No. 716,586. Patented Dec. 23, 1902.

J. H. SHEPHERD.

PUNCHING AND PRINTING MACHINE.

(Application filed Dec. 30, 1901.)

(No Model.) 5 Sheets—Sheet 1.

Fig. 1.

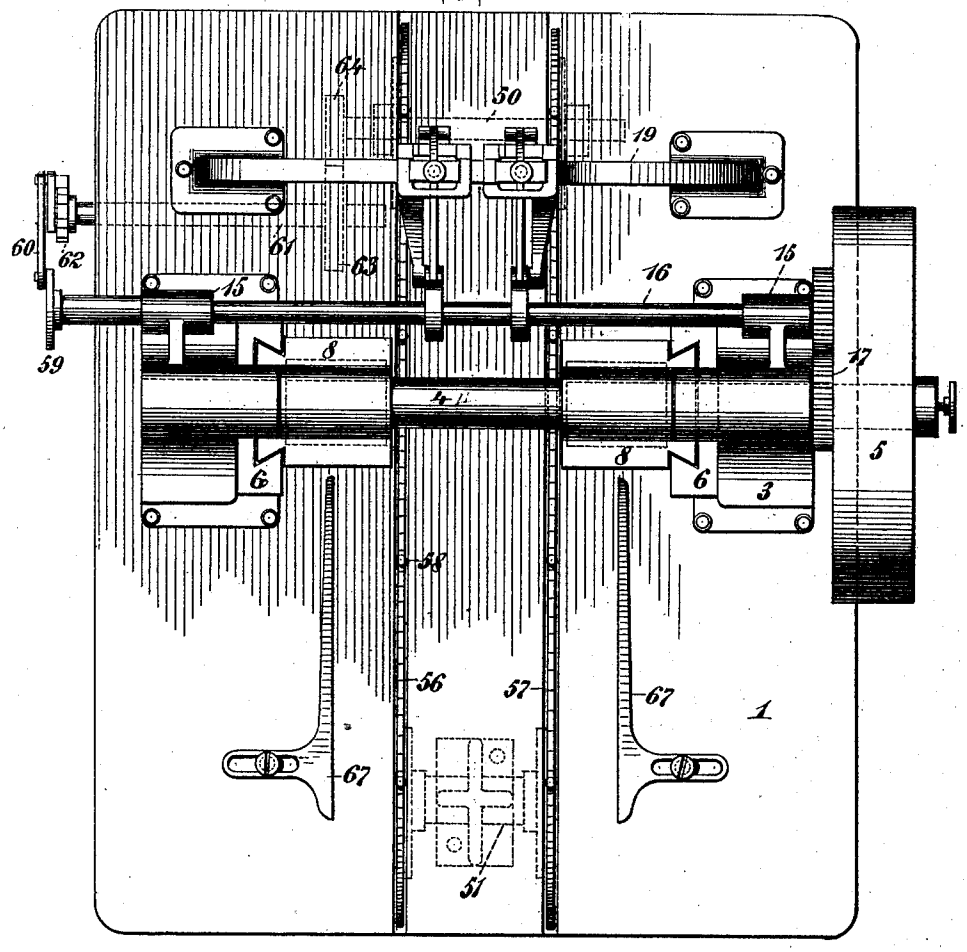


Fig. 2.

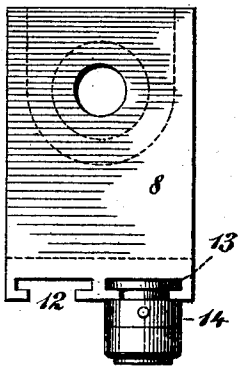
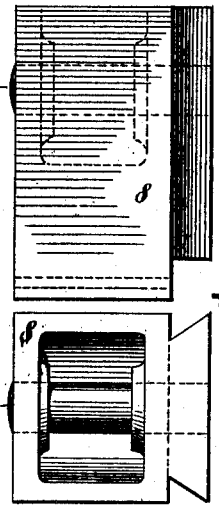


Fig. 3.



WITNESSES:

Gustave Dieterich.

Alvin Schlinbeck.

Fig. 4. INVENTOR

Joseph H. Shepherd.

