

Aug. 17, 1926.

1,596,728

J. J. HALLIWELL

THROW-OFF MECHANISM

Filed Jan. 5, 1923

2 Sheets-Sheet 1

FIG. 2.

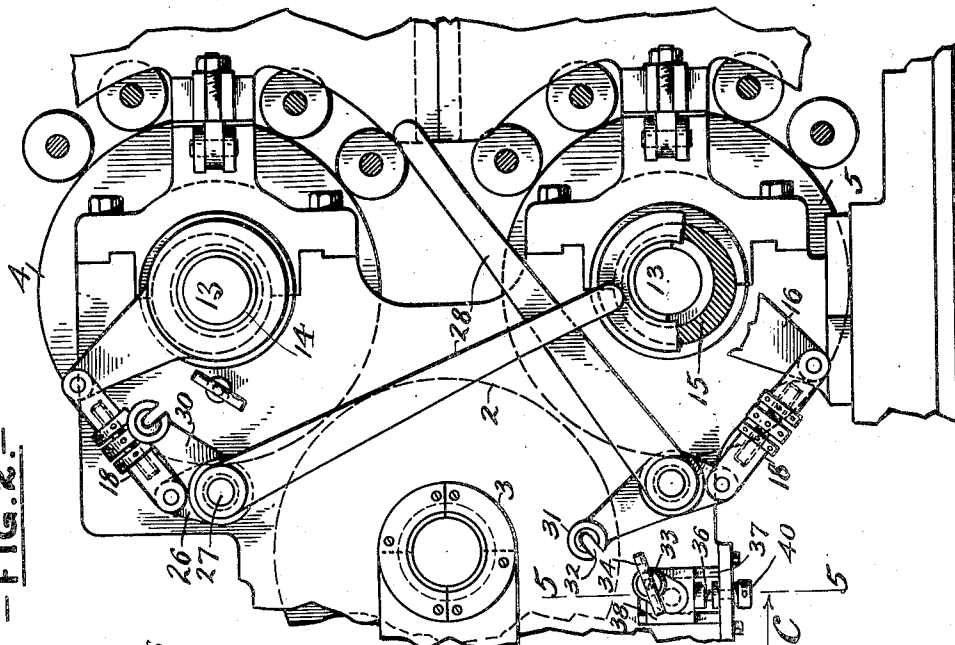
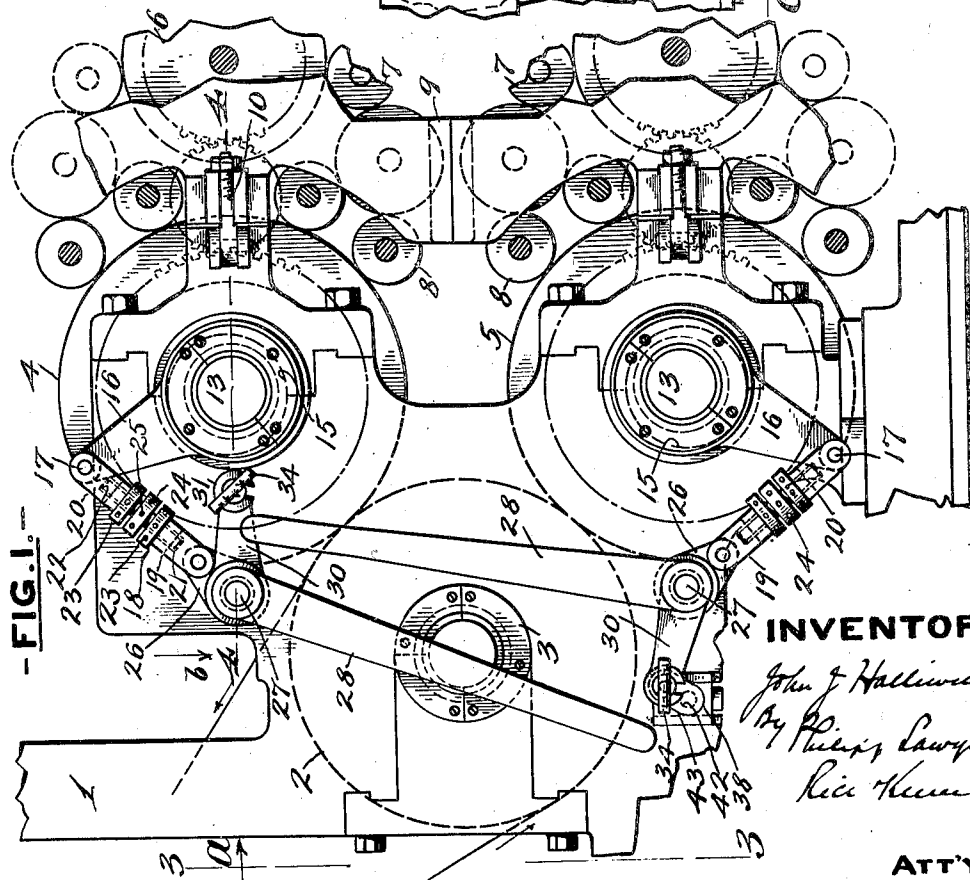


