

Oct. 27, 1925.

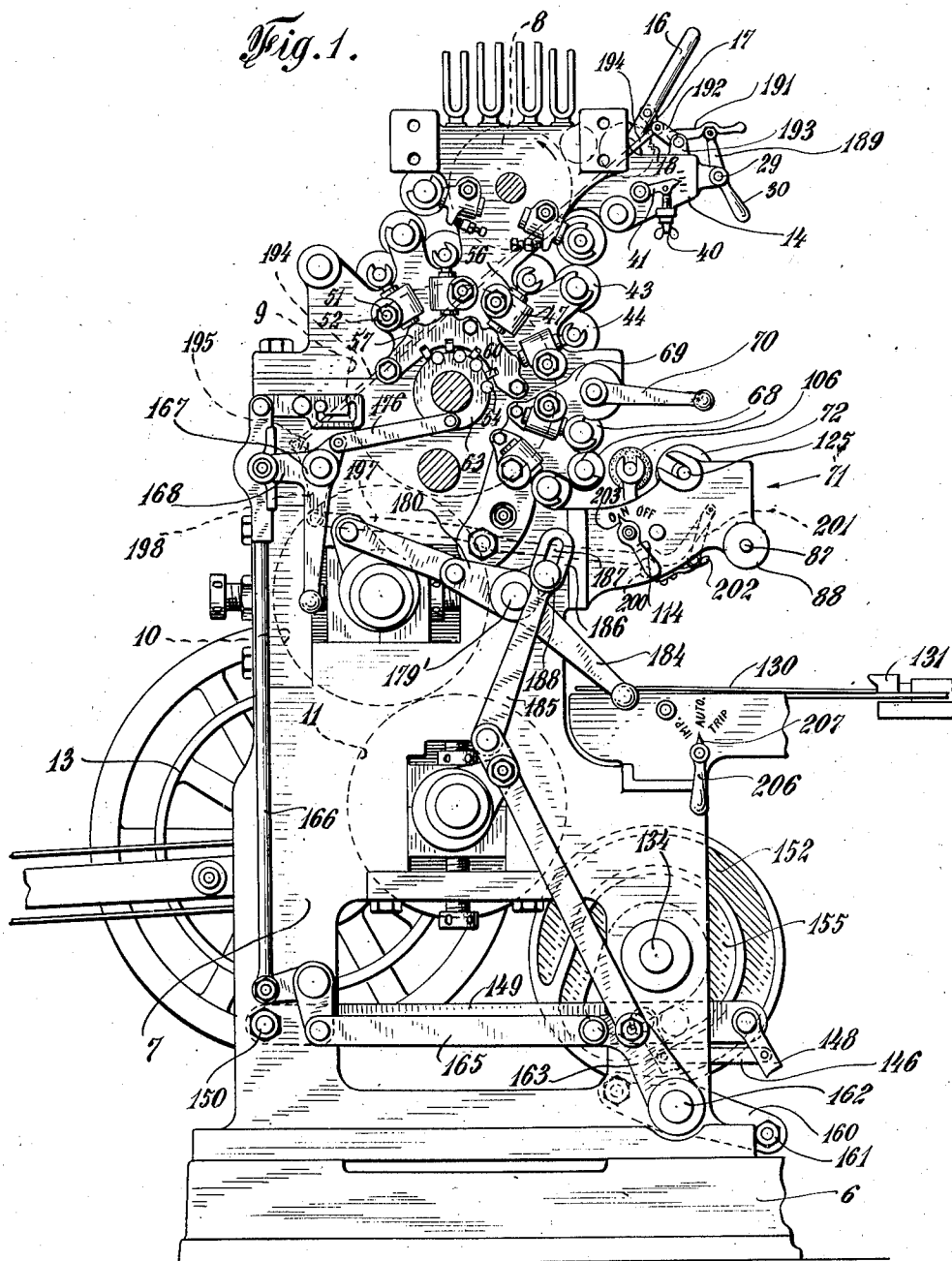
1,558,686

M. LIPTON ET AL

PRINTING PRESS

Filed June 21, 1922

9 Sheets-Sheet. 1.



Morris Lipton, INVENTORS
 Louis Haeulin and Frederick W. Hill
 BY William C. Pritchard
 their ATTORNEYS

Oct. 27, 1925.

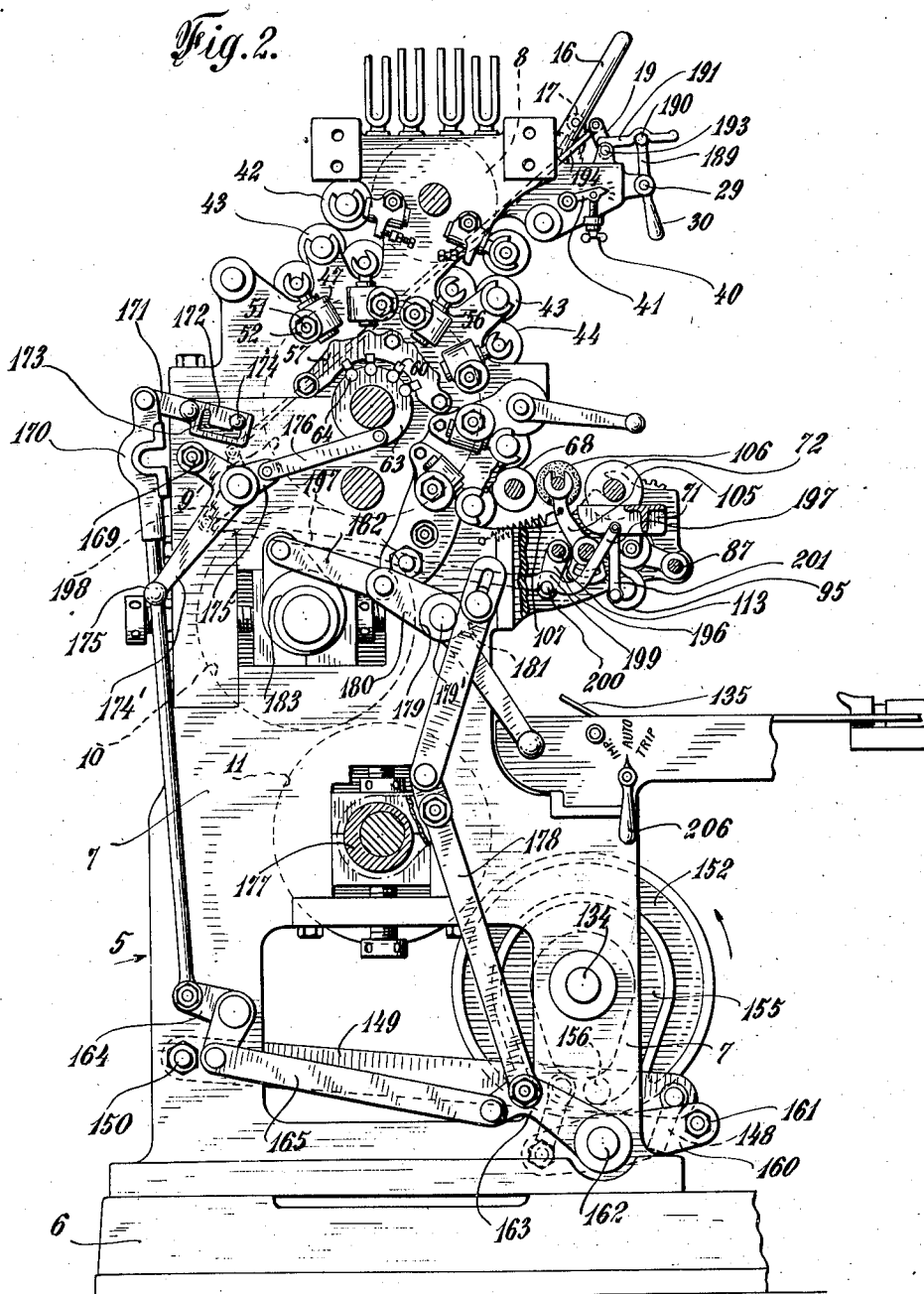
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9 Sheets-Sheet 2



Morris Lipton INVENTORS
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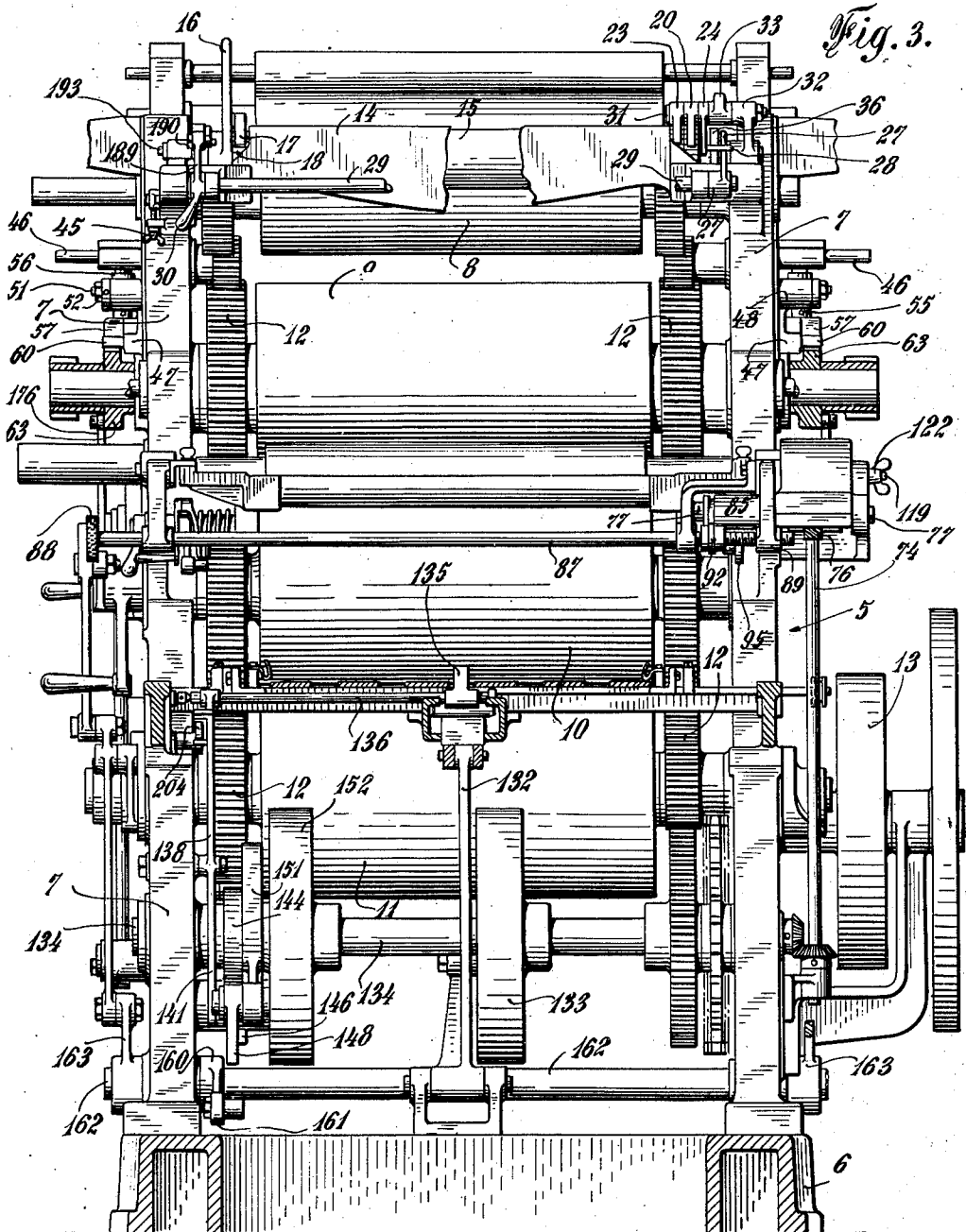
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9 Sheets-Sheet 3



