TELETYPESETTER

OPERATOR INSTRUCTION MANUAL

TELETYPESETTER

CORPORATION

1400 WRIGHTWOOD AVE.

CHICAGO, U. S. A.

Property of Wilbur F. Porter

END OF LINE SIGNAL LIGHT
JUSTIFICATION POINTERS
COUNTING POINTER
COUNTING SCALE
SEMAPHORE

LINE GUIDE
COPY HOLDER
TAPE REEL CONTAINER

TELETYPESETTER
PATENTS APPLIED FOR

OFF
ON

REPEAT KEY
PUNCH CONTROL LEVER
BACK SPACE LEVER
TAPE FEED THUMB WHEEL

POWER SWITCH
SPACE BAND BAR
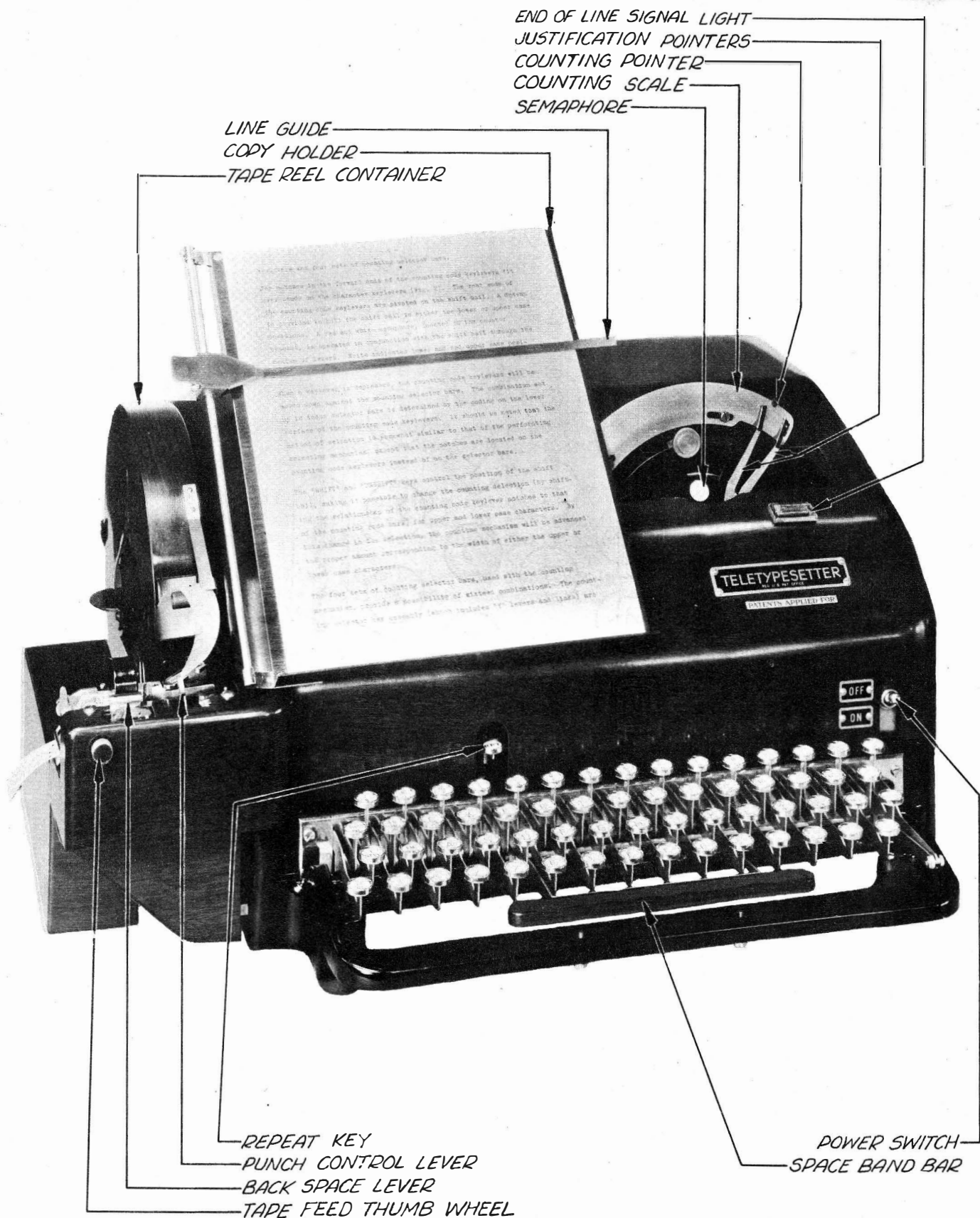
FIGURE 1

TELETYPESETTER KEYBOARD FINGERING CHART

LEFT HAND   RIGHT HAND

SPACE BAND   RIGHT THUMB
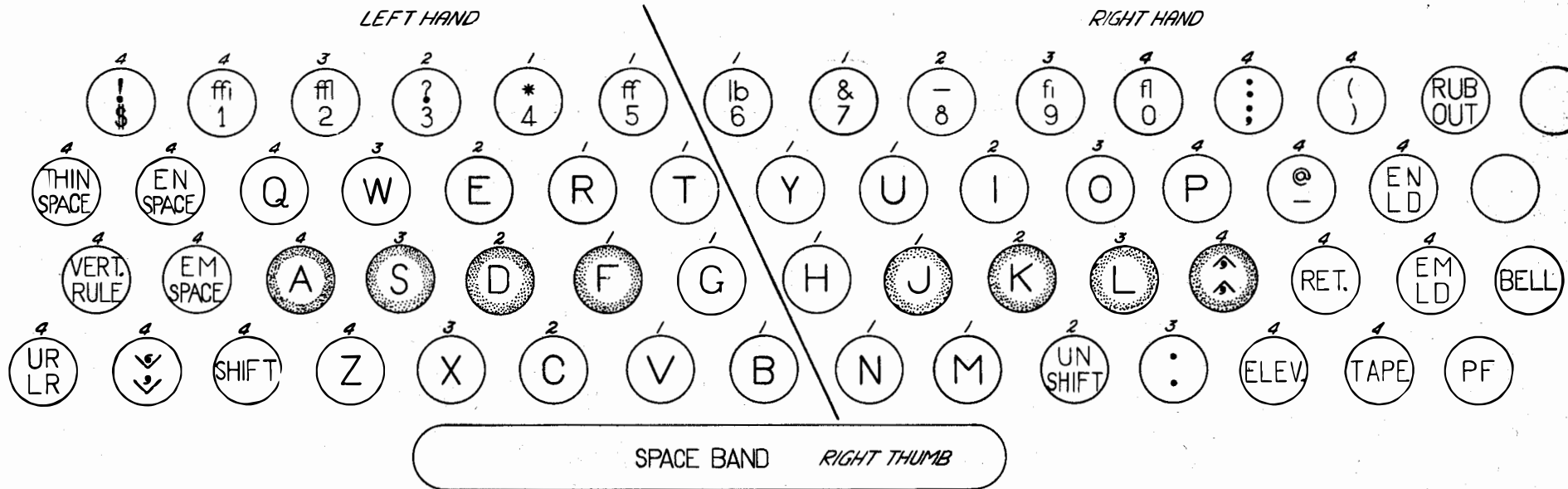
SHADED KEYS ARE THE GUIDE KEYS.   SMALL NUMBERS INDICATE THE CONTROLLING FINGER.

FIGURE 2

TELETYPESETTER PERFORATOR
GENERAL DESCRIPTION

The operator uses the Teletypesetter Perforator to set lines of printed matter in the form of paper tape perforated with the Teletypesetter code. This tape through the medium of the Teletypesetter Operating Unit controls the operation of a slug line casting machine to produce fully justified lines of type.

The Perforator consists of a selecting and punching mechanism for producing tape perforated with the code, and a counting mechanism which enables the operator to determine the proper number of characters necessary to fill a line. Both of these mechanisms are controlled by a keyboard which is arranged similarly to that of a typewriter, but with additional keys for the special characters used in the composition of printed matter.

Figure 1 presents the Teletypesetter Perforator as it is viewed by the operator. Following is a brief discussion of the principal features indicated on Fig.1:

The Perforator is driven by a small motor which is controlled by the power switch. The Perforator is ready for operation when the motor is running.

The counting pointer moves over the counting scale as each character key is struck, a distance proportional to the width of the character added to the line.

The justification pointers indicate the range of expansion furnished by the spacebands of the slug line casting machine, and enable the operator to produce fully justified lines.

