Jan. 14, 1930. L. H. MORSE 1,743,158

PAPER FEEDING MECHANISM

Filed Aug. 4, 1928 7 Sheets-Sheet 1

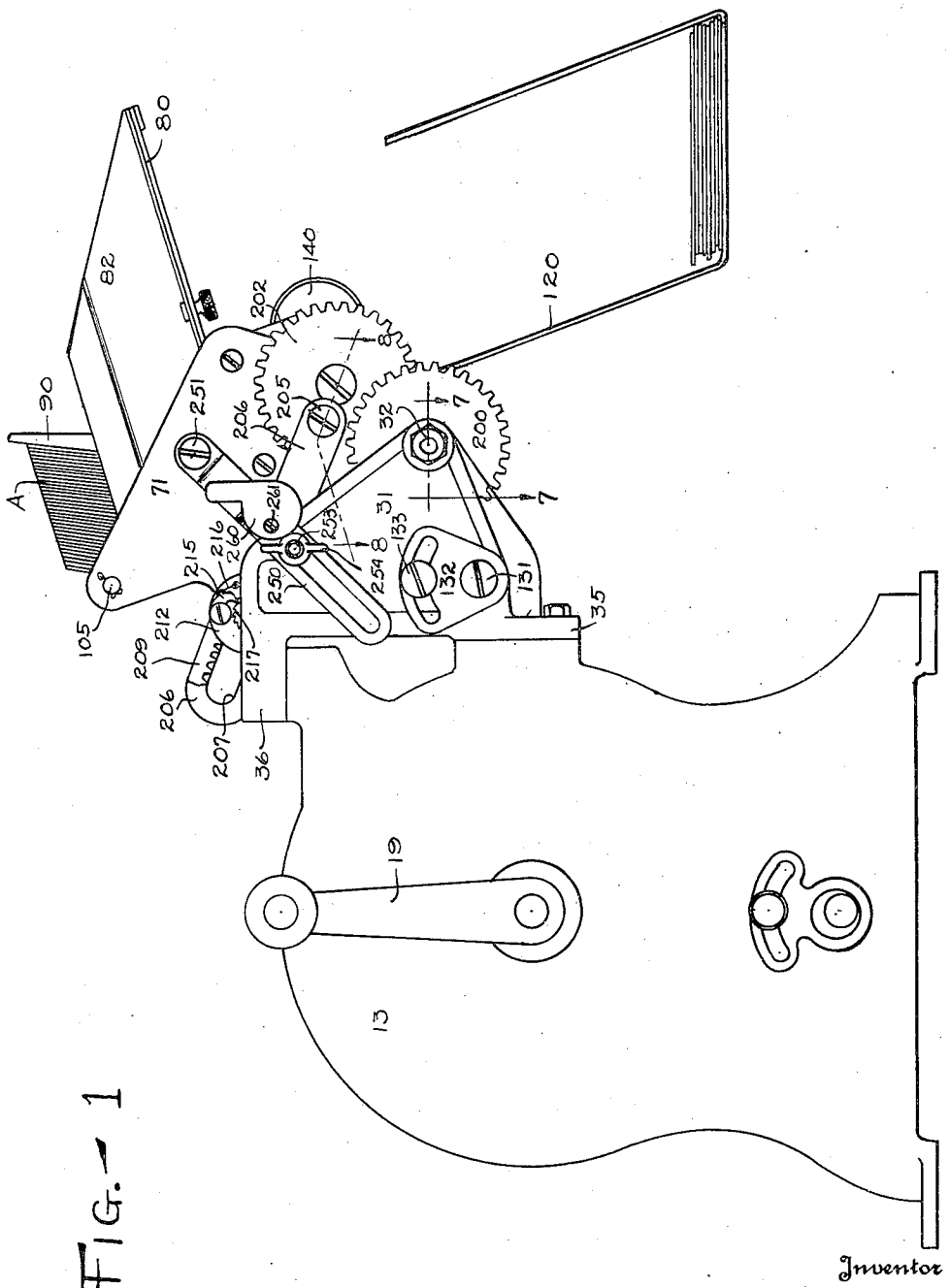


FIG. 1

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PAPER FEEDING MECHANISM

Filed Aug. 4, 1928 7 Sheets-Sheet 2

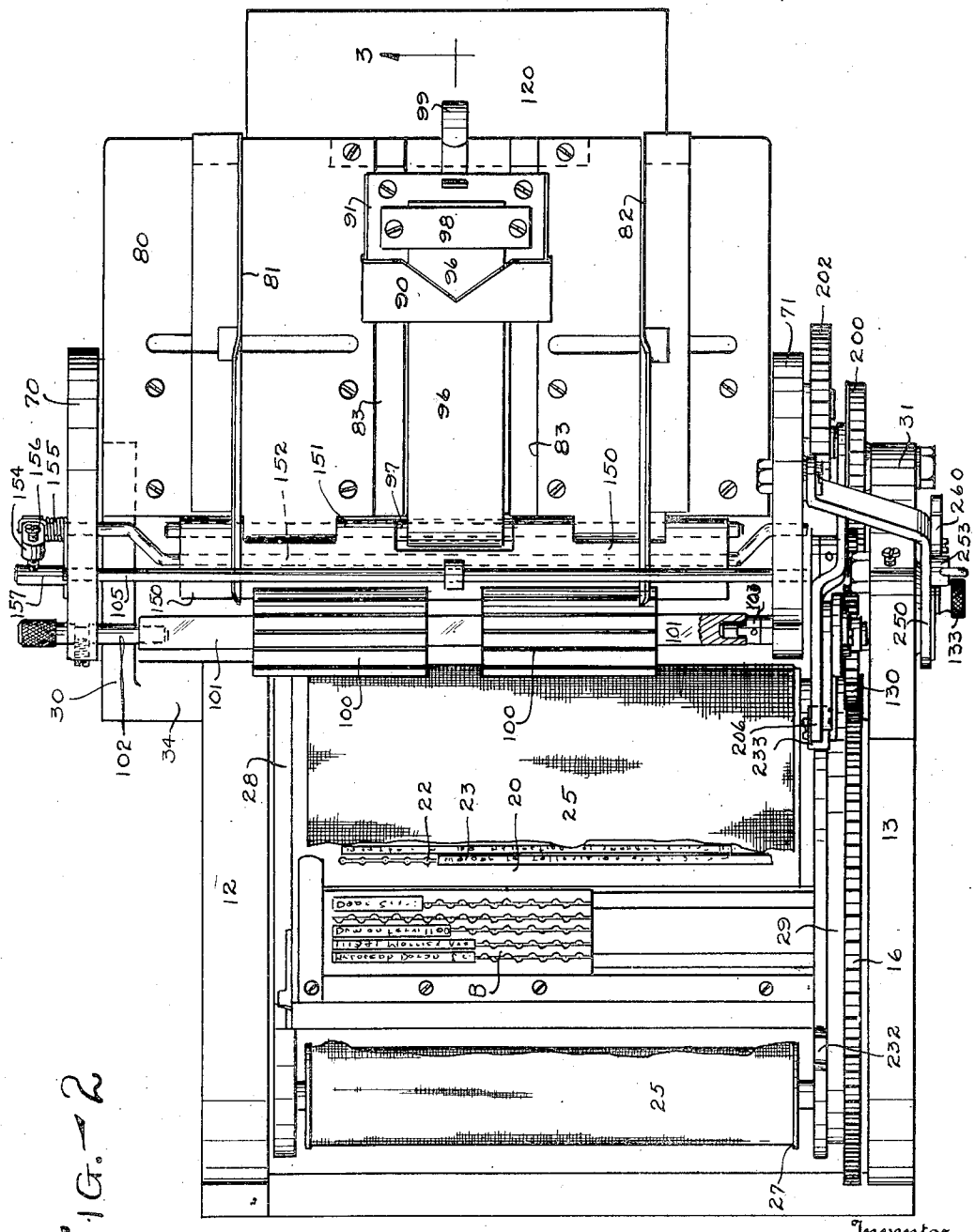


FIG. 2

