

Jan. 22, 1924.

1,481,349

C. CHISHOLM

PAPER FEEDING MECHANISM

Filed April 8, 1922

7 Sheets-Sheet 2

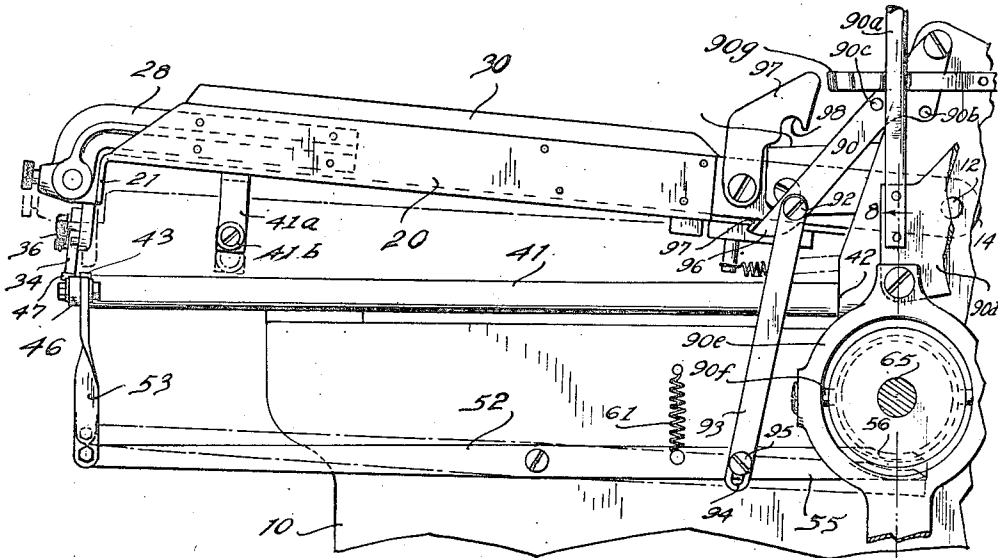


FIG. - 2

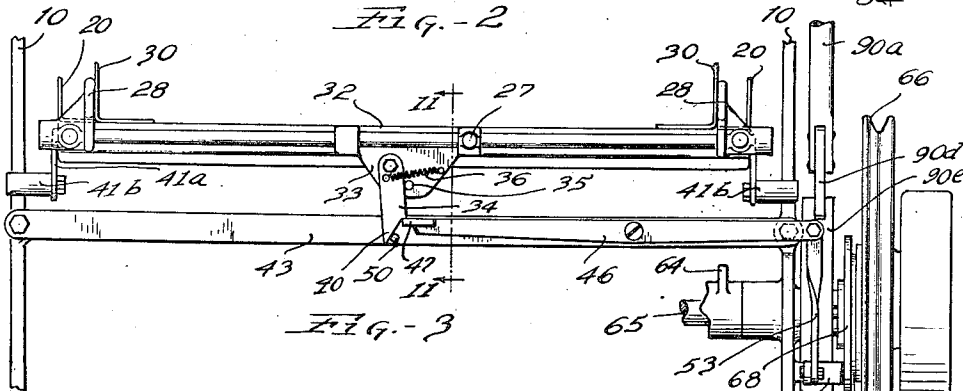


FIG. - 3

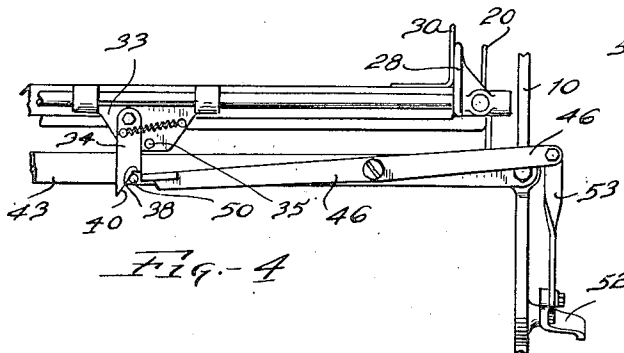


FIG. - 4

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7 Sheets-Sheet 3

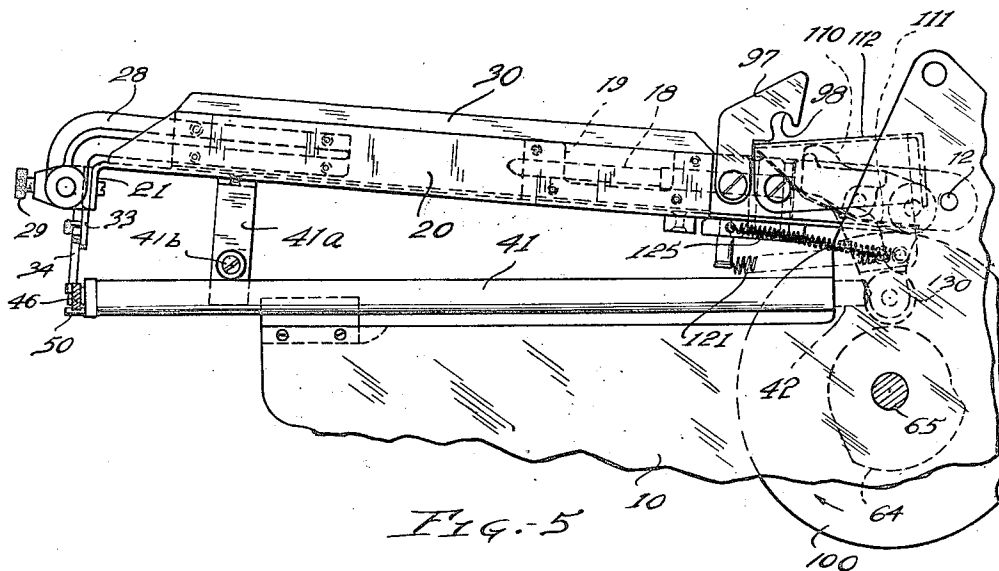


FIG. 5

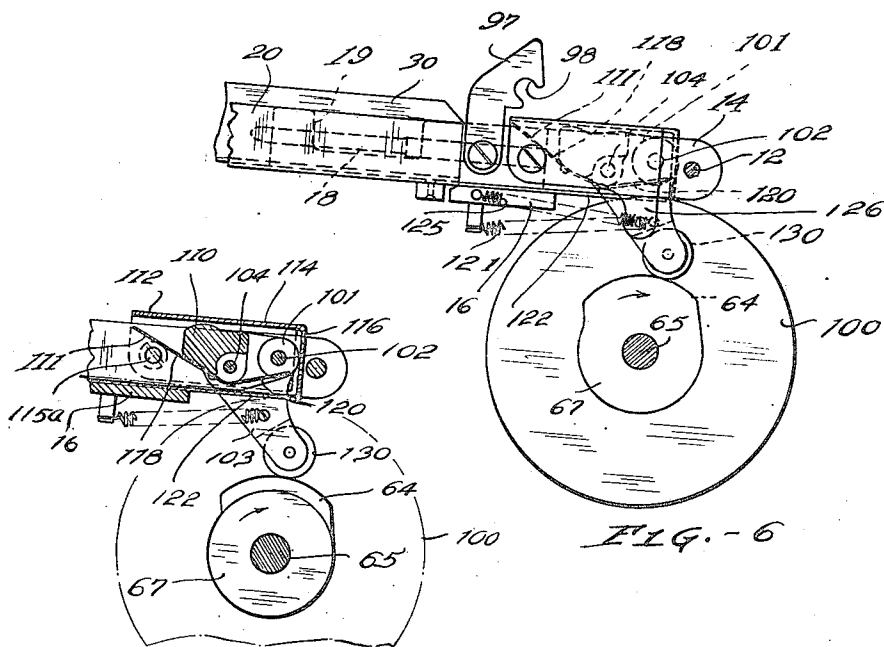


FIG. 6

FIG. 7

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7 Sheets-Sheet 4

