

Jan. 30, 1923.

1,443,698.

W. C. AVERY.
PAPER FEEDING APPARATUS FOR TYPEWRITERS.

FILED AUG. 25, 1921.

4 SHEETS—SHEET 1.

FIG. 1.

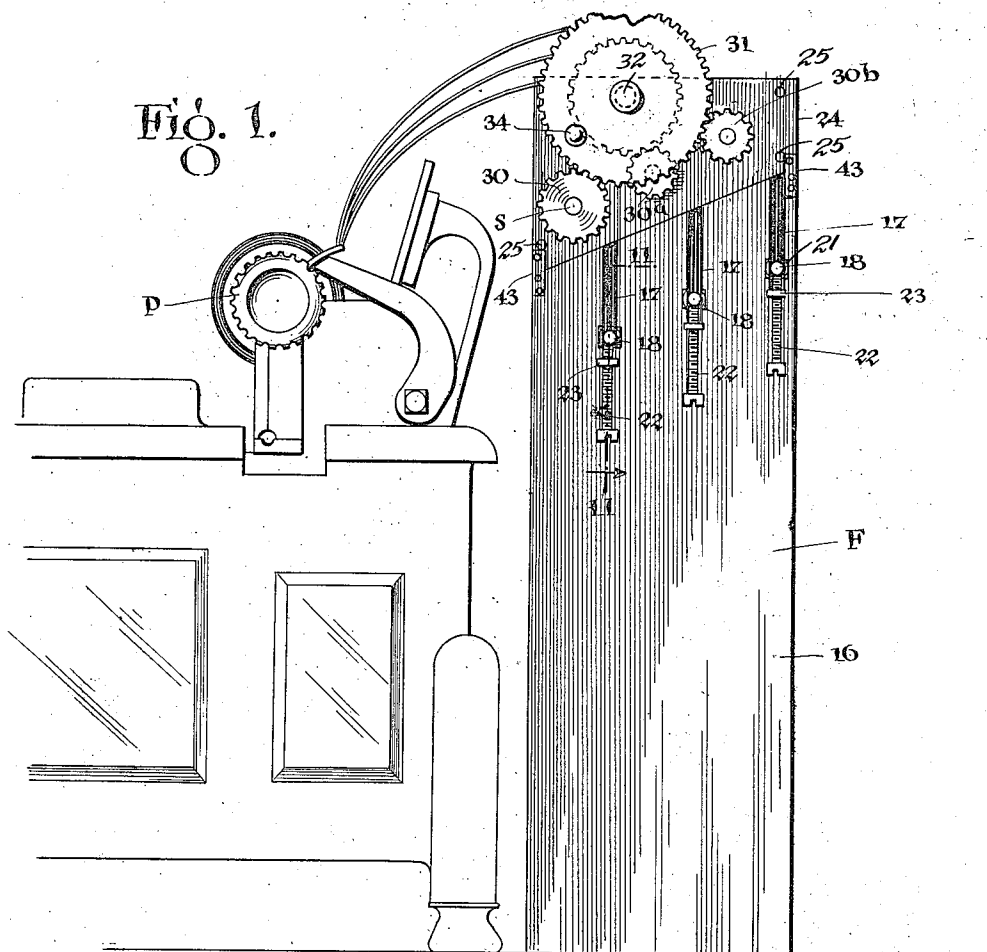


FIG 11.

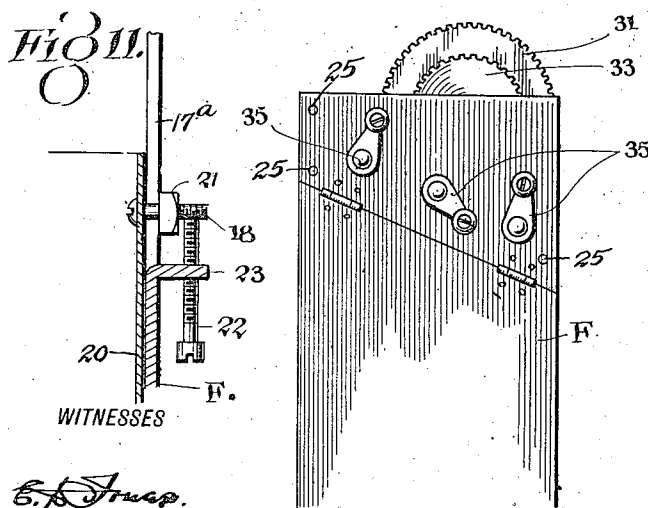


Fig. 2.

