W. M. KELLY.

PRINTING PRESS.

APPLICATION FILED MAR. 28, 1913.

1,092,998.

Patented Apr. 14, 1914.

3 SHEETS—SHEET 1.

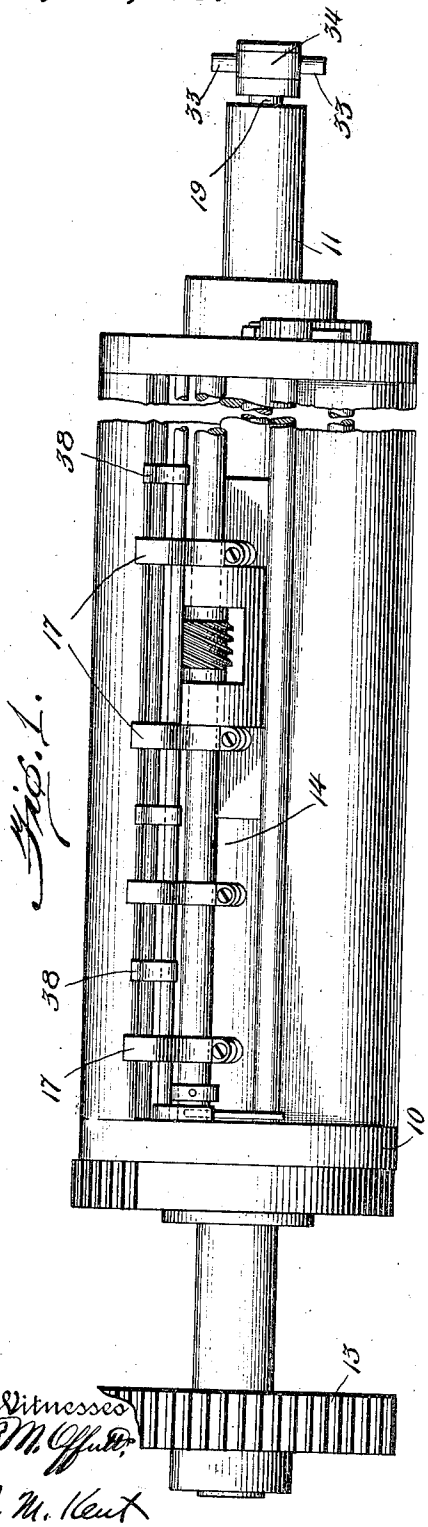


Fig. 1.

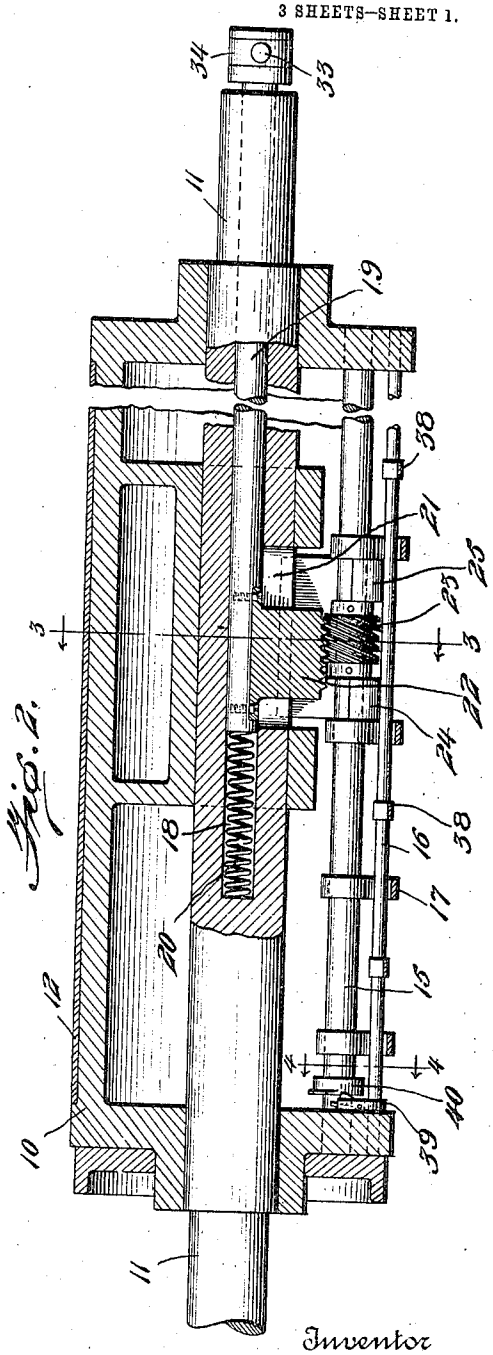


Fig. 2.