The end-of-line signal lamp is located just beneath the ruby glass and warns the operator when the counting pointer approaches the end of the line.

The back space lever and tape feed thumb wheel are used in back-spacing the tape whenever necessary to make corrections.

The punch control lever enables the operator to set trial lines without perforating the tape; the punching mechanism is rendered inoperative but the counting mechanism operates as usual.

The repeat key enables the operator to feed blank tape at a high rate of speed, and is sometimes used in connection with corrections involving many characters.

TOUCH SYSTEM OPERATION

The keyboard arrangement of the Perforator is based on the universal typewriter keyboard, with the addition of a number of extra keys required to control the special characters used in composition of printed matter.

The shift key is similar in action to the "shift lock" key of the ordinary typewriter in that all characters following the "shift" operation will be capitals, until such time as the unshift key is depressed. The shift and unshift semaphore has been provided in order that the operator can tell whether the keyboard is locked in upper or lower case, the indicating colors being red and white, respectively. To perforate the word "Jones" the sequence of keystrokes is as follows: Shift, J, unshift, o, n, e, and s, to perforate the word "JONES" the sequence of keystrokes is: Shift, J, O, N, E, and S.

Each line is ended by striking the Return (RET) and Elevate (ELEV) keys in the order named.

In order to realize the full advantage of Teletypesetter equipment, the perforator keyboard should be operated by the touch system. This system equips the operator with a rapid, accurate, and effortless method of operating the keyboard.

No attempt has been made in this manual of instruction to include a set of finger exercises to be used for practice in mastering the Teletypesetter keyboard touch system. Since the operation is so similar to that of the typewriter keyboard, it is recommended that operators familiarize themselves with the touch system using available books which are instructive of the touch system.