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Jan. 14, 1930. L. H. MORSE 1,743,158

PAPER FEEDING MECHANISM

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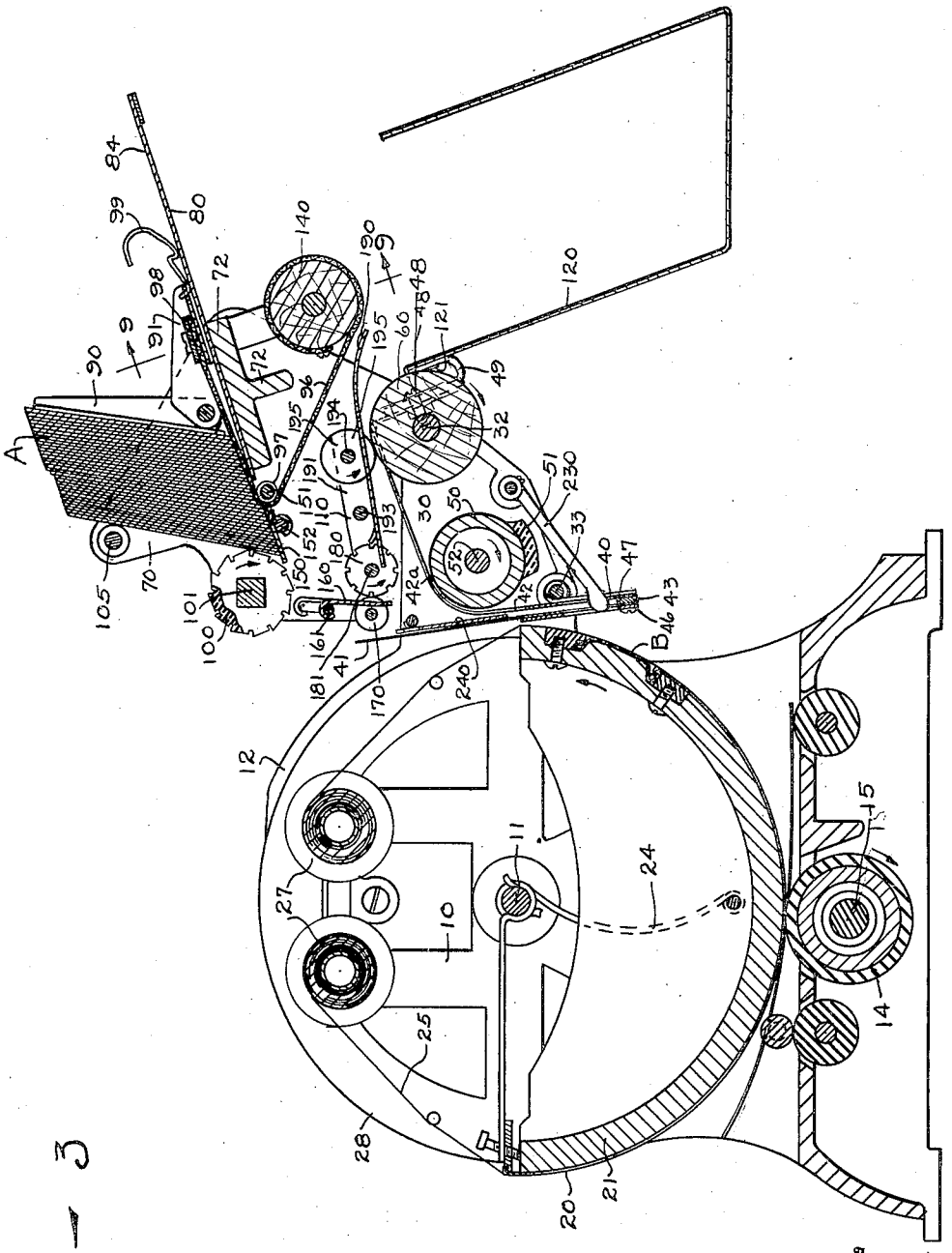


FIG. 3

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Jan. 14, 1930. L. H. MORSE 1,743,158

