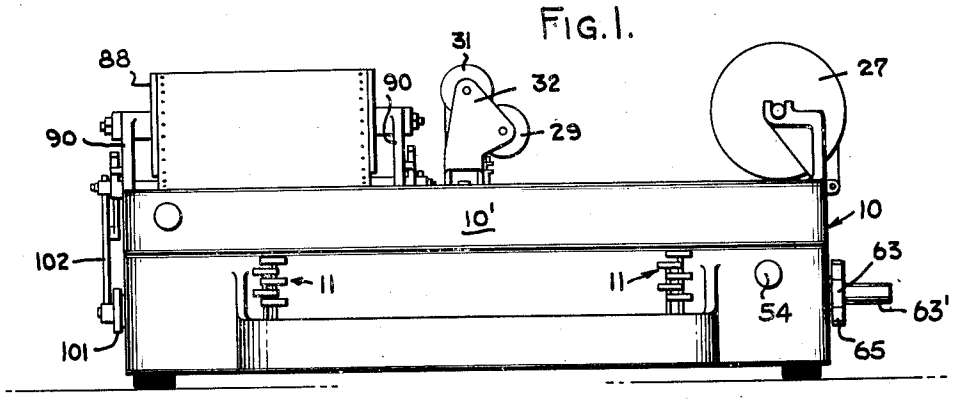
Jan. 4, 1944. F. P. CAMPBELL 2,338,489

TYPING MACHINE FOR PREPARING MATTER FOR PRINTING

Filed March 24, 1941 5 Sheets-Sheet 1

FIG. 1.



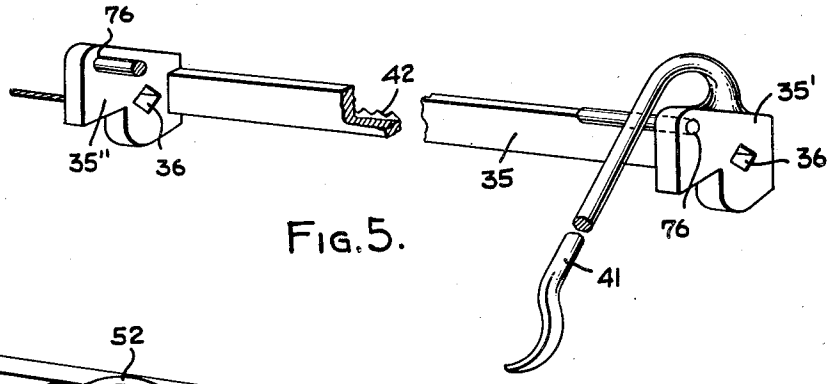


FIG. 5.

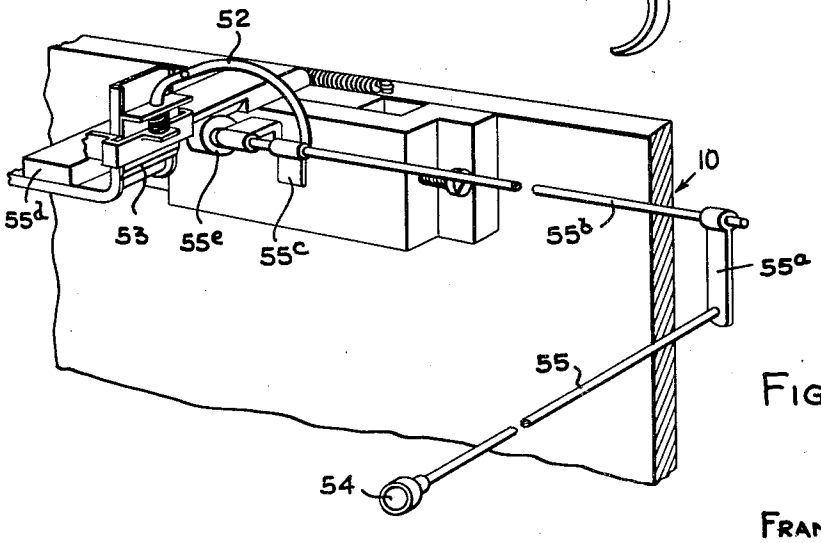


FIG. 6.

