motor Bar.

Quantity in Pounds—Priced Per Ton

To convert pounds to tons, divide by 2000, the reciprocal of which is .0005. In billing coal priced by the ton, the quantity instead of the price is indexed in the Multiplier-(Subtractor), because it usually contains the more figures. Compound multiplication may be used. However, the usual practice is to make only one multiplication—the quantity by one-half the price, and point off three places; this is equivalent to multiplying by .0005. The calculation of one-half the price is made mentally. The Decimal-Discout key should be used for pointing off when the price is less than \$10.00, because three Multiplying keys are depressed and three places are to be pointed off.

Calculating Net Weight

INVOICE				
GROSS LBS.	TARE	NET LBS.	PRICE	AMOUNT
1 CAR COAL 845 00	400 00	445 00	6 75 T	150 19

Operating Instructions

Gross Lbs.—Add the gross in the Crossfooter. Tabulate.

Tare—Index the “tare” in the (Multiplier)-Subtractor. Tabulate.

Net Lbs.—Depress the Subtract key and print the difference, transferring it to Register No. 1 with the Final Product key and the Motor Bar. Index the result in the Multiplier-(Subtractor).

Price—Write the price on the Red keys, non-add. Strike the typewriter key for “T”. Multiply by one-half the price (3375), tabulating at the same time to the “amount” column.

Amount—Depress the Decimal-Discout key, and the Full Cent bar. Print the net “amount,” transferring it to Register No. 3 with the Final Product key and the Motor Bar.

Calculating Long Tons—Quantity in Pounds

The quantity must be divided by the number of pounds contained in a long ton. A long ton, sometimes called gross ton, contains 2240 pounds. To divide by this, multiply by the reciprocal of 2240, which is .00044643. In multiplying by the reciprocal, omit the first two ciphers, which is equivalent to carrying the result to two more decimal places. Point off these two places after multiplying by the price.

INVOICE				
DESCRIPTION	POUNDS	TONS	PRICE	AMOUNT
1 CAR IRON BILLETS	643 45	28 72 ½	49 75	1429 07

Operating Instructions

Description—Use the typewriter.

Pounds—Index in the Multiplier-(Subtractor). Multiply by the reciprocal, as instructed above, and tabulate.

Tons—Depress the Decimal-Discout key and print the number of tons with the Final Product key, transferring it to Register No. 1. Index the result

in the Multiplier-(Subtractor). Tabulate to the “price” column.

Price—Write the price, non-add. Multiply by the price, tabulating to the “amount” column.

Amount—Point off for the two places omitted when multiplying by the reciprocal of the weight. Depress the Full Cent bar and print the amount, transferring it to Register No. 3

Quantity in Feet and Inches—Priced Per Foot

Where feet and inches are to be multiplied by the price, convert inches and fractions of inches into decimal parts of a foot. These decimals are given in the table on page 36.

(') is the abbreviation for feet
 (") is the abbreviation for inches

INVOICE				
QUANTITY	DESCRIPTION	PRICE	GROSS AMOUNT	NET AMOUNT
216' 7/4"	BLACK PIPE	1 32 1/2		287 00

Operating Instructions

Quantity—Use the typewriter.
Description—Use the typewriter.
Price—Index this in the Multiplier -(Subtractor). Multiply by the whole number of feet and by the decimal equivalent of inches and fractions of inches (216.6042) as shown in the table on the next page, tabulating at the same time to the amount column.
Amount—Point off, depress the Full Cent key and print the net amount, transferring it to Register No. 3 with the Final Product key and the Motor Bar.

Table of Decimal Parts of a Foot
Inches and Fractional Inches as Decimals of One Foot

Inches	Fractions of an Inch							
		1/8	1/4	3/8	1/2	5/8	3/4	7/8
1	.08334	.01042	.02083	.03124	.04166	.05208	.0625	.07292
2	.16667	.09375	.10417	.11458	.125	.13542	.14583	.15625
3	.25	.17708	.1875	.19792	.20833	.21875	.22917	.23958
4	.33334	.26042	.27083	.28125	.29166	.30208	.3125	.32292
5	.41667	.34375	.35417	.36458	.375	.38542	.39583	.40625
6	.5	.42708	.4375	.44791	.45833	.46875	.47916	.48958
7	.58334	.51041	.52083	.53125	.54166	.55208	.5625	.57291
8	.66667	.59375	.60416	.61458	.625	.63541	.64583	.65625
9	.75	.67708	.6875	.69791	.70833	.71875	.72916	.73958
10	.83334	.76041	.77083	.78125	.79166	.80208	.8125	.82291
11	.91667	.84375	.85416	.86458	.875	.88541	.89583	.90625
		.92708	.9375	.94791	.95833	.96875	.97916	.98958

Calculating Lumber—Priced Per Board Foot

When lumber is sold by the board foot it is usually priced by the thousand board feet.

