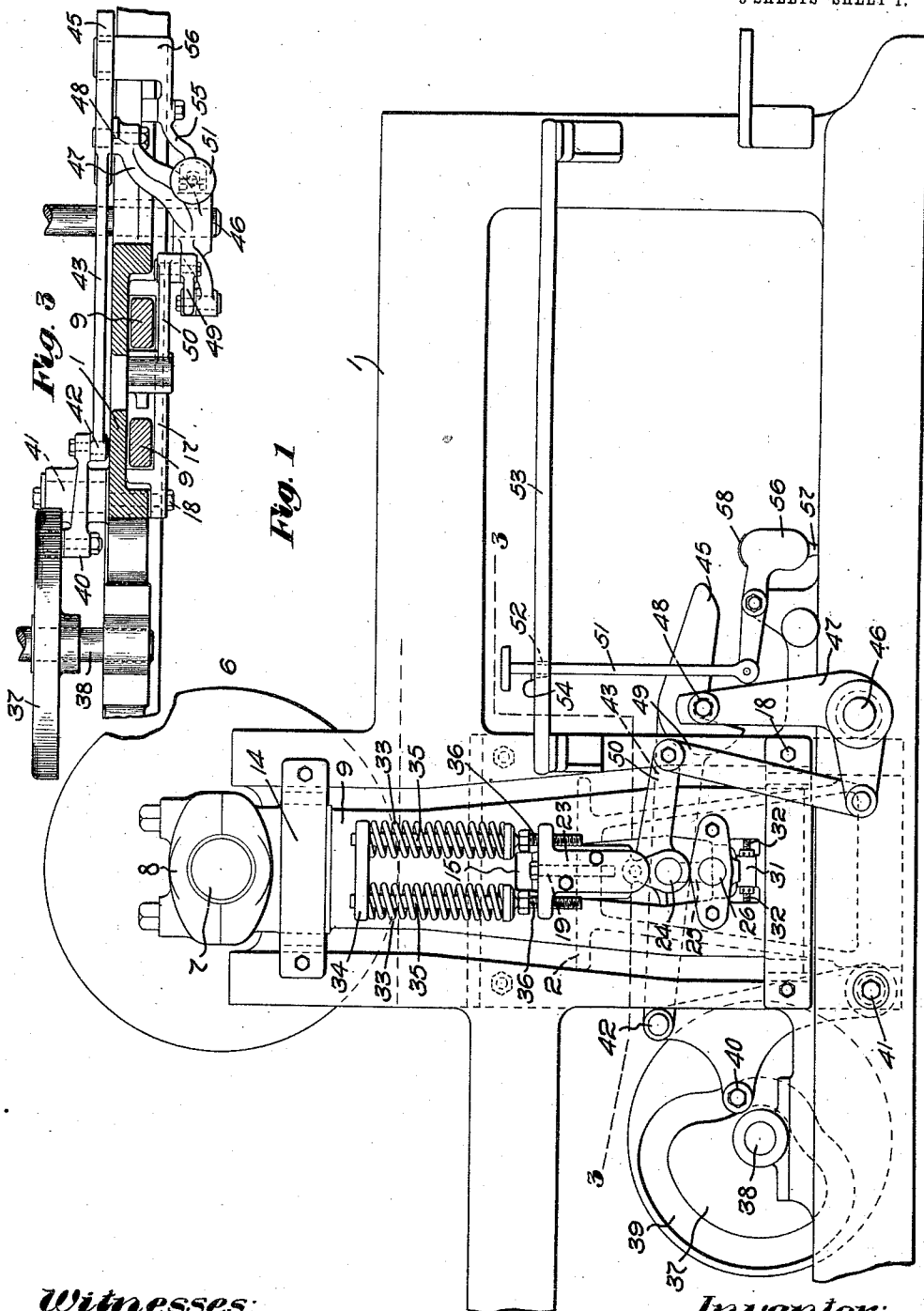


W. K. HODGMAN.
IMPRESSION MECHANISM FOR PRINTING PRESSES.
APPLICATION FILED AUG. 1, 1910.

1,019,253.

