April 3, 1951 E. J. JANKE 2,547,470

INK FOUNTAIN INTERRUPTER FOR ROTARY PRINTING MACHINES

Filed Jan. 17, 1945 7 Sheets-Sheet 1

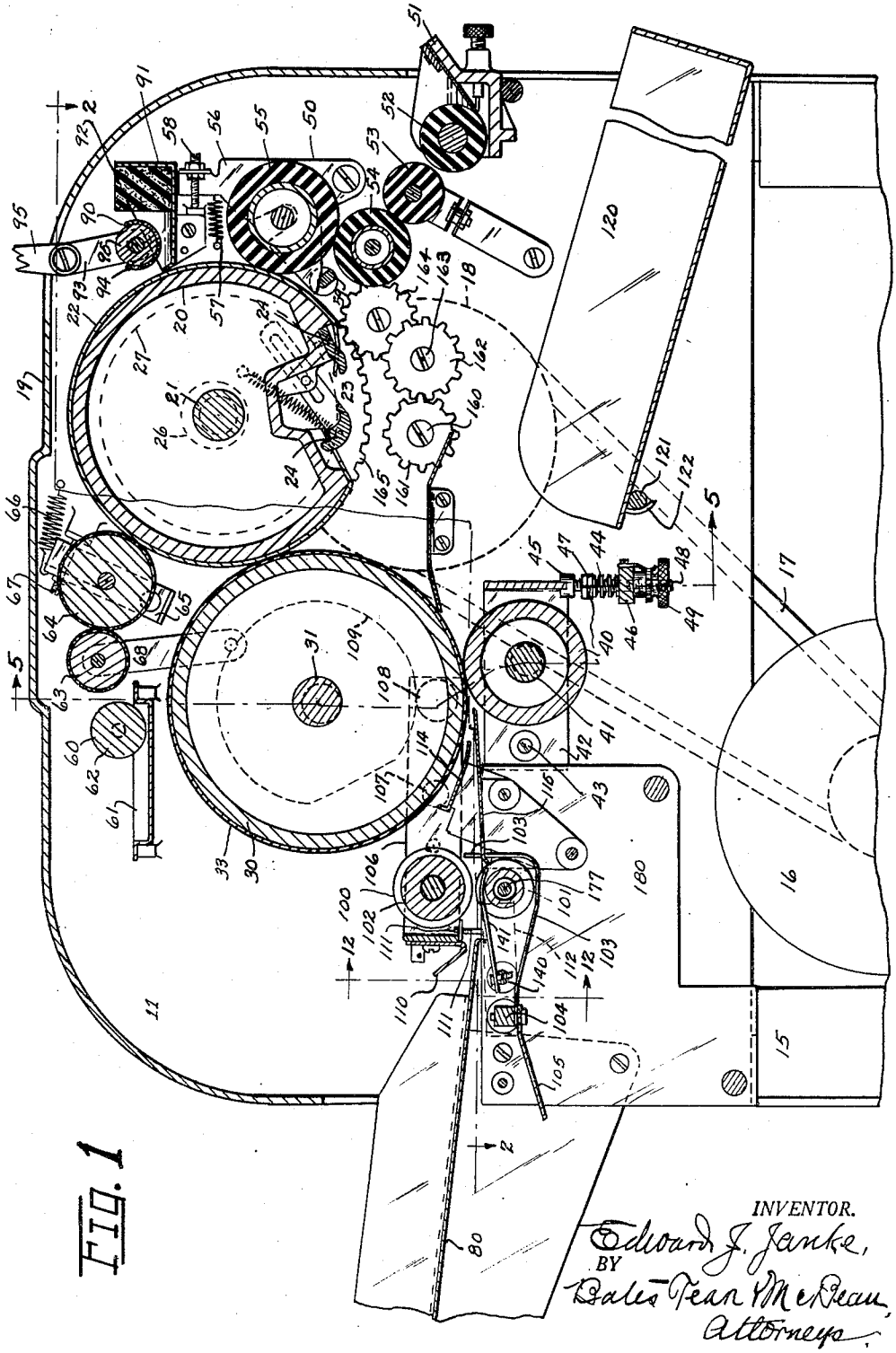


Fig. 1

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INK FOUNTAIN INTERRUPTER FOR ROTARY PRINTING MACHINES

Filed Jan. 17, 1945 7 Sheets-Sheet 2

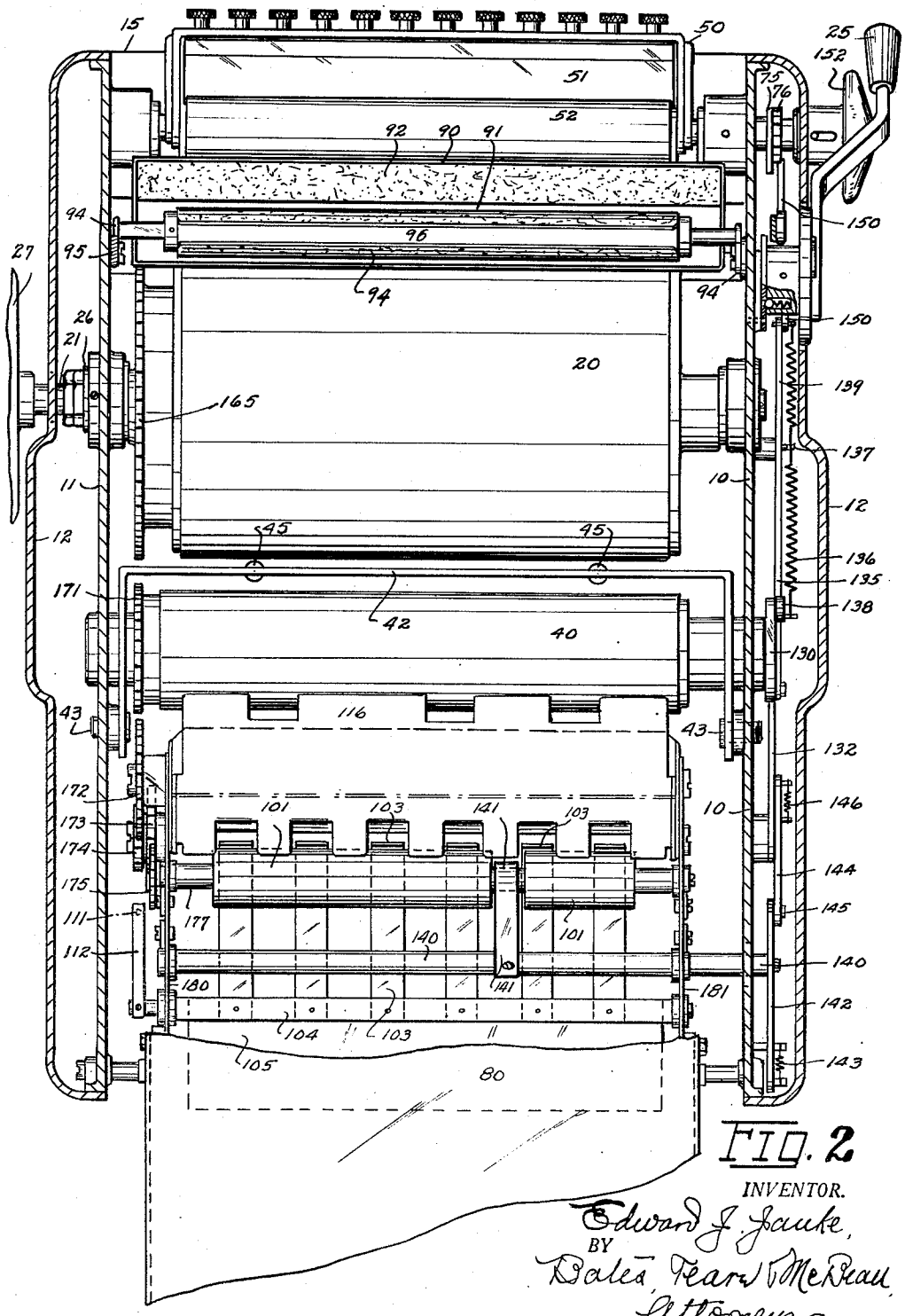


FIG. 2

