Jan. 30, 1951 L. H. PEEVEY 2,539,969

DUPLICATING MACHINE

Filed Aug. 5, 1944 7 Sheets-Sheet 1

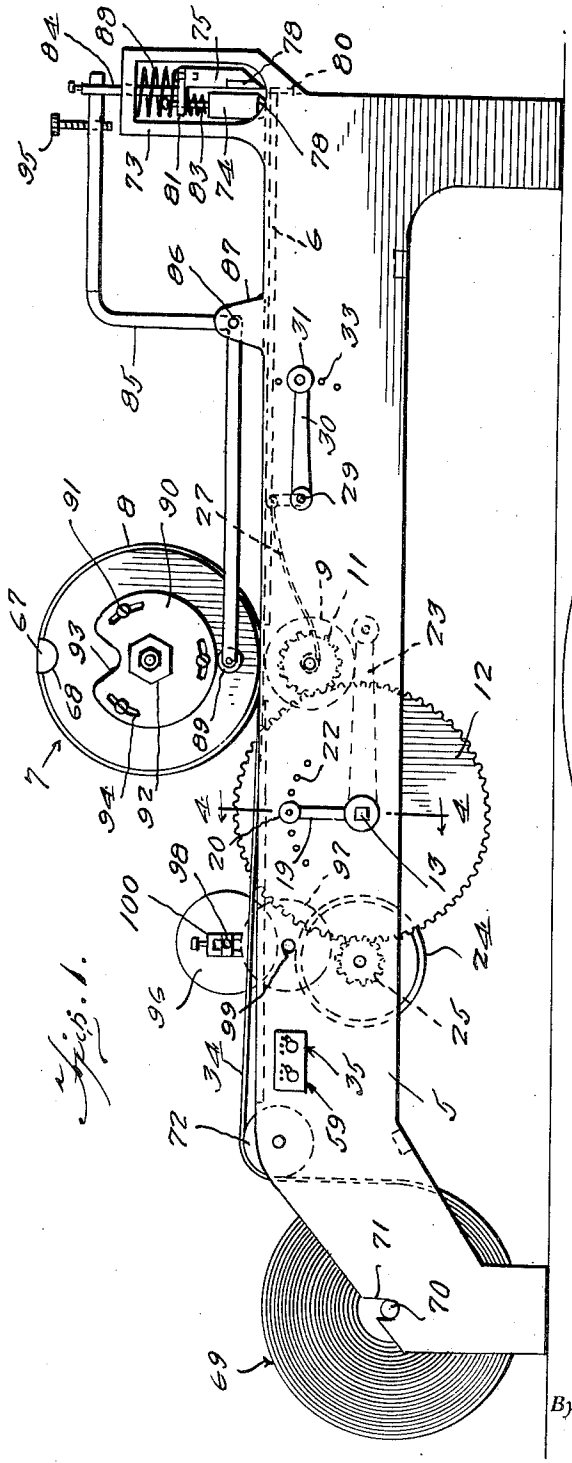

Fig. 1.

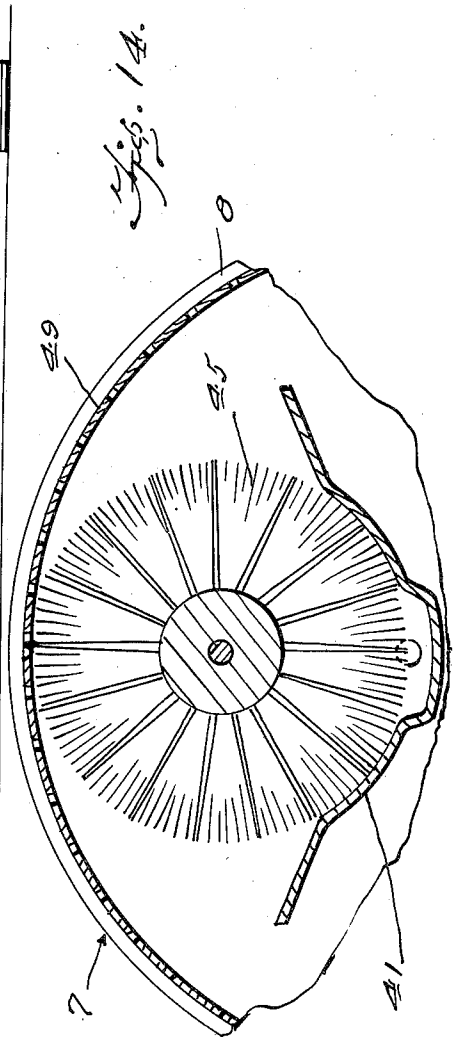

Fig. 14.

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Jan. 30, 1951 L. H. PEEVEY 2,539,969