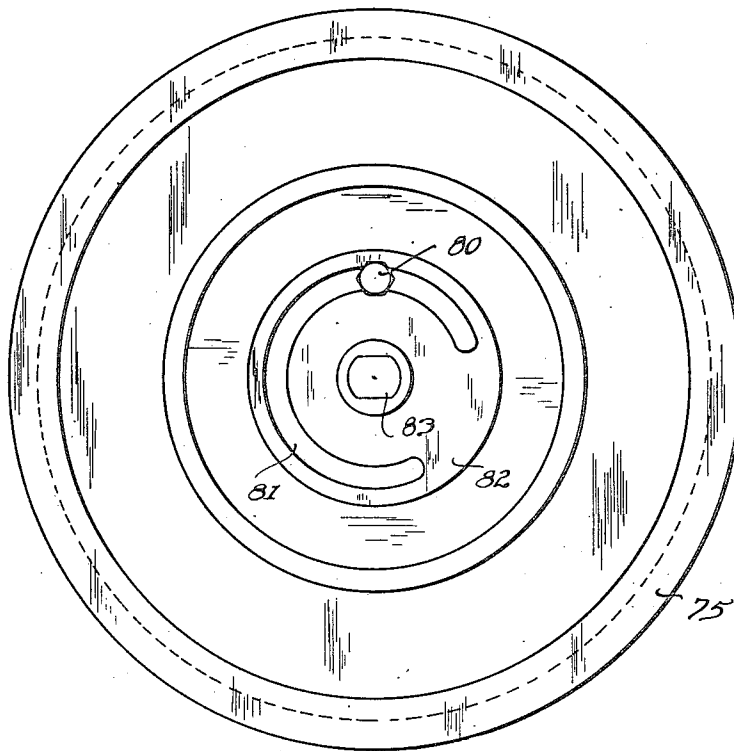


Fig. 9

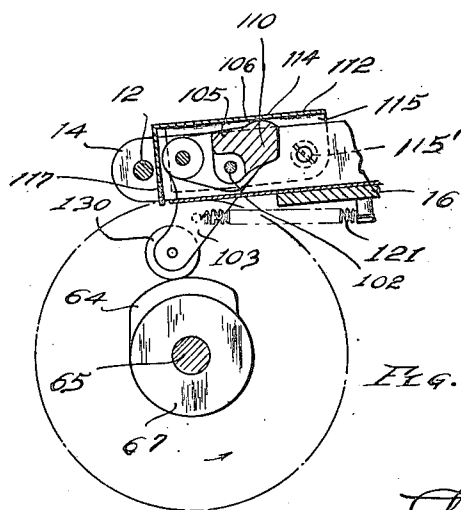


Fig. 8

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7 Sheets-Sheet 5

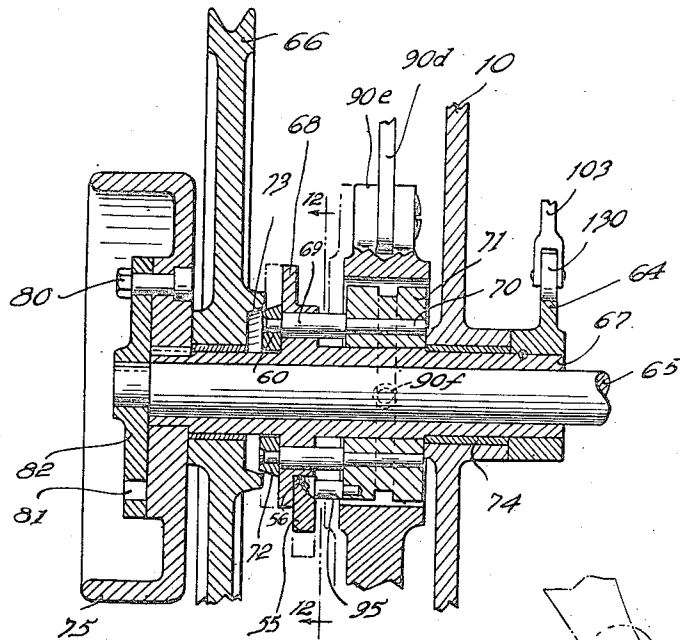


Fig.-10

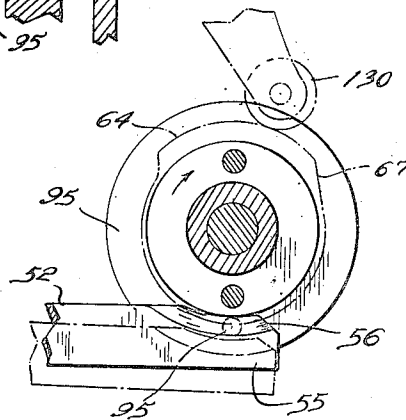


Fig.-12

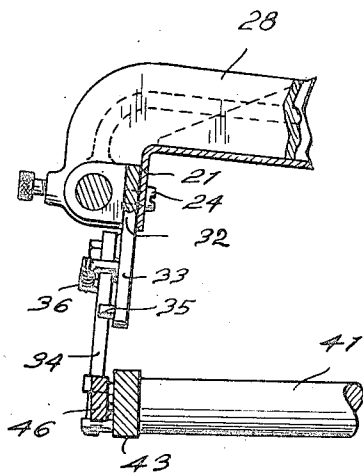


Fig.-11

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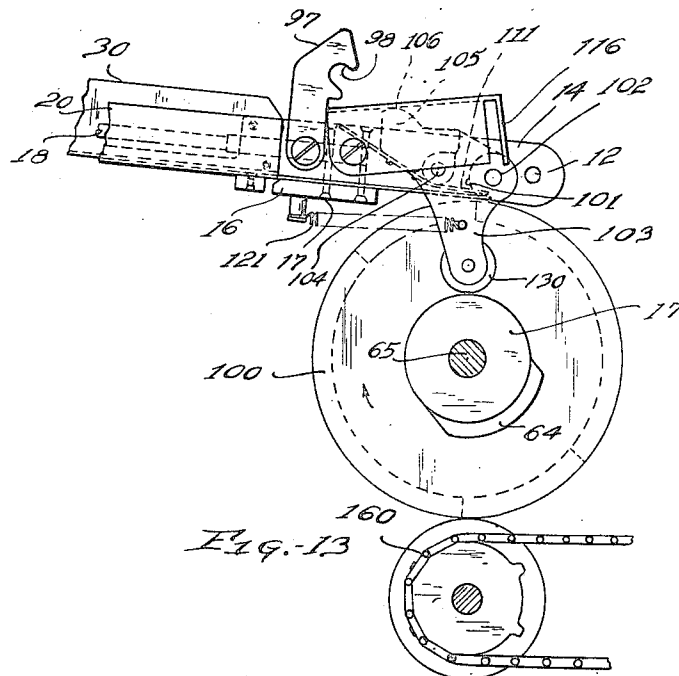
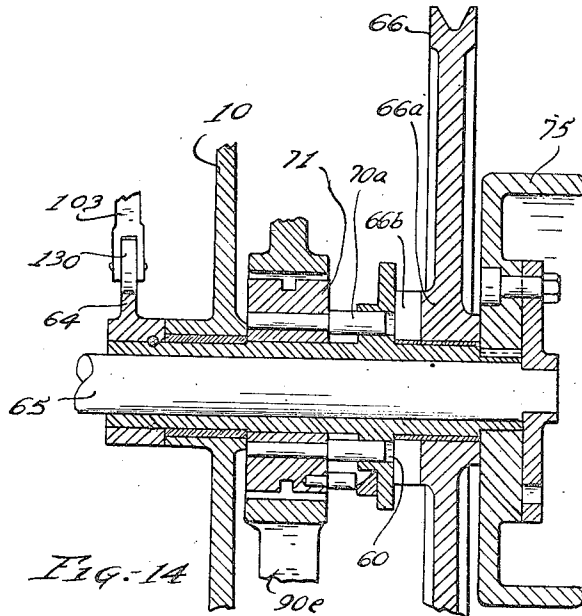