The abbreviation (M) is used for thousand
 (') is used for feet
 (") is used for inches

A board foot contains 144 cubic inches. Thus a piece of lumber 1" thick, 12" wide and 1' long equals one board foot. Likewise, a piece 2" x 6" x 1' equals one board foot. Therefore, to figure the number of board feet in a piece of lumber, use the following rule:

Thickness (in inches) x width (in inches) x length (in feet) divided by 12 equals the number of board feet.
 To divide by 12 multiply by the reciprocal of 12 (.08334)

Using the Lumber Table

The lumber table on the next page gives the number of board feet contained in various standard sizes. The calculation may therefore be reduced to multiplying the number of pieces by the number of board feet for one piece of the size in question as taken from the table.

INVOICE				
QUANTITY	DESCRIPTION	BOARD FEET	PRICE	AMOUNT
224 PCS	WHITE PINE 2 1/2" X 16" X 14'	104 53	32 50 M	339 72

Register No. 2

Register No. 3

Operating Instructions

Quantity—Index in the Multiplier-(Subtractor).

Description—Use the typewriter.

Board Feet When the Size is Given in a Table

—Multiply by the number of board feet for the size in question, 46.66667 in this case, and tabulate. Point off five places, depress the Full Cent bar and print the result, transferring it to Register No. 2 with the Final Product key and the Motor Bar. Index the result in the Multiplier-(Subtractor). Multiply by the price, tabulating to the "price" column.

Board Feet When the Size is not Given in a Table—Multiply by the thickness, latch down the Non-Print key, then without pointing off, transfer the result to Register No. 1 (Final Product key).

Index the result in the Multiplier-(Subtractor). Multiply by the width and, without pointing off, transfer the result to Register No. 1 (Final Product key).

Index this result in the Multiplier-(Subtractor). Multiply by the length, then point off for all fractions (in some cases it will be necessary to prefix

ciphers when multiplying by the length to permit pointing off the necessary number of places), and transfer the result to Register No. 1.

Again index the result in the Multiplier-(Subtractor). Multiply by .083334, the reciprocal of 12, depress the Decimal-Discunt key and, depress the Full Cent bar, release the Non-Print key, and print the result with the Final Product key, transferring it to Register No. 2.

Now index the result in the Multiplier-(Subtractor). Multiply by the price, tabulating to the "price" column.

In performing the above calculations, the Non-Print key should be used to prevent printing all calculations except the results desired.

Price—Write the price, non-add. Tabulate to the "amount" column.

Amount—Point off three places, as the price is per thousand. Depress the Full Cent bar and print the amount with the Final Product key and the Motor Bar, transferring it to Register No. 3.