DUPLICATING MACHINE

Filed Aug. 5, 1944 7 Sheets-Sheet 2

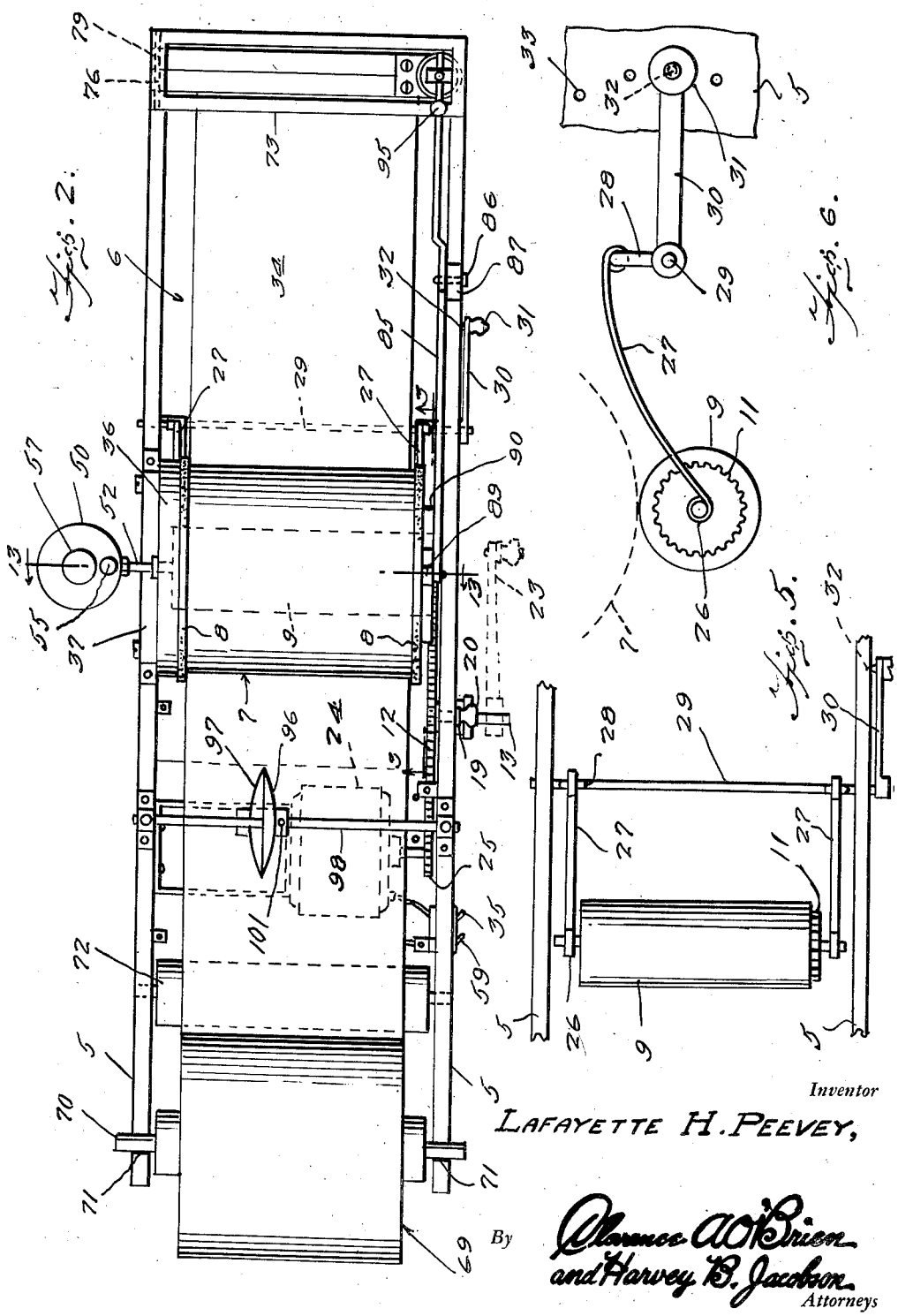

Fig. 2.

Fig. 6.

Fig. 5.

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Jan. 30, 1951 L. H. PEEVEY 2,539,969

DUPLICATING MACHINE

Filed Aug. 5, 1944 7 Sheets-Sheet 3

Fig. 11.

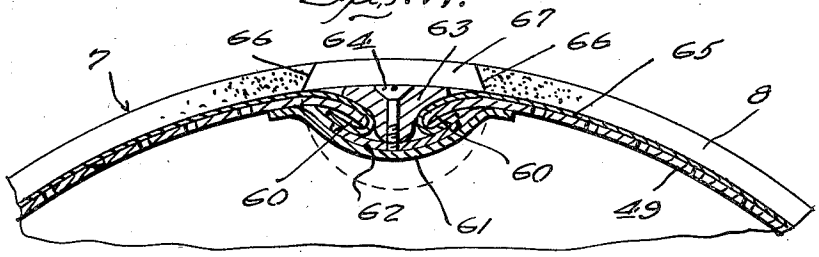


Fig. 10.

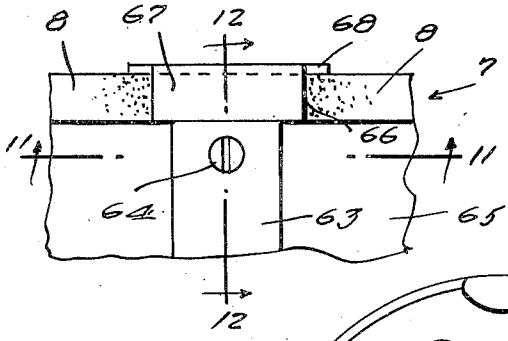


Fig. 12.

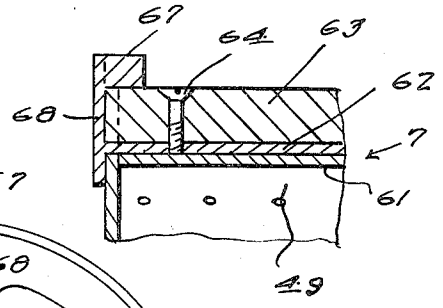
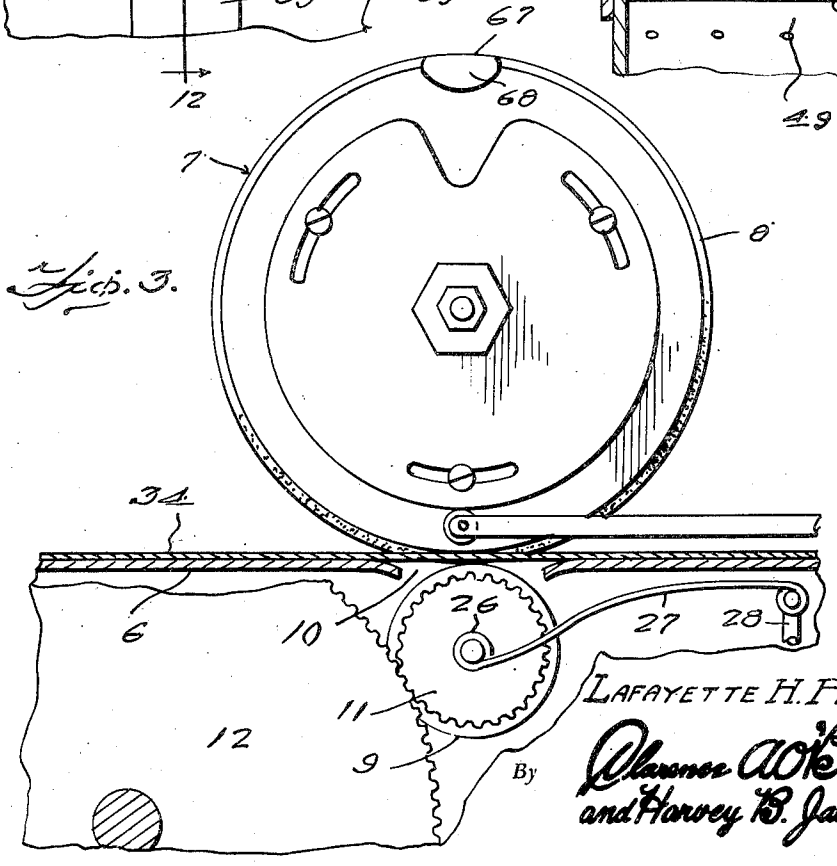


Fig. 3.



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Jan. 30, 1951 L. H. PEEVEY 2,539,969

DUPLICATING MACHINE

Filed Aug. 5, 1944 7 Sheets-Sheet 4

Fig. 4.

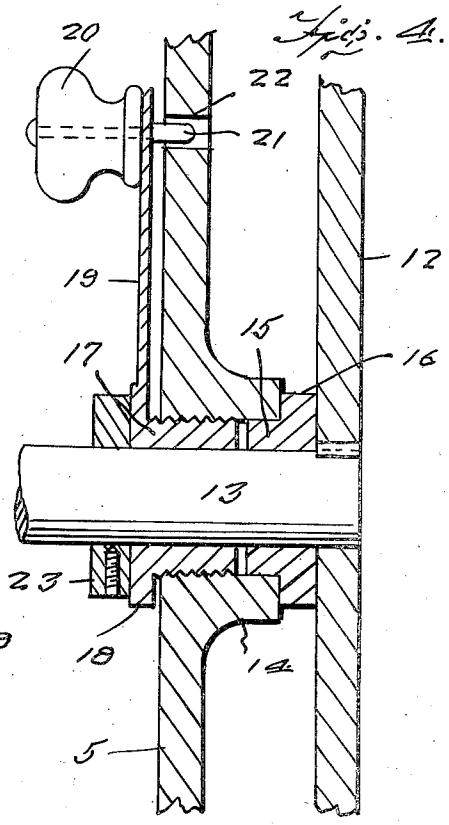

Fig. 7.

