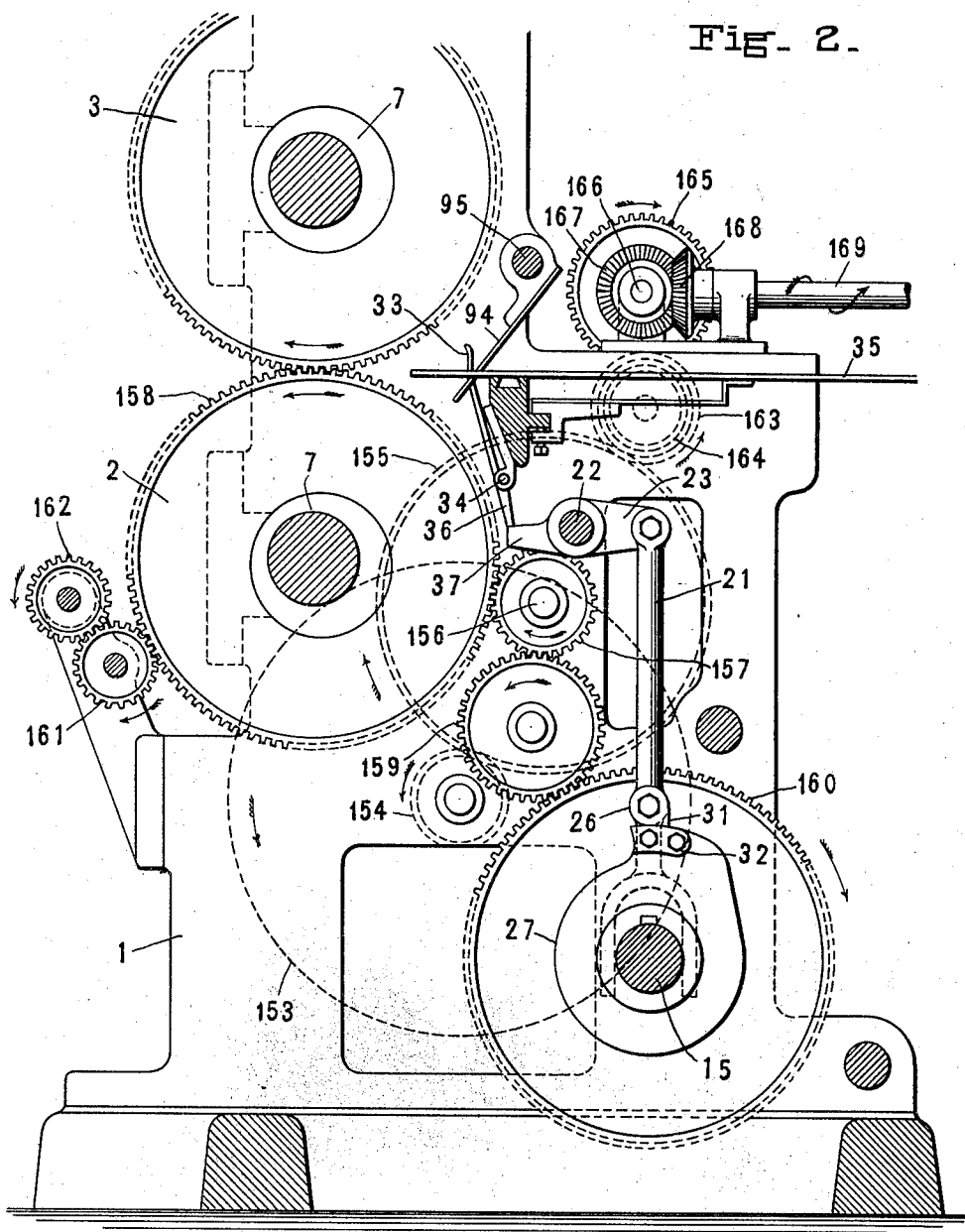


I. A. HUNTING.
 PRINTING OR OTHER MACHINE.
 APPLICATION FILED APR. 18, 1908.

998,340.