Lumber Table

LENGTH IN FEET

Sizes in Inches	8	10	12	14	16	18	20	22	24	26	Sizes in Inches
1 x 2	1.33333	1.66667	2.	2.33333	2.66667	3.	3.33333	3.66667	4.	4.33333	1 x 2
1 x 3	2.	2.5	3.	3.5	4.	4.5	5.	5.5	6.	6.5	1 x 3
1 x 4	2.66667	3.33333	4.	4.66667	5.33333	6.	6.66667	7.33333	8.	8.66667	1 x 4
1 x 5	3.33333	4.16667	5.	5.83333	6.66667	7.5	8.33333	9.16667	10.	10.83333	1 x 5
1 x 6	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	1 x 6
1 x 8	5.33333	6.66667	8.	9.33333	10.66667	12.	13.33333	14.66667	16.	17.33333	1 x 8
1 x 10	6.66667	8.33333	10.	11.66667	13.33333	15.	16.66667	18.33333	20.	21.66667	1 x 10
1 x 12	8.	10.	12.	14.	16.	18.	20.	22.	24.	26.	1 x 12
1 x 14	9.33333	11.66667	14.	16.33333	18.66667	21.	23.33333	25.66667	28.	30.33333	1 x 14
1 x 16	10.66667	13.33333	16.	18.66667	21.33333	24.	26.66667	29.33333	32.	34.66667	1 x 16
1 x 18	12.	15.	18.	21.	24.	27.	30.	33.	36.	39.	1 x 18
1 x 20	13.33333	16.66667	20.	23.33333	26.66667	30.	33.33333	36.66667	40.	43.33333	1 x 20
1 1/4 x 4	3.33333	4.16667	5.	5.83333	6.66667	7.5	8.33333	9.16667	10.	10.83333	1 1/4 x 4
1 1/4 x 5	4.16667	5.20833	6.25	7.29167	8.33333	9.375	10.41667	11.45833	12.5	13.54167	1 1/4 x 5
1 1/4 x 6	5.	6.25	7.5	8.75	10.	11.25	12.5	13.75	15.	16.25	1 1/4 x 6
1 1/4 x 8	6.66667	8.33333	10.	11.66667	13.33333	15.	16.66667	18.33333	20.	21.66667	1 1/4 x 8
1 1/4 x 10	8.33333	10.41667	12.5	14.58333	16.66667	18.75	20.83333	22.91667	25.	27.08333	1 1/4 x 10
1 1/4 x 12	10.	12.5	15.	17.5	20.	22.5	25.	27.5	30.	32.5	1 1/4 x 12
1 1/2 x 4	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	1 1/2 x 4
1 1/2 x 5	5.	6.25	7.5	8.75	10.	11.25	12.5	13.75	15.	16.25	1 1/2 x 5
1 1/2 x 6	6.	7.5	9.	10.5	12.	13.5	15.	16.5	18.	19.5	1 1/2 x 6
1 1/2 x 8	8.	10.	12.	14.	16.	18.	20.	22.	24.	26.	1 1/2 x 8
1 1/2 x 10	10.	12.5	15.	17.5	20.	22.5	25.	27.5	30.	32.5	1 1/2 x 10
1 1/2 x 12	12.	15.	18.	21.	24.	27.	30.	33.	36.	39.	1 1/2 x 12
2 x 4	5.33333	6.66667	8.	9.33333	10.66667	12.	13.33333	14.66667	16.	17.33333	2 x 4
2 x 6	8.	10.	12.	14.	16.	18.	20.	22.	24.	26.	2 x 6
2 x 8	10.66667	13.33333	16.	18.66667	21.33333	24.	26.66667	29.33333	32.	34.66667	2 x 8
2 x 10	13.33333	16.66667	20.	23.33333	26.66667	30.	33.33333	36.66667	40.	43.33333	2 x 10
2 x 12	16.	20.	24.	28.	32.	36.	40.	44.	48.	52.	2 x 12
2 x 14	18.66667	23.33333	28.	32.66667	37.33333	42.	46.66667	51.33333	56.	60.66667	2 x 14
2 x 16	21.33333	26.66667	32.	37.33333	42.66667	48.	53.33333	58.66667	64.	69.33333	2 x 16
2 1/2 x 12	20.	25.	30.	35.	40.	45.	50.	55.	60.	65.	2 1/2 x 12
2 1/2 x 14	23.33333	29.16667	35.	40.83333	46.66667	52.5	58.33333	64.16667	70.	75.83333	2 1/2 x 14
2 1/2 x 16	26.66667	33.33333	40.	46.66667	53.33333	60.	66.66667	73.33333	80.	86.66667	2 1/2 x 16
3 x 6	12.	15.	18.	21.	24.	27.	30.	33.	36.	39.	3 x 6
3 x 8	16.	20.	24.	28.	32.	36.	40.	44.	48.	52.	3 x 8
3 x 10	20.	25.	30.	35.	40.	45.	50.	55.	60.	65.	3 x 10
3 x 12	24.	30.	36.	42.	48.	54.	60.	66.	72.	78.	3 x 12
3 x 14	28.	35.	42.	49.	56.	63.	70.	77.	84.	91.	3 x 14
3 x 16	32.	40.	48.	56.	64.	72.	80.	88.	96.	104.	3 x 16
4 x 4	10.66667	13.33333	16.	18.66667	21.33333	24.	26.66667	29.33333	32.	34.66667	4 x 4
4 x 6	16.	20.	24.	28.	32.	36.	40.	44.	48.	52.	4 x 6
4 x 8	21.33333	26.66667	32.	37.33333	42.66667	48.	53.33333	58.66667	64.	69.33333	4 x 8
4 x 10	26.66667	33.33333	40.	46.66667	53.33333	60.	66.66667	73.33333	80.	86.66667	4 x 10
4 x 12	32.	40.	48.	56.	64.	72.	80.	88.	96.	104.	4 x 12
4 x 14	37.33333	46.66667	56.	65.33333	74.66667	84.	93.33333	102.66667	112.	121.33333	4 x 14
6 x 6	24.	30.	36.	42.	48.	54.	60.	66.	72.	78.	6 x 6
6 x 8	32.	40.	48.	56.	64.	72.	80.	88.	96.	104.	6 x 8
6 x 10	40.	50.	60.	70.	80.	90.	100.	110.	120.	130.	6 x 10
6 x 12	48.	60.	72.	84.	96.	108.	120.	132.	144.	156.	6 x 12
6 x 14	56.	70.	84.	98.	112.	126.	140.	154.	168.	182.	6 x 14
6 x 16	64.	80.	96.	112.	128.	144.	160.	176.	192.	208.	6 x 16
8 x 8	42.66667	53.33333	64.	74.66667	85.33333	96.	106.66667	117.33333	128.	138.66667	8 x 8
8 x 10	53.33333	66.66667	80.	93.33333	106.66667	120.	133.33333	146.66667	160.	173.33333	8 x 10
8 x 12	64.	80.	96.	112.	128.	144.	160.	176.	192.	208.	8 x 12
8 x 14	74.66667	93.33333	112.	130.66667	149.33333	168.	186.66667	205.33333	224.	242.66667	8 x 14
10 x 10	66.66667	83.33333	100.	116.66667	133.33333	150.	166.66667	183.33333	200.	216.66667	10 x 10
10 x 12	80.	100.	120.	140.	160.	180.	200.	220.	240.	260.	10 x 12
10 x 14	93.33333	116.66667	140.	163.33333	186.66667	210.	233.33333	256.66667	280.	303.33333	10 x 14
10 x 16	106.66667	133.33333	160.	186.66667	213.33333	240.	266.66667	293.33333	320.	346.66667	10 x 16
12 x 12	96.	120.	144.	168.	192.	216.	240.	264.	288.	312.	12 x 12
12 x 14	112.	140.	168.	196.	224.	252.	280.	308.	336.	364.	12 x 14
12 x 16	128.	160.	192.	224.	256.	288.	320.	352.	384.	416.	12 x 16
14 x 14	130.66667	163.33333	196.	228.66667	261.33333	294.	326.66667	359.33333	392.	424.66667	14 x 14
14 x 16	149.33333	186.66667	224.	261.33333	298.66667	336.	373.33333	410.66667	448.	483.33333	14 x 16
Sizes in Inches	8	10	12	14	16	18	20	22	24	26	Sizes in Inches

