June 10, 1930. J. C. M. SCHNEIDER 1,763,372

TYPEWRITING MACHINE

Filed Jan. 19, 1927

FIG. 1.

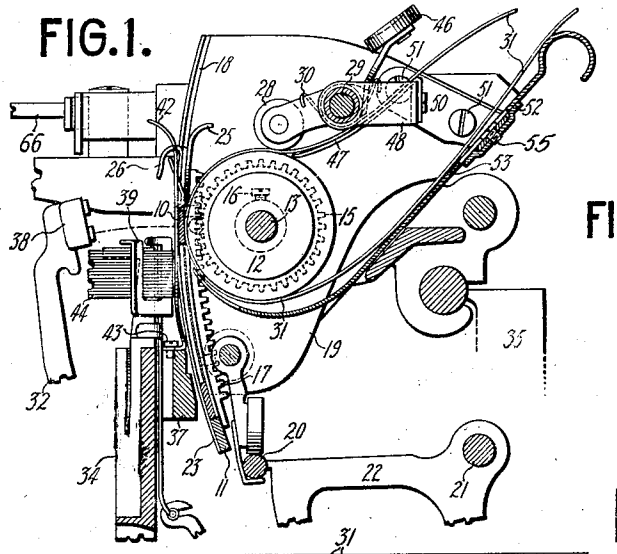


FIG. 4.

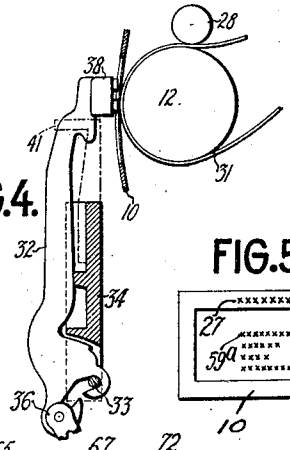


FIG. 5.



FIG. 6.

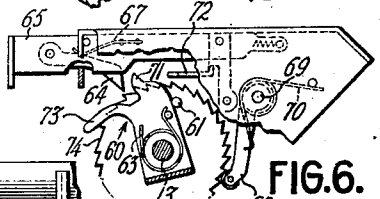


FIG. 2.



FIG. 7.

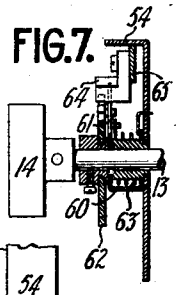


FIG. 3.



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1,763,372

# UNITED STATES PATENT OFFICE

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## TYPEWRITING MACHINE

Application filed January 19, 1927. Serial No. 161,971.

This invention relates to stencil-card typewritting machines in which a stencil-card is reciprocated in front of a platen and is elevated to the printing line by means of a line-spacing mechanism.

The card-holding frame is first in its uppermost position for receiving the card, and is then lowered to its lowermost position by pressing thereon so that a line of typing may be printed on the upper edge of the card-frame. Then, by operating the line-spacing mechanism, the card is positioned for the first line of typing on the stencil-sheet, and, after completely typing an address, the frame is restored to its initial position and the card is withdrawn from the frame and another card is inserted therein.

According to some features of this invention the card-holding frame is slightly curved and contacts with the platen in the vicinity of the printing line. The curving of the frame facilitates typing on a case-shift machine, and it clears some of the mechanism in the machine especially the segment, which carries all the type-bars. This segment is provided with an anvil against which all the type-bars strike, to prevent blurring of the typing, and is made very strong and heavy, and therefore bulky. Heretofore in mounting a card-holding frame between the type-bar segment and the platen it has been necessary to cut away a portion of the segment, thereby weakening the same, which is objectionable.

The new organization includes a platen of reduced diameter, which affords room to permit the introduction of the card-holding frame without cutting away the type-bar segment, and it also includes special type-bars provided with extra long type-heads, which are compensatory to the reduction of the diameter of the platen, so that the types may strike the reduced platen. The diameter of the platen may be about one-quarter of an inch smaller than the standard platen, which is one and three-quarter inches in diameter. This requires building up the type-head one-eigth of an inch. By means of this novel arrangement ample space is obtained between the platen and the type-bar segment so that a strong card-holding frame may be freely operated therebetween.