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9 Sheets-Sheet 4

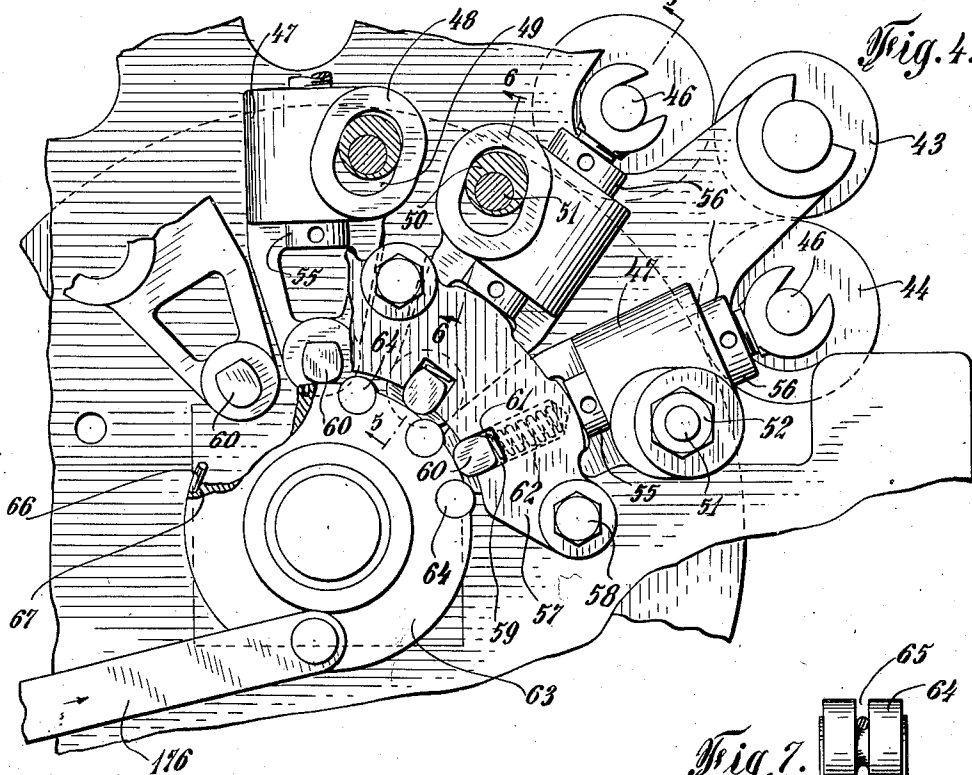


Fig. 7.

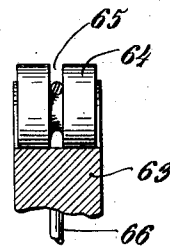


Fig. 5.

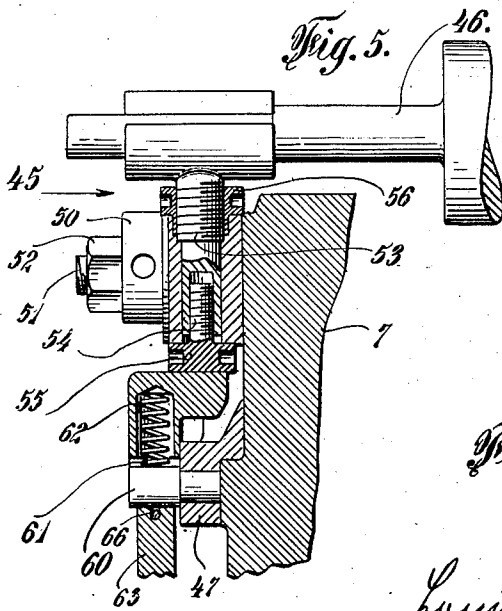


Fig. 6.

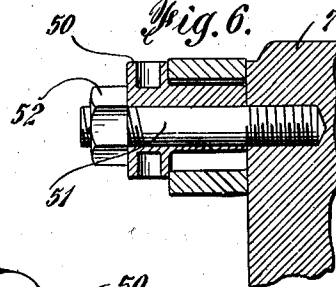
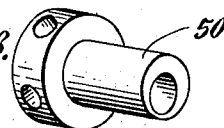


Fig. 8.



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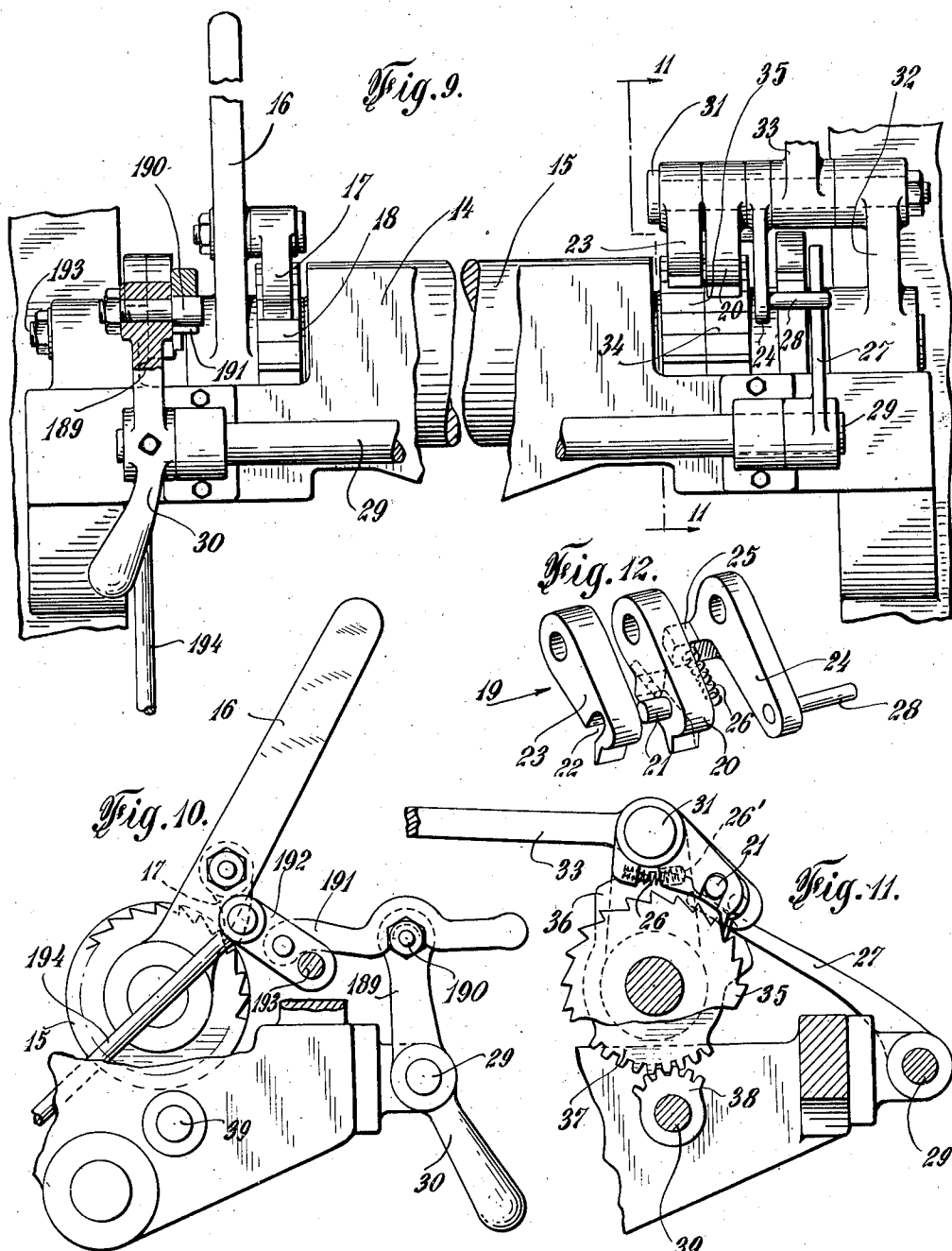
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9 Sheets-Sheet 5



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9 Sheets-Sheet 6

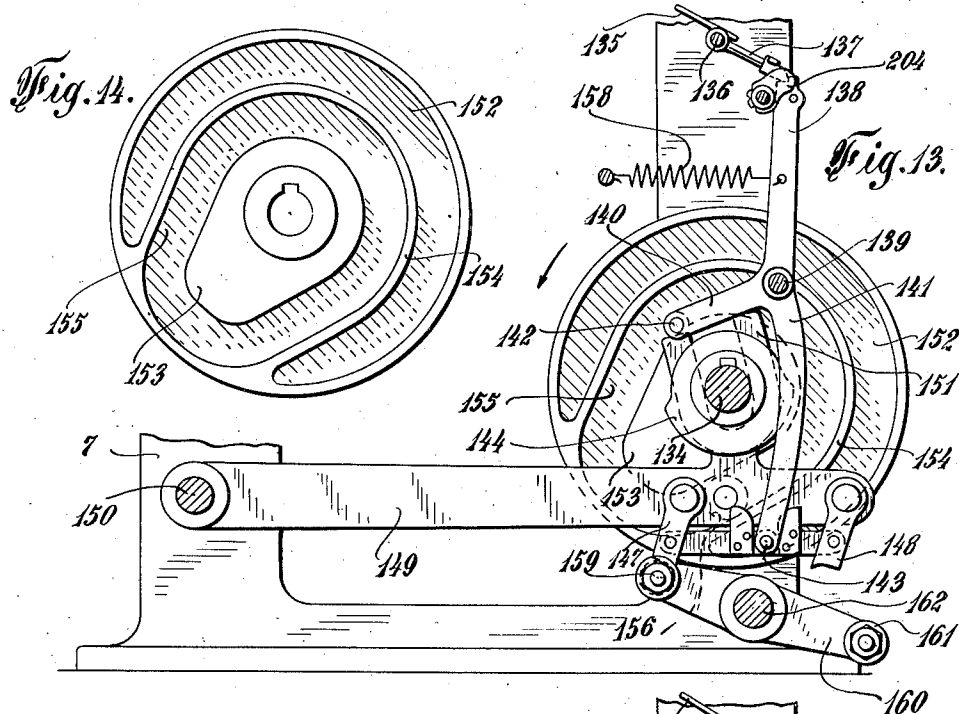


Fig. 17.

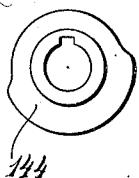


Fig. 16.

