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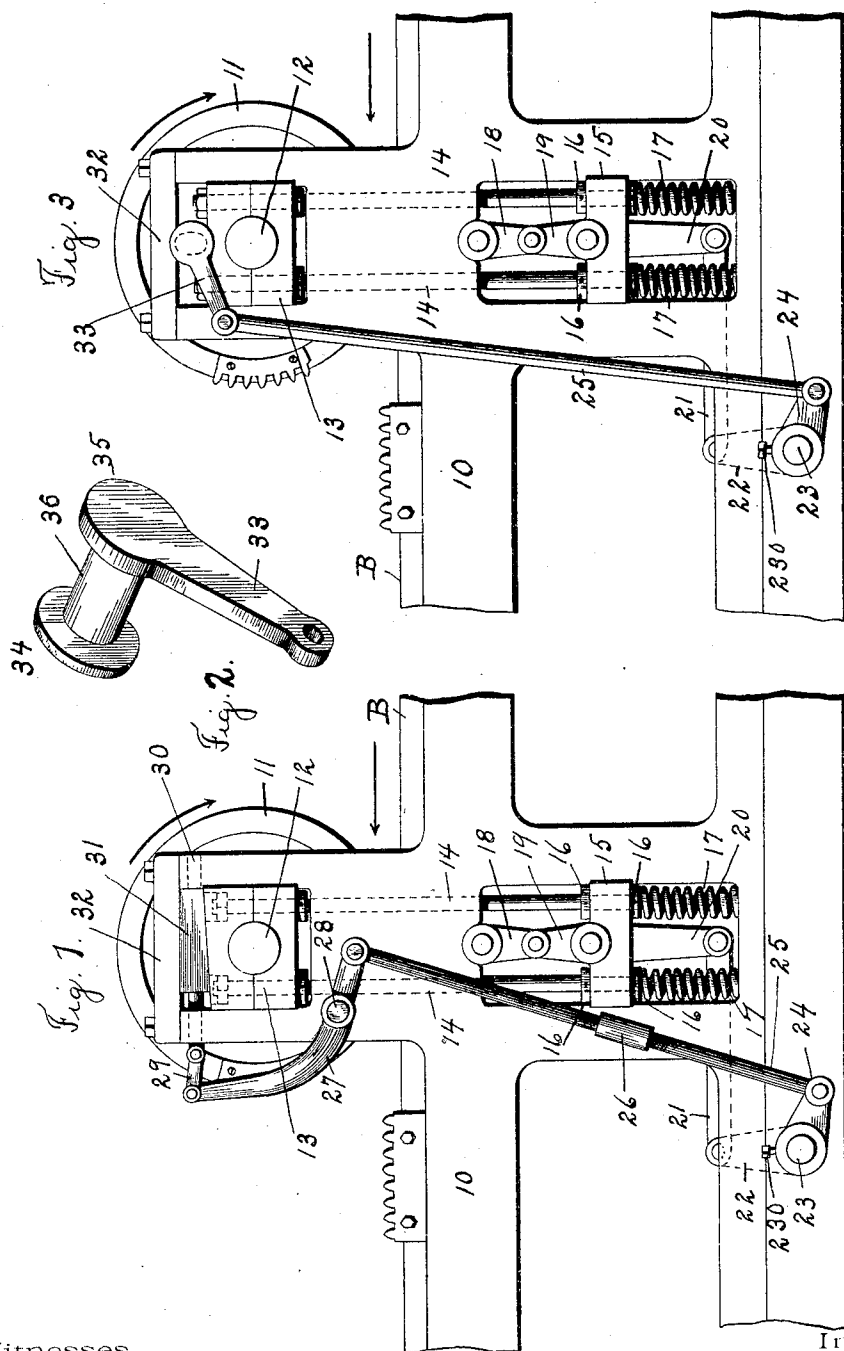
PATENTED JAN. 16. 1906.

H. A. W. WOOD.

IMPRESSION MECHANISM OF CYLINDER PRINTING MACHINES.

APPLICATION FILED MAR. 8, 1897. RENEWED APR. 24, 1905.

2 SHEETS—SHEET 1.



Witnesses.