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FIG. 9

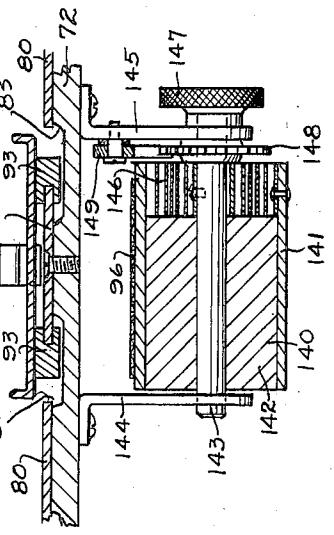


FIG. 4

Inventor

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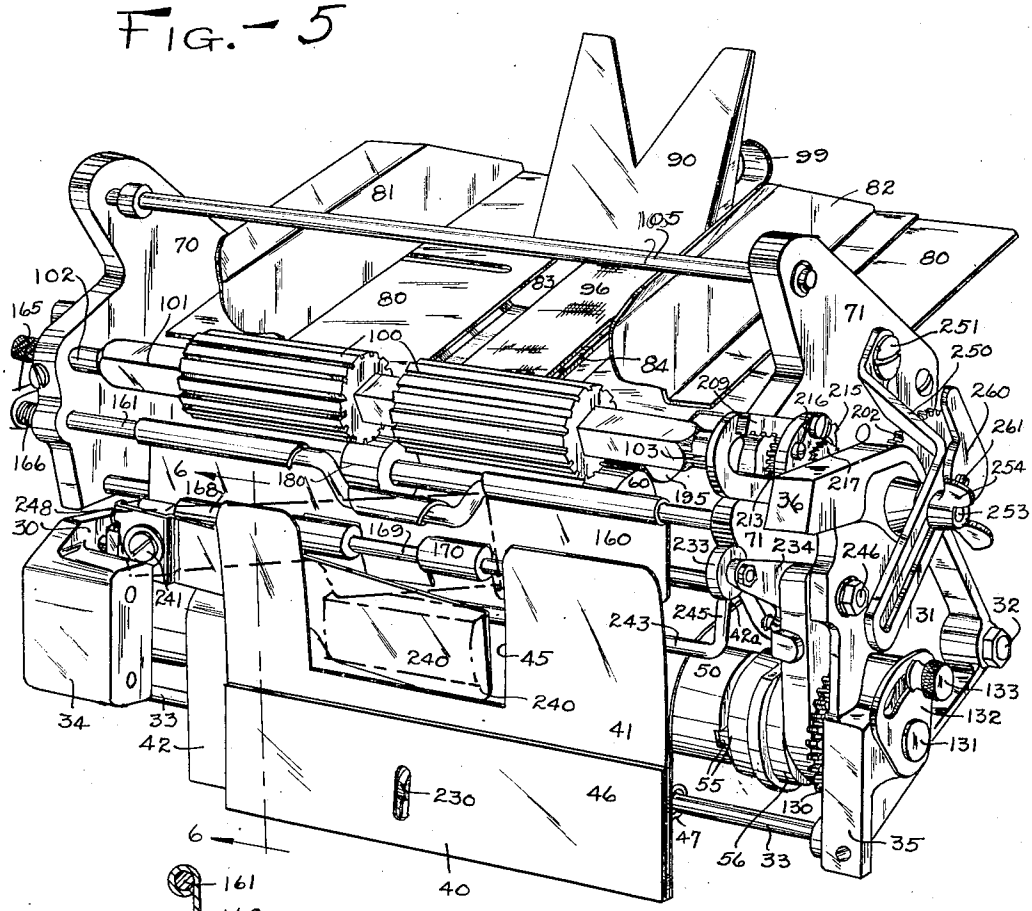
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Jan. 14, 1930. L. H. MORSE 1,743,158

PAPER FEEDING MECHANISM

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FIG. - 5



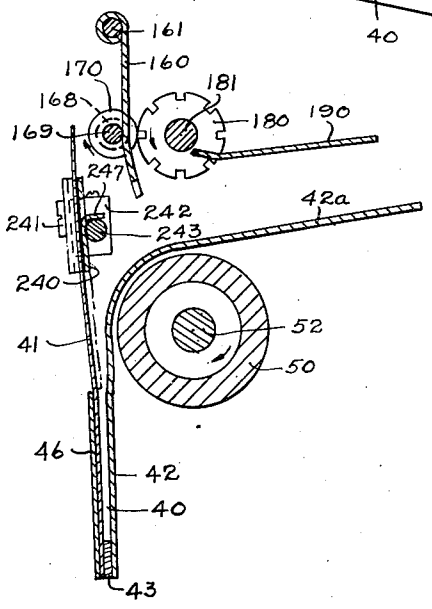


FIG. - 6

Inventor

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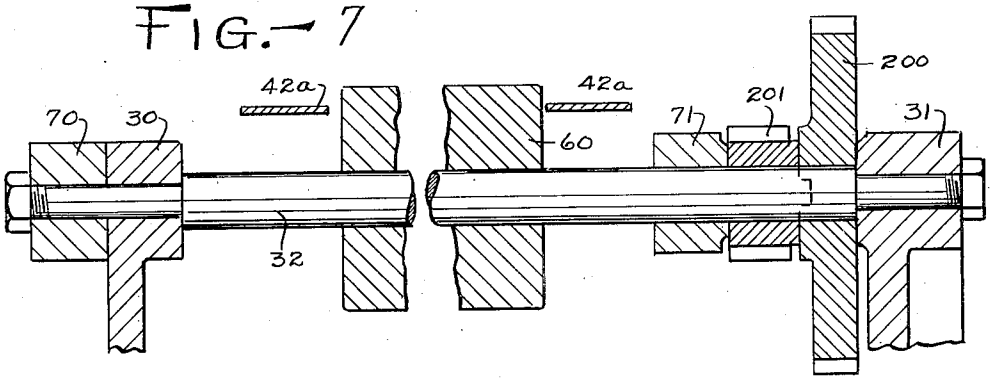
Attorneys