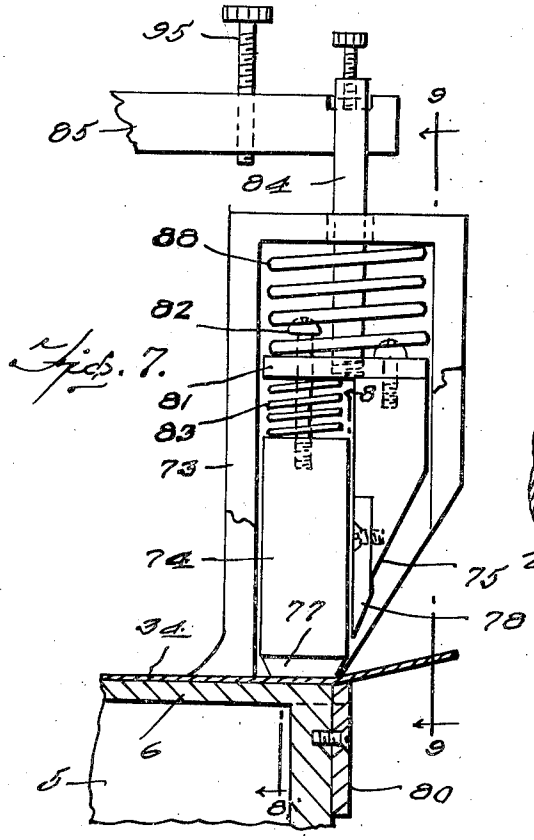

Fig. 8.

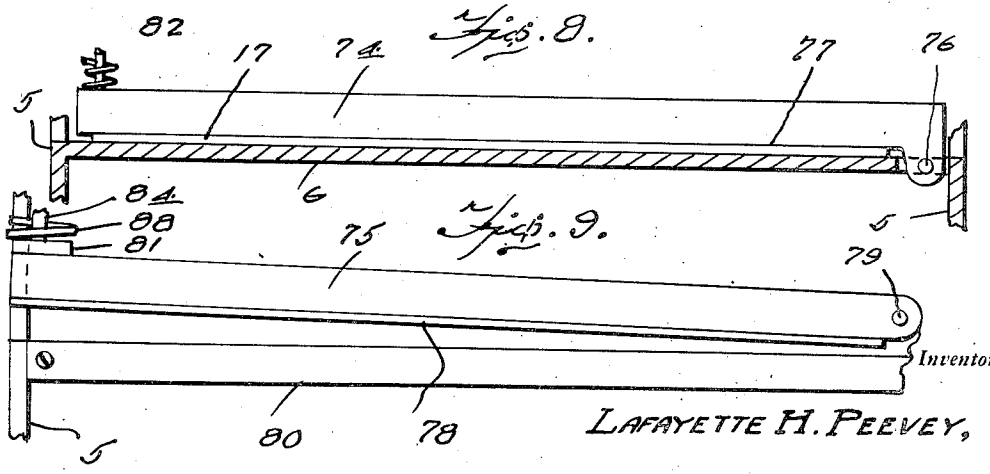

Fig. 9.

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Jan. 30, 1951 L. H. PEEVEY 2,539,969

DUPLICATING MACHINE

Filed Aug. 5, 1944 7 Sheets-Sheet 5

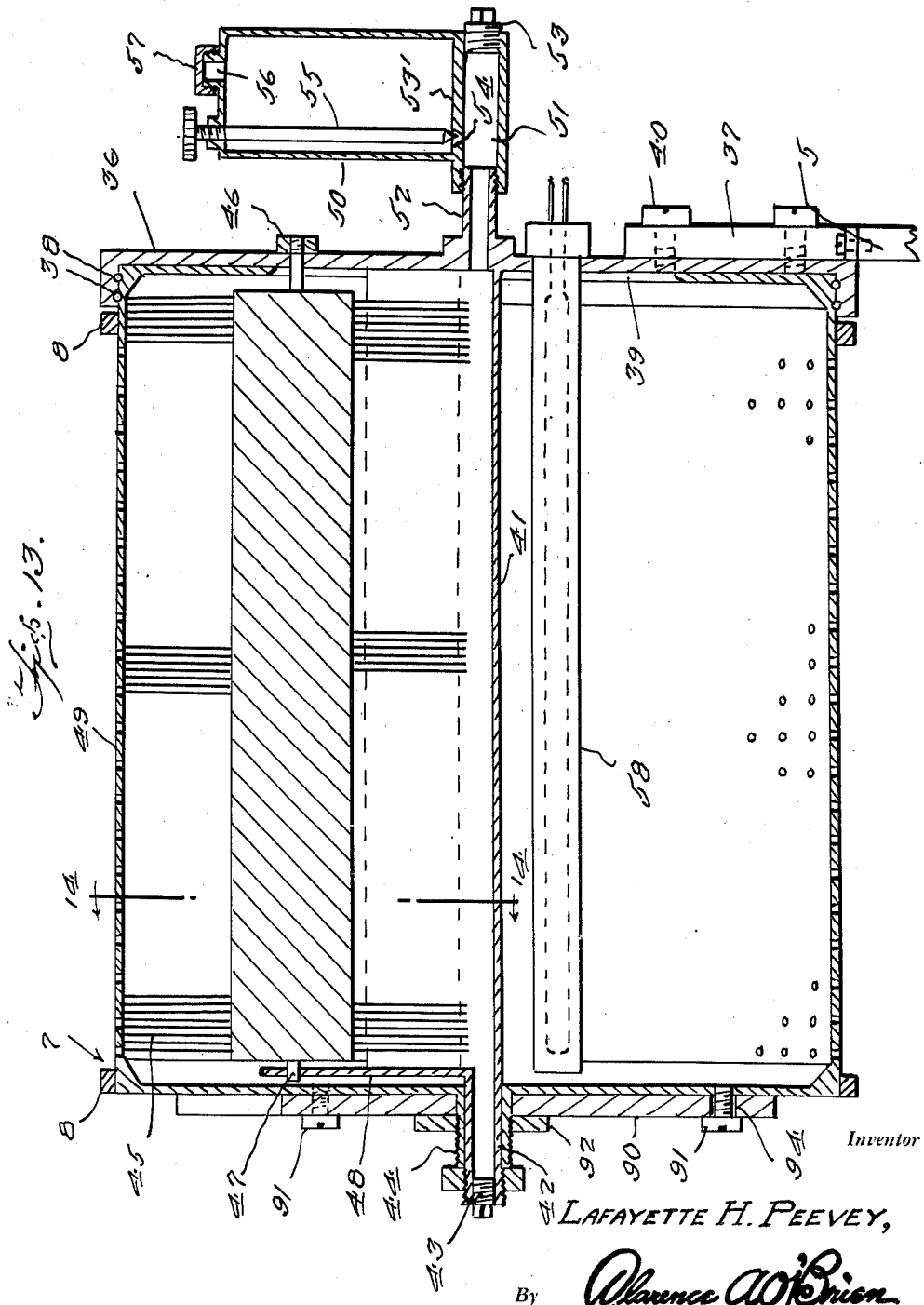

Fig. 13.

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Jan. 30, 1951 L. H. PEEVEY 2,539,969

DUPLICATING MACHINE

Filed Aug. 5, 1944 7 Sheets-Sheet 6

Fig. 15.