According to another feature of this invention the platen is loosely mounted on the platen-shaft, which is geared to the card-holding frame. Around this loose platen a strip of celluloid or other composition of similar character is passed and is held in place by means of a pressure-roll which is effective to prevent rotation of the platen when the card is line-spaced by operation of the platen-shaft. The advantage of using celluloid as a backing for stencil-cards is well known, but heretofore the practice has been to secure a small piece of celluloid around the platen by means of screws or otherwise. Since the celluloid has to be replaced often much time is wasted in this work. This new arrangement saves time and celluloid. After using a portion of the celluloid strip for some time the same may be moved around the platen to present a fresh portion thereof to the types, by simply pulling on the leading edge of the celluloid.

In order that the ribbon may be guided near the reduced platen, it is necessary to rearrange the ribbon-vibrator so that the ribbon itself is deflected about one-eighth of an inch further back than is the standard practice. This may be done by simply bending or building up the ribbon-vibrator.

In order to facilitate the insertion of the card in the card-holding frame, which latter is sometimes likely to bulge and then strike the ribbon, it is also proposed to provide the machine with a unitary deflecting finger which is secured the type-bar segment. This finger extends considerably above the top edge of the ribbon and is flared outwardly, away from the platen, the ribbon being mounted in front of the finger which is provided with an opening to permit typing therethrough.

Other features and advantages will hereinafter appear.

In the accompanying drawings,

Figure 1 is a cross-sectional view through the center of an Underwood machine having the invention applied thereto.

Figure 2 is a front view showing the stencil-card in its lowermost position.

Figure 3 is a cross-sectional plan view through the center of the platen.

Figure 4 is a diagrammatic view showing a built-up type-bar in its operative position striking against a small platen.

Figure 5 is a detail of the card showing how the lines are unevenly spaced thereon.

Figure 6 is an end view of the platen-frame showing the line-spacing mechanism.

Figure 7 is a cross-sectional view showing the line-spacing ratchet and other mechanism associated therewith.

A stencil-card 10 is inserted, bottom edge down, in a card-holding frame 11 which is arranged to be moved up and down in front of a platen 12 rotatably mounted on a platen-shaft 13 which is in turn rotatable by means of finger-pieces 14 at the ends thereof. The shaft is operatively connected to the frame by means of a pair of gears 15, which are fastened to the shaft by a screw 16, and by means of which racks 17 form integral parts of the card-holding frame. The latter is slightly curved and slides in grooves 18 cut in the end plates 19 carried by the platen-frame of the machine, which is case-shifted by means of a supporting rail 20 carried by arms 22 mounted on a cross-shaft 21. The card is held in place in the frame by means of front plates 23 which, together with the frame, confine the edges of the card. Said plates are attached to the frame by means of screws 24, and are provided at the top thereof with finger-pieces 25 and 26 for moving the frame downwardly to position the card for the first line of typing 27 on the upper edge thereof.

During line-spacing of the card, the platen, which is loosely mounted on the shaft, is held stationary by means of a pressure-roller 28 which is pivotally mounted on a cross-bar 29 and is held in contact with the platen by means of a spring 30 coiled around the shaft. A celluloid strip 31 may in this manner be held around the platen in immovable position during line-spacing of the card, so that the same portion of the celuloid may serve as a backing for many lines of typing on the stencil. When it is desired to line-space the celluloid strip the same is pulled forwardly by gripping the leading edge thereof, thereby presenting a fresh portion of the strip to the printing line.

The Underwood machine is provided with type-bars 32 which are pivotally mounted on a rod 33 carried by a type-bar segment 34 fixed to the frame 35 of the machine. The type-bars are swung to strike the platen by means of bell-cranks 36 which are operated by a series of keys, not shown. The type-bar segment 34 is reinforced by a cast-iron cross-bar 37 which tends to prevent vibration of the types when typing very fast. Owing to the compact construction of the Underwood machine, said cross-bar 37 is just strong enough to withstand the strain placed thereon. Heretofore, however, in order to provide space for operating a card-holding frame between said cross-bar and the platen, it was necessary to cut away a portion of the cross-bar. This weakening of the type-bar segment is objectionable. Acording to this invention, instead of cutting the cross-bar in order to make room for the card-holding frame, it is proposed to make the platen much smaller than the standard size and to move the card-holding frame backwardly away from the cross-bar so as to obtain the necessary clearance. This sets the printing point further back in the machine relatively to the type-bars, and since the platen-shaft is maintained in its original position, the type-heads must be moved nearer to the platen. For this reason the type-bars are provided with special type-heads 38 which are soldered to the type-bars 32 and extend far enough to the rear to strike the platen.