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3 SHEETS—SHEET 2.

Fig. 3.

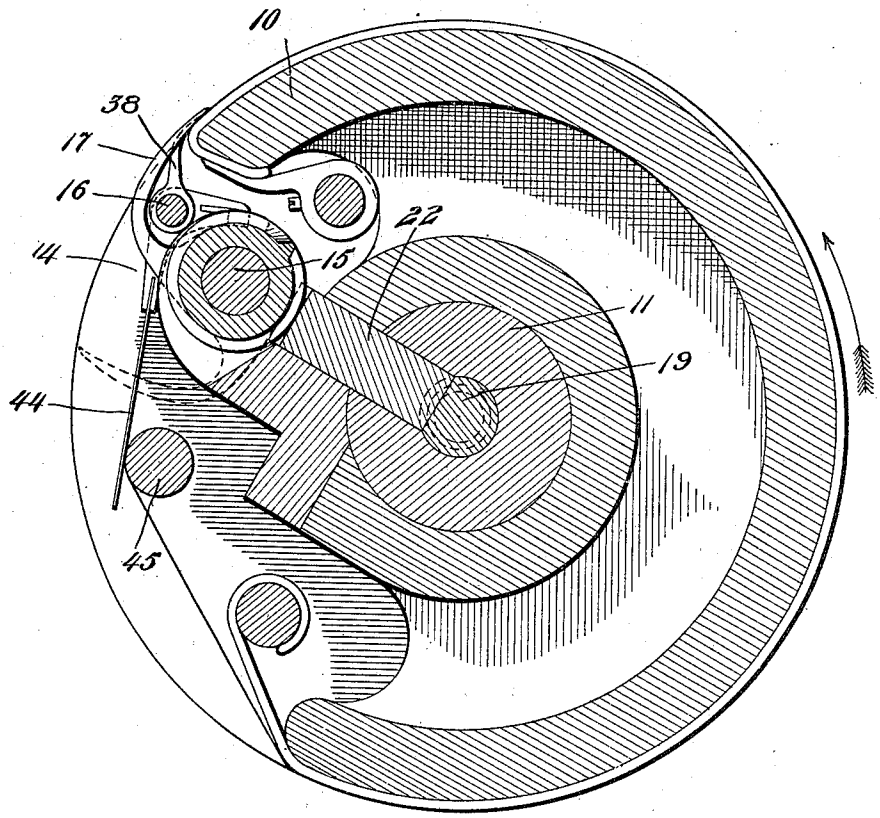


Fig. 4.

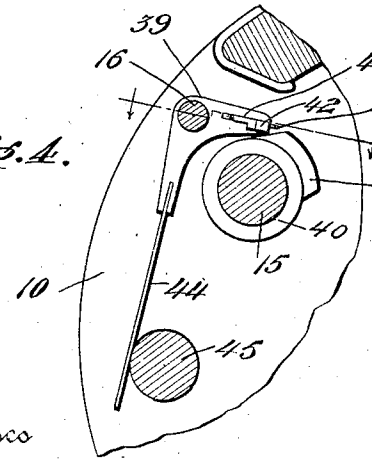
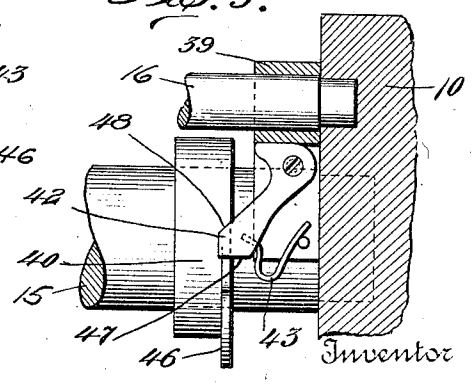


Fig. 5.



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3 SHEETS—SHEET 3.