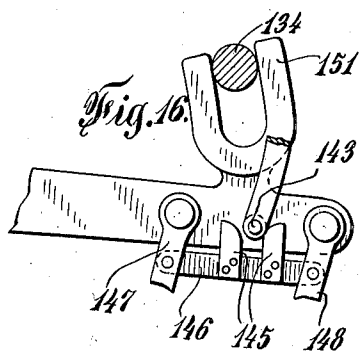
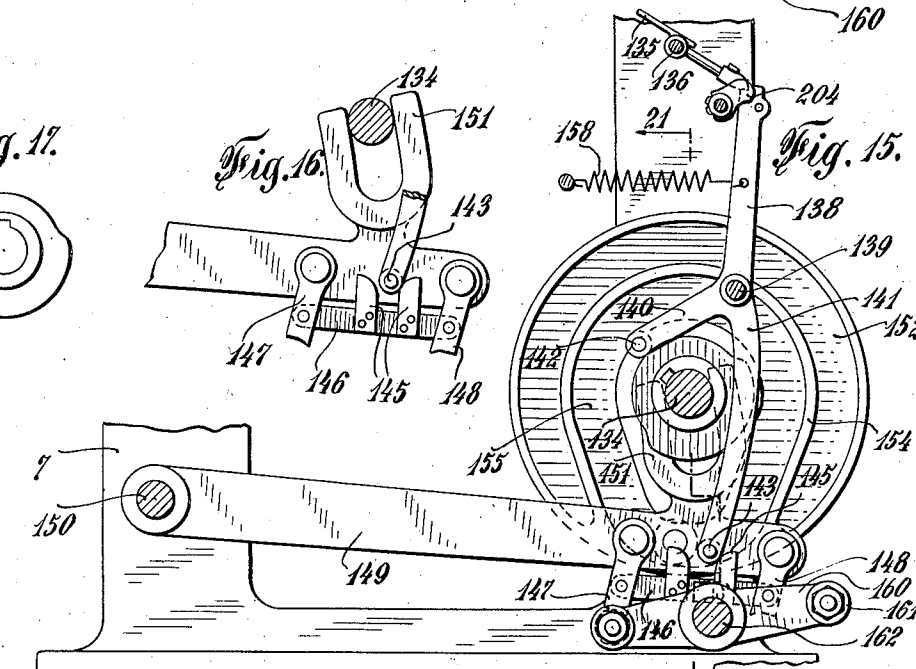


Fig. 15.



Morris Lipton, Louis Haeublein and Frederick W. Hall
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9 Sheets-Sheet 8

Fig. 22.

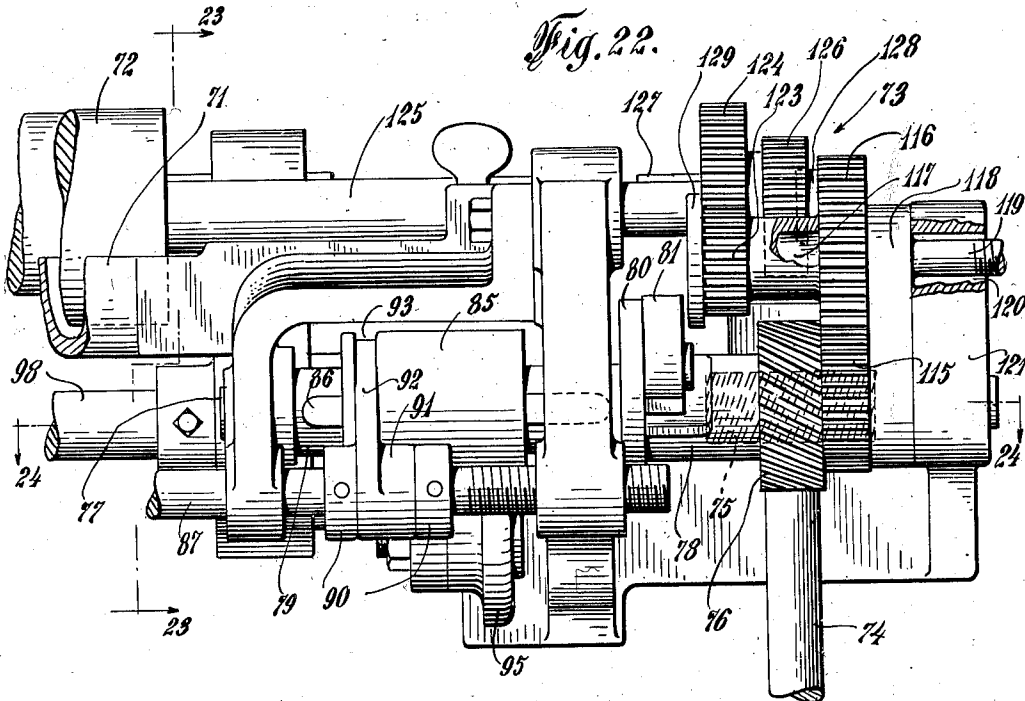
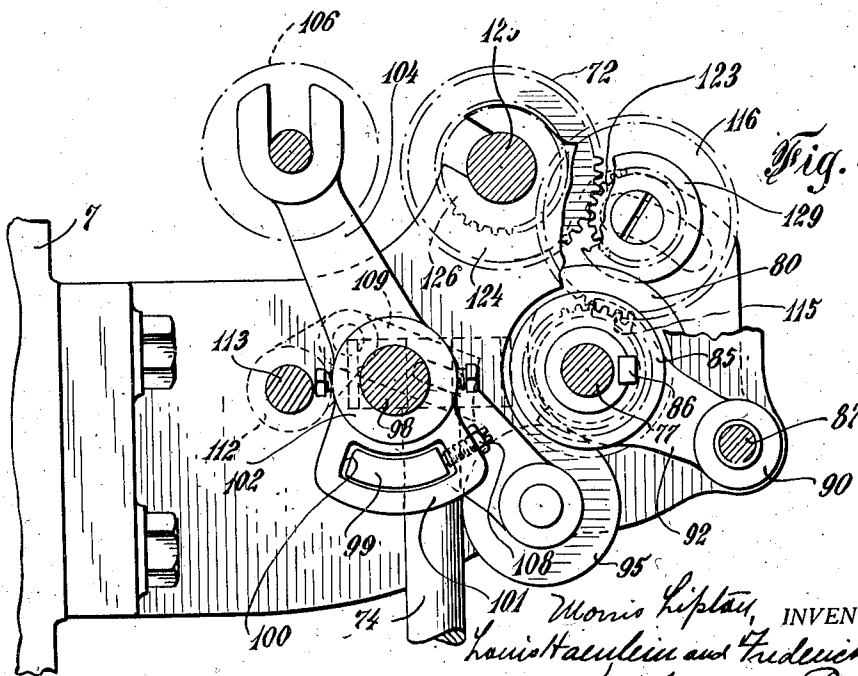


Fig. 23.



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Oct. 27, 1925.

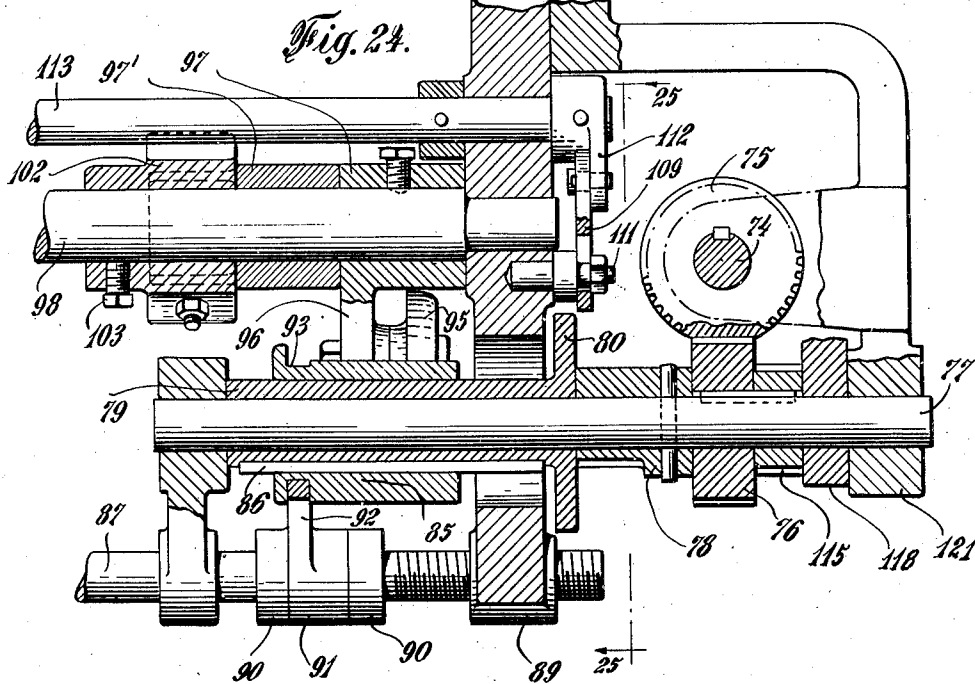
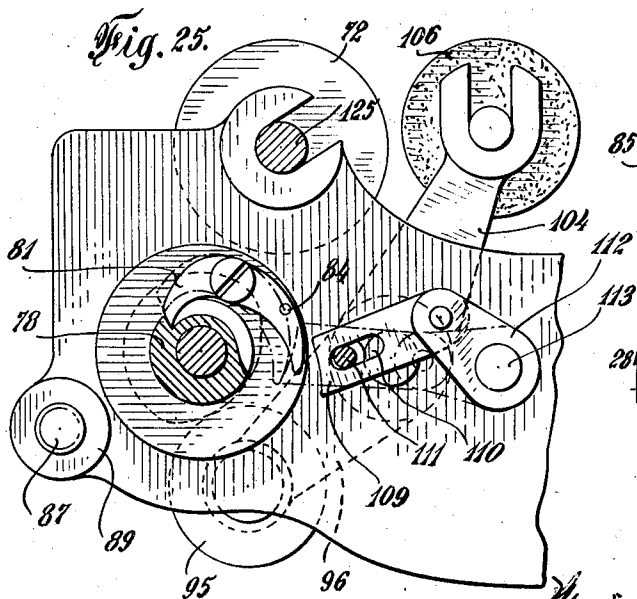
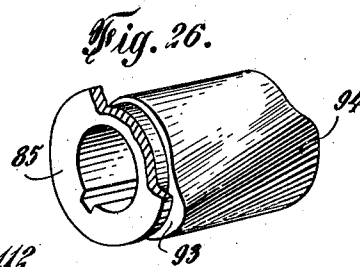
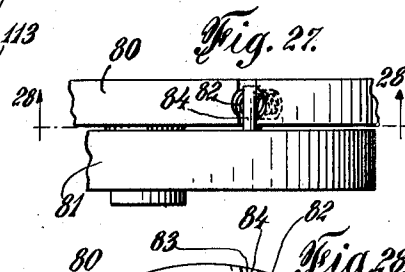
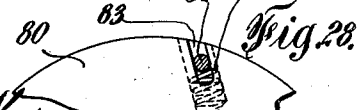
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Filed June 21, 1922

9 Sheets-Sheet 9



Morris Lipton INVENTOR'S
Samuel Hagelin and Frederick W. Hill
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Patented Oct. 27, 1925.

1,558,686

UNITED STATES PATENT OFFICE.

MORRIS LIPTON, OF RUTHERFORD, LOUIS HAENLEIN, OF EAST RUTHERFORD, AND
FREDERICK W. HILL, OF RUTHERFORD, NEW JERSEY, ASSIGNORS TO THE FUCHS &
LANG MANUFACTURING COMPANY, A CORPORATION OF NEW YORK.

PRINTING PRESS.

Application filed June 21, 1922. Serial No. 570,001.

To all whom it may concern:

Be it known that we, MORRIS LIPTON, a citizen of Russia (who has taken out first United States papers), and LOUIS HAENLEIN and FREDERICK W. HILL, citizens of the United States, residents, respectively, of city of Rutherford, county of Bergen, State of New Jersey, city of East Rutherford, county of Bergen, State of New Jersey, and city of Rutherford, county of Bergen, State of New Jersey, have invented certain new and useful Improvements in Printing Presses, of which the following is a specification.

This invention relates to printing presses and has particular reference to that class of machines known as the rotary offset type.