Jan. 14, 1930. L. H. MORSE 1,743,158

PAPER FEEDING MECHANISM

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FIG. 7



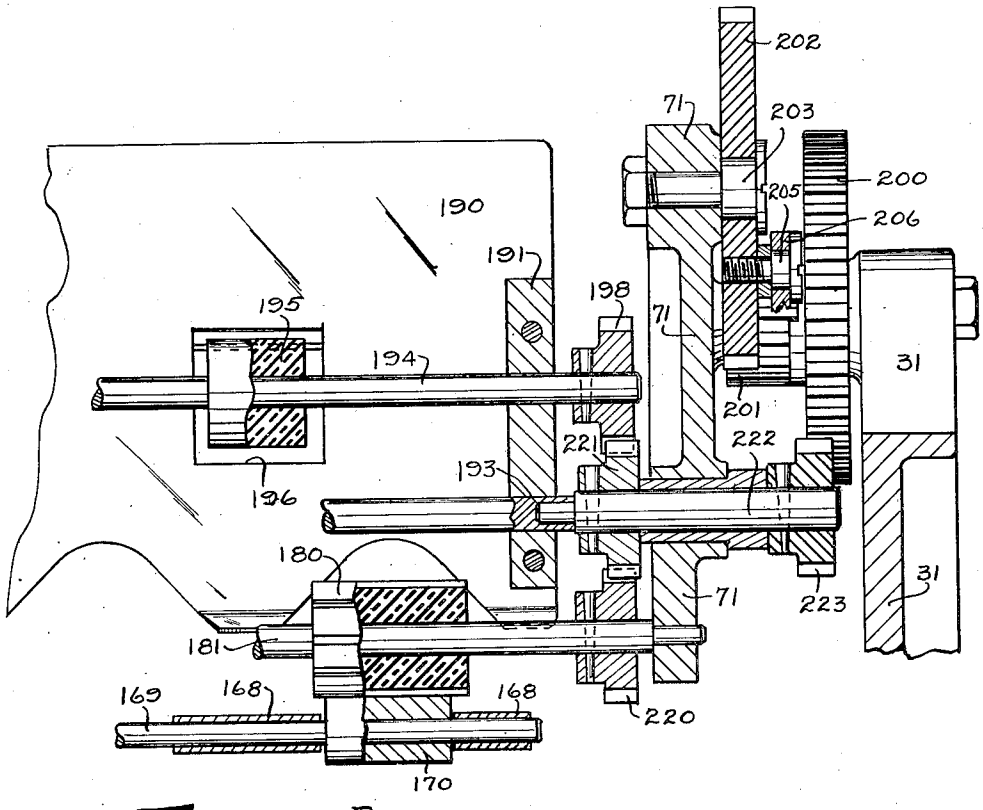


FIG. 8

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PAPER FEEDING MECHANISM

Filed Aug. 4, 1928 7 Sheets-Sheet 7

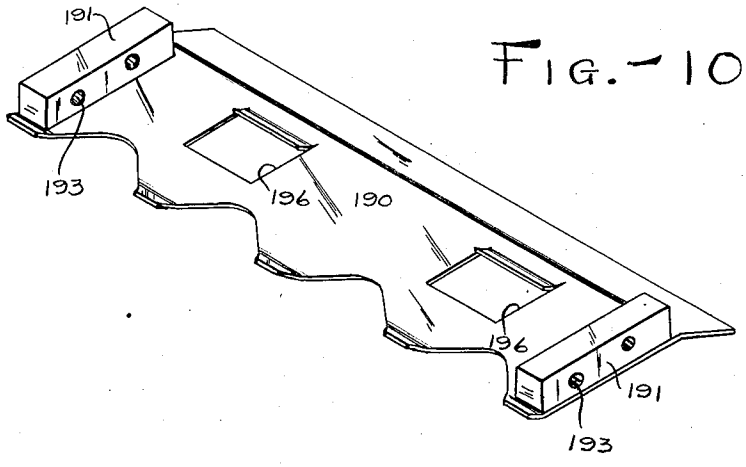


FIG.- 10

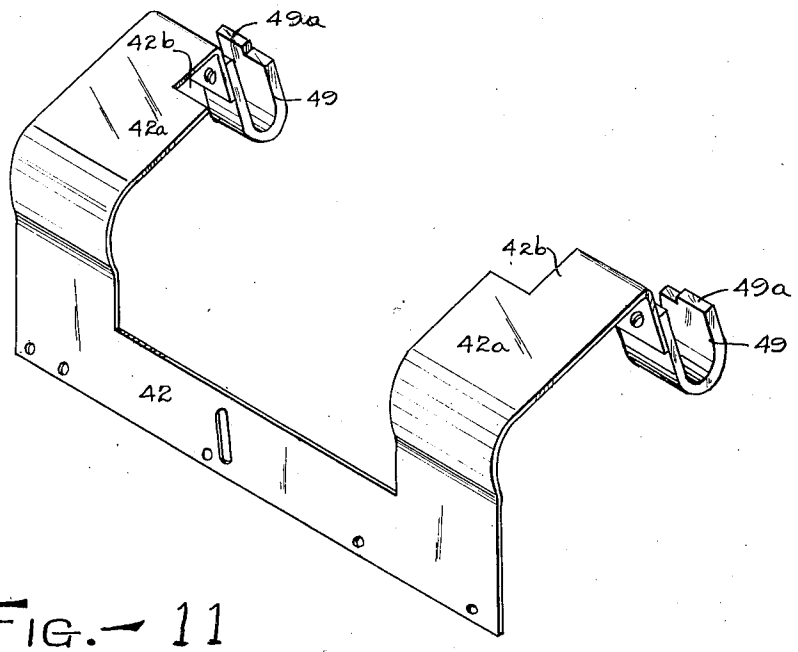


FIG.- 11

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Patented Jan. 14, 1930 1,743,158

UNITED STATES PATENT OFFICE

LAWRENCE H. MORSE, OF CLEVELAND, OHIO, ASSIGNOR TO THE AMERICAN MULTIGRAPH COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO

PAPER-FEEDING MECHANISM

Application filed August 4, 1928. Serial No. 297,519.

This invention relates to a device for automatically feeding paper, preferably envelopes or cards, to a printing machine. More particularly, the invention is designed for attachment to a rotary addressing machine, similar to the addressing multigraph, and operates to feed envelopes or cards at the proper time downwardly from an elevated supply into position to be printed by an address plate on a multigraph drum and a coacting platen behind it, following which the printed envelope or card is automatically discharged.

My invention is in the nature of a supplement to the addressing machine shown and claimed in Patent No. 1,627,240, granted May 3rd, 1927, to my assignee The American Multigraph Company, as assignee of John A. Hult. That patent shows a multigraph having provision for carrying a changeable address plate and having a segmental envelope platen at the rear of the machine adapted to print an envelope by means of the same address plate after the latter has printed on a sheet in conjunction with the body of the letter by means of the main platen of the multigraph. In the Hult machine however, the envelope is placed manually in the envelope pocket at the rear of the machine, from which it is discharged by the rolling printing action in effecting the envelope imprint. My invention provides for placing the envelope automatically in the pocket at the proper time, and provides also additional means for effectively discharging it following its impression. These features, and others contributing to the efficiency of the operation, are illustrated in the drawings hereof, and will be hereinafter more fully described.

