Feb. 16, 1926.

1,573,005

W. M. KELLY

IMPRESSION THROW-OFF

Filed April 5, 1923

2 Sheets-Sheet 1

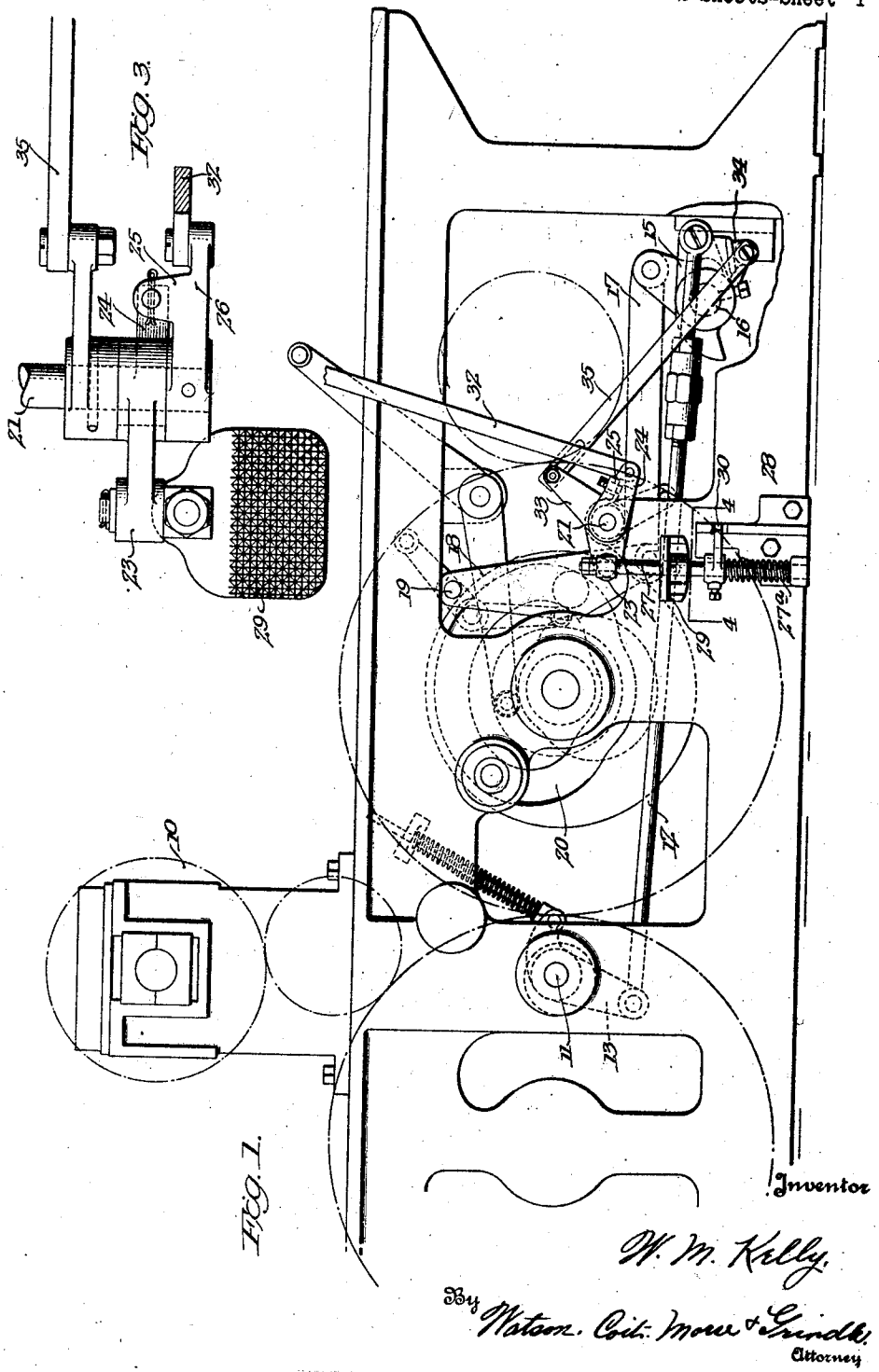


Fig. 1.