An important object of the invention is to provide in a machine of the class mentioned a simple and reliable automatically actuated means for lifting the inking rollers from the plate cylinder and moving the impression cylinder out of operative position with respect to the blanket cylinder, should a work-sheet, under any condition, fail to enter a machine in the course of its operation.

A further object of the invention is to provide in a machine of the class mentioned a manually operated means for throwing the blanket cylinder out of operative position in combination with an automatically actuated mechanism for moving the same into an operative position with respect to the plate and impression cylinders upon the insertion of a work-sheet.

Another object of the invention is to provide a means, functioning in connection with the several automatically actuated mechanisms, whereby certain automatically controlled elements are rendered inoperative at properly timed, predetermined intervals, and are maintained in their respective inoperative positions during predetermined periods to insure reliability in the operation of the machine as a unit.

A further object of the invention is to so construct and arrange the elements entering into the various automatically actuated controlling mechanisms that such controlling mechanisms may be easily rendered non-automatic in their operation and made to depend upon manual control for the exercising of their respective functions.

In addition to the above it is also an ob-

ject of this invention to make possible the production of a machine of the class mentioned, which is comparatively simple in design, relatively inexpensive to manufacture, positive and reliable in operation, easily controlled, readily assembled, rigid in design and capable of withstanding prolonged use with but a minor cost in upkeep.

Other objects and certain advantages of the invention will become apparent from the following description when taken in connection with the accompanying drawings in which—

Figure 1 is a side elevation of the machine showing the position of various automatically actuated controlling elements in the presence of a work-sheet.

Figure 2 is a side elevation of the machine showing the position of various automatically actuated controlling elements in the absence of the work-sheet.

Figure 3 is a front elevation of the machine.

Figure 4 is a somewhat enlarged fragmental side elevation of an automatically controlled lifting mechanism for the inking rollers.

Figure 5 is a sectional view taken on line 5—5 of Figure 4.

Figure 6 is a sectional view taken on line 6—6 of Figure 4.

Figure 7 is a detailed view of a lifting roller, showing the retaining means therefor.

Figure 8 is a perspective view of an eccentric adjusting pin shown in Figures 4 and 6.

Figure 9 is a front elevation of an intermittently actuated inking mechanism.

Figure 10 is an end elevation of the inking mechanism as viewed from the left in Figure 9.

Figure 11 is a vertical sectional view taken on line 11—11 of Figure 9.

Figure 12 is a perspective view of a double pawl unit, and releasing means therefor.

Figure 13 is a side elevation of an automatic trip mechanism and operating cam therefor.

Figure 14 is a side elevation of the operating cam shown in Figure 13.

Figure 15 is a view similar to that of Figure 13, showing the operating cam in an advanced position.

Figure 16 is a view showing in elevation an oscillating trip actuating lever and a trip unit carried thereby.

Figure 17 is a side elevation of a trip unit controlling cam.

Figure 18 is a view similar to that of Figure 15, showing the operating cam in an advanced position.

Figure 19 is a fragmental elevation of a trip arm releasing and trip lever locking mechanism.

Figure 20 is a front elevation of the automatic trip mechanism showing the trip lever locked in a given position.

Figure 21 is a sectional view taken on line 21—21 of Figure 15.

Figure 22 is an enlarged fragmental front elevation of an automatic moisture applying mechanism.

Figure 23 is a sectional view taken on line 23—23 of Figure 22.

Figure 24 is a horizontal sectional view taken on line 24—24 of Figure 22.

Figure 25 is a sectional view taken on line 25—25 of Figure 24.

Figure 26 is a perspective view of a variable cam.

Figure 27 is an enlarged fragmental view of a clutch engaging pawl and pawl carrying disc.

Figure 28 is a fragmental sectional view taken on line 28—28 of Figure 27.

In the drawing wherein for the purpose of illustration is shown what we at present consider the preferred form of our invention, the numeral 5 indicates, as a whole, a frame having a base 6 and side members 7, which are arranged in vertical positions and spaced an appreciable distance apart to accommodate the usual inking drum 8, plate cylinder 9, blanket cylinder 10, and impression cylinder 11. These elements are suitably journaled in their respective horizontal positions to the side members 7, and are adapted to be rotated through the instrumentality of suitable trains of gears 12, which receive power of rotation from a driving pulley 13, adapted to be connected to a suitable source of power not shown.

With the frame 5 there is associated, in proximity to the inking drum 8, an ink reservoir 14, adapted to receive a suitable quantity of printing fluid, which is supplied to the inking drum 8 through the instrumentality of an intermittently actuated inking roll 15. Under certain conditions—for example, when the machine is about to be started after a prolonged interval of inoperativeness—it is desirable to rotate the inking roll 15 manually in order that the operator may be able to properly adjust certain elements not shown governing the quantity of printing fluid taken up by the inking roller prior to the insertion of work and to enable this inking roll to be so operated, we have provided

an oscillating lever 16, suitably supported in operative relation with respect to the inking roll 15. The lever 16 is adapted to be oscillated around its pivotal connection and is provided with a pawl 17, adapted to engage a co-operating ratchet wheel 18, suitably connected with the inking roll 15. From this construction it is apparent that by properly operating the lever 16, the roll 15 may be rotated through as many complete revolutions as it is deemed necessary.

After the operator has begun to feed the work into the machine, it is desirable to effect a uniform intermittent operation of the inking roll 15, and, in order to accomplish this intermittent operation we have provided a double pawl unit indicated as a whole by the numeral 19. This pawl unit includes a pawl 20, having a pin 21 projecting from the side thereof which is adapted to enter a slot 22 formed in an adjacent pawl 23. These two pawls, namely, 20 and 23, are adapted to be lifted simultaneously by means of an arm 24, carrying a lug 25, within which one end of a compression spring 26 is disposed, the other end of the spring 26 being carried within a pocket 26', formed in the pawl 20.

In order to lift the arm 24 either manually or automatically, there is provided a finger 27, which is adapted to engage a pin 28, carried by the arm 24, the finger 27 being suitably connected to a horizontally disposed operating rod 29, which may be operated manually through the instrumentality of an operative lever 30, or automatically through a suitable mechanism associated therewith and hereinafter more particularly described.

The pawls 20 and 23 and also the lifting arm 24, are suitably mounted upon a pin 31, carried by an oscillating bracket 32, connected to a suitable reciprocating lever 33, which derives its reciprocatory motion from some appropriate operating part of the machine. As a result of the reciprocatory movement of the lever 33 the pawls 20 and 23 are caused to intermittently advance their respective ratchet wheels 34 and 35 thus producing an intermittent rotation of the inking roll 15 to which the ratchet wheels are suitably connected. By the provision of the spring 26 it is apparent that a yieldable connection is afforded between the two pawls 20 and 23 and the arm 24. This yieldable connection is desirable for the reason that it permits the pawls 20 and 23 to remain in driving engagement with their respective ratchet wheels 34 and 35, even if the lifting finger 27 is actuated during the intermittent rotation of the inking roll 15, thus relieving the pawls 20 and 23 of any excessive strain to which they would be subjected if the lifting arm 24 were connected directly or unyieldingly to the pawls.

With machines of the type to which our

invention pertains it is desirable, under certain conditions, to be able to vary or control the intermittent operation of the inking roll, and to make possible this variation we have provided a cam 36, which is provided with a segmental gear 37, adapted to engage a cooperative gear segment 38, suitably connected to a horizontally disposed shaft 39, which is adapted to be adjusted by means of a thumb screw 40, carried by one of the side members 7 and so arranged as to engage an arm 41, suitably connected to the shaft 39. By varying the position of the arm 41, through the instrumentality of the thumb screw 40, it is apparent that the position of the cam 36 may be changed with respect to the pin 28, which is adapted to cooperate therewith as the lever 33 is reciprocated. A proper adjustment of the cam 36 will enable the pawls 20 and 23 to be held free of their respective ratchet wheels 34 and 35, in their forward movement, a sufficient length of time to permit them to pass over a predetermined number of teeth after which time they are allowed to fall into engagement with their respective ratchet wheels. This simple adjustment affords a means by which the inking roll 15 may be rotated through any predetermined number of degrees within certain limits the minimum and maximum adjustments being, in this instance, such that we may vary the rotation of the inking roll from $\frac{1}{2}$ tooth to $3\frac{1}{2}$ teeth. The variation in the rotation of the inking roll 15, in the terms of half teeth, is made possible by reason of the fact that the pawl 20 is longer than the pawl 23 to the extent of one-half inch the length of a single tooth of either of the ratchet wheels 34 and 35. If for example, the cam 36 is so set with respect to the pin 28, carried by the arm 24, as to effect an intermittent rotation of the inking roll 15 to the extent of a half tooth, the pawl 23, as shown in Figure 11, will engage the next succeeding tooth, and upon the next cycle of operation of the reciprocating lever 33, the pawl 20 will engage the next succeeding tooth of its corresponding ratchet wheel. This alternate engagement of the pawls 20 and 23, with the succeeding teeth of their respective ratchet wheels 34 and 35, will continue so long as the cam 36 is set to effect an intermittent operation of the inking roll 15 through a fraction of a complete revolution, corresponding to the length of a half tooth. Since the adjustment of the cam 36 may be made to effect a movement of the inking roll 15, equivalent to a half tooth, it follows that the adjustment may be made ranging from a minimum throw to a maximum throw through intervals of a half tooth if desired. It is, of course, understood that an adjustment may be made from a minimum to a maximum throw without necessarily passing through the several intermediate

adjustments that is to say, if the cam 36 is set to advance the inking roll 15 a distance equal to a half tooth, the cam may be immediately adjusted to effect a maximum intermittent movement of the inking roll 15, which we have in this instance adopted as $3\frac{1}{2}$ teeth.

The ink supplied to the inking drum 8 from the reservoir 14 is in turn transferred to the usual printing plate carried by the cylinder 9, through a pair of intermediate rollers 42, which contact with a pair of rider rollers 43, adapted to engage a plurality of form rollers 44. In the event the operator of the machine should fail to insert a work-sheet, it becomes necessary to immediately disengage the form rollers 44 from the printing plate in order to prevent the application of an excessive amount of ink thereto. In order therefore that these rollers may be lifted through the instrumentality of automatically actuated means, hereinafter particularly described, we provide adjustable bearings 45 for opposite ends of their respective spindles 46. These bearings comprise adjustable housings 47, provided with offsets 48, having slots 49 formed therein within which are fitted adjustable eccentric bushings 50 adapted to be held in position by means of bolts 51, having screw threaded engagement with the side members 7. The eccentric bushings 50 are provided in order that the housings 47 may be adjusted laterally to effect an adjustment of the form rollers 44 with respect to the rider rollers 43. In making such an adjustment, the nuts 52, carried by the bolts 51, are loosened, and by a suitable tool or instrument, the eccentric bushings 50 are rotated upon their respective bolts 51 to desired positions, whereupon the nuts 52 are run down into intimate engagement with the bushings 50, thereby locking them in the desired positions, and consequently locking the form rollers 44 in their correctly adjusted positions with respect to the rider rollers 43.

The bearings 45 also include adjustable stems 53, which are carried within the housings 47, and counterbored to accommodate screw-threaded pins 54, having heads 55, adapted to co-operate with nuts 56, carried by screw-threaded portions of the stems 53, for retaining the stems in their respective positions. By the provision of the nuts 56 and the screw-threaded pins 54 it is possible to readily adjust the form rollers 44, with respect to the plate cylinder 9 and the rider rollers 43. This adjustment is made possible by unscrewing the nuts 56 and running the pins 54 further into screw-threaded engagement with the stems 53 to effect an adjustment of the form rollers 44 in one direction, and by unscrewing the nuts 55 and running the nuts 56 further down upon the screw-threaded portions of the stems 53

when it is desired to effect radial adjustment of the form rollers 44 in opposite directions. By the provision of means making possible these radial adjustments of the form rollers 44, the same may be adjusted with respect to the plate cylinder 9 and the rider rollers 43 with extreme accuracy, which is essential in machines of the type to which our invention is directed, in order that a proper application of ink to the printing plate may be afforded.