Patented July 18, 1911.

4 SHEETS—SHEET 2.



WITNESSES

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INVENTOR

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4 SHEETS-SHEET 3.

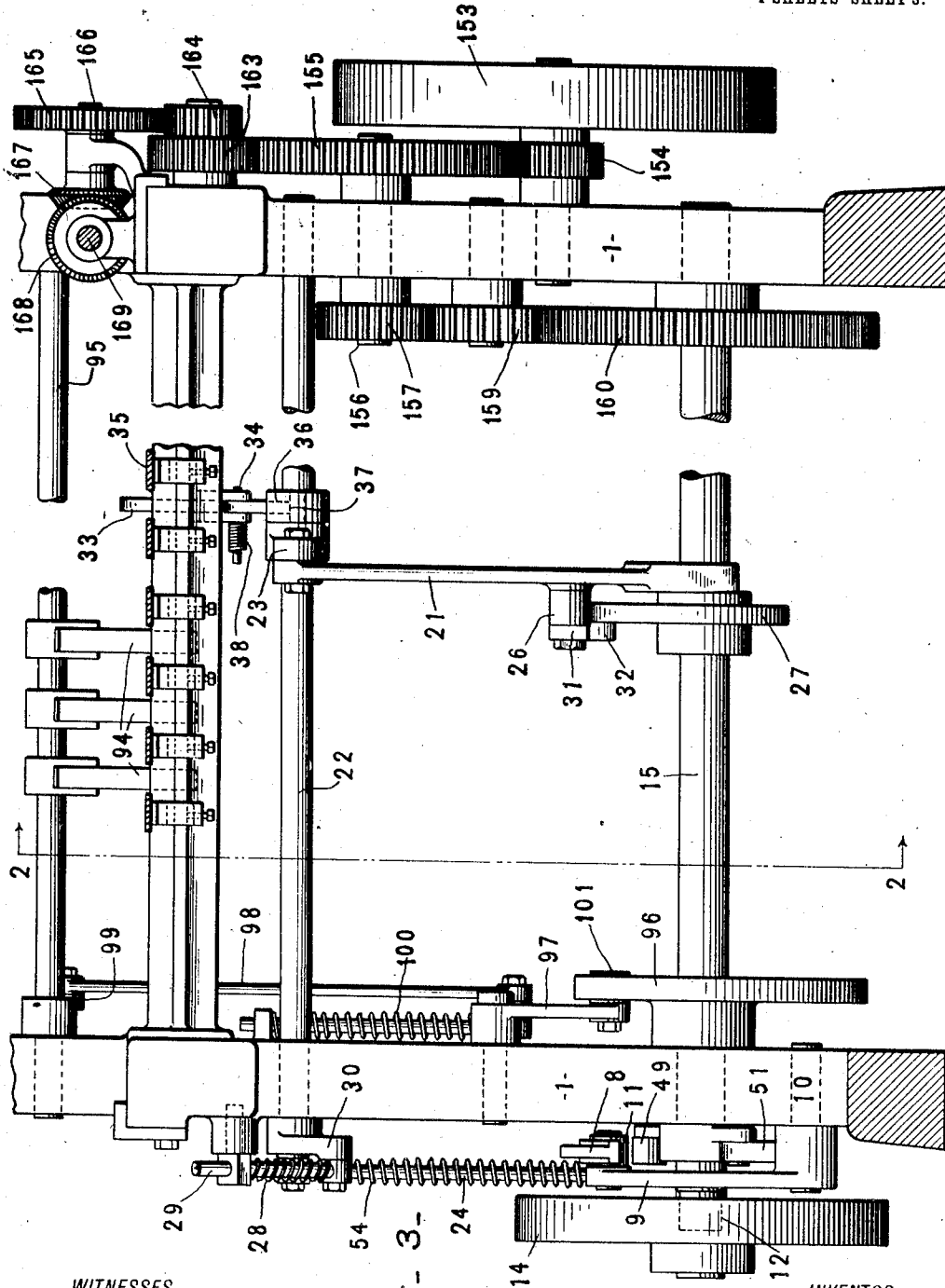


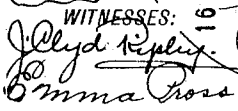
FIG-3-

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4 SHEETS SHEET 4.