Recommended finger positions are shown in Fig. 2.

TELETYPESETTER PERFORATOR
OPERATING PROCEDURE

LEFT HAND MARGIN——

——JUSTIFYING SPACE (SPACEBAND)

CLOSE SPACING

{ would be the chief medium of carriage within the local area, and
the long haul and water traffic supplying only necessary inter-——HYPHENATED WORD
regional exchanges, would fall to a small fraction of the present

WIDE SPACING

{ load. Most of us are willing to admit, however, that
community planning on any such basis of wholesale
common sense is almost too, Utopian for consideration at

JUSTIFYING SPACE (SPACEBAND)——
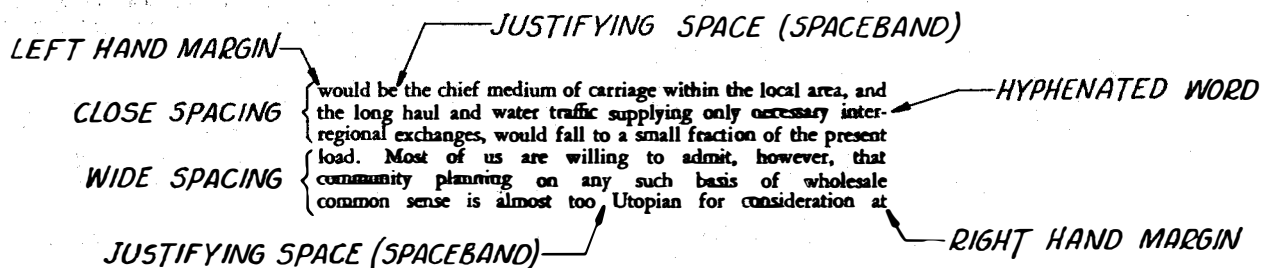
RIGHT HAND MARGIN

FIGURE 3

Figure 3 shows a typical sample of representative printed copy. This figure
should be studied carefully and the following characteristics noted:

Width of various characters.
Even margins, both right hand
and left hand.
Width of spacing between words:
Within a given line.
In different lines.

CHARACTER WIDTHS

A close examination of the printed copy in Figure 3 reveals that it differs from
typewritten copy in that the widths of different characters vary. Thus it will be
noted that a "w" is wider than an "i", a "U" is wider than a "u", an "m" is wider
than a "t", etc. However, it should also be noted that the width of any particular
character, such as "w" or "i", remains constant throughout the copy.

As copy is perforated on the Teletypesetter Perforator, it should be noted that
the counting pointer moves a definite distance across the counting scale from left to
right as the keys are struck for the various characters. It should be noted that
this pointer moves a certain distance when the key for "i" is struck, and about three
times this distance upon striking the key for "w"; and it should also be noted that
the counting pointer moves a greater distance for the character "U" than for "u",
and a greater distance for "m" than for "t". Thus it may be seen that the counting
pointer of the Teletypesetter Perforator is so designed that it takes into consider-
ation the various character widths. This is obviously necessary if this pointer is
to be used for measuring the length of a given line. It should be further noted that
the pointer always moves the same distance for any particular character.

LINE JUSTIFICATION

An examination of the printed copy in Figure 3 shows that it differs from type-
written copy in that both the left hand and right hand margins are in perfect align-
ment, whereas the right hand margin of typewritten copy is uneven. It should also
be observed that the spacing between words in typewritten copy is uniform, whereas
the spacing between words of printed copy, although uniform throughout a given line,
is not the same for all lines. The spacing between the words in the first three
lines of Figure 3 is quite close as compared to the wider spacing in the last three
lines.

This variable width of spacing between words in printed copy makes it possible
to maintain even margins at both the right and left hand sides of the copy. Actually
every line is set up with a length somewhat shorter than the distance between the
left and right margins. However, the typesetting machine which is controlled by the
perforated tape automatically expands the spacing intervals between words until the
overall length of the line is equal to the distance between the left and right hand
margins.

One would naturally assume that there are definite limits to the variations in
width of spaces between words; the minimum spacing must be wide enough to give an
appreciable spacing between words in order for the copy to be legible; while on the
other hand, the maximum spacing must not be so wide that the separation between

words is exaggerated, as this would present a very bad appearance on a printed page, as well as detracting from the continuity of the reading matter. Actually, the variations in width of these spacing intervals are held within such limits.

Referring now to the Teletypesetter Perforator, it will be observed that the matrix pointer moves from left to right across the counting scale as the keys for the various characters are struck. However, when the spaceband bar is struck, the counting pointer remains stationary but the counting scale itself moves a small distance from right to left. This motion of the scale is brought about by the motion of the right hand justification pointer, to which the counting scale is attached. This motion of the scale and right hand justification pointer represents the minimum width of the possible spacing interval, and for this reason the right hand justification pointer is often referred to as the "minimum" pointer. It will also be observed that the left hand justification pointer moves a greater distance from right to left than that traversed by the minimum pointer whenever the spaceband bar is struck. This motion of the left hand justification pointer represents the maximum width of the possible spacing interval, and for this reason the left hand justification pointer is often referred to as the "maximum" pointer. It follows that the distance between the two pointers represents the possible variation in the width of the spacing interval. As the spaceband bar is struck repeatedly, this motion of the two pointers and the counting scale is repeated. Thus as successive words are perforated, striking the spaceband bar between words, the counting pointer moves toward the right hand extremity of the counting scale while the justification pointers become more widely separated with each actuation of the spaceband bar.