BY Paul Benjamin

his ATTORNEY

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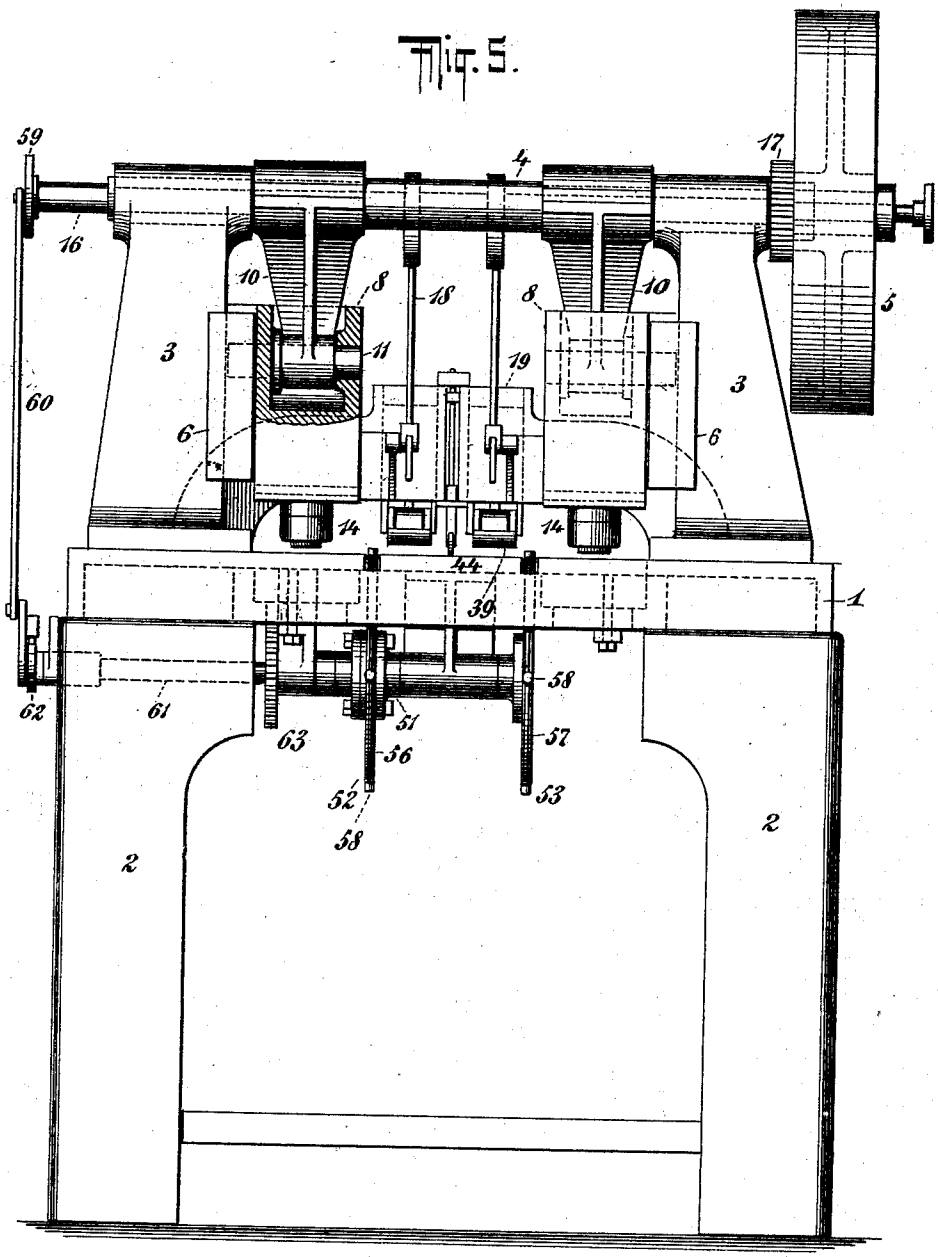
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PUNCHING AND PRINTING MACHINE.

(Application filed Dec. 30, 1901.)

(No Model.) 5 Sheets—Sheet 2.

Fig. 5.



WITNESSES:

Gustave Dieterich.

John T. Fehlenbeck.

INVENTOR

Joseph H. Shepherd

BY Lamb & Benjamin

his ATTORNEY

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 716,586. Patented Dec. 23, 1902.

