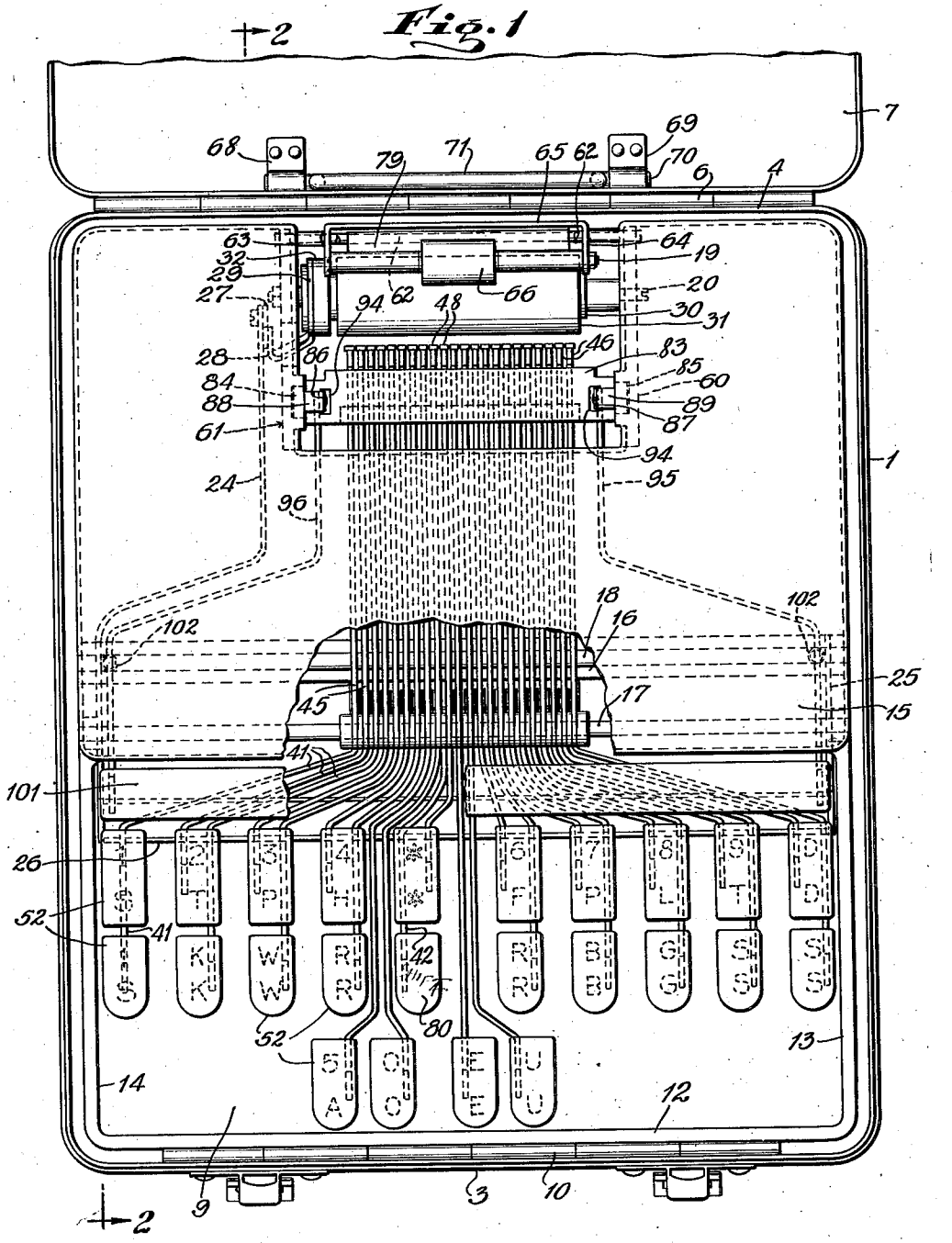
Dec. 17, 1935. H. BATES 2,024,622

WRITING MACHINE

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Fig. 1