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TYPING MACHINE FOR PREPARING MATTER FOR PRINTING

Filed March 24, 1941 5 Sheets-Sheet 2

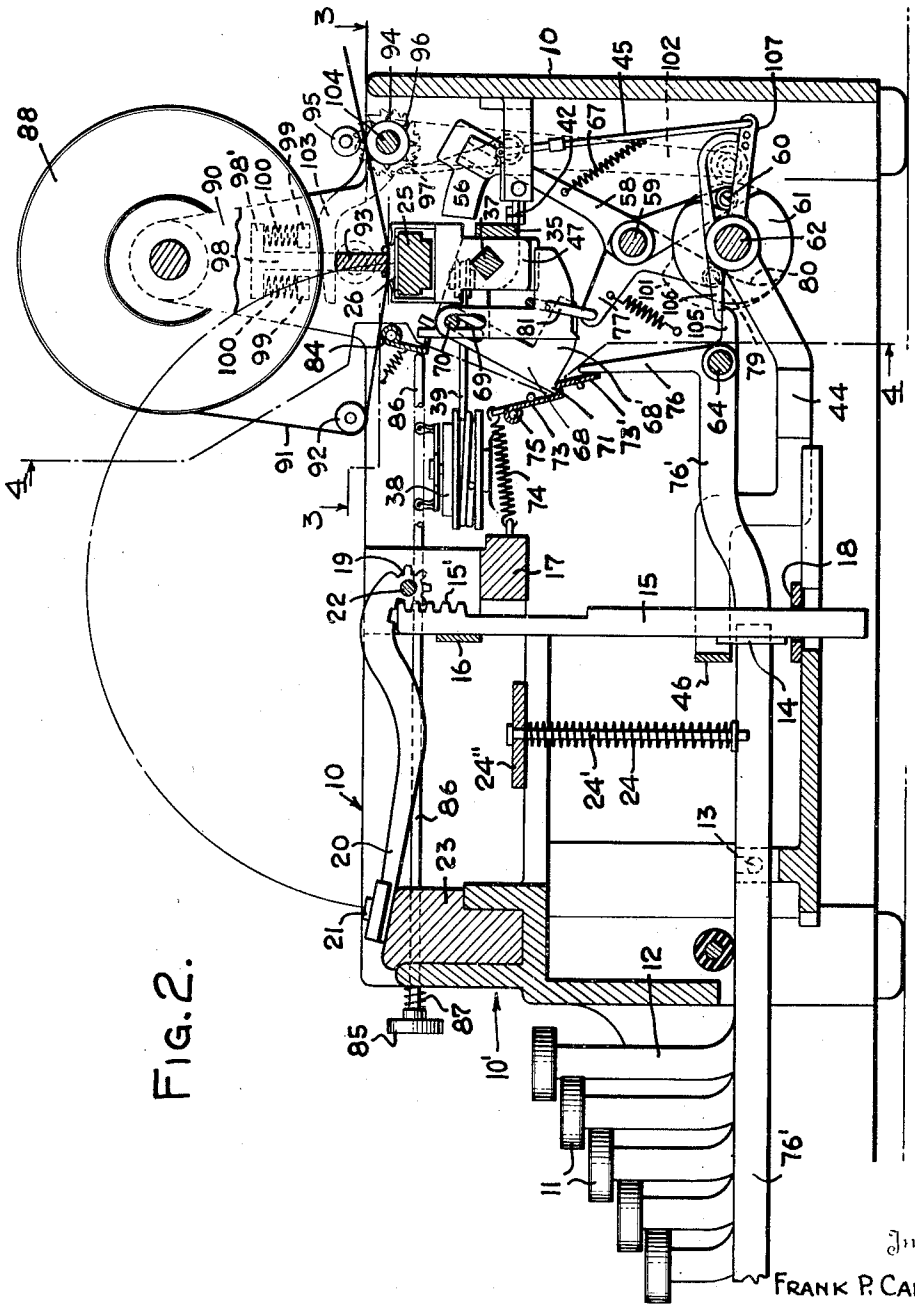


FIG. 2.