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UNITED STATES PATENT OFFICE.

IRVING A. HUNTING, OF PLAINFIELD, NEW JERSEY, ASSIGNOR TO THE POTTER
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NEW JERSEY.

PRINTING OR OTHER MACHINE.

998,340.

Specification of Letters Patent.

Patented July 18, 1911.

Application filed April 18, 1908. Serial No. 427,852.

To all whom it may concern:

Be it known that I, IRVING A. HUNTING, a citizen of the United States, and a resident of Plainfield, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Printing or other Machines, of which the following is a specification.

The present invention relates generally to printing machines, more particularly to tripping mechanism, and consists of the following improvements.

It is common, in printing machines, to employ a tripping device for tripping the impression when a sheet is missed in feeding, or when for any other reason it is desired to separate the printing members. These tripping means, however, generally have to be actuated by the operator, and, if he fails to act, the impression cylinder will receive the imprint, which in turn will offset on the reverse side of the next sheet or sheets. In order to obviate the necessity of depending on the operator, means are provided for automatically tripping and untripping the impression once to each cycle of the machine normally operative, the said automatic tripping means being rendered inoperative by the advance of a sheet. In the present instance where the cylinders make one revolution to each impression, the automatic means will act once to each revolution of the cylinders or other members. This automatic means may act to trip the impression cylinder or the member co-acting therewith, but in the present instance it is preferred to trip the impression cylinder.

Any suitable means may be used in carrying out this invention, but in the preferred form herein disclosed, the impression cylinder is under the control of a connection, causing it to be tripped and untripped, means are provided for automatically operating said connection, and a disconnecting or interrupting means for moving said connection out of engagement with its operating means is employed. Controlling this disconnecting means is a latch which normally prevents the disconnecting means from operating, said latch acting to release the disconnecting means when a sheet passes over the latch. This latch can conveniently be located so as to protrude into a sheet path in front of the printing couple.

When a construction of printing couple involving three cylinders is used it is advantageous to be able to trip the transfer cylinder by hand, so as to allow the plate cylinder to be inked up before printing commences, or when for any reason it is desirable to gain access to the parts either when the machine is at rest or in motion. For this purpose there is provided suitable means for tripping the transfer cylinder at will. It will be understood, however, that the transfer cylinder must not be tripped unless the impression cylinder is disconnected from its automatic tripping and untripping means, for otherwise the impression cylinder when untripped will be jammed against the transfer cylinder and be unable to complete its movement. In the construction shown, the transfer cylinder cannot be tripped unless the impression cylinder is tripped also. For these reasons the means which serve to trip the transfer cylinder act also to disconnect the impression cylinder from its automatic tripping and untripping means, and further to trip the said impression cylinder in unison with the transfer cylinder, unless the impression cylinder is in its tripped position when disconnected from its automatic tripping means. Hence, the operator cannot do any damage to the machine by reason of carelessness since the parts are so interconnected that the transfer cylinder cannot be tripped without first disconnecting the impression cylinder from its automatic tripping means. Conversely the automatic means cannot be connected up to the impression cylinder until the transfer cylinder is untripped. The means for thus disconnecting the impression cylinder from its automatic tripping means are capable of acting whatever the position of the latch and the parts connected thereto.