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4 SHEETS—SHEET 2.

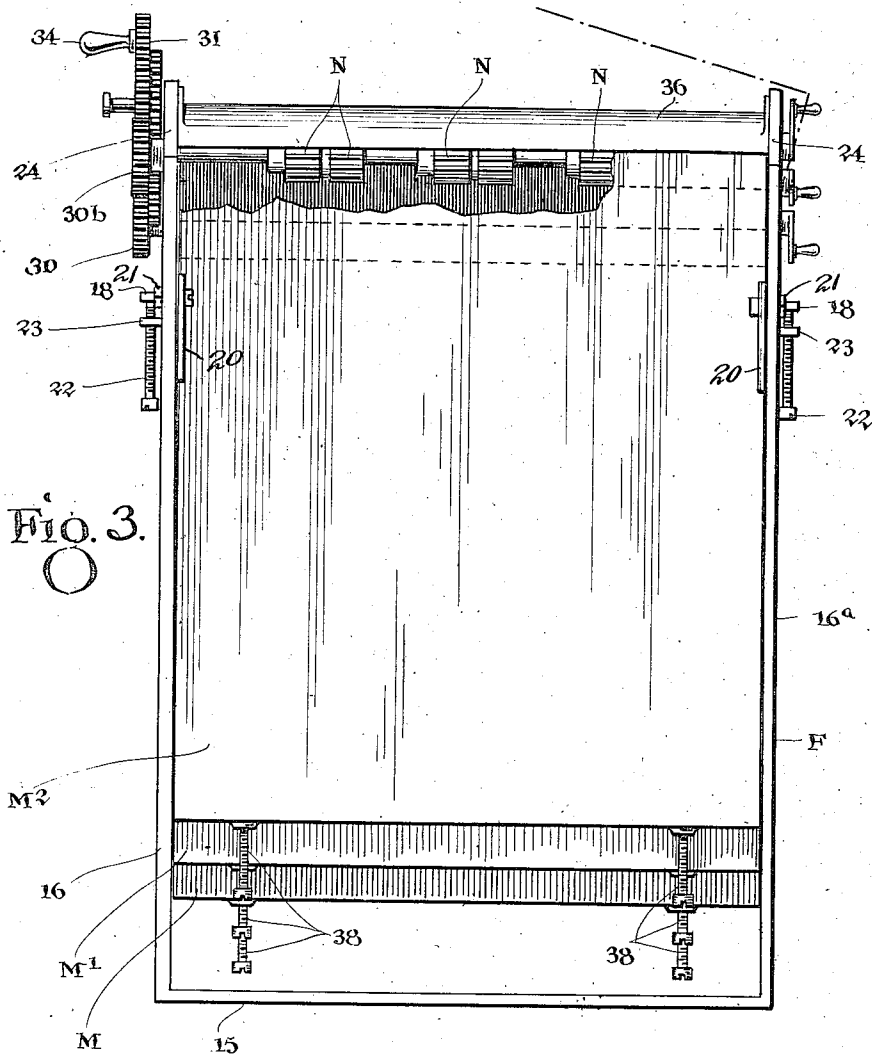
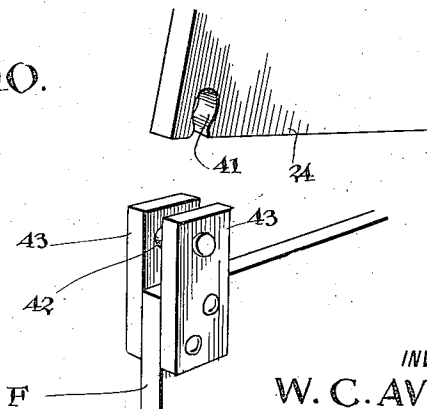


FIG. 3.
O

FIG. 10.
O



WITNESSES

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4 SHEETS—SHEET 3.