1,481,349

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Filed April 8, 1922

7 Sheets-Sheet 6



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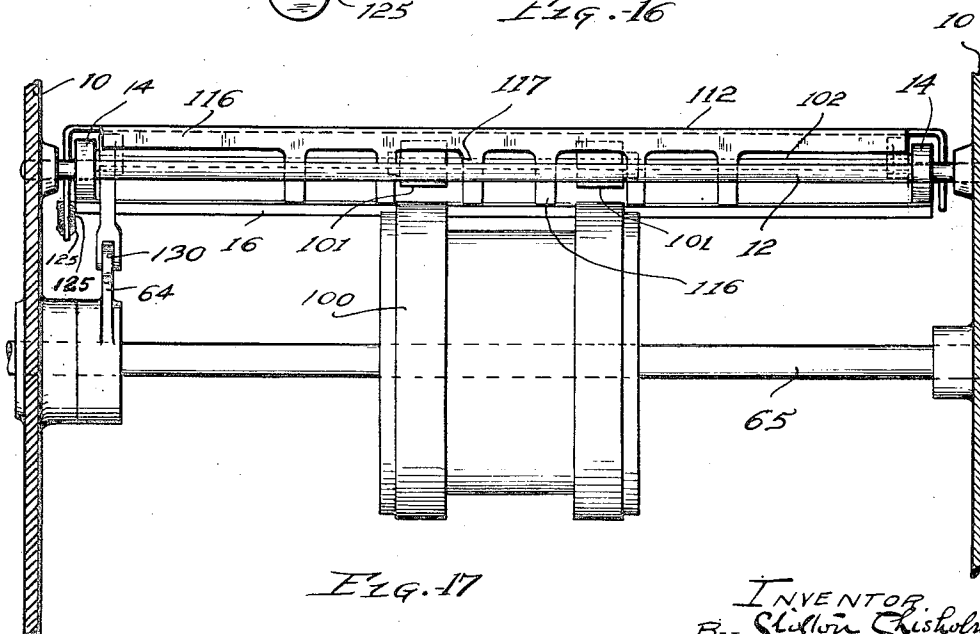
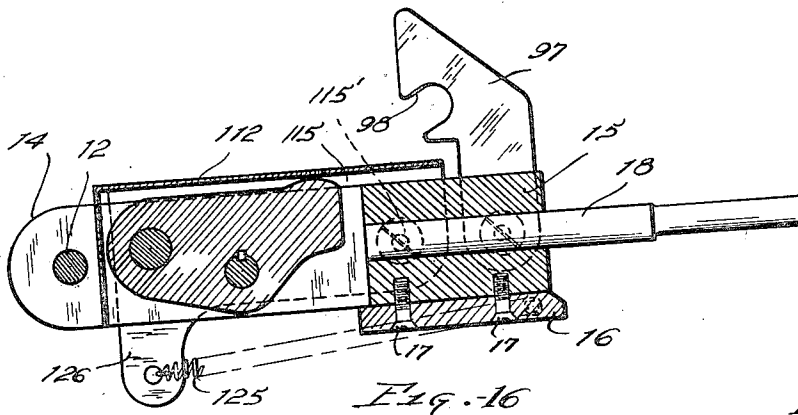
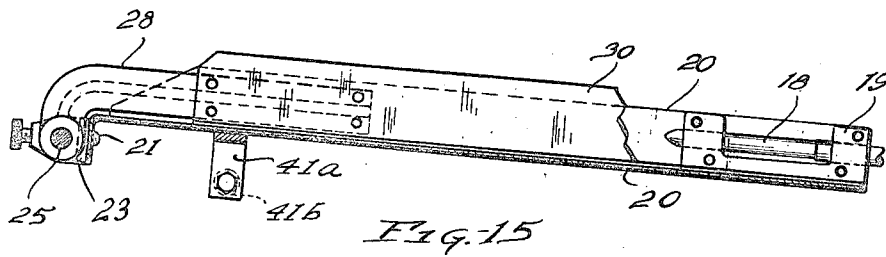
1,481,349

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PAPER FEEDING MECHANISM

Filed April 8, 1922

7 Sheets-Sheet 7



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UNITED STATES PATENT OFFICE.