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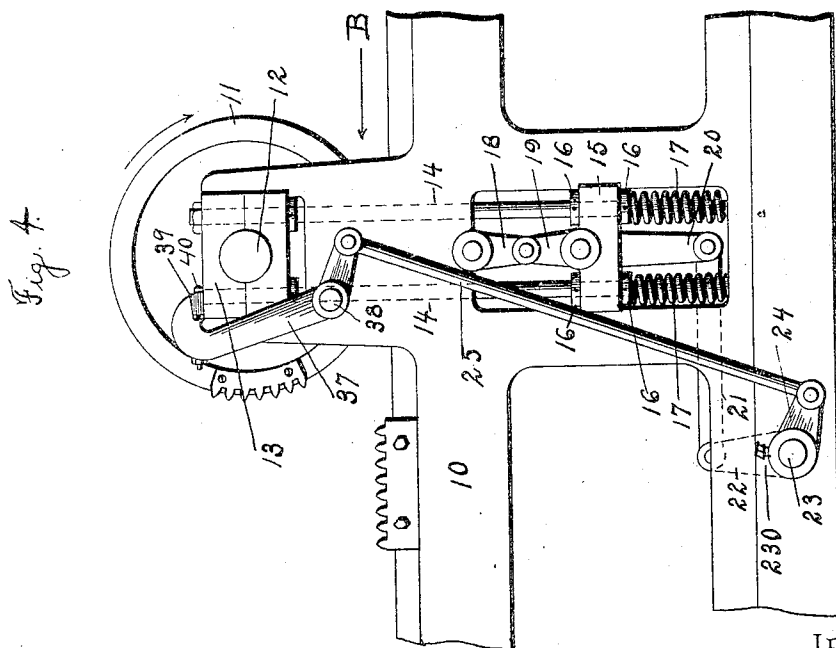
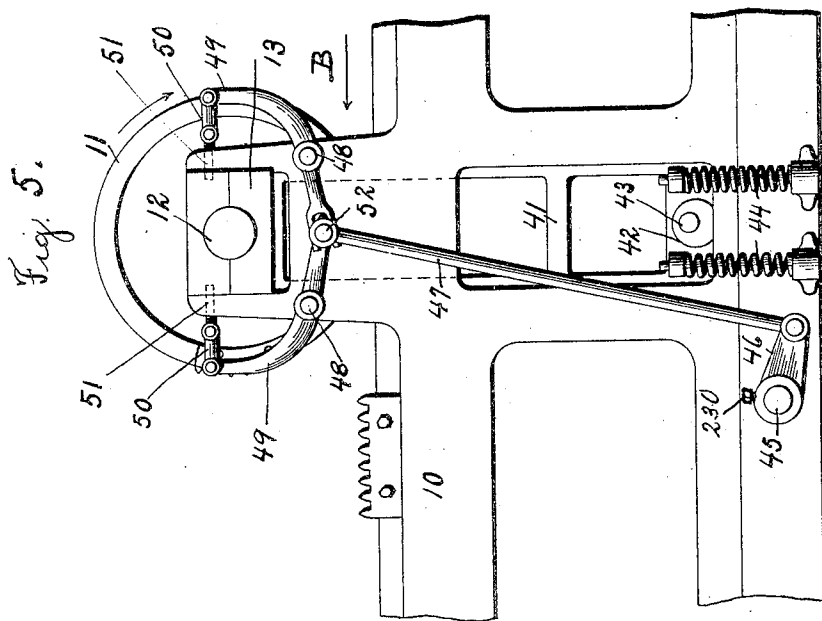
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Witnesses.

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UNITED STATES PATENT OFFICE.

HENRY A. WISE WOOD, OF NEW YORK, N. Y., ASSIGNOR TO CAMPBELL
PRINTING PRESS & MANUFACTURING COMPANY, OF NEW YORK, N. Y.,
A CORPORATION OF NEW YORK.

IMPRESSION MECHANISM OF CYLINDER PRINTING-MACHINES.

No. 810,016.

Specification of Letters Patent.

Patented Jan. 16, 1906.

Application filed March 8, 1897. Renewed April 24, 1905. Serial No. 257,094.

To all whom it may concern:

Be it known that I, HENRY A. WISE WOOD, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a new and useful Improvement in Impression Mechanism of Cylinder Printing-Machines, of which the following is a specification.

The object of this invention is to improve the impression mechanism for cylinder printing-machines, and especially relates to an improved mechanism for an impression-cylinder which is raised and lowered.

In all two-revolution presses the impression-cylinder is lowered during the period of impression—that is, while the bed makes its printing stroke—and is raised during the non-impression period—that is, while the bed makes its return stroke. During the impression period the strain of printing is very great and requires a very strong construction on the part of the cylinder raising and lowering mechanism to resist it. In many presses of this type the cylinder is carried in vertically-sliding boxes or journals which are secured to long rods or to long vertically-sliding frames. The mechanism in both of these types of machines to raise and lower the impression-cylinder is applied at the lower ends of the sliding rods or frames. It is apparent that the great length of the frames or the length of the rods invites stretch and spring and that as the printing strain is applied thereto the impression-cylinder will not be rigidly held in place. To remedy this evil in this style of machines, I provide a means or mechanism for locking or securing the top sections of the cylinder-boxes rigidly to the framing of the press, so that during printing all strain will be brought directly on the framing and not on the long connections or frames or the mechanism which raises and lowers the cylinder. To this end I specifically provide a lock which will lock the top sections of the cylinder-boxes to the framing of the machine during the forward or printing stroke of the bed when the cylinder is in its lowered position and which will unlock and allow the cylinder to be raised during the non-printing period or when the bed returns. By this arrangement no strain whatever during printing will be brought upon any portion of the cylinder raising and lowering mechanism,

with the result that the cylinder will offer an unyielding resistance to the printing-form and at the same time not strain or wear out the mechanism which raises and lowers it.

