

Mar. 13, 1923.

1,448,704

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DELIVERY MECHANISM FOR PRINTING MACHINES

Filed Nov. 15, 1920

3 sheets-sheet 1.

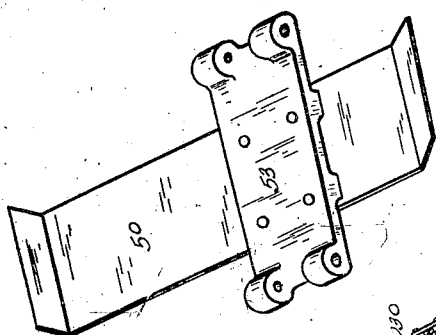


Fig.-2.

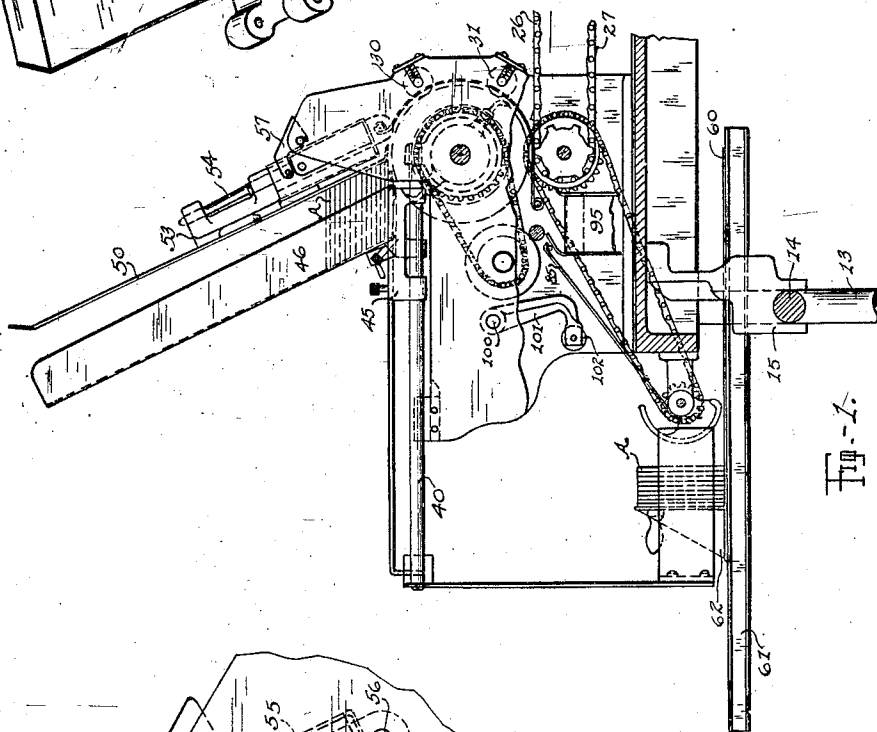


Fig.-1.

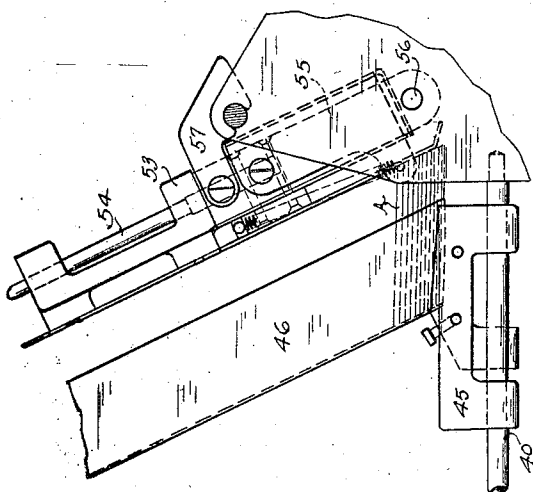


Fig.-3.

