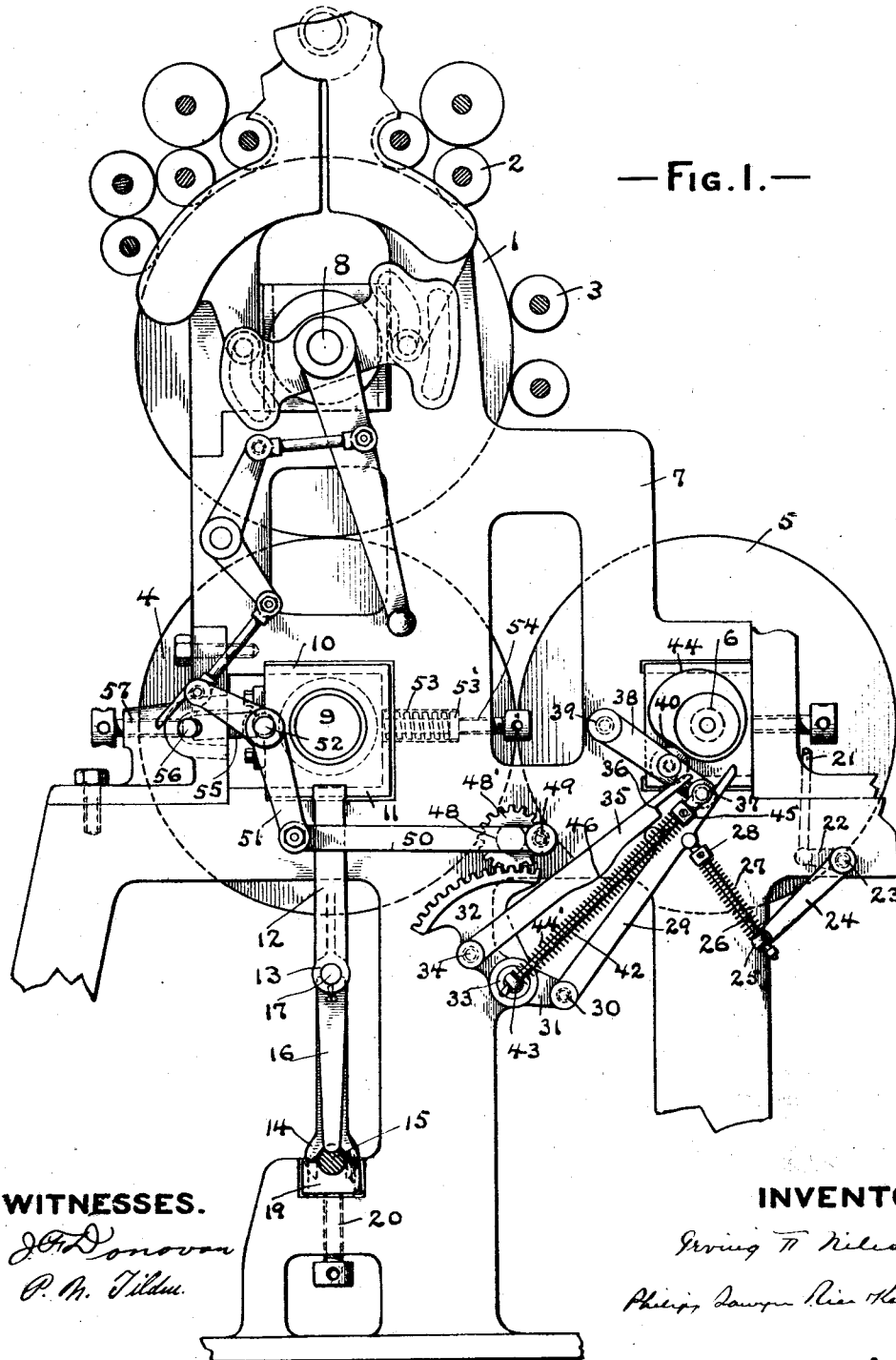


I. F. NILES.
TRIPPING MECHANISM FOR OFFSET MACHINES.
APPLICATION FILED DEC. 30, 1912.

1,193,045.