Over the lower ends of the housings 47 are disposed guard plates 57, which are secured to the side members 7 of the frame by means of bolts 58. These guard plates are cut away to provide notches 59, adapted to receive projecting studs 60, which are carried by the lower ends of the housings 47 and urged radially inwardly toward the axis of the plate cylinder by means of a plurality of springs 61 carried within pockets 62 formed in the guard plates. The studs 60 are adapted to normally engage the peripheral face of rotatable discs 63, which are disposed in concentric relations with respect to the axis of the plate cylinder 9, and co-act with a plurality of rollers 64, carried by the discs 63, in order to effect a radial displacement of the housings 47 and a similar displacement of the form rollers 44, when it is desired to lift these rollers and thus effect a discontinuance of the application of ink to the plate carried by the cylinder 9. In order to effectively lock the rollers 64 in their respective positions they are provided with grooves 65, adapted to receive retaining wires 66, carried within peripheral grooves 67 formed in the discs 63. From an inspection of Figure 4, it is apparent that when the discs 63 are rotated, the several rollers 64, carried by these discs, are so moved as to lift the bearings 45 thereby moving the rollers 44 out of contact with the printing plate against the influence of the several springs 61. As a means for rotating the discs 63 to effect the desired displacement of the form rollers 44, we have provided a comparatively simple mechanism, hereinafter more particularly described, which is adapted to be either manually operated or automatically operated in the absence of work-sheets.

In printing machines of the class to which our invention belongs, it is necessary to apply a thin film of water to the plate, carried by the plate cylinder 9, and to this end we provide a plurality of dampening rollers 68, which are suitably journaled at their opposite ends to movable brackets 69 adapted to be so operated through the instrumentality of a suitable handle 70 as to move the rollers either into or out of engagement with the plate carried by the plate cylinder. It will be noted that no provision is made for automatically operating the brackets 69 to

move the rollers 68 into or out of engagement with the plate carried by the plate cylinder, even though the construction of the several automatically operated mechanisms, hereinafter more particularly described, is such that the operation of the brackets 69 may be effected automatically in the absence of a work-sheet. Such an automatic operation is deemed unnecessary, in this particular type of machine, for the reason that if, in the operation of the machine, one or two work-sheets fail to enter the machine the continued application of water from the rollers 68 to the printing plate would not prove detrimental. As a matter of fact, it is desirable to keep the plate, carried by the plate cylinder, more or less dampened, in the absence of work, for the reason that if the plate were permitted to dry during the operation of the machine in the absence of work, too great a quantity of ink might be supplied to the plate when feeding of the work-sheets is resumed. If, however, it is observed that too much water is being supplied to the plate carried by the plate cylinder, after prolonged running in the absence of work, the rollers 68 may be easily disengaged from the printing plate through the instrumentality of the operating lever 70. As a source of water supply for the rollers 68 we have provided a water reservoir 71 within which is arranged a fountain roller 72 adapted to be rotated through a chain of gears 73, operatively connected to some suitable rotating part of the machine by means of a vertically disposed shaft 74, carrying a horizontally disposed gear 75, which meshes with a driving gear 76. This driving gear is suitably connected to a relatively short shaft 77, to which is suitably connected a clutch member 78, and upon which is loosely mounted an elongated sleeve 79, having at one end thereof a disc 80, to which is pivotally connected a pawl 81, normally retained in the position shown at Figure 25, by means of a compression spring 82 which is carried within a suitable pocket 83 formed in the disc 80 and adapted to engage a pin 84 carried by the pawl 81 and projecting into the pocket 83, as most clearly shown in Figures 27 and 28. This pawl 81 is adapted to so co-act with the clutch member 78 as to lock the sleeve 79 to the shaft 77 under normal conditions, and free the same from its interlocking engagement in the absence of a work-sheet by a suitable mechanism hereinafter particularly referred to, which is adapted to be actuated either manually or automatically to permit the shaft 77 to rotate independently of the sleeve 79.

Upon the sleeve 79 there is mounted a variable cam 85, which is so keyed to the sleeve 79 by means of a spline 86, as to lock the cam 85 against rotation with respect to the sleeve 79, but permit the same to slide longitudinal-

ly thereon. The longitudinal movement of the cam 85, with respect to the shaft 77, is effected by means of a shaft 87, which is at one end provided with an operating knob 88 and at its other end maintained in screw-threaded engagement with a suitable bracket 89. Adjacent the screw-threaded end of the shaft 87, there is arranged a pair of collars 90, between which is fitted a hub member 91, carrying a forked arm 92, adapted to operate within a peripheral groove 93, formed in the cam member 85, near one end thereof. It is apparent that by rotating the shaft 87 in either one direction or the other a corresponding longitudinal adjustment of the cam member 85 upon the sleeve 79 may be effected, due to the cooperative relation between the cam member 85, the forked arm 92 and the shaft 87.

The variable cam portion 94 of the cam member 85 is adapted to cooperate with a roller 95, carried by a depending arm 96, to which is connected a hub portion 97, suitably locked to the shaft 98.

Upon opposite ends of the shaft 98 there are arranged loosely mounted sleeves 97' provided with horizontally disposed arcuate shaped tongues 99, adapted to enter arcuate shaped slots 100, formed in depending wings 101, carried by collars 102, which are rigidly connected to the shaft 98 by means of set screws 103. The sleeves 97' are provided with upwardly projecting oscillatory arms 104 and 105 which are adapted to support an oscillating duct roller 106, which is moved alternately into engagement with the adjacent dampening roller 68, and the fountain roller 72. It will be appreciated that, by reason of the cooperation between the tongues 99 and the wings 101, the roller 106 is positively moved into engagement with the fountain roller 72, but is free to move into engagement with the adjacent dampening roller 68, under the influence of gravity and a tension spring 107, suitably connected to the arm 105, and one of the side members 7.

Since the roller 106 is positively moved into engagement with the fountain roller 72, it becomes necessary to provide a means whereby the roller 106 may be accurately adjusted with respect to the face of the fountain roller, and to this end we provide adjustable set screws 108, which are carried by the wings 101 and project into the arcuate shaped slots 100. By adjusting these set screws, it is obvious that the throw of the arms 104 and 105 may be varied and consequently the pressure exerted by the roller 106 upon the fountain roller may be varied. The set screws 108, together with their several cooperative elements, function, not only as a means to prevent the exertion of undue pressure upon the fountain roller 72 by the roller 106, but also afford a compensating

means, whereby the roller 106, when reduced in diameter, due to constant use, may be correctly positioned or adjusted with respect to the surface of the fountain roller 72 to insure a proper functioning thereof.

Due to varying conditions under which the machine is required to operate, it is desirable to be able to vary the length of time that the roller 106 may be permitted to remain in contact with the fountain roller 72, and it is for this reason that the cam element 85 is provided with a variable cam portion 94. If conditions are such that the roller 106 need be held in contact with the fountain roller 72 only a relatively short period, to supply a sufficient quantity of water to the roller 68, which, in turn, is applied to the plate carried by the plate cylinder 9, the shaft 87 is so moved, through the instrumentality of the operating knob 88, as to so position the cam element 85 upon the sleeve 79 that only a relatively short portion of the cam area will act upon the roller 95. If, on the other hand, it is desired to maintain the roller 106 in contact with the roller 72, for a relatively long period of time, the shaft 87 is so adjusted as to so position the cam element 85 upon the sleeve 79 that a relatively long portion of the cam area is permitted to act upon the roller 95. It will be understood, of course, that the longer the roller 106 is permitted to remain in contact with the fountain roller 72, the more water will be taken up by the duct roller 106, which is covered with a suitable absorbent material, whereas the shorter the period of contact between the fountain roller 72 and the duct roller 106, the less will be the quantity of water taken up thereby. Thus, by the relatively simple cam adjusting means above described, a reliable and accurate means by which the amount of moisture supplied to the plate carried by the plate cylinder may be governed to a satisfactory degree.

In machines of this type, it is desirable to maintain the duct roller 106 out of contact with the fountain roller 72, in the absence of work, particularly if the machine is running idle for any considerable length of time, and to accomplish this, we have provided a means for discontinuing the oscillatory movement of the arms 104 and 105, at that period in the operation of the machine when the roller 106 is in contact with the adjacent roller 68, which means comprises a trip link 109, adapted to coact with the pawl 81 to release the same from the clutch member 78, thereby permitting the shaft 77 to rotate independently of the sleeve 79 and cam member 85. This link is provided with an elongated slot 110, adapted to receive a guide pin 111, and is pivotally connected to an arm 112, suit-

ably connected to a horizontally disposed shaft 113, which is adapted to be actuated manually by means of a lever 114, or automatically by a suitable means herein-
 5 after particularly described.

From a consideration of Figure 25, it will appear that the pawl 81 is released from its cooperative clutch member 78 only at
 10 that period in the operation of the machine when the low part of the cam 94 is in engagement with the roller 95, at which instant the roller 106 is in contact with the adjacent roller 68, regardless of whether the release is effected manually or auto-
 15 matically. To have the roller 106 contact with the adjacent roller 68, upon failure to introduce work-sheets into the machine, is particularly advantageous, for the reason that such moisture as might be con-
 20 tained in the absorbent material of the roller 106 is gradually supplied to the dampening rollers 68, and thus the plate carried by the plate cylinder 9 is kept moist, so that when a work-sheet is again fed into
 25 the machine, the plate carried by the plate cylinder will consequently take up or receive only a suitable amount of printing fluid.

The train of gears 73, through which the
 30 roller 72 is driven, includes, in addition to the gears 75 and 76, hereinbefore mentioned, a relatively small gear 115, suitably connected to the shaft 77, which gear, in turn, meshes with a gear 116, journaled upon a
 35 stub shaft 117, which is carried by a wing 118. This wing is loosely mounted upon the shaft 77 and is provided with a screw-threaded stud 119, projecting through an arcuate shaped slot 120, formed in an extended
 40 portion 121 of the frame member 7. By loosening a wing nut 122, carried by the stud 119, the wing 118 may be swung about the shaft 77 as a pivot, in order to disengage the spur gear 123, which is operatively con-
 45 nected with the gear 116, from a similar gear 124, carried by the fountain roller shaft 125. The gear 124 has formed there- with a second gear 126, which, together with the gear 124, is splined to the shaft 125 by
 50 means of a key 127, both gears being adapted to be moved longitudinally on the shaft 125, in order that the gear 126 may be so positioned as to mesh with the gear 123. Upon so positioning the gears 124 and 126
 55 that the latter named gear may mesh with the gear 123, the wing 118 is moved about the shaft 77 as an axis, thereby bringing the gear 123 into mesh with the gear 126, whereupon the wing 118 is locked in position
 60 by means of the wing nut 122, thereby locking the gear 123 in engagement with the gear 126. When the gears 124 and 126 are in the position shown in Figure 22, they are prevented from moving in one direction
 65 by any suitable means, such as a head 128,

carried by the shaft 125, and are prevented from moving in an opposite direction by means of a head 129 carried by the stub shaft 117. If the gears 124 and 126 are so moved
 70 as to bring the latter named gear into engagement with the gear 123, the head 129, carried by the stub shaft 119, is permitted to enter the space afforded between the gears 124 and 126, whereby they are locked
 75 against longitudinal movement upon the shaft 125 in either direction. With the gears meshing, as shown in Figure 22, the fountain roller 72 is rotated at a given rate of speed, but if the gears 124 and 126 are
 80 so moved as to bring the latter named gear into engagement with the gear 123, the speed of rotation of the roller 72 will necessarily be increased, because of the fact that the gear 126 is somewhat smaller than the gear 124, both of which are adapted to mesh
 85 with the common gear 123.