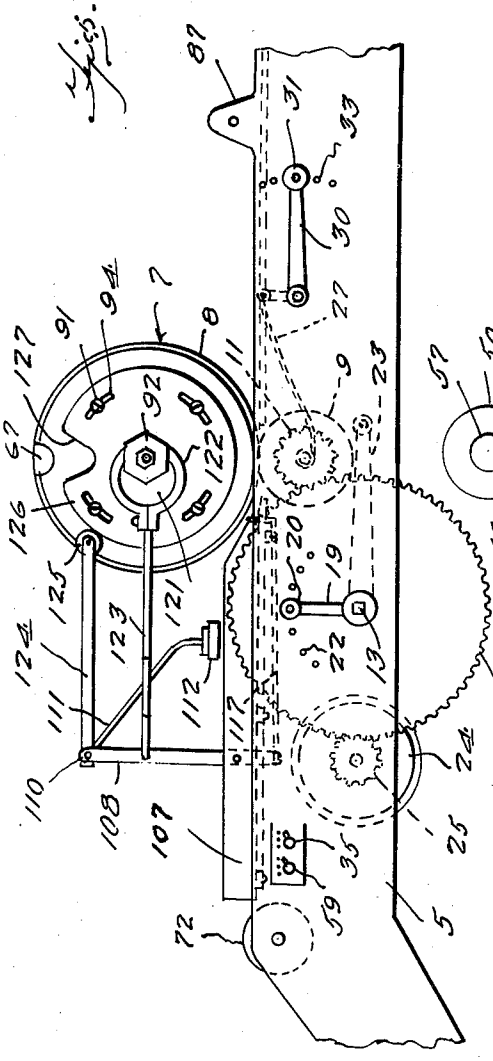
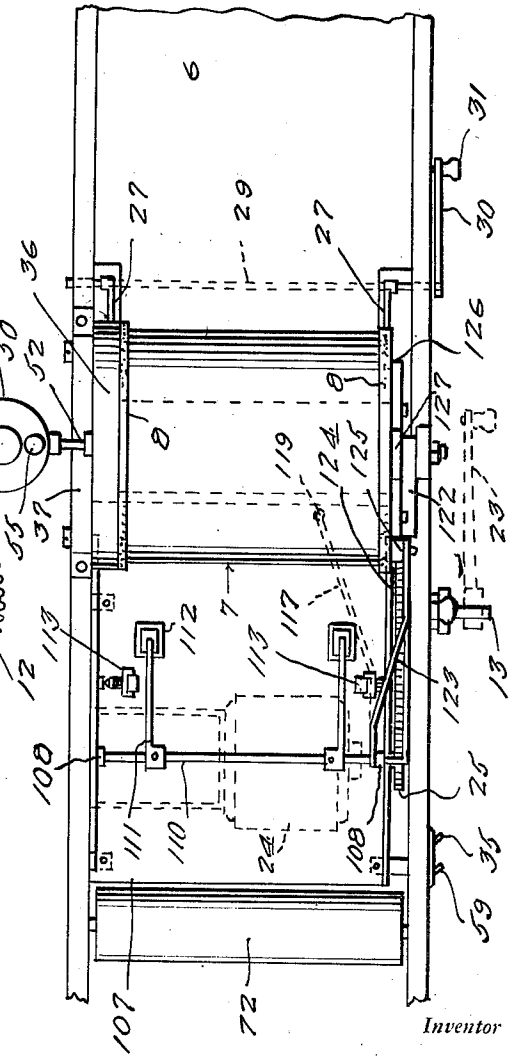


Fig. 16.



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DUPLICATING MACHINE

Filed Aug. 5, 1944 7 Sheets-Sheet 7

Fig. 17.

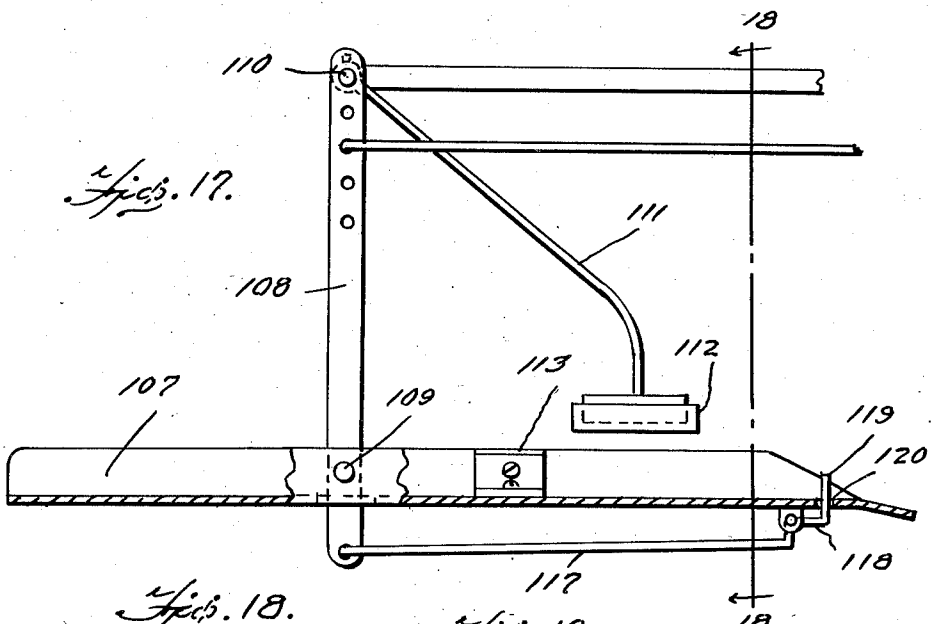

Fig. 18.

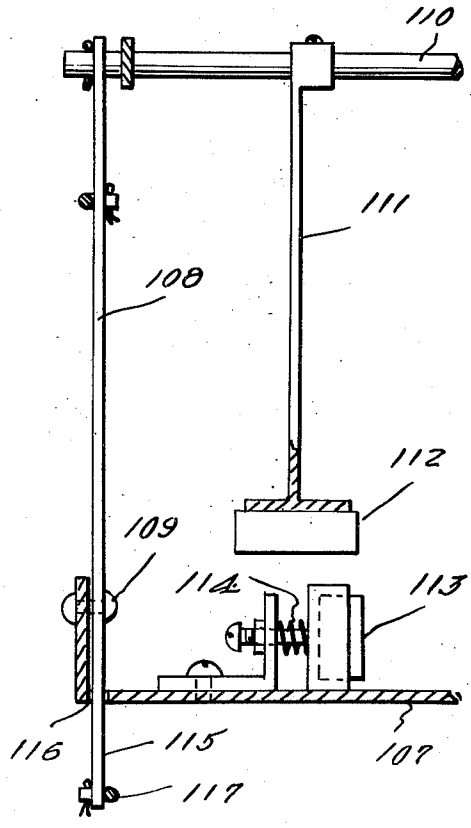

Fig. 19.

