

Oct. 28, 1941.

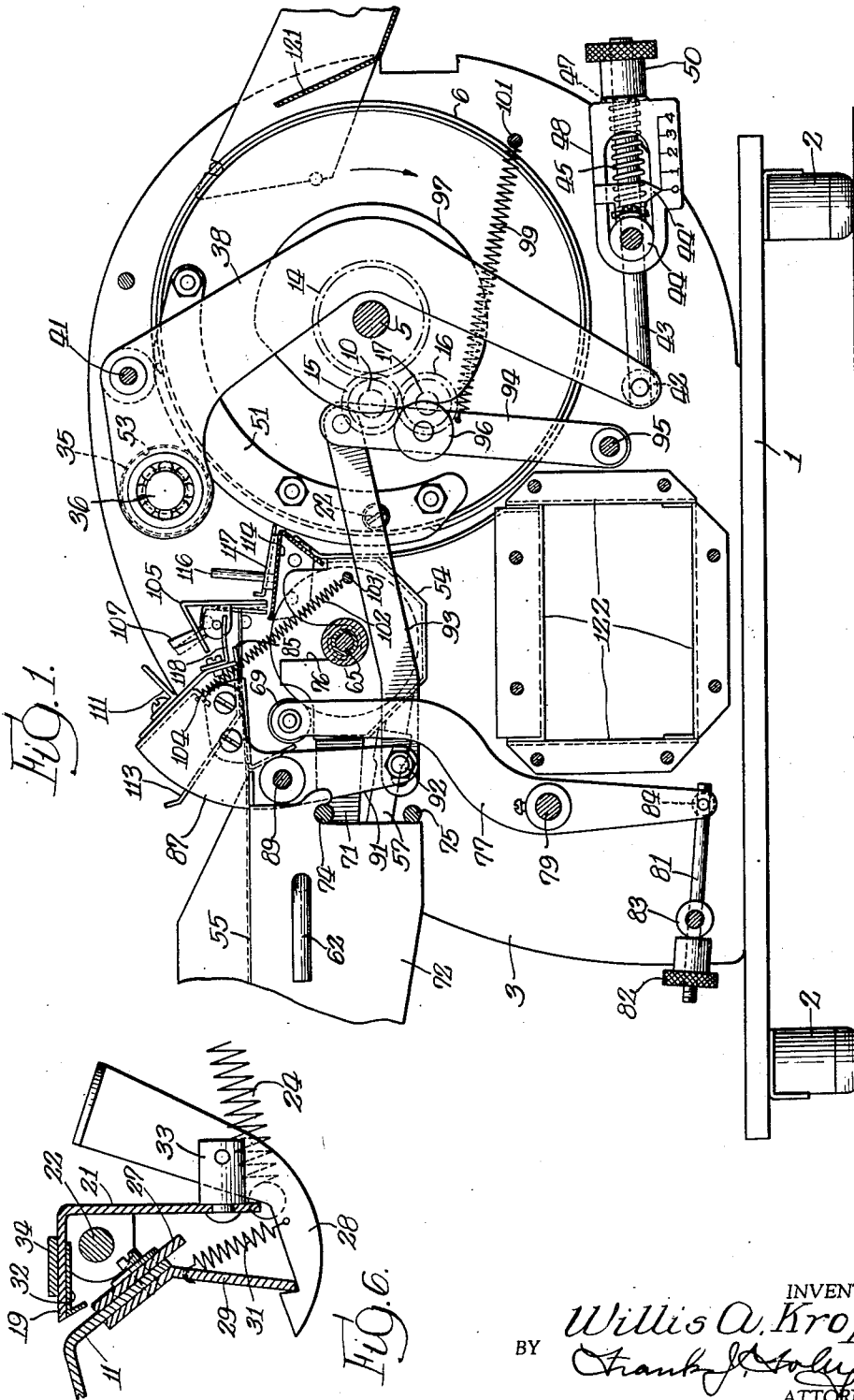
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2,260,464