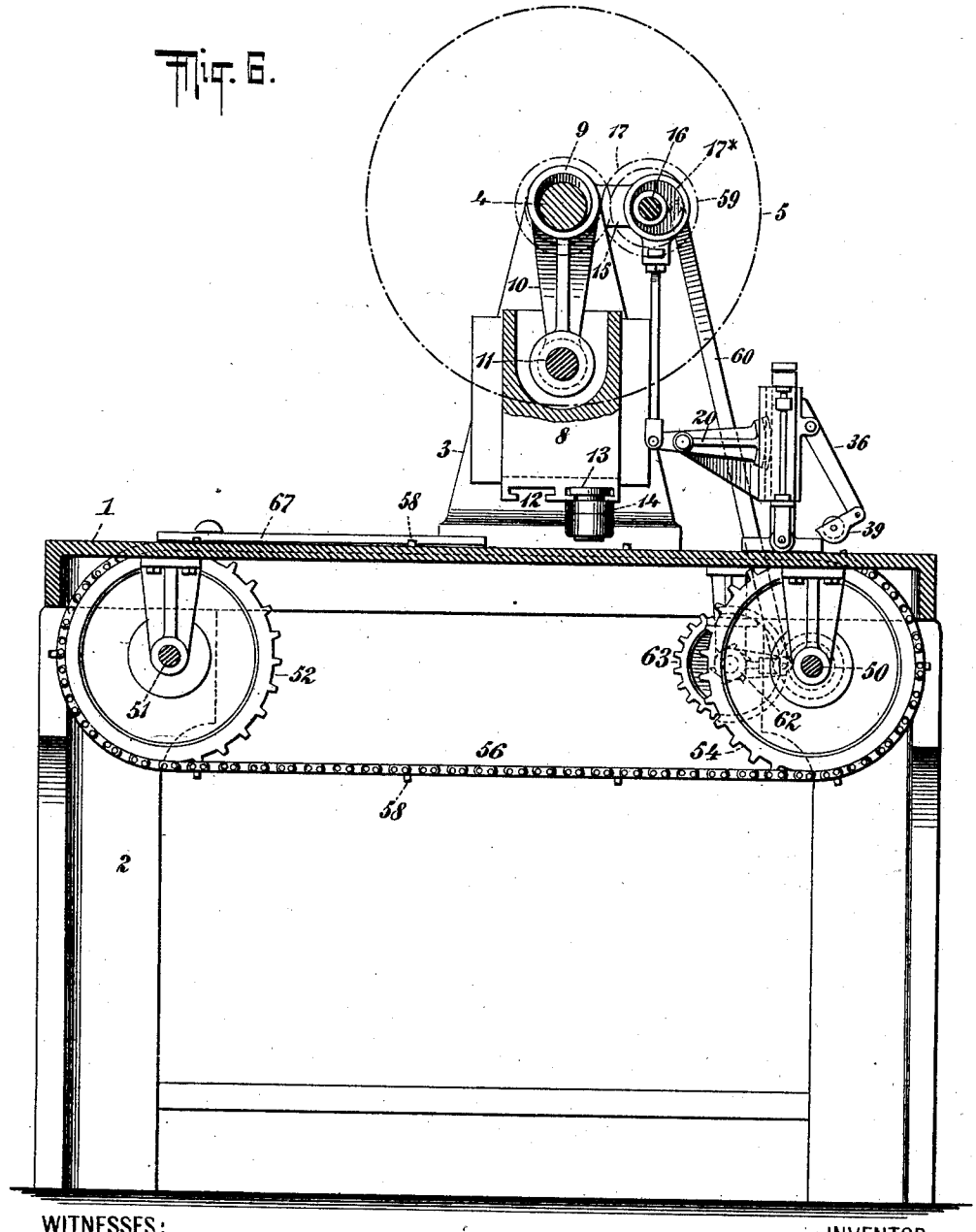
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(Application filed Dec. 30, 1901.)

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Fig. 6.



WITNESSES:

Gustave Dieterich.

John Kehlenbeck.

INVENTOR

Joseph H. Shepherd

BY Robt Benjamin

his ATTORNEY

THE NATIONAL PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 716,586. Patented Dec. 23, 1902.

J. H. SHEPHERD.

PUNCHING AND PRINTING MACHINE.

(Application filed Dec. 30, 1901.)

(No Model.) 5 Sheets—Sheet 4.