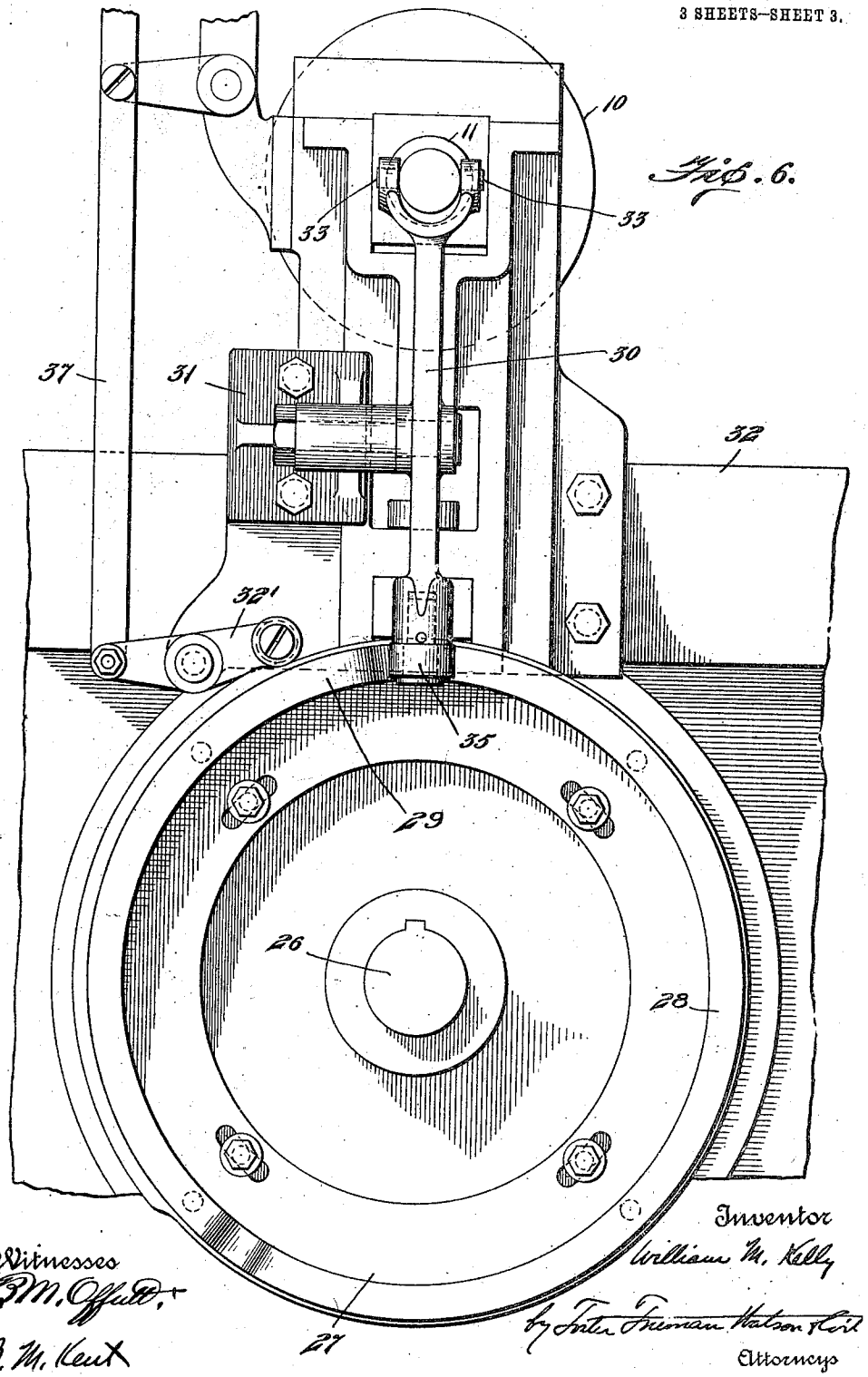


Fig. 6.

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UNITED STATES PATENT OFFICE.

WILLIAM M. KELLY, OF NEW YORK, N. Y., ASSIGNOR TO AMERICAN TYPE FOUNDERS COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

PRINTING-PRESS.

1,092,998. Specification of Letters Patent. Patented Apr. 14, 1914.

Application filed March 28, 1913. Serial No. 757,470.

To all whom it may concern:

Be it known that I, WILLIAM M. KELLY, a citizen of the United States, residing at New York, in the county and State of New York, have invented certain new and useful Improvements in Printing-Presses, of which the following is a specification.