LENGTH IN FEET

Calculating Surface—Priced Per Square Foot

To calculate surface, multiply the number of pieces by the width, and the result by the length. If the width and length are expressed in inches and the price is per square foot, it is necessary to reduce the square inches to square feet. This is done by dividing by 144 (number of square inches contained in a square foot). To do this, multiply by the reciprocal .00694445. When multiplying by this reciprocal, omit the first two ciphers, which is equivalent to carrying the result to two more decimal places. Point off these two places after multiplying by the price.

This problem involves compound multiplications. After multiplying two factors in the regular way, transfer the result to Register No. 1, (depress the Final Product and Non-Print keys and the Motor Bar); then index it in the Multiplier-(Subtractor) for the next multiplication.

INVOICE				
QUANTITY	DESCRIPTION	TOTAL SQUARE FEET	PRICE	AMOUNT
1 38 PCS	PLATE GLASS 14" X 38"	509 832	93 SQ FT	474 14

Operating Instructions

Quantity—Index in the Multiplier- (Subtractor).

Description—Without tabulating, type the description. Multiply by the width and tabulate. Index the result in the Multiplier- (Subtractor).

Multiply by the length. Index the result in the Multiplier-(Subtractor); then multiply by the reciprocal as instructed above.

Total Square Feet—Depress the Decimal-

Discount key. Print the result and index it in the Multiplier-(Subtractor). Tabulate to the "price column" and print the price, non-add. Multiply by the price, tabulating to the "amount" column.

Amount—Point off two places for the two decimal places omitted when multiplying by the reciprocal. Depress the Full Cent bar, and then print the "amount" with the Final Product key, transferring it to Register No. 3.