In the drawings, Fig. 1 is a side elevation of the feeding mechanism attached to a multigraph; Fig. 2 is a plan of the embodiment shown in Fig. 1, with a few parts omitted; Fig. 3 is a vertical section through the envelope feed and multigraph as indicated by the line 3—3 on Fig. 2; Fig. 4 is a diagrammatic side elevation of the gearing for operating the paper feed; Fig. 5 is a perspective of the paper feed detached from the multigraph and looking from the position occupied by the multigraph; Fig. 6 is a detail in vertical section as indicated by the line 6—6 on Fig. 5; Fig. 7 is a horizontal section on a larger scale through parts mounted on a transverse frame rod, as indicated by the line 7—7 on Fig. 1; Fig. 8 is an approximately horizontal section through parts concerned with the operation of a feed roll and an ejecting roll, the plane of this section being indicated by the line 8—8 on Figs. 1 and 4; Fig. 9 is a vertical section through the follower mechanism, as indicated by the line 9—9 on Fig. 3; Fig. 10 is a perspective of the plate forming the upper portion of the discharge guide; Fig. 11 is a perspective of the plate forming the lower portion of such guide.

As shown in the drawings, the printing machine proper is of the type of the multigraph and comprises a rotary drum 10 mounted on a shaft 11, journalled in end frame plates 12 and 13 above a roller platen 14 mounted on a shaft 15. Gearing 16 and 17 and an Oldham coupling connect the drum and platen. Any suitable means, as for example an electric motor or a crank 19 is provided for rotating the drum and platen.

I have shown mounted on the drum a means for printing the body of a form letter, such means comprising a blanket 20 (shown conventionally in Fig. 2) stretched about a segment 21 on the drum and having raised overhanging projections 22 carrying embossed printing strips 23. The segment is shown as a semi-cylinder resting on the end members 28 and 29 of the drum and held in place by a spring hook 24 engaging the shaft 11. An inking ribbon 25 is shown as mounted on spools 27 carried between the end members of the drum, such ribbon extending intermediately about the type form.

The segment 21 in the Hult machine is provided with a pair of undercut channels into which an address plate B may be slid endwise beneath the inking ribbon. Behind the drum is located a segmental platen suitably controlled by a clutch which operates to print the address from the same address plate, and through the same ribbon upon an envelope placed in a suitable pocket at the rear of the machine between the multigraph drum and the segmental platen.

It will be seen that in the construction described, when the drum is rotated, a sheet of paper fed between the drum and platen may be printed by the type characters and address plate through the ribbon, and thereafter the address plate may address the envelope. The envelope was placed by hand and the sheet of paper fed by hand or automatically as desired.

My envelope attachment carries the envelope platen and the envelope pocket together with automatic envelope feeding and discharge mechanism, so that the whole device is mounted as a self contained machine ready for attachment to a multigraph.

The main frame of my attachment comprises the side plates 30 and 31 and connecting cross rods 32 and 33. The plate 30 is preferably provided at its inner end with a block 34 adapted to abut the outer side of the end plate 12 of the multigraph and be bolted to it, while the frame plate 31 has a machined face 35 adapted to abut the rear face of a lug of the multigraph plate 13 and has also an overhanging ear 36 adapted to abut the top of a lug on the multigraph frame plate.

The attachment frame just described carries the envelope pocket 40, the envelope platen 51 and the main discharge roll 60, all of which will be hereinafter described in detail. Pivotally mounted on the frame rod 32 is a swinging frame consisting of a pair of vertical plates 70 and 71 connected by a rigid cross member 72. This frame carries the paper table 80, the follower mechanism 90 thereon, the main feed roll 100, and a combined feeding and discharging device 110. All of these will be described in order.

As shown in Figs. 3, 5 and 11, the envelope pocket comprises a front plate 41, a rear plate 42 and a bottom strip 43 to which both plates are secured. The front plate 41 is an extremely thin member free at its top to move toward the multigraph and has an opening 45 through which the platen acts. This plate is reinforced on the front side by a stiffer plate 46. The pocket is hung in place by means of metal strips 47 secured to the bottom bar and extending upwardly along the rear side of the plate 42 and curled around the frame rod 33. The plate 42 thence extends upwardly in the form of two separated arms 42^a which extend over the roller 50, carrying the segmental platen 51, beyond the ends of the segment. The arms are then secured at 48 to the cross rod 32, and beyond it they bend downwardly and to their extreme ends are attached U-shaped upwardly facing brackets 49, Figs. 3 and 11. These U-shaped members provide recesses for the ready attachment of the envelope receptacle 120. This may be a sheet metal box or trough as shown in Fig. 3 having at its upper end a forward flange carrying a downwardly projecting flange 121 which is adapted to occupy the recesses of the brackets 49. Shoulders 49^a prevent longitudinal shifting of the receptacle.

The roller 50 carrying the segmental rubber platen 51, behind and beneath the shield plate 42, may be of substantially the form shown in the Hult patent referred to, being mounted on a shaft 52 (Fig. 3) which at its ends may have eccentric pins (indicated at 52^a in Fig. 4) extending into adjustable studs 131 mounted in the frame plates 30 and 31. An Oldham coupling 55 may have a single rotation clutch 56 as shown in the Hult patent, may connect the platen roller with a gear 130 journalled on studs 131 which carries that end of the platen. A flared arm 132 on this pin, and a clamping screw 133 passing through a slot in the arm enables the pin to be turned axially to adjust the platen by means of its eccentric mounting.

As will be well understood, a suitable friction brake may also be employed on the platen roller to prevent its displacement when not driven.

Behind the platen is a main delivery roll 60, which is preferably of wood and is journalled on the stationary rod 32 so that its uppermost surface projects slightly above the plane of the inclined part 42^a of the envelope pocket, such inclined portion being cut out as shown at 42^b to allow space for the roller. Accordingly, as the envelope moves rearwardly, being guided by the portions 42^a of the envelope pocket, it comes gradually onto the discharge roller and is fed by it, and cooperating mechanism to be described, rearwardly and discharged into the receptacle 120.

I will now describe the feed mechanism carried by the surmounting frame plates 70 and 71 and which also has discharge mechanism 110 coacting with the upper portion of the discharge roller 60 last described. The cross member 72 of the surmounting frame carries two aligned plates 80 which constitute the paper table. On these plates are upstanding side guides 81 and 82 adjustably clamped in place by means of bolts passing through slots in the plates 80. Intermediate of the plates 80 is a narrow plate 84 carried by the cross member 72 and forming a guide for the follower 90. This follower is pivotally mounted to a carriage 91 which is slidably guided on the plate 84. The follower carriage 91 has on its underside lugs 93 which extend downwardly in the slots 83 between the plates 80 and 84 and thence project beneath the plate 84.