The hand operative device which serves to trip the transfer cylinder may be of any suitable construction for carrying out the invention as set forth above, but preferably, and as herein disclosed, the movable bearings of the cylinder are provided with a connecting means which is normally disconnected from a hand lever. A locking device is provided which locks the said lever to the connection from the movable bearings when the lever is moved in a certain direction and a certain distance, the further movement of

the lever causing the cylinder to be tripped. Means are further provided for releasing the locking device. Means are also provided for locking the impression cylinder to the hand lever, capable of being connected up only when the automatic tripping means are disconnected from the impression cylinder, and vice versa. By means of suitable connections this hand lever acts also to lift the gab hook or other connection between the automatic tripping means and impression cylinder. The cylinders may be mounted in movable bearings of any suitable construction, but preferably, and as shown, eccentric bushings are employed for this purpose.

Other features of construction, combination of parts, and arrangement of elements will appear as the specification proceeds.

In the accompanying drawings the invention is embodied in a concrete and preferred form, but variations may be made from the structure shown without departing from the legitimate and intended scope of the invention.

In the said drawings: Figure 1 is a general side elevation of a machine embodying the invention. Fig. 2 is a longitudinal sectional view on the line 2—2 of Fig. 3. Fig. 3 is an end view, partly in section, looking in the direction of the arrow 3, Fig. 1. Figs. 4 and 5 are views of substantially the same parts as those shown in Fig. 1 illustrating the members in their various positions.

Similar characters of reference indicate corresponding parts in the several views.

1 indicates the main framework for properly supporting the parts comprising the machine. The printing couple is here represented as consisting of three cylinders making one revolution to each impression and composed of the first or impression cylinder 2, the second or transfer cylinder 3, having the rubber blanket 4, and the plate cylinder 5. The plate cylinder is mounted in fixed bearings (not shown) while the transfer and impression cylinders are journaled in movable bearings here shown as eccentric bushings 7. Suitable means are provided for automatically tripping and untripping the impression cylinder once to each revolution consisting, in the present instance, of a suitable connection such as the gab hook 8, adapted to be reciprocated by means of the rocking lever 9, pivoted at 10 and provided with a roller 11 with which the gab hook engages. The rocking lever carries a second roller 12 engaging with a groove 13 in the cam 14 mounted on the cam shaft 15. This cam shaft makes one revolution to each impression. The eccentric bushings of the impression cylinder are provided with short arms 16 connected to the rock shaft 17 by means of the rod 18 and arms 19. The gab hook 8 is connected

to the rock shaft 17 by means of the lever 20. Suitable disconnecting means are provided for lifting the connection or gab hook 8 out of engagement with the roller 11, consisting in this instance of a rod 21 mounted fast on the rock shaft 22 by means of arm 23. This rock shaft 22 is connected to the gab hook 8 by means of the rod 24 and arm 25. The rod 21 carries a roll 26 adapted to engage with the cam 27 on the shaft 15 which when the roll drops off the high point of the cam, rocks the shaft 22 and lifts the gab hook 8 out of engagement with the roller 11. The revolution of the cam 27 will cause the rock shaft 22 to return to its original position. The spring 28, mounted on the rod 29 connected to the arm 30 of the rock shaft 22, resists this return movement and causes the roll 26 to descend when the high point of the cam passes. The roll 26 is provided with a shoe 31 and the cam 27 has a lateral extension 32 at its high point whereby the drop of the roller 26 is sudden when it passes beyond the high point of the cam.

33 indicates a latch pivoted at 34 and adapted to protrude into the sheet path 35 in front of the printing couple and to bear with its other end 36 against a stop 37 on the rock shaft 22 thereby preventing the rod 21 from dropping after the roller 26 passes the high point of the cam 27. The operation of this part of the machine is as follows: The impression cylinder is tripped and untripped automatically once to each revolution by the gab hook 8, the disconnecting means for the said gab hook being prevented from acting by reason of the latch 33. When, however, a sheet passes over the sheet path 35, the latch is depressed thereby releasing the disconnecting means and allowing the roll 26 to drop thus causing the rock-shaft 22 to turn, whereby the gab hook 8 is lifted out of engagement with the roller 11 and the cylinders are maintained in contact. A coiled spring 38 serves to restore the latch to its original position.