This invention relates to printing presses of the type employing a rotating impression cylinder and relates more particularly to improvements in the means for actuating the paper grippers and shooflys.

The objects of the invention are to provide a construction which is simple and reliable in operation.

The novel features of the invention will be apparent from the following description taken in connection with the accompanying drawings, in which:

Figure 1 is a side elevation of an impression cylinder embodying my invention. Fig. 2 is a longitudinal section thereof. Fig. 3 is a transverse section on the line 3—3 of Fig. 2. Fig. 4 is an enlarged section on the line 4—4 of Fig. 2. Fig. 5 is an enlarged detail of the shoofly shaft actuating mechanism. Fig. 6 is a side elevation of a part of a printing press showing my invention applied thereto.

Referring to the drawings, 10 indicates the impression cylinder which is mounted on a shaft 11 and is provided with the usual impression pad 12. The shaft 11 is preferably provided with a gear 13 on one end thereof whereby the cylinder is rotated from the driving mechanism of the printing press. The cylinder has in one side thereof an opening or recess 14, in which are arranged the gripper shaft 15 and the shoofly shaft 16, these shafts being parallel and supported in suitable bearings in the walls of the cylinder. The gripper shaft has arranged thereon the grippers 17 which, as shown in Fig. 3, are adapted to press against the outer surface of the cylinder for the purpose of securing the edge of the sheet of paper to be printed.

The shaft 11 is provided with a longitudinal opening 18 on the axis thereof, this opening extending to one end of the shaft and having arranged therein a longitudinally movable rod or shaft 19 and a spring 20 which bears against the inner end of the shaft 19 and normally tends to press the same outwardly. The shaft 11 is also provided with a radial opening 21, in which is arranged a rack or cam 22, this rack being secured to the shaft 19, as clearly shown in Fig. 2. The rack 22 engages a worm or cam 23, of comparatively steep pitch, arranged on the gripper shaft 15 between bearings 24 and 25. By this construction the shaft 15 will be rocked by moving the shaft 19 longitudinally in the shaft 11 and for the purpose of thus moving the shaft 19 I provide, on a shaft 26 of the printing press, which rotates in definite relation to the cylinder 10, a cam wheel 27. The cam wheel 27 carries a face cam 28 having a high part 29. A lever 30 is pivotally mounted on a bracket 31 secured to the frame 32 of the printing press and has its upper end in engagement with the trunnions 33 on a collar 34 which is arranged on the shaft 19. The lower end of the lever 30 carries a roller 35 which engages the cam track 28 and, as will be readily understood, will cause the lever 30 to be rocked as the cam wheel 27 revolves. The roller 35 is held against the cam 28 by the spring 20, which, as hereinbefore stated, normally presses the shaft 19 outwardly. From Fig. 2 it will be seen that when the shaft 19 is moved inwardly by the cam 28 the gripper shaft 15 will be rocked in the direction to move the grippers 17 into engagement with the surface of the impression cylinder for the purpose of gripping a sheet of paper, and when the shaft 19 is moved in the opposite direction by the spring 20 the gripper shaft will be rocked in the reverse direction to release the sheet of paper. In Fig. 6 I have also shown a cam lever 32′ and a link 37 which is actuated by the cam wheel 27. This mechanism, however, relates to another part of the printing press and has no bearing on the invention claimed herein and therefore a description of the same is unnecessary.

For the purpose of actuating the shoofly shaft 16, which carries the shooflys 38, I have provided on this shaft an arm 39, preferably adjacent one of the end walls of the cylinder, and a cam 40 on the gripper shaft 15. The arm 39 is provided with a slot 41

in which is arranged a detent 42. The detent 42 is normally held in a position where it projects laterally from the side of the arm 39, by a spring 43. The arm 39 also has secured thereto a spring 44, the outer end of which engages a shaft 45, or any other suitable part of the cylinder 10, for the purpose of normally holding the shaft 16 in such a position that the shooflys 38 are in contact with the surface of the cylinder 10.