DUPLICATING MACHINE

Filed May 31, 1940

5 Sheets-Sheet 1



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DUPLICATING MACHINE

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5 Sheets-Sheet 2

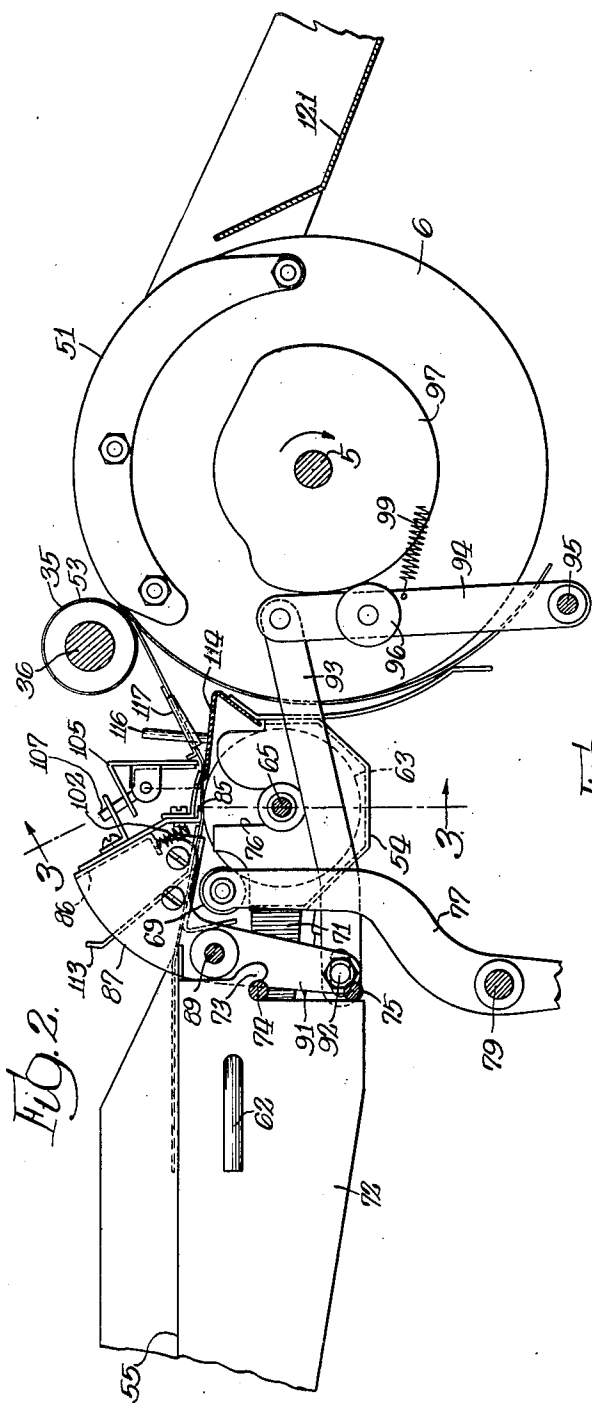


Fig. 2.

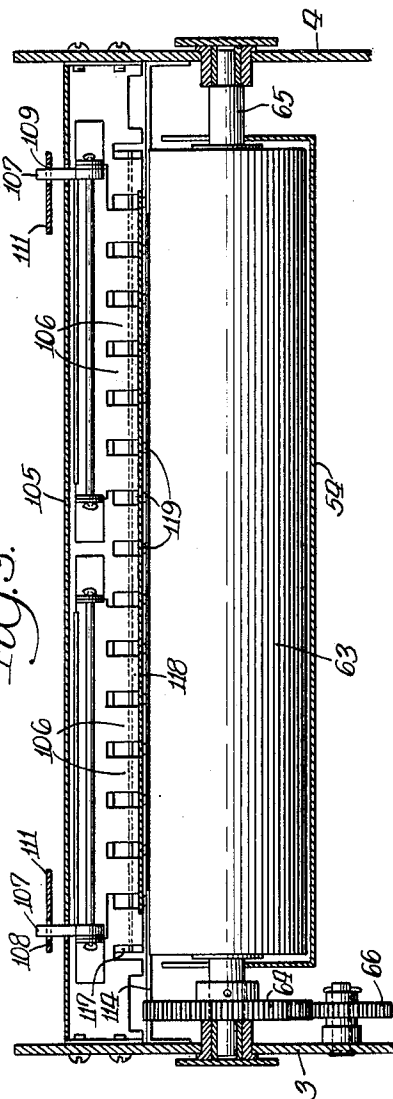


Fig. 3.

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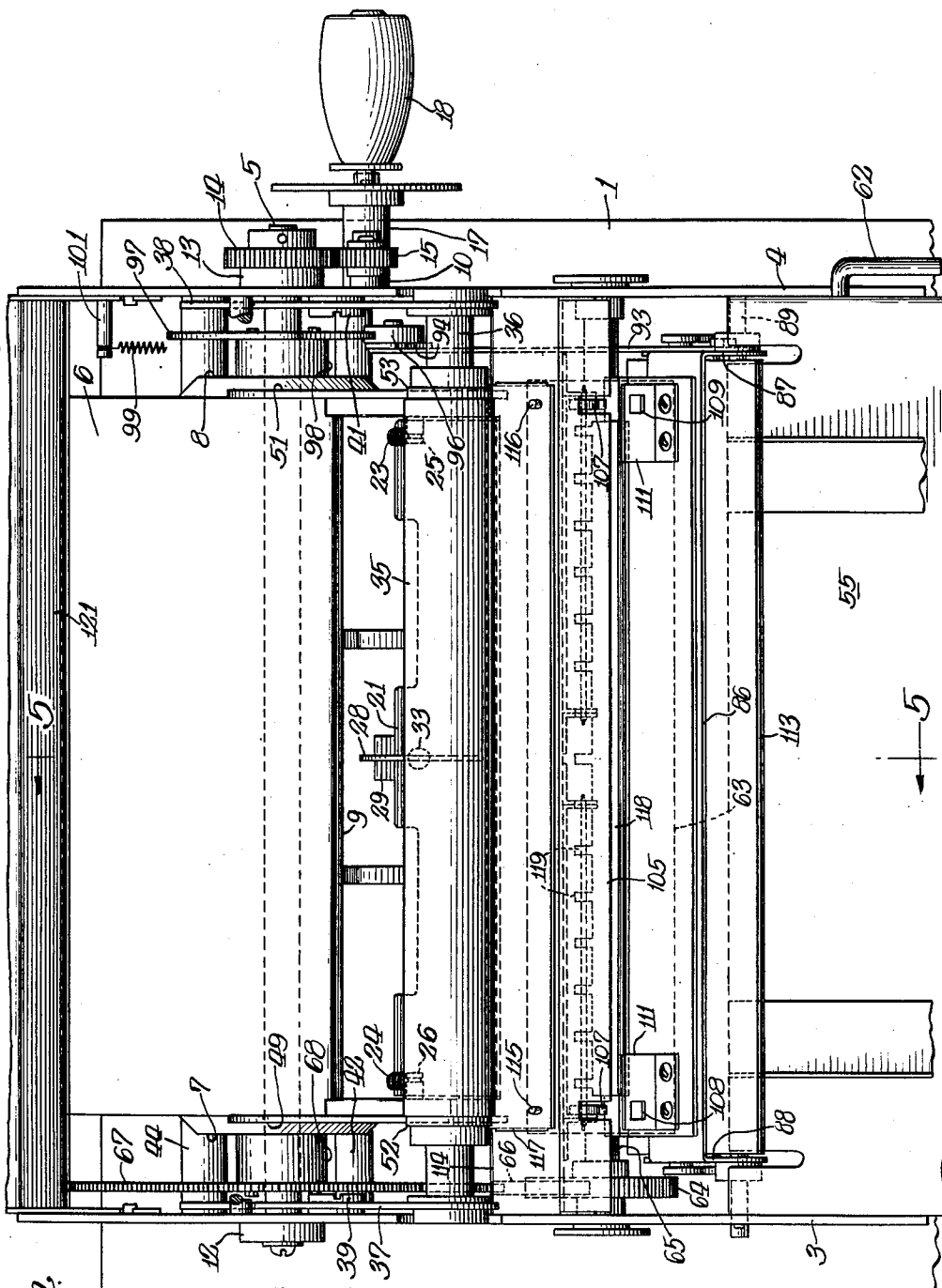
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DUPLICATING MACHINE