FIG. 1.



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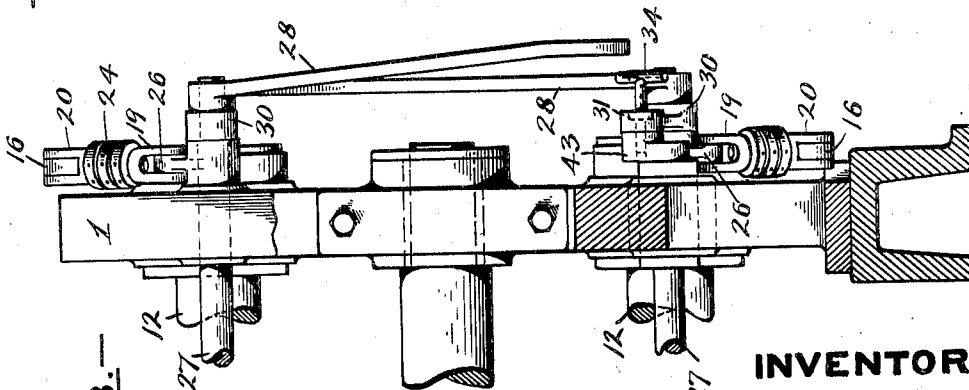
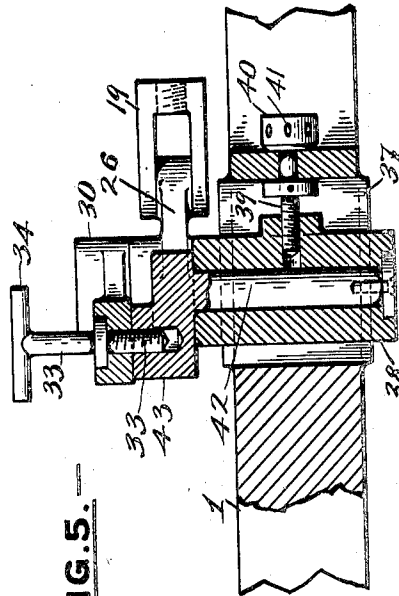
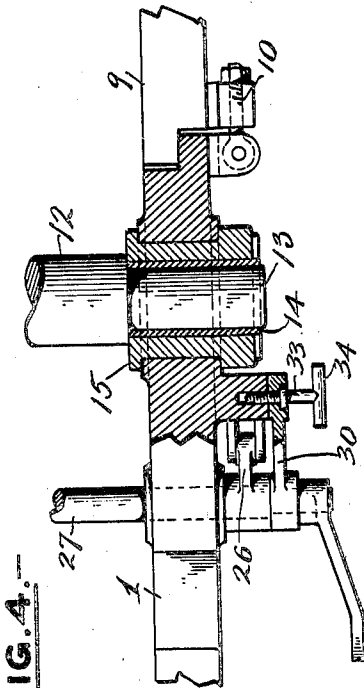
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

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THROW-OFF MECHANISM.

Application filed January 5, 1923. Serial No. 610,805.

This invention relates to certain improvements in throw-off mechanisms for cylinders of printing machines.

It is the especial object of the invention to provide a throw-off mechanism for one of the cylinders of a printing couple by which the cylinder may be tripped or thrown on or off impression and in which a further movement may be given the throw-off mechanism to adjust the impression contact of the cylinders while the cylinders are in impression contact.