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Fig. 3

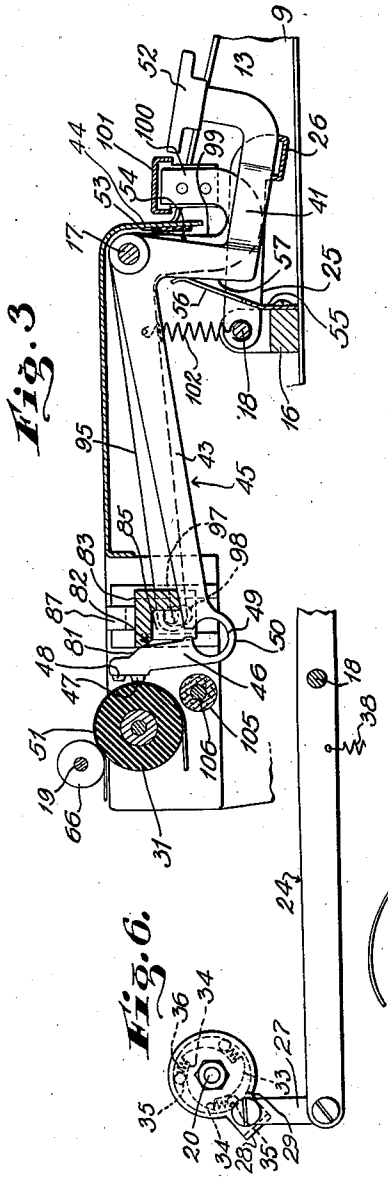
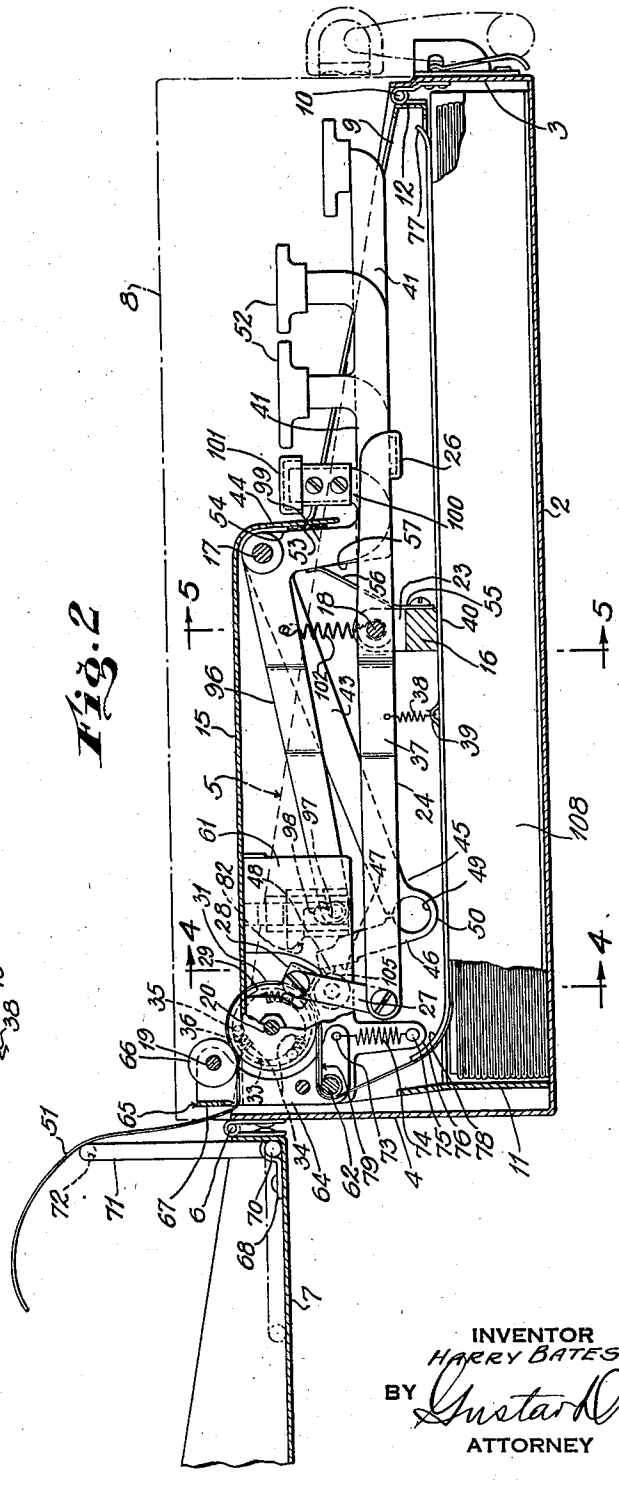


Fig. 6.