The follower is given a tendency to move toward the main feed roll by means of a spring barrel 140 and a strap 96 leading therefrom about a roller 97, thence backwardly along the top of the plate 84 to the carriage 91 to which it is clamped by a suitable cross bar 98. A suitable clip 99 secured to the car-

riage may latch over the end of the plate 84 and hold the follower in its outermost position. In use however, this latch is idle, riding freely on the plate 84, the follower 90 pressing against the rear of the stack of envelopes, as shown at A in Fig. 3, and forcing it forwardly against the main feed rolls 100 and a rotatable cross rod 105 mounted in the frame plates 70 and 71.

When the machine is used for feeding envelopes, in contradistinction to cards, the flaps of the envelopes cause the stack to be thicker in the upper region than in the lower part, by an amount varying with the number of envelopes. To accommodate this, I mount the follower 90 pivotally, as heretofore explained. Thus, the follower automatically conforms in position to the rear face of the stack and always forces the lower portion of the envelopes snugly against the feed roller 100.

The spring barrel 140 is shown more particularly in Fig. 9. As there shown, it comprises a sleeve 141 and a core 142 loosely mounted on a shaft 143 journalled in brackets 144 and 145 depending from the cross frame member 72. A spiral spring 146 is connected at one end to the shaft 142 and at the other to the shell 141. On the end of the shaft 143 is a knob 147 by which the spring may be wound up, a ratchet wheel 148 on the shaft and an escapement pawl 149 serving to maintain the spring wound. By rocking the escapement pawl, the spring may be allowed to unwind to reduce the tension on the strap 96, after the manner of a typewriter tension escapement.

In front of the paper table is the main feed roll 100 which preferably comprises a plurality of rubber sections mounted on a square shaft 101. I prefer to have two of these sections. They are grooved longitudinally to provide ribs which take somewhat the form of ratchet teeth as shown in Fig. 3. These rubber sections engage the foremost envelope and are adapted to force it downwardly off the front of the stack. The square shaft 101 is readily removable, being preferably journalled at one end on a slidable pin 102 clamped in the frame plate 70 by a set screw, and at the other end having a tongue and groove connection with a short driving shaft 103. The rubber sections 100 are slidable on the square shaft so that they may be positioned for different size envelopes, or may be readily replaced by fresh sections in case of wear.

The foremost envelope and several at the rear thereof are supported on an extension 150 of the paper table, which comprises a plate hinged at 151 to the forward end of the table proper and supported by a rock shaft 152 whereby this extension may be swung upwardly or downwardly to vary the approach to the feed roller and thus control the feed. The rock arm 154 on the rock shaft 152 carries a spring 155 pressing the rock shaft in one direction, and a set screw 156 passing through the rock arm against an abutment 157 provides for the adjustment. By adjusting this plate 150 and adjusting the tension on the follower strap 96 a very effective separating of the foremost envelope from the stack and its downward feed may result.

When an envelope is fed from the stack, it passes diagonally forwardly and downwardly, its lower end striking a plate 160 mounted on a transverse rock shaft 161. This rock shaft is intermediately bent, enabling the plate to be rigidly secured to it by curling over it in different regions as shown in Fig. 5.

The plate 160 has ears 168 at its lower end which carry a rod 169 on which are mounted freely turning feed rolls 170. These feed rolls 170 coact with a series of rubber rolls 180 mounted on a shaft 181 journalled in the frame members 70 and 71. The plate 160 is adjustable by means of its suporting rock shaft 161 to bring the rolls 170 into proper engagement with the rolls 180. This adjustment of the plate is made by means of an arm 165 on the rock shaft, a spring 166 pressing the arm in one direction and a set screw (not shown) limiting the movement.

Extending rearwardly from the under portion of the roller 180 is the top discharge guide 190. This guide is an approximately horizontal plate secured to the underside of a pair of end blocks 191 (Fig. 10) pivoted near their forward ends at 193 to studs extending from the frame members. The stud carried by the frame member 71 is shown at 222 in Fig. 8, and the other stud is similar. Behind these studs these blocks carry a shaft 194 on which are mounted rubber feed rolls 195 which project through openings 196 in the plate 190 and rest on the delivery roll 60 heretofore mentioned. The rolls 180 and 195 are geared with an intermediate driving gear 221 and thus rotate in the same direction; that is, their downward portions travel rearwardly.

It will be seen that the forward portion of the roll 180 coacts with the roll 170 to force the envelope downwardly into the pocket, where it is printed. After printing this envelope being shoved upwardly by the multigraph drum and the segmental platen 51 engages the underface of the rolls 180 and they then act as delivery rolls, carrying the envelope rearwardly along the underside of the shield 190 and delivering it to the main delivery couple 60 and 195. These latter rolls continue the delivery of the envelope between them under the plate 190 and discharge it into the receptacle 120. By giving the rolls 180 the combined function of feeding and delivering, I am enabled to make the mechanism very compact, and this is one of the features of my invention.

The envelope feed is operated by gearing connected with the multigraph drum. Thus the main gear 16 on the drum, which drives the platen gear 17, also meshes with the gear 130 on the stud 131 carrying the shaft of the envelope platen, as already explained. As the multigraph gear is normally exposed in this region, the simple act of mounting the envelope attachment on the multigraph frame causes these gears to mesh. The gear 130 meshes with a gear 200 journalled on the stationary rod 32. This gear is drivingly connected with a pinion 201 which meshes with a gear 202 (Figs. 4 and 8) which is carried on a stub shaft 203 mounted in the side member 71 of the surmounting frame. The gear 202 operates the feed roll, as about to be described.

The gear 202 carries a crank pin 205 on which is mounted a link 206 which has near its other end an elongated slot 207 extending around the shaft 103 which couples to the feed roller shaft 101. Loosely journalled on this shaft 103 is a disk 212 carrying on its inner side a pinion 213 (Fig. 4). A rack 209 formed on the side of the link 206 constantly meshes with this pinion and accordingly rotates the pinion and the disk 212 first in one direction and then the other as the gear 202 rotates. The disk 212 carries a pawl 215 pressed by a spring 216 into engagement with a ratchet wheel 217 which is rigid on the shaft 103. The ratchet teeth face in such direction that when the link 206 moves in the left hand direction in Fig. 1, (that is, toward the general location of the multigraph) the pawl clicks idly over the ratchet teeth, but when the link moves in the reverse direction, the pawl drives the ratchet wheel and hence the shaft 101 to turn the rearmost portion of the rollers 100 downwardly.

It will be seen from the description given, that, as the multigraph drum rotates, the feed rollers 100 will have periodic feeding movements separated by periods of rest. It requires a plurality of these feeding movements to fully feed an envelope. The gearing is so proportioned and timed that it results in feeding an envelope downwardly from the stack a material time before the address plate on the drum reaches the region of envelope printing.