It may thus be seen that the spread or separation between the two justification pointers represents a certain allowable range for ending the line, known as the range of expansion or justification. The Teletypesetter Perforator is so constructed that a line may be ended when the counting pointer is somewhere between the two justification pointers. If the counting pointer is just inside the right hand justification pointer when the line is ended, the width of the spacing between the words in the line will be small, and if the counting pointer is just inside the left hand pointer, the width of the spacing between the words of the line will be near the maximum width allowable. IF THE LINE IS ENDED WITHOUT THE COUNTING POINTER SOMEWHERE BETWEEN THE TWO JUSTIFICATION POINTERS, THE LINE WILL NOT BE USABLE. Therefore, the operator is given a definite allowable interval for ending each line, which is done by striking the Return (RET) and Elevate (ELEV) keys in order. If a word cannot be ended within this justification interval, it should be hyphenated. In case the last word of the line is a long word which cannot be ended or hyphenated within the justification interval, such as might occur with the word "through", it is necessary for the operator to resort to the use of "fixed spaces", described in the next section.

FIXED SPACES

FIGURE 4

In addition to the spacebands of variable width selected by the spaceband bar, it is necessary to make use of spacing intervals of a definite constant width in the composition of printed copy. There are three kinds of so called "fixed spaces", i.e., "em" spaces, "en" spaces, and "thin" spaces. Each of these spaces introduce a definite spacing in the line and may be considered as being the same as characters in that they are counted by the counting pointer, but they make no impression in the printed copy.

The em space is approximately the same width as the character "W". The en space is one-half the width of the em space, and the thin space is either one-third or one-fourth the width of the em space. The en space is sometimes referred to as the "figures" space since it is the same width as the figures (1, 2, 3,....,0) in any particular copy.

QUADDED LINES

THE SPACEBAND BAR SHOULD NEVER BE STRUCK TWICE IN SUCCESSION OR AT THE BEGINNING OR END OF ANY LINE. FAILURE TO OBSERVE THIS RULE WILL RESULT IN MECHANICAL DIFFI-CULTIES IN THE TYPESETTING MACHINE CONTROLLED BY THE PERFORATED TAPE.

In the previous explanation it has been stated that a line will not be usable unless it is ended with the counting pointer between the two justification pointers. In the case of the seventh line of the copy in Figure 4, it may be readily seen that the line is not justifiable after perforating "of leaders:". In order to make this line justifiable, it is necessary to finish the line by "quadding", which consists of striking "spaceband, em space, en space, em space, and en space"; this sequence to be repeated until the counting pointer is between the two justification pointers, at the same time making sure that the last perforation before the RET (Return) and ELEV (Elevate) perforations is not a spaceband.

SPECIAL FINGERING FOR QUADDING

Ordinarily the keys for the en and em spaces are actuated by the little finger of the left hand, as shown in Figure 2. However, when these keys are used for quadding, it is good practice to use the second and first fingers of the left hand for controlling the keys for en and em spaces, respectively, the space band bar being controlled as usual by the right thumb.

INDENTIONS

In order to get proper alignment of copy, it is necessary that fixed spaces be used in making indentions. The first line of the copy in Figure 4 is indented one em space. The tabular matter in this illustration is indented one and one-half ems, i.e., each line is started by perforating em space and en space.

LEADERS

In the example of tabular copy shown in Figure 4, a series of dots is used for filling in the space in the middle of the line, in order to enable the reader to follow the copy. These dots are known as leaders and are set by means of the EM LD and EN LD keys on the perforator. An em leader is a character consisting of two dots and is the same thickness as the em space. The en leader consists of one dot and occupies a space in the printed line equal to the space required for an en space. The spacing of the dots on these leaders is such that em and en leaders may be used alternately in a line to produce a series of evenly spaced dots. When setting a series of leaders, the EM LD and EN LD keys should be alternated; this is similar to quadding except that no spacebands are used in setting leaders.

In some cases, particularly with large type, the em leader consists of four dots and the en leader two dots. Sometimes short dashes are used instead of dots.

SPECIAL FINGERING FOR EM AND EN LEADER KEYS

Ordinarily the EM LD and EN LD keys are actuated by the little finger of the right hand. However, when setting a series of leaders as shown in Figure 4, it is good practice to use the third and second fingers of the right hand for the EM LD and EN LD keys, respectively.

USE OF THE THIN SPACE

In the composition of printed matter it is not uncommon for a line to end with a long word which cannot be hyphenated, but which spreads over the entire justifica-

tion interval. In such a case it is necessary to reset the line and introduce a thin space next to each spaceband so that the line will end in the justification interval without the long word; or thin spaces may be introduced between the letters of some particular word in the line to obtain the same result. This latter practice is known as "letter spacing" and is not considered good composition practice, (see the example illustrated in the seventh line of the last paragraph of Figure 4)., It should only be used in the case of very short lines such as might occur when working around cuts or illustrations.