Fig. 2



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Fig. 4

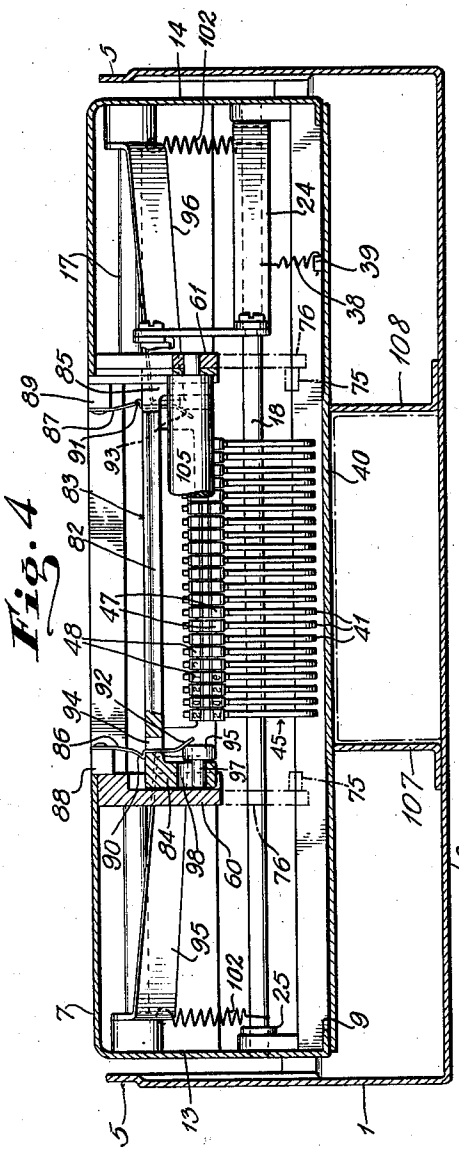
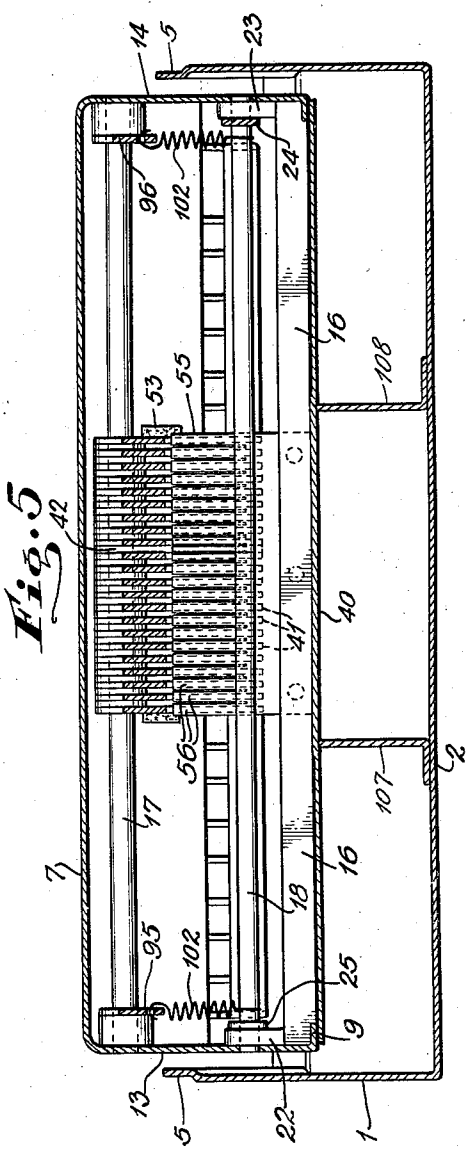


Fig. 5



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2,024,622

WRITING MACHINE

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Application April 25, 1934, Serial No. 722,248

11 Claims. (Cl. 197—9)

This invention relates to writing machines in general and more especially to so-called shorthand writing machines of the type known as phonetic typewriters, stenotypes, stenographs and the like.

Among the objects of the present invention, it is aimed to provide an improved writing machine especially adapted for shorthand writing and the like in which lost motion is reduced to a minimum not only in the interest of simplifying the construction and therefore the cost of construction but also in the interest of noiseless operation.

It is still another object of the present invention to provide an improved writing machine especially adapted for shorthand writing and the like which dispenses with an inking ribbon and associated parts, relying upon an inking roller which will cooperate with the type to effect inking preparatory to each printing impression.

It is still another object of the present invention to provide an improved writing machine especially adapted for shorthand writing and the like in which the key bar and type bar constitute an integral unit.