It is a further object of the invention to provide an improved toggle for effecting the throw-off to and from impression and for adjusting the impression while the cylinders are in impression contact.

Generally speaking, the improved mechanism includes an eccentric bearing for the cylinder of the printing couple which is to be moved to or away from its cooperating cylinder, this eccentric bearing being actuated to throw on or off impression and then given a further movement to adjust the impression after the cylinders have been brought into printing relation, this movement being effected by a toggle of improved construction which is capable of being given an adjusting movement after it has been operated to throw the cylinders on impression and while it is locked in such position.

With these and other objects not specifically referred to in view the invention consists in certain novel parts, arrangements and combinations which will be described in detail in connection with the accompanying drawings and the novel features thereof pointed out in the claims hereunto annexed.

In these drawings—

Figure 1 is a side view of so much of a printing machine as is necessary for understanding the invention, certain parts being shown in section and certain other parts being broken away, the printing elements being illustrated as on impression.

Figure 2 is a similar view with the part shown in off position;

Figure 3 is an end view partly in section on the line 3—3 of Fig. 1, looking in the direction of arrow *a* of that figure;

Figure 4 is a detail sectional view looking in the direction of arrow *b*, the view being taken on line 4—4 of Fig. 1; and,

Figure 5 is a detail sectional view on an

enlarged scale, the section being taken on line 5—5 of Fig. 2 and looking in the direction of arrow *c* of that figure.

Referring now to these drawings—

The invention has been illustrated in a printing machine in which there are provided two form cylinders and an impression cylinder. In the particular machine chosen to illustrate the invention the form cylinders are tripped away from the impression cylinder. It will be understood, however, that the invention is susceptible of use in other arrangements of printing couples than that here illustrated and that such other use is within the scope of the invention.

In the particular machine illustrated the operative parts of the mechanism are carried in side frames 1 of any usual or desired construction. Mounted in these side frames is an impression cylinder 2 supported in bearings 3 these bearings being stationarily mounted in the frames so that, in the construction illustrated, the impression is stationary. Cooperating with this impression cylinder is a pair of form cylinders 4, 5, and, as shown, these form cylinders are arranged to be tripped or thrown on or off impression relatively to the impression cylinder 2. These form cylinders are supplied with ink from distributors 6, to which ink is supplied in any suitable manner, not illustrated, and the usual train of ink rolls 7, 8. In constructions where the form cylinders are tripped, as in the present instance, the inking mechanism is mounted so that it can be moved toward and away from the form cylinders, and, in the particular construction illustrated, this is effected by the provision of a movable frame 9 in which the distributors and ink rolls are mounted, this frame being racked back from the form cylinders in any usual manner, not illustrated. Tie bolts 10 may be employed if desired for uniting the movable frame 9 with the main frame 1 of the machine.

Throw-off mechanisms embodying the invention will include an eccentric bearing for the form cylinders so that by rocking this bearing the cylinders may be thrown on impression and a further movement may be given to the bearing to adjust the impression after the cylinders have been thrown into printing relation. This construction does away with the floating journal boxes

and the like usually employed in this class of machines and the various mechanisms for adjusting these floating boxes. Thus there is provided a very simple and efficient construction which makes the production of the mechanism exceedingly economical.

In machines constructed in accordance with the invention, therefore, the cylinders 4, 5 will be eccentrically mounted, and, in the particular construction illustrated, the shafts 12 are provided with reduced ends 13 mounted in sleeves 14 in eccentric hubs 15 rotatably mounted in side frames 1 before referred to.

By rocking the hubs 15, therefore, the cylinders are given an eccentric movement to and from the impression cylinder so that they may move to throw the cylinder on and off impression and a further movement will cause an adjustment of the impression.