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TYPING MACHINE FOR PREPARING MATTER FOR PRINTING

Filed March 24, 1941 5 Sheets-Sheet 3

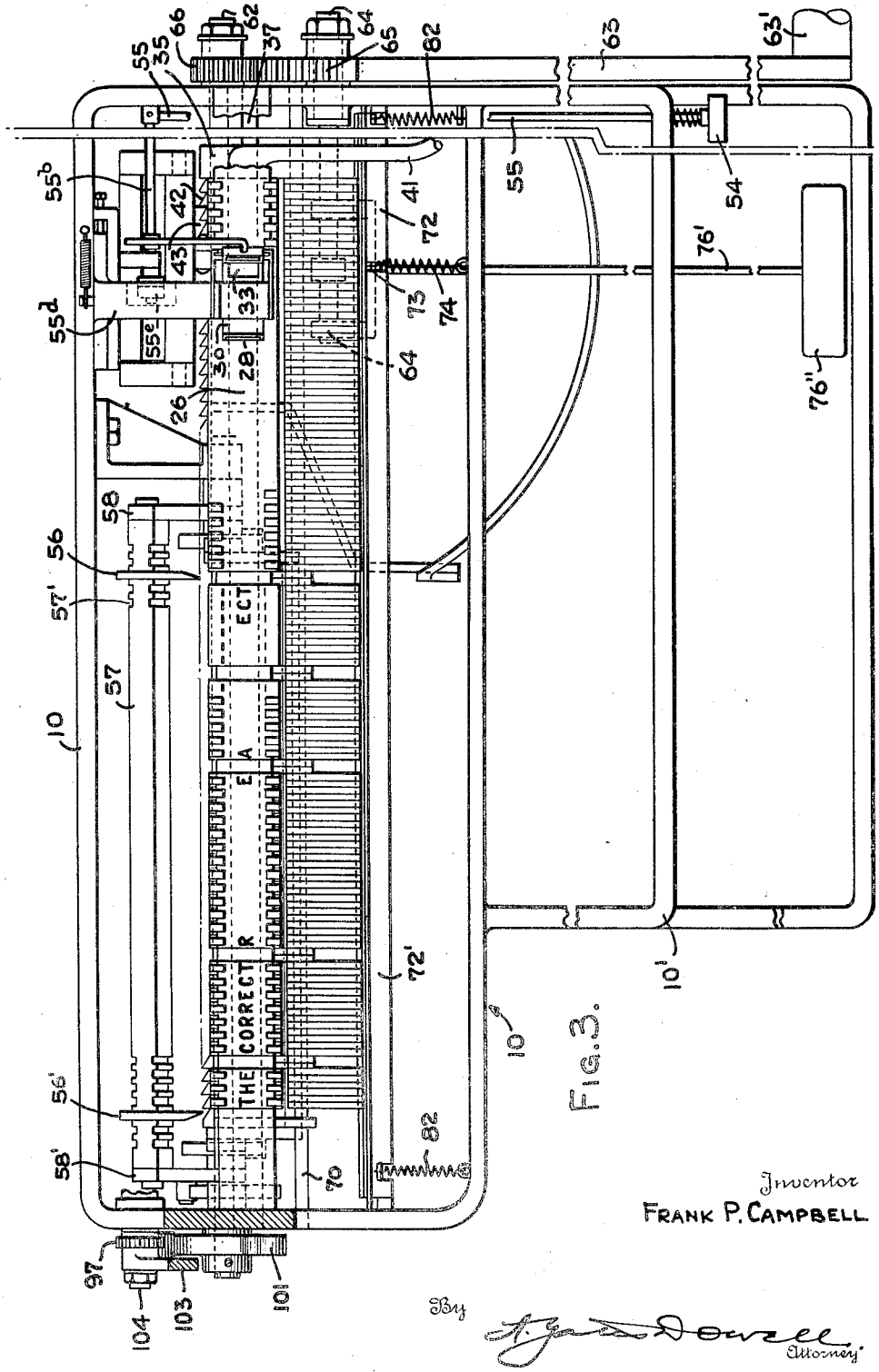


Fig. 3.

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TYPING MACHINE FOR PREPARING MATTER FOR PRINTING

Filed March 24, 1941 5 Sheets-Sheet 4

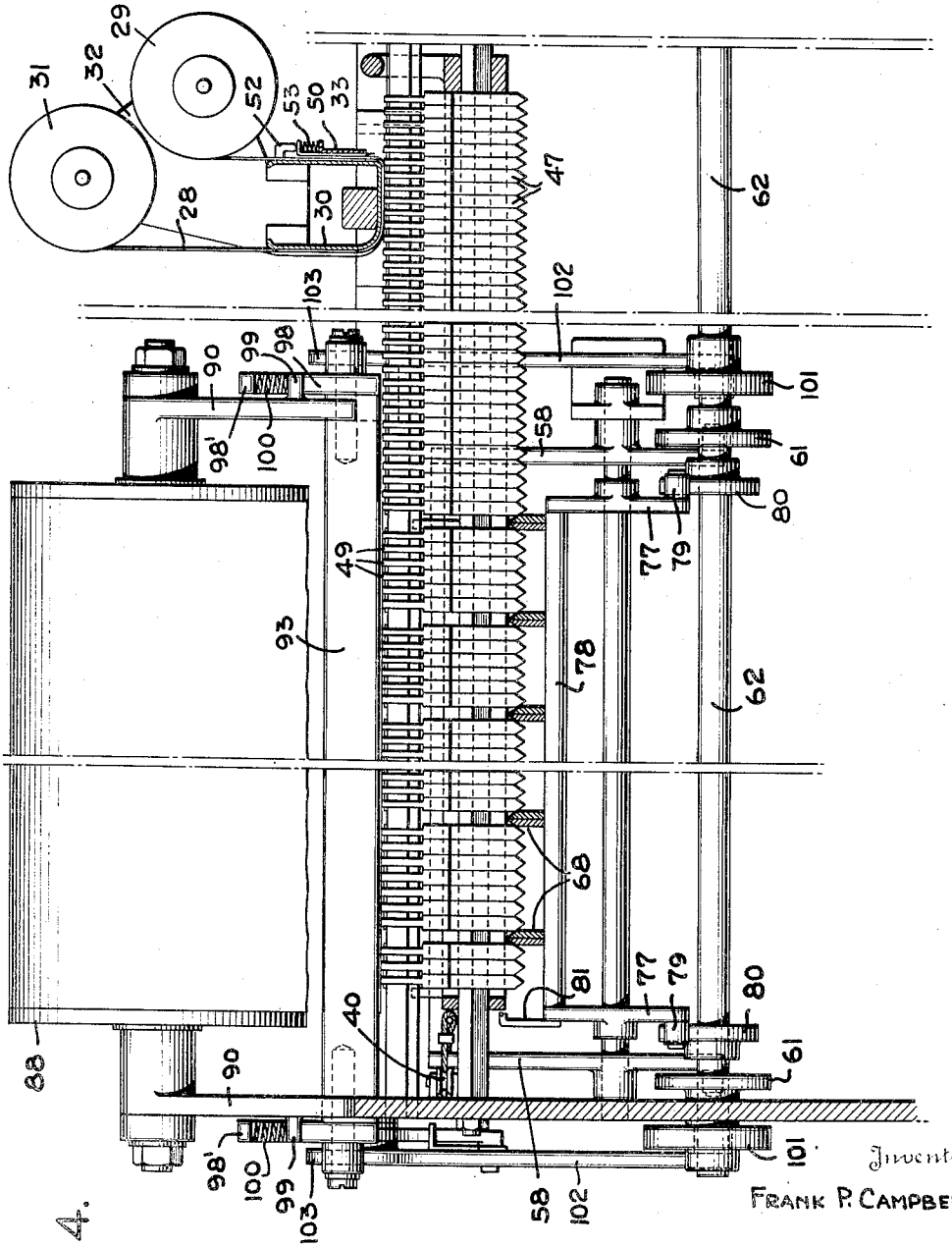


Fig. 4.