Fig. 3.

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2 Sheets-Sheet 2

Fig. 4.

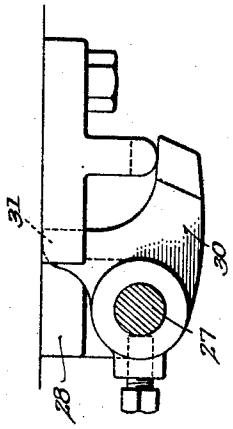
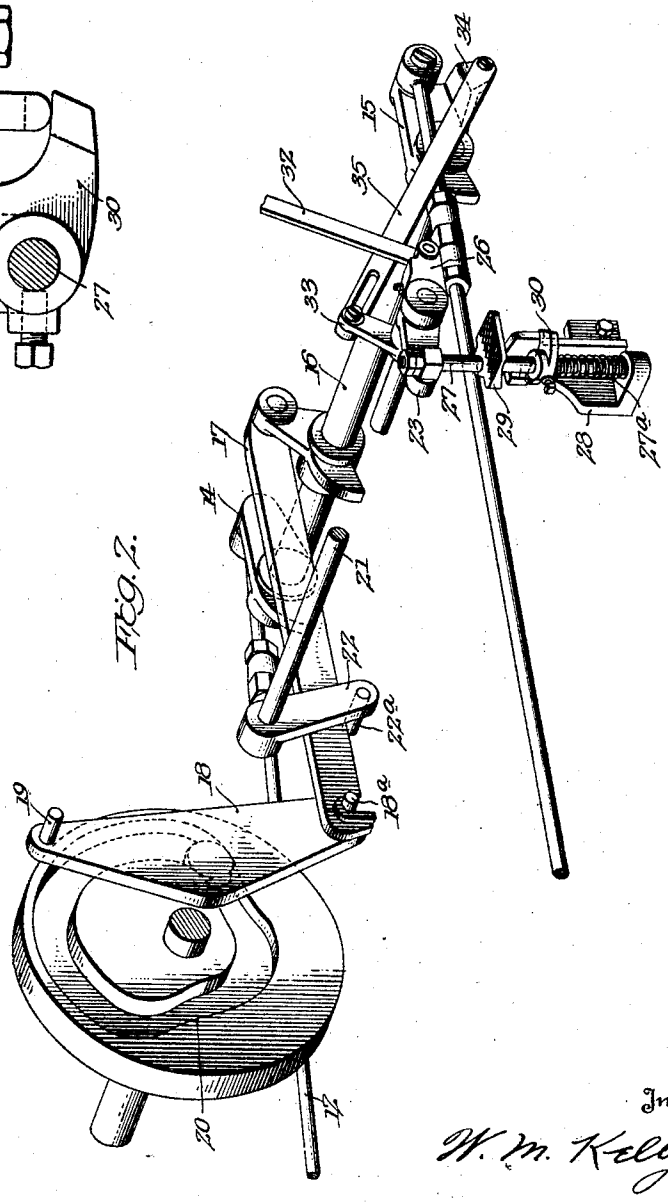


Fig. 2.



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Patented Feb. 16, 1926. 1,573,005

UNITED STATES PATENT OFFICE.

WILLIAM M. KELLY, OF WESTFIELD, NEW JERSEY.

IMPRESSION THROW-OFF.

Application filed April 5, 1923. Serial No. 630,166.

To all whom it may concern:

Be it known that I, WILLIAM M. KELLY, a citizen of the United States, and a resident of Westfield, Union County, New Jersey, have invented certain new and useful Improvements in Impression Throw-Offs, of which the following is a specification.

The present invention relates to printing presses of the bed-and-cylinder type, and consists in improved mechanism for controlling the impression throw-off.

In the operation of presses of the type mentioned the impression is regularly thrown on and off as the sheets are printed and delivered, by means of devices which raise and lower the impression cylinder once for each sheet operated on. It is sometimes desirable to maintain the impression cylinder in raised position while the press is operating, as when no sheets are being fed, or when the sheet feeding mechanism fails to forward a sheet, or when a sheet is presented to the impression cylinder in a crumpled condition. Means is usually provided for manually rendering the cylinder raising and lowering mechanism inoperative, and also for preventing actuation of this manual means when the cylinder is down.