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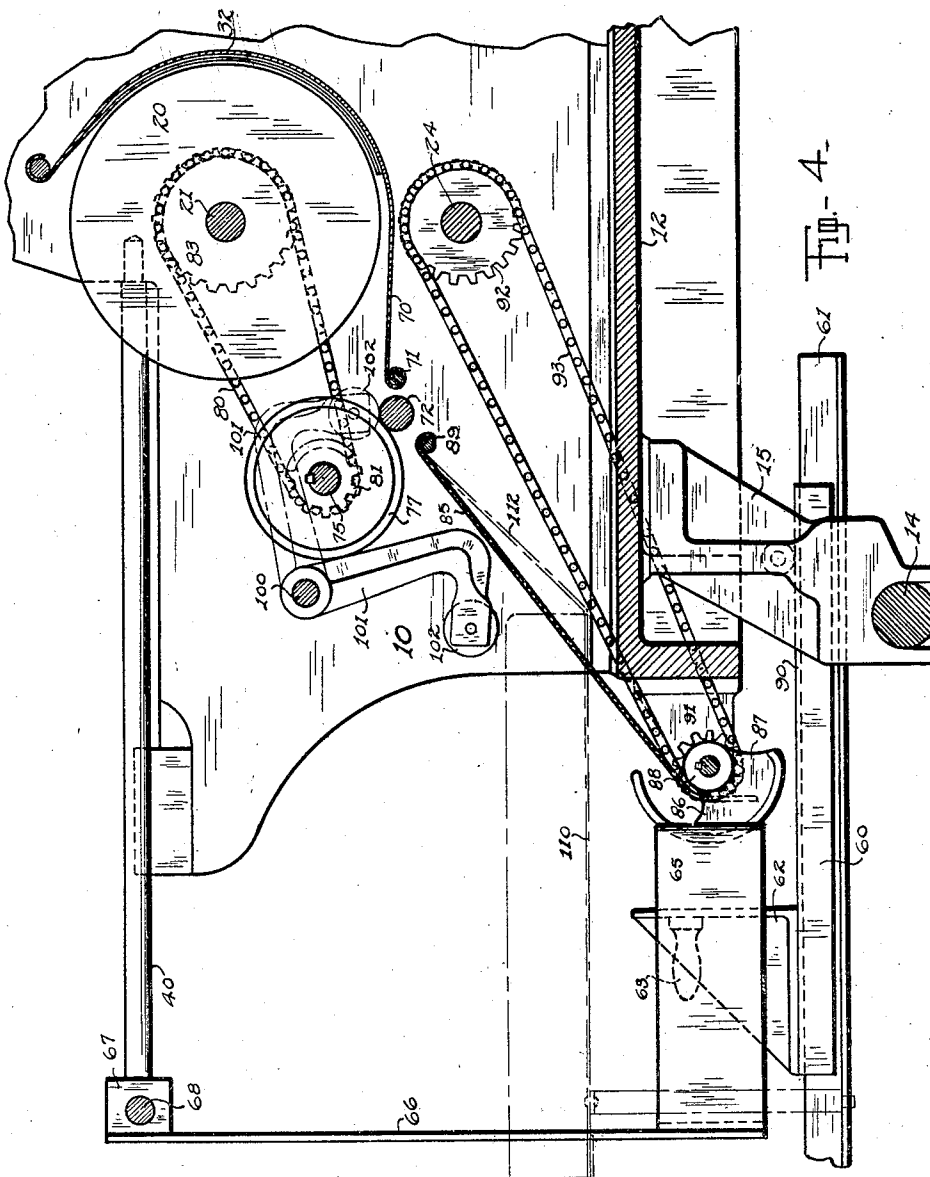
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DELIVERY-MECHANISM FOR PRINTING MACHINES