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INK FOUNTAIN INTERRUPTER FOR ROTARY PRINTING MACHINES

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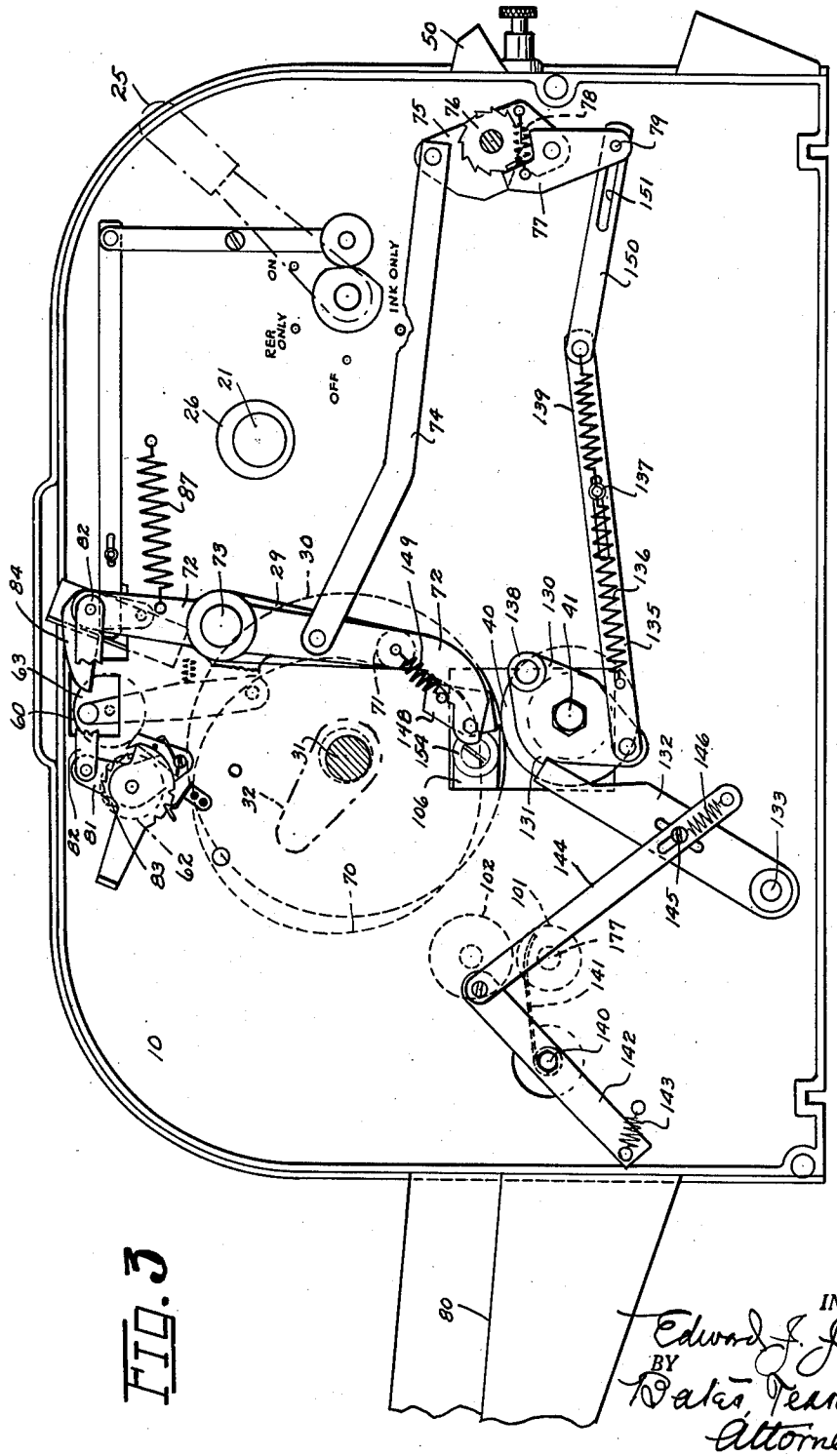


FIG. 3

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INK FOUNTAIN INTERRUPTER FOR ROTARY PRINTING MACHINES

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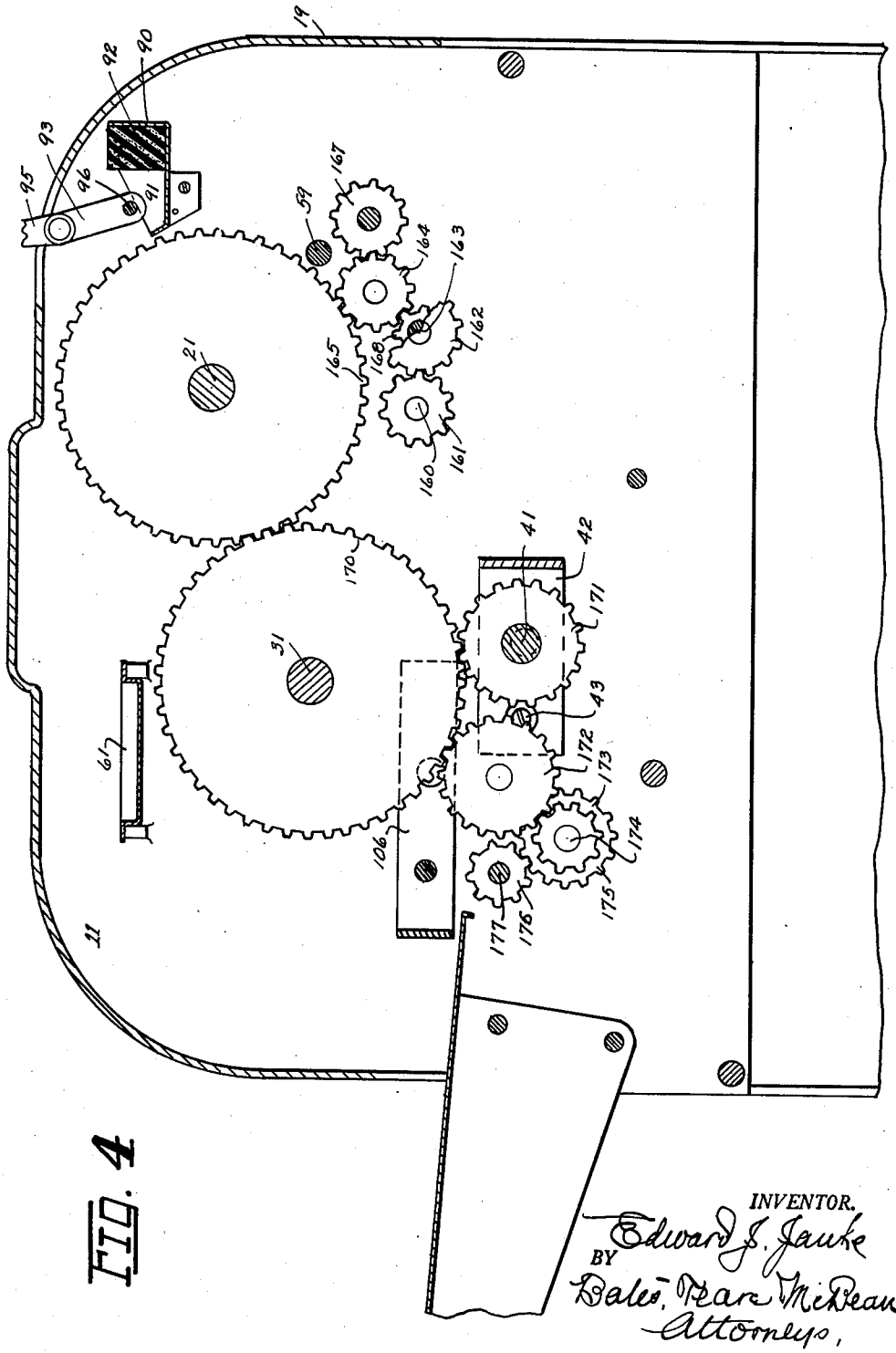