39 indicates a connection from the eccentric bushings 7 of the transfer cylinder mounted fast on the shaft 40 by means of the arm 41 having the stud 42. Mounted loosely on the shaft 40 is a hand operated lever 43 provided with a locking device consisting of the pivoted member 44 having the slot 45 provided with a notch 46 at one end. The stud 42 is adapted to engage in this slot, and when the lever 43 is moved to the position shown in Fig. 4 the spring 47 will pull the pivoted member upward thereby causing the stud 42 to occupy the notched portion 46 of the slot 45. By this means the lever 43 and connection 39 are locked together so that the further movement of the lever 43 into the position shown in Fig. 5 will cause the transfer cylinder to be moved

into its tripped position. It may be stated here that the spring 47 is not a necessary element since the parts would be locked together by the stud 42 coming in contact with the end of the slot 45. The return movement of the lever 43 will cause the transfer cylinder to be moved back again into its untripped position and by simultaneously pressing the thumb lever 48 the locking device will be released since the member 44 will then swing around its pivot on the lever 43 against the pressure of the spring 47 thereby moving the stud 42 out of the notched portion 46 of the slot 45. Mounted loosely on the shaft 15 is a dog 49 adapted to lift the gab hook 8 when moved in an upward direction. This dog 49 is connected to the bell crank 50 by means of the link 51 and is operated by means of the cam 52 engaging with the roll 53 on the bell crank 50. The cam 52 is connected at all times to the handle 43 so that as the said handle is moved into the position shown in Fig. 4, the dog 49 will disconnect the impression cylinder from its automatic tripping means by lifting the gab hook 8 out of engagement with the roller 11. This upward motion of the gab hook is made possible by reason of the spring 54 on the rod 24 and can be effected whatever the position of the latch 33. A further movement of the lever 43 will maintain the gab hook 8 in its raised position since the roller 53 travels over the surface 55 of the cam 52, which surface is concentric to the shaft 40. By this means the transfer cylinder cannot be tripped without disconnecting the impression cylinder from its automatic tripping means, nor can the automatic tripping means be connected up to the impression cylinder unless the transfer cylinder has been moved into its untripped position.

It is apparent that the transfer cylinder cannot be moved into its tripped position unless the impression cylinder is tripped simultaneously therewith, or unless the said impression cylinder is in its tripped position when disengaged from its automatic tripping means. For this reason there is provided means which will trip the impression cylinder in unison with the transfer cylinder, unless previously tripped, when the handle 43 is operated. These means as here shown take the form of a link 56 adapted to engage with a stud 57 mounted on the arm 19. This link is pivoted loosely on the handle 43 by means of the pivot 58 and normally rests on top of the stud 57. As will be noticed, this link does not strictly speaking, connect the handle 43 and the impression cylinder since it serves only to move the said cylinder in one direction. There may be provided, however, a second link 59 having a slot 60 which can be used in addition to the link 56 so as to enable the impression

cylinder to be moved back and forth in both directions by means of the handle 43. This link 59 may be mounted on the same pivot 58 but is normally held out of contact with the stud 57 by means of the set screws 61 adapted to fasten the link 59 in either position with reference to the link 56 by reason of the slot 62. It is apparent, however, that the automatic tripping means for the impression cylinder can never regain control of the said cylinder unless the link 59 is disengaged from the stud 57. In the rear of the impression cylinder is located a conveyor 89 which serves to receive the sheet after it has passed through between the cylinders.

In front of the impression cylinder are located a plurality of fingers 94 mounted on the shaft 95 and adapted to be raised by means of the cam 96 operating the bell crank 97, which latter is connected to the said fingers by means of the rod 98 and arm 99. A spring 100 serves to keep the cam roll 101 carried by the bell crank 97 in contact with the cam 96. These fingers 94 are raised by the said cam 96 to allow the sheet to pass to the cylinders and serve to prevent the sheet from buckling upward.