Patented Mar. 5, 1912.

3 SHEETS—SHEET 1.



Witnesses:

Carl L. Choate.
Horace A. Crossman

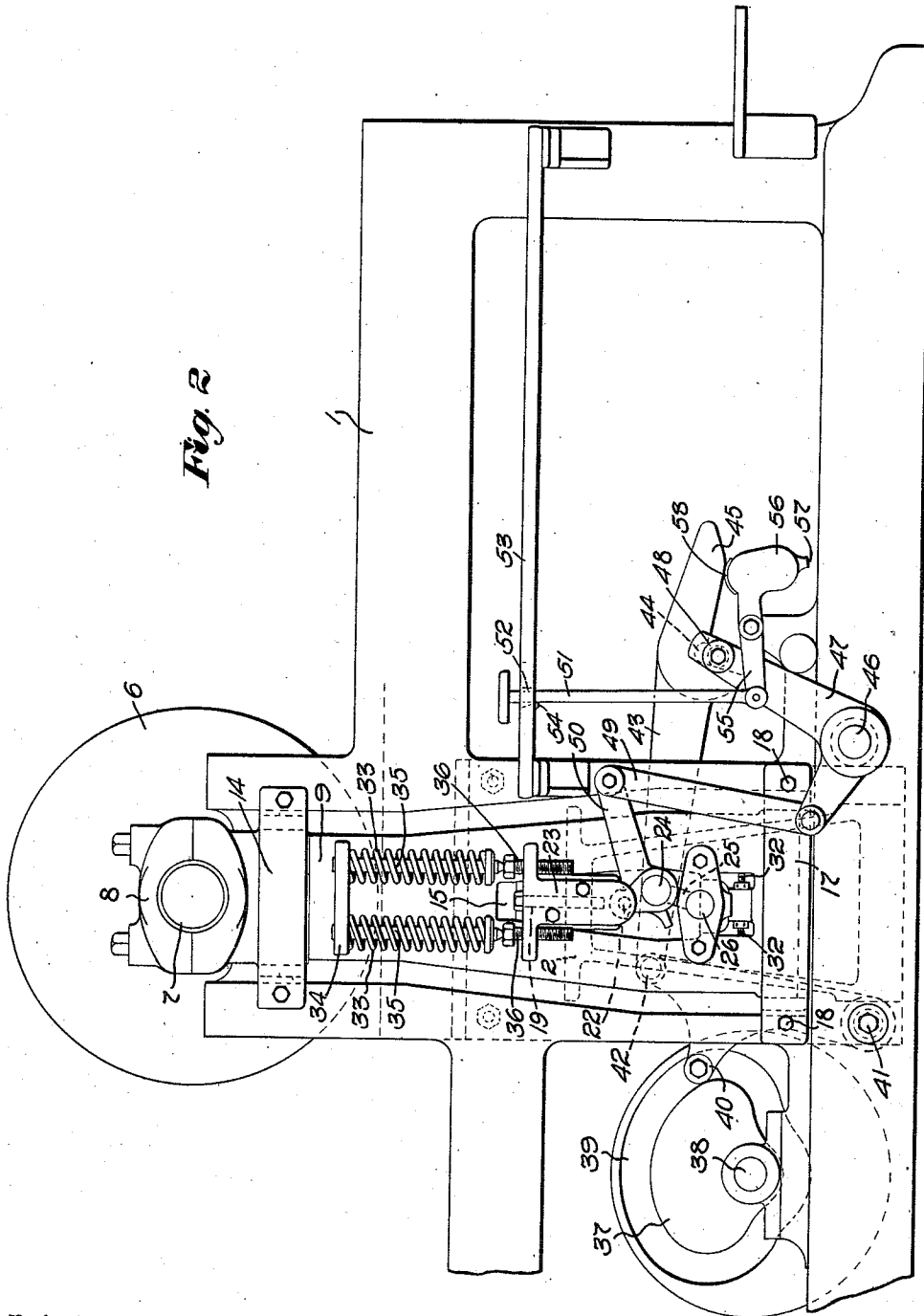