CORRECTING THE TAPE

If an error is made in perforating the tape, it should be backspaced using the back space lever (See Figure 1) until the incorrect perforation is over the tape punch pins, and deleted by depressing the RUBOUT key. The RUBOUT key causes all six holes to be punched. This is a "dead" combination so far as any operation of the typesetting machine is concerned.

If it is necessary to delete a whole line or sentence, the backspacing may be done rapidly by depressing the back space lever and turning the tape feed thumb wheel. The perforations may then be deleted by depressing the RUBOUT and REPEAT keys simultaneously.

> Note:
> Sometimes in the course of perforating a line of copy, the operator can foresee some difficulty in justifying the line, particularly in the case of lines containing a number of leaders but very few space bands. In such cases it is good practice to strike the tape key a few times along with the leaders, so that in the case of the line being too short the tape can be backspaced and the proper number of additional. leaders inserted in the spaces left blank. The tape key may also be used in ordinary copy for leaving blank spaces for the insertion of thin spaces, in order to avoid completely deleting and resetting a line in which the justification appears to be difficult.
> The punch control lever has been provided to enable the operator to set a trial line without perforating the tape, in the case of questionable lines.

READING THE TAPE

In order to make corrections, it is necessary for the operator to read the tape. The code may be deciphered by referring to Figure 5. The operator should practice reading the tape in order to become thoroughly familiar with the code.

FIGURE 5

The tape should be read from left to right the same as ordinary matter, holding the tape in the same position as when it is spaced out of the perforator. When the tape is held in the proper position, the center of the small feedhole in the middle of the tape is located slightly to the left of the center line of the code perforations. Having determined the right and left ends of the tape in this manner the reader may identify the top surface of the tape by looking for the frequent recurrence of the end of line signals (RET and ELEV). Figure 6 shows the position in which the tape should be held when reading.
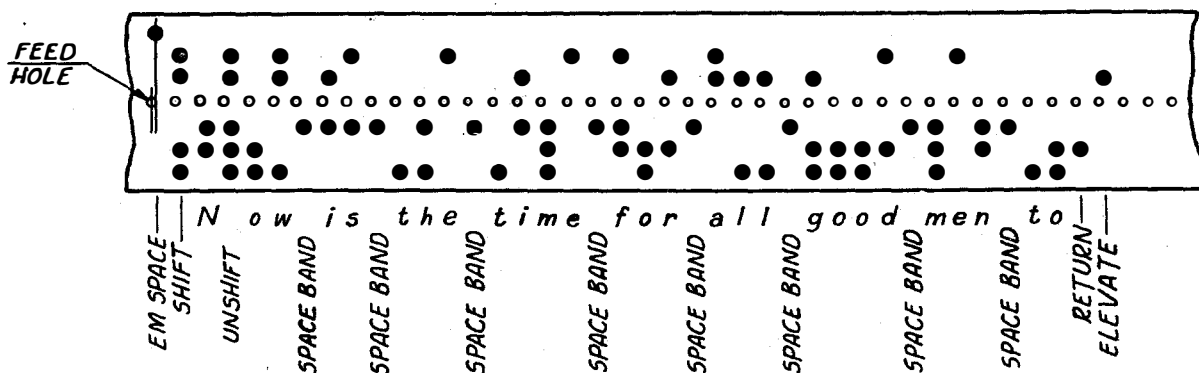
MOTION OF TAPE WHEN BEING SPACED OUT OF PERFORATOR

FIGURE 6

USE OF THE RETURN AND ELEVATE KEYS

In the previous exercises and discussions, the operator has been instructed to strike the Return (RET) and Elevate (ELEV) keys in the order given at the end of each line. The Return key serves to return the counting pointer and justification pointers to their respective zero positions preparatory to counting the length of the next line. (When the tape is used for wire transmission the Return signal in the tape serves to return the carriage of the printing telegraph machine which monitors the copy.)

When the Elevate signal reaches the typesetting machine controlled by the perforated tape, it performs certain operations which result in the entire line being cast into a line of type. This casting operation of the typesetting machine is preceded by the action of that part known as the "Elevator", hence the term "Elevate". (When the tape is used for wire transmission the Elevate signal in the tape serves to space the paper on the platen of the printing telegraph machine which monitors the copy.)

REPEATED CHARACTERS

NO CHARACTER KEY OF THE TELETYPESETTER PERFORATOR SHOULD BE STRUCK MORE THAN TWICE IN SUCCESSION. This includes such characters as em space, em leader, thin space, etc.

When the perforated tape is used for controlling the operation of a typesetting machine, it is operated automatically at the maximum practical speed. There is a definite limit to the speed with which a given character may be repeated on this machine. Thus if any character is perforated three times in succession, it is possible that only two of these characters will appear in the final printed copy.

Since this problem is one of time relationship, it may be overcome by introducing a time interval allowance in the perforated tape. This may be done by striking the tape key in order to avoid any triple repetition of characters. For example, the number 1,000,000 should be perforated as follows, - one, comma, cipher, cipher, tape, cipher, comma, cipher, cipher, tape, cipher; or the number 1000000 (without commas) should be perforated as follows, - one, cipher, cipher, tape, cipher, cipher, tape, cipher, cipher.