In a machine such as we have shown, the work-sheets 130 are fed into the machine between the blanket cylinder 10 and the im-
 90 pression cylinder 11, by means of a reciprocating abutment 131, operatively connected to an oscillating lever 132, suitably driven through the instrumentality of a positively acting cam 133, carried by a horizontally
 95 disposed cam shaft 134. The abutment 131, in its operation, is adapted to move the work-sheet 130 forward into the machine, whereupon it is gripped by a suitable gripping mechanism, not shown, which is co-
 100 operatively associated with the impression cylinder 11.

So long as these work-sheets continue to be fed into the machine, the form rollers 44 are maintained in contact with the plate carried by the plate cylinder 9, and the im-
 105 pression cylinder 11 is also maintained in contact with the blanket cylinder 10, but if, for any reason, one of these work-sheets should fail to pass into the machine, the form rollers 44 are instantly lifted out of contact with the plate and likewise the im-
 110 pression cylinder 11 is immediately disengaged from the blanket cylinder 10. This lifting and disengagement is effected automatically by means of a trip finger 135, carried by a horizontally disposed rod 136, which is adapted to be moved, in the absence
 115 of a work-sheet, from the position shown in Figure 18 to that of Figure 13, by reason of a weighted trip arm 137. When the trip arm 137 drops from the position shown
 120 in Figure 18 to the position shown in Figure 13, it engages a trip lever 138, which is pivotally connected to one of the side members 7 of the frame, by means of a
 125 post 139. This trip lever is provided with relatively short and long diverging fingers 140 and 141, respectively, carrying at their ends bosses 142 and 143. The boss 142, carried by the relatively short arm 140, is
 130

adapted to coact with a cam 144, suitably connected to the cam shaft 134, whereas the boss 143, connected to the relatively long arm 141, is adapted to coact with a pair of guide fingers 145 carried by a link 146, pivotally connected at its ends to a pair of depression fingers 147 and 148, which, in turn, are pivotally connected to an oscillating lever 149. This oscillating lever is pivotally connected to a suitable portion of the frame 5, by means of a pin 150, and is provided relatively near its free end with a yoke 151, which is adapted to straddle the shaft 134, intermediate the cam 144 and a grooved cam wheel 152, carrying a relatively steep cam 153, surrounded by a cam ring 154, which, with the cam 153, forms a cam groove 155. Within the cam groove 155, there is arranged a cam roller 156, carried by a pin 157, which is connected with the oscillating lever 149, relatively near its free end.

It is apparent that as the cam disc 152 rotates in the direction of the arrow, shown in Figures 13, 15 and 18, the oscillating lever 149 is, at its free end, moved in an arc, thereby lifting and lowering the depression fingers 147 and 148. It is also apparent that the cam 144, cooperating with the boss 142, causes a positive movement of the trip lever 138 in one direction about its pivot 139, the lever being moved in an opposite direction, about its pivot 139, by means of a tension spring 158. If, however, a work-sheet 130 fails to pass into the machine, the arm 137 will engage the upper end of the trip lever 138, when the same has been moved against the influence of the spring 158 by the cam 144, and due to this engagement of the arm 137 with the trip lever 138, the same is prevented from moving under the influence of the spring 158, in which case the depression fingers 147 and 148, due to the engagement of the boss 143 with the guide fingers 145, are locked in their respective positions, shown in Figure 13, upon the completion of the upward movement of the free end of the oscillating lever 149. Immediately after the cam 144 is freed from the boss 142, the cam 153 begins to coact with the roller 156 to move the free end of the oscillating member 149 downwardly, in which case the depression finger 147 cooperates with an outwardly projecting pin 159, carried by a rocking beam 160, to lower that end of the rocking beam 160, which carries the pin 159 and simultaneously lifts the opposite end of the rocking beam 160, which carries a similar outwardly projecting pin 161.

Since the rocking beam 160 is rigidly connected to a horizontally disposed shaft 162, which projects through the side members 7, it follows that in moving the rocker arm 160 from the position shown in Figure 13 to that shown in Figure 15, the shaft 162 will

be slightly rotated, thereby moving the operating feet 163, which are rigidly connected to the shaft 162, from the position shown in Figure 1 to the position shown in Figure 2. These operating feet are suitably connected with various levers at both sides of the machine for effecting an automatic operation of various cooperative elements throughout the device, but since corresponding levers on both sides of the machine are substantially identical, it is deemed necessary to describe only those which are shown in Figures 1 and 2.

When the foot 163 is moved from the position shown in Figure 1, to the position shown in Figure 2, a bell crank lever 164 is rocked about its pivotal connection by means of a link 165, connecting one arm of the lever with the foot 163. This rocking movement of the bell crank lever 164 lifts an operating rod 166, which is connected to the other arm of the bell crank lever 164, and it is due to the lifting of the operating rod 166 that the several form rollers 44 are lifted free from engagement with the plate carried by the plate cylinder 9. To effect this disengagement of the rollers 44 with the plate carried by the plate cylinder 9, we provide a bell crank lever 167, which is pivotally connected to the side member 7. This bell crank lever is provided with a relatively short arm 168, which carries a stud 169, adapted to enter a yoke 170, carried at the upper end of the operating rod 166. In order to retain the yoke 170 in engagement with the stud 169, we have provided a link 171, which is connected to the upper end of the yoke 170, and provided with a wing 172, having a slot 173 formed therein. This wing is adapted to cooperate with a locking pin 174, to retain the rod 166 in a vertical position, in which position the yoke 170 is effectively locked in operative connection with the stud 169. If it should be desired to disengage the yoke 170 from the stud 169, the operating rod 166 may be moved to and locked in the position shown in Figure 2, in which position the bell crank lever 167 is adapted to be actuated manually through the instrumentality of an extended arm 174', provided with an operating handle 175.

The bell crank lever 167, adjacent the relatively short arm 168 is provided with a second relatively short arm 175', which, in turn, is connected to the concentric disc 63, by means of an interposed link 176. By the provision of the operating rod 166 and the bell crank lever 167, it is obvious that a positive and reliable means is afforded for moving the disc 63 from the position shown in Figures 1 and 4 to the position shown in Figure 2, when the feet 163 are moved from the position shown in Figure 1 to the position shown in Figure 2, in the absence of a work-sheet 130. By moving the disc 63 from

the position shown in Figures 1 and 4 to the position shown in Figure 3, the rollers 64 are so moved as to engage the studs 60, and lift the housings 47, thereby moving the form rollers 44 out of engagement with the plate carried by the plate cylinder 9.

At the same time the operating rod 166 is moved upwardly to disengage the form rollers 44 from the plate carried by the plate cylinder 9, the impression cylinder 11 is disengaged from the blanket cylinder 10. To effect disengagement of the impression cylinder 11 from the blanket cylinder 10, we provide eccentric journals 177 for the impression cylinder 11, one of which journals is shown in Figure 2. By suitably rotating these journals, in the absence of a work-sheet 130, it is obvious that the impression cylinder 11 may be disengaged from the blanket cylinder 10, and to effect this rotation we connect the journals 177 with the feet 163 by means of interposed links 178. Thus, it is obvious that when the foot 163 is moved from the position shown in Figure 1 to the position shown in Figure 2, the journals 177 will be so moved as to bring about the desired separation of the blanket and impression cylinders 10 and 11, respectively.

Since it is not desired to automatically disengage the blanket cylinder 10 from the plate cylinder 9, when a work-sheet fails to pass into the machine, we have so designed a throw-out mechanism for the blanket cylinder 10 that the same may be disengaged from the plate cylinder only by manual operation. This throw-out mechanism shown in Figure 2 is the same as that at the opposite side of the machine, and comprises a bell crank lever 179, which is connected to a horizontally disposed shaft 179' and includes a pair of relatively short arms 180 and 181. The arms 180 are, by means of links 182, operatively connected to eccentric bearings 183, which are carried upon opposite sides of the machine for supporting the blanket cylinder 10. By moving the bell crank levers 179, through the instrumentality of an operating handle 184, from the position shown in Figure 1 to the position shown in Figure 2, the eccentric bearings 183 are slightly rotated, thereby moving the blanket cylinder 10 slightly out of contact with the plate cylinder 9.

Inasmuch as it is desirable to automatically move the blanket cylinder 10 into engagement with the plate cylinder 9, upon the insertion of a work-sheet 130, we have provided a link 185, which is pivotally connected at one end to the upper end of the link 178. This link 185, at its opposite end is provided with a head 186 having a slot 187 formed therein, which is adapted to receive a pin 188, carried by the relatively short arm 181 of the bell crank lever 179.

When the link 185 is in its lowermost po-

sition, and the operating lever 184 is depressed, as shown in Figure 2, the pin 188 will be so disposed within the slot 187 that a movement of the foot 163 from the position shown in Figure 2 to the position shown in Figure 1 will cause the operating lever 184 to automatically move from the position shown in Figure 2 to the position shown in Figure 1, thereby extending the link 182, which causes the eccentric bearing 183 to so move that the blanket cylinder 10 is urged into contact with the plate cylinder 9. From the construction and arrangement of the bell crank lever 179 and the interposed link 185, it is apparent that the only period during which the blanket cylinder 10 might be disengaged from the plate cylinder 9 is when the operating foot is maintained in the position shown in Figure 2, which position is brought about by the failure to introduce a work-sheet into the machine.

As above explained, it is only under certain conditions, in the absence of work-sheets, that it becomes necessary to disengage the blanket cylinder 10 from the plate cylinder 9, and in this connection it is left to the good judgment of the operator as to when the blanket cylinder should be disengaged. On the other hand, it is desirable, under all conditions, incident to the feeding of work into the machine, to maintain the blanket cylinder 10 in engagement with the plate cylinder 9, and from the construction and arrangement of the various elements included in the control mechanism for the blanket cylinder 10, it will appear that the desired engagement of this cylinder with the plate cylinder is insured upon the introduction of a single sheet into the machine after the blanket cylinder 10 has been disengaged from the plate cylinder 9, which disengagement is made possible, as above mentioned, only when the foot 163 has been moved to the position shown in Figure 2, as a result of failure to introduce the work into the machine.

In machines of this type, it is especially desirable to discontinue the application of the printing fluid to the inking drum 8, upon the failure to introduce a work-sheet into the machine, and while we have described a manually operated means for effecting a discontinuance of the application of printing fluid, it is particularly advantageous to be able to automatically discontinue the application of printing fluid upon the failure to introduce a work sheet into the machine.

In order that the inking mechanism hereinbefore described may be automatically controlled, we have provided the lever 30 with an extension 189, carrying a stud 190, which is adapted to engage a link 191, pivotally connected to an oscillating arm 192. The oscillating arm 192 is pivotally connected, at one end, to a suitable support 193 and

at its other end to an actuating rod 194, which, in turn, is connected to a relatively short arm 195, adapted to be actuated by the bell crank lever 167. The link 191 may be
 5 lifted free from the stud 190, when it is desired to control the inking mechanism manually, but in order to facilitate an automatic control of the inking mechanism, the link 191 is permitted to assume the position
 10 shown in Figures 1 and 2, in which position a direct connection is afforded between the bell crank lever 167 and the operating shaft 29. By the provision of the rod 194, and its several associated cooperative elements,
 15 it is apparent that when the operating rod 166 is lifted, due to the movement of the foot 163, from the position shown in Figure 1 to the position shown in Figure 2, the relatively short arm 192 will be so moved
 20 as to partially rotate the shaft 29, thereby causing the disengagement of the pawls 20 and 23 from their respective cams 34 and 35 through the instrumentality of the finger 27.