Fig. 4.

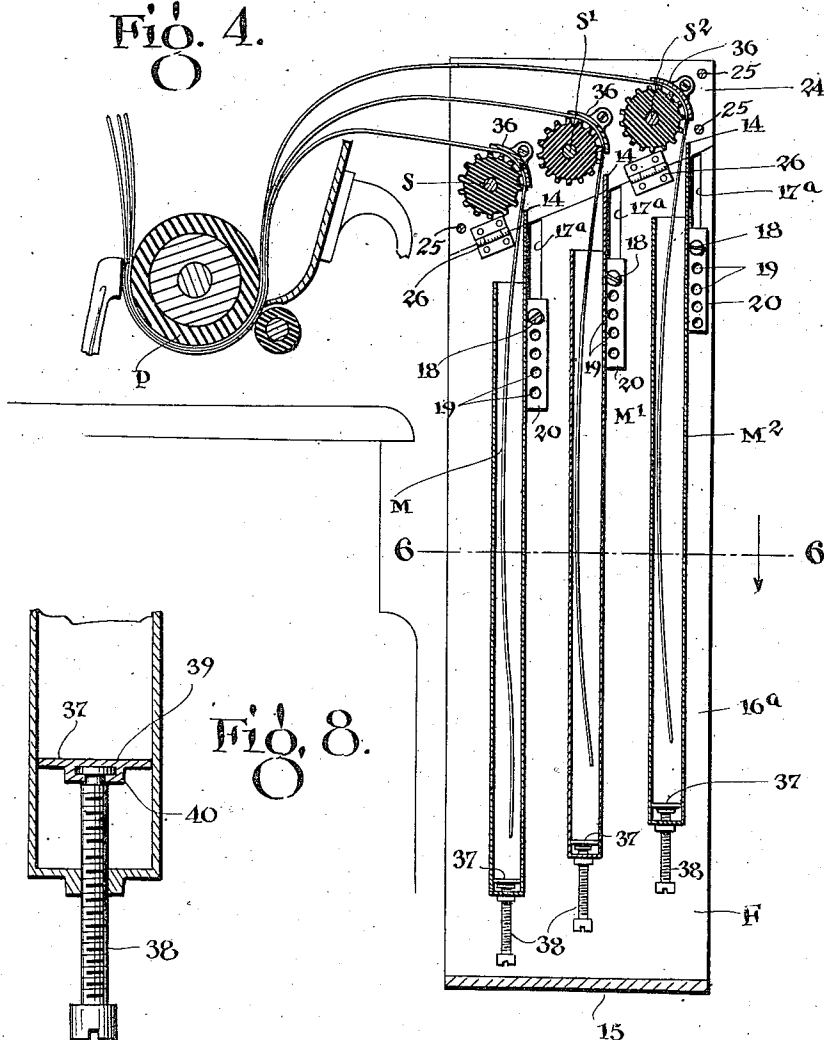


Fig. 8.

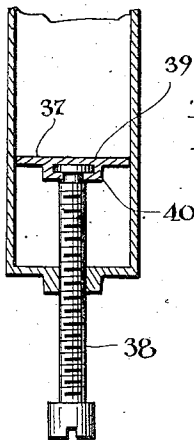
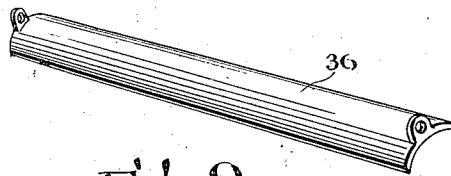


Fig. 9.



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4 SHEETS—SHEET 4.

Fig. 5.