SPECIAL CHARACTERS AND FUNCTIONS

1. fi, fl, ff, ffi, and ffl

In the composition of printed matter these combinations of characters are each set as one character, and provision has been made on the Teletypesetter Perforator to permit their use. Practice in the use of these keys will be treated in subsequent exercises.

2. Vertical Rule (VERT RULE)

This is a vertical line sometimes used for bracketing in printed copy. Instructions regarding the use of this key will be covered in subsequent exercises.

3. Em dash — (Shift position on "5" key.)

This is a dash which is equal in length to the width of an em space.

4. "BELL" and "PF"

These keys are used only in the case of wire transmission. The Bell signal serves to ring a bell on the printing telegraph machine which monitors the copy at the receiving end and is used to attract the attention of the receiving party. The PF or Paper Feed key is used for spacing out the paper on the platen of the printing telegraph machine at the end of an article.

5. "UR" and "LR"

This key is used for controlling the composition of bold face or italicized matter. These designations are abbreviations for the terms "Upper Rail" and "Lower Rail", referring to features of the typesetting machine. Detailed instructions covering the use of this key will be given in another section of this manual.

The method of fingering all keys, including these special characters and functions, is shown in Figure 2.

In the composition of printed matter **special emphasis** is sometimes placed on **certain words or phrases** by means of **bold face type**, which presents a noticeable contrast in the copy as compared to the ordinary "roman" characters. If a line contains both roman and **bold face** characters it is commonly referred to as a **mixed line.**

It is a common practice in newspaper composition to set complete lines or paragraphs in bold face in order to direct the attention of the reader to certain parts of an article. Bold face type may be used for either UPPER CASE or lower case characters.

A. BOLD FACE

In book and magazine composition it is the usual practice to make use of *italics* in order to gain a similar degree of emphasis. *Italics* are often used when setting *proper names, foreign expressions, etc*, although the actual rules governing the use of *italics* are determined by the *style* of any particular kind of copy, which is in turn defined in the *Rules for Composition* followed by various printing plants. The term *mixed line* is also applied to lines of copy which contain both roman and *italicized* characters.

Explanatory paragraphs, footnotes, etc, in connection with printed articles are commonly set in solid italic, to differentiate between the article proper and the addenda. Both UPPER CASE and lower case characters may be italicized.

B. ITALICS

FIGURE 7

USE OF THE UR-LR KEY, - LATERAL DUPLEX RAIL OPERATION

Figure 7 illustrates the use of bold face and italic type. A "font" of type may contain both roman and bold face characters, or roman and italic characters, but only two kinds are available in any particular font. Referring now to the operation of the typesetting machine, the bold face or italic characters are set using the "upper rail" whereas the roman characters are usually set in the "lower rail" position. Further details in connection with the rail features of typesetting machines are covered in Teletypesetter Bulletin #4 - "Description of the Operating Unit", in those

sections devoted to the explanation of the "Duplex Rail". (Certain fonts of type are designed to set combinations of roman and Gothic, roman and Antique, bold and Gothic, and many other combinations, on the lower and upper rails, respectively. For further discussion of this subject refer to those sections of this manual devoted to "Type Faces". For the purpose of this section only the roman will be considered in the lower rail position, and bold face or italic in the upper rail position.

The lateral rail is sometimes referred to as the "greek" rail or attachment. It is designed to set either solid or mixed lines, and is the type commonly used in book and magazine composition.

Refer to Figure 2. It will be noted that the UR appears in the upper case position of the keytop and the LR appears in the lower case position. Therefore, in order to set type in the upper rail position, it is necessary to first strike the SHIFT key (unless the perforator is already in the shift position, as indicated by the semaphore) and then strike the UR-LR key, in which case the function selected will actually be UR or Upper Rail.

Once in the upper rail position, all subsequent characters will be set accordingly, until the rail is returned to the lower position. This may be done in one of two ways. The lateral rail is so designed that it <u>always</u> returns to the lower or roman position at the end of the line. The lateral rail may also be moved from the upper to the lower position anywhere within a given line by striking the UNSHIFT key followed by the UR-LR key, which, of course, selects the lower case function or LR, - lower rail. To change from the lower rail to the upper rail, it is <u>always</u> necessary to use the UR function since the lower rail position is considered as being the normal operating position.

Having once positioned the <u>lateral rail</u> in either the upper or lower position, the operator may proceed to select both upper and lower case characters as required in the line being set, without affecting the position of the lateral rail, so long as the UR-LR key is not depressed.

    <u>IMPORTANT</u> - A certain time interval is required in the operation of the typesetting machine for positioning a character in either rail position. Therefore a definite time interval must be allowed before moving the lateral rail in order to permit proper positioning of the last characters preceding the change; and unless this allowance is made, errors will appear in the printed copy due to one or more characters being set in the wrong rail position. This allowance should be made in the tape by preceding each UR or LR perforation with <u>three</u> "non-character-selecting" perforations such as, TAPE-TAPE-SHIFT, TAPE-TAPE-UNSHIFT, TAPE-TAPE-TAPE, etc.