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PAPER-FEEDING MECHANISM.

Application filed April 8, 1922. Serial No. 550,801.

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 Paper-Feeding Mechanism, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to a paper feeding mechanism for printing machines whereby single sheets of paper may be moved to position from a supply stack and be fed to the paper feeding rolls.

It is frequently desirable in addressing machines, and other printing machines to cause the impression to be made at varying distances from the forward end of the paper passing through the machine, and it is one of the objects of this invention to provide a machine having adjustable means thereon, so that any desired portion of the paper sheet fed thereto may be brought to position to receive the impression.

A further object of the invention is to provide a machine in which the paper may be initially fed by hand, after which it is advanced under control of the operator, to printing position.

An additional object of the invention is to provide a feeding device for a printing machine having a paper support and actuating mechanism for the feeding device, controlled by manual movement of the paper support.

A more specific object of the invention is to provide a paper feeding mechanism having a pivoted paper tray thereon and wherein, after the paper has been manually fed to receiving position on the tray, the latter may be depressed to cause the feed rolls to move the paper to printing position. This may be accomplished by providing a paper feeding mechanism embodying a paper tray or support which is responsive to a depressing movement of the operator's arm or hand, the movement of the tray being such as to effect the actuation of lever mechanism arranged to couple the feeding mechanism to driving means after a sheet has been manually fed from a stack of sheets on the support to a receiving position in the feeding mechanism, whereby the paper feeding movements and the power control move-

ments of the operator's hands may be confined to the immediate vicinity of the paper stack.

A preferred form of the machine is provided with means whereby the operator moves the top sheet from the stack to position against a movable stop member, the paper being suitably guided to this position, and the operator thereafter depresses the paper holding tray, resulting in the throwing in of a clutch member which causes the paper feeding rolls to operate and at the same time removes the stop member, whereby the paper may be moved by the feed rolls and carried to printing position. The distance from the end of the sheet at which the printing occurs may be varied by means of a cam member carried on the drive shaft on which the clutch is mounted. The machine also provides means whereby the operation of the clutch on moving the tray may be prevented when desired, and means whereby the tray itself may be entirely removed from the machine.

The means for performing the above and other objects will be apparent in the following description, taken in connection with the accompanying drawings, wherein Fig. 1 is a plan view of an embodiment of my invention as applied to the addressing machine described and claimed in my application Serial No. 426,412, filed November 26, 1920; Fig. 2 is a side elevation of the paper feeding mechanism and connecting means for controlling an intermittently operable clutch on the machine; Fig. 3 is an end elevation of paper supporting means and clutch operating means associated therewith; Fig. 4 is a fragmentary end elevation of the paper supporting means showing the clutch operating means in a clutch releasing position; Fig. 5 is a cross sectional elevation taken substantially along the line 5—5 of Fig. 1 and showing the relation of the various elements of the paper feeding mechanism when the paper is being fed thereby; Fig. 6 is a fragmentary side elevational section of the paper feeding mechanism showing the members thereof in their normally inactive relation; Fig. 7 is a similar view showing some of the elements in cross section; Fig. 8 is another cross sectional view of the members of the feed mechanism as viewed from the left

hand side of the machine; Fig. 9 is a side elevation with adjustable driving pulley; Fig. 10 is a vertical cross sectional view taken through the axis of the clutch mechanism; Fig. 11 is a section on line 11—11 of Fig. 3; Fig. 12 is a cross sectional view of the members of the clutch mechanism; Fig. 13 is a view of the paper feeding mechanism similar to Fig. 6, but showing the relation of the members of the feed mechanism when feeding paper; Fig. 14 is a modified construction of the clutch mechanism; Fig. 15 is a cross section of the paper supporting means taken substantially along the line 15—15 of Fig. 1; Fig. 16 is an enlarged cross sectional view taken substantially along the line 16—16 of Fig. 1; Fig. 17 is a fragmentary elevation showing the relation of paper feed rolls when in a normally inoperative position.

Referring to the drawings by reference characters, I have shown at 10 suitable standards or uprights which may be carried on the body of an addressing machine or similar mechanism. These standards, it will be noted, are spaced and are provided with bosses 11 through which a rod 12 passes. Secured to this rod I show a pair of spaced supporting members 14 having enlarged heads 15. A bar 16 secured to the heads 15 by fastening members 17 serve to keep the supporting members aligned.

Pins 18 (Figs. 1, 15 and 16) project forwardly from the supporting members 14 and are arranged to fit apertures in engaging members 19 carried by the paper tray 20. This tray comprises a bottom portion and a pair of side flanges. The front of the tray is turned down as at 21 and to this turned down part I secure a bracket 32 by means of suitable fastening members 24. A rod 25 passes through holes in arms 26 on the bracket and is held in place by a set screw 27. The ends of the rod have arms 28 slidably mounted thereon and adjustably held by set screws 29. The arms 28 have L-shaped paper guides 30 secured thereto, which guides each have one leg of the L contacting with the tray 20 and the other upstanding to guide the paper. The guides may be moved in and out to fit different sizes of paper and may be secured in position by the set screws 29.

To enable the depression of the tray to release the clutch, I provide the following mechanism; the bracket 32 on the tray has a depending portion 33, and on this depending portion I pivotally mount a latch member 34, which is normally held in contact with a pin 35 by means of a spring 36. The lower end of the latch 34 has a shoulder 38, and adjacent the shoulder is a beveled portion 40. Rods 41 secured to the uprights 10 at 42 are connected at the front of the machine by means of a cross member 43 being

suitably held by fastening means 44. On this member 43 I show a pivotally mounted clutch controlling lever 46 which has a head 47 thereon; the latter member normally bearing against the shoulder 38 on the latch 34.

Means for arresting the downward movement of the tray may comprise inverted L-shaped members 41^a secured to the bottom of the tray and provided with resilient snubbers or rolls 41^b arranged to strike on the rod members 41.