The combined feed and delivery rolls 180 have on their shaft 181 a pinion 220 which meshes with the pinion 221 on the short shaft 222 journalled in the surmounting frame member 71. On the outer end of this shaft 222 is a pinion 223 meshing with the gear 200. Accordingly, the rolls 180 are constantly driven, and thus when the lower end of the envelope as fed by the rolls 100, reaches the bite of the rolls 170 and 180, it is taken up by them and fed downwardly into the envelope pocket between the plates 41 and 42.

If desired, a detector mechanism may be provided to control the movement of the platen roller 50, according to whether or not an envelope is in the pocket. Such detector mechanism may well be made in accordance with Patent No. 1,625,256 issued April 19th, 1927 to my assignee The American Multigraph Company, as assignee of John A. Hult.

The mechanism of the patent mentioned has a detector finger which normally stands in the envelope pocket, projecting from the rear through a slot therein, as illustrated herein in Fig. 3, by the finger 230. This finger may control the clutch 56 for communicating motion from the gear 130 to the platen roller. Thus, there may be a cam 232 on the multigraph drum engaging at the proper time a roller 233 on an arm 234, the movement of which arm will or will not release the clutch, according to whether or not a suitable distance piece is inserted by the operation of the finger 230. If there is no envelope in the pocket, the movement of the arm 234 fails to release the clutch. If there is an envelope in the pocket the movement of the finger 230 interposes the necessary distance piece, and the movement of the arm 234 then causes the clutch to engage so, that thereupon the platen revolves. This movement takes place just as the address plate indicated at B in Fig. 3 is coming into proximity to the platen roller, the result being that the segment 51 forces the envelope in the pocket against the address plate and effects the printing.

The printing movement of the platen segment 51 and the plate B lift the envelope upwardly and thus bring its upper end against the under surface of the roller 180. This roller now acts on the envelope as a delivery roll and forces its upper end rearwardly, causing such upper end to travel along the underside of the plate 190. The envelope thus comes into the bite of the delivery rolls 195 and 60. The roller 195 is constantly driven by reason of its shaft carrying a pinion 198 (Figs. 4 and 8) which meshes with the pinion 221 heretofore mentioned. The rolls 195 and 60 being constantly driven carry the envelope farther rearwardly and discharge it over the top of the receptacle 120 where it falls on the envelopes previously delivered.

To prevent the segmental envelope platen 51 from bowing the envelope inwardly toward the address plate, in a way which would be likely to smudge the envelope, I provide a shield 240 (Figs. 3, 5 and 6) which comprises a blade normally extending across the opening 45 of the envelope pocket 41, this blade being pivoted at 241 to a block 242 mounted on a stationary rod 243 extending behind the plate 41. The rod 243 is mounted at one end in the frame plate 30 and at the other end is preferably cranked, as illustrated at 245, and mounted in the frame plate 31, the cranked portion 246 of the rod forming the bearing for the arm 234.

The blade 240 may have a lip 247 (Fig. 6) overhanging this rod, limiting the downward movement of the blade. The upward movement of the blade may be limited by a shoulder 248 (Fig. 5) adapted to engage the block 242. The blade is therefore capable of a limited up and down oscillation. The blade normally substantially closes the opening through the plate 41.

The envelope inserted in the pocket stands behind this blade 240. Now, as the printing action is about to begin, the edge of the segment 51 pressing against the envelope lifts the blade 240 so that the only available opening through the plate 41 is that between the upper edge of the segment 51, and the bottom of the opening 45. Printing is effected through this opening, the segment and envelope passing upwardly at the rear of the elevated blade until the lower edge of the segment clears the region of the lower edge of the blade, when the blade drops to normal position.

The result of this shield mechanism is that the opening between the platen roller and the multigraph is normally closed and is only opened at the time of printing the envelope and then only for a distance corresponding to the face of the envelope platen. This effectively prevents the envelope being inadvertently bent against the multigraph ribbon and insures clean and accurate printing.

It is desirable to be able to move the envelope stack with its feed and upper delivery rolls away from the envelope pocket, to remove an envelope which may have been improperly fed or discharged. To accomplish this I pivotally mount the supplemental frame 70, 71, 72 which carries the stack and feed and upper delivery rolls on the rod 32. To hold this frame normally in position, I provide a slotted link 250 pivoted to the frame plate 71 at 251, then offset outwardly and having its slot embracing a stud 253 carried by the plate 31. A wing nut 254 threaded on the stud 253 serves to clamp the link, and thus hold the supplemental frame in its active position as illustrated in Fig. 5. When this nut is loosened the supplemental frame and the parts it carries may be tipped backwardly to the extent allowed by the slot of the link, the end portion of the link engaging the stud 253 and limiting the backward swing.

To adjust accurately the approach of the supplemental frame to the envelope pocket, to provide for different sizes of envelopes and different weights of paper, I prefer to mount a cam 260 on the link 250, which cam engages the cylindrical hub of the wing nut 254. The cam is clamped in position by its pivot screw 261. By slightly loosening the wing nut and loosening the screw 261, the cam may be set in any desired position, after which the screw and wing nut are tightened.

As heretofore mentioned, my paper feed mechanism is a very compact device, self-contained in a frame adapted for attachment to existing multigraphs. When so attached it is very effective in automatically feeding the envelopes downwardly into position for printing and delivering them following the impression into a suitable receptacle. As the addressing multigraph, with the address plate changed for each rotation, prints individually addressed letters, my paper feed mechanism enables the automatic printing of the same address on the envelope without attention by the operator. The operator is thus free to devote himself to the operation of the multigraph and the installing and removing of the address plates. Frequently the multigraph is power driven and provided with an automatic paper feed, and in that case when the machine is equipped with my automatic envelope feed, the operator can devote his attention entirely to the removal of an address plate and installing an address plate once for each rotation, simply taking care that periodically envelopes and sheets of paper are supplied to the stacks.

It is to be understood that though I have for convenience referred to this invention as a mechanism for feeding envelopes, such term should be taken as including cards, sheets of paper or other articles which may be fed to a region where some work is performed on them, after which they are discharged.

I claim:—

1. The combination with a rotary printing drum, an envelope platen and an envelope receiving pocket between the drum and platen in which the envelope is moved during the printing impression of an automatic envelope feed operating concurrently with the rotation of the drum and adapted to feed an envelope from a stack into said pocket before the impression in the opposite direction to its movement during printing.