Any suitable gearing may be employed to transmit motion to the various parts. In the present instance, the gearing is as follows: From the driving pulley 153 the motion is transmitted through the pinion 154 to the intermediate gear 155 on the stud 156. The stud 156 also carries the pinion 157 engaging with the gear 158 on the impression cylinder, and with the gear 159 from which latter motion is transmitted to the gear 160 on the cam shaft 15. From the impression cylinder the other cylinders of the printing couple are driven in the usual way. Gear 158 also imparts motion to the conveyor 89 by means of the pinions 161 and 162. The gear 155 also meshes with the pinion 163 which in turn drives the pinion 164 in mesh with the gear 165 on the stud 166. The stud 166 carries the bevel gear 167 meshing with the bevel gear 168 on the longitudinal shaft 169 extending to other parts of the machine.

What is claimed is:—

1. The combination with a plurality of one revolution cylinders, constituting a printing couple, and a sheet path located in front of said cylinders, of means for automatically tripping and untripping the impression once to each revolution of the cylinders, and means extending into the sheet path aforesaid moved and actuated by the advance of a sheet for interrupting the operation of the said automatic tripping means to maintain the members in contact.

2. The combination with the members of a printing couple, of a connection for tripping and untripping one of said members

with relation to the other, means for automatically operating said connection, disconnecting means for moving said connection out of engagement with its operating means, and a latch, normally preventing the disconnecting means from operating, but actuated by the advance of a sheet to release the disconnecting means so as to allow the latter to move the connection out of engagement with its actuating means.

3. The combination with a plurality of one revolution cylinders, constituting a printing couple, and a sheet path located in front of said cylinders, of automatic means for tripping and untripping the cylinders once to each revolution, normally inoperative interrupting means for said automatic means, and means extending into the sheet path aforesaid moved and actuated by the advance of a sheet, for rendering the interrupting means operative to permit printing contact of the cylinders.

4. The combination with the members of a printing couple, of a connection for tripping and untripping one of the said members with relation to the other, a rocking lever for moving said connection back and forth, a cam for operating said rocking lever, a cam, and disconnecting means operated thereby, for lifting the connection out of engagement with the rocking lever, and a latch, normally preventing the disconnecting means from being operated, but actuated by the advance of a sheet to permit the disconnecting means to be actuated by its cam to move the connection out of engagement with the rocking lever.

5. The combination with a plurality of cylinders constituting a printing couple, of means for automatically tripping and untripping one of the said cylinders, and means, which when actuated, serves progressively to disconnect the said cylinder from its tripping means and to trip another cylinder.

6. The combination with a plurality of cylinders constituting a printing couple, of means for automatically tripping and untripping one of the said cylinders, means for tripping another of said cylinders normally inoperative, and an actuating device which, when operated, acts progressively to disconnect the first cylinder from its automatic tripping means, to lock itself to the tripping means of the said second cylinder, and to trip the said second cylinder.

7. The combination with a plurality of cylinders constituting a printing couple, means for automatically tripping and untripping one of said cylinders, means for tripping another of said cylinders normally inoperative, an actuating device which, when operated, acts progressively to disconnect the first cylinder from its automatic tripping means, to lock itself to the tripping

means of the second cylinder, and to trip the said second cylinder, and a connection from said actuating device to the first cylinder, for tripping the latter in unison with the second cylinder, adapted to operate only when the said first cylinder is left untripped when disconnected from its automatic tripping means.

8. The combination of a plurality of cylinders constituting a printing couple, means for automatically tripping and untripping one of said cylinders, and means for tripping another of said cylinders capable of acting only when the first cylinder is disconnected from its automatic tripping means.