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5 Sheets-Sheet 3



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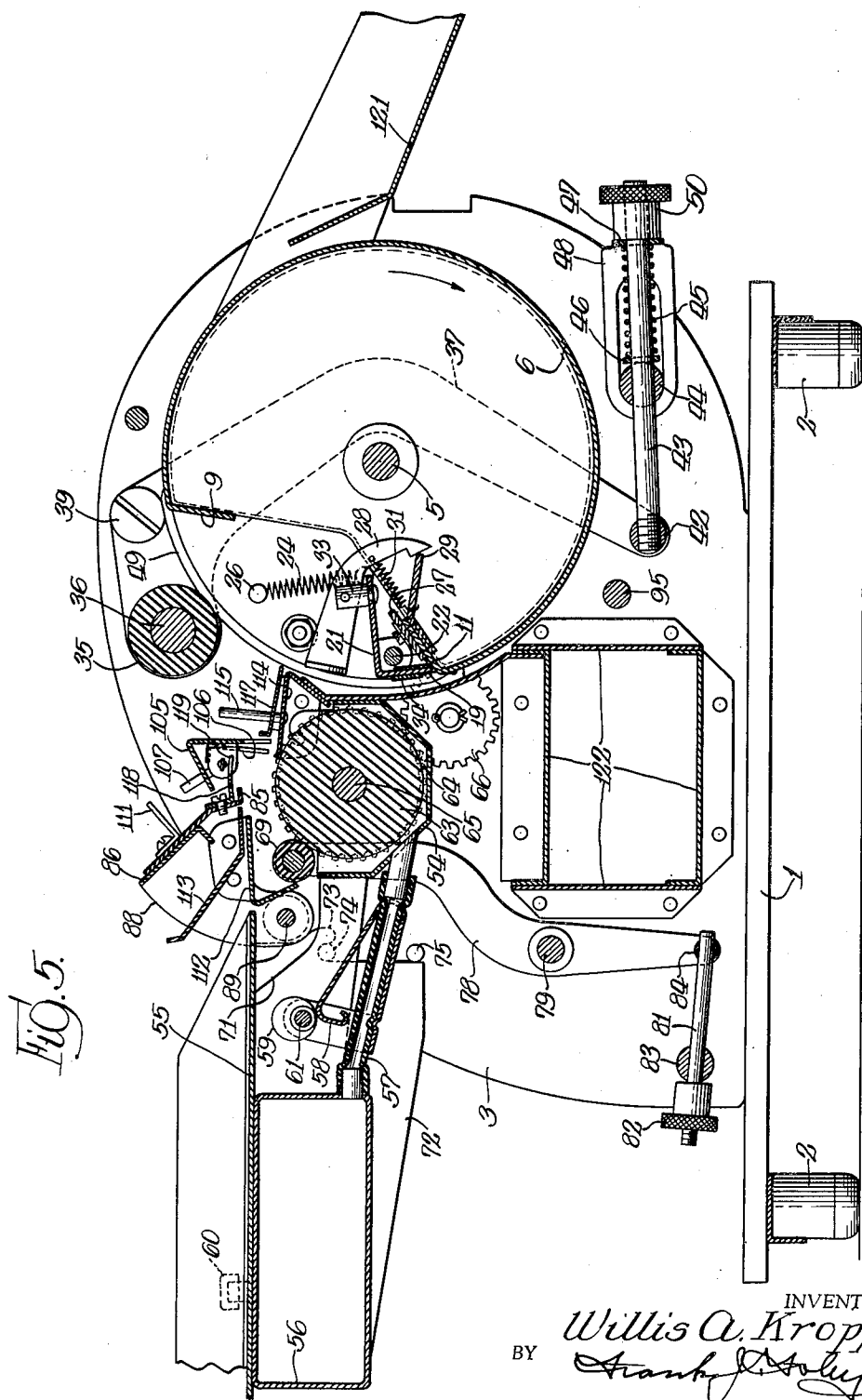
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DUPLICATING MACHINE