From the description previously given, it will be apparent that when the paper tray is in an elevated position, the latch 34 is urged against the pin 35 by the spring 36. The pin 50 is secured on the cross member 43, and consequently when the tray is depressed, the beveled end of the latch 34 will ride down on this pin, at the same time pressing down the head 47 to rock the lever 46. At a certain period of its movement, the pin 50 pushes the latch 34 to one side to free the head 47 of the lever so that the lever 46 is free to return to initial position.

Pivoted on one of the standards I show another lever 52 which is connected by means of a link 53 with the lever 46 so that the movement of the paper tray will cause movement of the lever 52. The arrangement is such that the end 55 of this lever will move in the same direction as the paper tray. This end 55 of the lever 52 is provided with a cam surface 56 (Figs. 10 and 12) which acts to throw in and out a clutch 60.

The clutch mechanism shown in Fig. 10 is constructed as follows: The shaft 65 on which the paper feed roll is secured has a pulley 66 loosely journaled thereon. This pulley is mounted on a sleeve 67 keyed to the shaft. This sleeve includes a flange portion 68 in which are slidably mounted a pair of pins 69. These pins 69 are arranged to move through apertures in the flange 68, while a portion of each pin 69 is of a reduced diameter, as at 70, and the portion of reduced diameter is fitted into a ring 71 which is mounted to slide on the sleeve 67. A friction element 72 is secured on the ends of the pins 69 and indicated as coned to fit within a coniform recess 73 on the drive pulley 66. The shaft is indicated as mounted in a bearing 74 carried on the standard 10 of the machine.

Fig. 10 shows the clutch in disengaged position, the ring 71 being held in idle position by reason of the pin 95 carried thereby engaging the side surface 55 of the actuating lever 52. The depression of the tray, by reason of the linkage described, lowers the free end of the lever 52 to carry it out of the pin 95, whereupon the clutch ring 71 is shifted toward the left by a spring hereinafter described to cause the member 72 to engage the driver 66. After the rotation of the clutch ring has started, the lever 52 is

returned to normal position and a beveled portion 56 thereon now stands in the path of the pin 95 so that as the clutch is completing a single rotation the pin 95 engages and rides outwardly on this beveled portion, moving the ring 71 to the right and opening the clutch.

Keyed to the sleeve 67, I show a cam member 64. At the opposite end of the sleeve 67 from that occupied by the cam, I secure a cup member 75. This cup member is normally made to rotate with the sleeve, being secured by means of a bolt 80 to a disc 82 keyed on the shaft 65. It will be noted that rotation of the cup 75 rotates the cam relative to the shaft, and this is effected by loosening the bolt 80 moving in the slots 81. Thus the angular relation of the cam 68 and shaft 65 may be adjusted. When the relation of the cam 64 with respect to a certain portion of the drive wheel 66, or other part of the machine, is desired to be changed, I loosen the bolt 80 and turn the cup 75, thereby turning the cam 64 to the desired position, whereupon the bolt 80 is tightened and the adjustment is completed.

It is frequently desirable that the operation of depressing the paper tray will not cause the clutch to be thrown in and out, and for controlling such action at will, the following arrangement is provided. The lever 90, pivoted at 91 to the side frame of the machine, is pivotally connected at 92 to a second lever 93 which has a slot 94 near one extremity. This slot is adapted to have sliding movement over a screw or projection 95 on the clutch control lever 52. It will be noted that the lever 90 is extended, as at 96, and is provided with a headed portion 97 to allow operation thereof.

From the description, it will be apparent that the depression of the headed portion 97 will straighten the levers 90 and 93, thereby moving the control member 55 downwardly and away from contact at all times with the clutch. At the same time through the system of levers 53 and 46, the head 47 of the lever 46 will be lowered from contact with the latch 34. Thus movement of the feed tray up and down would merely cause the latch 34 to be moved back and forth by the pin 50, without in any way affecting the clutch.

The levers 90 and 93 may be brought into or out of alignment through a manual rearward or forward shifting of the lever 90^a, which may act upon the lever 90 by contact with pins 90^b and 90^c respectively. The lever 90^a may also be utilized to effect operation of the clutch members and is therefore secured to a plate member 90^d which is pivotally secured to a shipper lever 90^e. The plate member 90^d also serves to connect the clutch mechanism to stop mechanisms which automatically disengage the clutch from the driving means in the manner shown and de-

scribed in my applications, Serial No. 419, 222, filed October 25, 1920 and Serial No. 425,476, filed November 20, 1920.

The lever 90^e may be suitably mounted on one of the standards 10, whereby shifting of the shipper lever will cause pins 90^c to slide the ring member 71 along the sleeve 67. It will be noted that the operation of the shipper lever may be effected irrespective of the relative positions of the lever member 90^a and levers 90 and 93, the pins 90^b and 90^c being of sufficient length to be engaged by the lever member 90^a regardless of the position of the shipper lever 90^e.

When it is desired to drive the machine continuously, for instance when printing envelopes, the lever 90^a may be shifted rearwardly, toward the right in Fig. 2, while still in engagement with the flat spring member 90^g, which acts to maintain the shipper lever in an outward clutch-engaging position.

In Fig. 14 an alternative clutch construction is illustrated which embodies a rearrangement of the immediate clutching elements of the mechanism, whereby a positive coupling of the parts is effected by pin members 70^a being brought into engagement in suitable slots formed in the hub 66^a of the drive wheel 66 as illustrated at 66^b. The pins 70^a are carried by the collar 71 in the same manner as the pins 69, as shown in Fig. 8.

It sometimes happens that it is desirable to remove the tray 20 entirely from the machine and use other means to feed envelopes. When this is desired, the tray 20 is withdrawn from the supporting pins 18 and the supporting members 14 are swung about the shaft 12 until the notches 98 in the latch 97, secured on the supporting member, engage over the pins 91.

The mechanism for feeding the paper to the printing rollers will now be described. The feed roll 100 is indicated as mounted on the shaft 65 and is adapted to be driven when the clutch member 60 engages the pulley 66. Cooperating with this feed roll 100, I show feed rolls 101. These rolls 101 are mounted on a shaft 102, which has its ends secured in levers 103 pivoted at 104 to the supporting member, and are made up of a plurality of rollers each mounted on the same shaft and spaced apart for a purpose to be presently described.