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TYPING MACHINE FOR PREPARING MATTER FOR PRINTING

Filed March 24, 1941 5 Sheets-Sheet 5

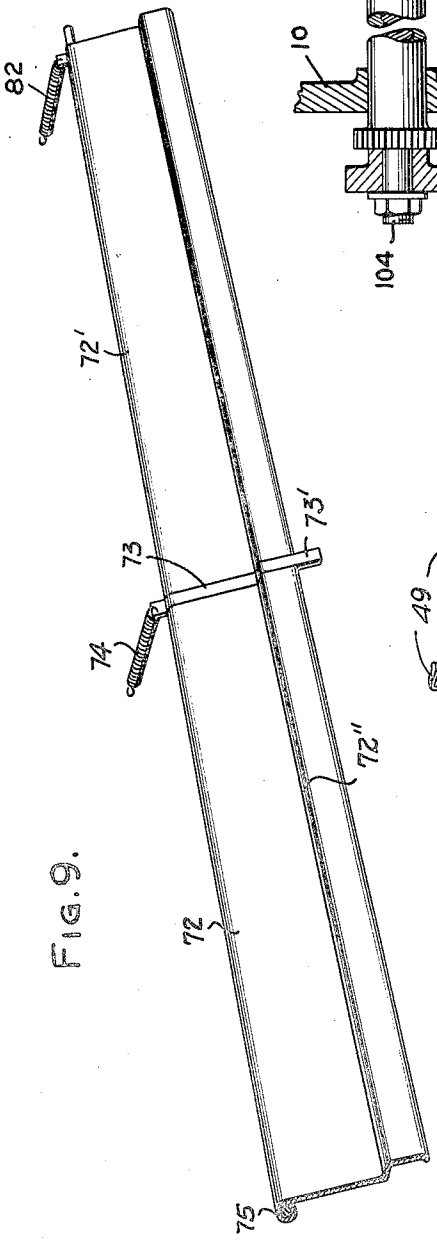


FIG. 9.

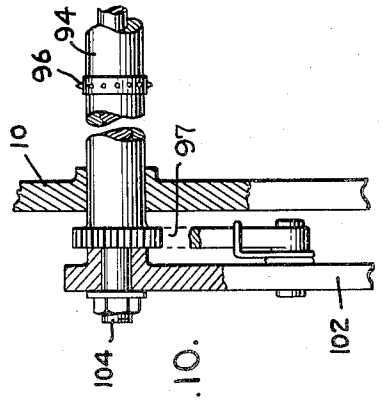


FIG. 10.

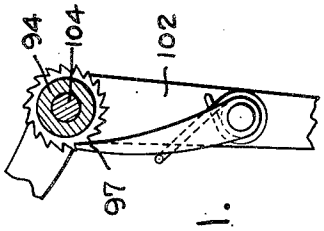


FIG. 11.

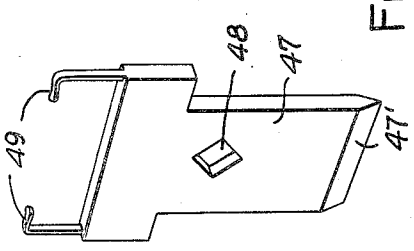


FIG. 7.

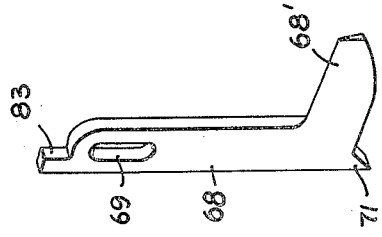


FIG. 8.

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Patented Jan. 4, 1944

2,338,489

UNITED STATES PATENT OFFICE

2,338,489

TYPING MACHINE FOR PREPARING MATTER FOR PRINTING

Frank P. Campbell, Cheverly, Md.

Application March 24, 1941, Serial No. 384,989

12 Claims. (Cl. 101—46)

This invention relates to printing and more particularly to typing machines for use in what is commonly termed "offset" printing, and has for an object to provide an improved means and method of preparing print and transferring the same to a printing roll or plate for use in a printing press.

The present method consists in typing the letters or characters to be printed on a strip of paper or the like, severing the strip to permit separation of the words of the respective lines so that they may be appropriately spaced from one another, and then justifying the line by positively defining the left and right hand marginal limits and inserting justifying spacers between the respective strips of paper or other material bearing the printed words and equally spacing the latter within said limits. The ink used for typing is of the transfer type, and after the line has been printed and justified, it is transferred to a sheet of paper or other flexible material for reproduction as in the usual offset printing operation.

The machine and method of the present invention is primarily adapted for use in printing shops or establishments where the business does not justify the purchase of a Linotype machine, although the machine may be used in the place of or as an auxiliary to a Linotype machine.