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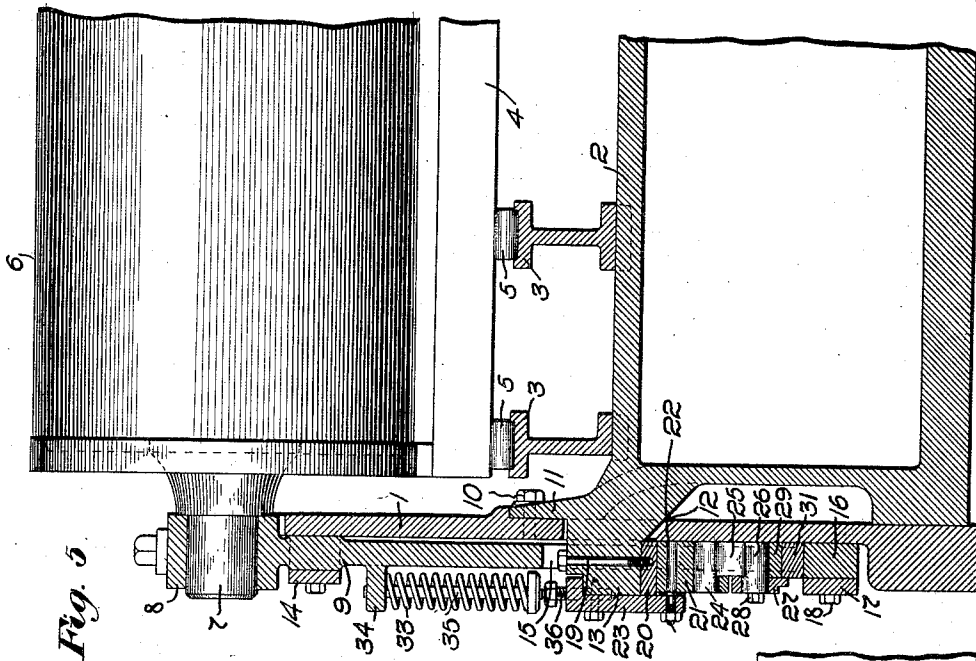