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5 Sheets-Sheet 4



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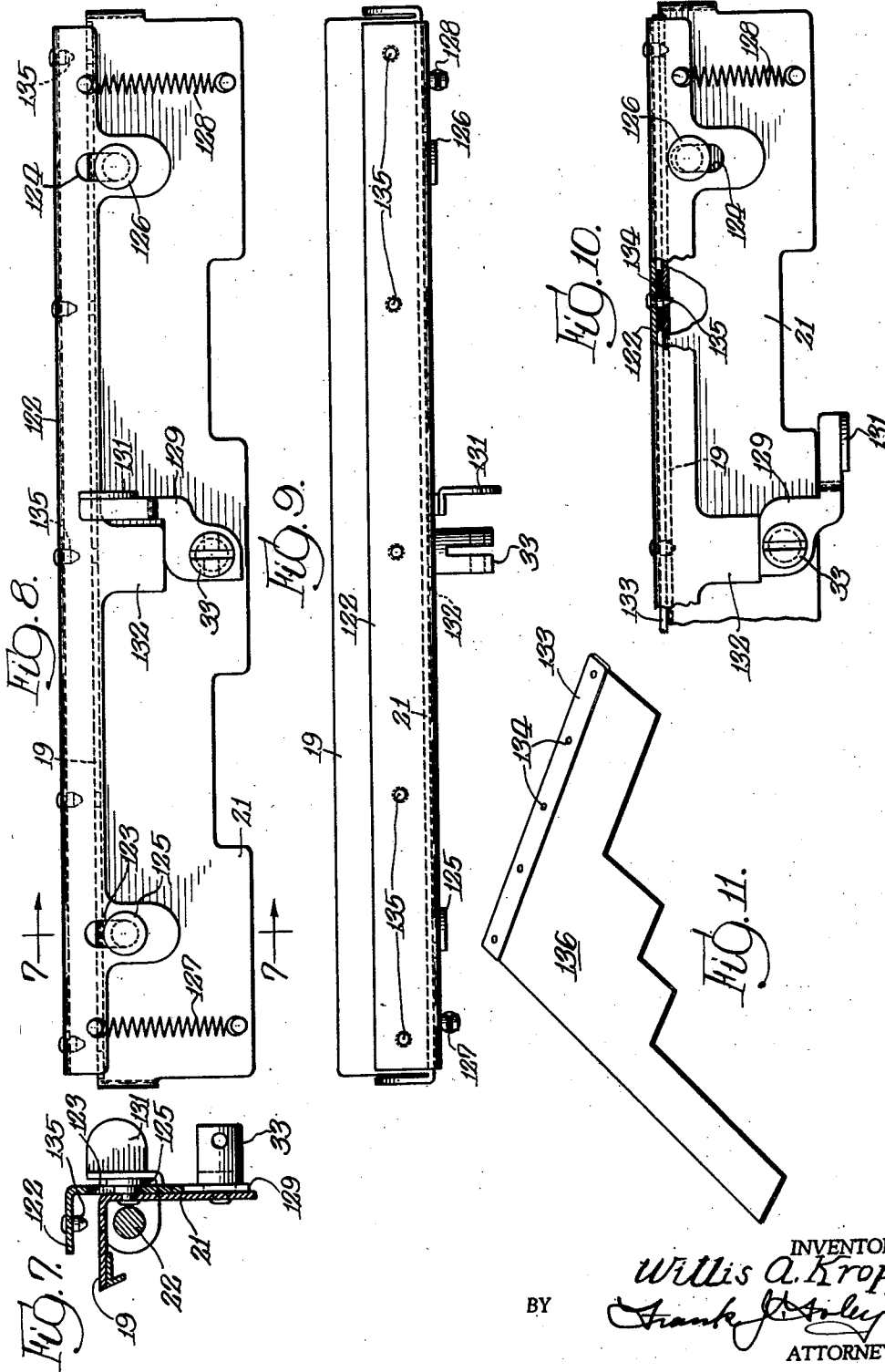
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DUPLICATING MACHINE

Filed May 31, 1940

5 Sheets-Sheet 5



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2,260,464

DUPLICATING MACHINE

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Application May 31, 1940, Serial No. 338,099

14 Claims. (Cl. 101—132.5)

This invention relates generally to improvements in duplicating machines and particularly to improvements in mechanisms for feeding copy sheets to a duplicating drum.

The various improvements provided by this invention are herein illustrated as applied to a machine which moistens blank copy sheets and presses them against a master copy positioned on the drum and imprinted with type characters or other printable matter in reverse. As is customary, the copy sheets are moistened with a volatile ink solvent. This invention provides a new means for moistening the sheets in a uniform manner.

Another feature of this invention resides in the provision of novel means for feeding successive copy sheets to the drum while the latter is continuously rotating.

Another object of the invention is to assure that the sheets may be fed to the drum in such a manner that the copy will be printed on all copy sheets accurately and uniformly in a desired position.

Another object of the invention is to provide, in a continuously rotating machine of this class, for the non-operation of the feeding and or moistening mechanism should a copy sheet inadvertently be not presented to the feeding mechanism.

Various other objects and novel advantages of this invention will be specifically alluded to hereinafter, wherein a preferred embodiment of the invention is illustrated.

In the drawings, Fig. 1 is a vertical sectional view of a duplicating machine made in accordance with my invention, and showing the various movable parts thereof in a position just prior to the commencement of a sheet-feeding operation.

Fig. 2 is a similar sectional view, but in which the machine is shown partially advanced in the feeding operation.

Fig. 3 is a partial sectional view on the line 3—3 of Fig. 2.

Fig. 4 is a top plan of the machine, while in the position shown in Fig. 1.

Fig. 5 is a sectional view of the line 5—5 of Fig. 4.

Fig. 6 is a detail view of the sheet clamping mechanism provided on the drum.

Fig. 7 is a sectional view of a modified form of a clamping mechanism for retaining both a master sheet and a block-out sheet.

Fig. 8 is a side elevation of the modified clamp.

Fig. 9 is a top plan view of the device.

Fig. 10 is a partial section of the mechanism.

Fig. 11 is a perspective view of a block-out sheet illustrative of the type which may be employed with the clamp.

Referring further to the drawings, the machine includes a base plate 1 having suitable feet 2. On the base are fixed in any suitable manner a pair of side frame plates 3 and 4. Supported in any suitable manner in the side plates upon its shaft 5 is a cylindrical drum comprising a sheet 6 of metal or other rigid material and end walls 7 and 8 united thereto. The sheet 6 is formed with two inwardly bent flanges 9 and 11, which define the longitudinal margins of an arcuate gap which extends the length of the drum.