9. The combination of three cylinders constituting a printing couple, means for automatically tripping and untripping the first of said cylinders away from and toward the second cylinder, and means for tripping the first and second cylinders away from the third cylinder capable of acting only when the first cylinder is disconnected from its automatic tripping means.

10. The combination of three cylinders, constituting a printing couple, means for automatically tripping and untripping the first of said cylinders away from and toward the second cylinder, and means for tripping the said second cylinder away from the third cylinder capable of acting only when the first cylinder is disconnected from its automatic tripping means.

11. The combination of three cylinders constituting a printing couple, means for automatically tripping and untripping the first of said cylinders away from and toward the second cylinder, and means for tripping the second cylinder alone, or the first and second cylinder in unison, at will, with reference to the third cylinder capable of acting only when the first cylinder is disconnected from its automatic tripping means.

12. The combination of a plurality of cylinders constituting a printing couple, means for tripping one of said cylinders at will, and means for automatically tripping another of said cylinders capable of acting only when the first tripping means is disconnected from its cylinder.

13. The combination of three cylinders constituting a printing couple, means for tripping the first and second of said cylinders away from the third cylinder, and means for automatically tripping and untripping the first of said cylinders away from and toward the second cylinder capable of acting only when the first tripping means is disconnected from the first and second cylinders.

14. The combination of three cylinders constituting a printing couple, means for tripping the second cylinder away from and

toward the third cylinder at will, and means for automatically tripping the first cylinder away from and toward the second cylinder capable of acting only when the first tripping means is disconnected from the second cylinder.

15. The combination of three cylinders constituting a printing couple, means for tripping the second cylinder alone or the first and second cylinders in unison, at will, with reference to the third cylinder, and means for automatically tripping and untripping the first of said cylinders away from or toward the second cylinder capable of acting only when the first tripping means is disconnected from the second cylinder.

16. The combination of a plurality of members constituting a printing couple, two sets of tripping devices, means for automatically operating one of said tripping devices, an actuating device for operating the other of said tripping devices, and means connected to said actuating device controlling the automatic tripping device and adapted to render the latter inoperative when operating the other tripping device and vice versa.

17. The combination of a plurality of members constituting a printing couple, two sets of tripping devices, means for automatically operating one of said tripping devices, an actuating device for operating the other of said tripping devices, means connected to said actuating device controlling the automatic tripping device and adapted to render the latter inoperative when operating the other tripping device and vice versa, and means adapted to be actuated by the advance of a sheet for rendering the automatic tripping means inoperative.

18. The combination of three cylinders constituting a printing couple, means for automatically tripping and untripping the first of said cylinders, and means, which, when actuated, serves progressively to disconnect the first cylinder from its tripping means and to trip the second cylinder.

19. The combination of three cylinders constituting a printing couple, means for automatically tripping and untripping the first of said cylinders, means for tripping the second of said cylinders, normally inoperative, and an actuating device, which, when operated acts progressively to disconnect the first cylinder from its automatic tripping means, to lock itself to the tripping means of the said second cylinder, and to trip the said second cylinder.

20. The combination of three cylinders constituting a printing couple, means for automatically tripping and untripping the first of said cylinders, means for tripping the second of said cylinders, normally inoperative, and an actuating device, which, when operated, acts progressively to discon-

nect the first cylinder from its automatic tripping means, to lock itself to the tripping means of the said second cylinder, and to trip the second cylinder, and a connection from said actuating device to the first cylinder for tripping the latter in unison with the second cylinder, adapted to operate only when the said first cylinder is left untripped when disconnected from its automatic tripping means.

21. The combination with the members of a printing couple, of means for automatically tripping the impression once to each cycle of the machine, means actuated by the advance of a sheet for interrupting the operation of the automatic tripping means to maintain the members in contact, and an interrupting device for interrupting the operation of the automatic tripping means at will.

22. The combination with a plurality of one-revolution cylinders constituting a printing couple, of means for automatically tripping the impression once to each revolution of the cylinders, means, actuated by the advance of a sheet for interrupting the operation of the automatic tripping means to maintain the members in contact, and a hand operated device for interrupting the operation of the automatic tripping means at will.