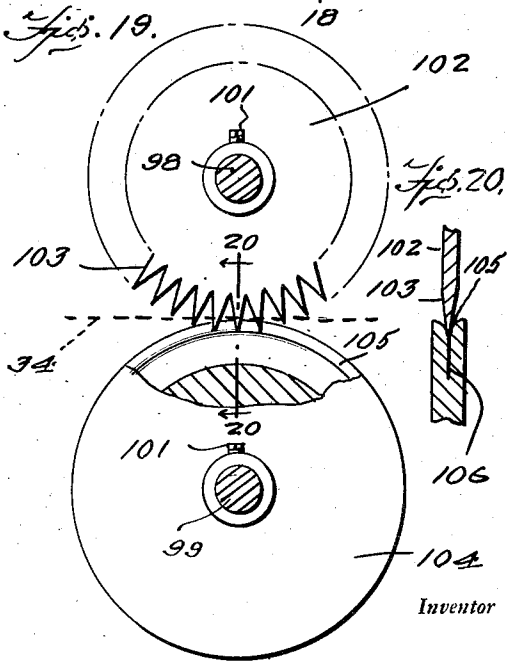

Fig. 20.

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Patented Jan. 30, 1951

2,539,969

UNITED STATES PATENT OFFICE

2,539,969

DUPLICATING MACHINE

Lafayette H. Peevey, Alameda, Calif.

Application August 5, 1944, Serial No. 548,198

5 Claims. (Cl. 101—116)

1

This invention relates to improvements in printing machines of that type which are employed for making duplicate copies of circulars, letters, etc., by the aid of a rotary printing cylinder.

An important object of the present invention is to provide improved friction driving means for the printing cylinder.

Another object of the invention is to provide an improved printing cylinder and supporting and driving means therefor.

A further object of the invention is to provide a duplicating machine of the above kind adapted for rapidly printing reproductions of circulars, letters, etc., on a continuous strip of paper fed from a paper roll, and to provide improved means for automatically cutting the paper strip into sections during the printing operations.

Still another object of the invention is to provide improved means for stopping the traveling movement of the paper strip at a predetermined point during the cutting action.

Other objects are to provide cutting or perforating means to automatically divide the paper strip longitudinally as the printing operations proceed; to provide an improved rotary stencil cylinder and ink distributing device therefor; and to provide improved means for automatically feeding sheets of paper to the printing cylinder when the use of a continuous strip of paper is not desired.

Other improved features and details of construction will become apparent from the following description when considered in connection with the accompanying drawings.

In the drawings, wherein like reference characters indicate corresponding parts throughout the several views:

Figure 1 is a side elevational view of a duplicating machine constructed in accordance with the present invention and conditioned for printing on a continuous strip of paper fed from a paper roll.

Figure 2 is a top plan view thereof.

Figure 3 is an enlarged fragmentary vertical section taken substantially upon the plane of line 3—3 of Figure 2.

Figure 4 is an enlarged fragmentary vertical section taken on the plane of line 4—4 of Figure 1.

Figure 5 is a fragmentary plan view illustrating details of the friction driving roller for the printing cylinder, and its mounting means.

Figure 6 is a side elevation, partly broken away, of the construction shown in Figure 5.

Figure 7 is an enlarged fragmentary view partly

2

in end elevation and partly in vertical section, showing details of the paper strip stopping and cutting means.

Figure 8 is a view drawn on a reduced scale and taken substantially on the plane of line 8—8 of Figure 7.

Figure 9 is a view similar to Figure 8 taken substantially on the plane of line 9—9 of Figure 7.

Figure 10 is a fragmentary plan view of a portion of the mimeograph printing cylinder where means is provided to secure the stencil sheet thereon.

Figure 11 is a section on line 11—11 of Figure 10.

Figure 12 is a section on line 12—12 of Figure 10.

Figure 13 is an enlarged vertical section through the printing cylinder and adjacent parts, taken substantially on the plane of line 13—13 of Figure 2.

Figure 14 is a fragmentary vertical section taken on line 14—14 of Figure 13.

Figure 15 is a fragmentary side elevational view of the machine shown in Figure 1, but with the machine conditioned for feeding sheets of paper to the printing cylinder instead of feeding a continuous strip of paper thereto.

Figure 16 is a top plan view of the construction shown in Figure 15.

Figure 17 is an enlarged fragmentary detail view, partly in side elevation and partly broken away and in section, showing the sheet-receiving mechanism employed in Figures 15 and 16.

Figure 18 is an enlarged vertical fragmentary section taken on the plane of line 18—18 of Figure 17.

Figure 19 is a sectional detail view, partly in elevation, showing perforating discs that may be employed in lieu of the cutters of Figure 1 which divide the continuous strip of paper longitudinally.

Figure 20 is a fragmentary section taken on line 20—20 of Figure 19.

Referring in detail to the drawings, the present machine includes a suitable elongated frame that consists of rigidly connected, spaced side frame pieces 5 connected at their upper edge portions by a bed 6. Intermediate the ends of the frame and mounted transversely of the latter above the bed 6 is a rotary printing cylinder 7 having friction tires 8 at the ends thereof arranged to bear upon the periphery of a friction driving roller 9 mounted beneath the bed 6 in line with a transverse opening or slot 10 provided in the bed 6, as shown more clearly in Figure 3. Slot 10 permits the tires 8 to protrude through

the bed for engagement with the periphery of roller 9, as shown, so that when roller 9 is driven, rotation thereof is imparted to the printing cylinder 7. Fixed to one end of the roller 9 is a gear 11 that meshes with a larger gear 12 fixed on the inner end of a tranverse shaft 13 journaled in a bearing 14 of the adjacent side frame piece 5, as shown in Figure 4. A bushing 15 is slidably fitted in the inner portion of bearing 14 and has a flanged inner end 16 interposed between the inner end of bearing 14 and the adjacent side of gear 12. Another bushing 17 is threaded in the outer portion of bearing 14 and has an enlarged outer end 18 provided with a resilient radially projecting lever 19. The outer end of lever 19 carries a suitable knob or handle 20 and an inwardly projecting pin 21 adapted to be selectively engaged in a desired one of an arcuate series of openings 22 provided in the adjacent frame piece 5. A collar 23 is fitted and secured on the shaft 13 at the outer side of the enlarged end 18 of bushing 17, and the arrangement is such that when the bushing 17 is turned in one direction, it is threaded inwardly to reduce friction between the parts 14, 16, 12, 18 and 23. On the other hand, when the bushing 17 is turned in the opposite direction, it is threaded outwardly to increase said friction. Accordingly, the position of the handle 19 will govern the friction imposed upon and acting to restrain turning of gear 12. By properly adjusting the bushing 17, free rotation of the printing cylinder 7 may be opposed frictionally to the desired degree so that said printing cylinder will stop turning instantaneously or as soon as driving of gear 12 is discontinued. The outer end of shaft 13 is preferably squared for removable reception of a hand crank 23 that may be employed for manual driving of gear 12 and printing cylinder 7 if desired. However, gear 12 is preferably motor driven, and for this purpose a motor 24 is mounted in the frame forwardly of shaft 13 and has a pinion 25 on its power or armature shaft that meshes with the gear 12. It will be apparent that the lever 19 may be flexed to withdraw the pin 21 from an opening 22 when adjustment of said lever is desired to vary the frictional resistance to rotation of gear 12.