It is still another object of the present invention to provide an improved type bar integral with the key bar for use with a writing machine and the like.

It is still another object of the present invention to provide an improved type bar action comprising a unitary type bar and key bar formed to cooperate with an inking roller preparatory to a printing impression and cooperate with a cam to effect a printing impression.

It is still another object of the present invention to provide an improved writing machine especially adapted for shorthand writing and the like hinged to a case having a compartment below the machine parts for a supply of paper, preferably fan folded and so positioned relative to one another that the paper can be threaded from said supply through the machine and in turn access be had to said compartment by merely raising the machine parts about its hinge.

It is still another object of the present invention to provide an improved writing machine especially adapted for shorthand writing and the like in association with a case having a hinged cover adapted to swing to the rear of the platen and equipped with a paper support to facilitate supporting the strip of paper as it is printed in position to be readily inspected by the operator for the purpose, as an instance, of reading back the matter previously printed.

These and other features, capabilities and advantages of the invention will appear from the subjoined detail description of specific embodiments thereof illustrated in the accompanying drawings in which

Figure 1 is a plan view partly broken away of a writing machine made according to the present invention in position in its case;

Fig. 2 is a section on the line 2—2 of Fig. 1;

Fig. 3 is a fragmental section showing the type in printing position;

Fig. 4 is a section on the line 4—4 of Fig. 2;

Fig. 5 is a section on the line 5—5 of Fig. 2; and

Fig. 6 is a fragmental detail of another embodiment of the platen rotating mechanism.

For the embodiment of Figs. 1 to 5 inclusive, there is provided a case 1 preferably having a base 2, a short front wall 3, a rear wall 4 preferably of greater altitude than the wall 3 and two inclined side walls 5.

The case 1 preferably has hingedly connected at 6 a cover 7 which in closed position corresponds to the dash and dot line 8 shown in Fig. 2.

The writing machine proper consists essentially of a frame 9 preferably hinged at its upper front edge 10 to the upper inner face of the wall 3. The frame 9 preferably has a downwardly extending support 11 consisting in the present instance of a plate which rests on the base 2 to cooperate with the hinge 10 to maintain the frame 9 in writing position. The frame 9 preferably consists of a unitary wall member having a short front wall 12, side walls 13 and 14 and a transversely extending cover plate 15. The supporting wall 11 may also form an integral part of the frame 9 connecting the side walls 13 and 14.

For supporting the machine parts, the side walls 13 and 14 in the present instance have connected to them the crossbar 16 and rods 17 and 18. The crossbar 16 is preferably disposed adjacent the lower ends of the side walls 13 and 14 and about half way between the front wall 12 and supporting wall 11.

The rod 18 in the present instance constitutes a shaft being journaled not only in the side walls 13 and 14 but also in the bearings 22 and 23 extending upwardly from the crossbar 16 adjacent the inner faces of the side walls 13 and 14.

To this shaft 18 in the present instance is fixed

the lever 24 and the arm 25. The front end of the lever 24 and of the arm 25 have secured adjacent their lower ends the crosspiece 26.

The rear end of the lever 24 is pivotally connected by the link 27 to the projection 28 extending forwardly from the lower end of the disc 29 rotatably supported on the rod 20.

On the rod 20, there is also rotatably mounted the cylinder 30 to which is secured the platen 31. The left hand end of the cylinder 30 in the present instance has fixed thereto a chambered collar 32 in which is disposed the notched disc portion 33 of the disc 29. The disc portion 33 in the present instance has three spirally extending notches 34 each to receive a ball 35 and a spring 36 urging the ball outwardly from the cylinder of each notch 34 normally into frictional engagement with the inner face of the collar 32. The rearwardly extending arm 37 of the lever 24 is preferably connected by the spring 38 to the abutment 39 formed on the plate 40 connected to the lower face of the crossbar 16.

From the foregoing, it will appear that when the crosspiece 26 is depressed, the lever 24 will actuate the link 27 in turn to actuate the disc 29 to cause the balls 35 to engage the inner face of the collar 32 and thereby advance the platen 31 a line space and that the return movement of the lever 24 by the spring 38 will return the disc 29 when the balls 35 will depress the springs 36 in turn sufficiently to clear the inner face of the collar 32 without rotating the platen 31.