FIG. 4

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April 3, 1951 E. J. JANKE 2,547,470

INK FOUNTAIN INTERRUPTER FOR ROTARY PRINTING MACHINES

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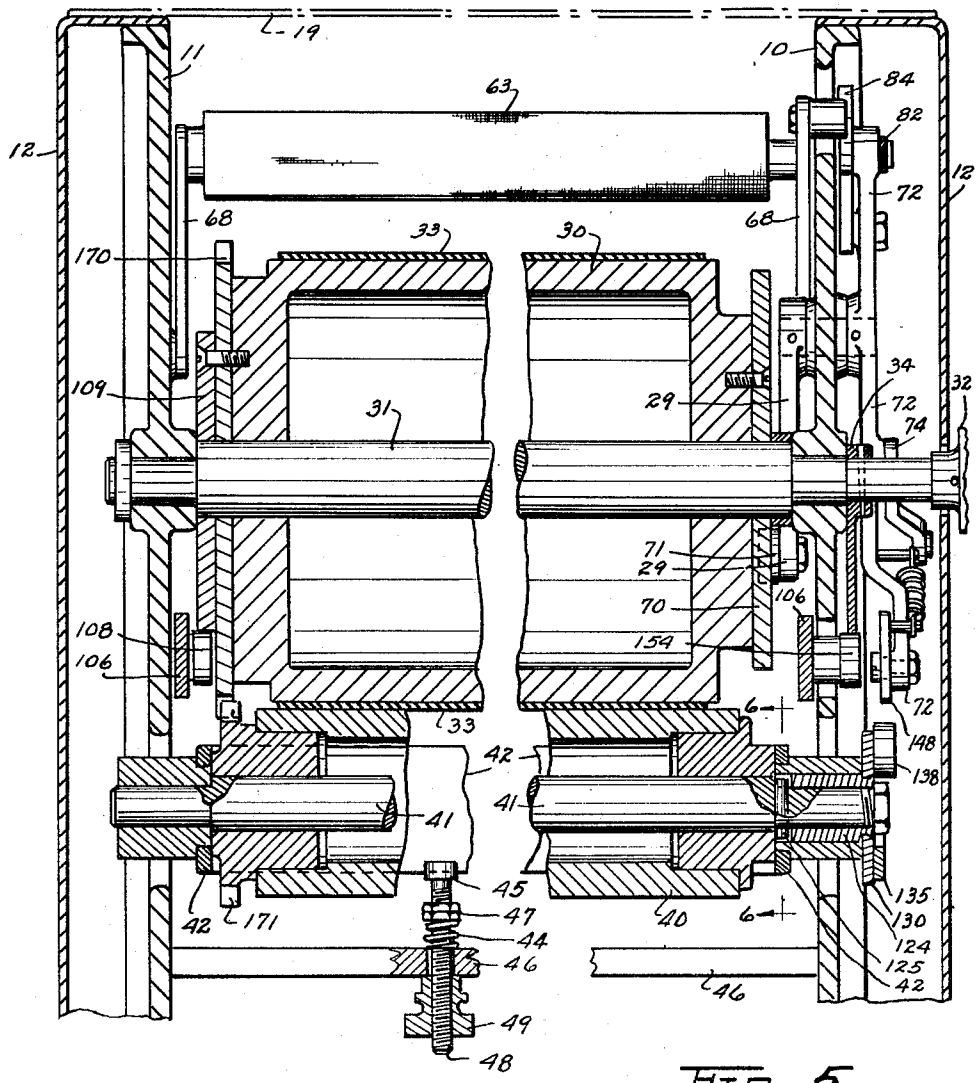


FIG. 5

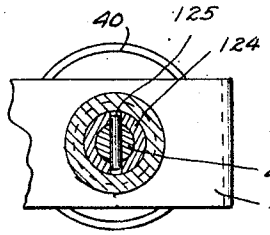


FIG. 6

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INK FOUNTAIN INTERRUPTER FOR ROTARY PRINTING MACHINES

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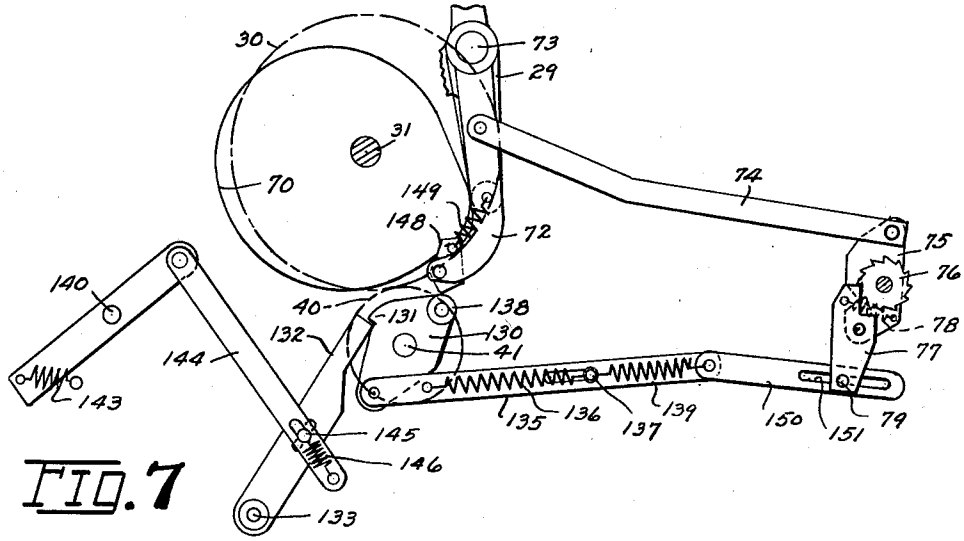