The lever 103, it will be noted, in shape suggests a bell crank with the portion 105 formed with a tip 106 which is adapted to contact with the under surface of a paper stop 112. The lever 103 is provided with offset lugs 110 on which a paper guide member 111 is secured. The paper stop 112 referred to comprises a top portion 114 having side flanges 115 pivoted at 115^a to the supporting members 14. The top portion

also has a turned-down back portion 116 from which a plurality of fingers 117 depend. These fingers are spaced to span the spaced rolls comprising the feed rolls 101,—see Fig.

5 17.

When the paper stop is in lowered position as shown in Fig. 8, the fingers 117 extend down to a point even with the bottom of the paper tray 20. One of the levers 103 carries a roller 130 and is normally maintained in position to cause this roller to engage the cam 64 on the sleeve 67 by means of a spring 121, while a second spring 125 engages a projection 126 carried on the paper stop 112 to hold the stop normally down.

From the preceding description, it will be seen that rotation of the cam 64 causes the levers 103 to rock about their pivots, with the result that when the roller 130 moves down the levers 103 move the paper stop device 112 up, thus removing the obstruction to the advance of the paper, while at the same time the end 120 of the paper guide 111 is carried down by the projection 110 of the levers 103, and this serves to bring the paper into position to be engaged by the feed roll 100 and the rolls 101, the latter having also moved down with the levers 103.

When the operator is feeding paper to the machine, and moves the sheet to printing position, there is a tendency for the forward end of the moved sheet to raise above the bottom of the tray. In order that the end of the paper may be held down, I accordingly, provide the positioning member 111 mentioned above. This positioning member extends entirely across the machine and as stated is secured to lugs on the levers 103. The positioning member comprises a forwardly extending portion 118 which is inclined upwardly, whereby the paper will strike it as it has advanced and the forward end of the paper will be guided into position adjacent the feed roll. The other end of the positioning member 111 is bent upwardly as at 120, and it will be apparent that when the levers 103 are rocked, this end 118 will move down and carry the paper with it into contact with the feed roll 100. The forwardly projecting portion 120 of the paper positioning member is indicated as notched to receive the paper feed rolls 101 in the notches.

The operation of the machine is as follows: A stack of sheets are placed upon the tray 20 by the operator and the top sheet is manually fed forwardly into the feeding mechanism with the edge thereof in contact with the depending stop fingers 117, and immediately upon the consummation of this manual feeding of the sheet the operator exerts pressure on the tray while commencing the operation of grasping and

feeding the next sheet from the stack. The depressing of the tray causes a swinging movement thereof about its axial mounting on the rod member 12, thus bringing about actuation of the clutch controlling levers 47 and 52 in the manner hereinbefore described. The end 55 of the lever 52 is thus shifted out of engagement with the clutch members, as indicated by the dot and dash position in Fig. 12, and the shipper lever 90° is shifted outwardly from the machine under the influence of the spring member 90^a upon the lever member 90^a. The clutch member 72 is thus brought into engagement with the clutching surfaces 73 of the fly wheel hub and rotation is imparted from the fly wheel to the shaft 65.

The manual feeding of the sheet with the top edge thereof into contact with the fingers 117, and between the rearwardly extending portion 120 of the guide member 118 and the rest plate 122, positions the upper portion of the sheet between the feed rolls 100 and 101, as indicated in Fig. 7.

As the shaft 65 and cam 64 rotate, the levers 103 are drawn forwardly under influence of the spring 121, when the depression in the cam permits movement of the cam follower 130, as indicated in Figs. 5 and 13. This forward movement of the levers 103 carries the feed rolls 101 downwardly into engagement with the paper sheet. The guide portions 120, disposed between the rolls 101 likewise are carried downwardly into contact with the sheet, and serve to prevent a crimping or wrinkling of the paper, thus maintaining the paper in comparatively smooth engagement with the roll 100 as it is moved thereby.

The stop fingers 117 will have been raised by the action of the camming portion 110 of the levers 103 prior to the final downward engaging movement of the feed rolls 101 onto the upper surface of the sheet. The sheet thus has a free movement. The paper sheet is guided by suitable means, not shown, in a downward direction until engaged by the platen roll 160, illustrated in Fig. 13. Near the completion of one revolution of the shaft 65 the cam 64 will have again acted upon the cam roller 130, thus effecting the repositioning of the various members of the sheet receiving mechanism whereupon another sheet may be positioned between the feed rollers by the operator.

In the meantime, the pin 95 will have revolved into engagement with the cam surface 56 on the end of the lever 52 and the clutch disc 72 will be disengaged from the driving wheel 66 and shifted to the position indicated in Fig. 10. The shifting of the pin 95 likewise effects an inward movement of the shipper lever 90°, resulting in a compressing of the clutch member 90^a by the lever member 90^a.

If it is desired to increase the space between the top edge of the sheet and the first line of the printed matter, the angular relation of the cam and the pin 95 will be changed (see Fig. 12), whereby the amount of angular movement of the feed roller 100 before feeding engagement of the roller member 101 with the sheet will be increased. On the other hand, if it is desired to decrease the space the amount of angular movement of the feed roll 100 before engaging the sheet will be decreased. As the pin 95 is fixed relative to the shaft 65, the desired increase or decrease in the space between the printed matter and the top margin of the sheet may be brought about by turning the hand wheel 75 to the left or to the right respectively. To effect this adjustment, the bolt 80 is loosened and the shaft 65 is maintained stationary while the sleeve and cam are adjusted. The amount of this angular adjustment is limited only by the angular span of the rise on the cam.

It will be noted from the foregoing description, that the advantages which will be found in my invention include the quick detachability of the entire feeding mechanism, involving only the simple movement of replacing the feed mechanism in relation to the feed roll 100 by swinging the paper tray and the feed mechanism including the lever 103 about its pivotal axis on the rod 12 upwardly until the hook members 97 can be locked on the pins 91. If desired, the paper tray 20 may then be removed from the machine by sliding the tray out of engagement with the pin members 18, whereupon an envelope magazine may be positioned on the machine by engagement thereof with the pins 18 when in this elevated position, as described in my application, Serial No. 424,114, filed Nov. 15, 1920.

Furthermore, the clutching mechanism, as hereinbefore stated, may be positioned for continuous operation by bringing the lever 90^a into proper relation with the spring member 90^b, whereby the clutch will be maintained in continuous engagement with the driving wheel, and the clutch lever 52 will be maintained out of engagement with the clutch by the same operation through alignment of the lever members 90 and 93. It will be noted, furthermore, that the arrangement of the various elements in the feed mechanism is such that the depressing movement of the tray by the operator does not in any manner affect the efficient functioning thereof when the sheet is being acted upon by the feed rolls 101 and 100.