Fig. 6.

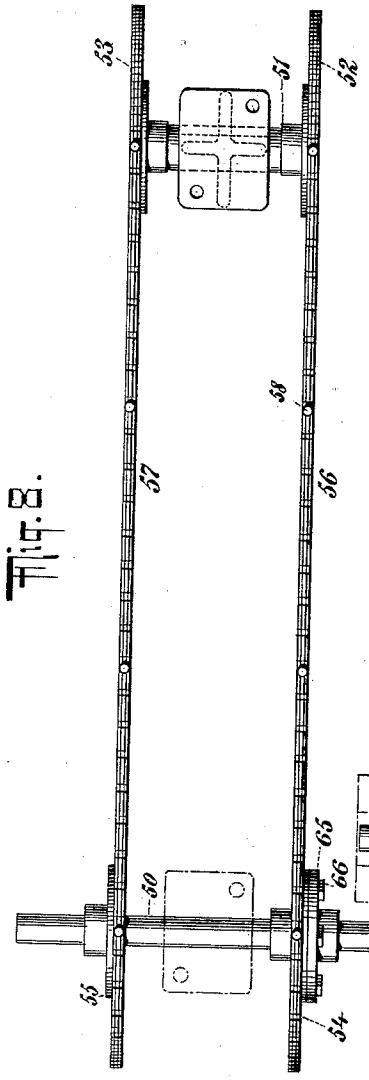
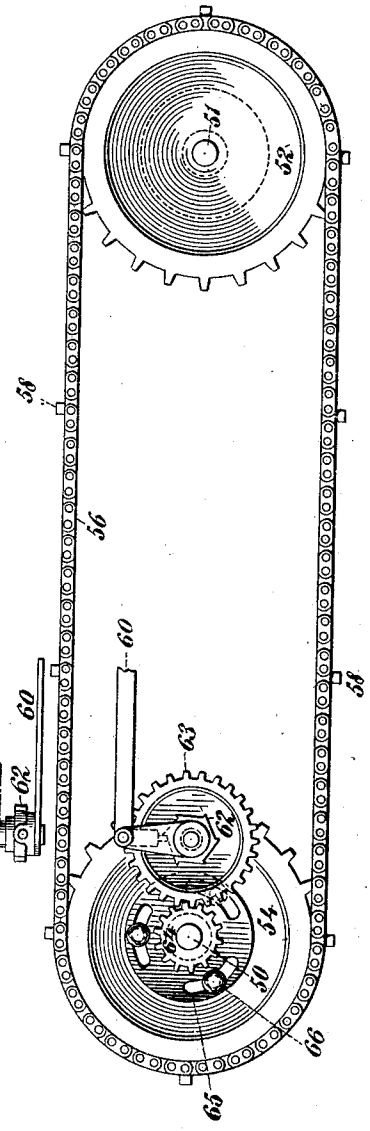


Fig. 7.



WITNESSES:

Gustave Peterich.

Edward Kehlenbeck.

INVENTOR

Joseph H. Shepherd.

BY Paul Benjamin

ATTORNEY

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 716,586. Patented Dec. 23, 1902.

J. H. SHEPHERD.

PUNCHING AND PRINTING MACHINE.

(Application filed Dec. 30, 1901.)

(No Model.)

5 Sheets—Sheet 5.

Fig. 11.

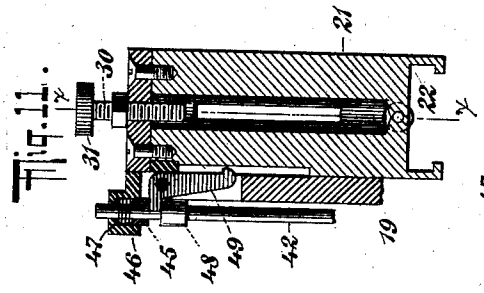


Fig. 12.