As shown more clearly in Figures 5 and 6, the driving roller 9 has a shaft whose proecting ends are journaled in bearings 26 provided in corresponding ends of a pair of leaf springs 27 disposed parallel with and inwardly of the frame pieces 5. The other ends of leaf springs 27 are attached to cranks 28 projecting upwardly from a transverse horizontal shaft 29 journaled in the side frame pieces 5 rearwardly of the printing roller 7 and beneath the bed 6. The shaft 29 projects at one side of the frame where it has a resilient hand lever 30 secured thereon, said hand lever having a knob or handle 31 at its free end and an inwardly projecting pin at 32, similar to the pin 21, adapted to selectively engage a desired one of an arcuate series of openings 33 provided in the adjacent frame piece 5. By flexing the hand lever 30 outwardly, the pin 32 may be withdrawn from the opening 33 so that said hand lever 30 may be swung in either direction to regulate the tension of springs 27 and thereby adjust the pressure with which the driving roller 9 frictionally engages the tires 8 of the printing cylinder 7. When the adjustment has been effected, it may be secured by allowing the pin 32 to engage in the opening 33 registered therewith. It may be noted at this time that the paper 34 on which the printing is being done is frictionally engaged between the periphery of the printing cylinder 7 between its tires 8 and the periphery of the driving roller 9 so that said cylinder and roller act to feed the paper rearwardly during the printing operation. Also, a suitable switch 35 may be provided at one side of the machine for controlling the operation and speed of the motor 24. As shown more clearly in Figure 13, one end of the printing cylinder 7 is journaled in the rim of a circular bearing cap 36 that is rigidly carried by a supporting bracket 37 fixed to the frame piece 5 at the adjacent side of the machine. This end of the printing cylinder projects outwardly beyond the adjacent tire 8 for this purpose, and anti-friction balls 38 or the like are provided in the rim of bearing cap 36 for engagement with the periphery of this end of the printing cylinder. The end of the printing cylinder at the bearing cap 36 has a relatively large central opening at 39 which is effectively closed by the bearing cap 36, and bolts 40 may be employed to secure the bearing cap 36 to the bracket 37 so that the printing cylinder and the bearing cap may be readily unfastened and removed in case it is desired to substitute a new or different printing cylinder.

While any preferred type of printing cylinder may be employed, that illustrated is of improved construction and is of the perforated type adapted to have a stencil sheet secured thereon. As shown more clearly in Figures 13 and 14, an ink trough 41 is supported in the upper portion of the printing cylinder and extends from end to end of the latter, one end of said trough 41 being rigid with the bearing cap 36 and the other end thereof having at its lowest and intermediate point an outwardly projecting tubular shaft 42 closed by a removable plug 43 and rotatably received within a tubular hub 44 provided on the adjacent end of the printing cylinder. A rotary ink distributing brush 45 of cylindrical form is journaled at one end, as at 46, in the bearing cap 36 and at the other end, as at 47, in an end wall 48 of the trough 41. The ink distributing brush 45 is of a diameter so that its lower portion operates within the trough 47 and its upper portion engages the perforated peripheral wall 49 of the cylinder 7, the bristles of the brush 45 being relatively stiff and of a length to be slightly flexed where said bristles engage the inner surface of the perforated wall 49. Thus, when the printing cylinder is rotated, it causes rotation of brush 45 by reason of the engagement of the bristles of brush 45 with the inner surface of the wall 49 of the printing cylinder, and the ink in the trough 41 is taken up by the bristles and transferred through the perforations in the wall 49 of the printing cylinder. Ink is transferred to the trough 41 from an ink reservoir 50 supported by the bearing cap 36 outside and adjacent one end of the printing cylinder. This reservoir has a bottom outlet chamber 51 which communicates with an inlet nipple 52 provided on the bearing cap 36 and communicating with the lower intermediate portion of the trough 41 at the adjacent end of the latter. At its outer side and in line with the inlet nipple 52, the reservoir 50 has a removable plug 53, and it will be apparent that when the plugs 43 and 53 are removed, a cleaning implement may be passed entirely through the chamber 51, nipple 52, the bottom or lower portion of trough 41 and the shaft 42 for clean-

ing purposes. This also permits flushing of the parts for removal of sediment that may accumulate therein or for removal of ink when it is desired to change the color of the latter. The upper or main portion of reservoir 50 is separated from the chamber 51 by a partition 53' having a small opening 54 therein controlled by a needle valve 55. By adjusting the needle valve 55, the rate of supply of ink from the reservoir 50 to the trough 41 may be conveniently regulated. Reservoir 50 has a suitable filler neck 56 closed by a cap 57. In case it is desired to heat the ink in the trough 41 to maintain the same in a free flowing condition, an elongated electrical heating element 58 may be supported by the bearing cap 36 so as to extend directly beneath the trough 41 from end to end of the latter. A switch 59 may be provided on the side of the machine adjacent the switch 35 for controlling the heating element 58 and regulating the amount of heat generated thereby.

As shown more clearly in Figures 10 to 12, inclusive, means is provided for effectively securing a stencil sheet upon the perforated peripheral wall of the printing cylinder 7. This perforated peripheral wall 49 has a slot therein extending from side to side of the cylinder, and the portions 60 of the wall 49 at opposite sides of the slot are directed inwardly toward a concave strip 61 fastened to the inner surface of the wall 49 so as to bridge said slot. A concave clamping strip 62 is arranged between the inwardly directed ends 60 of the wall 49 and the bridging strip 61, and another clamping strip 63 is arranged in the depression formed between the inwardly directed ends 60 of wall 49, clamping screws 64 being passed through the clamping strip 63 and threaded into the clamping strip 62 to draw said clamping strips together. The screws 64 are provided at suitable intervals along the lengths of the strips 62 and 63, and when the ends of the stencil sheet 65 are folded around the edges of the inturned ends 60 of wall 49, the screws 64 may be tightened to draw the clamping strips 62 and 63 toward each other so as to firmly clamp the portions of the stencil sheet 65 between said clamping strips and the inturned ends 60. In order to permit insertion and removal of the strips 62 and 63, the end wall of cylinder 7 opposite that at which the bearing cap 36 is located is cut away to conform with the curvature of the bridging strip 62, allowing the strips 62 and 63 to extend out flush with said end wall of cylinder 7, as shown in Figure 12. Also, at this point, the tire 8 is cut away and has spaced ends thereof undercut, as at 66, to receive a bevel ended arcuate insert 67 by means of which the gap between the ends of the tire 8 at this point is bridged to provide a continuous surface for engagement with the driving roller 9. This insert 67 has a flange 68 at its outer side adapted to overlie the ends of the strips 62 and 63 when in position, as shown clearly in Figures 10 and 12. Due to the resilient nature of the tire 8, the insert 67 may be snapped into place for being frictionally held therein. At the same time, it may be forcibly removed whenever it is desired to remove the clamping strips 62 and 63.

In Figures 1 and 2, the machine is conditioned for printing on a continuous strip of paper fed from a paper roll 69 carried by a transverse shaft 70 whose ends are seated in vertical elongated notches or slots 71 provided in the upper edges of the frame pieces 5 at the forward end of the machine. An idler roller 72 is journaled transversely of the frame immediately behind the roll of paper 69 and so that the top thereof is slightly above the bed 6 of the machine. The strip of paper is led from the roll 69 upwardly over idler roller 72 and then rearwardly on the bed 6 so as to pass between the printing cylinder 7 and its driving roller 9, as shown in Figures 1 to 3, inclusive.