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3 sheets-sheet 2



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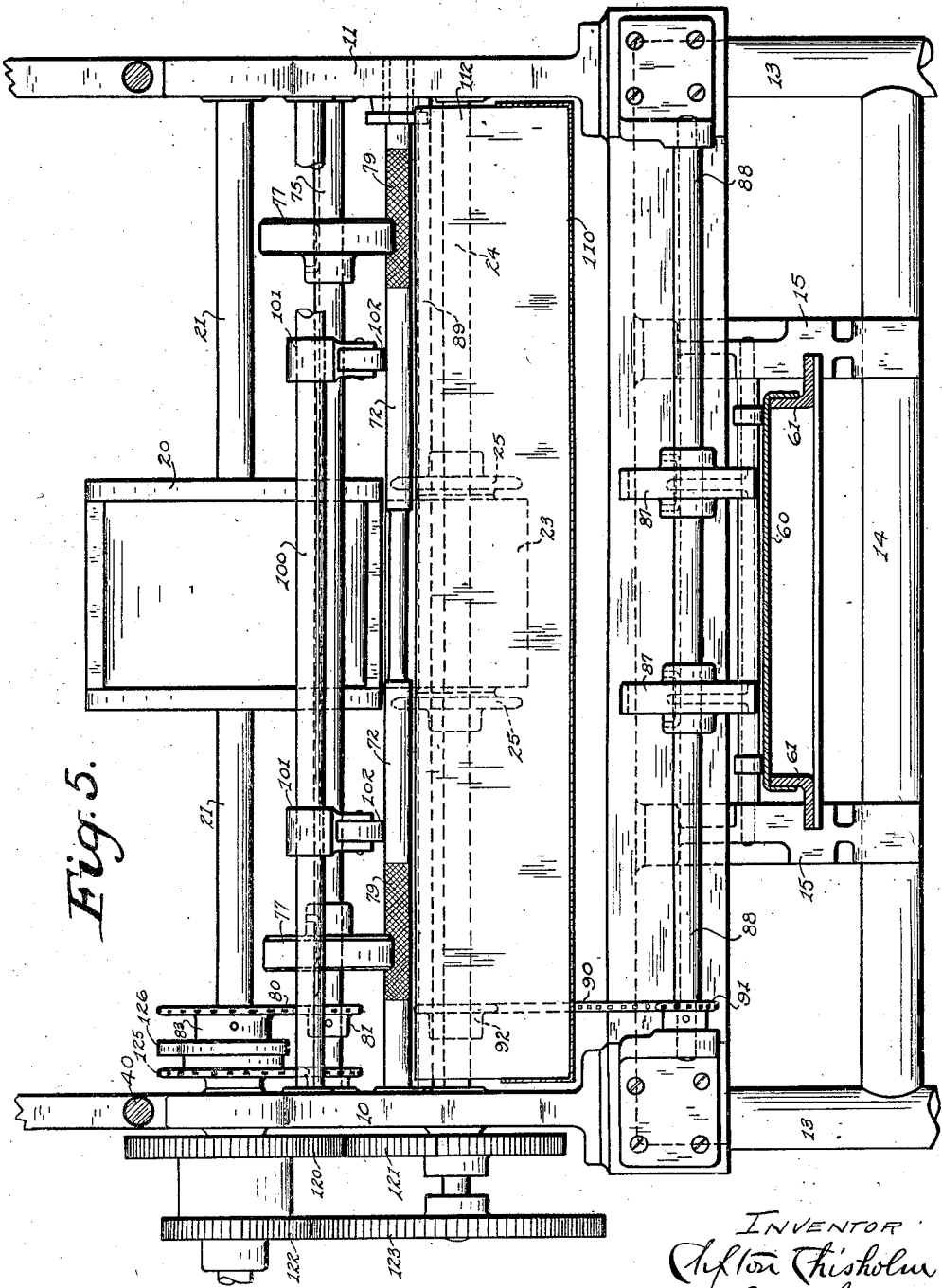
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DELIVERY MECHANISM FOR PRINTING MACHINES

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3 sheets-sheet 3



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UNITED STATES PATENT OFFICE.

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DELIVERY MECHANISM FOR PRINTING MACHINES.

Application filed November 15, 1920. Serial No. 424,114.

To all whom it may concern:

Be it known that I, CLIFTON CHISHOLM, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Delivery Mechanism for Printing Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to mechanism for delivering paper from a suitable machine which acts thereon. More particularly it is of special advantage in delivering either sheets or envelopes of various sizes from an address printing machine. One of the objects of the invention is to provide mechanism readily adjustable for different sizes of material and having interchangeable features for sheets and envelopes. Another object is to render the construction simple and efficient, and capable of being cheaply constructed. The invention is hereinafter more fully explained in connection with the drawings, which show an approved embodiment thereof, the essential novelty features being summarized in the claims.

In the drawings, Fig. 1 is a sectional side elevation of the mechanism arranged to deliver envelopes; Fig. 2 is a perspective of the back plate of the envelope magazine; Fig. 3 is a side elevation of the lower portion of the envelope magazine on a larger scale than Figs. 1 and 2; Fig. 4 is a sectional side elevation on a still larger scale of the delivery mechanism proper, set for delivering envelopes,—the active position of the interchangeable sheet delivery parts being indicated in broken lines; Fig. 5 is a front elevation on the same scale as Fig. 4 of the delivery mechanism adjusted for delivering sheets.

The frame of the mechanism shown comprises a pair of end plates 10 and 11 mounted on a horizontal bed plate 12. This frame is shown as supported on a metal stand having upright rods and cross rods, some of which are shown at 13 and 14 in the drawings. The bed plate is shown as provided with downwardly extending brackets resting on the cross rods 14.