Patented Aug. 1, 1916.
4 SHEETS—SHEET 1.



— Fig. 1. —

WITNESSES.

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INVENTOR.

Irving N. Niles
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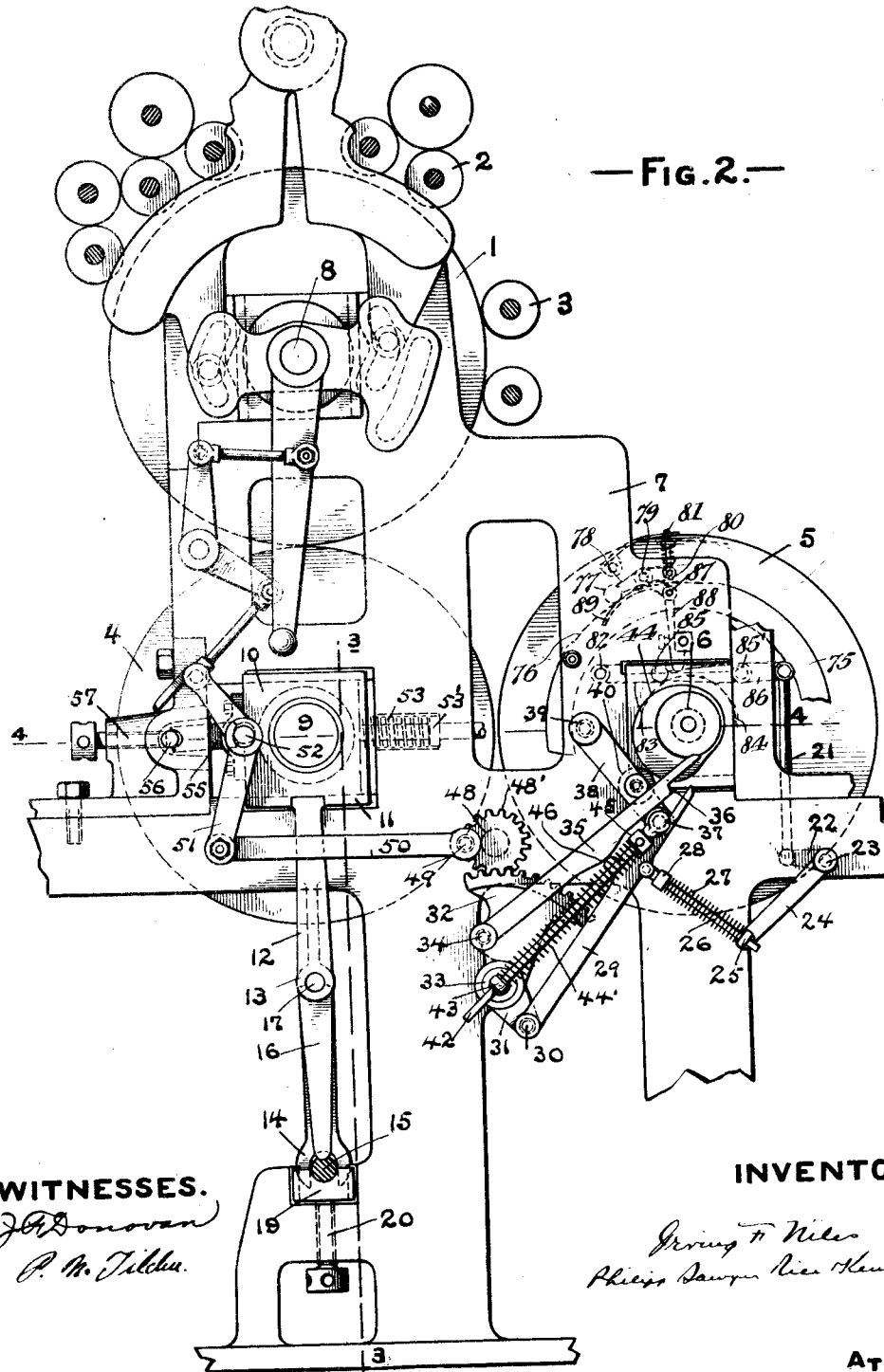
ATT'YS

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4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 3.