Fig. 3.

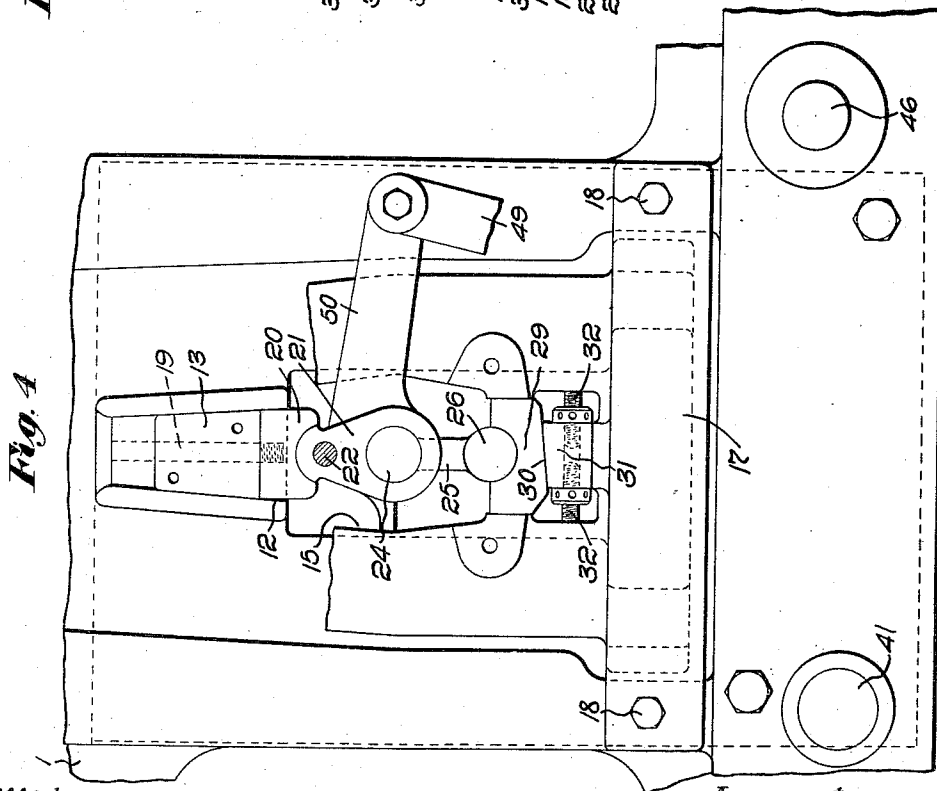


Fig. 4.

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UNITED STATES PATENT OFFICE.

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IMPRESSION MECHANISM FOR PRINTING-PRESSES.

1,019,253.

Specification of Letters Patent.

Patented Mar. 5, 1912.

Application filed August 1, 1910. Serial No. 574,838.

To all whom it may concern:

Be it known that I, WILLIS K. HODGMAN, a citizen of the United States, and a resident of Taunton, in the county of Bristol and State of Massachusetts, have invented an Improvement in Impression Mechanism for Printing-Presses, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to impression mechanism for printing presses and more particularly to printing presses of the bed and cylinder type, such, for example, as two or three revolution bed and cylinder presses.

In order that the principle of the invention may readily be understood, I have disclosed a single embodiment thereof in the accompanying drawings, wherein—

Figure 1 is a side elevation of a portion of a two revolution bed and cylinder press embodying my invention, the bed and cylinder being in printing or impression relation to each other; Fig. 2 is a similar view but representing the cylinder as tripped; Fig. 3 is a longitudinal transverse section through one of the side frames and adjacent parts upon the broken line 3—3 of Fig. 1; Fig. 4 is a view upon a larger scale than Fig. 1 of a portion of the tripping mechanism and parts to which it is connected; and Fig. 5 is a view in vertical section of the mechanism shown in Fig. 1.

Referring more particularly to the drawings, one of the side frames of the press is indicated at 1 in the several figures. The said side frames may be of any suitable shape or construction. Between the side frames 1—1 is a center or cross stay 2 of any suitable construction and supporting thereon tracks or ways 3 upon which is mounted the bed 4, rollers 5 being preferably interposed between said tracks and bed. In operative relation to and preferably above the bed 4 is a printing or impression cylinder 6 having its trunnions 7 supported in bearings 8 formed in or applied to the upper ends of upstanding side rods 9 of any suitable form and construction.

Heretofore it has been customary to support the side rods by or from the side frames

of the press, said side frames being bolted or otherwise secured to the cross or center stay. By reason of this construction the impression strain has been transmitted by said side rods to the side frames and through said side frames to the center stay. Owing, however, to the fact that said side frames are not integral with but are bolted or otherwise secured to the said stay and because in the continued use of the press the connections between the side frames and the stay become sufficiently worn to permit more or less relative movement between said side frames and the stay, it is evident that the relation of the cylinder to the bed becomes uncertain and the entire operation of the press becomes unreliable. An important object of my invention is to so construct the press that no part of the strain of impression passes through the side frames, but is directly received and wholly borne by the said stay. That is to say, the strain of impression is directly transmitted through the side rods to a rigid supporting structure and not to parts or members such as the side frames which may be bolted or otherwise secured thereto and liable to become loosened through continued use.