20 indicates a suitable paper feeding drum, or platen, tightly secured on a driving shaft 21. Beneath this paper feeding drum is an impression platen 23 loosely

mounted on a shaft 24. Secured to this shaft, adjacent to the ends of the impression platen 23, are sprocket wheels 25, over which extend conveyer chains 26, which are provided with spaced lugs 27 adapted to engage and feed address plates. Co-operating with the paper feeding drum are pressure rollers 30 and 31, which project against portions of the drum thru openings in an arcuate shield 32.

The parts described in the above paragraph are connected in timed relation so that the conveyer chains, by means of their lugs, may feed address plates to the impression members 20 and 23, at the same time that paper is fed from above the drum 20 downwardly about its right hand portion in Fig. 1, so as to pass with the address plate between the impression in a movement toward the left. Such general construction and operation is shown, and features thereof claimed in my Patents Nos. 1,285,622, and 1,285,623, granted November 26, 1918, and in my pending applications Serial No. 371,722, filed April 6, 1920, and Serial No. 420,415, filed October 29, 1920, to all of which reference may be made for more detailed description.

Secured to the upper portions of the frame plates 10 and 11 are horizontal rods which may carry a suitable table and mechanism for feeding sheets either by hand or automatically. These same rods may carry an envelope magazine, as illustrated in Figs. 1, 2 and 3. As shown, the rods carry a suitable bridge member 45, on which is mounted the front and side portions 46 of the envelope magazine, these portions being preferably two approximately upright flanged strips to form side and front corner guards. The back of the envelope magazine preferably comprises a plate 50 bent at its upper and lower ends to allow easy insertion and extraction of envelopes, this plate having secured to it a bracket adapted to slide on suitable studs 54. These studs are shown as mounted in a member 55 hinged to the frame 56 and held in the active position by a suitable latch 57. These various features are shown more fully and claimed in my co-pending application entitled "Paper feeding mechanism" executed concurrently herewith.

The receiver for the addressed envelopes comprises an inverted sheet metal trough 60, 110

slidable on a pair of frame angle bars 61, and carrying a back stop 62 which has a suitable handle 63, by which it may be positioned. This back stop stands between side guards 65 carried by arms 66, which depend from blocks 67 laterally slidable on a cross rod 68 carried by the rods 40. This enables the side guards to be positioned for different sizes of envelopes. To convey the envelopes from the impression members to the receiver described, I provide the mechanism now to be described.

The arcuate guard 32 extends tangentially to the front of the impression line, as indicated at 70 in Fig. 4, the impression platen operating through a recess in the guard. This end of the guard curls around and is supported by stationary cross rod 71. Immediately in front of this cross rod is a freely rotatable shaft 72 journaled in the end plates. Above and to the front of the shaft 72 is a shaft 75, on which are slidably mounted rollers 77 having elastic treads, which may engage with the shaft 72. The shaft 75 is suitably rotated, as for instance, by a sprocket chain 80 running over a sprocket wheel 81 on the shaft 75, and a sprocket wheel 83 on the shaft 21.

When the machine is adjusted for addressing envelopes, the addressed envelope passes toward the left in Fig. 4, above the paper guard 70, and into the bite of the rollers 72 and 77. These pinch the envelope and direct it diagonally downward. By reason of the impulse of these rollers and gravity, the envelope passes rapidly down an inclined chute plate 85, hung on a cross rod 89. In such travel its lower edge comes into a recess 86 of the rotating packer cam 87. These cams are splined to a shaft 88, driven in timed relation with the rest of the machine so that as the envelope slides down the chute 85 and its lower edge is received in the recess 86, the cams lower the envelope so that it drops onto the plate 60 and immediately thereafter the shoulders 90 on the cams engage the envelope to shove toward the left against the preceding envelopes standing vertically on the plates 60, or against the abutment 62. It is convenient to give the proper rotation to the shaft 88 by means of a sprocket 93, which runs over a sprocket wheel 91 on the shaft 88 and a sprocket wheel 92 on the impression shaft 24.

It will be seen that the mechanism described may take envelopes one after the other from the bottom of the stack A, Fig. 1, (by the mechanism of my Patent No. 1,285,623, for instance) and feed them one after the other with the printing plates between the impression rollers; then, while the plates are disposed of by a suitable conveyer (indicated at 95 in Fig. 1), the envelopes will pass between the delivery rolls 77 and 72, and slide down into the grip of

the stacker cams, which stack them on the receiving tray in the position indicated at A' in Fig. 1. The rolls 77 and the stacker cams 87, while driven by their respective shafts, are readily slidable laterally to provide for envelopes of different lengths.