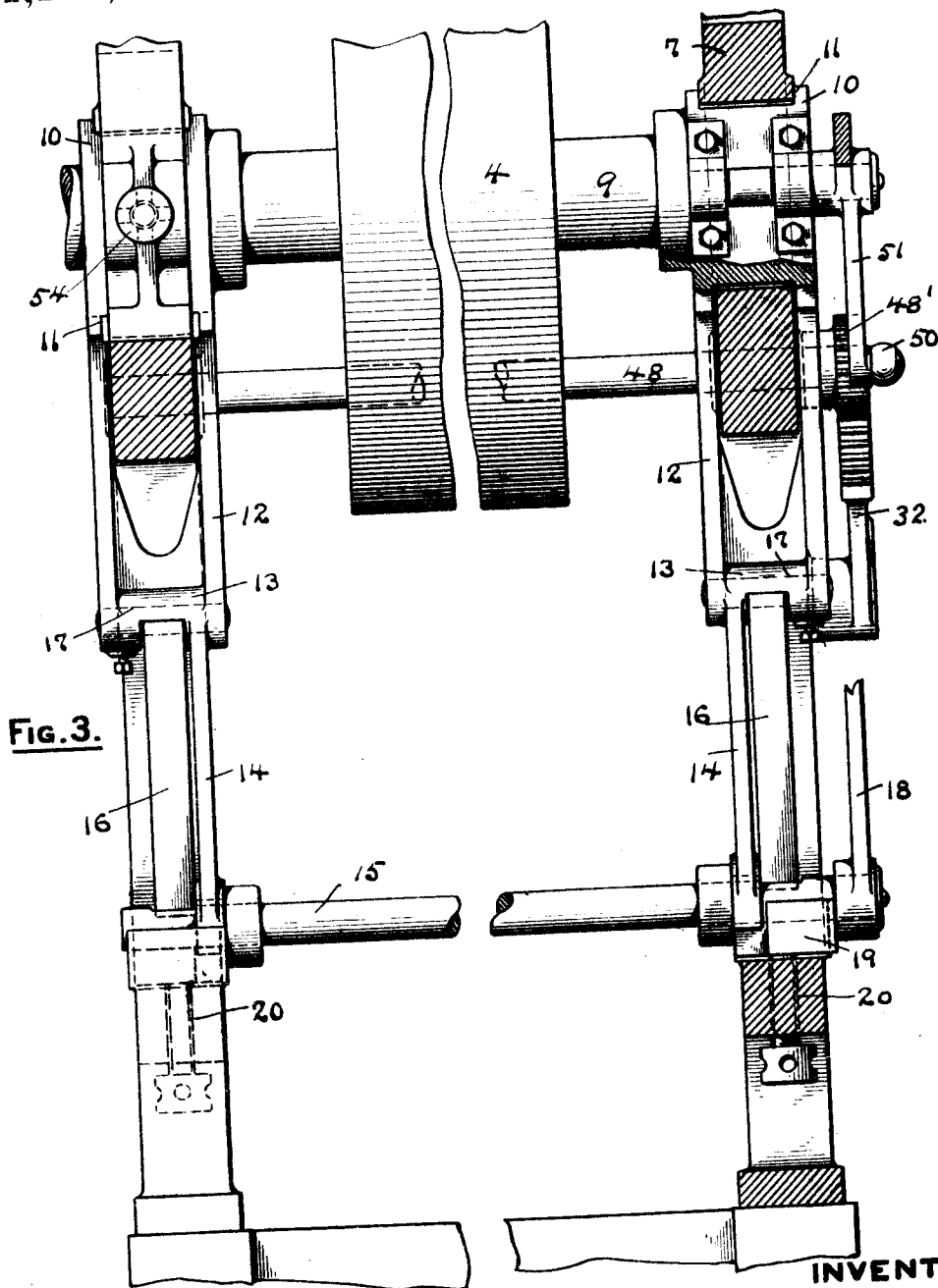


Fig. 3.