2. The combination with a rotary printing drum, an envelope platen and a pocket between them in which the envelope is moved during the printing impression, of a feed roll acting on a stack of envelopes to feed them one after the other into the pocket, in the opposite direction to that of its movement during printing.

3. The combination with a printing couple, of means for supporting a stack of envelopes, a feed roll adapted to dislodge the foremost envelope and feed it, and a pair of coacting rolls to feed the said envelope and advance it to printing position, one roll of said pair acting to engage the envelope after printing and assist in its delivery.

4. In a feeding mechanism, the combination of a paper table, a feed roll adjacent the edge thereof, means for forcing a stack of articles standing on edge on the table against the feed roll, and a pair of rolls to receive

the article discharged by the feed roll, one of the rolls of said pair being carried by an adjustable plate acting as a guide to the bite of said pair of rolls.

5. In an envelope feeding mechanism, the combination of means for supporting a stack of envelopes, a feed roller coacting therewith, a pair of advancing rolls into the bite of which the feed roll may feed the foremost envelope, one of said advancing rolls acting also on the printed envelope to move the same as it is being delivered, an envelope pocket into which the advancing rolls may feed the envelope to be printed, said pocket also forming an underguide for the delivered envelope, and a plate forming an upper guide for such envelope.

6. In a paper feed mechanism, the combination with a platen roll, a pocket lying in front of the platen and having its rear wall curving rearwardly over the platen roll to form an under paper guide, and a paper receptacle carried by such rear wall.

7. In a feeding mechanism, the combination of a platen roller, an envelope pocket located in front of the platen roller and having a front plate and a back plate, the back plate extending upwardly over the platen roller as a discharge guide, and a top plate forming with the back plate a discharge chute.

8. In a feeding mechanism, the combination of a pocket having a front plate and a back plate, the back plate extending upwardly and then rearwardly to act as a discharge guide, a top plate forming with the back plate a discharge chute, and a pair of delivery rolls one above the other, the under roll extending above the plane of the rear extension of the back plate and the upper roll extending below the plane of the top plate.

9. In a feeding mechanism, the combination of a platen roller carrying a segmental platen, a pocket in front thereof and having its rear wall bifurcated and extending over the platen roller beyond the ends of the path of said segment, and then bent downwardly, the downwardly bent portions carrying upwardly facing U-shaped brackets, and a receptacle having a flange or rib adapted to occupy the U-portions of said brackets.

10. In a feeding mechanism, the combination with an envelope platen, of a hinged frame carrying a stack of envelopes and a feed roll adapted to dislodge the foremost envelope, which thence passes into the region of the platen, said hinged frame being adjustable for different size envelopes or different thicknesses of paper.

11. In a feeding mechanism, the combination of a pocket, a pivotally supported frame, means on said frame for carrying a stack of articles to be fed, feed mechanism on said frame coacting with the foremost article in the stack, to advance it into the pocket, the frame with the stack and feed mechanism being adapted to be swung away from the pocket.

12. In a feeding mechanism, the combination of a hinged frame carrying a stack of articles and a feed roll adapted to engage and dislodge the foremost article, a crank and means operated thereby for rotating the feed roll, said hinged frame being pivoted in the axes of the crank.

13. In an envelope feeding mechanism, the combination of an envelope platen, an envelope pocket in front thereof, a pivotally supported frame, means on said frame for carrying a stack of envelopes, a feed roller on said frame coacting with the foremost envelope in the stack, a pair of advancing rolls on said frame adapted to receive the fed envelope and advance it into the pocket, the frame with the stack, the feed roll and advancing rolls being adapted to be swung away from the platen and pocket, and means for locking said frame in position.

14. A feed mechanism comprising means for supporting a stack of articles, a feed roller for discharging the foremost article, a pair of coacting rolls adapted to advance the article, a pair of delivery rolls for the article, and a floating frame carrying one of the delivery rolls and one of the advancing rolls.

15. The combination with a printing couple of means for supporting a stack of envelopes, a feed roller for feeding the foremost envelope in the stack, front and rear advancing rolls receiving the fed envelope and advancing it toward printing position, top and bottom delivery rolls adapted to discharge the printed envelope, and a frame carrying near its forward end the rear advancing roll and near its rear end the top delivery roll, said frame being pivotally supported on an axis between rolls carried by it.

16. In an envelope feeding mechanism, the combination of a paper table, comprising a pair of aligned plates separated from each other, a plate between them separated from them, a carriage slidably mounted on said intermediate plate and having members extending downwardly in slots between the paper table plates and the intermediate plate, and having lips underhanging the plate, an approximate upright envelope engaging member pivotally mounted near its lower end on a horizontal axis on the carriage, a flexible strap leading from the carriage along the intermediate plate and thence downwardly, and a spring acting on said strap.

17. The combination with a rotary printing drum, an envelope platen and a pocket between them closed at one edge and open at the other, of a feed roll acting on a stack of envelopes to feed them one after the other into the pocket through its open edge, and

discharge mechanism to discharge the printed envelope out of the same open edge of the pocket, said feed and discharge mechanism operating consequent upon the operation of the printing drum.

18. A feeding mechanism comprising a table for supporting a stack of articles on edge, a feed roll adapted to act on the foremost article to dislodge it from the stack, a pair of receiving rolls into the bite of which the feed roll feeds the article, a pocket into which said pair of rolls feed the article, and a rotary printing couple coacting with the article while in the pocket and serving to feed it backwardly through the pocket entrance.

19. The combination with a printing couple, of an envelope pocket between the members of the couple, means for separating an article from a stack thereof, a combined feed and delivery roll which acts by one portion of its surface to feed the article toward the pocket and by another portion of its surface to assist in the delivery of the article from the pocket.

20. The combination with a rotary printing couple, of an envelope feeding and delivering mechanism, comprising means for supporting a stack of envelopes, a feed roller coacting therewith, a pair of advancing rollers into the bite of which the feed roll may feed the foremost envelope to the printing couple, one of said advancing rolls acting also on the printed envelope to move the same as it is being delivered by the couple, and a pair of delivery rolls into the bite of which the envelope passes after leaving said advancing rolls.

21. In an envelope feeding mechanism, the combination of a table adapted to support a stack of envelopes on edge, a feed roll, a follower adapted to hold the envelopes in approximately vertical position, means for moving the follower to press the stack along the table toward the feed roll so that the foremost envelope engages the feed roll, and a hinged plate forming a continuation of the paper table and adjustable at its free edge toward or from the feed roll.

In testimony whereof, I hereunto affix my signature.

LAWRENCE H. MORSE.