The foregoing and other objects and advantages will become apparent in view of the following description taken in conjunction with the drawings, wherein:

Fig. 1 is a view in front elevation of a typing machine embodying the invention;

Fig. 2 is an enlarged view in vertical section of the machine of Fig. 1;

Fig. 3 is a sectional plan view taken substantially on the line 3—3, Fig. 2;

Fig. 4 is a view in section and elevation taken substantially on the line 4—4, Fig. 2;

Fig. 5 is a fragmentary perspective view of a carriage assembly;

Fig. 6 is a detail perspective view of type strip severing mechanism;

Figs. 7 and 8 are similar views of coacting spacer members;

Fig. 9 is a perspective view of a supporting and releasing device for the members of Fig. 8;

Figs. 10 and 11 are details of the transfer sheet indexing mechanism.

Referring to the drawings in detail, and first to Figs. 1 and 2, the typing machine may be patterned along the lines of the conventional typewriter and is so illustrated. The frame of the machine is generally indicated at 10 and includes a front portion 10' carrying a plurality of type keys 11 arranged in a generally semi-circular form, the keys being mounted on levers 12 fulcrumed for rocking movement on a series of pivotal rests 13. At their inner ends the levers are pivotally anchored in a slotted member 14, and at this point each key engages a rack bar 15 which is shown as mounted for vertical movement in guides 16, 17 and 18. At their upper ends the rack bars are each provided with teeth 15' which engage gear teeth 19 on the inner ends of a series of type bars 20, the latter having on their outer ends type characters 21. The type bars are mounted for pivotal movement on a curved bearing ring 22, and on their outer ends the said bars come to rest on a cushioned support 23. The key levers 12 are individually actuated against the pressure of springs 24 mounted on pin 24', the latter at its upper end being anchored in cross member 24''.

The arrangement of the keys and type bars and the manner in which they operate may be varied at will, and in fact the design of the machine in this respect may follow the conventional typewriter as above indicated. The type characters here shown are of equal point spacing throughout to simplify the illustration and description. Each type bar may be provided with a multiple of characters brought into typing position by shifting the bars as a unit.

The type characters are printed on a strip of paper or like material (herein termed the line strip) by the use of transfer ink, the said strip being severed after each line has been typed thereon. To accomplish this operation, a stationary platen 25 in the form of an elongated bar is provided and is anchored at opposite ends to the frame 10. This platen 25 should be of a length such as will readily accommodate any reasonable length of line. The line strip is indicated at 26 and is fed from a reel 27 along the top of the platen, note particularly Fig. 3.

An inking ribbon 28 is provided, note Fig. 4, and is fed from reel 29 through and over guide 30 and thence on to reel 31, the reels and guide being supported on a suitable bracket or frame member 32. The guide 30 is formed with an opening 33, at which point the type 21 contacts the ribbon and make their impression through the latter on the paper strip. The reels 29 and 31 may be provided with suitable escapement mechanism whereby the ribbon is fed from one reel to the other as the typing operation progresses.

Below the platen 25 is a movable member 35 which is in effect a carriage and may be constructed as shown in Fig. 5. This carriage member or bracket is provided with end plates 35' and 35'' which are formed with holes or openings 36 to permit the carriage to be mounted on a guide bar 37 fixed at its opposite ends to the frame 10.

The carriage is advanced during typing to the left as viewed in Figs. 3 and 4 by means of a tension reel 38 which is connected to the carriage by means of flexible cable 39 passed around sheave 40. Return movement of the carriage against the tension of reel 38 may be effected by means of hand lever 41.

The back of the carriage 35 is provided with a series of ratchet teeth 42 which coact with ratchet or dog 43 forming part of escapement mechanism including lever 44 having an operative connection with the ratchet 43 by means of adjustable link 45, the lever 44 being actuated by means of lever 46 overlying the inner extremities of the type levers 12 to be contacted thereby each time any one of said levers is actuated.

Within the confines of the members 35' and 35'' of the carriage 35 are mounted a series of spacer members 47, one of which is shown in detail in Fig. 7. Each of these members 47 has a wedged-shaped edge 47' which depends downwardly, note particularly Fig. 4. A bearing hole or opening 48 provides means by which the spacer members may be slidably mounted on the guide bar 37.

Each of the members 47 is also provided with a pair of spring fingers 49 which extend upwardly over the platen 25 and are tensioned sufficiently with respect to the strip of paper or line strip 26 on the platen to grip the paper and feed the latter along with the carriage 35 and the members 47.

Means are provided to effect severing of the strip 26 between any word or group of words making up a line of type, such means as herein shown comprising a knife 50, note particularly Figs. 4 and 6, which is mounted for vertical reciprocation in guide 51. A lever 52 acts to depress the knife 50 against the tension of spring 53, said lever being actuated from the keyboard by means of spring return push button or key 54 conected by rod 55, lever 55*a* shaft 55*b* and contact lever 55*c*. The entire ribbon-feeding and strip severing mechanism is mounted as a unit on bar 55*d* which when the knife 50 descends into cutting position is shifted laterally to bring the knife into proper spaced relation with respect to the adjacent typed character by means of cam 55*e* secured on and rotatable with shaft 55*b*, said cam acting on supporting bar 55*d*.