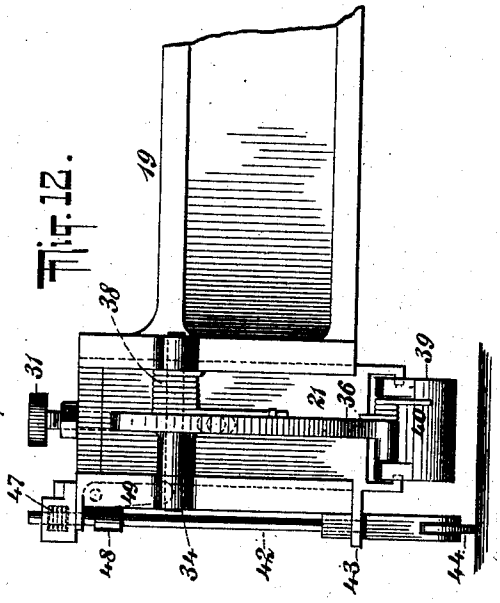
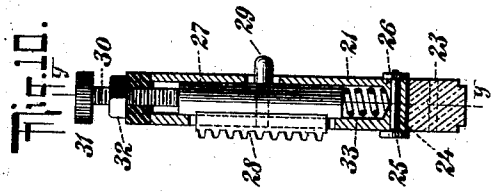


Fig. 10.



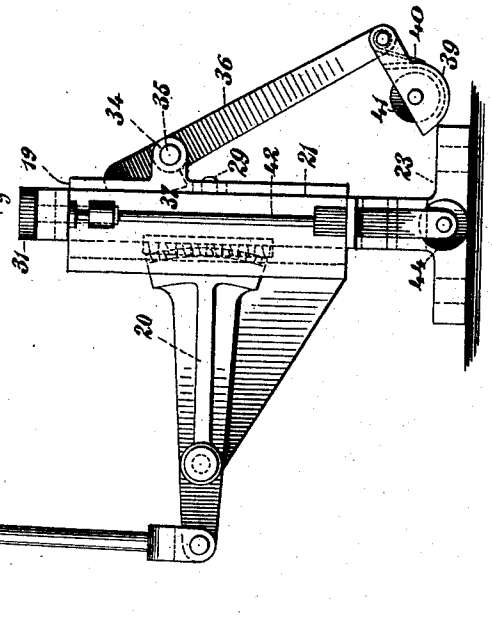
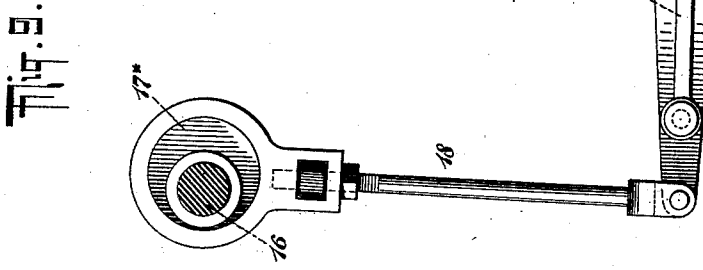


Fig. 9.



WITNESSES:

Gustave Dietrich.

John D. Schlenbrick.

INVENTOR

Joseph H. Shepherd

BY Paul Lampson

his ATTORNEY

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOSEPH HEWES SHEPHERD, OF DOVER, NEW JERSEY.

PUNCHING AND PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 716,586, dated December 23, 1902.

Application filed December 30, 1901. Serial No. 87,759. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH HEWES SHEPHERD, of Dover, Morris county, New Jersey, have invented a new and useful Improvement in Punching and Printing Machines, of which the following is a specification.

My invention relates to a multiple punch-press with printing devices combined therewith.

The object of the invention is to punch holes in and print the name and size upon any article within the compass of the machine, such as collars and cuffs of linen, paper, or celluloid.

My invention consists in the construction of the apparatus and the various combinations and instrumentalities therein, all as hereinafter more particularly set forth.

In the accompanying drawings, Figure 1 is a plan view. Figs. 2 and 3 are side elevations of one of the punch-heads with the punch in place in Fig. 2. Fig. 4 is a top view of one of the punch-heads. Fig. 5 is an end elevation of the entire machine. Fig. 6 is a vertical longitudinal section of the machine. Fig. 7 is a detailed view showing the feed-belt and ratchet-driving mechanism. Fig. 8 is a top view of the same. Fig. 9 is a detailed view showing the printing and inking device in side elevation, and Fig. 12 is a similar view showing the same in front elevation. Fig. 11 illustrates details of the printing device, Fig. 10 being a section on the line *x x* of Fig. 11 and Fig. 11 a section on the line *y y* of Fig. 10.

Similar numbers of reference indicate like parts.