FIG. 7

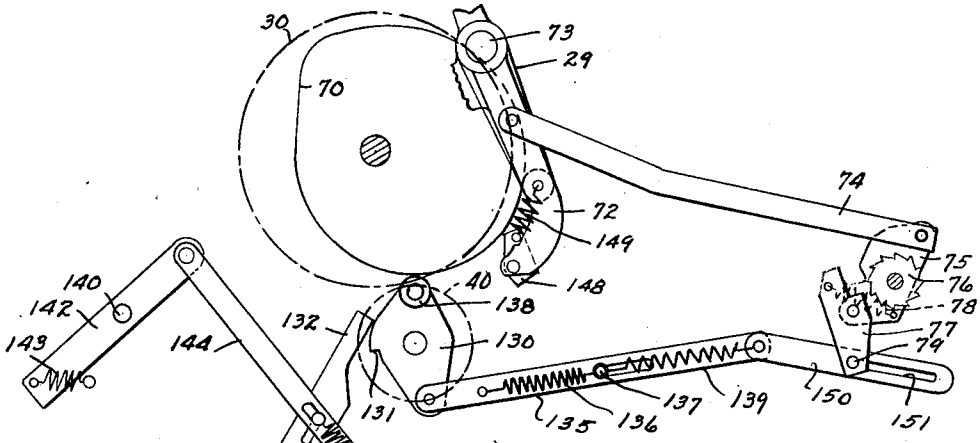


FIG. 8

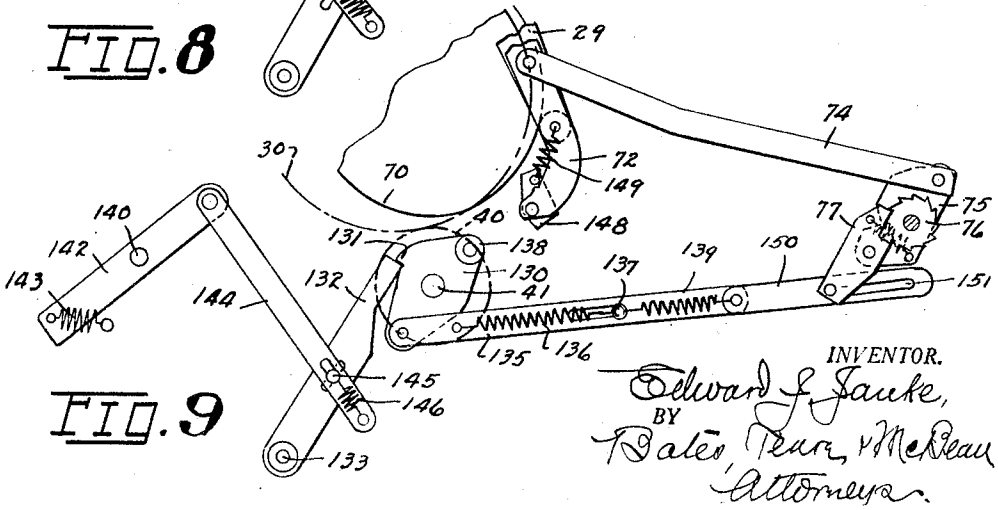


FIG. 9

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April 3, 1951 E. J. JANKE 2,547,470

INK FOUNTAIN INTERRUPTER FOR ROTARY PRINTING MACHINES

Filed Jan. 17, 1945 7 Sheets-Sheet 7

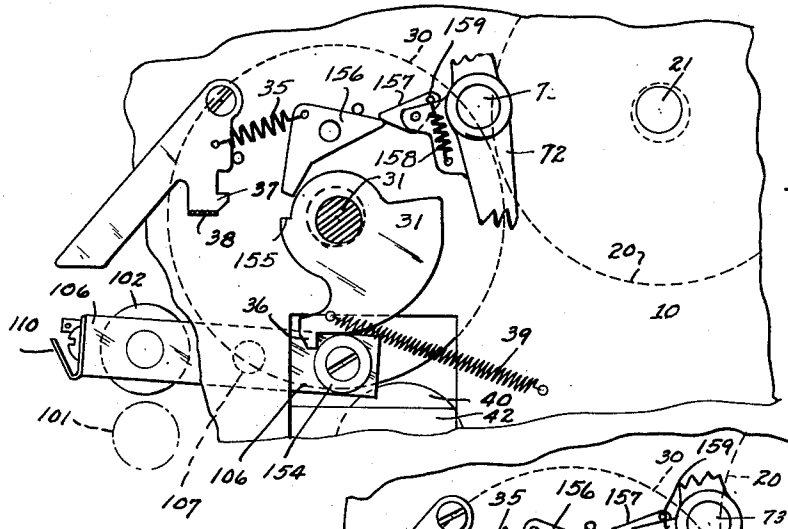


FIG. 10

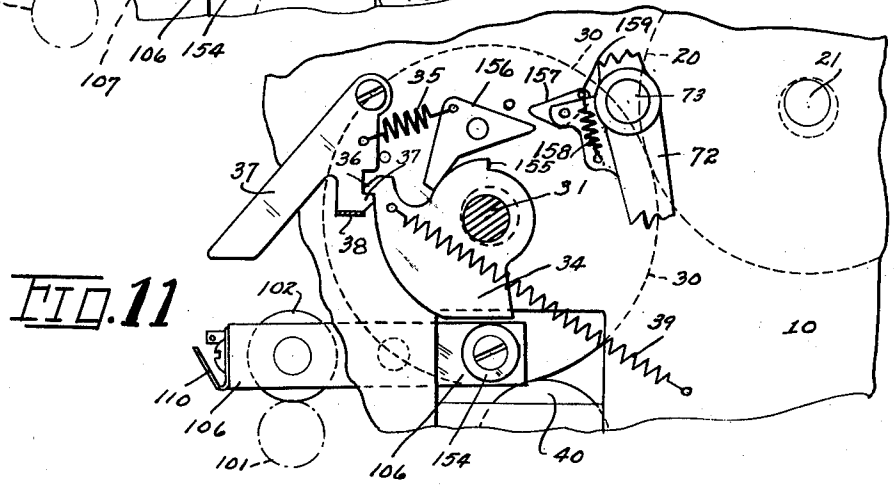


FIG. 11

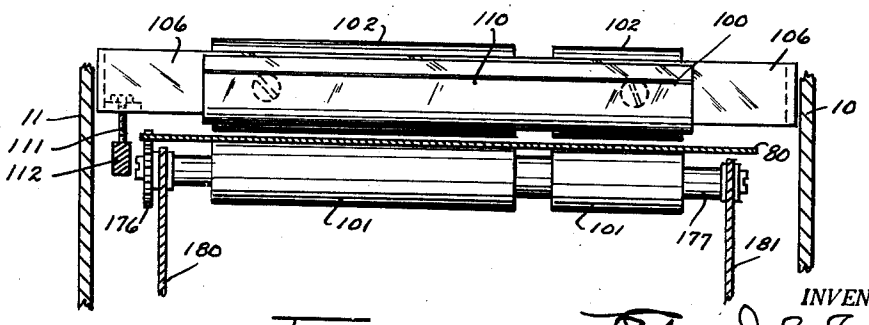


FIG. 12

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Patented Apr. 3, 1951

2,547,470

UNITED STATES PATENT OFFICE

2,547,470

INK FOUNTAIN INTERRUPTER FOR ROTARY PRINTING MACHINES

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Application January 17, 1945, Serial No. 573,280

3 Claims. (Cl. 101—233)

1

The invention relates to a rotary printing machine operating on the planographic principle. The general object of the invention is to provide such a machine in a compact and efficient form which shall have provision for the rapid building up and continuous maintenance of the inked image and which shall effectively transfer the same to sheets fed to the machine.