WITNESSES.

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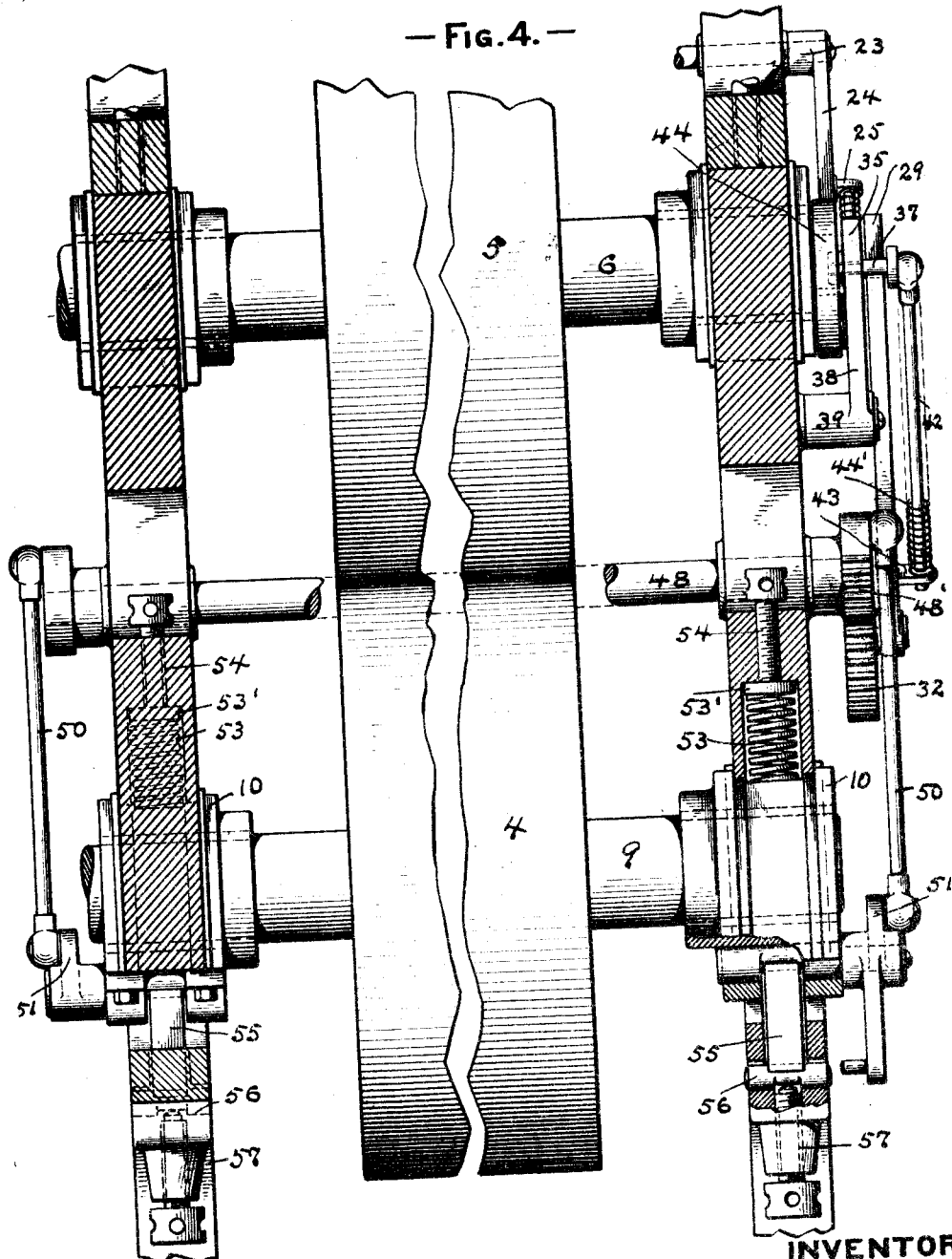
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— FIG. 4. —



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UNITED STATES PATENT OFFICE.