The punching devices.—The table 1 of the machine is supported on legs 2. It carries standards 3, in the upper ends of which is journaled the shaft 4, upon which is the main driving-pulley 5. To the inner sides of standards 3 are secured the vertical dovetail guides 6, which guides receive correspondingly-shaped projections on the punch-heads 8. Upon shaft 4 are eccentrics 9, each of which carries a pitman 10. The lower end of each pitman enters a recess in the upper part of punch-head 8 and is pivoted therein by pin 11. In the lower face of each punch-head are rectangular elongated recesses 12, Fig. 2, suitably formed to receive the flanged projection 13 on the punch 14. The punch is thus held in the recess and may be adjusted in position longitudinally of the same. By the rotation of shaft 4 the punch-heads are caused to reciprocate vertically in the guides 6, thus moving the punches to and from the work on the table of the machine. Each punch-head has two punch-holding grooves 12, and hence may carry two punches 14, if desired. This number of grooves may be increased or diminished. So, also, I may construct the machine with more than two punch-heads, actuated in similar manner from shaft 4.

The printing devices.—Journaled in suitable brackets 15 on the standards 3 is a shaft 16, rotated by gearing 17 from main shaft 4. On shaft 16 are eccentrics 17*, each of which actuates a pitman 18. Each pitman actuates a printing-block in the following manner, Figs. 9, 10, 11, 12: Pivoted in an arched supporting-frame 19 is a toothed sector 20. Vertically moving in said frame is the sliding head 21. This head has at its lower end a recess 22, in which is received the upper flanged end of the type-block 23. Said block is further secured in said recess by the pin 24, which has a solid head 25 at one end and may be threaded to receive a nut 26 at the other end. The head 21 is made hollow to receive a solid plunger 27, which carries on one side a rack 28, which protrudes through an opening in the wall of said head, and on the other side a pin 29, also extending through an opening in the head-wall. The openings are made sufficiently long to permit of vertical play to the rack and pin.

Extending through the upper end of head 21 is a screw 30, provided with a milled head 31 and clamp-nut 32. Beneath the plunger 27 is a spiral spring 33. By suitably adjusting the screw 30 said spring 33 can be more or less compressed. The toothed sector 20 engages with the rack 28.

The foregoing devices are duplicated in the arched frame 19, one being operated by each eccentric 17*.

When the shaft 16 is rotated, the sector 20, through the pitman and eccentric, is caused to vibrate, thus effecting a vertical reciprocating motion of the head 21 in its frame, and thus bringing the type-block 23 toward or from the work on the table beneath it. The

function of the movable plunger 27 and the spring 33 is to cause the type-block to meet the work with an elastic pressure, which may be regulated by more or less compressing said spring by means of the screw 30.

The inking device.—Pivoted in brackets 34 on the frame 19 is a short shaft 35, on which is fixed the lever 36. The upper end of said lever above the pivot is rounded, has a shoulder at 37, and is in position to be acted upon by the pin 29 on plunger 27 as said plunger moves up and down. A coiled spring 38 surrounds the lever-shaft and has one end abutting on the frame and the other on the lever, so that its tendency is to hold the lower end of said lever away from the frame. Said lower end has pivoted to it the ink-well 39, which is held up in the proper position by a coiled spring 40. In the ink-well is journaled the inking-roller 41. The arrangement of parts is such that when the lever 36 is moved in one direction, the type-block being raised, it carries the roller 41 under the face of the type to ink the same. This movement of the lever is effected by the pin 29 rising (with the sliding head) above the lever-shaft, and so bearing against the rounded upper end of the lever, so forcing said end outwardly from the frame. As the sliding head descends the pin passes beneath the shoulder 37 on the lever, which is then free to be thrown rearward or in the position shown in Fig. 9 by the action of the spring 38.

The safety device.—If no article to be printed should come under the type-block, the latter would imprint upon the bed. The next article fed to the type would then be soiled by the fresh ink of the impression, and so be injured. To obviate this, a safety device is provided, constructed as follows, Figs. 10 and 12: 42 is a vertical rod having its lower end squared and passing through a guide 43 on frame 19. At its lower extremity said rod carries a roller 44. The upper portion of said rod passes through a guide 45 and enters a hollow threaded projection 46, also on said frame. In said projection is a spiral spring 47, which bears against said guide 45. On rod 42 is a collar 48, which engages with the arm of a pivoted latch 49, the shouldered lower end of which is adapted to engage with a projection on sliding head 21, Fig. 12, and thus prevent said head descending to its limit, and hence the type-block from meeting the bed. If an article to be printed is carried beneath the roller 44, then the rod 42 is raised, and the collar 48 acts upon latch 49 to withdraw its lower end from the path of sliding head 21, so that the latter is free to descend and carry the type into impression-contact with said article.