Improved means is provided for automatically cutting the paper strip 34 into sections as the printing operations proceed, and improved means for stopping the traveling movement of the paper strip at the rear end of the machine during the cutting action. These means are best illustrated in Figures 1, 2 and 7 to 9, inclusive, and they consist of a suitable transverse guide frame 73 mounted upon the frame of the machine at the rear end of the latter and having vertically movable paper strip stopping and cutting elements 74 and 75, respectively, mounted therein. The element 74 consists of an elongated bar disposed transversely of the bed 6 and pivoted to the frame at one end, as indicated at 76, a suitable resilient and frictional facing strip 77 being secured on the bottom surface of the bar 74 for engagement with the upper surface of the paper strip 34, as it passes thereunder. The cutting element 75 consists of a bar carrying a knife 78 and pivoted at one end to the frame of the machine, as at 79. The knife 78 cooperates with a fixed knife 80 secured on the adjacent end of the machine frame. The bar carrying the knife 78 is normally elevated to a position above the bar 74 and has a plate 81 attached to the top of its free end, which plate has an end overlying and spaced from the free end of the bar 74, as shown clearly in Figure 7. A screw 82 is carried by and projects upwardly from the free end of bar 74 and is encircled by a helical compression spring 83 interposed between the plate 81 and the bar 74. Rigid with and projecting upwardly from the plate 81 is a rod 84, through the upper end of which loosely projects one end of an angular lever 85 pivoted at 86 between its ends to a bracket 87 carried by the adjacent frame piece 5 at a point between the guide frame 73 and the printing cylinder 7. A relatively large and strong helical spring 88 encircles the rod 84 between the top of the guide frame 73 and the plate 81. The springs 83 and 88 normally act to lower the elements 74 and 75, and the spring 88 is considerably stronger than the spring 83. The other or forward end of lever 85 carries a roller 89 arranged to bear upon the peripheral edge of a cam disc 90 secured to the adjacent end of the printing cylinder 7 by means of bolts 91 and a clamping nut 92 threaded on the hub 44 of the printing cylinder. While other forms of cams may be employed, depending upon the lengths into which the paper strip is to be cut, the cam disc 90 which is shown has one peripheral recess 93 so that the paper strip is cut once upon each revolution of the printing cylinder. Also, cam disc 90 has arcuate slots 94 through which the bolts 91 extend, thereby permitting rotary adjustment of the cam disc 90 relative to the printing cylinder so that the paper strip cutting operation may be caused to occur at exactly the right time. The arrangement is such that the cam disc 90 holds the lever 85 positioned with its rear end or arm elevated for the major portion of a revolution of the printing cylinder, thereby compressing spring 88 and raising the clamping and cutting elements 74 and 75. When the roller 89 of lever 85 enters the peripheral re-

cess 93 of cam disc 90, the spring 88 is permitted to force the elements 74 and 75 downwardly. When this occurs, the clamping element 74 first engages the paper strip 34 and clamps it to the bed 6 so as to stop the rearward traveling movement of the paper strip at this point. This is promptly followed by compression of the weaker spring 83 and further downward movement of the cutting element 75 so that the paper strip is cut by the knives 78 and 80 while still being held by the clamping element 74. This action takes place very quickly and the roller 89 promptly passes out of the peripheral notch 93 of cam disc 90 so as to actuate lever 85 and cause it to again elevate the elements 74 and 75 for the next paper clamping and cutting operation. The downward movement of the rear arm of lever 85 may be properly adjustably limited by means of an adjusting screw 95 threaded through the lever 65 and arranged to engage the top of the guide frame 73 when the rear arm of lever 85 reaches its lower limit of movement.

Means is provided, which is removable from the machine when not desired for use, for dividing the paper strip 34 longitudinally as it is fed through the machine. As shown in Figures 1 and 2, this means may consist of cooperating cutter discs 96 and 97 carried by upper and lower transverse horizontal shafts 98 and 99, respectively, disposed in superposed relation at a point between the idler roller 72 and the printing cylinder 7. Shaft 98 is journaled in removable bearing brackets 100 mounted upon the frame pieces 5, while shaft 99 is mounted in removable bearings carried at the inner sides of said frame pieces 5. The only time these cutters are used is when the paper strip 34 is wider than the width of the desired printed sheet, and, in order to provide for printed strips of varying widths, the cutter discs 96 and 97 are adjustable longitudinally of the shafts 98 and 99. For this purpose, said cutter discs may have set screws 101 threaded through the hubs thereof and impinging the shafts 98 and 99 to secure said cutter discs in adjusted positions. While cutter discs are preferably employed at 96 and 97, perforating discs may be substituted therefor to divide the paper strip longitudinally, as illustrated in Figures 19 and 20. In the latter figures, a toothed perforating disc 102 is shown mounted on the shaft 98 in place of the cutter disc 96, said perforating disc having tapered pointed peripheral teeth 103 arranged to perforate the paper strip 34 as it feeds past said disc 102. The perforating disc 102 cooperates with a peripherally grooved disc 104 secured on shaft 99 in place of the cutter disc 97, the teeth 103 of the perforating disc 102 being arranged to ride in the peripheral groove 105 of the disc 104, as shown in Figures 19 and 20. Preferably, the disc 104 is slit at 106 a short distance inwardly from the peripheral groove 105 and parallel with and midway between the sides of the disc 104 so that the peripheral or marginal portions of the disc 104 may yield slightly apart in operation. The disc 104 serves as a bearing for the strip 34 while it is being perforated by the disc 102. The discs 102 and 104 are adjustable transversely of the machine and longitudinally of the shafts 98 and 99 in the same manner and for the same purpose as the cutter discs 96 and 97.

In Figures 15 to 18, inclusive, the machine is shown conditioned to feed sheets of paper to the printing cylinder when it is not desired to print on a continuous strip of paper fed from a paper roll, as in Figures 1 and 2. To make this change, the paper strip holding and cutting means is eliminated, and a special paper sheet feeding means is mounted upon the frame of the machine directly in front of the printing cylinder. This paper sheet feeding means consists of a trough 107 mounted upon and bridging the frame pieces 5 and adapted to have a pile of paper sheets placed therein. At opposite sides of the trough 107 are upright levers 108 pivoted near their lower ends to the sides of the trough 107, as at 109, for forward and rearward swinging movement. A rod 110 connects and has its ends journaled in the upper ends of the levers 108, and fixed at their upper ends to the shaft 110 between the levers 108 are rearwardly and downwardly extending paper sheet feeding arms 111 that are located near the opposite sides of the trough 107. The arms 111 carry paper sheet-engaging pads or feet 112 at their lower ends, said pads or feet being composed of resilient friction elements which engage the surface of the uppermost sheet of paper on the pile of sheets placed within the trough 107. Transversely adjustable guides 113 are provided in the trough 107 near opposite sides of the latter, and these are adapted to engage the side edges of the pile of sheets to maintain them aligned. These guides are preferably yieldingly urged inwardly into engagement with the side edges of the pile of sheets by springs 114.