For Dimensions that are Used Frequently

The operator should calculate the number of square feet contained in each piece and make a table similar to the lumber table on page 45.

Calculating Surface and Weight—Priced Per Hundred Pounds

In this case the surface is calculated exactly as in the previous example, after which the total of square feet is multiplied by the weight per square foot for that dimension. This weight is taken from a table.

INVOICE				
QUANTITY	DESCRIPTION	TOTAL LBS.	PRICE	AMOUNT
1 03 SHEETS	#28 STEEL 12" X 91"	599 012	10 35 C	62 00

Operating Instructions

Quantity—Index in the Multiplier-(Subtractor).

Total Lbs.—Calculate the surface in square feet, following the instructions for the previous invoice. Index this result in the Multiplier-(Subtractor). Multiply by .7669 (the weight per square foot, taken from a table). Depress the Decimal-Discount key and print the number of pounds with the Final Product key, transferring it to Register No. 1. Index this result in the Multiplier-(Subtractor), and tabulate to the "price" column.

Price—Enter the price, non-add, and depress the typewriter key for "C." Multiply by the price and tabulate to the "amount" column.

Amount—Point off four places (two places omitted when multiplying by the reciprocal and two more places for the price per hundred). Depress the Full Cent bar and print the amount with the Final Product key, transferring it to Register No. 3.

Calculating Lineal Feet and Weight—Priced Per Hundred Pounds

To calculate lineal feet, multiply the length by the number of pieces. To calculate the weight, multiply the result by the number of pounds per lineal foot for that size.

Inches are converted to decimal parts of a foot. See table on page 36.

INVOICE				
QUANTITY	DESCRIPTION	TOTAL LBS.	PRICE	AMOUNT
5	BARS ¼" X 2" X 15'3"	709 12 ½	4 52 C	32 05

Operating Instructions

Quantity and Description—Use the typewriter.

Lineal Feet—Index the quantity in the Multiplier-(Subtractor). Multiply by the length converting the inches into decimals of a foot (15.25). Latch down the Non-Print key. Transfer the result, carried to two decimal places, to Register No. 1. Index this result. Multiply by 9.3, the weight per lineal foot for this size.

Total Lbs.—Release the Non-Print key. Point off one place, and print the weight with the Final Product key, transferring it to Register No. 1.

Index this result in the Multiplier-(Subtractor).

Price—Write the price, non-add and type "C" on the typewriter. Since four places are to be pointed off, it is necessary to multiply by 0452. (Two places were omitted in pointing off after multiplying by the length and there are two places to point off for the price per hundred.) Tabulate to the "amount" column.

Amount—Point off, depress the Full Cent bar and print the amount, transferring it to Register No. 3.

Calculating Weight of Paper—Priced Per Pound—Quantity in Sheets

The weight of 1000 sheets is usually given, which in the following example is 36 pounds.

INVOICE				
QUANTITY	DESCRIPTION	PRICE	AMOUNT	
12456	SHEETS WHITE BOND 17 X 22 36 LBS M SHEETS	16 ½ LB	73 99	

Operating Instructions

Quantity—Index the quantity in the Multiplier-(Subtractor).

Description—Type the description, including the weight per thousand sheets.

Weight—Multiply by the Weight per thousand sheets. Latch down the Non-Print key and transfer the result to the register with the Final Product key. Index this result in the Multiplier-(Sub-

tractor) with the Register Total and Extend keys. Tabulate to the price column.

Price—Write the price, non-add; then multiply by the price, prefixing a cipher (0165), and tabulate at the same time to the amount column.

Amount—Release the Non-Print key, depress the Decimal-Discount key and the Full Cent bar; then print the amount with the Final Product key, transferring it to Register No. 3.

Calculating Interest

The formula for figuring interest is: Principal x days x $\frac{\text{rate}}{360}$ equals amount of interest.

The calculation is shortened by using the decimal equivalent for the fraction $\frac{\text{rate}}{360}$. This is the interest on one dollar for one day. The table below gives the daily interest at rates from $\frac{1}{8}\%$ to $12\frac{7}{8}\%$.

After multiplying the principal by the number of days, point off two places so that the first two ciphers in the decimal equivalent may be omitted. This is necessary to obtain accuracy and also saves time.

Note: If the number of days is less than ten, it will be necessary to prefix a cipher. For instance, multiply by 07 for 7 days.