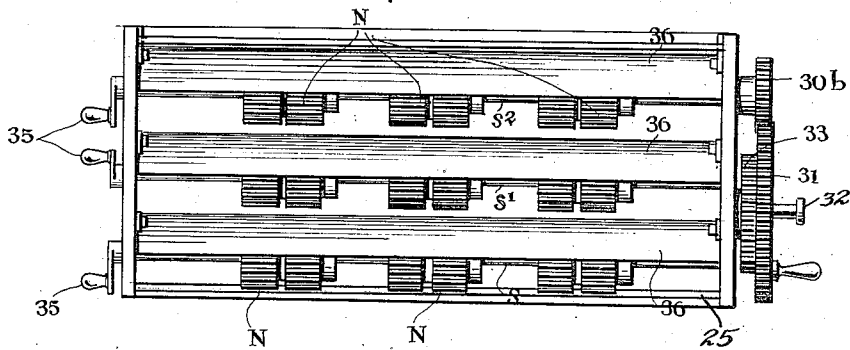


Fig. 6.

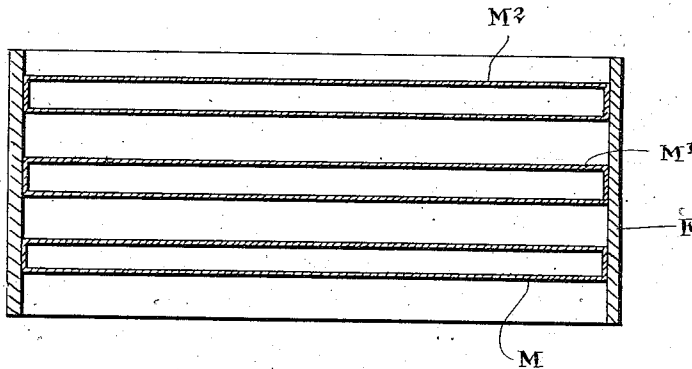
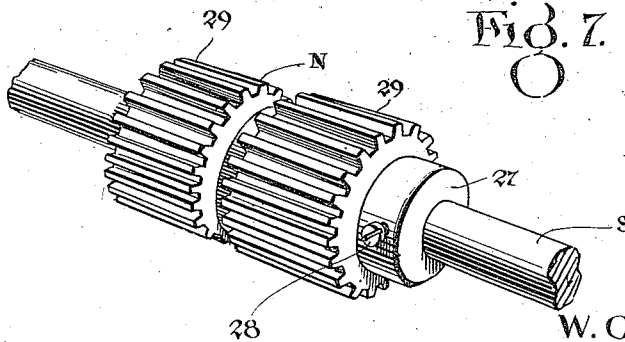


Fig. 7.



WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM CHARLES AVERY, OF HONOLULU, TERRITORY OF HAWAII.

PAPER-FEEDING APPARATUS FOR TYPEWRITERS.

Application filed August 25, 1921. Serial No. 495,277.

To all whom it may concern:

Be it known that I, WILLIAM CHARLES AVERY, a citizen of the United States, and a resident of Honolulu, Territory of Hawaii, have invented certain new and useful Improvements in Paper-Feeding Apparatus for Typewriters, of which the following is a specification.

My invention relates to apparatus for feeding sheets of paper to a typewriter, and my invention contemplates certain new and useful improvements in the apparatus as embodied in my Patent No. 1,373,700, issued April 5, 1921.

The purpose of my present invention is the provision of a paper feeding apparatus in which the paper containing trays or magazines are disposed perpendicularly and so arranged as to provide an extremely compact apparatus, and one which is simple in construction and operation.

It is also a purpose of my invention to provide a paper feeding apparatus having paper containing magazines which are pivotally supported to insure of the proper feeding of the papers from the magazine, and which are vertically adjustable to accommodate sheets of paper of different lengths and to so support the sheets that they will properly cooperate with the feed rollers in effecting the feeding of the sheets to the typewriter.

I will describe one form of paper feeding apparatus embodying my invention, and will then point out the novel features thereof in claims.