In the accompanying two sheets of drawings I have shown various ways by which my invention may be carried out, referring to which—

Figure 1 is a rear elevation of enough of a printing-machine to illustrate my invention. Figs. 3, 4, and 5 are views similar to Fig. 1, illustrating modifications; and Fig. 2 is a perspective view of the form of lock used in the modification shown in Fig. 3.

Referring first to the construction shown in Fig. 1, it will be seen that I have shown the mechanism arranged on one side of the machine, it being understood that the mechanism on the other side is substantially the same. In detail 10 designates the framing of the machine, 11 the impression-cylinder, and 12 the shaft thereof, which latter is journaled in boxes 13, which are arranged so as to be capable of vertical movement in the framing. The boxes have connected thereto long rods 14 14, which are passed through yokes or pieces 15, which are also fitted to slide on the framing, the rods 14 14 being adjustably connected to the yokes 15 by means of check-nuts 16 16, threaded on the rods 14 14. Springs 17 17 are arranged to bear on the under side of the yokes 15 to counterbalance the weight of the impression-cylinder and the parts connected therewith. 18 and 19 designate the usual toggles, which are applied to the framing and to the yokes 15. 20 designates levers, which are connected to actuate the toggle-arms 19. The levers 20 are connected by links 21 to levers 22, secured on a shaft 23, which is properly oscillated during the operation of the machine. The mechanism as thus described constitutes an impression-cylinder raising and lowering mechanism of well-known form. Also arranged on the shaft 23 are arms or levers 24, which connect by links 25 to levers or arms 27, which are journaled on studs 28, secured to the framing. The links 25 are preferably made in two parts and are connected by take-up couplings 26, the two parts being oppositely screw-threaded into these couplings, whereby the length of the links 25 can be adjusted to adjust the operation of the locking mechanism herein-

after described. The levers 27 connect by short links 29 to rods 30, which are fitted in holes bored in the framing. The upward extensions of the framing that carry the impression-cylinder have caps 32 fitted thereon above the journal-boxes 13, the caps 32 thus forming part of the framing. The tops of the journal-boxes 13 are inclined, as shown. Secured on the rods 30 are locks 31, which in the particular modification under discussion are made in the form of wedges. B designates the usual reciprocating bed. As the parts are shown, the bed B is making its forward or printing stroke and the impression-cylinder is in its lowered position. In this position the wedges 31 have been moved to the right to firmly hold the boxes 13 against the caps 32, thereby locking the boxes 13 to the framing, so that upward movement thereof is impossible. As the bed reverses the shaft 23 is oscillated. This will cause the wedges 31 to move to the left, so that as the toggle mechanism acts the journals 13 and the impression-cylinder 11 can be raised. The toggle mechanism acts at first slowly, so that the wedges 31 can be well withdrawn before the impression-cylinder is raised. As the bed reverses at the right-hand extreme the cylinder is lowered by the toggle mechanism and the wedges 31 forced back to the position shown in Fig. 1. By adjusting the couplings 26 the action of the wedges can be controlled. This forms a simple and effective mechanism for the purposes previously referred to and one which can be operated directly from the cylinder raising and lowering mechanism—that is, directly from the shaft 23—without providing additional cams or shafts.

In Fig. 3 I have shown the same form of press with a modified form of lock applied thereto. The form of lock used in this modification consists of spool-shaped pieces, which have projecting arms 33, to which the links 25 are connected. These spool-shaped pieces have flanges 34 and 35, which fit on the sides of the journal-boxes 13 and the caps 32. The central parts 36 of the spool-shaped pieces are made elliptical in cross-section, as indicated in dotted lines in Fig. 3, so that when in one position, substantially that shown in Fig. 3, the journal-boxes 13 will be rigidly secured or locked against upward movement; but when turned so that the elliptical sections 36 have their short axes between the boxes 13 and the pieces 32 the cylinder 11 can be raised.

In Fig. 4 I have shown another form of locking mechanism, which consists of hooks 37, journaled on studs 38, to which hooks the links 25 are connected. These hooks are arranged to fit over the tops of the journal-boxes 13 when the impression-cylinder is in its lowered position, as shown in Fig. 4. The hooks are preferably supplied with adjustable

able jaws, which may consist of wedge-shaped pieces 39, which may be adjusted back and forth in the jaws by screws 40.