INVOICE			
PRINCIPAL	TIME	RATE	TOTAL INT.
125 75 INT	87 DAYS AT	$6\frac{3}{4}\%$	2 05

Operating Instructions

Principal—Index in the Multiplier-(Subtractor).

Time and Rate—Use the typewriter. Multiply by the number of days, point off two places, latch down the Non-Print key, then transfer the result to Register No. 1 with the Final Product key and the Motor Bar. Index this result in the Multiplier-(Subtractor), then multiply by the interest on one

dollar for one day, omitting the first two ciphers (01875). Unlatch the Non-Print key and tabulate to the Total Interest column while multiplying.

Total Interest—Depress the Decimal-Discout key and the Full Cent bar, then print the result with the Final Product key, transferring it to Register No. 3.

Interest Table

Interest on \$1.00 for one day at rates from $\frac{1}{8}\%$ to $12\frac{7}{8}\%$, computed on the basis of 360 days per year. Tables based on 365 days may be obtained if required.

		$\frac{1}{8}\%$	$\frac{1}{4}\%$	$\frac{3}{8}\%$	$\frac{1}{2}\%$	$\frac{5}{8}\%$	$\frac{3}{4}\%$	$\frac{7}{8}\%$	
0%		.000003472	.000006944	.000010416	.000013888	.000017361	.000020833	.000024305	0%
1%	.000027778	.00003125	.000034722	.000038194	.000041666	.000045138	.000048611	.000052083	1%
2%	.000055555	.000059027	.0000625	.000065972	.000069444	.000072916	.000076388	.000079861	2%
3%	.000083333	.000086805	.000090277	.00009375	.000097222	.000100694	.000104166	.000107638	3%
4%	.000111111	.000114583	.000118055	.000121527	.000125	.000128472	.000131944	.000135416	4%
5%	.000138889	.000142361	.000145833	.000149305	.000152777	.00015625	.000159722	.000163194	5%
6%	.000166666	.000170139	.000173611	.000177083	.000180555	.000184027	.0001875	.000190972	6%
7%	.000194444	.000197916	.000201389	.000204861	.000208333	.000211805	.000215277	.000218750	7%
8%	.000222222	.000225694	.000229166	.000232639	.000236111	.000239583	.000243055	.000246527	8%
9%	.00025	.000253472	.000256944	.000260416	.000263889	.000267361	.000270833	.000274305	9%
10%	.000277778	.00028125	.000284722	.000288194	.000291666	.000295139	.000298611	.000302083	10%
11%	.000305555	.000309028	.0003125	.000315972	.000319444	.000322916	.000326389	.000329861	11%
12%	.000333333	.000336805	.000340278	.00034375	.000347222	.000350694	.000354166	.000357639	12%

Rule: Multiply the principal by the number of days and then by the interest rate for one day. If the time is given in years, months and days it must be converted to days.

Example: \$9867.45 at $6\frac{3}{4}\%$ for 28 days.

Operation: 9867.45 x 28 x .01875 = 51.80

Calculating Bushels—Priced Per Bushel—Quantity in Pounds

To reduce pounds to bushels, divide by the number of pounds contained in a bushel. To do this, multiply by the reciprocal for the number of pounds. The reciprocals for the number of pounds of various commodities are given below.

Reciprocals for Bushels

	Pounds	Reciprocals
APPLES	48	.0208333
BARLEY	48	.0208333
BEANS	60	.0166667
BRAN	20	.05
BUCKWHEAT	52	.0192307
CASTOR BEANS	46	.0217391
COAL	80	.0125
CORN ON EAR	70	.0142857
CORN, SHELLED	56	.0178571
CORN MEAL	50	.02
CLOVER SEED	60	.0166667
FLAX SEED	56	.0178571
HEMP SEED	44	.0227272
HUNGARIAN SEED	48	.0208333
LIME	80	.0125
MILLET SEED	50	.02
OATS	32	.03125
ONIONS	57	.0175438
PEAS	60	.0166667
POTATOES	60	.0166667
POTATOES, SWEET	56	.0178571
RYE	56	.0178571
SALT	50	.02
TIMOTHY SEED	45	.0222222
TURNIPS	42	.0238095
WHEAT	60	.0166667

After multiplying by one of these reciprocals, do not point off for all decimals, but leave two places because the number of bushels printed is automatically pointed off two places. Bushels are thus

shown as whole numbers and decimals. After multiplying by the price, point off the two places omitted when multiplying by the reciprocal, plus the required number of places if a fraction occurs in the price.