The crosspiece 26 is limited in its upward movement by engaging the lower faces of the key bar arms 41 and 42. The key bar arms 41 constitute an integral part of the type bar arms 43 all pivotally mounted on the rod 17 which is journaled in the side walls 13 and 14 adjacent the front end of the wall 15 inside of the rear face of the depending portion 44 of the wall 15. Each key bar arm 41 is integral with a type bar arm 43 to form a single lever 45.

Each lever 45 has formed at the rear end of a key bar arm 43 an upwardly extending type supporting arm 46 to the rear upper face of which there are provided two type formations 47 and 48. Each lever 45 intermediate its arm portions 43 and 46 is provided with an enlarged opening 49 preferably circular as shown in Fig. 2.

The levers 45 are preferably composed of steel, the resiliency of which is sufficient to permit the arm portions 46 to yield relative to the arm portion 43 in the narrow connecting area 50.

This resilient area 50 is deliberately formed to facilitate causing the type formations 47 and 48 to be pressed into printing position on the paper or like material 51 mounted on the platen 31.

The arm portion 41 of each lever 45 is substantially U-shaped having a key or finger engaging cap 52 on the upper free end of the same. The depending portion 44 of the plate 15 preferably has secured to its inner face a pad 53 composed of some suitable resilient substance, such as rubber or the like to serve as a cushion or bumper to receive the front edges 54 of the arms 41. For maintaining the levers 45 in normally retracted position against the cushion 53, there is provided the slitted spring plate 55 secured at its lower end to the front face of the crossbar 16, the slits being formed to produce a number of spring fingers 56 corresponding to the number of levers 45 with each spring finger 56 engaging a rear edge 57 of an arm 41.

In the present instance extending downwardly from the upper wall 15, there are provided the two castings 60 and 61. Extending transversely from one wall 60 to the other wall 61, there is provided the pin 62, Fig. 2, which extends through the lateral extensions 63 and 64, Fig. 1, of the bracket 65 to pivotally mount the bracket 65 relative to the side walls 60 and 61. At the upper end of the lateral extensions 63 and 64, there is journaled the shaft 19 of the pressure roller 66 for engaging the paper 51 to maintain the same in feeding engagement with the platen 31. To the rear of the roller 66, there is formed on the bracket 65 the short guiding wall 67 beneath which the paper 51 extends after leaving the roller 66 and then passes over the upper edge of the rear wall 4 of the casing 1.

In the present instance and as forming an important part of the present invention, a cover 7 is provided with the bearing brackets 68 and 69 for frictionally securing the longitudinal limb 70 of a rectangular shaped supporting bracket 71. This supporting bracket 71 may be moved into descended position, the dash and dot line position of Fig. 2, when it will engage with the inner face of the cover 7, or it may be moved into raised position, the full line position of Fig. 2, when it will engage the short wall 6 of the cover 7. The raised position of course will only take place when the cover 7 is open. In this position, the paper after passing the lower edge of the wall 67 will extend over the upper edge of the horizontally extending limb 72 of the bracket 71, as shown in Fig. 2. This bracket 71 will facilitate reading back any of the immediately preceding dictated matter without requiring engagement of the paper by the hands of the operator.

For maintaining the roller 66 in frictional engagement with the paper 51, the lower ends of the bracket 65 are provided with abutments 73 which are connected by springs 74 with abutments 75 on the downwardly extending arms 76 of the side walls 60, 61.

The paper 51 is preferably mounted in a supply chamber and is preferably formed, see Fig. 2, into a fan folded package between the walls 3 and 11 resting on the base 2 and disposed below the plate 40. The plate 40 is preferably curved upwardly at its front and rear ends 77 and 78 and particularly at its rear end 78 to form a mouth with the wall 11 to permit the paper to pass upwardly around the outer face of the curved end 78 of the plate 40 to and over the spring finger 79 mounted on the rod 62 and then onto the platen 31. The spring finger 79, see Fig. 2 extends across the lower end of the platen 31 to yieldably maintain the paper in engagement with the platen 31.

The rod 62 and shafts 19 and 20 are preferably mounted at their ends in the side walls 60 and 61. The arm portion 42 similar to the arm portions 41 is provided with a finger engaging cap 80. The arm portion 42 however, see particularly Fig. 1, is adapted merely to rotate the platen a line space without effecting a printing impression. This arm portion 42 therefore is not integral with a rearwardly extending type arm portion but terminates on the shaft 17. The lower face of the arm portion 42 however alines with the lower faces of the arm portions 41 to engage the crosspiece 26 so that the depression of the key 80 will cause the crosspiece 26 to be depressed and thereby the platen 31 to be rotated a line space without actuating any type bar element.