More specifically, it is an object of the invention to provide for the interruption of the passage of ink from the ink supply to the image when a sheet fails to pass between the platen and its coacting printing member so that the image will not become unduly heavy for subsequent sheets.

Another object is to provide for adjustment of the printing pressure between the platen, against which the back of the sheet passes, and the coacting printing member, to facilitate the use of the machine with sheets of various thicknesses, and at the same time prevent offsetting of the image on the platen. This is effected by causing a separation of such parts whenever a sheet fails to be fed during the cycle of operation of the machine, and thereafter restoring such parts automatically for the next cycle of operation.

A further object of my invention is to provide a printing machine of the planographic type in which the printing plate may be quickly and easily applied to the machine and prepared for the printing operation.

My invention is particularly well adapted for an office printing machine of the offset type, and it is an object of the invention to provide such a machine in a simple and compact form which may be hand fed at one end thereof, under control of suitable timing mechanism, to cause the sheets to pass one at a time between the offset drum and platen to a suitable receiving tray.

My machine carries all of the different parts mounted on a frame comprising a pair of spaced upright plates which may be supported on a suitable stand, and such stand may house a motor, making the machine entirely self-contained.

The drawings illustrate a preferred embodiment of my invention. Fig. 1 is a vertical section through the machine, the offset blanket being illustrated merely in conventional form; Fig. 2 is a sectional plan of the machine shown in Fig. 1; Fig. 3 is a side elevation, with the cover removed and certain parts omitted; Fig. 4 is a sectional elevation looking in the same direction as Fig. 3, but taken just in front of the opposite frame plate and being sectioned through the cover; Fig.

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5 is a section, intermediately broken away, through the offset drum and platen on the offset plane indicated by the line 5—5 on Fig. 1; Fig. 6 is a detail illustrating the support for the platen, being a vertical section on the line 6—6 on Fig. 5; Fig. 7 is a side elevation of the mechanism and linkage controlling the release of the platen whenever a sheet fails to be fed, together with the means for automatically restoring the platen to active position, and illustrates the parts in position for detecting the presence or absence of a work sheet; Fig. 8 is a view of the same parts at a later period in their cycle of operation and illustrates the platen in an idle or released position due to the absence of a work sheet in the machine; Fig. 9 is a view taken at the same period in the cycle of operation as Fig. 8, but with the platen active due to the presence of a work sheet in the machine; Fig. 10 is a side elevation of the latching mechanism for retaining the offset drum in coaction with the master drum and platen but allowing its immediate separation from both of such members, this view showing the drums in their separated or inactive positions; Fig. 11 is a view of the same parts with the latch in its other position and the drum in their coacting positions; and Fig. 12 is a detail in vertical cross section in front of the paper feed mechanism, showing the paper guide, the plane of the section being indicated by the line 12—12 on Fig. 1.

In Figs. 2 and 5, I have shown two spaced vertical frame plates 10 and 11 parallel with each other which together with bracing cross rods hereinafter mentioned, constitute the main frame of the machine. Plate 10 also appears in Figs. 1 and 3 and the plate 11 in Fig. 4. Ordinarily these frame plates and the machine carried thereby rest on a suitable base or stand indicated at 15 in Fig. 1. This stand may house a driving motor 16 connected by a belt 17 with a pulley 18 of the printing machine.

The printing machine includes a master sheet carrying drum 20, an offset drum 30 and a platen 40 all suitably mounted between the two plates 10 and 11. Between these plates also is an inking mechanism 50 adapted to deliver ink to the master sheet 22 on the drum 20, and a normally acting ink repellent applying mechanism 60 acting on a region of the master sheet in advance of the inking mechanism. Also between the frame plates is mounted a special applicator mechanism 90 for initially treating the master sheet preliminary to the inking or printing operation.

Between the frame plates 10 and 11, I also

mount the control mechanism 100 for the manual paper feed and a projecting paper support 80, and behind the platen I provide means for holding a removable receiving tray 120. Various mechanisms hereinafter described are mounted on the exterior of the two frame plates 10 and 11 and are shielded by side cover plates 12. Substantially all of the parts of the machine between the frame plates may be covered by a suitable cover which is removed when the machine is operated. Such removable cover is indicated at 13 as extending over the entire top of the machine and downwardly beyond each end thereof to regions a short distance above the paper support and the inking fountain.

The master drum 20 is provided with an axially extending recess 23 in which is mounted an attaching means, generally indicated at 24, for attaching a printing plate to the drum. The attaching means shown is substantially that shown in Patent No. 2,165,233 issued July 11, 1939 to Addressograph-Multigraph Corporation, as assignee of F. E. Curtis.

The master drum 20 is rigidly mounted on a shaft 21, the ends of which are preferably journalled in eccentric bushings 26 mounted in the frame plates 10 and 11, to allow accurate alignment. The offset drum 30 is rotatably mounted on an eccentric central portion of a shaft 31 which is mounted in the two frame plates in a manner capable of a partial rotation, by which the position of the offset blanket 33 is adjusted with reference to both the master sheet and the platen as hereinafter described.

The platen 40 is rotatably mounted on an eccentric intermediate portion of a shaft 41, the axial end portions of which are mounted in bearings carried by a yoke 42 pivoted to the plates 10 and 11 at 43 and spring pressed upwardly by a pair of spring units 45 which act against the transverse portion of the yoke distant from the pivot, as hereinafter more fully explained. These spring units maintain proper yielding pressure between the platen and the offset cylinder during the operation of the machine.

The spring units 45 are identical in construction and are both indicated in Fig. 2, and one is shown in detail in Figs. 1 and 5. Each unit includes a spring 44 which bears at its lower end against a fixed cross bar 46 carried by the two frame plates 10 and 11. At their upper ends each spring acts against an adjustable stop 47 on a screw 48, the upper end of which is anchored to the yoke and the lower end of which passes through the cross bar 46, and is provided with a nut 49. These nuts provide adjustable limits for the upward movement of the platen yoke.

The offset drum may be released from both the master drum and the platen by turning the eccentric shaft 31 on which the offset drum is mounted. This shaft is normally in the position shown in Figs. 1 and 11. As illustrated in Fig. 11, a cam 34 is secured to the shaft 31 and a spring 39 is connected between this cam and the frame plate 10 to swing the shaft in a counterclockwise direction and thereby move the offset drum away from both the platen and the master drum. Normally the swinging of the shaft is prevented by a latch 37 which is retained in engagement with a tooth 36 on the cam by a spring 35.

The latch 37 has a suitable lateral extension 38 projecting through an opening in the cover on that side, so that whenever desired the latch may be withdrawn from the cam 34 by manual pressure against the extension 38. This releases the cam 34 and permits the spring 39 to swing the offset drum shaft and bring the offset drum to its inactive position, shown in Fig. 10. When it is desired to restore the offset drum to its active position, the operator grasps a handle or knob 32 which is secured to the shaft 31, and turns the same in a clockwise direction until the cam 34 is reengaged by the latch 37. The knob or handle 32 is indicated in broken lines on Fig. 3, and its hub is shown at 32 in Fig. 5.