The following outline lists a number of possible conditions which might occur when changing from one rail position to another, and describes the perforator procedure which may be used for each condition. Following this outline, a recommendation is specified for a uniform operating procedure which will cover all possible conditions.

1. Lower to upper rail, - perforator in the unshift position, at the beginning of a line.
      <u>SHIFT - UR</u>
      No time interval is necessary in the tape in this case since the rail motion is preceded by the time required for actuating the Elevator of the linecasting machine and delivering the preceding line to the caster.

2. Lower to upper rail, - perforator in the shift position, at the beginning of a line.
      <u>UR</u>
      No time interval is necessary in the tape for the same reason outlined in 1.

3. Lower to upper rail, - perforator in the unshift position, in the middle of a line.
      <u>TAPE-TAPE-SHIFT-UR</u>

4. Lower to upper rail, - perforator in the shift position, in the middle of a line.
      <u>TAPE-TAPE-TAPE-UR</u>

5. Upper to lower rail, - perforator in the unshift position, at the beginning
    of a line.
        The lateral rail is designed to return to the lower position auto-
        matically at the end of the line, hence no rail perforation is re-
        quired.

6. Upper to lower rail, - perforator in the shift position, at the beginning of
    a line.
        No rail perforation is required for the same reason outlined in 5.

7. Upper to lower rail, - perforator in the unshift position, in the middle of
    a line.
        <u>TAPE-TAPE-TAPE-LR</u>

8. Upper to lower rail, - perforator in the shift position, in the middle of a
    line.
        <u>TAPE-TAPE-UNSHIFT-LR</u>

THE ABOVE OUTLINE ILLUSTRATES A NUMBER OF POSSIBLE PROCEDURES FOR DIFFERENT
CONDITIONS. FOR THE PURPOSE OF ESTABLISHING A UNIFORM KEYBOARD PRACTICE, IT IS
RECOMMENDED THAT THE FOLLOWING PROCEDURE BE FOLLOWED IN ALL CASES OF LATERAL RAIL
OPERATION:

        LOWER TO UPPER RAIL, - TAPE-TAPE-SHIFT-UR.
        UPPER TO LOWER RAIL, - TAPE-TAPE-UNSHIFT-LR.

It is obvious that this procedure will cover all possible conditions. As the
operator becomes more experienced in the use of the perforator, especially on a par-
ticular class of composition, it may be convenient to take advantage of some of the
"short-cuts" described in the preceding outline.

USE OF THE UR-LR KEY, - STANDARD DUPLEX RAIL OPERATION

This type of rail is sometimes referred to as the "split" rail, "transverse"
rail, or "short" rail. The use of this rail is limited to solid lower rail or upper
rail lines, and cannot be used for setting mixed lines. It is simpler in its
principle of operation and does not require any time interval in the tape since the
upper rail position is selected <u>only at the beginning of a line</u>, where it is preceded
by the time interval required for actuating the Elevator of the linecasting machine.
THE RAIL KEY IS USED IN CONNECTION WITH STANDARD RAIL OPERATION ONLY AT THE
BEGINNING OF A LINE, FOR SELECTING THE UPPER RAIL POSITION. THE LR SIGNAL IS NEVER
USED SINCE THE STANDARD RAIL IS DESIGNED TO RETURN TO THE LOWER POSITION AT THE END
OF THE LINE.
If the perforator is in the unshift position at the end of the preceding line,
the UR perforation must be preceded by SHIFT; but if the perforator is already in the
shift position, only UR is required. For the purpose of establishing a uniform
practice, it is recommended that the operator always precede the UR with the SHIFT
perforation.

SETTING QUADS AND LEADERS ON THE UPPER RAIL

When an em or en space is set on the upper rail it appears in the printed copy
as an em or en leader, respectively; and similarly, when an em or en leader is set
on the upper rail it appears in the printed copy as an em or en space, respectively.

EXTRA SETS OF EM SPACES AND EM LEADERS

In order to provide an extra supply of em spaces and em leaders for use in
setting long quadded lines or long series of leaders, certain printing plants have
adopted the practice of replacing the ffl and ffi characters by extra sets of em
spaces and em leaders, respectively, in addition to the regular supply available in
the standard positions. When this practice is used, it is possible to select em
spaces in any one of four ways, namely, by striking the em space or ffl keys in the
lower rail position, or the em leader or ffi keys in the upper rail position; and
similarly, em leaders may be selected in one of four ways, namely, by striking the
em leader or ffi keys in the lower rail position, or the em space or ffl keys in the
upper rail position.
One advantage of this arrangement is that two em space keys are available which
may be alternated in quadding, and two em leader keys are available which may be

alternated in setting leaders. It may be readily seen that fewer keystrokes are required in filling a line with em width characters than with alternate em and en width characters.

SUMMARY OF OPERATING RULES AND PRECAUTIONS

END EACH LINE BY STRIKING THE RETURN AND ELEVATE KEYS IN THE ORDER GIVEN.