As shown more clearly in Figures 15, 17 and 18, one of the levers 108 has a depending end portion 115 that extends through a slot 116 in the bottom of the trough 107 and has a link 117 pivoted to the lower end thereof. The link 117 extends rearwardly from the lever 108 and is pivotally connected to an end of a bell crank lever 118 whose other end has an upwardly extending stop extension 119 projecting upwardly through an opening 120 in the forward portion of the trough 107. The arrangement is such that when the levers 108 are in their rearwardly swung position with the feet 112 elevated from the pile of sheets in the trough 107, the stop extension 119 will be elevated in front of the rear edges of the pile of sheets arranged in the trough 107 so as to prevent accidental rearward shifting thereof. It will also be apparent that when the levers 108 are swung forwardly, the arms 111 are moved forwardly. If desired, both of the levers 108 may be constructed as described to operate a stop extension 119. Means is provided for operatively connecting one of the levers 108 with the printing cylinder so as to be swung back and forth thereby. For this purpose, an eccentric 121 is secured on the end hub or shaft 44 of the printing cylinder, and an eccentric ring 122 that encircles this eccentric is operatively connected by a rod 123 with an intermediate portion of the lever 108 at the same side of the machine. As the printing cylinder rotates, the eccentric 121 rotates therewith and rapidly reciprocates the rod 123 to rock the levers 108 back and forth. Upon the forward movement of the levers 108, the stop extension 119 is retracted below the uppermost sheet of the stack and the feeding feet 112 force the uppermost sheet of the stack rearwardly to the printing cylinder. As the levers 108 swing rearwardly, shaft 110 is rocked to swing the arms 111 downwardly, and as the levers 108 are swung forwardly, shaft 110 is rocked to elevate the arms 111. This is done to lower the sheet-engaging feet 112 while they are moved rearwardly and to elevate them while they are being moved forwardly. In this way, the rocking movement of the levers 108 is mainly relied upon to cause the forward shifting of the sheets of paper and the rocking of shaft

110 is mainly relied upon to effect the engagement and disengagement of the feeding feet 112 with respect to the paper sheets. For causing rocking of shaft 110, an arm 124 is secured at one end to said shaft 110 and projects rearwardly therefrom, arm 124 having a roller 125 at its rear end arranged to bear upon the periphery of the cam disc 126 secured upon the adjacent end of the printing cylinder in substantially the same manner as has previously been described with respect to the cam disc 90. The cam disc 126 has a peripheral recess 127, and the arrangement is such that the cam disc 126 normally elevates the arm 124 and maintains the feeder feet 112 elevated from the pile of sheets for the major portion of the revolution of the printing cylinder 7. Once for each revolution of the printing cylinder, the roller 125 enters the recess 127 and allows the lever 124 to lower by gravity, thereby rocking shaft 110 and causing the arms 111 to lower so that the feeder feet 112 engage the uppermost sheet of the pile. As this takes place, eccentric 121 causes rearward swinging of the levers 108 so that the engaged uppermost sheet of paper is fed rearwardly to the printing cylinder. As soon as the levers 108 reach their rearward limit of movement, cam disc 126 elevates arm 124 and disengages the feeder feet 112 from the sheet. The parts remain in this position as the eccentric 121 acts to swing the levers 108 rearwardly for the next feeding operation.

From the foregoing description, it is believed that the construction and operation, as well as the advantages of the present invention, will be readily understood and appreciated by those skilled in the art. Minor changes in details of construction illustrated and described are contemplated, such as fairly fall within the spirit and scope of the invention as claimed.

What I claim is:

1. In a machine of the character described, the combination with a rotatably mounted printing cylinder, a friction driving roller for said printing cylinder disposed beneath the latter, means for operating said driving roller including a power transmitting gear, a machine frame having a bearing at one side, said gear having a shaft fixed thereto that is journaled in and projects outwardly through said bearing, a bushing about the shaft within the inner portion of said bearing and frictionally engaging the outer side of said gear, a second bushing adjustably threaded in the outer portion of said bearing and disposed about said shaft, an abutment collar secured on the shaft outwardly of the second-named bushing, means for rotatably adjusting the second-named bushing and coacting with said collar to axially shift the shaft and vary the frictional engagement between the first-named bushing and said gear so as to cause stopping of the printing cylinder as soon as driving power is removed from the gear.

2. In a machine of the character described, the combination with a stationary bearing cap, of a revoluble stencil cylinder having an end closed and supported by and rotatably mounted in said bearing cap, said stencil cylinder having a tubular hub at its other end, a member rigid with said bearing cap and extending within said stencil cylinder to the other end of the latter, and a shaft rigid with an end of said member and having said hub journaled thereon.

3. In a duplicating machine, the combination with a revoluble stencil cylinder having peripheral friction tires on the end portions thereof for engagement with a friction driving roller, and a friction driving roller for said cylinder disposed beneath the latter and having its periphery engaged by said tires, said stencil cylinder having a perforated peripheral wall formed with a transverse slot, the portions of said peripheral wall at opposite sides of said slot being directed inwardly in spaced relation, a strip secured to the inside of said peripheral wall and bridging said slot, a clamping plate disposed between the inturned portions of said peripheral wall and said bridging strip, a second clamping plate disposed in the space between the inturned portions of the peripheral wall, and means to draw the clamping strips together so as to bind a stencil sheet in place on the peripheral wall with the ends of said stencil sheet folded around the edges of the inturned peripheral wall portions.

4. In a duplicating machine, the combination with a revoluble stencil cylinder having peripheral friction tires on the end portions thereof for engagement with a friction driving roller, and a friction driving roller for said cylinder disposed beneath the latter and having its periphery engaged by said tires, said stencil cylinder having a perforated peripheral wall formed with a transverse slot, the portions of said peripheral wall at opposite sides of said slot being directed inwardly in spaced relation, a strip secured to the inside of said peripheral wall and bridging said slot, a clamping plate disposed between the inturned portions of said peripheral wall and said bridging strip, a second clamping plate disposed in the space between the inturned portions of the peripheral wall, and means to draw the clamping strips together so as to bind a stencil sheet in place on the peripheral wall with the ends of said stencil sheet folded around the edges of the inturned peripheral wall portions, a tire of the stencil cylinder being cut away at a point coincident with said clamping strips so as to provide spaced ends on the tire, said ends of the tire being undercut, and a removable insert for bridging the space between the tire ends resiliently and frictionally retained in place between said ends and by the latter.

5. In a duplicating machine, the combination with a revoluble stencil cylinder having peripheral friction tires on the end portions thereof for engagement with a friction driving roller, and a friction driving roller for said cylinder disposed beneath the latter and having its periphery engaged by said tires, said stencil cylinder having a perforated peripheral wall formed with a transverse slot, the portions of said peripheral wall at opposite sides of said slot being directed inwardly in spaced relation, a strip secured to the instrips together so as to bind a stencil sheet in side of said peripheral wall and bridging said slot. a clamping plate disposed between the inturned portions of said peripheral wall and said bridging strip, a second clamping plate disposed in the space between the inturned portions of the peripheral wall, and means to draw the clamping place on the peripheral wall with the ends of said stencil sheet folded around the edges of the inturned peripheral wall portions, a tire of the stencil cylinder being cut away at a point coincident with said clamping strips so as to provide spaced ends on the tire, said ends of the tire being undercut, and a removable insert for bridging the space between the tire ends resiliently and frictionally retained in place between said ends and by the latter, said insert having a flange at

its outer side overlying the ends of the clamping strips at the adjacent end of the stencil cylinder.

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