25 As above mentioned, in describing the operation of the manually operated controlled mechanism for the inking roller 15, a disengagement of the pawls 20 and 23 from their respective ratchet wheels will cause
 30 the inking roller 15 to remain inoperative so long as these pawls are maintained in their disengaged positions. Upon the introduction, however, of a work-sheet into the machine, the pawls 20 and 23 will be per-
 35 mitted to drop to their normal positions and engage their respective ratchet wheels 34 and 35, as a result of the movement of the foot 163 from the position shown in Figure 2 to the position shown in Figure 1, which
 40 movement is automatically brought about through the instrumentality of the trip mechanism, including the depression fingers 147 and 148.

45 It has been hereinbefore mentioned that the oscillating duct roller 106 may be rendered inoperative manually, through the instrumentality of the releasing link 109, which, when operated through the shaft 113, serves to disengage the pawl 81 from the
 50 clutch member 78. It is desirable, however, under ordinary conditions, to release the pawl 81 automatically upon the failure to introduce a work-sheet into the machine, so that the roller 106 will lie normally against
 55 the adjacent dampening roller 68, while the machine is running free, and to accomplish this automatic release, we provide a depending arm 196, which is connected directly to the shaft 113. This arm is normally con-
 60 nected by means of a link 197 to an arm 198, which is adapted to be moved upon the operation of the bell crank lever 167. The link 197 is bent, as shown at 199, to engage a pin 200, carried by the arm 196, so that when
 65 the link 197 is moved in one direction or the

other, a corresponding movement of the shaft 113 is afforded.

When the bell crank lever 167 is moved from the position shown in Figure 1 to the position shown in Figure 2, the shaft 113 is
 70 so moved as to cause the releasing link 169 to engage the pawl 81 as the shaft 77 is rotated. As hereinbefore mentioned, the release of the pawl 81 from its cooperative clutch member 78 takes place while the duct
 75 roller 106 is in engagement with the adjacent dampening roller 68, this being desirable for the reason that it is advantageous to continue the application of water to the plate carried by the plate cylinder, under
 80 certain conditions, even in the absence of a work-sheet. If, for any reason, it should be desired to discontinue the automatic control of the roller 106, such may be accomplished
 85 by lifting the link 197 out of engagement with the pin 200, in which case the link 197 may be maintained out of engagement with the pin 200 by means of an arm 201, pivotally connected to the upturned end of the
 90 link 197 and adapted to be so held as to maintain the link 197 in its lifted position by means of a keeper 202, suitably connected to the side member 7.

It might be mentioned that to enable the operator to readily determine whether or
 95 not the roller duct 106 is rendered inoperative or is functioning in an oscillatory manner, when the link 197 is lifted out of engagement with the pin 200, to permit the roller to be manually controlled, we have
 100 provided the lever 114 with a pointer 203, which, when registered with the word "On", indicates that the depressing link 109 is so positioned as to permit the pawl 81 to be maintained in locking engagement with the
 105 clutch member 78, in which engagement the roller 106 is oscillated during the operation of a machine, it being moved alternately into contact with the adjacent roller 68 and the fountain roller 72. If, on the other
 110 hand, the pointer 203 registers with the word "Off" the operator will understand that the depressing link 109 is so positioned as to release the driving engagement between the cam member 85 and the shaft 77,
 115 thus permitting the roller 106 to maintain a position in contact with the adjacent dampening roller 68. It will be appreciated therefore that by the presence of the words "On" and "Off" and the provision of the
 120 pointer 203, the operator is enabled, at a glance, to determine in which direction to move the lever 114 to manually bring about a desired condition of the roller 106; that is to say, he is enabled to readily determine
 125 whether to move the lever to the right or left to cause the roller 106 to oscillate or remain constantly in contact with the adjacent roller 68.

In applying new blankets to the blanket 130

cylinder, in machines of this type, it is customary to place the blanket around the cylinder, and then run the machine for a short period, after which the operation of the machine is discontinued to enable the blanket, which has been stretched more or less, due to contact between the impression cylinder and the blanket cylinder, to be drawn more tightly around the blanket cylinder. This intermittent operation of the machine is carried out with the blanket cylinder in contact with the impression cylinder a sufficient number of times to adequately stretch the blanket, so that the same will be maintained in an intimate relation with the surface of the blanket cylinder, without undue wrinkling or puckering, due to further excessive stretching during the normal operation of the machine.

In order that the machine embodying our invention may be so operated in the absence of work-sheets as to maintain the blanket cylinder in contact with the impression cylinder 11, we have provided a means for preventing engagement of the locking finger 137 with the upper end of the trip lever 138, under all conditions, so that the trip lever 138 may be free to oscillate about its pivot 139 in the same manner as if work-sheets 130 were being fed through the machine continuously. The means which we employ for retaining the finger 137 out of engagement with the trip lever 138 is shown most clearly in Figure 19, and comprises a cam 204 rigidly secured to an operating shaft 205, which is provided with an operating handle 206, having a pointer 207 associated therewith. The cam 204 is adapted to be actuated through the shaft 205, and is provided with a series of indents 208, 209 and 210, which are adapted to cooperate with a spring pressed plunger 211 carried within a suitable housing 212, attached to one of the frame members 7. The spring pressed plunger 211, when seated within the indent 208, serves to retain the cam 204 in its vertical dotted line position, and when cooperating with the indent 209, the cam 204 is held in its full line position, shown in Figure 19. If it is desired to retain the cam 204 in a horizontal position, so as to engage a lug 213, carried by the trip lever 138, the shaft 205 is so moved as to permit the plunger 211 to enter the indent 210.

With the shaft 205 so positioned as to maintain the cam 204 in the dotted line position shown in Figure 19, the trip arm 137 is retained under all conditions in the position shown in Figure 18, which position corresponds to that which the trip arm would occupy in the presence of a work-sheet 130. It follows, therefore, that when the cam 204 is retained in its dotted line position, shown in Figure 19, the foot 163 will, under all conditions, be maintained in the position shown in Figure 1, in which position the blanket and impression cylinders 110 and 111, respectively, are retained in surface engagement with each other. The machine may therefore be operated for any desired length of time, and yet maintain a positive engagement between the blanket cylinder 10 and impression cylinder 11, even in the absence of work-sheets, thus enabling the operator to easily stretch a blanket newly applied to the blanket cylinder 10.

Under normal operating conditions, the shaft 205 is so positioned as to maintain the cam 204 in its full line position, shown in Figure 19, in which position the trip arm 137 is adapted to engage the upper end of the trip lever 138 to retain the same in the position shown in Figure 13, whereby an automatic operation of the foot 163 is accomplished, as hereinbefore described, to move the various cooperating elements of the machine into their respective operative positions, shown in Figure 2. On the other hand, the trip arm 137 is free to move, upon the resumption of the printing operations, from its position shown in Figure 13 to its position shown in Figure 18, to facilitate an automatic movement of the various cooperating elements of the machine from their respective positions shown in Figure 2 to their respective normal operating positions shown in Figure 1.

Under certain conditions, it might be desirable to retain the several elements of the machine in their respective inoperative positions, shown in Figure 2, and in order to positively retain the several elements of the machine in their respective inoperative positions, the cam 204 may be so moved through the instrumentality of the shaft 205 as to permit the plunger 211 to enter the depression 210, whereby the cam 204 is locked in a horizontal position. The cam, when locked in its horizontal position, will positively prevent the return of the trip lever 138 to its normal position under the influence of the spring 158, when the trip arm 137 is released, due to the presence of a work sheet, or otherwise. It will be appreciated, therefore, that with the cam 204 so positioned as to engage the lock 213, carried by the trip lever 138, the operation of the machine will be such that the various operative elements of the machine will be maintained in their respective inoperative positions, in which case the blanket cylinder 10 is retained in a spaced relation with respect to its cooperating impression cylinder 11, so that any number of work-sheets may be passed through the machine without subjection to printing operations.

In order to enable the operator to determine any one of the three positions to which the lever 206 must be moved, to produce a given position of the cam 204, we have in-

5 indicated two of the directions in which the
 pointer 207 must point by the abbrevia-
 tions "Imp." and "Auto." which are respec-
 tively abbreviations of the words "Impres-
 sion" and "Automatic." The third position
 10 to which the pointer must point to produce
 a given position of the cam 204 is indi-
 cated by the word "Trip." It is apparent
 that when the pointer 207 registers with
 15 the abbreviation "Imp." the cam 204 is
 maintained in its vertical position, in which
 position the blanket and impression cylin-
 ders 10 and 11, respectively, are maintained
 in an intimate surface engagement. When
 20 the pointer 207 registers with the abbrevia-
 tion "Auto." the operator will readily un-
 derstand that the cam 204 is maintained in
 its full line position, shown in Figure 19,
 in which position the machine is permitted
 25 to operate in every particular in a normal
 manner. The operator will also appreciate
 that by moving the lever 206 to bring the
 pointer 207 into registration with the word
 "Trip," the cam 204 will be permitted to
 30 assume a horizontal position, in which posi-
 tion the trip lever 138 will, under all con-
 ditions, be retained in its position shown in
 Figure 13, in which position the blanket and
 impression cylinders 10 and 11 are main-
 tained in a spaced relation under all con-
 ditions.

We claim:

1. A printing machine having a plate
 cylinder adapted to carry a printing plate,
 35 a source of printing fluid supply, an inking
 drum, an inking roller adapted to transfer
 printing fluid from said source of supply to
 said inking drum, a pair of ratchet wheels
 cooperatively associated with said inking
 40 roller, a pair of pawls adapted to cooperate
 with said ratchet wheels, means for oscil-
 lating said pawls in a given path whereby
 said inking roller is intermittently actu-
 ated, and means yieldably connected with
 45 said pawls for lifting the same out of en-
 gagement with their respective ratchet
 wheels.

2. A printing machine having a plate
 cylinder adapted to carry a printing plate,
 50 a source of printing fluid supply, an inking
 drum, an inking roller adapted to transfer
 printing fluid from said source of supply to
 said inking drum, a pair of ratchet wheels
 cooperatively associated with said inking
 55 roller, a pair of pawls adapted to cooperate
 with said ratchet wheels, means for oscil-
 lating said pawls in a given path whereby
 said inking roller is intermittently actuated,
 means yieldably connected with said pawls
 60 for lifting the same out of engagement with
 their respective ratchet wheels, and auto-
 matically actuated means for effecting an
 operation of said pawl lifting means upon
 the failure to introduce a work-sheet into
 65 the machine.

3. A printing machine having a plate
 cylinder adapted to carry a printing plate;
 a plurality of rollers adapted to normally
 engage said plate for supplying printing
 fluid thereto, movable supports for said roll-
 70 ers, means tending to urge said supports in
 a given direction whereby said rollers are
 permitted to intimately engage said plate,
 a cam element adapted to move said sup-
 ports in an opposite direction whereby said
 75 rollers are moved out of engagement with
 said plate to interrupt the application of
 printing fluid thereto, and automatically ac-
 tuated means for actuating said cam upon
 the failure to introduce a work-sheet into
 80 the machine whereby said supports are
 moved and said rollers are displaced with
 respect to said plate cylinder.