After the respective words which make up a line of type have been typed on the strip 26 and the words severed by the knife 50, there are two actions which take place to justify the line: the opposite ends of the line are positively limited against displacement, and the words within the line are equally spaced within those limits. To accomplish this result, end stops 56 and 56', note particularly Fig. 3, are provided and are adjustably mounted on a bar 57 having a series of teeth 57' therealong to permit adjustment of the members 56 and 56'. The bar 57 is supported at its opposite ends by means of levers 58 and 58' which are mounted on a shaft 59 and at their lower ends are provided with cam rollers 60 adapted to coact with cams 61 mounted on cam shaft 62. The shaft 62 may be operated in any suitable manner, but as here shown, is manually operated by means of key lever 63 which at its inner end is adjustably secured to shaft 64 having secured thereon gears 65 in mesh with pinion 66 secured on shaft 62. The lever 63 is provided with handle 63'. The levers 58 are thus positively actuated in one direction, or towards the left as indicated in Fig. 2 by means of cam 61 and lever 63 and are normally maintained in outward or non-operating position by means of spring 67.

Equal spacing of the words within the line is effected by spacers 68, one of which is shown in detail in Fig. 8. Each of the spacers 68 is generally in the form of an L-shaped member having a wedge-shaped leg 68' which is adapted to enter or cam itself between an adjacent pair of members 47. There are approximately as many spacers 68 as there are members 47, so that separation of the words may take place at any desired point. At their upper end the spacers 68 are provided with elongated bearing openings or slots 69 whereby they may be mounted on supporting rod or shaft 70 which at its opposite ends is fixed to the frame 10. The lower end of each of the members 68 is provided with a latching projection 71 for a purpose which will presently be described. The string of spacers 68 is held in idle or non-spacing position by support 72, note particularly Figs. 2 and 9. This support may be formed of sheet metal and is made in two separate parts 72 and 72', each part being formed with a ledge 72'' which engages the latching projection 71 of the L-shaped spacers 68. Within the space between the supports 72 and 72' is mounted a spacer release lever 73 having spring 74 connected to the upper end thereof and a lower contact projection 73'. The upper edges of the supports 72 and 72' are rolled or curled to provide a bore by which they are mounted on a supporting rod 75, said rod also serving as a pivot or fulcrum for the spacer release lever 73. The lever 73 is located at a point where it will register with the opening 33 in the guide 30, note Fig. 4, so that when the spacers 68 slide along the supports 72—72', any selected one may be released and dropped into spacing position between the members 47. To actuate the lever 73 against the tension of spring 74, an arm 76 is loosely fulcrumed on the shaft 64 and is adapted to engage the projection 73' on the lever 73, note Fig. 2. Arm 76 forms a bell-crank connection with lever 76' which extends to the front of the machine and is provided with spacer bar 76''. Thus, when the spacer bar 76'' is depressed, lever 76 is moved counterclockwise as viewed in Fig. 2 and the lever 73 is rocked rearward and releases any one of the spacers 68 which may register with the lever at that particular time during the typing operation.

When the lever 73 is actuated to release any selected number of spacers 68, they drop by gravity into a position between the wedge shaped ends 47' of the members 47. To drive the spacers 68 home, bellcrank levers 77 are provided, note Figs. 2 and 4, and are mounted on shaft 59, said levers being connected at their upper ends by a rod or bar 78 adapted to engage the lower legs 68' of the members 68. The opposite ends of each of the levers 77 are provided with cam rollers 79 adapted to engage cams 80 mounted on the cam shaft 62. Thus, as the lever 63 is depressed, it rotates shaft 62 clockwise through connecting gears 65 and pinion 66, thereby rocking the bellcrank levers upwardly and throwing the bar 78

against the lower surface of any of the spacers 68 which may have been released at that time.

After the line has been justified, the spacers 68 must be returned to their non-spacing position. Accordingly, the spacers which have been inserted between the members 47 are first moved downwardly by a link rod 81 connected at opposite ends to the bell-crank levers 77 and having the intermediate portion thereof adapted to engage the lower legs 68' of the spacers 68. Thus, when the spacer bar 63 is released and cams 80 permit return movement of the bell-crank lever 77, the latter at the same time drops the rod or bar 78 in contact with the legs 68' of the spacers 68 and pulls the spacers outwardly from between the members 47. To move the spacers which have been thus removed from their spacing position back up on the ledge 72', the latter is mounted to rock on the shaft 75 against the tension of springs 82 and each of the spacers 68 is provided with an upwardly projecting lug 83 which is adapted to be contacted by a pusher bar 84, see Fig. 2, which in turn is actuated by means of push button 85 connected to said pusher bar by means of rod 86 against the tension of spring 87.

As heretofore indicated, the method of printing for which the machine is particularly adapted is known as "offset" printing, wherein the typed matter is reproduced by photographing to a suitable plate for use in a printing press. In the present instance, the line of type after being justified, is transferred on to a sheet of paper ready for the photographing process. To transfer the line of type to the sheet of paper, transfer ink is used for the ribbon 28, and the paper or transfer sheet or web to which the individual lines are transferred is mounted on a reel 88, the latter in turn being rotatably mounted on shaft 89 supported in bearing brackets 90 from the frame of the machine. The transfer sheet as it passes from the reel is indicated at 91, and this sheet passes around idler roll 92 and then beneath press bar 93 and then passes between indexing roll 94 and tension roll 95. The marginal edges of the paper are perforated in accurately spaced relation, and indexing wheels 96 are adapted to engage in these perforations, note Figs. 2 and 10. These indexing wheels are intermittently actuated by pawl and ratchet mechanism 97, Fig. 11, which mechanism is in turn actuated in a manner which will presently become apparent.