To adapt the machine shown to the feeding of sheets, I make the following changes:—

The envelope magazine is removed and a suitable sheet support placed on the rods 40. The rollers 77 are shoved laterally apart until their elastic surfaces contact with knurled portions 79 of the rotary shaft 72. Mounted on a suitable cross rod 100 are a pair of arms 101 carrying rollers 102. When the machine is feeding envelopes, these arms are in such a position that the rollers are separated from the shaft 72, Figs. 1 and 4 show the arms hanging down in the idle position. For feeding sheets these arms are turned over into the position shown in broken lines in Fig. 4, and full lines in Fig. 5. In this position, the rollers 102 rest by gravity on the shaft 72.

By reason of the elastic surface of the rollers 77, now engaging the knurled portions of the shaft 72, these rollers, on the driven shaft 75, become drivers for the shaft 72, which is thus positively rotated and thereby delivers rotation to the rollers 102 directly above the shaft 72. The result is that the sheet which comes horizontally above the paper guard 70 into the bite of the rollers 72 and 102 is fed horizontally to the left, instead of diagonally downwardly, as in the case of envelopes. The sheet is thus given a momentum which carries it over a horizontal receiving tray, shown in broken lines at 110 in Fig. 4. This tray is supported at its outer end by suitable legs, and at its inner end by an inclined extension 112 which overhangs the stationary cross rod 89. The sheets are thus delivered in a superimposed pile into the tray 110.

When printing sheets, it may be desirable to change the speed of the printing drum 20 with reference to the conveyer chains to obtain one impression of each rotation of the drum 20, instead of two, which is ordinarily the case for envelopes. I effect this by suitable change speed gearing connecting the shafts 24 and 21, which is claimed in my co-pending application, No. 371,722 referred to. So far as illustrating herein this mechanism comprises a pair of equal sized gears 120 and 121 on the shafts 21 and 24, and a pair of gears 122 and 123 on the same shafts and of a diameter having the proportions of 1 to 2. The gears 121 and 123 are tight on the shaft 24, whereas the gears 120 and 122 are loose on the shaft 21, and either may be clutched to it, if desired, by suitable mechanism not shown. I have shown, loosely mounted on the shaft

21, a cam 125 driven by a sprocket chain 126 from the shaft 75. This cam may initiate in proper time, the operation of an automatic sheet feed or suitable paper releasing fingers for controlling the starting of sheets fed by hand.

Having thus described my invention, I claim:—

1. In a delivery mechanism, the combination with means for acting on paper, of interchangeable paper and envelope feed devices, said paper feed device being adapted to deliver sheets superimposed in a pile and to deliver the envelopes upright on the edge thereof.

2. In a delivering mechanism, the combination of a pair of coating rolls whose axes are in substantially the same vertical plane to deliver sheets substantially horizontally, and a different system of rolls whose axes line in a plane inclined to the first-mentioned plane to deliver envelopes diagonally downwardly, and two different receptacles for the sheets and envelopes respectively.

3. The combination with means for feeding paper, of a roller to which such paper may be fed, rolls adapted to stand above the roller and coact with it, means for moving said rolls to idle position, and other rolls shiftable into position to coact with said roller from a different direction.

4. The combination of a roller, an arm, a roll carried thereby and adapted to coact with said roller, or be swung out of coaction, a shaft, and a roll shiftable laterally thereon and adapted to coact with said roller.

5. The combination with means for feeding paper, of a roller, a roll adapted to stand above the roller and coact with it, or be moved free from it, a driving roll coacting with said roller to rotate it, and means for shifting said driving roll laterally on its shaft.

6. The combination with means for feeding paper, of a roller, a roll adapted to stand above the roller and coact with it, or be moved free from it, and a driving roll having an elastic tread coacting with said roller to rotate it.

7. The combination with means for feeding paper, of a roller, a rotating shaft parallel therewith, a roll mounted on said shaft and adapted to engage said shaft and frictionally drive it, and a roll coacting with the roller and adapted to be rotated thereby.

8. The combination with means for feeding paper, of a roller, a rotating shaft parallel therewith, a roll mounted on said shaft and adapted to engage said shaft and frictionally drive it, a roll coacting with the roller and adapted to be rotated thereby, and an arm carrying the last mentioned roll and adapted to move it to idle position.