In the accompanying drawings:

Figure 1 is a view showing in side elevation a portion of a typewriter having applied thereto one form of paper feeding apparatus embodying my invention.

Figure 2 is a fragmentary view showing in side elevation the opposite end of the apparatus from that shown in Figure 1.

Figure 3 is a view showing in rear elevation the apparatus shown in Figure 1 with a portion thereof broken away to reveal parts not otherwise disclosed.

Figure 4 is a central vertical sectional view of a portion of the typewriter and the entire apparatus shown in Figure 1.

Figure 5 is a top plan view of the apparatus.

Figure 6 is a transverse sectional view taken on the line 6—6 of Figure 4.

Figure 7 is an enlarged detail perspective view showing a portion of one of the shafts and a pair of the feed rollers.

Figure 8 is an enlarged fragmentary vertical sectional view of the lower end of one of the magazines showing the follower.

Figure 9 is a detail perspective view of one of the guiding lips comprised in the apparatus.

Figure 10 is a fragmentary perspective view showing one of the latching means for securing the feeding device in operative position.

Figure 11 is a fragmentary sectional view taken substantially along the line 11—11 of Figure 1.

Similar reference characters refer to similar parts in each of the several views.

Referring specifically to the drawings and particularly to Figures 1 and 4, P designates the platen of a standard form of typewriter which is shown as arranged in advance of the paper feeding apparatus embodying my invention. The apparatus in the present instance comprises a frame F of U-shaped formation and including a base portion and side portions 16 and 16^a. As shown in Figures 1 and 4, the side portions 16 and 16^a are provided at their upper ends with vertically arranged slots 17 and 17^a, the upper ends of which are in communication with the upper edge of the frame so as to permit of the insertion of adjusting devices therein as will be described hereinafter. Supported for swinging movement between the sides 16 and 16^a are a plurality of magazines or trays designated at M, M¹ and M², respectively, although it is to be understood that any number of magazines can be provided depending upon the number of sheets desired to be fed to the typewriter. The upper ends of the magazines constitute the delivery ends from which the sheets of paper are adapted to be withdrawn. These delivery ends are provided with upwardly extending guide flanges 14 designed to guide the sheets of paper into contact with feed rollers. The magazines are supported in vertical position by means of screws 18 horizontally arranged within the slots 17 and 17^a, and se-

cured in any one of a plurality of openings 19 formed in a flange 20 secured to or formed integral with each of the magazines M, M' or M². As shown in Figure 11, each screw 18 is provided with nuts 21 arranged upon the shank of the screw to embrace the flange 20 and to secure the screw in horizontal position so that its free end will project through the corresponding slot 17 or 17^a to a point exteriorly of the frame. The projecting end of each screw is adapted to be engaged by an adjusting screw 22 threadedly fitted in a projection 23 preferably formed integral with the side portions 16 or 16^a of the frame F and disposed at the lower end of the slot 17 or 17^a. The arrangement of the screw 22 is such that its free end engages the projecting end of the screw 18 so that by adjusting the same vertically within the projection 23, a corresponding adjustment of the screw 18 is effected. By simultaneously adjusting the companion screws 22 of any one magazine M, M' or M², it will be clear that the corresponding screws 18 are likewise adjusted to effect a vertical adjustment of the corresponding magazine.

The upper end of the frame F supports and is adapted to be spanned by a feeding device which, in the present instance, comprises a pair of plates 24 secured in spaced relation by means of rods 25 and forming in effect a continuation of the side portions 16 and 16^a of the frame. This feeding device is supported for swinging movement to spanning and non-spanning positions with respect to the frame by means of hinges 26 secured to the upper edge of the frame and to the lower edge of one of the plates 24 so that the device as a whole can be swung from the spanning position shown in Figure 3 to a non-spanning position as indicated in dash lines in Figure 3.