Referring to Figs. 4 and 5 it will be seen that the cam 40 is provided with a radial extension 46 which is adapted to strike the side 47 of the detent 42 when the gripper shaft is rocked for the purpose of releasing the paper. The engagement of the cam projection 46 with the detent 42 rocks the shoofly shaft 16 and causes the shooflys 38 to kick the edge of the sheet of paper free from the surface of the cylinder, thus facilitating its delivery from the cylinder. During the rocking movement of the gripper shaft 15 the grippers 17 are carried to substantially the position shown in dotted lines in Fig. 3 and in this position the cam projection 46 will have passed the detent 42 and the spring 44 will have caused the shoofly shaft to rock in the reverse direction to its original position with the shooflys in contact with the surface of the cylinder 10. On the reverse movement of the gripper shaft the cam projection 46 will engage the inclined side 48 of the detent 42 and move the detent, against the pressure of the spring 43, into the slot 41 and thus permit the cam projection to pass the detent without rocking the shoofly shaft.

The operation of the mechanism is as follows: The cylinder 10 is so geared to the bed-operating mechanism of the printing press that the cylinder makes two revolutions for each reciprocation of the bed. On one of these revolutions the cylinder receives the sheet of paper and the paper is printed and on the succeeding revolution the paper is discharged from the cylinder. The paper is fed to the cylinder at regular intervals in any suitable manner, the cylinder rotating in the direction of the arrow shown in Fig. 3. While the paper is being fed to the cylinder the grippers 17 are out of contact with the surface of the cylinder and at the proper instant the grippers are moved into the position shown in full lines in Fig. 3 and thus secure the forward edge of the sheet. This movement of the grippers is effected by the cam roller 35 passing from the low part of the cam 28 to the high part 29 thereof, and thereby moving the shaft 19 inwardly. The parts remain in this position until the cylinder makes practically a complete revolution when the grippers are rocked to release the paper by the roller 35 passing from the high part 29 of the cam 28 to the low part thereof, as the wheel 27 rotates, thus permitting the spring 20 to force the shaft 19 outwardly. This rocking movement of the gripper shaft 15 causes the cam projection 46 to engage the detent 42, as hereinbefore described, and rock the shoofly shaft, and thereby lift the forward edge of the sheet of paper from the surface of the cylinder. Before the gripper shaft 15 reaches the end of this rocking movement the detent 42 passes the cam projection 46 and the spring 44 rocks the shoofly back to its original position with the shooflys 38 in contact with the surface of the cylinder, as shown in Fig. 3. The grippers remain in this open position until after the receipt of the next sheet of paper when the operation is repeated, the shooflys 38 remaining in engagement with the surface of cylinder during the reverse rocking movement of the gripper shaft.

While I have illustrated and described what I consider to be the preferred form of my invention it will be understood that the invention is not limited to the specific details of construction illustrated.

Having thus described the invention what is claimed as new is:

1. In a printing press, the combination of an impression cylinder, a gripper shaft carried thereby, an axially movable shaft, carried by the cylinder, a rack and screw operatively connecting said shafts whereby the gripper shaft is rocked by the axially movable shaft, and means for actuating said axially movable shaft.

2. In a printing press, the combination of an impression cylinder, a gripper shaft carried thereby, an axially arranged shaft parallel with the gripper shaft and carried by the cylinder, a rack on said axially arranged shaft, a screw on the gripper shaft engaged by said rack and whereby the gripper shaft is rocked by axial movements of said axially arranged shaft, and means for reciprocating said axially arranged shaft.

3. In a printing press, the combination of a shaft, an impression cylinder thereon, a gripper shaft carried by said cylinder, an axially movable shaft in said first-mentioned shaft and projecting outwardly from one end thereof, spring means for moving said axially movable shaft in one direction, cam means for moving said axially movable shaft in opposition to said spring means, and coöperating cams on said gripper and axially movable shafts for rocking said gripper shaft by means of said axially movable shaft.

4. In a printing press, the combination of an impression cylinder, a gripper shaft carried thereby, a shoofly shaft carried by the cylinder and arranged parallel with the gripper shaft, means for rocking the gripper shaft in timed relation to the revolutions of the cylinder, a cam on the gripper shaft, an

arm on the shoofly shaft having pivoted thereto a detent adapted to be engaged by said cam, when the gripper shaft is rocked in one direction, and rock the shoofly shaft, and means for rocking the shoofly shaft in the reverse direction before the end of said rocking movement of the gripper shaft, and said detent being adapted to permit the reverse rocking movement of the gripper shaft without rocking the shoofly shaft.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM M. KELLY.

Witnesses:

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ARTHUR L. BRYANT.