The feeding and clutching mechanisms are associated in such a manner that the movements of the operator in feeding the sheets into the machine, are confined to the immediate vicinity of the stack of sheets positioned on the tray, whence the attention of

the operator may be primarily directed to the constant removal of the sheets singly from the stack and the continuous positioning thereof within the feed mechanism, while attention to the intermittent driving of the machine is but a secondary matter in the efficient operation thereof, due to the fact that the operation of the clutching mechanism is controlled by the simple movement of slightly depressing the paper feed tray.

I claim:—

1. In a paper feeding mechanism, paper feeding rolls, means to support a stack of paper, and means whereby movement of the paper stack supporting means may initiate the action of said paper feeding rolls.

2. In a paper feeding mechanism, paper feeding rolls, a clutch to operate said paper feeding rolls, means to support a stack of paper, and means whereby movement of the paper stack supporting means causes said clutch to operate said paper feeding rolls.

3. In a paper feeding mechanism, paper holding means along which the paper moves, a paper stop to limit the forward movement of the paper, and means whereby movement of the paper holding means causes said stop to move from stopping position.

4. In a paper feeding mechanism, a stationary feed roll, a movable feed roll, a movable paper tray, and means whereby movement of the paper tray causes said movable feed roll to move toward said stationary feed roll.

5. In a paper feeding mechanism, a paper feed roll, a support for holding a stack of paper and pivotally mounted adjacent said feed roll, means for driving said feed roll, and means whereby movement of the paper stack supporting means about said pivot causes said means to operate said paper feed roll.

6. In a paper feeding mechanism, a paper feed roll, a stop to limit the forward position of a sheet to be fed, and means whereby movement of the paper holding means initiates the operation of said paper feeding roll and moves said paper stop from operative position.

7. In a paper feeding mechanism, a paper feed roll, a stop to limit the forward position of a sheet to be fed, a clutch to operate said paper feeding rolls, and means whereby movement of the paper holding means causes said clutch to operate said paper feeding roll and to move said paper stop from operative position.

8. In a paper feeding mechanism, paper feed rolls, a paper stop to limit the forward position of a sheet to be fed, a clutch to operate said paper feeding rolls, and means whereby movement of the paper holding means causes said clutch to operate said

paper feeding rolls and to move said paper stop from operative position.

9. In a paper feeding mechanism, a stationary feeding roll, a movable feed roll, a paper tray adapted to support a stack of paper and movably mounted adjacent said stationary feed roll, a clutch for driving said stationary feed roll, and means whereby movement of the paper tray about said pivot causes said clutch to operate said stationary feed roll.

10. In a paper feeding device, a feed roll, means to guide the paper to feeding position, means to stop it at feeding position, and single means to simultaneously free the paper for movement and to advance the feed roll to act on the paper for movement and to advance the feed roll to act on the paper.

11. In a paper feeding device, a feed roll, means to guide the paper to feeding position, means to stop it at feeding position, and single means to simultaneously free the paper for movement and to advance the feed roll to act on the paper, said guiding means including a member adapted to move said paper against the feeding roll.

12. In a paper feeding device, a paper stop member, adapted to engage a sheet of paper to limit the forward movement of the paper, a movable paper engaging roll and single means to move said stop away from active position and move said movable roll to active position.

13. In a paper feeding mechanism, a stationary paper feed roll, a movable paper engaging roll, said last named roll comprising a plurality of individually spaced sections, a stop member having portions movable to position between the portions of the engaging roll and adapted to limit the forward position of the paper, a guide plate adapted to guide the paper, and means to cause said guide plate to move said paper downwardly and simultaneously to move said movable feed roll to feeding position.

14. In a paper feeding mechanism, a stationary paper feed roll and a movable paper engaging roll, a stop member adapted to limit the forward movement of the paper, a guide plate adapted to guide the paper, and means to cause said guide plate to move said paper downwardly and simultaneously to move said movable feed roll to feeding position.

15. In a paper feeding mechanism, a stationary feed roll, a movable feed roll, a removable paper tray, and means for latching said movable feed roll in idle position.

16. In a paper feeding mechanism, means for guiding the paper, a paper stop to limit the forward movement thereof, a pivoted member carrying said stop, and means for securing such pivoted member in a position with the stop idle.

17. In a paper feeding mechanism, the

combination with means for guiding the paper, a paper stop, a cam for operating it, means connecting the stop with the cam, a pivoted member carrying the stop and connecting means and adapted to be swung to withdraw said connecting means from the cam.

18. In a paper feeding mechanism, a table along which the paper moves, a paper stop to limit the forward movement of the paper, feed rolls, a pivoted member carrying the paper stop and one of the feed rolls, and means for holding said pivoted member with such carried parts in idle position.

19. In a paper feeding mechanism, the combination of a stationary feeding roll, a movable roll, a paper stop, a cam, a roller coacting therewith, a member carrying the roller, the paper stop and the movable feed roll, whereby the cam may actuate said parts, and means whereby the cam roller, the movable feed roll and the stop may be moved as a unit to idle position.

20. In a paper feeding mechanism, the combination with the feed rolls of a paper support comprising a pivoted member and a tray removably carried thereby, and a hook for holding said pivoted member in idle position.

21. In a paper feeding mechanism, the combination with paper guiding means of feed rolls, a clutch for controlling the feed rolls, means for periodically actuating the clutch, said paper guiding means being adapted to be moved to idle position, and means whereby such movement closes the clutch for continuous operation under other control.

22. In a paper feeding mechanism, the combination of a feed roll, a driving shaft therefor, a feed controlling cam, a clutch for controlling movement of the roll and cam, a paper guiding device having means to engage said cam and a roll to coact with the roll first mentioned, and adjustable means connecting the cam and the shaft whereby the rotational period between the initiation of the clutch actuation of said first roll and the engagement thereof by the second roll may be varied.

23. In a paper feeding mechanism, a paper feed roll, a driving shaft, a clutch between the drive shaft and the feed roll, a supporting frame, a lever pivoted to the supporting frame and having means to operate said clutch, a paper tray pivoted adjacent the paper tray roll, a catch carried by said paper tray, and means whereby said catch actuates said clutch to drive said paper feed roll.