I find it very desirable to bring the offset drum into coaction with the master drum only at a time when the gap in the master drum is juxtaposed to the offset blanket because this avoids any blow or impact on the image, which might tend to blur the reproduction. By starting the coaction when the gap on the master drum is opposite the offset drum the image is never submitted to other pressure than a rolling action.

To accomplish the result above noted I provide mechanism shown in Figs. 10 and 11. It will be there seen that the cam 34 is provided with a shoulder 155 and pivoted to the frame plate 10 is a dog 156 normally held in the path of the shoulder by the spring 35. This spring, as heretofore stated, acts on the latch lever 37 and is anchored at one end of that lever and at the other end to the dog 156 and tends to hold each of these members against suitable stops secured to the frame plate. I mount on the lever 72 a pawl 157 normally held in the position shown in Fig. 10 by a spring 158, which tends to retain a pin 159 on the pawl against a portion of the lever 72.

The lever 72 is so timed with relation to the drums that it is swinging in a counterclockwise direction when the gap of the master drum is passing the blanket drum. In the latter portion of this movement the pawl 157 acts on the dog 153 and swings the lower end thereof out of the path of the shoulder 155, allowing the hand lever 32 to turn the eccentric shaft into the position shown in Fig. 11, before the gap has passed the blanket, so that the blanket is in position to engage the master sheet as the rotation continues and brings the master sheet by rolling action into juxtaposition with the blanket.

In the operation of the machine, when the operator desires to cause the engagement of the master with the blanket he grasps the handle 32 and starts to turn it in the clockwise direction. If the gap in the master drum happens to be opposite the blanket at this time the dog 156 will leave the cam 34 free to move into position shown in Fig. 11. However, usually some other portion of the master sheet will be opposite the blanket when the operator starts to turn the handle 32 and hence the shoulder 155 will engage the dog 156 and the turning will be stopped before the blanket is contacting with the master. The operator then continues his manual pressure in the clockwise direction, against the action of the spring 39, until the dog 156 is freed from the shoulder, whereupon the completion of the movement of the hand lever actively positions the blanket ready to receive imprint of the image by rolling contact.

On the back stroke of the lever 72 the pawl 157 clicks idly across the end of the dog 156, as allowed by the spring 158.

It will be noted that the arrangement is such that the pawl 157 will engage the dog 156 for a relatively short period of time, quickly sliding from the end of the dog and permitting the dog to swing into the active position shown in Fig.

10, before the gap in the drum has passed the point of contact of the two drums.

As shown, the inking mechanism 50 comprises a fountain 51 adapted to contain ink, a fountain roller 52 therein, a swinging ductor roller 53, a longitudinally reciprocable distributing roller 54, and a form roller 55. The latter coacts with the master sheet 22 on the drum 20 and with the distributing roll 54. The ductor roll swings back and forth between the fountain roller and the distributing roll.

The form roll 55 may be manually separated from the master sheet 22 to facilitate the initial application of ink repellent thereto, as well as to facilitate the substitution of one master sheet for another. As illustrated the form roll 55 is mounted between a pair of plates 56 pivoted to the respective frame plates 10 and 11 and drawn by springs 57 toward the master sheet under the control of an adjustable stop screw 58. A suitable cam rod 59 rotatively mounted in the frame plates is adapted to be turned by the operation of a hand lever 25 (Figs. 2 and 3) to cam the plates 56 in a direction to separate the form roll from the drum.

The normal ink repellent applicator mechanism which acts on the master sheet during each revolution of the master drum, as illustrated in Fig. 1, comprises a trough 61 adapted to contain a liquid ink repellent, a fountain roll 62 immersed therein, a swinging ductor roll 63 and an absorbent form roll 64. The form roll is mounted in a pair of pivoted end bars 65 which are drawn toward the master drum 20 by springs 66 under the control of adjustable stop screws 67. The ductor roll 63 oscillates between the fountain roll 62 and the form roll 64 to deliver repellent to the master sheet.

The two ductor rolls 53 and 63, as well as the fountain rolls 52 and 62, for the ink and repellent respectively are operated at the same time by a single cam 70 secured to the offset drum 30, which is driven by suitable gearing as hereinafter explained. This cam 70 acts against a roller 71 (Fig. 3) on a lever 29 secured to a stub shaft 73 journalled in the frame plate 10. A second lever 72 is secured intermediate its ends to the stub shaft 73 and is connected by a link 74 with a lever 75 pivoted about the axis of the ink fountain roll 52. This fountain roll carries on its end a ratchet wheel 76 which is acted on by a pawl 77 pivotally mounted on the lever 75 and urged toward the ratchet by a spring 78. The lever 75 operates the ductor roll 53 in the manner described in Patent No. 2,165,235, issued July 11, 1939, to Addressograph-Multigraph Corporation, as assignee of F. E. Curtis.

The lever 72 also actuates the repellent ductor and fountain rolls. The upper end of this lever is connected by the link 82 to a lever 81 on the axis of the repellent fountain roll 62. On the shaft of this fountain roll is a ratchet wheel 83 which is periodically advanced by a pawl operated by the lever 81. The lever 72 carries a cam 84 which acts on the frame 68 of the repellent ductor roll 63 to shift it between the repellent fountain roll 62 and the repellent form roll 64, after the manner of the Curtis Patent 2,165,235.

In the present machine, I have provided above the inking mechanism a special applying mechanism 90, which may be operated to apply a treating liquid in proper quantity and of the proper strength to the master sheet before the inking of the image thereon for initial operation of the machine. This special applying mechanism comprises a trough 91 shown as located above the inking mechanism and supported by the two frame plates 10 and 11. In this trough is a block 92 of a liquid storage material such as sponge rubber. The block extends the length of the trough and its lower portion extends into the liquid therein, while the upper portion reaches above the liquid, receiving its liquid supply by capillary attraction. Between the upper portion of the block 92 and the master sheet, and normally out of contact with either of them, is an absorbent member 94 carried on a bar 96 which is secured to pivotally mounted arms 93. Suitable manual means may rock these arms. Fig. 1 indicates for this purpose a hand lever 95 which may be a continuation of one of these arms.

At the start of the operation of building up the image on the master sheet, the upper end of the hand lever 95 is pressed toward the left in Fig. 1, which presses the absorbent material 94 into engagement with the sponge rubber. This absorbent material, which is thus moistened throughout by capillary action, extends around the bar 96 toward the drum 20 that when it is swung by movement of the lever 95 toward the right in Fig. 1, the absorbent material bears or rubs against the master sheet on the rotating drum 20 and applies treating solution or preliminary repellent thereto.

By furnishing repellent of proper strength and composition to the trough 91 and manipulating the roller 94 a few times between the sponge rubber reservoir and the master sheet, one can supply repellent of proper composition and sufficient strength to the master sheet to make an effective preliminary treatment in a brief time interval. If desired, this special repellent may be a concentrated form of such repellent as is applied normally on each cycle from the trough 61.

I have found that in building up the image, it is quite effective to give the master drum about two revolutions with the saturated absorbent material 94 in contact therewith and while the offset blanket is held out of contact with the master sheet, and before the ink is applied to the master sheet. Then I may rotate the master drum about four revolutions, retaining it still out of contact with the offset blanket, but with the ink form roll in contact with the master sheet to build up the inked image on the master sheet without further application of repellent. Then by rotating the master drum about four more revolutions, with the ink and normal repellent mechanism 50 and 60 respectively in active engagement with the master sheet, and with the offset blanket in contact with the master sheet, a proper inked image will be produced on the offset blanket. These preliminary rotations of the master drum 20 may be produced by power, by turning the motor switch off and on, or the drums may be manually rotated by a hand wheel 27 on the shaft of the master drum. The application of ink or repellent or both may be readily controlled by a hand lever 25 (Figs. 2 and 3) having four positions as shown in Patent No. 2,165,234 issued July 11, 1939 to Addressograph-Multigraph Corporation as assignee of F. E. Curtis.