In order that the ribbon may be moved near the platen, a ribbon-vibrator 39 is increased rearwardly by an extension 40 which is welded thereto at each side of the type-slot, as shown more clearly in Figure 3. The ribbon-vibrator is arranged to be moved up and down in front of the types in the regular manner and is slidably mounted on a type-guide 41 carried by the type-bar segment.

According to another feature of this invention there is provided a card-deflector 42 which is fast to the cross-bar 37 by means of screws 43 and serves as a means for preventing the bottom edge of the card from engaging the top edge of the ribbon 44 when the card is placed in the card-holding frame. This deflector 42 may be mounted between the platen and the ribbon-vibrator and is provided with an opening 45 through which the type may strike the card. The upper edge of the deflector is flared away from the platen to further facilitate the insertion of the card in the card-holding frame.

Insertion of the celluloid strip around the platen is facilitated by providing a finger-piece 46 which is effective to swing the roller 28 away from the platen. Thus the leading edge of the strip is easily passed over a guiding plate 47 which spaces the intake and delivery ends of the strip. The tension on the roller 28 may be regulated by operating the screws 49 which hold the cross-bar 29 in place. The guiding plate is carried by a bail-piece 48, pivotally mounted on the cross-bar 29.

It is desired to double space the card between the line of typing 27 on the upper edge of the card and the first line of typing $59^a$ on the stencil-sheet. To this end, there is provided a cam-plate 60 which is pivotal-

ly mounted on the platen-shaft and is held in the position shown in Figure 6 by means of a pin 61. The latter is fixed to a line-space ratchet 62 and holds the cam-plate 60 against the tension of a spring 63. The ratchet is line-spaced by means of a pawl 64, which is held in engagement therewith by means of a spring 67 and is carried by a slide 65, operated by a line-spacing handle 66. A retaining pawl 68, pivotally mounted at 69, is held in contact with the ratchet 62 by means of a spring 70. When first line-spacing the slide 65, the pawl 64 engages the teeth of the ratchet 62 and moves the same two spaces. At this time the pawl engages also a projection 71 on the cam-plate 60 to thereby move the cam-plate against a stop 72 carried on one of the end plates 54. During other line-spacing movements of the slide 65, the pawl rides over an extension 73 of the cam-plate 60 which has previously been moved to operating position so that only one tooth of the ratchet 62 is engaged by the pawl. By means of this arrangement the card is automatically line-spaced, so that the distance between the first line of typing on the frame of the card and the first line of typing on the stencil-sheet is greater than the spacing between the other lines on the stencil-sheet. The ratchet may be the same as is usually used in the standard typewriting machines, except that one of the teeth is cut away at 74 to limit the number of lines which may be written on the card. When the ratchet is moved so that the mutilated tooth is in front of the pawl, the latter will move idly and no further line-spacing of the card will occur. The present invention may be used in connection with the line-spacing mechanism disclosed in my pending application, Serial No. 132,114, filed August 28, 1926, now Patent No. 1,725,542, dated August 20, 1929, in which a separate retaining ratchet-wheel is associated with a specially constructed line-space ratchet-wheel.

This device is specially designed for hard, continuous service. The structure is therefore strongly reinforced so as to reduce wear and tear to a minimum and to reduce vibration during fast typing. To this end, the end plates 19 are secured by means of brackets 50, which are fast thereto, by means of screws 51, to a cross-bar 52 which carries a rear table 53 and serves as a means for joining together end plates 54 of the platen-frame. The brackets 50 are secured to the cross-bar 52 with screws 55.

The spacing between the plates 19 may be adjusted to fit the width of the card-holding frame by means of screws 56 carried by hubs 57 which are slidably mounted on a shaft 59 and form integral parts of the plates.

The platen is preferably made of cast-aluminum and is cored so as to make it as light as possible to facilitate case-shifting of the platen-frame. The ends of the platen may be provided with bronze bushings 58 driven or otherwise secured thereto to form durable bearings for the platen on shaft 13.

Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others.

Having thus described my invention, I claim:

1. A stencil-card typewriting machine including a card-holding frame arranged to reciprocate in front of a platen and means for line-spacing the frame, said means including a line-spacing mechanism operatively connected to a platen shaft, gears carried by said shaft and racks on said card-holding frame for engaging the gears, the platen being loosely mounted on the platen shaft, and a resilient pressure roll running on the platen to hold the platen and prevent rotation thereof when line-spacing the card, the platen being independently rotatable to line-space a backing sheet therearound.