Viewing Fig. 5, it will be evident that the side frames 1 are secured by bolts 10 to upstanding flanges 11 adjacent the ends of the stay 2 and that said side frame is provided with an opening 12, shown also in Fig. 4. An end 13 of the stay 2 protrudes through said opening 12 beyond the outer face of the adjacent side frame 1 so as to receive the strain of impression, as will be more fully described, and at the opposite side of the press I employ a similar construction. Each side rod 9 is guided at its upper end by the side frame as indicated in Fig. 5, a guiding plate 14 being employed if desired to position this end of each side rod. Each side rod 9 is cut away or divided at its lower portion as indicated at 15 in Figs. 4 and 5, so as to pass about the adjacent protruding end of the cross stay 2, the said side rod having a closed lower end 16 (see Fig. 5) positioned sufficiently below said protruding end 13 to permit the interposition therebetween of the cylinder tripping

mechanism. At its lower end each side rod 9 may be held in place by a plate 17 secured by bolts 18 to the side frame 1. Each opening 15 is of sufficient extent vertically to permit the necessary vertical movement of the side rods 9 in tripping the cylinder.

Secured by one or more bolts 19 passing vertically through each protruding end 13 of the cross stay, is a block 20 having in its lower face a socket to receive the complementally shaped upper end of the upper toggle member 21, said member 21 being secured to the said protruding end of the cross stay by a bolt 22, which serves as a fulcrum about which said toggle member turns. Said bolt passes also through the lower end of a plate 23 bolted or otherwise secured as shown in Fig. 5 to the outer face of the protruding end of the cross stay. The said toggle member 21 is suitably apertured to receive the angled end 24 of the lower toggle member or link 25, the lower angled end 26 of said member 25 being received in a suitable aperture in the plate 27 secured by bolts 28 to the side rod 9. The rounded lower end of the toggle member or link 25 is also received in a socket in a block 29 having a lower wedge face 30, with which slidingly contacts the upper wedge face of a block 31. Said block 31 may be laterally adjusted by adjusting screws 32—32, thereby to take up wear in the toggle from time to time or to adjust the impression of the cylinder, as may be necessary. The wedge block 31 is carried upon the upper face of the bottom cross portion 16 of the side rod 9. It will thus be evident that the said toggle mechanism is interposed between the lower face of the protruding end 13 of the cross stay and the lower end of the side rod, and that said toggle mechanism wholly underlies and is in the vertical plane of said protruding end. In this manner impression strains are directly transmitted to the protruding ends of said cross stay.

When the toggle mechanism is positioned as shown in Figs. 1 and 4, the cylinder 6 is maintained in operative relation to the bed 4, but when the toggle is broken the said cylinder is by suitable means tripped or elevated to the position indicated in Fig. 2. For this purpose I provide coiled compression springs 33—33 interposed between a transverse rib 34 upon the side rod 9 and the upper face of the plate 23. Preferably the springs 33 surround pins 35 whose lower ends are provided with collars, said lower ends bearing upon adjusting screws 36, whereby the tension of said springs may be adjusted. The tension of said springs is such as to somewhat more than compensate for the weight of the cylinder 6, so that the said cylinder may be more readily elevated by said springs than it is drawn down by

the toggle mechanism described. In this manner, all lost motion in the toggle is prevented and the parts of the toggle are always kept under sufficient strain to be in working contact; that is to say, the toggle joint is kept under compression, inasmuch as the said springs tend constantly to elevate the side rods and all parts carried thereby or connected thereto.

It will be apparent that the toggle mechanism is readily accessible and readily removable for repairs, etc.