9. The combination with means for feeding paper, of a roller, a rotating shaft paral-

lel therewith, a roll slidably mounted on said shaft and adapted to engage said shaft and frictionally drive it, a roll coacting with the roller and adapted to be rotated thereby, an arm carrying the last mentioned roll and adapted to move it to idle position, said first mentioned roll being laterally shiftable to bring it into direct action on the paper when the other roll is in an inactive position.

10. The combination of a paper feeding drum, a roller platen beneath it, means for conveying address plates and paper between the drum and platen, alternately active mechanism for delivering such paper either diagonally downwardly or more nearly horizontal, and a pair of paper receiving trays adapted to be supported at different elevations to receive the material delivered.

11. The combination with means for printing by rolling contact, a support on which the printed paper may rest as it travels, a pair of delivery rollers into the grip of which such paper is fed, means for receiving the delivered paper, another delivery roller adapted to coact with one of the rollers of said pair to deliver the paper in a different direction, and means supported at a different elevation to receive the paper so delivered.

12. The combination with a pair of roller platens, and means for feeding paper and address plates between them, of delivery rolls for receiving the printed paper and feeding it diagonally downward, an inclined chute adapted to support the paper so delivered, a receiving tray, and a stacking mechanism adjacent to the bottom of the chute to stack the delivered paper on the receiving tray.

13. The combination of a pair of rotary platens, one above the other, means for feeding envelopes and address plates between the platens to address the envelopes, a pair of coating delivery rolls adapted to receive the printed envelopes, such rolls being mounted on axes which are in an inclined plane to tip the envelope and discharge it diagonally downwardly.

14. The combination of a pair of rotary platens, one above the other, means for feeding envelopes and address plates between the platens to address the envelopes, a pair of coating delivery rolls adapted to receive the printed envelopes, such rolls being mounted on axes which are in an inclined plane to tip the envelope and discharge it diagonally downwardly along a chute, a receiving tray, and a stacking mechanism located adjacent to the bottom of the chute.

15. The combination of a support for a stack of envelopes to be printed, a paper feeding roller beneath the same, a platen roller beneath the paper feeding roller, a conveyer adapted to feed a plate between the rollers at the same time the envelope is

fed between them, means for receiving the plate following the impression, and delivery rollers adapted to receive the envelope and direct it diagonally downward and stacking mechanism adapted to receive the envelopes so directed.

16. The combination with a support for paper to be printed, a roller about which such paper may travel, a platen roller beneath the roller first mentioned, means for feeding address plates between the two rollers co-incidentally with the travel of the paper between them, delivery mechanism to receive such paper, comprising a freely rotatable roller, a positively driven roll which may coact with the roller to pinch paper between them, and deliver it in one direction, and a second roll which may coact with said freely rotating roller to pinch paper and deliver it in another direction, a sheet-receiving tray adapted to receive sheets in a pile, and an envelope receiving tray adapted to receive envelopes standing on edge.

17. The combination with a support for paper to be printed, a roller about which such paper may travel, a platen roller beneath the roller first mentioned, means for feeding address plates between the two rollers co-incidentally with the travel of the paper between them, delivery mechanism to receive such paper, comprising a freely rotatable roller, a positively driven roll which may coact with the roller to pinch paper

between them, and deliver it in one direction, and a second roll which may be driven by the said freely rotating roller and coact therewith to pinch paper and deliver it in another direction, said two rolls being shiftable to interchangeably engage paper, a sheet-receiving tray adapted to receive sheets in a superimposed pile, and an envelope receiving tray adapted to receive envelopes standing substantially vertically on edge, and a stacking mechanism coacting with the envelope receiving tray.

18. In a paper feed device, the combination of a horizontal feeding roll, means to operate said roll and selective means for coacting with said roll whereby paper may be delivered from the roll to a horizontal or vertical position.

19. In a paper feed device, the combination of three horizontal feed rolls, and means whereby the rolls may be made to coact in pairs to deliver paper to a horizontal or vertical position.

20. The combination with means for acting on paper, of delivering mechanism adjustable at will to deliver paper to either of two receptacles placed one above the other, said means including a plurality of rolls movable at will to cause the paper to be delivered to the upper or the lower receptacle.

In testimony whereof, I hereunto affix my signature.

CLIFTON CHISHOLM.