In accordance with the practice heretofore

followed, the present machine is also equipped with twenty-four keys or finger engaging caps, twenty-three caps 52 and one cap 80. Also in accordance with the practice heretofore followed, the two caps 52 at the extreme left hand end of the keyboard are connected to a single key element 41. All the other caps 52 are connected to an individual key arm 41 and the key 80 is also connected to its individual arm 42.

In dotted lines, the characters corresponding to the caps 52 are marked on the caps 52. It is of course understood that in the machines extensively in use today, there are no character markings on the keys or caps 52. The cap 80 as aforesaid is not connected to print any character and therefore has no character marking on the same.

The type 48 formed on the arm 46 consists of the following:

STPH*FPLTDSKWR RBGSSAOEU

The type 47 consists of the following characters:

1 2 3 4 * 6 7 8 9 D 1 K W R RBGSS5OEU

For effecting the printing of the type 48, the ordinary depression of a key 52 will cause the shoulder 81 to engage the inclined face 82 of the crossbar 83 which is provided with the depending portions 84 and 85 disposed to slide vertically adjacent to the inner faces of the walls 60 and 61. The crossbar 83 is maintained in its lower position for effecting an impression of a type 48 by the spring arms 86 and 87 connected to the projections 88 and 89 respectively secured to the inner faces of the upper ends of the side walls 60 and 61. The spring arms 86 and 87 are provided with projections 90 and 91 to engage the upper face of the crossbar 83, see Fig. 4.

These spring arms 86 and 87 have depending fingers 92 and 93 extending downwardly through the openings 94 in the crossbar 83, with the lower ends of the fingers 92 and 93 inclined toward one another to form cam faces to engage the upper ends of the arms 95 and 96. These arms 95 and 96 are provided with pins 97 which extend into the slots 98 formed in the depending portions 84 and 85 of the cross arm 83. The arms 95 and 96 extend forwardly and are pivotally mounted on the rod 17 and then extend downwardly into the portions 99 and then in the upwardly extending portions 100, finally connected to the finger engaging bar 101, disposed adjacent to the front face of the downwardly extending wall 44 and to the rear of the caps 52 as part of the keyboard.

In order to return the bar 101 into raised position where the shoulders 90 and 91 engage the upper face of the crossbar 83 to effect printing of the type 48 as distinguished from the type 47, the springs 102 are provided, connecting the arms 95 and 96 with the rod 18.

When it is desired to effect printing of a type 47, it is only necessary first to depress the bar 101 so that the arms 95 and 96 deflect the fingers 92 and 93 inwardly in turn to cause the shoulders 90 and 91 to clear the bar 83 and then permit the pins 97 to engage the upper end of the slots 98 to raise the crossbar 83 so that its cam face 82 will not be engaged until the type lever 45 actuated rises a greater distance than that required for printing a type 48.

In Fig. 3, the bar 101 has been depressed to raise the cam face 82 into position to cooperate with the shoulder 81 of a type bar to effect printing of a type 47, whereas in Fig. 2, the dotted line position of the shoulder 82 indicates the position where the bar 101 has not been depressed, to wit the position illustrated in Fig. 4 where the cam face 82 will cooperate with the shoulder 81 to effect printing of a type 48.

The actual printing impression will of course result from the fact that when the shoulder 81 engages the cam face 82, it will deflect the arm portion 46 mainly about the resilient area 50 to cause the type 47 or 48 to engage the paper 51.

In the path of movement of the type 47 and 48, there is provided a printing roller 105 mounted on the shaft 106 journaled in the side walls 60 and 61.

The lower edge of the plate 67 preferably is serrated as shown in Fig. 2 to serve as a tearing strip when it is desired to sever the used portion from the supply. As shown in Figs. 4 and 5, the supply of paper 51 is preferably confined against lateral displacement by the partitions 107 and 108 connected to and extending up from the base.

In the embodiment shown in Fig. 6, the projection 28 normally extends rearwardly from the lower end of the disc 29 so that upon depression of a key 52 or 80, the platen 31 is not rotated or advanced but on the other hand upon the release of the crossbar 26, the spring 38 will return the lever 24 and then cause the friction balls 35 to engage the inner face of the collar 32 to advance or rotate the platen 31.