The object of the present invention is to provide an improved positive, locking means for the impression throw-off, which will prevent absolutely the operation of said throw-off at all times except when the impression cylinder is in fully raised position.

Other objects and features of novelty will be apparent from the following description taken in connection with the drawings, in which:

Figure 1 is a side view of a portion of a press showing impression throw-off mechanism including the present improvements;

Figure 2 is a perspective view of parts of the impression throw-off mechanism detached from the press;

Figure 3 is a detail plan view illustrating the pedal and sheet detector connections to the rock shaft which operates the throw-off and also the locking connection for this shaft; and

Figure 4 is a horizontal section on line 4—4 of Figure 1.

The impression throw-off shown in the drawings is substantially the same as that illustrated in my copending application Serial No. 490,290, with the exception of the locking means; and reference may be had to said application for a more detailed showing and description of the various elements of said throw-off.

The impression cylinder 10 is raised and lowered by means of a shaft 11 and eccentrics thereon connected by means of links with vertically slidable bearings of the impression cylinder. The shaft 11 is oscillated to raise and lower the cylinder by means consisting of adjustable rods 12 which connect arms 13 on shaft 11 with arms 14 and 15 on a shaft 16, a gab hook 17 pivoted at one end to an arm on shaft 16 and having its other end hooked over a pin 18ª at the lower end of a lever 18 which is fulcrumed at 19 on the frame of the press, and a cam 20 engaging a laterally projecting pin on lever 18. For releasing the gab hook to render the impression throw-off inoperative, there is provided a rock shaft 21 journaled in the frame of the press and having an arm 22 at one end thereof from which projects a pin 22ª adapted to engage under the gab hook and lift the same out of engagement with the pin on lever 18.

Means are provided for operating shaft 21 either manually at will or automatically in response to the sheet detector of the press. The manual means comprises an arm 23 freely rotatable on shaft 21 and having an extension 24 engaging the end of a screw pin adjustably mounted in a lug 25 on an arm 26 which is pinned to shaft 21. The arm 23 is swivelly connected at its free end to the upper end of a rod 27 which has its lower end guided in a hole in a bracket 28 bolted to the press frame. Rod 27 has fixed thereto a pedal 29 and a latch 30. A coil spring 27ª surrounds the rod 27 between the latch and the bracket 28. When the pedal is depressed against the action of the coil spring, rock shaft 21 is rotated and the gab hook is released. The pedal may be held depressed by turning the rod 27 to engage the latch 30 under a shoulder formed on bracket 28. Latch 30 has an arm 31 adapted to engage the bracket and thus limit the opposite rotation of rod 27. The automatic means for operating shaft 21 comprises a link 32 pivoted at its lower end to arm 26 and connected at its upper end to be operated under control of the sheet detector mechanism. When the sheet feeding devices fail to feed a sheet or when a sheet is fed in crumpled condition, the sheet detector mechanism causes link 32 to move upwardly,

thus rotating shaft 21 and releasing the gab hook.

The devices thus far described are substantially the same as those disclosed in my copending application. The present invention has particular reference to the means for locking the shaft 21 against turning while the impression cylinder is down and releasing said shaft only when said cylinder is in substantially fully raised position. This means comprises an arm 33 pinned to shaft 21, an arm 34 rigid with arm 15 but offset therefrom and a link 35 pivotally connected at one end to arm 33 and having a longitudinal slot in its other end engaging a pin mounted in the free end of arm 32. The position of these parts shown in the drawings is that at which the impression cylinder is down. In this position it will be noted that it is impossible to rotate shaft 21 by the depression of pedal 29 or by the upward movement of link 32. It will not be possible to rotate said shaft sufficiently to release the gab hook until the impression cylinder has nearly reached its fully raised position, for the reason that the link 35 will not be moved sufficiently from the position shown to permit movement of the pin on arm 33 in the slot in said link to the extent required to release the gab hook, until the impression cylinder has been fully raised. In the position of the parts illustrated, with the cylinder down, the crank arm 34 is near its dead center with respect to the link 35 so that the movement of the latter will be relatively small as compared with the movement of the crank arm from the initial position shown. This will prevent substantial operation of shaft 21 during the initial raising movement of the impression cylinder, and the parts are so constructed that the shaft 21 cannot be rotated sufficiently to release the gab hook until the impression cylinder has nearly reached fully raised position. This locking device, therefore, provides a positive lock preventing the operation of the impression throw-off at all times except when the cylinder is fully raised.