The press bar 93 directly overlies the platen 25, and this bar is supported at opposite ends from brackets 98 each having a head 98' at its upper end, the said brackets 98 being slidable in guide lugs 99 projecting outwardly from the main supporting brackets 90. Springs 100 are interposed between the heads 98' and guide lugs 99 so that the bar is depressed against the tension of said springs.

To depress the bar 93 and in turn press the paper against the line of type, cams 101 are provided and are adapted to actuate levers 102, there being one at each side of the machine, said levers extending upwardly and at their upper ends being provided with fingers or arms 103, said arms 103 together with the levers 102 forming bell-cranks which are fulcrumed on shaft 104 on which the indexing wheels 96 are also mounted. It will be noted that the cams 101 are mounted on the cam shaft 62, so that when this shaft is rotated through lever 63 and gears 65 and 66, the press bar 93 is depressed. When the lever 63 is released and the shaft 62 rotates in the opposite direction, the pawl and ratchet mechanism 97 is caused to engage the indexing wheels 96 and advance the sheet of paper 91.

Whenever a spacer 68 is released into spacing position, the escapement for the carriage 35 must also be actuated. Accordingly, the lever 76' is provided with an extension 105 adapted to engage lever 106 fulcrumed on shaft 62, said lever at its rear end engaging an extension 107 of lever 44. Thus, when the lever 106 is actuated, it in turn pulls down on the link 45 which actuates ratchet or dog 43.

A general description of the operation of the machine follows:

As heretofore noted, the machine is particularly adapted for use in offest printing, and the ink used for the ribbon 28 is of the transfer type whereby the characters typed on the line strip 26 may be transferred by contact to the sheet 91.

The line strip 26 is first inserted between the top of the platen and the spring fingers 49 of the members 47. The machine is now ready to be operated in a manner similar to the ordinary typewriter. After each word has been typed, the knife 50 is depressed into cutting position to sever the line strip by means of the push bar 55 and push button 54. Thus, when the complete line is typed, the line strip will be severed between each word.

Each time the strip is severed, one or more of the line spacers 68 is released (depending upon the width of the space desired) by depressing bar 76'' and actuating lever 76', the released spacer dropping and swinging forwardly so that its leg 68' is directly below the line of members 47 ready to be moved up into spacing position between any adjacent pair of said members. After the line has been typed, the line strip severed between each respective word and the spacers 68 thrown into position, lever 63 is depressed to rotate cam shaft 62 and the bar 57 is rocked inwardly bringing the end stops 56 and 56' into position at opposite ends of the line and the spacers 68 are moved upwardly between their coacting spacing members 47, so that the spacing of the words of the line within the end stops is equal throughout the line.

Fig. 3 shows a line of type which has been justified, the stops 56, 56' and the spacer members moving back to idle position.

After the line is justified, the press bar 93 descends and presses the transfer sheet or web 91 against the print or characters which have been typed on the line strip by means of the transfer ink used on the ribbon 28. The sheet or web 91 is advanced one step each time a line has been typed, justified and transferred.

The machine is capable of turning out a large amount of work in a relatively short time, and does not require a skilled operator other than one capable of using a typewriter. Each line is accurately and positively justified and once the line has been transferred to the transfer sheet, the strip of paper on which the characters are printed may be discarded. Thus, the machine does not require expensive and bulky materials.

It will be understood that the machine shown in the drawings and described in the specification is simply for the purposes of illustrating the invention, and that refinements and changes in construction and design may be adopted to carry out my improved method without departing from the spirit or scope of the invention as defined by the appended claims.

What is claimed is:

1. In a machine for preparing printed matter for use in making printing plates by the offset method, an elongated platen, a plurality of spacer members one for each letter space supported from said platen and having fingers overlying the platen, said spacing members having substantially wedge-shaped active portions, means for advancing said members together with a strip of paper or like material along said platen with said fingers in engagement with said strip, means for typing characters on said strip, means for severing the strip between each word as the latter is typed, spacers and supporting means therefor, means for releasing said spacers from said supporting means during the typing operation to drop a spacer into proper position with respect to coacting spacer members, stops movable into position to define the marginal limits of the line, and means for inserting said spacers between said spacer members after said stops have been moved into margin-defining position.

2. In a machine for preparing printed matter for use in making printing plates by the offset method, an elongated platen, a series of spacer members one for each letter space, having wedge-shaped active portions and fingers engaging over said platen, means for advancing said members together with a strip of paper or like material along said platen with said fingers in engagement with said strip, means for typing characters on said strip, a knife, means for operating said knife to sever the strip between each word as the latter is typed, adjustably mounted stops for defining the marginal limits of the line, means for moving said stops into position after the line has been typed and severed, spacers and means for inserting said spacers between said wedge-shaped portions of the spacer members after said stops have been moved into margin-defining position.