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TRIPPING MECHANISM FOR OFFSET-MACHINES.

1,193,045.

Specification of Letters Patent.

Patented Aug. 1, 1916.

Application filed December 30, 1912. Serial No. 739,224.

To all whom it may concern:

Be it known that I, IRVING F. NILES, a citizen of the United States, residing at Plainfield, county of Union and State of New Jersey, have invented certain new and useful Improvements in Tripping Mechanism for Offset-Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to improvements in printing machines and has been designed for use particularly in that class of machines known as transfer or offset machines. In this type of machine, the impression to be printed is taken from a form member onto a transfer member and printed between the transfer member and an impression member. It is desirable in this type of printing machine that these members during the printing operation be in continuous printing relation. For various reasons, however, as in inking up, a missed sheet or a broken web, it becomes necessary to break the printing relation between the form and transfer members, or the transfer member and impression member, or the relation between all three members. It has been proposed to eccentrically mount the impression member and trip or throw that member out of printing relation with the transfer member. It has further been proposed to eccentrically mount the transfer member and trip it out of printing relation with the impression member. Certain disadvantages are present in such constructions. If the impression member is tripped the first sheet fed to the press is always out of register. If the eccentrically mounted transfer member is tripped, it is necessary that it be either in or out of printing relation with both the form and impression cylinders, with the result that during inking up there is back printing on the impression cylinder, which to be avoided necessitates a considerable waste of paper.

It is the especial object of the present invention to provide a transfer or offset press in which the form and impression cylinders may be stationarily mounted and in which the transfer cylinder is mounted so that it can be operated by independent sliding movements, as distinguished from eccentric movements and in different directions, whereby the transfer cylinder may be

tripped into contact with the form cylinder and thereafter with the impression cylinder, the three cylinders then continuing in printing relation; or may be tripped from printing relation with the impression cylinder and remain in such relation with the form cylinder; or tripped from contact with the form cylinder and remain in printing relation with the impression cylinder, the transfer and impression cylinders then continuing in printing relation during the printing operation.

It is a further object of the invention to provide an improved construction for tripping the transfer member to the various positions it is to assume.

These objects are effected by novel constructions, a detailed description of which will now be given in connection with the accompanying drawings, in which—

Figure 1 is a side elevation of a transfer press embodying the invention, the parts being shown in printing relation, and just prior to tripping the transfer cylinder off impression; Fig. 2 is a view similar to Fig. 1, showing the parts in the position they assume when the transfer cylinder is out of printing relation with the impression cylinder, but in contact with the form cylinder, and just prior to tripping on impression; Fig. 3 is a section taken on line 3—3 of Fig. 2, and Fig. 4 is a plan view partly in section taken on line 4—4 of Fig. 2.

Referring now to these drawings, the machine which has been taken to illustrate the invention is a rotary machine, the printing members of which are cylinders. In this machine 1 is the form or plate cylinder with which cooperate the usual inking rolls 2 and dampening or water rolls 3; 4 is the transfer cylinder located between the form and impression cylinder, and carrying the usual blanket (not shown), and 5 is the impression cylinder. In accordance with the invention, the impression cylinder is stationarily mounted on a shaft 6 suitably journaled in the frame 7 of the machine. The form cylinder 1 in the machine illustrated is likewise stationarily mounted on a shaft 8, suitably journaled in the frame of the machine. These cylinders are intergearing and are driven from a suitable source of power as is well understood, the gearing not being shown, as it is unnecessary for an understanding of the invention.