4. A printing machine having a plate
 cylinder adapted to carry a printing plate,
 85 a plurality of rollers adapted to normally
 contact with said plate and supply printing
 fluid thereto, supports for said rollers, said
 supports having slots formed therein, eccen-
 tric elements within said slots, said eccen-
 tric elements being adapted to be so moved
 as to adjust said supports with respect to
 each other whereby a similar adjustment is
 brought about between said rollers, means
 95 tending to retain said supports in such posi-
 tions as to permit said rollers to intimately
 contact with said plate, and means for so
 moving said supports as to displace said
 rollers with respect to said cylinder where-
 by the application of printing fluid thereto
 100 is discontinued.

5. A printing machine having a plate cyl-
 105 nder adapted to carry a printing plate, a
 plurality of rollers adapted to normally
 contact with said plate and supply printing
 fluid thereto, supports for said rollers, said
 supports having slots formed therein, ec-
 centric elements within said slots, said ec-
 centric elements adapted to be so moved as
 to effect an adjustment of said supports
 with respect to each other whereby a simi-
 110 lar adjustment is brought about between
 said rollers, means tending to retain said
 supports in such positions as to permit said
 rollers to intimately contact with said
 plate, and automatically actuated means for
 so moving said supports as to free said
 rollers from engagement with said plate
 upon the failure to introduce a work-sheet
 120 into the machine.

6. A printing machine having a plate cyl-
 125 nder adapted to carry a printing plate, a
 fountain roller adapted to be rotated and
 carry upon its surface a film of moisture,
 a dampening roller adapted to transmit
 moisture to said plate, an intermediate roller
 adapted to be so moved as to alternately
 contact with said dampening roller and said
 fountain roller, means for moving said inter-
 130 mediate roller alternately into contact with

said fountain roller and dampening roller including a cam, a driving means for said cam, and means for disengaging said cam from its driving means at such a time when said intermediate roller is out of contact with said fountain roller.

7. A printing machine having a plate cylinder adapted to carry a printing plate, a fountain roller adapted to be rotated and carry upon its surface a film of moisture, a dampening roller adapted to transmit moisture to said plate, an intermediate roller adapted to be so moved as to alternately contact with said dampening roller and said fountain roller, means for moving said intermediate roller alternately into contact with said fountain roller and dampening roller including a cam, a driving means for said cam, and automatically actuated means operable upon the failure to introduce a work-sheet into the machine to release the driving engagement between said cam and its driving means at such a time when said intermediate roller is out of contact with said fountain roller.

8. A printing machine having a plate cylinder adapted to carry a printing plate, a fountain roller adapted to be rotated and carry upon the surface thereof a film of moisture, a dampening roller adapted to transmit moisture to said plate, an intermediate roller disposed between said fountain roller and said dampening roller, means for alternately moving said intermediate roller into engagement with said fountain roller and dampening roller, said means including an oscillatory arm, a cam cooperating with said arm, driving means for said cam, a clutch normally locking said cam in driving engagement with its driving means, and both manually and automatically actuated means for releasing said clutch at such time as said intermediate roller is out of engagement with said fountain roller whereby the movement of said intermediate roller into alternate engagement with said fountain roller and dampening roller is discontinued, said automatically actuated means being dependent for its operation to release said clutch upon the failure to introduce a work-sheet into the machine.

9. A printing machine having a plate cylinder adapted to carry a printing plate, means for supplying printing fluid to said plate, a fountain roller adapted to be rotated and carry upon the surface thereof a film of moisture, a dampening roller adapted to transmit moisture to said plate, an intermediate roller disposed between said fountain roller and said dampening roller, a variable cam for so moving said intermediate roller as to cause the same to alternately contact with said fountain and dampening rollers means for adjusting said cam to vary the length of time which said inter-

mediate roller is permitted to remain in engagement with said fountain and dampening rollers, means for driving said cam, a clutch adapted to connect said cam with said driving means, and automatically actuated means depending for its operation upon the failure to introduce a work-sheet into the machine for releasing said clutch whereby said cam is rendered inoperative at such a time when said intermediate roller is out of contact with said fountain roller.

10. A printing machine having a plate cylinder adapted to carry a printing plate, a plurality of rollers adapted to normally contact with said plate and supply thereto printing fluid, means for supplying moisture to said plate, a blanket cylinder, an impression cylinder, means for simultaneously discontinuing the application of printing fluid and moisture to said plate and moving said impression cylinder into an inoperative position with respect to said blanket cylinder, the latter named means comprising a cam, a rocker arm, an oscillating lever, pivoted means carried by said oscillating lever and adapted to co-act with said rocker arm upon the failure to introduce a work-sheet into the machine, means operable in the absence of a work-sheet to control the operation of said pivoted means and comprising a second cam, a trip lever adapted to co-act with said second named cam and said pivoted means, and a trip arm adapted to lock said trip lever in a given position upon the failure to introduce a work-sheet into the machine.

11. A printing machine having a plate cylinder adapted to carry a printing plate, a plurality of printing rollers adapted to normally engage said plate and supply printing fluid thereto, means for supplying moisture to said plate, a blanket cylinder, an impression cylinder, means for discontinuing the application of printing fluid and moisture to said plate and for moving said impression cylinder out of operative position with respect to said blanket cylinder upon the failure to introduce a work-sheet into the machine, means for resuming the application of printing fluid and moisture to said plate and for moving said impression cylinder into operative position with respect to said blanket cylinder upon the introduction of a work-sheet into the machine, the last named means comprising a rocker arm, an oscillating lever, pivoted means carried by said oscillating lever and adapted to co-act with said rocker arm, means for retaining said pivoted means in one position in the absence of work-sheets and for retaining said pivoted means in a different position in the presence of work-sheets, the last named means comprising a trip lever operatively associated with said pivoted means, a cam for moving said lever

in one direction, a trip arm adapted to lock said trip lever in a given position in the absence of work-sheets, and resilient means for returning said trip lever to its normal position upon the introduction of a work-sheet into the machine and upon the release of said trip arm from said trip lever.

12. A printing machine having a plate cylinder adapted to carry a printing plate, inking rollers adapted to normally contact with said plate and supply thereto printing fluid, means for supplying moisture to said plate, a blanket cylinder, an impression cylinder, means for controlling the application of printing fluid and moisture to said plate and for moving said impression cylinder out of operative position with respect to said blanket cylinder upon the failure to introduce a work-sheet, said means comprising a cam, a rocker arm, depressor feet cooperating with said cam and said rocker arm, a trip lever for controlling the operation of said depressor feet, a second cam for operating said trip lever, a trip arm for locking said trip lever when moved under the influence of the second named cam, and means adapted to be moved to retain said trip arm out of engagement with the said trip lever under all conditions and adapted to be further moved to lock said trip lever in a given position under all conditions.

13. A printing machine having a plate cylinder and an impression cylinder, means for effecting a relative movement between said cylinders upon the failure to introduce a work sheet, said means comprising a cam, a rocker arm, an oscillating lever, means associated with said oscillating lever and adapted to coact with said rocker arm upon the failure to introduce a work sheet into the machine, means operable in the absence of a work sheet to control the operation of the latter named means and comprising a second cam, and a trip lever adapted to cooperate with the second named cam and said means carried by said oscillating lever.

14. A printing machine having a plate cylinder and an impression cylinder, means for effecting a relative movement between said cylinders upon the failure to introduce a work sheet, said means comprising a cam, a rocker arm, an oscillating lever, means associated with said oscillating lever and adapted to coact with said rocker arm upon the failure to introduce a work sheet into the machine, means operable in the absence of a work sheet to control the operation of the latter named means and comprising a second cam, a trip lever adapted to cooperate with the second named cam and said means associated with said oscillating lever, and a trip arm adapted to lock said trip lever in a given position upon the failure to introduce a work sheet into the machine.

15. A printing machine having a plate

cylinder adapted to carry a printing plate, a plurality of rollers adapted to supply printing fluid to said printing plate, means for effecting relative movement between said plate cylinder and rollers upon the failure to introduce a work sheet into the machine, said means comprising a cam, a rocker arm, an oscillating lever, means associated with said oscillating lever and adapted to coact with said rocker arm upon the failure to introduce a work sheet into the machine, means operable in the absence of a work sheet to control the operation of the latter named means and comprising a second cam, a trip lever adapted to cooperate with the second named cam and said means associated with said oscillating lever, and a trip arm adapted to lock said trip lever in a given position upon the failure to introduce a work sheet into the machine.

16. A printing machine having a plate cylinder adapted to carry a printing plate, a plurality of rollers adapted to supply printing fluid to said printing plate, means for effecting relative movement between said plate cylinder and rollers upon the failure to introduce a work sheet into the machine, said means comprising a cam, a rocker arm, an oscillating lever, means associated with said oscillating lever and adapted to coact with said rocker arm upon the failure to introduce a work sheet into the machine, means operable in the absence of a work sheet to control the operation of the latter named means and comprising a second cam, a trip lever adapted to cooperate with the second named cam and said means associated with said oscillating lever, a trip arm adapted to lock said trip lever in a given position upon the failure to introduce a work sheet into the machine, and a trip arm adapted to lock said trip lever in a given position upon the failure to introduce a work sheet into the machine.

17. A printing machine having a plate cylinder adapted to carry a printing plate, means for supplying moisture to said plate, means for discontinuing the application of moisture to said plate upon the failure to introduce a work sheet into said machine, the latter named means comprising a cam, a rocker arm, an oscillating lever, means associated with said oscillating lever and adapted to coact with said rocker arm upon the failure to introduce a work sheet into the machine, means operable in the absence of a work sheet to control the operation of said means associated with said oscillating lever and comprising a second cam, and a trip lever adapted to coact with said second named cam and said means associated with said oscillating lever.

18. A printing machine having a plate cylinder adapted to carry a printing plate, means for supplying moisture to said plate,

means for discontinuing the application of moisture to said plate upon the failure to introduce a work sheet into said machine, the latter named means comprising a cam, a rocker arm, an oscillating lever, means associated with said oscillating lever and adapted to coact with said rocker arm upon the failure to introduce a work sheet into the machine, means operable in the absence of a work sheet to control the operation of said means associated with said oscillating lever and comprising a second cam, a trip lever adapted to coact with said second named cam and said means associated with said oscillating lever, and a trip arm adapted to lock said trip lever in a given position upon the failure to introduce a work sheet into the machine.

19. A printing machine having a plate cylinder adapted to carry a printing plate, a source of printing fluid supply, an inking drum, an inking roller adapted to transfer printing fluid from said source of supply to said inking drum, driven means connected to said inking roller, actuating means adapted to drive said driven means, operable means for severing driving connection between said driven means and said actuat-

ing means, and yieldable means interposed between said actuating means and said operable means and adapted to yield upon the operation of said operable means prior to severance of said driving connection.

20. A printing machine having a plate cylinder adapted to carry a printing plate, a source of printing fluid supply, an inking drum, an inking roller adapted to transfer printing fluid from said source of supply to said inking drum, driven means connected to said inking roller, actuating means adapted to drive said driven means, operable means for severing driving connection between said driven means and said actuating means, said operable means being dependent for its operation upon the failure to introduce a work-sheet into the machine, and yieldable means interposed between said actuated means and said operable means and adapted to yield upon the operation of said operable means prior to severance of said driving connection.

In testimony whereof, we have affixed our signatures to this specification.

MORRIS LIPTON.
LOUIS HAENLEIN.
FREDERICK W. HILL.