23. The combination with the members of a printing couple, of a connection for tripping and untripping one of said members with relation to the other, means for automatically operating said connection, disconnecting means for moving said connection out of engagement with its operating means, a latch, normally preventing the disconnecting means from operating, but actuated by the advance of a sheet to release the disconnecting means so as to allow the latter to move the connection out of engagement with its actuating means, and means for moving the connection out of engagement with its actuating means, whatever the position of the latch.

24. The combination of the members of a printing couple, a sheet path located in front of the couple, means for automatically tripping and untripping the impression once to each cycle of the machine, a latch protruding into the sheet path, and adapted to be actuated by the advance of a sheet to interrupt the operation of the automatic tripping means, and means for interrupting the operation of the said automatic tripping means, whatever the position of the latch.

25. The combination of a plurality of cylinders constituting a printing couple, means, normally operative, for automatically tripping and untripping one of said cylinders, means, actuated by the advance of a sheet, for rendering the automatic tripping means inoperative, and means for tripping another

of said cylinders capable of acting only when the first cylinder is disconnected from its automatic tripping means.

26. The combination of a plurality of cylinders constituting a printing couple, means for automatically tripping and untripping one of said cylinders once to each revolution of the cylinders, means, actuated by the advance of a sheet for interrupting the operation of the automatic tripping means to maintain the members in contact, and means for tripping another of said cylinders capable of acting only when the first cylinder is disconnected from its automatic tripping means.

27. The combination of three cylinders constituting a printing couple, means for automatically tripping and untripping the first of said cylinders, means, actuated by the advance of a sheet, for rendering the tripping means inoperative, and means for tripping the first and second cylinders in unison capable of acting only when the first cylinder is disconnected from its automatic tripping means.

28. The combination of three cylinders constituting a printing couple, means for automatically tripping and untripping the first of said cylinders, means, actuated by the advance of a sheet, for rendering the automatic tripping means inoperative, and means for tripping the second cylinder capable of acting only when the first cylinder is disconnected from its automatic tripping means.

29. The combination of three cylinders constituting a printing couple, means for automatically tripping and untripping the first of said cylinders, means, actuated by the advance of a sheet, for rendering the automatic tripping means inoperative, and means for tripping the second cylinder alone, or the first and second cylinders in unison, at will, capable of acting only when the first cylinder is disconnected from its automatic tripping means.

30. The combination of three cylinders constituting a printing couple, means for

tripping the second cylinder alone or the first and second cylinder in unison, at will, with reference to the third cylinder, and means for automatically tripping and untripping the first of said cylinders away from or toward the second cylinder capable of acting only when the first tripping means is disconnected from the first and second cylinders.

31. In a printing machine, two cylinders journaled in movable bearings, means for automatically tripping one of said cylinders, connecting means from the bearings of the other of said cylinders whereby it may be tripped, a locking device, an operating lever which, when moved in one direction a certain distance causes the first cylinder to be disconnected from its automatic tripping means and the locking device to lock the lever and connecting means from the second cylinder together so that the further movement of the lever will trip the said second cylinder, and means for releasing the locking device.

32. In a printing machine, two cylinders journaled in movable bearings, means for automatically tripping and untripping one of said cylinders, connecting means from the bearings of the second cylinder whereby the cylinder may be tripped, a locking device, an operating lever which, when moved in one direction a certain distance causes the first cylinder to become disengaged from its automatic tripping means and the locking device to lock the lever and connecting means from the second cylinder together so that the further movement of the lever will trip the second cylinder, means carried by the lever for tripping the first cylinder in unison with the second cylinder, and means for releasing the locking device.

Signed at Plainfield in the county of Union and State of New Jersey this sixteenth day of April A. D. 1908.

IRVING A. HUNTING.

Witnesses:

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J. HERBERT CASE.