In machines embodying the invention, the transfer cylinder will be mounted so that it can be given two independent and successive sliding movements, and thus thrown into printing relation with the form cylinder for inking up, and then, when suitably inked, thrown into printing relation with the impression cylinder, the three cylinders then continuing in printing relation. Furthermore, and in the best constructions, the transfer cylinder will be so mounted as to have a certain vertical and sidewise adjusting movement, whereby its printing contact with the form and impression cylinder may be varied. This construction is important in that it allows the impression cylinder to be stationarily mounted, so that no adjustment of it is necessary, and so that the grippers when once set can be held in set position. Furthermore, in the best constructions, the transfer cylinder is mounted in substantially vertical alinement with the form cylinder, and in substantially horizontal alinement with the impression cylinder. In the construction illustrated, the transfer cylinder is mounted on a shaft 9 which is journaled in a pair of floating boxes 10. These boxes are supported so that they have a sufficient vertical and horizontal movement to allow the transfer cylinder to be thrown out of printing relation with both the form and impression cylinders, this movement being a sliding movement. The construction and means for supporting these boxes may be varied. As illustrated, the boxes 10 are flanged, as at 11, on three sides, these flanges fitting on the frame 7 as shown in Fig. 3. The boxes 10 are supported so as to have a vertical movement to bring them into and out of printing relation with the form cylinder by a yoke 12 fitting around the frame and taking over the lower edges of the flanges 11, as shown in Fig. 2. The lower end of this yoke is provided with a boss 13 from which project forked arms 14 which fit about a shaft 15 suitably journaled in the frame of the machine, these forked arms 14 acting as guides and tending to keep the parts in alinement. The underside of the boss 13 is cut away and has fitted therein one end of a link 16 which takes about a pin 17 passing through the boss, the other end of the link 16 taking into a groove cut in the shaft 15. The shaft 15 is provided at one end with an operating handle 18. This construction forms, in effect, a toggle, and by rotating the shaft 15 through handle 18, the toggle is made or broken and the journals of boxes raised or lowered, resting preferably, when in lowered position, on the frame. In the best constructions the journals of shaft 15 are mounted to be adjustable vertically, whereby the contact between the transfer cylinder and the form cylinder may be varied as desired. In the construction illus-

trated, the boxes 19, in which the shaft 15 is journaled, abut against the adjusting screws 20 passing through the frame of the machine by which the boxes may be raised and lowered.

With the construction so far described, it will be seen that the transfer cylinder may be manually operated to be brought into printing relation with the form cylinder for inking up. The transfer cylinder is at this time, however, out of printing relation with the impression cylinder. When the printing operation is to take place, the transfer cylinder is given a second movement to throw it into printing relation with the impression cylinder. In the best constructions, this movement is automatically effected by the operation of the machine, being preferably accomplished by the feeding of the first sheet to the press, through a suitable sheet detector. Any suitable sheet detector mechanism may be employed for this purpose, a convenient one being that shown in my co-pending application Serial No. 685,246, filed March 21, 1912, to which reference should be made for a full description. This mechanism may, however, be briefly described as follows: As shown in this application, there is provided a circular fixed cam located at one end of the impression cylinder 5 and having a depression 76. This cam is engaged by a cam roll 77 on an arm 78 fast on a rock shaft 79 journaled in the impression cylinder 5. This rock shaft 79 has one or more arms 80 on which are carried spring pressed detector fingers or plungers 81. Fulcrumed to the machine at 82 is a power arm 83 which is continuously oscillated by a cam 84 on the shaft 6 of the impression cylinder, the cam bearing against a roll 85 on the arm 83. At the end 85' of the power arm is fulcrumed a lever 86 which is attached at its outer end to a rod 21 through which, as hereinafter described, the transfer cylinder is tripped and untripped. Upon the frame at 87 is fulcrumed a spring pressed pawl 88 having a tail 89 located adjacent the cam depression 76, before referred to, and adapted to be actuated by the cam roll 77. When no sheet is being fed, the plungers 81 are projected into the sheet path and, through the connections described, cause the cam roll to engage with the tail 89 of the spring pressed pawl 88 and cause the pawl to engage with the end of the lever 86, before referred to, and thus actuate the rod 21, through connections hereinafter described, to trip the transfer cylinder off impression. With the mechanism just described, when a sheet is fed in the rod 21 is released and drops, allowing the pawl 29 to drop and the pawl 35 follows and assumes the position where on the next rotation of the cam 44 the shoulder 36 of the pawl 35 engages with the pin 37 and, through the connections be-

fore described, moves the transfer cylinder on impression, as hereinafter described.