The feeding device also includes a plurality of shafts S, S' and S² journaled in the plate 24 and upon each of which are secured a plurality of feeding units designated at N. As shown in Figure 4, the shafts are arranged in progressively ascending horizontal planes, and the feeding units of each shaft occupy a corresponding plane. As shown in Figure 7 each feeding unit comprises a sleeve 27 fixed to the shaft by means of a screw 28 and having secured thereto a pair of feed rollers 29, each of which is constructed of rubber and provided with radially extending teeth in the same manner as is the rollers embodied in my patent herein referred to. In the present instance I have provided three shafts one for each of the magazines, and three feeding units on each of the shafts, it being understood, however, that any number of feeding units may be provided and any number of rollers with each feeding unit.

The several shafts are adapted to be si-

multaneously rotated in effecting actuation of the feeding rollers for simultaneously feeding the sheets of paper from the several magazines, and to this end I provide one and the same end of the several shafts with pinions 30, 30^a, and 30^b for the shafts S, S' and S², respectively. The pinions 30 and 30^b mesh with a driving gear 31 slidably fitted in a stub axle 32 secured in the corresponding plate 24. The gear 31 has fixed thereto another gear 33 which meshes with a gear 30^a of the shaft S'. The gear 31 is provided with an operating crank 34 by means of which gears 31 and 33 can be rotated to effect actuation of the pinions and rotation of the shafts. As previously stated, the gear 31 is mounted for sliding movement on the axle 32, the purpose of this arrangement being to allow of the moving of any of the gears 31 out of mesh with the pinions and thus permitting of the independent or simultaneous actuation of any of the shafts. Any one shaft is adapted to be manually operated independently of the other shafts by means of a crank 35 fixed to the opposite end of the shaft from that end to which the pinion is secured, as clearly shown in Figure 2.

Associated with each of the feeding units N is a guiding lip 36 secured at its opposite ends with the plates 24 and spanning the space therebetween. These lips are so associated with the feeding units as to guide the sheets of paper into contacting relation with the feed rollers and to cooperate with the latter in effecting the feeding of the sheets from the several magazines to the platen of the typewriter.

As shown in Figures 4 and 8, each magazine is provided at its lower end with a follower 37 movably fitted within the magazine and adapted to be manually elevated or lowered through the medium of a pair of screws 38 threadedly fitted within the bottom wall of the magazine and provided with heads 39 rotatably fitted in sockets 40 formed on the follower 37. From this arrangement it will be seen that by rotating the screws in one direction or the other, a vertical adjustment of the follower is effected. The followers are designed for the purpose of supporting the sheets of paper within the magazine and irrespective of the length of the sheets. This facilitates the feeding of the sheets by the feed rollers as by an adjustment of the followers, the sheets can be supported so that their upper ends are disposed between the feed rollers and the guide lips 36 so that when the former are rotated they will effect vertical feeding of the sheets from the magazines.

As shown in Figure 10, one plate 24 of the feeding device is provided with orifices 41 having restricted mouths through which latch pins 42 are adapted to pass into the

orifices for temporarily securing the feeding device in proper position upon the frame. The latch pins 42 are secured within and in spanning relation to pairs of blocks 43 secured to the upper edges of the portion 16 of the frame F so that when the feeding device is moved into spanning position upon the frame, the pins will pass into the orifices 41 which, by virtue of the restricted mouths, temporarily maintain the device in spanning position.