3. In a machine for preparing printed matter for use in making printing plates by the offset method, an elongated platen, a plurality of spacer members one for each letter space having fingers overlying said platen, means for advancing said members together with a strip of paper or like material along said platen with said fingers in frictional engagement with the strip, means for typing characters on said strip, a knife operable to sever the strip between each word as the latter is typed, stops and means for moving said stops into position at opposite ends of the severed line to define the marginal limits of the latter, and spacers movable between said spacer members to separate the word portions of the strip within said marginal limits.

4. In a machine for preparing printed matter for use in making printing plates by the offset method, an elongated platen, a series of spacer members one for each letter space having portions overlying said platen, means for advancing said members together with a strip of paper along said platen with said portions in frictional engagement with the strip, means for typing characters on said strip a knife operable to sever the strip between each word, spacers movable into position between said members, stops operable to define the marginal limits of the line, and means for actuating said spacers to drive them between the spacer members after the stops have been moved into position.

5. In a machine for preparing printed matter for use in making printing plates by the offset method, a platen providing a backing for a strip of paper or like material, means for typing the characters to be printed on said strip, a knife operable to sever the strip between each word, means for operating said knife, a series of spacing members one for each letter space engaging said strip, spacers movable between said members, stops movable into position at the opposite ends of the line to define the marginal limits of the line, and means for inserting said spacers between said members at each severed word portion of the strip after said stops have defined the marginal limits of the line.

6. In a machine for preparing printed matter for use in making printing plates by the offset method, a platen providing a backing for a strip of paper or like material, means for typing the characters to be printed on said strip, a knife arranged to sever the strip between each word after the latter has been typed, means for operating said knife, stops arranged to be moved into position at the opposite ends of the severed line to define the marginal limits of the latter, spacing members in engagement with said strip and means operable to space said members within said limits to effect equal spacing of said severed word portions of the strip.

7. A typing machine comprising a frame, typing elements mounted in said frame, keys for actuating said typing elements for making typed impressions on a strip of material adapted to receive said impressions in the form of words or characters, a platen backing up the said strip, severing means operable to detach segments of the strip with words or characters thereon after application of the words or characters thereto to complete a line thereof, means for moving said detached strip segments relative to one another on said platen to equalize the space between them and predetermine the length of the line, means for operating said moving means, and means operable to effect transfer of said line of impressions to a web of material for offset printing.

8. In a machine for preparing printed matter for printing, a platen, means for supporting a strip of paper on said platen, means for typing characters on said strip, means operable to separate the strip between each word as the latter is typed, means for justifying the line of type so separated, means for operating said justifying means, means for transferring said characters through contact to a web of material for use in preparing a printing plate by the offset method, and means for operating said transfer means, said platen backing up said strip during the separating, justifying and transferring operations.

9. In a machine for preparing printed matter for use in making printed plates by the offset method, an elongated platen, means for applying a strip of paper or like material to said platen, means for typing characters to be printed on said strip, a knife and reciprocating means supporting said knife whereby the latter may be actuated to sever the strip between each word as the latter is typed, a series of spacer members one for each letter space having fingers acting to engage said strip and wedge-shaped active portions, means for advancing said spacer members and strip along said platen, adjustable end stops and means for moving said end stops into position to define the marginal limits of the line after the latter has been typed and severed, spacers and a support therefor normally carrying said spacers out of operative position, means for selectively releasing said spacers from said support into a position

whereby they may be inserted between said spacer members to separate the latter, means for actuating said spacers to word-separating position, a press bar movably mounted above said platen, means for feeding a sheet of paper or like material between said press bar and platen, and means for actuating said press bar after the line has been typed, severed and justified to transfer the characters of the line to said sheet.

10. In a machine for preparing printed matter for use in making printing plates by the offset method, a platen, means for applying a strip of paper or like material to said platen, means for typing characters to be printed on said strip, a knife and means for actuating said knife to sever the strip between each word as the latter is typed, means for advancing the strip as the typing and severing operations progress, means for defining the marginal limits of the typed and severed line, means for spacing the words within said limits, means for operating said spacing means, a reciprocating press bar mounted above said platen, means for feeding a web of paper or like material between said press bar and platen, and means for actuating said press bar to press the sheet against the typed and justified strip to transfer characters to said sheet.

11. In a machine for preparing printed matter for use in making printing plates by the offset method, a platen, means for supporting a strip of paper or like material on said platen, means for typing characters on said strip, means for severing said strip between each word as the latter is typed, means for advancing the strip as the typing and severing operations progress, means for limiting the margin of each typed and severed line, means for spacing the words within said margin, means for operating said spacing means, a press bar movably mounted above said platen, means for feeding a web of paper or like material between said press bar and platen, and means for actuating said press bar to press the sheet against the type and justified strip and effect transfer of the characters from said line to said sheet.

12. In a machine for use in preparing plates for a printing press by the offset method, an elongated platen adapted to support a strip of paper or like material, means for typing characters on said strip, means movable to effect severing of said strip between each typed word, means for operating said severing means, means movable into position to block off the opposite ends of each line, means movable into position to effect spacing of the word portions of the strip within said blocked off limits, and means for operating said severing, blocking off and spacing means, said platen backing up the strip during said operations.

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