The ends of the drum shaft are supported in bearings 12 and 13 carried by the side frame plates. The right end of the shaft has fixed thereon a gear 14 which meshes with gear 15, the latter being in mesh with a gear 16 fixed on the crank shaft 17 to which is secured the crank handle 18 by means of which the machine is manually rotated. If desired, a power drive may be employed instead of the crank handle. The gear 15 is carried on a post 10 supported on the frame plate 4.

For mounting master sheets upon the drum, I provide a rockable gripping device consisting of an L-shaped member having a flange 19 formed integrally with the flange 21, the device being pivoted on the longitudinally extending rod 22 carried by the drum end walls. A pair of springs 23 and 24 anchored to the posts 25 and 26 on the drum end walls are attached to the flange 21 to hold the flange 19 of the clamping device resiliently against the inwardly bent flange 11 of the drum. Longitudinally extending plate 27 is adjustably mounted on the drum flange 11 by means of screws or the like. The leading edge of a master copy sheet may be placed against this plate when the sheet clamping device is opened to the position shown in Fig. 6. To open the clamping device, the operator will merely push on the lower end of the flange 21, causing the clamp to rotate about its axis 22 until the hook on the end of the locking dog 28 becomes engaged over the end of the rigid finger 29 which extends inwardly from the drum flange 11. A spring 31 connected as shown to the finger and dog, will hold the two engaged until the operator trips the device by rotating the latching pawl 28 out of engagement with the finger 29, whereupon the springs 23 and 24 will close the clamp to grip the master sheet. In

order to make certain that the leading edge of the copy sheet will engage the adjustable bar 27 and not slide past, I provide a flanged member 32 positioned as shown in Fig. 6, which will positively guide the master sheet against the bar. This clamp for the master sheet may also be employed for gripping block-out sheets which may, if desired, be laid over the master copy for purposes well known in this art. The latch pawl is pivotally mounted as shown on a post 33, carried on the clamping device itself.

The clamping device also carries on its outer surface and positioned close to the peripheral surface of the drum, a margin bar 34 against which the leading edges of the copy sheets will be placed when they are fed to the drum, in a manner which will later be described.

For pressing copy sheets against the master sheet, I preferably employ a soft rubber roller 35, extending the full length of the drum. This pressure roller is carried on a shaft 36, which may be mounted in frictionless bearings in the ends of bell cranks 37 and 38, the latter being pivoted (Figs. 4 and 5) on the studs 39 and 41 carried on the side frame plates. The lower end of each bell crank is connected to a rod 42.

For regulating the pressure applied by the roller, a spring loaded rod 43, screwed into the rod 42 passes through a shaft 44 and is embraced by the compression spring 45 held under tension between washer 46 and the end wall 47 of yoke 48. Secured to the rod 44 is a pointer 44' registering on a scale marked on the yoke 48 so that as rotation of the nut 50 adjusts the outer end of the spring and yoke relatively to the rod 44, the relative tension on the spring will be indicated on the scale.

Normally, the pressure roller is permitted to ride against the drum or any papers carried thereon, but as the gap of the drum passes underneath the pressure roller, it is preferable to swing the pressure roller outwardly a slight amount and hold it out until after the margin bar 34 passes thereunder. This is accomplished by securing a pair of cams 49 and 51 to the drum and having them engaged by steel rings 52 and 53 carried at the ends of the soft rubber roller. The purpose of this feature is as follows. If a copy sheet brought against the margin bar has a warped or wavy front edge, it will pass more easily under the pressure roller without danger of being creased if the roller is held out of contact with the margin bar until after both the bar and the front edge of the paper have passed thereunder.

The feeding of copy sheets to the drum is accomplished by means of a combined feeding and moistening mechanism which will now be described.

A tank 54, for holding the ink solvent such as alcohol or some other volatile solvent, is positioned adjoining the drum and the feed table 55 and is supplied from a storage tank 56 through a tube 57, the tube being preferably made of rubber. Any suitable shut-off valve may be used, but I prefer a clamp 58 rotatable downwardly to compress the tube by a cam 59 mounted on the shaft 61 which is rotated by a handle 62. The tank 56 is normally sealed at its filling opening 60, hence the arrangement provides a typical fountain feed for the tank 54.

Wallowing in the solvent carried by the tank 54, is a roller 63 which serves the dual purpose of moistening the copy sheets and assisting in feeding them to the drum. This roller is continuously driven by means of a gear 64 fixed on

one end of the roller shaft 65 in mesh with a gear 66 which in turn meshes with a gear 67 secured to a hub 68 mounted at one end of the drum and rotating therewith.

The roller 63 is made of a composition which will provide a soft, yielding surface having a great affinity for the ink solvent contained in the tank 54. Any one of the well known solvents now commonly employed may be used. These have a large alcohol content, usually, and have high volatility and extremely low viscosity. In order that the roll may retain enough solvent to moisten the sheets, it must be readily wetted by the solvent and capable of retaining a very thin but uniform film of the solvent after pressure contact with a doctor roll yet also adapted to transfer this film of solvent to a copy sheet in a uniform manner. I have found that a soft rubber roller made of natural rubber is readily wetted by the solvent and will retain a thin, uniform film. However, natural rubber does not have a sufficiently long life. It deteriorates in the atmosphere and is attacked by the solvents. Hence, I prefer to employ a synthetic rubber providing a similar soft, yielding, smooth, non-porous surface readily wetted by the solvent, but not subject to deterioration by contact with the solvent or the atmosphere.