In operation, the apparatus is arranged in vertical position and at the rear of the typewriter in the manner clearly shown in Figures 1 and 4, with the delivery ends of the magazines disposed directly below the feeding units so that the upper ends of the sheets of paper lie contiguous to the flanges 14 with the latter disposed adjacent the rear side of the feed rollers as is clearly shown in Figure 4. The magazine M is adapted to contain the original sheets of paper, the magazine M' containing the carbon sheets, and the magazine M² the copy sheets. With the gears 31 and 33 in mesh with the pinions of the several shafts S' and S², it will be clear that upon rotation of the gears, the several feeding units will be rotated in a counter-clockwise direction as when viewed in Figure 4 to engage the forwardmost sheet of each magazine and feed the same upwardly, outwardly and forwardly under the action of the guiding lips to the platen of the typewriter. It is to be understood that the flanges 14 cooperate with the guiding lips 36 in directing the sheets of paper into contact with the feed rollers, the lips also coacting with the rollers so that the teeth of the latter will effectively grip the sheets in feeding the same from the magazine. When the several sheets of paper have been fed far enough to be engaged by the platen, the operator then rotates the platen in the usual manner causing the further feeding of the sheets into proper position upon the platen. Prior to this manual feeding operation, the gears 31 and 33 are moved out of mesh with the pinions so that the independent rotation of the shafts and feeding units can be effected in order that the proper feeding of the sheets of paper to the platen can take place. This construction also allows of the operation of two of the feeding units to feed a carbon sheet and a paper sheet when more than one copy of a letter is desired. By virtue of the fact that the magazines are pivotally sustained by means of the screws 18, it will be clear that they can occupy the most advantageous position for facilitating the feeding of the sheets of paper therefrom.

When it is desired to supply the magazines with paper, it will be clear that the feeding device as a whole can be swung upwardly and outwardly to non-spanning po-

sition with respect to the upper end of the frame so that the open ends of the magazines will be disposed to permit the ready introduction of the sheets into the magazines.

Although I have herein shown and described only one form of paper feeding apparatus embodying my invention, it is to be understood that various changes and modifications may be made herein without departing from the spirit of the invention or the spirit and scope of the appended claims.

What I claim is:

1. A paper feeding apparatus for typewriters comprising a frame, a vertical magazine supported by the frame, means for adjusting the magazine vertically and a feeding mechanism swingingly supported upon the frame for movement to and from position to withdraw sheets of paper from the magazine.

2. A paper feeding apparatus for typewriters comprising a frame, a plurality of magazines pivotally supported in vertical position within the frame, and a feeding device supported for swinging movement on the frame to occupy spanning and non-spanning positions with relation to the frame and including feeding units for each of the magazines arranged to withdraw sheets of paper from the upper ends of the magazines.

3. A paper feeding apparatus for typewriters comprising a frame, a plurality of magazines pivotally supported in vertical position within the frame, and a feeding device supported on the frame to occupy spanning and non-spanning positions with relation to the upper ends of the frame, said device comprising feeding units arranged above the magazines for separately withdrawing sheets of paper therefrom, and guiding lips associated with the feeding units for guiding the sheets of paper laterally to one side of the apparatus.

4. A paper feeding apparatus for typewriters comprising a frame, magazines pivotally supported in vertical position upon the frame, means for varying the vertical position of the magazines, feed rollers arranged above the magazines, flanges formed on the magazines, and guiding lips co-operating with the feed rollers and flanges for directing sheets of paper from the magazines to said rollers whereby upon rotation of the latter withdrawing of the sheets from the magazines is effected.

5. A paper feeding apparatus for typewriters comprising a frame, magazines pivotally supported in vertical position within the frame, means for varying the vertical position of the magazines independently of each other, adjustable followers in the lower ends of the magazine, flanges on the upper or delivery ends of the magazines, feed roll-

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ers above the magazines, and guide lips associated with the feed rollers and flanges to effect the guiding of sheets of paper into contact with the rollers and laterally from the rollers to one side of the apparatus.

6. A paper feeding apparatus for typewriters comprising a frame, a plurality of magazines pivotally supported in vertical position within the frame, and a feeding device comprising shafts, rollers fixed to the shafts, cranks fixed to one end of the shafts for independent operation of the shafts, pinions fixed to the opposite ends of the shafts, and manually operable means for actuating all of said pinions simultaneously, said means being movable and in active position

to permit the independent operation of the shafts by said cranks.

7. A paper feeding apparatus for typewriters comprising a frame, magazines pivotally supported in vertical position within the frame, means for varying the vertical position of the magazines, feed rollers at the upper ends of the magazines for withdrawing sheets of paper therefrom, and followers in the lower ends of the magazines, each of said followers comprising a plate, screws threadedly fitted within the magazine and having a rotatable connection with said plate.

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