The construction of the tripping mechanism may be somewhat varied. In the best constructions, and as illustrated, where the impression member is a cylinder, the tripping mechanism will be operated from such cylinder. Referring to Fig. 2, there is provided a rod 21 operated by the detector mechanism. The rod 21 is secured at one end to the arm 22 of a lever fulcrumed at 23 on a pin in the frame of the machine. The long arm 24 of the lever carries at its free end an eye 25, through which passes a rod 26 around which is arranged a spring 27 abutting against the eye and an adjustable collar 28 on the rod. This rod is secured to a pawl 29 pivoted at 30 to one arm 31 of a sector lever 32 pivoted on a stud 33 in the frame of the machine. Pivoted on the other arm of the sector at 34 is secured a second pawl 35. These pawls 29 and 35 have near their outer ends shoulders 36 against which is adapted to abut a pin 37 carried on the end of a cam lever 38 pivoted on a stud 39 in the frame of the machine. This cam lever carries a cam roll 40 which bears against a cam 44 carried on the shaft 6 of the impression cylinder. The pin 37 is extended beyond the pawls (see Fig. 4) and has fast thereon one end of a rod 42, which passes through an eye 43 on the stud 33 before referred to. A spring 44' is arranged about this rod, taking against the eye 43 and an adjustable collar 45 on the rod. The pawls 29 and 35 are kept apart, so that the pin 37 can pass between them, by means of a projection 46 on the lower pawl. The pawls operate the sector to trip the cylinder 4, through suitable connections hereinafter described. In the construction illustrated, the lower pawl 29 acts to trip the cylinder off impression and the upper pawl 35 acts to trip on impression, being actuated by the connections leading to the sheet detector mechanism, a sheet fed in the machine causing the parts to throw on, and a missed sheet to throw off. The springs 27, 44' assist the pawls in taking these various operative positions.

The means actuated by the movement of the sector to trip the cylinder may be varied. These means will, in the best constructions, include a shaft 48 extending across the machine, suitably journaled in the frame thereof, and connections from the shaft to the cylinder on each side of the machine. As these connections are duplicates, a description of them on one side of the machine only will be given. In the preferred construction, the shaft 48 has secured thereto a pinion 48' with which the sector 32 meshes. This pinion carries a crank pin 49 to which is secured a link 50 which is fast on one arm 51 of a bell crank lever keyed to an eccentric pin 52 which bears against the journal box

10. Coöperating with eccentric pin 52 is a link 55, one end of which fits around pin 52 and at the other bears against a pin 56 suitably mounted in a slot in the frame. This construction in effect forms a toggle, 70 which when moved by rocking lever arms 51 to the position shown in Fig. 1 trips the cylinder on impression and holds it in printing relation with the impression cylinder. In the best constructions, the toggle is made 75 and the cylinder tripped against the compression of a spring 53, (see Fig. 4) set in a slot in the frame and bearing against the journal box 10, and a plate 53', this plate being adjusted and the compression of the spring adjusted by a screw 54. The spring 53 acts, when the toggle is broken, to throw the transfer cylinder out of printing relation with the impression cylinder.

In the best constructions, means will be 85 provided for adjusting the transfer cylinder sidewise toward the impression cylinder to vary the printing contact. As illustrated an adjusting screw 57 is provided which bears against pin 56, which may thus be adjusted 90 in its slot, and the printing contact of cylinder 4 varied.

It will be understood that the invention has been shown and described in what is considered its best form. Changes and 95 variations may be made, however, in the specific construction shown and described, without departing from the invention, and it is not, therefore to be restricted to such specific construction.

What is claimed is:—

1. In a printing machine, the combination with a printing couple including a form member and stationary impression member, of a transfer member, a shaft therefor, a 105 pair of floating journal boxes in which the shaft is mounted, means for operating the boxes to bring the transfer cylinder into printing relation with the form member, and means for thereafter operating the boxes 110 for bringing the transfer member into printing relation with the impression member, the three members then continuing in printing relation.