The cylinder 6 is tripped periodically in any suitable manner. Preferably I provide an impression cam 37 suitably journaled in the framing upon the shaft 38 and driven in any suitable manner. The said cam is provided with a cam path 39, with which engages a bowl or projection upon the impression cam lever 40 pivoted at 41 in the side framing and having pivoted thereto at 42 an impression cam connecting rod 43 having a socket 44 in its under face adjacent its outer end and a tripping end 45. Mounted upon the rock shaft 46 in the side frames is a rock shaft lever 47 carrying at the outer end of one arm a bowl 48 adapted to enter the socket 44, and when so engaged with said impression cam connecting rod to compel conjoint movement of said connecting rod and said rock shaft lever. The opposite arm of said rock shaft lever 47 is connected by a link 49 to an arm 50 of the upper toggle member 21. It will therefore be apparent that in the rotation of the impression cam 37, the impression cam connecting rod 43 is moved to and fro and thereby rocks the rock shaft lever 43 when its upper end is seated in the socket 44 and that thereby the toggle is periodically straightened and broken so as at the proper times to trip the cylinder 6. When the toggle is broken as indicated in Fig. 2, the springs 33 immediately elevate the cylinder 6, and when the toggles are straightened the said cylinder is drawn down into operative relation to the bed 4. In practice the springs 33 are adjusted so they contribute to elevate the cylinder 6, but the toggle mechanism would elevate the cylinder without the springs by means of the bolt 22 and the angled ends of link 25 which latter are received by toggle member 21 and plate 17 for that purpose.

I may provide any suitable mechanism for disengaging the rock shaft lever 47 from the impression cam connecting rod 43, thereby after the socket 44 or the horn adjacent thereto has elevated the cylinder permitting the spring 33 to hold the impression cylinder from contact with the bed 4 for any desired period. To effect this result, I have herein provided a trip pedal 51 passing through an opening 52 in the feeder platform 53 and having a pin 54 to engage the under

face of said platform when the pedal is depressed. The opening 52 is slightly elongated to permit the feeder laterally to move the trip pedal and thereby to disengage the pin 54 from the under face of the feeder platform. At its lower end the trip pedal is pivoted to a lever 55 pivoted upon the side frame and having a counterbalance 56 tending to elevate the trip pedal when the pin 54 is disengaged from the feeder platform. The lower end 57 of said counterbalance is adapted to contact with the side framing and to serve as a stop for the upward movement of the trip pedal. When the feeder depresses the trip pedal the upper face 58 of the counterbalance 56 contacts with the trip end 45 of the impression cam connecting rod 43, and thereby disconnects said connecting rod from the rock shaft lever 27. The trip pedal may be depressed at any time and held down by the foot or by pin 54 until the parts reach the position shown in Fig. 2 when the trip end 45 of the impression cam connecting rod 43 arrives within effective reach of the upper face 58 of the counterbalance. Thus damage cannot result from tripping when the cylinder is down or moving up or down as the downward hanging horn on the impression cam connecting rod 43 will act to operate the tripping mechanism and prevent the cylinder being left down in contact with the bed except in the proper part of the printing stroke. The cylinder 6 remains elevated until the impression cam connecting rod 43 is again engaged by the rock shaft lever 47 and in the continued rotation of the cam the toggle is straightened. Any other suitable means may be employed periodically to trip the cylinder 6.

It will be evident from the foregoing description that the strain of impression is not borne by the side frames or other part bolted or otherwise secured to the cross or center stay, but that said strain is directly borne by the center stay itself. In this manner an absolutely accurate relation of the impression cylinder and bed is always maintained. The toggle mechanism is directly interposed between the side rods and the protruding ends of the cross stay and is directly beneath such cross stay ends, so that the impression strains pass vertically through said toggle mechanism.

Having thus described one illustrative embodiment of my invention, I desire it to be understood that although specific terms are employed, they are used in a generic and descriptive sense and not for purposes of limitation, the scope of the invention being set forth in the following claims.

Claims.

1. A bed and cylinder press comprising in combination side frames, a cross or center stay connected thereto, a bed supported

above the center stay, a cylinder above the bed, and side rods supporting said cylinder, said side rods being directly supported by the cross or center stay, whereby the latter receives the impression strain. 70

2. A bed and cylinder press comprising in combination side frames, a cross or center stay having ends projecting beyond the outer faces of said side frames, a bed supported above the center stay, a cylinder above the bed and upright members supporting said cylinder and themselves supported by and transmitting the strain of impression to said projecting ends. 75

3. A bed and cylinder press comprising in combination side frames having openings therethrough, a center or cross stay having ends protruding through said openings, a bed, a cylinder thereover, and side rods supporting said cylinder and transmitting the strain of impression to said protruding ends. 80