Preferably, the doctor roll 69 will be made of the same material and it will be applied against the moistening roll with sufficient pressure to remove the surplus solvent carried on the surface of the moistening roll as it emerges from the tank. However, due to the affinity of the rubber roll for the solvent, a very thin, uniform film of solvent adequate for the moistening of the copy sheets will remain. The exact amount of moisture which should be retained by the moistening roll cannot be stated as it must be varied in accordance with the texture of the paper used, the composition of the ink, the number of copies to be made, and in accordance with other factors well known in the industry. The determination of the amount of moisture to be carried by the roll to the copy sheets is a matter for the operator to decide upon during the use of the machine.

By reason of such considerations as assembly, repair and servicing, it is preferred to form the wallowing tank, the storage tank and the feed table into one rigid unit, in which case the wallowing tank is attached to the bottom of the feed table by a pair of arms such as the arm 71, while the storage tank is secured directly to the feed table. At each side of the table, there is provided a downwardly extending flange such as the flange 72 and a hook similar to the hook 73, will be formed on each flange to engage a post such as 74 carried by the side frame plates. The forward edge of each side flange will then abut another post 75 carried by the main side frame plates. It will be understood that the hook and flange construction is identical on each side of the feed table.

The shaft of the wallowing roll extends through suitable notches formed in the end walls of the wallowing tank, one of these notches being shown and designated as 76 in Fig. 1, the shaft ends being supported in suitable bearings carried by the main side frame plates of the machine. The doctor roll referred to heretofore as 69, is supported between a pair of arms 77 (Fig. 2) and 78 (Fig. 5) which are pivoted on a cross rod 79 and are held under tension by the tension rod 81, which latter is provided with an adjusting nut 82 acting against a cross rod 83 through which a rod 81 extends, the latter being

connected to both arms 77 and 78 by a connecting rod 84.

To press the copy sheets down against the walling roll to moisten their under sides and to cause them to be fed to the drum, I employ a shoe which preferably has a continuous surface so that all portions of the copy sheet will be firmly pressed against the walling roll with equal force. This shoe, 85, is best shown in Fig. 5 and is secured to a rigid ball 86 in any suitable manner, the downwardly extending arms of the ball designated 87 and 88 being secured to a rockable shaft 89, whereby the shoe may be rocked downwardly as desired against the walling roll. As an extension of ball arm 87 is an arm 91 carrying a pin 92 which extends through a slot as shown in the rear end of a link 93 which is pivotally connected to the cam follower arm 94, pivoted on a post 95 on the main frame. This arm carries a roller 96 which follows the cam 97 which is secured to a hub 98 fastened on the right end wall of the drum, as best shown in Fig. 1. This cam follower arm is normally urged towards the cam by the spring 99 anchored to the post 101.

The shoe 85 is not pressed downwardly against the roller by the action of the cam 97, but rather is raised thereby, the downward movement of the shoe being accomplished by means of a pair of springs connected to opposite sides of the shoe to urge it downwardly. One of these springs, and the other is identical with it, is shown in Fig. 1 and designated 102, being anchored to a post 103 on the inside of the adjoining side frame plate, whereas the upper end of the spring is connected directly to the ball 86 at the point 104. Therefore, when the cam follower 96 rides onto the major diameter of the cam 97, the arm 93 will move toward the left, as seen in Fig. 1, permitting the spring 102 to pull the shoe downwardly against the walling roll, provided no mis-feeding lock is interposed to prevent such movement. The slot in the arm 93 prevents the cam 97 from forcing the shoe down, if the lock is interposed.

In the present disclosure, there is provided a mechanism to prevent operation of the shoe unless a copy sheet is, at the time, in proper position for moistening and feeding.

Referring to Fig. 5, an angular plate 105 is mounted between the side frame plates of the machine in such a position that a copy sheet about to be fed will be pushed forwardly until its leading edge strikes the downwardly depending part of this member. Pivotally secured to the feed stop member 105 is a plate or a plurality of plates as desired, having spaced apart fingers 106 against which the copy sheet will be pushed when it is being registered for feeding. As shown in Fig. 1, moving integrally with the swinging feed fingers 106 are one or more triggers such as 107, preferably one near each end of the feeding area. These fingers protrude through the upper flange of the member 105 and are intended to register, if tripped by a copy sheet, with correspondingly located openings 108 and 109 provided in the flange 11 carried by the ball 86. If these trigger fingers are tripped, that is, rotated toward the left as Fig. 1 is viewed, they will pass through the openings in the flange 11 at the time the cam 97 permits the feeding and moistening shoe to be depressed by its springs. Otherwise, the trigger fingers will be struck by the unperforated portion of the flange 11, thereby holding the feed shoe off the mois-

tening roll. Hence, if a copy sheet is brought toward the feeding position askew and does not contact and trip both triggers, the feeding shoe will not be operated.

If desired, this mechanism for preventing the operation of the feed shoe may be eliminated, in which case, the feed shoe will come down against the moistening roll or any copy sheet overlying it, any time the cam 97 is rotated to the feeding position.

For guiding the copy sheets during the feeding operation to the drum, there is provided in addition to the feed table 55, a separate extension thereof, indicated as 112 and overlying the latter, a guide plate 113. Another guide plate 114 is mounted as shown and overlying the latter and loosely mounted on a pair of posts 115 and 116 is a plate 117, which plate is held somewhat spaced above the stationary plate 114 by means of depending flanges at its opposite ends resting on the plate 114. A copy sheet advanced between the fixed and movable plates, will be guided directly to the drum and held down by the floating plate 117 until after the margin bar 34 has passed the edge of the sheet. As the drum is further rotated and the sheet is further advanced by the feeding mechanism, the sheet will be bent upward and will raise the plate 117, as shown in Fig. 2. This shortened path of travel will enable the sheet to register against the margin bar before it is gripped by the roller 35.