In other words, the feed of the platen 31 with that embodiment will be effected after a printing impression instead of during a printing impression.

It is obvious that various changes and modifications may be made to the details of construction without departing from the general spirit of the invention as set forth in the appended claims.

I claim:

1. In a writing machine, the combination with a plurality of combined key bars and type bars, each consisting of a pivotally mounted lever having two arms, a finger engaging key at the end of one arm and type formed at the end of the other arm and a flexible portion intervening between the pivot and the type, of a platen for writing material, an inking roller in the path of movement of said type when actuated, and a cam cooperating with the type supporting arm of said lever when the key supporting arm thereof is depressed to flex said intervening portion and force the type into type impressing relation with the writing material on said platen.

2. In a writing machine, the combination with a plurality of type supporting levers, each lever consisting of a combined one-piece key bar and flexible type bar, of a platen for writing material, an inking device in the path of the type on said levers when actuated, and a cam cooperating with a part of said levers when actuated to press a part of the type bar portion thereof into type-impressing relation with the writing material on said platen.

3. In a writing machine, the combination with a plurality of type supporting levers, each lever consisting of a one-piece substantially rigid key supporting arm and a flexible type supporting arm, of a platen for writing material, an inking device in the path of the type on said levers when actuated, and a cam cooperating with a part of said levers when actuated to flex a part of the type arm thereof into type impressing relation with the writing material on said platen.

4. In a writing machine, the combination with

a plurality of type supporting levers, each lever consisting of a one-piece metal substantially rigid key supporting arm and a flexible type supporting arm, the type supporting arm consisting of two portions separated by a flexible portion, of a platen for writing material, an inking device in the path of the type on said levers when actuated, and a cam cooperating with a part of said levers when actuated to flex a part of the type arm thereof into type impressing relation with the writing material on said platen.

5. In a writing machine, the combination with a plurality of type supporting levers, each lever consisting of a one-piece metal substantially rigid key supporting arm and a flexible-type supporting arm, the type supporting arm consisting of two portions separated by a weakened portion to facilitate flexure, of a platen for writing material, an inking device in the path of the type on said levers when actuated, and a cam cooperating with a part of said levers when actuated to flex a part of the type arm thereof into type impressing relation with the writing material on said platen.

6. In a writing machine, the combination with a plurality of type supporting levers, each lever consisting of a one-piece metal substantially rigid key supporting arm and a flexible type supporting arm, the type supporting arm consisting of two portions separated by a flexible portion, one of which portions has type on one side and a cam engaging face on the other side, of a platen for writing material, and a cam cooperating with the cam engaging face of an actuated lever to flex the type arm thereof into type impressing relation with the writing material on said platen.

7. In a writing machine, the combination with a plurality of type supporting levers, each lever consisting of a substantially rigid key supporting arm and a flexible type supporting arm, the type supporting arm consisting of two portions separated by a flexible portion, one of which portions has two type formations on one edge and a cam engaging face on the other edge, of a platen for writing material, a cam, and a shift device controlling the position of said cam to cooperate with the cam engaging face of a type supporting arm of an actuated lever to flex the type arm thereof into type impressing relation of either of the type formations with the writing material on said platen.

8. A type supporting lever for a writing machine consisting of a key supporting arm and a flexible type supporting arm, the type supporting arm consisting of two portions separated by a flexible portion, one of which portions has a type formation on one edge, and a cam engaging face on the other edge, the cam engaging face being adapted to cooperate with a cam to press the type formation into type impressing position by flexing said portion.

9. In a writing machine, the combination with a plurality of type supporting levers, each lever consisting of a one-piece substantially rigid key supporting arm and a flexible type supporting arm, of a platen for writing material, and a cam cooperating with said levers when actuated to flex the type arm thereof into type impressing relation with the writing material on said platen.

10. In a writing machine, the combination with a support for writing material, of a plurality of type supporting levers, each lever consisting of a one-piece substantially rigid key supporting arm and a flexible type supporting arm, and a device for cooperating with said levers when actuated to deflect the type supporting arms thereof into type impressing relation with the writing material on said platen.

11. In a writing machine, the combination with a support for writing material, of a plurality of one-piece type supporting levers, each lever consisting of a key supporting arm and a type supporting arm including an intervening flexible portion, and a device for cooperating with a part of said levers when actuated to flex said flexible portions in turn to actuate the type supporting arms into type impressing relation with the writing material on said platen.

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