After the image has been properly built up on the blanket cylinder, and the motor is running to drive the various parts, it is only necessary to feed sheets to the bite of the blanket and platen drums to effect printing. The sheets to be printed are fed from a suitable tray 80 carried by the

frame of the machine and projecting at the forward end thereof and adapted to carry a number of sheets with their edges fanned out so that they can be manually shoved one after another toward the printing machine.

To control the feed, I provide a lower feed roller 101, and a coacting upper roller 102. Each of these rollers is made in two longitudinally spaced sections mounted on suitable shafts. Behind the line of contact of the two feed rollers is a stop finger 103 mounted on a pivoted bar 104 and counterweighted by a forwardly extending plate 105. The shaft of the upper feed roller 102 is journalled in a yoke frame 106 which is pivoted at 107 and carries a roller 108 which coacts with a cam 109 secured to the offset drum (Figs. 1 and 5). This cam for the most part is concentric as shown in Fig. 1 and by acting on the roller 108 maintains the upper feed roller out of contact with the lower feed roller and allows the counterweighted stop fingers to stand in the position shown in Fig. 1, thus preventing the shoving of the paper to printing position.

The paper is shoved forwardly manually during the period of separation of the upper and lower feed rollers under a suitable downwardly inclined guide 110 until it abuts the fingers 103. Now when the flattened portion of the cam 109 comes opposite the roller 108 this frees that roller and the upper feed roller 102 descends by gravity into engagement with the lower feed roller. At the same time, a pin 111 depending from the front portion of the pivoted yoke engages a lever 112 on the bar 104 carrying the stop fingers. This swings the stop fingers down to idle position, out of the path of the sheet.

The lowering of the upper feed roll not only removes the stop fingers from the path of the sheet but also because of the rotation of the lower feed roller, as will hereinafter be explained, causes the sheet to be fed forward between suitable guides indicated at 114 and 116 in Fig. 1 into the bite of the offset blanket and platen. For simplicity, I have not shown any gripper on the offset drum for engaging the sheets. However, if desired I may employ a gripper, such as is shown in the Patent No. 2,165,331, issued July 11, 1939 to Addressograph-Multigraph Corporation as assigness of F. E. Curtis. In that case the guides 114 and 116 will preferably be of the form shown in that patent to allow a change in the direction of the sheet adjacent the forward end, enabling it to buckle as the forward end passes into the gripper so that it is not injured by being shoved against a definite stop on the gripper but when it reaches that stop excess of this movement is taken up in buckling, as set out in that patent.

After passing through the bite of the offset blanket and platen the printed sheet is delivered to a suitable tray for removal from the machine. I have indicated in Fig. 1 a tray 120 occupying the lower portion of forward space between the frame plates, this tray resting on a suitable cross rod 121 of the frame and held thereto by a downward hook 122. Whenever desired the tray may be simply lifted free from the rod and drawn out with its contents at the far end of the machine.

The paper feed rolls are held separated while the master sheet is being prepared for the printing operation. To accomplish this I prefer to use the latch mechanism 34, 35, 36, 37 which is used to separate the offset and master drums during the period of preparation, as heretofore described. A roller 154 is mounted on the yoke 106 which carries the upper feed roll 102. When the offset drum shaft is in its idle position (Fig. 10) this roller is engaged by the cam 34 in such manner as to swing the yoke 106 to raise the upper feed roll 102.

The cam 34, it will be seen, performs three functions; it holds the feed rollers separate when the drums are idle; it prevents the positioning of the blanket drum except when the gap of the master drum is opposite it, and it retains the blanket drum in its active position when it has been so placed until released by the actuation of the finger member 38 on the latch 37.

Whenever during each cycle of operation, at the proper time for a sheet to be gripped between the feed rollers 101 and 102, a test is made for the presence or absence of such sheet. If the sheet is present the operation proceeds in the normal manner as described. If the sheet is absent the platen shaft 41 is automatically turned to withdraw the platen from the offset blanket so that the image on the offset blanket is not transferred to the platen surface. This operation will now be described.

A plate 130 is secured to a sleeve 124 which embraces the end of the platen shaft 41 and which is drivingly connected to the shaft 41 by a pin 125 (Figs. 5 and 6). The plate 130 is provided with a tooth 131 which is normally engaged by a latch or a strut lever 132 pivoted at 133 to the frame plate 10. To the lower end of the plate 130 is attached a link 135 drawn toward the right (Fig. 3) by a spring 136 anchored at its left hand end to the lever and at its right hand end to a pin 137 on the frame plate 10. This spring tends to swing the plate 130 and the platen shaft in a counter-clockwise direction which movement is normally prevented by the latch or strut lever 132.

Pivotally carried by two frame plates 180 and 181 (Figs. 2 and 12) which are secured to and lie adjacent respective frame plates 10 and 11 is a rod 140 carrying a feeler finger 141 extending between two sections of the roller 101 and beneath the annular gap in the roller 102. Rigid on the shaft 140 is a rocking lever 142 acted on by a spring 143 which tends to turn the shaft 140 to raise the stop finger. An extension of the lever 142 is connected by a link 144 with the latch 132. The connection as shown is yielding by reason of link 144 being slotted about a pin 145 carried by the latch 132, this pin being connected by a spring 146 with the link. The pin 145 is adjustably mounted in a slot in the latch 132 and extending lengthwise thereof. Adjustment of the position of this pin enables the normal position of the feeler finger 141 to be nicely set.

When during the cycle of operation a sheet should be gripped between the two feed rollers 101 and 102 but before the sheet should reach the bite of the platen and offset drums, the plate 130 is acted on by a suitable mechanism about to be described, so that it is given a very slight turn in a clockwise direction, relieving the pressure of the tooth 131 on the strut lever or latch 132 as illustrated in Fig. 7. Thereupon the spring 143 tends to swing the feeler finger 141 upwardly and will do so if no paper is present, in which case the link 144 will withdraw the lever 132 from the path of the tooth 131, and the spring 135 will swing the plate 130 counter-clockwise thus turning the eccentric platen shaft and lowering the platen to idle position, as shown in Fig. 8. In this position the platen is free from the blanket, as the downward movement,

caused by the eccentric shaft is greater than the slight upward movement allowed to the platen by the stop nuts 49 on the screws 48 and caused by the springs 44.

However, if there is a sheet of paper between the two feed rollers at the time the feeler finger tends to move upwardly, this sheet will bridge the gap across the two sections of the upper feed roller and the finger cannot move up into the freeing position but will be held down by the sheet of paper. This will retain the strut lever in the path of the latch tooth 131, with the result that when the means acting on the plate 130, relieves it so that it tends to turn in the counter-clockwise direction it can only turn a very slight distance, that is back to its normal position shown in Fig. 3.