The plate 118 is provided with a plurality of separated fingers 119 which serve to make certain that the leading edge of the copy sheet is lowered as the shoe descends and is introduced between the plates 114 and 117.

The feeding and moistening device operates as follows: While the drum is continuously rotated, the roll 63 will likewise be continuously rotated through the gear train heretofore described. A copy sheet will be advanced along the feed table until its leading edge strikes the margin stop 105 or the trip fingers 106, if the latter be employed. As the drum continues to rotate, the cam 97 will operate on the feeding shoe to enable the latter to be lowered, pressing the copy sheet directly and firmly into contact with the moistening roller. The excess surface moisture having been removed by the doctor roll, enough solvent will still adhere to the surface of the moistening roll to moisten the paper. The feeding shoe and moistening roll will at the same time, cooperate to advance the copy sheet between the plates 114 and 117 to strike the drum behind the margin bar. As the machine continues to operate, the edge of the copy sheet will gain on the margin bar until, just before the margin bar passes underneath the pressure roller 35, the copy sheet will be snugly registered against the rear edge of the margin bar. Further advance of the machine will cause the pressure roller to grip the copy sheet and thereafter press it against the master copy carried by the drum. In the meantime, the feeding shoe continues to firmly press the copy sheet against the rotating moistening roll until all of it has been moistened. Thereafter, the cam 97 will act to positively raise the feeding shoe and make ready for the feeding of another copy sheet. Further rotation of the drum will permit the copy sheet to fall into the delivery chute 121.

Preferably, the gear drive of the moistening and feeding roll will be designed to give the roll

a peripheral speed equal to that of the drum, hence, when the feed cam is so designed as to cause the leading edge of the copy sheet to strike the drum surface immediately behind the margin bar, further rotation of the machine will enable the copy sheet to gain slightly on the drum. This action is secured through the fact that the leading edge of the paper is lifted by the drum, and the loose plate 117, being very light in weight, will be raised by the paper permitting the copy sheet to be fed thereafter not along the plane of the table 114, but rather in a more direct line from the top of the wallowing roll to the place where the pressure roller initially grips the copy sheet. In view of this gain of the copy sheet over the drum, the leading edge will be pushed snugly against the rear edge of the margin bar and extremely accurate registration with the master sheet is thereby obtained.

In Fig. 5, there is shown in cross section, a series of four plates 122, which may be riveted or welded to each other and to the vertical side frame plates of the machine for the purpose of imparting rigidity to the frame structure of the machine.

In Figs. 7 to 10 inclusive, there is illustrated a modified master sheet clamp mechanism which also embodies a clamp for a block-out sheet. That portion of the mechanism which performs the function of holding the master sheet may be identical with the master sheet clamp heretofore described and shown in cross section in Fig. 6, excepting that in place of the fixed margin bar 34, this modification substitutes a movable block-out clamp member 122. This member is L-shaped in cross section having one leg which slides along the side of the plate 21 and being provided with slots 123 and 124 guided on the rivets 125 and 126.

Spring 127 and 128 connected to this block-out clamp and to fixed pins on the plate 21, as shown, normally tend to pull the member 122 down against the top surface of the master clamp 19. In that position, the edge of the member 122 serves as a margin bar against which copy sheets are aligned when they are fed to the drum.

The lever 129 pivoted on the post 33 and having an offset handle 131 may be rotated either to the position shown in Fig. 8 where it will lift the depending tongue 132 on the block-out clamp to open the block-out clamp, or it may be rotated to the position in Fig. 10 where it allows the springs to close the block-out clamp.

The block-out sheets to be used with this clamp will be provided with apertures either directly in the paper or in reinforced edge members such as 133, the holes 134 being positioned to register with pins 135 carried by the movable clamp 122 and extending through the block-out sheet into corresponding holes in the flange 19. The block-out sheet 136 shown in Fig. 11 is merely illustrative of the general nature of such a sheet, but the configuration will depend on what matter is to be blocked out.

The manner of use of the block-out clamp has been explained, but attention may be called to the fact that when applying or removing a block-out sheet it is not necessary to release or in any way disturb the clamping of the master sheet on the drum.

While a preferred embodiment of the invention has been described with considerable particularity herein, it should be understood that the invention is not limited to the specific details of the construction herein shown, but rather

its novel features are susceptible of considerable variation and modification without departing from the spirit and the scope of the claims which follow.

Having shown and described my invention, I claim:

1. In a duplicating machine, a rotary drum and means for securing a master copy thereon, a moistening roll having an uninterrupted imperforate surface adjacent to the drum and connected for continuous rotation therewith at identical peripheral speeds, a feed table adjoining and above said moistening roll and a paper stop positioned above the moistening roll to intercept sheets advanced beyond the table edge, an oscillatable member having a non-rotating contact with the copy sheets for pressing them against the roll, means for oscillating said member to contact copy sheets against the roll to initiate the feeding of the same to the drum, said member being arranged to depress the leading edges of copy sheets between the table edge and paper stop against the moistening roll to pass them under the latter.

2. In a duplicating machine, a rotary drum, a moistening roll having an uninterrupted imperforate surface adjacent thereto and means for rotating the drum and roll at unvarying relative speeds continuously during the feeding of successive copy sheets, a feed table adjoining and above said moistening roll and a paper stop positioned above the moistening roll to intercept sheets advanced beyond the table edge, an oscillatable member for pressing copy sheets against said roll, and means operatively connected with said rotating means to actuate said member to contact copy sheets with said roll in a timed relation with a pre-determined position of the drum, said member being arranged to depress the leading edges of copy sheets between the table edge and paper stop against the moistening roll to pass them under the latter.