In Fig. 5 I have shown a slightly-modified form of mechanism for raising and lowering the cylinders. The same consists of frames 41, which are fitted into the framing, so as to be capable of vertical movement therein. These frames are raised and lowered by a shaft 43, having eccentrics or cams which fit into bearings 42, arranged in said frames 41. Suitable springs 44 are arranged to counterbalance the weight of the impression-cylinder and its various parts. 45 designates a shaft which is arranged in the framing and which is oscillated by a cam or other suitable mechanism at the proper time. Mounted on the ends of this shaft are levers or arms 46, which connect by links 47 to pins 52. Engaging each of the pins 52 are levers 49, which are pivoted on studs 48. These levers 49 connect by links 50 to bolts 51, which are fitted in holes bored in the framing, and which when the journal-boxes 13 are in their lowered position are adapted to project thereinto, and thus to lock the impression-cylinder and its various parts rigidly to the framing. In this particular modification the shaft 45 is oscillated to withdraw the bolts 51 before the impression-cylinder is raised and to insert the bolts 51 after the impression-cylinder is lowered.

The arms or levers 24 or 46 are preferably adjustably secured to their shafts, as by means of set-screws 230, so that the operation of my improved locking mechanism can be adjusted and regulated at this point also, if desired.

As I use the term "lock" in the claims, the same refers to the wedges 31, (shown in Fig. 1,) the eccentrics 36, used in the device shown in Fig. 3, the hooks 37, used in Fig. 4, the bolts 51, used in the device shown in Fig. 5, or to any other equivalent means for locking the top sections of the cylinder-boxes to the framing of the press.

It will be noted that in all the constructions described the top sections of the cylinder-boxes are locked to the framing during the impression period. This is an important point, because it is these top sections which take the strain of impression from the cylinder or the cylinder-shaft, and by locking these sections to the framing the strain of the impression is transmitted directly to the locking devices.

Many other devices may be arranged and designed to carry out the broad purpose of my invention without departing from the scope of my claims.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination in a printing-press of the framing, vertically-movable boxes

mounted therein, an impression-cylinder journaled in said boxes, means for raising and lowering said boxes, and a locking mechanism for locking the top sections of the boxes to the framing so as to resist the thrust of impression.

2. The combination in a printing-press of the framing, vertically-moving boxes or frames mounted therein, covers or caps arranged above said boxes, an impression-cylinder journaled in said boxes, means for raising and lowering said boxes, and a locking mechanism interposed between said boxes and said covers or caps for locking the boxes in their lowest position.

3. The combination in a printing-press of the framing, vertically-moving boxes or frames mounted therein, covers or caps arranged above said boxes, an impression-cylinder journaled in said boxes, means for raising and lowering said boxes, sliding wedges interposed between said boxes and caps, and means for actuating said wedges to lock the boxes in their lowest positions.

4. The combination in a printing-press of the framing, vertically-moving boxes mounted in the framing, caps arranged above said boxes, an impression-cylinder journaled in said boxes, means for raising and lowering said boxes, sliding wedges arranged between said boxes and said caps, and means connected to the raising and lowering mechanism for actuating said wedges to lock the boxes in their lowest positions.

5. The combination in a printing-press of the framing, vertically-moving boxes arranged therein, a shaft journaled in said boxes carrying the impression-cylinder, caps arranged above said boxes, sliding wedges arranged between said boxes and said caps,

a toggle mechanism for raising and lowering said boxes, mechanism for actuating the toggle mechanism, and connections therefrom to actuate said wedges to lock the boxes in their lowest positions.

6. The combination in a printing-press of the framing, vertically-moving boxes mounted therein, a shaft carrying the impression-cylinder journaled in said boxes, sliding wedges arranged between said boxes and said caps, rods extending from said boxes and connecting to a yoke, toggles arranged between said yoke and the framing, an oscillating shaft connecting by levers, and links to operate said toggles, and levers mounted on said oscillating shaft connecting by links to levers connected to said sliding wedges to move said wedges to lock the boxes in their lowest positions.

7. The combination in a printing-press of the framing, vertically-moving boxes mounted therein, a shaft carrying the impression-cylinder journaled in said boxes, sliding wedges arranged between said boxes and said caps, rods extending from said boxes and connecting to a yoke, toggles arranged between said yoke and the framing, an oscillating shaft connecting by levers, and links to operate said toggles, and levers mounted on said oscillating shaft connecting by adjustable links to levers connected to said sliding wedges to move said wedges to lock the boxes in their lowest positions.

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

H. A. WISE WOOD.

Witnesses:

HENRY W. COZZENS, Jr.,
LOUISE PECKHAM.