4. A bed and cylinder press comprising in combination side frames, a cross or center stay therebetween and having ends extending outwardly beyond the outer faces thereof, a bed above the center stay, a cylinder above the bed, upright side rods directly supporting said cylinder and extending below said stay ends, and cylinder tripping means interposed directly between said stay ends and the lower parts of said side rods. 85

5. A bed and cylinder press comprising in combination side frames, a cross or center stay therebetween and having protruding ends to receive the impression strain, a bed above the center stay, a cylinder above the bed, and upright side rods supporting said cylinder and directly connected to said protruding ends. 90

6. A bed and cylinder press comprising in combination side frames, a cross or center stay therebetween and having protruding ends to receive the impression strain, a bed above the center stay, a cylinder above the bed, upright side rods supporting the cylinder and cylinder tripping mechanism directly interposed between said rods and said protruding ends. 105

7. A bed and cylinder press comprising in combination side frames, a cross or center stay therebetween having ends protruding through said side frames, a bed above the center stay, a cylinder above the bed, upright side rods directly supporting the cylinder and extending about and to a point below said protruding ends, and cylinder tripping toggle mechanism interposed between the lower faces of said protruding ends and underlying parts of said side rods, whereby the impression strain is directly borne by said center stay. 115

8. A bed and cylinder press comprising in combination side frames, a cross or center stay therebetween having ends protruding through said side frames, a bed above the 120

stay connected thereto, a bed supported 130

center stay, a cylinder above the bed, upright side rods directly supporting the cylinder and guided by said side frames and extending about and to a point below said protruding ends, cylinder tripping toggles between the lower faces of said side rods, and cylinder elevating springs between the upper faces of said protruding ends and overhead portions of said side rods.

9. A bed and cylinder press comprising in combination side frames, a cross or center stay therebetween having ends protruding through said side frames, a bed above the center stay, a cylinder above the bed, upright side rods directly supporting the cylinder and extending about and to a point directly beneath said protruding ends, and cylinder tripping mechanism directly beneath said protruding ends and between the same and the underneath portions of said side rods.

10. A bed and cylinder press comprising in combination side frames, a cross or center stay therebetween having ends protruding through said side frames, a bed above the center stay, a cylinder above the bed, upright side rods directly supporting the cylinder and extending about and to a point directly beneath said protruding ends, and cylinder tripping toggle mechanism directly beneath said protruding ends and between and directly engaging the same and underneath portions of said side rods.

11. A bed and cylinder press comprising in combination side frames, a cross or center stay having ends projecting beyond the outer faces of said side frames, a bed supported above the center stay, a cylinder above the bed, side rods supporting said cylinder and extending about and to a point beneath said protruding ends and readily accessible and removable toggle mechanism interposed between said protruding ends

and the underneath portions of said side rods.

12. A bed and cylinder press comprising in combination side frames, a cross or center stay therebetween and having protruding ends to receive the impression strain, a bed above the center stay, a cylinder above the bed, side rods passing about and to a point beneath said protruding ends, and cylinder tripping toggle mechanism positively secured to said protruding ends of the center stay and engaging the underlying portions of said side rods.

13. In a bed and cylinder printing press, an impression tripping mechanism comprising in combination side frames, a center stay therebetween having ends passing through said side frames, a bed above and supported by said center stay, a cylinder above the bed, upright side rods guided by the side frames and directly supporting the cylinder and extending down around and below to a point directly beneath said protruding ends of the center stay, toggle mechanism directly beneath said protruding ends and between the same and the underneath portions of said side rods, means for periodically operating the toggles to draw down the cylinder into printing contact with the bed and to elevate the cylinder out of contact with the bed, means for rendering inoperative at will the means for periodically operating the toggles to draw down the cylinder, and means for holding the cylinder tripped.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

WILLIS K. HODGMAN.

Witnesses:

EVERETT S. EMERY,
MAY H. LOWRY.