3. In a duplicating machine, a rotary drum, a moistening roll having an uninterrupted imperforate surface adjacent thereto, means for driving the drum and roll in unison at unvarying relative speeds continuously during feeding of successive copy sheets, a feed table adjoining and above said moistening roll and a paper stop positioned above the moistening roll to intercept sheets advanced beyond the table edge, a member intermittently spaced apart from said roll to permit introduction of copy sheets between the member and roll, and means operatively connected with said driving means to actuate said member to contact copy sheets against said roll in a timed relation to a pre-determined position of the drum, said member being arranged to depress the leading edges of copy sheets between the table edge and paper stop against the moistening roll to pass them under the latter.

4. In a duplicating machine, a rotary drum, a moistening roll having an uninterrupted imperforate surface adjacent thereto, means for driving the drum and roll in unison at unvarying relative speeds continuously during feeding of successive copy sheets, a feed table adjoining and above said moistening roll and a paper stop positioned above the moistening roll to intercept sheets advanced beyond the table edge, a feed stop on said drum, an oscillatable member for pressing copy sheets against said roll and means operatively connected with said driving means to actuate said member to contact copy sheets against said roll whereby they are fed against said

feed stop, said member being arranged to depress the leading edges of copy sheets between the table edge and paper stop against the moistening roll to pass them under the latter.

5 5. In a duplicating machine, a rotary drum, a moistening roll having an uninterrupted imperforate surface adjacent thereto, means for driving the drum and roll in unison at unvarying relative speeds continuously during feeding of successive copy sheets, a feed table adjoining and above said moistening roll and a paper stop positioned above the moistening roll to intercept sheets advanced beyond the table edge, a feed stop on said drum, a member intermittently spaced apart from said roll to permit introduction of copy sheets between the member and roll, means operatively connected with said driving means to actuate said member to contact copy sheets against said roll whereby they are fed against said feed stop, and means for guiding the copy sheets into position behind said feed stop, said member being arranged to depress the leading edges of copy sheets between the table edge and paper stop against the moistening roll to pass them under the latter.

6. In a duplicating machine, a rotary drum, a moistening roll adjacent thereto, means for driving the drum and roll in unison at unvarying relative speeds continuously during feeding of successive copy sheets, a feed stop on said drum, a member intermittently spaced apart from said roll to permit introduction of copy sheets between the member and roll means operatively connected with said driving means to actuate said member to contact copy sheets against said roll whereby they are fed against said feed stop, and means for guiding the copy sheets against the drum behind said stop and movable thereafter for altering the path of the copy sheets from the roll to the drum.

7. In a duplicating machine, a rotary drum, means for feeding copy sheets thereto comprising two members, at least one of which is a roll, means for driving the drum and roll at unvarying relative speeds continuously during the feeding of successive copy sheets, a feed stop on the drum, means for guiding the leading edge of copy sheets in one path to the drum surface behind said feed stop and movable thereafter to enable the remainder of the same copy sheets to follow a different path toward the drum.

8. In a duplicating machine, a rotary drum having a feed stop thereon, means including a roller continuously driven along with the drum at unvarying relative speed thereto during feeding of successive copy sheets and operatively connected with the rotation of the drum to deliver the leading edges of the copy sheets against the drum behind said feed stop, said means including guiding means positioned to deliver said leading edges initially behind the feed stop and movable thereafter to permit the rest of each copy sheet to follow through along a different path.

9. In a duplicating machine, a rotary drum having a feed stop thereon, a pressure roller for

pressing copy sheets against a master copy carried by the drum, means for feeding copy sheets against the drum behind the feed stop before the latter passes under said roller and further adapted to feed and hold the leading edge of the sheet snugly against said stop as the latter passes underneath said roller.

10. In a duplicating machine, a rotary drum having a feed stop thereon, a pressure roller for pressing copy sheets against a master copy carried by the drum, means for feeding copy sheets against the drum behind the feed stop before the latter passes under said roller and further adapted to feed and hold the leading edge of the sheet snugly against said stop as the latter passes underneath said roller, and means for temporarily lifting the pressure roller from the drum until after the leading edge of each copy sheet passes beneath said roller.

11. In a duplicating machine, a rotary drum, a roller positioned adjacent thereto, means for driving the drum and roller in unison continuously during the feeding of successive copy sheets, a member intermittently positioned out of contact with said roller to permit the introduction of copy sheets between the roller and member, a margin stop for sheets so introduced and means associated therewith actuated by pressure contact from copy sheets and arranged only if actuated to permit movement of said member thereafter, and means operatively connected with said driving means to move said member for contacting copy sheets against said roller.

12. In a duplicating machine, a rotary drum, a positively driven feed roller adjacent thereto, means cooperating with said roller for feeding copy sheets toward the drum, and means between the roller and drum for guiding copy sheets into contact with the drum, said means including a member movable by the copy sheet itself after contact with the drum to permit a change of direction of the feeding of the copy sheet thereafter.

13. In combination with a duplicating machine having a rotary drum, a clamping member for clamping master copies on said drum including a plane portion lying substantially in the periphery of the drum, and a clamp bar for clamping block out sheets upon the plane portion of said clamp, one edge of said bar being positioned to serve also as a margin stop for copy sheets.

14. In combination with a duplicating machine having a rotary drum provided with an arcuate gap therein, a master copy clamp positioned to clamp master copies on the drum at a position adjoining one edge of said gap, said clamp having a plane portion lying substantially in the periphery of the drum within said gap, a clamp bar for gripping block out sheets against the plane surface of said clamp, said bar having one edge when in closed position serving as a margin stop for copy sheets, and means extending into the gap of the drum for operating said bar from closed to open positions.

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