2. In a printing machine, the combination 115 with a form cylinder and an impression cylinder, of a transfer cylinder mounted in vertical alinement with the form cylinder and in horizontal alinement with the impression cylinder, and means for moving the transfer cylinder in straight lines into printing relation with the form cylinder and then 120 into printing relation with the impression cylinder, the cylinders then continuing in printing relation.

3. In a printing machine, the combination 125 with a form cylinder and a stationary impression cylinder, of a transfer cylinder mounted in vertical alinement with the form cylinder, and means for giving a straight 130

line vertical movement to the transfer cylinder to bring it into and out of printing relation with the form cylinder while permitting it to be in printing relation with the impression cylinder.

4. In a printing machine, the combination with stationary form and impression cylinders, of a transfer cylinder, a shaft therefor, floating journal boxes in which the shaft is supported, means for giving the boxes a sliding movement to bring the transfer cylinder into printing relation with the form cylinder, and means operated by the material fed for automatically giving the transfer cylinder a second sliding movement to bring it in printing relation with the impression cylinder.

5. In a printing machine, the combination with stationary form and impression cylinders, of a transfer cylinder mounted in substantially vertical alinement with the form cylinder, a shaft for the transfer cylinder, a pair of floating journal boxes in which the shaft is mounted, a rock shaft, toggles between the rock shaft and the boxes, by making and breaking which the boxes are given a vertical sliding movement, and means for operating the rock shaft.

6. In a printing machine, the combination with stationary form and impression cylinders, of a transfer cylinder, a shaft therefor, a pair of journal boxes for the shaft mounted to be given a sliding movement in two directions, a toggle mechanism for sliding the boxes vertically to bring the transfer cylinder into and out of printing relation with the form cylinder, and a toggle mechanism for sliding the boxes horizontally to bring the transfer cylinder into printing relation with the impression cylinder, and means for operating the toggles.

7. In a printing press, the combination with a form cylinder and a stationary impression cylinder, of a transfer cylinder, a shaft therefor, sliding journal boxes in which the shaft is mounted, means for sliding the boxes to bring the transfer cylinder in printing relation with the form cylinder, means operating to move and hold the transfer cylinder in printing relation with the impression cylinder, and compression springs against which the cylinder is so moved.

8. In a printing machine, the combination with the form cylinder and a stationary impression cylinder, of a transfer cylinder, a shaft therefor, sliding journal boxes in

which the shaft is mounted, a pair of tripping pawls, a sector operated by the pawls, connections from the sector whereby the boxes are moved to bring the transfer cylinder in printing relation with the impression cylinder, said connections including a toggle, and compression springs acting when the toggle is broken to throw the transfer cylinder out of printing relation with the printing cylinder.

9. In a printing machine, the combination with a form cylinder and a stationary impression cylinder, of a transfer cylinder, a shaft therefor, a pair of floating journal boxes in which the shaft is mounted arranged to have a sliding movement vertically and horizontally, a toggle for moving the boxes vertically, a second toggle for moving the boxes horizontally, and means for adjusting the throw of each of the toggles.

10. In a printing press, the combination with a form cylinder and an impression cylinder, of a transfer cylinder and means for giving the transfer cylinder two independent straight line movements, to first bring the cylinder into printing relation with the form cylinder, and thereafter with the impression cylinder, these three cylinders then continuing in printing relation.

11. In a printing machine, the combination with a form cylinder and impression cylinder, of a transfer cylinder, a shaft therefor, sliding journal boxes in which the shaft is mounted, a pair of tripping pawls, a sector operated by the pawls, toggles for sliding the boxes operated by the sector, and means for adjusting the throw of the toggles.

12. In a printing machine, the combination with a form cylinder and an impression cylinder, of a transfer cylinder, means for giving the transfer cylinder a straight line movement to bring it into printing relation with the form cylinder, and means operated by the material fed for automatically giving the transfer cylinder a second straight line movement to bring it into printing relation with the impression cylinder.

In testimony whereof, I have hereunto set my hand, in the presence of two subscribing witnesses.

IRVING F. NILES.

Witnesses:

RICHARD KELLY,
J. M. W. JORDAN