The feeding device.—Supported in suitable hangers beneath the table are parallel shafts 50 and 51, which carry sprocket-wheels 52 53 54 55 and chain feed-belts 56 57. Said feed-belts are provided with pins 58, which protrude through parallel longitudinal slits in the table. Motion is imparted to these belts in the following manner: At the end of shaft 16 is a crank-disk 59, the pin of which carries a connecting-rod 60, whereby intermittent movement is imparted to a shaft 61 through the ratchet 62. Shaft 61 transmits motion to shaft 50 by gears 63 and 64. The gear 64 is attached to shaft 50 by an adjustable coupling 65, slotted to receive pins 66, Fig. 7.

The operation of the machine.—Assume the article to be punched and printed to be a cuff. It is laid upon the table between the adjustable guides 67 and on being engaged by the pins 58 is carried forward beneath the punches 14. At a period when through the operation of the ratchet mechanism the feed intermits the punches descend and produce the necessary perforations. The feed resuming, the cuff is carried onward and beneath the printing-types, where again a delay in the feed, similarly caused, affords time for the types to descend and produce the desired impression. Further resumption of feed carries the article to the delivery end of the apparatus.

I claim—

1. The combination of the vertically-reciprocating punch 14, vertically-reciprocating type-block 23, work-supporting table 1, feed-belts 56, 57 having pins 58 protruding through openings in said table, and means for intermittently actuating said feed-belts.

2. The combination of the rotary shaft 4 and supports therefor, pitman 10, punch-head 8 carrying punch 14, table 1, feed-belts 56, 57 having pins 58 protruding through openings in said table and a ratchet mechanism for actuating said feed-belts, and means for actuating said ratchet mechanism interposed between the same and said shaft 4.

3. The combination of the rotary shaft 4 and supports therefor, pitman 10, punch-head 8 carrying punch 14, rotary shaft 16, gearing between said shafts 4 and 16, a vertically-reciprocating type-block actuated by said shaft 16, table 1, feed-belts 56, 57 having pins 58 protruding through openings in said table, a ratchet mechanism for actuating said feed-belts and means for operating said ratchet mechanism interposed between the same and shaft 16.

4. The combination of the hollow sliding head 21 and support therefor, a type-block carried by said head, plunger 27 on said head, spring 33 below said plunger, means for regulating the elasticity of said spring and mechanism acting upon said plunger for vertically reciprocating said sliding head.

5. The combination of the hollow sliding head 21, and support therefor, a type-block carried by said head, plunger 27 on said head, spring 33 below said plunger, means for regulating the elasticity of said spring, a rack 28 on said plunger, pivoted toothed sector 20 engaging with said rack and means for vibrating said sector, and thereby causing a vertical reciprocation of said sliding head.

6. The combination of a table or bed, a sup-

porting-frame thereon, type-carrying sliding head 21 vertically reciprocating on said frame, latch 49 pivoted on said frame and engaging with said head, vertical rod 42 movable in guides on said frame, a collar 48 on said rod constructed to engage with said latch, and a roller 44 pivoted in the lower extremity of said rod 42 and bearing on said bed.

7. The combination of the frame 19, hollow sliding head 21 vertically reciprocating therein, a type-block carried by said head, plunger 27 on said head, pin 29 on said plunger, lever 36 pivoted in said frame and having a shoulder 37, an inking device carried by said lever and a retracting-spring 38 for said lever; the aforesaid parts being constructed and arranged so that upon the ascent of said head said pin 29 shall act upon said lever 36 to move the inking device beneath the type-block to ink the same, and upon the descent of said head said pin shall pass under said shoulder on said lever, and permit said lever to be retracted by said spring 38, to withdraw the inking device from the type.

JOSEPH HEWES SHEPHERD.

Witnesses:

JOHN A. ABEL,

PERCY L. GALLAGHER.