Although one embodiment of the invention has been described in detail, the invention is not thus limited but includes modifications and changes that come within the scope of the appended claims.

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent is:

1. In a printing press, in combination, an impression cylinder, means for raising and lowering said cylinder in timed relation to the operation of the press, including a shaft operatively connected to said cylinder and a releasable connection between said shaft and the press operating mechanism, means for releasing said connection, and means for preventing operation of said releasing means when said cylinder is down, including a lost-motion connection between said shaft and said releasing means.

2. In a printing press, in combination, an impression cylinder, means for raising and lowering said cylinder in timed relation to the operation of the press, including a shaft operatively connected to said cylinder and a releasable connection between said shaft and the press operating mechanism, means for releasing said connection including a rock shaft, and means for preventing operation of said releasing means when said cylinder is down including a lost-motion connection between said shaft and said rock shaft.

3. In a printing press, in combination, an impression cylinder, means for raising and lowering said cylinder in timed relation to the operation of the press, including a shaft operatively connected to said cylinder and a releasable connection between said shaft and the press-operating mechanism, means for releasing said connection including a rock shaft, and means for preventing operation of said rock shaft when said cylinder is down including a lost-motion connection between said shaft and said rock shaft.

4. In a printing press, in combination, an impression cylinder, means for raising and lowering said cylinder in timed relation to the operation of the press, including a shaft operatively connected to said cylinder and a releasable connection between said shaft and the press-operating mechanism, means for releasing said connection including a rock shaft, and means for preventing operation of said rock shaft when said cylinder is down, including an arm on said rock shaft, an arm on said shaft and a link pivoted to one of said arms and having a pin-and-slot connection with the other of said arms.

5. In a printing press, in combination, an impression cylinder, means for raising and lowering said cylinder in timed relation to the operation of the press, including a shaft operatively connected to said cylinder, an arm on said shaft, a gab hook pivoted to said arm, a lever having a pin engaged by said gab hook and means for oscillating said lever; means for disengaging said gab hook from said lever, including a rock shaft operatively connected to said gab hook and means for rotating said rock shaft to lift said gab hook out of engagement with the pin on said lever, and means for preventing rotation of said rock shaft when said cylinder is down including a lost-motion connection between said shaft and said rock shaft.

6. In a printing press, in combination, an impression cylinder, means for raising and lowering said cylinder in timed relation to the operation of the press, including a shaft operatively connected to said cylinder, an arm on said shaft, a gab hook

pivoted to said arm, a lever having a pin engaged by said gab hook and a cam engaged by said lever; means for disengaging said gab hook from said lever, including a rock shaft, an arm on said rock shaft having a pin adapted to engage under said gab hook and means for rotating said rock shaft; and means to prevent rotation of said rock shaft when said cylinder is down, including a lost-motion connection between said shaft and said rock shaft.

7. In a printing press, in combination, an impression cylinder, means for raising and lowering said cylinder in timed relation to the operation of the press, including a shaft operatively connected to said cylinder, an arm on said shaft, a gab hook pivoted to said arm, a lever having a pin engaged by said gab hook and a cam for oscillating said lever; means for disengaging said gab hook from said lever including a rock shaft, an arm on said rock shaft having a pin adapted to engage under said gab hook and means for rotating said rock shaft to lift said gab hook out of engagement with the pin on said lever; and means for preventing rotation of said rock shaft when said cylinder is down, including an arm on said rock shaft, an arm on said shaft and a link pivoted to one of said arms and having pin-and-slot connection with the other of said arms.