Machines constructed in accordance with the invention will include a toggle mechanism for moving the cylinders to and from impression and means will be provided whereby this toggle mechanism may be adjusted after the parts are in printing relation so as to adjust the impression as may be necessary or desired. While this toggle mechanism may be varied to some extent, in the construction illustrated, bearing 15 is provided with a rocker arm 16 to which one arm of the toggle is connected at 17. While the mechanism for adjusting the toggle to give an adjusting movement to the arm 16 may be varied, in the particular construction illustrated, the toggle is arranged so that one of the toggle arms may be adjusted. As shown the toggle arm 18, which is connected to the rocker arm 16, is a split arm having members 19 and 20. These members are, as illustrated, (see dotted lines in Fig. 1) recessed as indicated at 21 and are connected by a threaded bolt 22, lock nuts 23 being provided for preventing rotation of the bolt. On the bolt is provided an adjusting nut 24 this nut being locked between the lock nuts 22 and being provided with holes 25 in which a suitable tool may be inserted for turning the nut. By rotating this nut the split parts of the arm are drawn toward or forced away from each other thus causing a rocking movement of the rocker arm 16 and an adjustment of the impression contact between the form and impression cylinders while the cylinders are in printing relation. The toggle arm 18 at the end opposite the rocker arm 16 is connected to the other toggle arm 26 fast on a rock shaft 27 suitably journaled in the machine frame and this shaft being rocked to make and break the toggle by an operating handle 28.

The locking means for toggle may be somewhat varied in construction but in ma-

chines embodying the invention in its best form this locking means will be adjustable so that the throw of the toggle may be varied so as to vary the extent of the movement given the rocker arm 16. In the particular construction illustrated this locking mechanism includes an arm 30 fast on rock shaft 27 before referred to, this arm 30 being provided with a head 31 having a holding slot 32, this holding slot being capacitated to take over a stud 33 on a hand clamp 34 by which the arm may be securely clamped to the main side frame 1 before referred to.

As before stated, in the best constructions this locking means is adjustable so that the position of the head 31 may be varied in the frame. While this mechanism may vary to some extent, in the particular construction illustrated (see particularly the lower portion of Fig. 2 and Fig. 5), the frame 1 may be recessed as indicated at 36 the sides of which recess are provided with guides 37 in which can slide a block 38 this block being movable in the guides by means of an adjusting screw 39 having a head 40 provided with holes 41 in which a suitable tool may be inserted to turn the bolt. This block is recessed to receive a pin 42 integrally formed on an arm 43 into which is threaded the end of the hand clamp 34 before referred to. With this construction the arm 30 may be locked in different positions in the frame relatively to the rock shaft 27 and the amount of throw given by the toggle may be varied accordingly.

While the invention is shown and described in what is believed to be its best form it will be understood that various changes may be made in the specific structure disclosed and that the invention is not limited to this but that such changes may be made without departing from the invention as defined in the claims hereunto appended.

What I claim is:

1. The combination with an impression cylinder of a form cylinder, an eccentric bearing for one of the cylinders, a toggle for rocking the eccentric bearing to throw the cylinders on or off impression, means for locking the toggle, means for adjusting the lock, and means for effecting a movement of the bearing when the cylinders are on impression to adjust the impression contact.

2. The combination with an impression cylinder of a form cylinder, an eccentric bearing for one of the cylinders, a toggle for moving the bearing, a locking arm for the toggle, and an adjustable lock for the locking arm.

3. The combination with an impression cylinder of a form cylinder, an eccentric bearing for one of the cylinders, a toggle for

moving the bearing, a locking arm for the toggle, a pin, a block in which the pin is mounted, means for adjusting the block, and means for securing the locking arm to the
5 pin.

4. The combination with an impression cylinder of a form cylinder, an eccentric bearing for one of the cylinders, a toggle for moving the bearing having a toggle
10 arm, adjusting devices for adjusting the arm, a locking arm for the toggle, a lock for the arm, and means for adjusting the lock.

5. In a throw-off mechanism for printing
15 cylinders, a movable cylinder bearing, a toggle having a split arm the parts of which

are connected by an adjusting nut and bolt, a locking arm for the toggle, means for adjusting the locking arm, and a manually operable crank for actuating the toggle.

6. In a throw-off mechanism for printing
20 cylinders, a movable cylinder bearing, a toggle having an operating arm, connections between the arm and the bearing, means for locking the toggle, means for
25 adjusting the operating arm when the toggle is locked, and a manually operable crank for actuating the toggle.

In testimony whereof, I have hereunto set my hand.

JOHN J. HALLIWELL.