24. In a paper feeding mechanism, a paper feed roll, a driving shaft and clutch between the drive shaft and the paper feed roll, a supporting frame for the roll, and shaft, a lever pivoted to the supporting frame and having means to operate said clutch, a sec-

ond lever pivoted to the frame, a link connecting said first lever to the second lever, a paper tray pivoted adjacent the paper feed roll, a catch carried by said tray adapted to operate said lever, said catch comprising a spring pressed member adapted to engage the lever when the tray is elevated, and to depress said lever and release it when the tray is depressed.

25. In a paper feeding mechanism, a paper feeding roll, a driving shaft, a clutch between the drive shaft and the paper feed roll, a supporting frame, a lever pivoted to the supporting frame and having means to operate said clutch, a second lever pivoted to the frame, a paper tray pivoted adjacent the paper feed roll, and means whereby the depression of said paper tray acts through said levers to operate said clutch.

26. In a paper feeding mechanism, a paper feeding roll, a driving shaft, a clutch between the drive shaft and the paper feed roll, a supporting frame, a lever pivoted to the supporting frame and having means to operate said clutch, a second lever pivoted to the frame, a paper tray pivoted adjacent the paper feed roll, means whereby the depression of said paper tray acts through said levers to operate said clutch, said means comprising a bracket carried by the tray, a spring pressed latch carried on the bracket, a head on said first mentioned lever adapted to engage the catch, coacting means between the bracket and the frame, whereby downward movement of the tray causes said latch to depress said head and then to release the same.

27. In a paper feeding mechanism, a paper feed roll, a driving shaft, a clutch between the drive shaft and the paper feed roll, a supporting frame, a lever pivoted to the supporting frame and having means to operate said clutch, a second lever pivoted to the frame, a link connecting said first lever and the second lever, a paper tray pivoted adjacent the paper feed roll, means to hold a supply of paper on said tray, a bracket carried by said tray, a spring pressed pivoted member carried by said bracket, said spring pressed member having a shoulder and a beveled portion, a projection carried by said frame which the beveled portion contacts, a head on the second mentioned lever adapted to contact with said shoulder when the latch is in one position, the arrangement being such that the depression of the paper tray causes the beveled member to be moved by the projection to free the head from said shoulder after the head has been depressed, whereby the clutch member may be thrown into action and immediately withdrawn.

28. In a paper feeding mechanism, the combination of means for guiding paper to feeding position, upper and under feeding

rolls, and movable means acting upon the top surface of the paper to bring it to coacting position with the under feeding roll.

29. In a paper feeding mechanism, the combination of means for guiding paper to feeding position, a lower feed roll, spaced upper feed rolls, and movable fingers adapted to act upon the top surface of the paper between the upper feed rolls to bring it to coacting position with the lower feed roll.

30. In a paper feeding mechanism, the combination of means for guiding the paper to feeding position, feeding rolls, and movable fingers acting upon the paper surface of the individual fed sheets to cause a uniform feeding.

31. In a paper feeding mechanism, the combination of a stationary feeding roll, a movable feeding roll, a paper stop, and means adjacent the paper stop for moving the paper transversely of its feeding movement to the stationary feeding roll, whereby it may be evenly fed.

32. In a paper feeding device, a supporting member, a paper feed tray secured thereto, a lever carried by said supporting member, a paper stop member pivoted on said support and adapted to be moved by said lever, and a paper guide operated by said lever, said paper guide comprising an upwardly projecting front portion and an upwardly projecting rear portion, said first mentioned portion acting to guide the paper against said stop member, and the second mentioned portion acting to press the paper to feeding position.

33. In a paper feeding device, a supporting member, a paper feed tray secured thereto, a lever carried by said supporting member and pivoted thereto, a cam wheel carried by said lever, a paper stop member pivoted on said support and adapted to be engaged by said lever and to be moved thereby to and from operative position, a paper guide secured to said lever, said paper guide comprising an upwardly projecting front portion and an upwardly projecting rear portion, said first mentioned portion acting as a guide and the second mentioned portion acting to press the paper to feeding position, and a paper engaging roll carried on said supporting member and adapted to press paper into contact with said feed roll.

34. In a paper feeding device, means to support a feed roll, a supporting member mounted adjacent said feed roll and having a projecting member thereon, a paper tray having an aperture adapted to receive said projection and to hold it thereon, said supporting member being pivotally mounted whereby said tray may move up and down, and means whereby the movement of said tray up and down throws the clutch member in and out.

35. In a paper tray for use in a paper

feeding machine, a base member, a paper tray secured thereon, said paper tray comprising a base member, a front portion having a bracket secured thereto, a rod carried on said bracket and adjustable members on said rod, and having paper engaging means thereon.

36. In a paper feeding machine, a pivotally supported member having projections thereon, said projections being adapted to receive a paper tray, means carried on said pivoted member for presenting paper to a paper feed roll, and means whereby said supporting member may be shifted about its pivot out of operative position.

37. In a paper feeding machine, a pivotally supported member having projections thereon, said projections being adapted to receive a paper tray, means carried on said pivoted member for presenting paper to a paper feed roll, means whereby said supporting member may be shifted about its pivot out of operative position, and means carried on said pivoted member adapted to engage a frame of said paper feeding device to hold said pivot member out of operative position.

38. In a paper feeding mechanism, the combination of a shaft, a sleeve thereon, a cam on the sleeve controlling the feed, and a hand wheel and adjustably clamped member, located one on the shaft and the other on the sleeve.

39. In a paper feeding device of the class described, the combination of a feeding drum, a shaft carrying the same, a sleeve

on said shaft, a cam on the sleeve, a paper feed roll adapted to coact with the drum under the control of said cam, a hand wheel on the sleeve having an arcuate slot, and a member on the shaft having a pin adjustably engaging said slot.

40. In a paper feeding mechanism, a table along which the paper moves, a paper stop to limit the forward movement of the paper, feed rolls for the paper, a pivoted member carrying the paper stop and one of the feed rolls, means for holding said pivoted member with said carried parts in idle position, and adjustable means connecting said last named means with one of the feed rolls, whereby the idle period of one of the feed rolls, relative to the initiation of the movement of the other roll may be varied.

41. In a paper feeding mechanism, the combination with paper guiding means, a feed roll, a clutch for controlling the feed roll, means for periodically actuating the clutch, means whereby said movement closes the clutch for continuous operation under other control, means for periodically bringing one of the feed rolls into cooperative feeding relation with the other roll, including actuation of the paper guiding means, and means whereby the preliminary partial rotation of one of the feed rolls before co-operating with the other feed roll may be varied.

In testimony whereof, I hereunto affix my signature.

CLIFTON CHISHOLM.