8. In a printing press, in combination, an impression cylinder, means for raising and lowering said cylinder in timed relation to the operation of the press, including a shaft operatively connected to said cylinder and a releasable connection between said shaft and the press operating mechanism, manual means for releasing said connection, means for releasing said connection independently of said manual means, and means actuated by said shaft for preventing operation of said last mentioned two means when said cylinder is down.

9. In a printing press, in combination, an impression cylinder, means for raising and lowering said cylinder in timed relation to the operation of the press, including a shaft operatively connected to said cylinder and a releasable connection between said shaft and the press operating mechanism, a rock shaft having means to actuate said releasable connection, two arms on said rock shaft one of which is fixed thereon and the other of which has a one way connection with said rock shaft, manual means for operating one of said arms and independent means for operating the other arm, and means actuated by said shaft for preventing operation of said rock shaft when said cylinder is down.

10. In printing press, in combination, an impression cylinder, means for raising and lowering said cylinder in timed relation to the operation of the press, including a shaft operatively connected to said cylinder and a releasable connection between said shaft and the press operating mechanism, means for releasing said connections including a rock shaft having an arm engaging said connection, a second arm fixed to said rock shaft, a rod having its upper end swiveled in said second arm and having its lower end guided in the frame of the press, a pedal mounted on said rod and a coil spring surrounding said rod and normally holding said rock shaft in non-releasing position with respect to said releasable connections, and means for preventing operation of said rock shaft when said cylinder is down including an arm fixed to said rock shaft, an arm fixed to said shaft and a link pivoted to one arm and having a lost-motion connection with the other arm.

11. In a printing press, in combination, an impression cylinder, means for raising and lowering said cylinder in timed relation to the operation of the press including a shaft operatively connected to said cylinder and a releasable operating connection between said shaft and the press operation mechanism, means for releasing said connection including a rock shaft having an arm adapted to operate said connection, a second arm fixed to said rock shaft, a link connecting said second arm to the sheet detector mechanism of the press, a third arm revolubly mounted on said rock shaft and having an extension adapted to engage under a lug on said second arm, and a pedal operatively connected to said third arm, and means preventing operation of said rock shaft except when said cylinder is in fully raised position, including an arm on said shaft, a link pivoted to said arm, a fourth arm fixed on said rock shaft having a pin and slot connection with said link.

12. In a printing press, in combination, an impression cylinder, means for raising and lowering said cylinder in timed relation to the operation of the press, including a shaft operatively connected to said cylinder, an arm on said shaft, a link pivoted at one end to said arm and having a downwardly opening slot formed adjacent to its other end, a depending lever fulcrumed in the frame of the press and having a laterally extending pin adjacent its lower end engaged in said slot and a cam rotated by the operating mechanism of the press engaging said lever, means for raising said link to disengage said pin, including a rock shaft journaled in the frame of the press having an arm at one end and a pin projecting laterally therefrom adapted to engage the under side of said link, a second arm fixed to said rock shaft, a link connecting said second arm to the sheet-detector mechanism of the press, a third arm revolubly mounted on said rock shaft and having an extension adapted to

engage under a lug on said second arm and a pedal operatively connected to said third arm, and means preventing disengagement of said pin and slot except when said cylinder is in raised position, including a second arm on said shaft, a link pivoted to said second arm and a fourth arm fixed on said rock shaft and having pin and slot connection with said link, said last mentioned arms and link being so arranged that when the cylinder is down the pin engages the outer end of the slot and the second arm on said shaft is substantially parallel with the link.

13. In a printing press, in combination, an impression cylinder, means for raising and lowering said cylinder in timed relation to the operation of the press, including a shaft operatively connected to said cylinder and a releasable connection between said shaft and the press operating mechanism, means for releasing said connection including a rock shaft, and means preventing release of said connection except when said cylinder is in fully raised position, including an arm on said shaft, a link pivoted at one end to said arm and having a longitudinal slot adjacent its other end, an arm fixed on said rock shaft having a pin engaging said slot, said arms and link being so arranged that when said cylinder is down the pin is at the outer end of the slot and the arm on said shaft is substantially parallel with the link.

In testimony whereof I hereunto affix my signature.

WILLIAM M. KELLY.