NEVER END A LINE UNLESS THE COUNTING POINTER IS BETWEEN THE TWO JUSTIFICATION POINTERS.

NEVER BEGIN NOR END A LINE WITH A SPACEBAND.

NEVER STRIKE THE SPACEBAND BAR TWICE IN SUCCESSION.

NOT MORE THAN TEN SPACEBANDS SHOULD BE USED IN ONE LINE OF COPY. WHEN MORE THAN TEN SPACES ARE REQUIRED BETWEEN THE WORDS OF A LINE, THE OPERATOR SHOULD RESORT TO THE USE OF FIXED SPACES, PREFERABLY EN SPACES, TO MEET THE REQUIREMENT.

REMEMBER THAT WHEN THE SHIFT KEY IS DEPRESSED ALL SUBSEQUENT CHARACTERS CONTINUE IN THE SHIFT POSITION UNTIL THE UNSHIFT KEY IS STRUCK.

THE SEMAPHORE IS PROVIDED TO INDICATE WHETHER THE PERFORATOR IS IN THE SHIFT OR UNSHIFT POSITION AT ANY TIME; RED INDICATES SHIFT POSITION AND WHITE INDICATES UNSHIFT POSITION.

USE THE BACKSPACE LEVER AND RUBOUT KEY FOR MAKING CORRECTIONS IN THE TAPE.

REMEMBER THAT THE POINTERS ARE NOT BACKSPACED WHEN A PERFORATION IS DELETED.

CARE MUST BE EXERCISED IN THE USE OF THE RUBOUT KEY SO THAT THE NECESSARY SHIFT, UNSHIFT, RAIL, RETURN, AND ELEVATE SIGNALS ARE NOT DELETED.

WHEN THE TAPE IS BACKSPACED THE TAPE WINDER SHOULD BE BACKED UP SUFFICIENTLY TO RELEASE THE TENSION ON THE TAPE, OTHERWISE THE FEEDHOLES WILL BE TORN.

DO NOT USE THE REPEAT KEY EXCEPT IN CONNECTION WITH THE RUBOUT OR TAPE KEYS, FOR MAKING LONG CORRECTIONS OR SPACING OUT THE TAPE.

IT IS NECESSARY FOR THE OPERATOR TO BE ABLE TO READ THE CODE.

USE FIXED SPACES WHENEVER A DEFINITE SPACING INTERVAL IS REQUIRED IN THE COPY, SUCH AS INDENTIONS, TABULATIONS, ETC.

NEVER STRIKE ANY KEY MORE THAN TWICE IN SUCCESSION. USE THE TAPE KEY TO AVOID MORE THAN TWO SUCCESSIVE IDENTICAL PERFORATIONS.

USE THE fi, fl, ff, ffi, AND ffl KEYS WHENEVER THESE COMBINATIONS OF LETTERS OCCUR IN THE COPY, UNLESS SPECIFICALLY INSTRUCTED OTHERWISE.

USE THE FOLLOWING PROCEDURE IN ALL CASES WHEN CHANGING THE POSITION OF THE LATERAL RAIL:

LOWER TO UPPER RAIL, - TAPE-TAPE-SHIFT-UR.

UPPER TO LOWER RAIL, - TAPE-TAPE-UNSHIFT-LR.

REMEMBER THAT BOTH THE LATERAL AND STANDARD RAIL RETURN TO THE LOWER POSITION AT THE END OF EACH LINE.

THE POSITION OF THE STANDARD RAIL CANNOT BE CHANGED EXCEPT AT THE BEGINNING OF A LINE, AND STILL SET A USABLE LINE. THE POSITION OF THE LATERAL RAIL CAN BE CHANGED ANYWHERE WITHIN A GIVEN LINE.

WHEN IN THE UPPER RAIL POSITION USE THE EM AND EN LEADER KEYS FOR QUADDING AND THE EM AND EN SPACE KEYS FOR SETTING LEADERS.

IN ORDER TO FOLLOW THE PROPER PROCEDURE IN USING THE UPPER RAIL, IT IS NECESSARY FOR THE OPERATOR TO KNOW WHETHER THE LINECASTING MACHINE IS EQUIPPED WITH LATERAL OR STANDARD RAIL.

ALWAYS STRIKE THE SAME KEY WITH THE SAME FINGER EXCEPT IN THE CASES OF LINES REQUIRING QUADDING OR A SERIES OF LEADERS, WHERE SPECIAL FINGERING IS USED.

CONCENTRATE ON DEVELOPING A SMOOTH EVEN KEYBOARD TOUCH. SPEED WILL COME WITH CONTINUED PRACTICE.

REFER TO A DICTIONARY OR SIMILAR REFERENCE FOR CORRECT DIVISION OF WOR S WHEN IT IS NECESSARY TO HYPHENATE.

THE FOLLOWING KEYS PROVIDE IDENTICAL SELECTION IN EITHER SHIFT:

PERIOD	THIN SPACE	RETURN
COMMA	EN LEADER	ELEVATE
SPACE BAR	EM LEADER	SHIFT
EN SPACE	TAPE	UNSHIFT
EM SPACE	RUBOUT	PAPER FEED
VERTICAL RULE	BELL	