INVOICE				
QUANTITY	DESCRIPTION	BUSHELs	PRICE	AMOUNT
471 86 LBS	TURKEY RED WHEAT	786 434	1 45 ½ BU	1144 26

Operating Instructions

Quantity—Index in the Multiplier- (Subtractor).

Description—Without tabulating, type the description, multiply by the reciprocal for the commodity, according to the above instructions, then tabulate.

Bushels—Point off (see above) and print the number of bushels with the Final Product key, trans-

ferring it to Register No. 1. Index this result in the Multiplier-(Subtractor).

Price—Write the price. Multiply by the price, tabulating at the same time to the "amount" column.

Amount—Point off for the fraction in the price, plus two decimal places omitted in the multiplication by the reciprocal. Print the amount with the Final Product key, transferring it to Register No. 3.

Additional Features

There are numerous additional features with which the Burroughs Typewriter Billing Machine may be equipped for efficiently handling special types of

figure problems involving multiplication. The following are a few of the most commonly used features which affect the operating instructions in this book:

Transfer to Register from First Product Key

The First Product key is so constructed that it will function as a Transfer Total key for the Crossfooter, automatically transferring the amount to the active Register, without affecting the amount indexed in the Multiplier-Subtractor. To print

a total of the Crossfooter and non-transfer, when the machine is constructed to transfer to the register from the First Product key, depress the First Product key and hold down the Non-add keys while operating the motor bar.

Clear Multiplier Key

The Final Product key is displaced by the Clear Multiplier key. Depressing this key and then the Motor Bar clears the Multiplier-Subtractor without in any way affecting the amount in the Crossfooter. The First Product key is displaced by the Product key, which is a transfer total key for the Cross-

footer. (See above.) In order to print the result of a multiplication, transfer it to the active Register and clear the Multiplier-Subtractor, (the same operation for which the Final Product key is used on the regular machine), depress the Product and Clear Multiplier keys together and then the Motor Bar.

Simultaneous Addition

When a machine is equipped with this feature, it may be adjusted so that when an amount is entered on the Red Keys and the Motor Bar operated, the

amount adds in both the Crossfooter and the Register simultaneously.

Positive Register Control

This feature is usually, but not necessarily, furnished on machines with simultaneous addition. It provides automatic control of addition so that an amount may be added in the Crossfooter only, added in the active register only or non-added in any column in which an appropriate control is

placed, by merely entering the amount on the keyboard and operating the Motor Bar. This feature may also be used to prevent results from transferring from the Crossfooter to the Register in certain positions or to cause register totals to automatically transfer to the Crossfooter in certain positions.

Automatic Extension

The manual operation of depressing the Extend key is eliminated by some machines which are constructed so that amounts entered in certain positions are automatically indexed in the multiplier. The amount (usually the price in billing) is

merely entered on the Red keys and the motor bar operated. Otherwise, the operation is unchanged. The extend key is used in the usual way for indexing amounts in the multiplier in positions where the automatic control does not function.

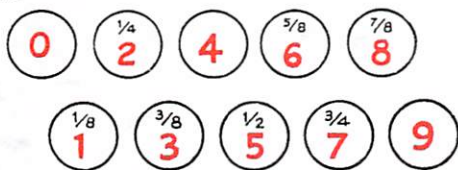
Overdraft Light Signal

Many billing machines are also used for book-keeping or other purposes. For such applications the machine may be equipped with a signal light which indicates when a credit balance has been

created. When this occurs, the balance is in the crossfooter as a complementary amount. To convert it to the true credit balance, it is transferred to the Subtractor and the Subtract key operated.

Other Styles of Burroughs Typewriter Billing Machines

Some styles of machines have more than three registers. Some are equipped with eighth instead of tenth fractions and some are not equipped with fractions.



On machines with eighth fractions, the fractions are handled in the same manner as tenth fractions on the style described in this book. It is not neces-

sary to use the decimal equivalent of the eighth fractions except when they occur in the factor used on the multiplying keys.

On machines without fractions, the operation of the Full Cent bar is changed as follows:

The Full Cent bar is used during, instead of after, the multiplying. It is operated after depression of the key for the first figure to the right of the decimal point. For example, in multiplying by $4\frac{1}{4}$, (4.25) the 4 and 2 keys are operated, then the Full Cent bar is depressed, followed by the 5 key. The point-Off and Decimal-Discount keys are used in the normal manner.

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