The means for turning the plate 130 to relieve the pressure on the latch or strut lever 132 is shown as a pawl 148 on the lower end of the lever 72 heretofore described. This pawl is acted on by a spring 149 tending to maintain it in the position shown in Figs. 3, 8 and 9. When the lever 72 is swung by the cam 70, heretofore referred to, in the direction toward the right in Fig. 3, the pawl 148 bears downwardly on a roller 138 carried by the plate 130 while passing across it. The consequent movement of the plate 130 is slight as indicated in Fig. 7. It is, however, sufficient to swing the tooth 131 free from the strut lever, as shown in Fig. 7. This allows the feeler 141 to test for the presence or absence of paper.

Assuming the paper is absent at the time when it should be present, then the paper detector swings the strut lever into the position shown in Fig. 8 and the spring 135 swings the plate 130 into the position there shown. As the lower end of the lever 72 is swinging toward the left by its spring 87 under the control of the cam 70, the pawl 148 encounters the roller 138 but by reason of the spring 149 may tip on its pivot and thus pass idly to the left side of the roller 138.

Now on the return stroke of the lever 72 the pawl in moving toward the right engages the roller 138 and carries it and the upper end of the plate 130 to the right, thus bringing the tooth 131 into position above the strut lever 132, and if a sheet of paper is present between the feel rollers, in position to hold the feeler finger down, the strut lever 132 will be swung into its active position, so that the platen remains restored.

It will be seen therefore that on every cycle of operation a test is made for the presence or absence of a sheet. The feeler and its linkage, which is normally held in idle position, is released for action by the slight turning of the plate 130 into the position of Fig. 7; then if the paper is absent the plate swings into the position of Fig. 8 turning the platen down. If the paper, however, is present the plate returns only a slight distance until its tooth 131 abuts the upper end of the strut lever, as shown in Fig. 9.

To prevent excess inking of the transfer blanket in case a sheet fails to be fed, I provide means whereby such failure causes the mechanism for turning the fountain roller heretofore described to be ineffective for such cycle of operation. I effect this in a very simple manner by linking the pawl 77 to the plate 130 in a manner holding the pawl idle whenever the platen is turned down, as shown in Fig. 8. To accomplish this I prefer to utilize the same link 135 which is actuated by the spring 136, to turn the released platen down to idle position. I extend

the link 135 beyond the guiding pin 137 as shown at 139 in Figs. 3 and 7 to 9. I pivot to such extension a link 150 which has a slot 151 extending about a pin 79 on the lower end of the pawl 77.

In the normal position of the parts, with the platen up as shown in Figs. 3, 7 and 9, the link 150 is idle and the pawl is operated by the cam and link mechanism 72, 74, 75 heretofore described, the same as if the link 150 were absent, the pin 79 simply traveling idle in the slot 151 as shown in Figs. 7 and 9. However, when the platen is turned down, by reason of the withdrawal of the latch 132 due to the absence of paper, the link 150 assumes the position shown in Fig. 8, which brings the left hand end of the slot 151 into position so that when the lever 74 rocks the pawl carrier 75, the pin 79 engages the end of the slot 151 and can move no further toward the left. Accordingly, as the pawl carrier swings the pivot of the pawl it tips the nose of the pawl to the left so that it cannot engage the ratchet 76, the pawl thus moving to the position indicated in Fig. 8. The result is that if during each cycle of operation a sheet is not fed between the feed rolls 101 and 102 the pawl becomes rendered inactive for such cycle of operation and no fresh ink is supplied to the ink ductor 53 by the fountain roller 52.

The fountain roller 52 is tight on its shaft and this shaft carries a knob 152 on its end whereby the roller may be manually turned whenever desired to present additional ink to the ductor 53 or when initially placing the machine in operation.

While any suitable gearing may be used to rotate the various rotatable parts of the machine, I will, for completeness, describe the particular gearing shown in the drawings. This is best shown in Figs. 1 and 4, as there appears the motor 16 by its belt 17 operates a large sheave 18 (shown in dotted lines in Fig. 1) which is on a shaft 160 rigidly carrying a pinion 161. This pinion is shown as meshing with the gear 162 on a stub shaft 163 carrying the pinion 163. The pinion 163 meshes with a pinion 164, which meshes with a gear 165 on the master drum 20. The pinion 164 also is shown as meshing with a gear 167 on the shaft of the distributing roll 54 of the inking system.

The gear 165 on the master drum, which has a pitch circle corresponding to the periphery of the mounted master sheet, is shown as meshing with an equal size gear 170 on the offset drum. This latter gear meshes with a gear 171 on the platen shaft, and also meshes with an idler gear 172 which meshes with a pinion 173 on a stub shaft 174 carried by the frame plate 180. On this shaft is a gear 175 meshing with a gear 176 on the shaft 177 of the lower feed roller 102.

Reference is made to my pending application No. 578,288, filed February 16, 1945, now matured into Patent No. 2,443,458, June 15, 1948, for claims relating to the manually movable member adapted to transfer material from an absorbent reservoir to the master sheet and to my application No. 652,262, filed March 6, 1946, for claims relating to the means for controlling the starting of contact between the master sheet and the offset blanket.

I claim:

1. In a printing machine, a rotary printing drum, an inking system therefor including a form roll coacting with the drum, a fountain roll, transfer means operating in timed relation with the drum to transfer ink from the fountain roll to

the form roll, a ratchet on the fountain roll, a pawl carrier carried by the axis of the ratchet and having a pawl to engage the ratchet, means operating in timed relation to the drum to oscillate the pawl carrier to propel the ratchet and turn the fountain roller, a paper detector, a platen roll, means controlled by said detector to shift the platen roll to an idle position consequent upon the absence of paper, linkage directly interconnecting said last named means with said pawl to move the pawl to an idle position without disturbing the swinging movement of the pawl carrier whereby the supply of ink to the fountain roll is interrupted without disturbing the operation of the form roll or the ink transfer means, and means to automatically restore the platen and said pawl consequent upon the presence of paper at the detecting position.

2. In a printing machine having a frame, a rotary printing drum rotatably mounted in said frame, an inking system for such drum including an ink fountain, a fountain roll to remove ink from said fountain, a form roll coacting with the drum to apply ink thereto, means to transfer ink from the fountain roll to the form roll, driving means to rotate the drum, means to operate said fountain roll and said transfer means and said form roll in timed relation to said drum, said means including a pivoted arm mounted for rotation about the axis of said fountain roll, a ratchet drivingly connected with said fountain roll, a pawl mounted on said arm and adapted to be moved into and out of cooperative engagement with said ratchet, resilient means normally acting to move said pawl into engagement with said ratchet, an arm pivoted on said frame, a cam mounted for rotation in timed relation with said printing drum to swing said last named arm, a link interconnecting said arms, means carried by said link to actuate said transfer means, a paper detector, means controlled by said paper detector and connected with said first named arm to swing said arm to move said pawl away from said ratchet wheel consequent upon the absence of paper in said machine and thereby stop the operation of said fountain roll without affecting the operation of said form roll and said transfer means.

3. In a printing machine, a rotary printing drum, an inking system therefor including a form roll coacting with the drum, a fountain roll, transfer means operating in timed relation with the drum to transfer ink from the fountain roll to the form roll, a drive mechanism for the fountain roll, a paper detector, a platen roll, means controlled by said detector to shift the platen roll to an idle position consequent upon the absence of paper, linkage directly connecting the platen shifting means with the drive mechanism for the fountain roll whereby the supply of ink to the fountain roll is interrupted without disturbing the operation of the form roll relative to either the drum or the ink transfer means.

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