2. In a stencil-card typewriting machine, the combination of a card-holding frame having a card pocket, a platen, a platen axle, means for rotating said axle, means for operatively connecting the axle with the card-carrying frame, the platen being loosely mounted on the shaft, and a pressure roll for frictionally preventing rotation of the platen upon movement of the platen axle, said pressure roll being also effective to hold in place a strip of celluloid serving as a backing for the stencil-card.

3. In a typewriting machine having a platen, a card-carrying frame arranged to reciprocate in front thereof and a ribbon in front of the platen, means for deflecting the card during insertion thereof in the card-carrying frame, said means including a plate mounted between the ribbon and the platen adjacent the printing point, the upper edge of the plate being higher than the ribbon and having an opening therein in front of the ribbon through which opening the type may strike the platen.

4. In a stencil-card typewriting machine, the combination of a revoluble platen, a shaft therefor, end plates for rotatably supporting said shaft, a card-holding frame arranged to reciprocate in front of the platen upon rotation of the shaft, and a pressure roll for holding the platen against rotation and for holding a backing sheet therearound.

5. A stencil-card typewriting machine including in combination, a platen displaced rearwardly of the standard printing plane, a supporting shaft therefor, plates for rotatably supporting said shaft, there being a pair of gears fast to said shaft, a card-holding frame uniformly curved throughout its length along an arc having its axis a distance to the rear of the shaft and bodily slidable in correspondingly curved channels in said

plates in front of the platen, there being also racks carried by said frame for engaging said gears, and the platen being loosely mounted on said shaft for independent rotation thereon, a line-spacing mechanism operatively connected to the platen-shaft for line-spacing the card, and means for independently controlling said platen.

6. In a stencil-card typewriting machine, the combination with a platen, a shaft therefor, and a segment having type-bars pivoted thereon, of a card-carrying frame arranged to move up and down in front of the platen in a uniformly curved path of relatively large radius, the platen having the front printing face thereof set back from the standard printing plane of the machine, connections between the shaft and said frame to move the latter in said curved path upon line-spacing of the former, line-space mechanism for said shaft including a ratchet-wheel, a manually-operated pawl engaging said ratchet-wheel, and a retaining pawl for the same, and means co-operating with said line-space mechanism for producing automatically-variable line-spacing movement of said shaft, the rearward displacement of the front printing face of the platen co-operating with the curvature of the card-carrying frame in conformity with the curved path of travel thereof to provide ample space between the segment and the platen for the movement of said card-carrying frame.

7. In a stencil-card typewriting machine, the combination with a platen, and a shaft therefor, of a card-carrying frame arranged to move up and down in front of the platen in a uniformly curved path whose axis is located behind the shaft, connections between the shaft and said frame to move the latter in said curved path upon line-spacing of the former, line-space mechanism for said shaft including a ratchet-wheel secured on the platen-shaft, a manually-operated pawl engaging said ratchet-wheel, and a retaining pawl for the same, and means co-operating with said line-space mechanism for producing automatically variable line-spacing movement of said shaft, said means including a pivoted cam mounted in the path of said manually-operated pawl and associated with said ratchet-wheel so as to be settable to initially permit plural-space line-spacing of said shaft and be automatically set by said pawl to thereafter control the latter to uniformly line-space the shaft a smaller number of line-spaces upon the subsequent actuations of the pawl.

8. In a stencil-card typewriting machine, the combination of a platen, a shaft therefor, a card-carrying frame arranged to move up and down in front of the platen, connections between the shaft and said frame to move the latter upon line-spacing of the former, line-space mechanism for said shaft including a ratchet-wheel, a manually-operated pawl engaging said ratchet-wheel, and a retaining pawl for the same, means co-operating with said line-space mechanism for producing automatically-variable line-spacing movement of said shaft, said means including a cam in the path of said manually-operated pawl and initially settable to permit plural-space line-spacing of said shaft and automatically set by said pawl to thereafter control the latter to uniformly line-space the shaft a smaller number of line-spaces upon the subsequent actuations of the pawl, and means for limiting the line-spacing of the shaft to prevent accidental displacement of the card-carrying frame, said last-mentioned means including a cut-away tooth on said ratchet-wheel over which cut-away portion said manually-operated pawl will idly ride.

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