

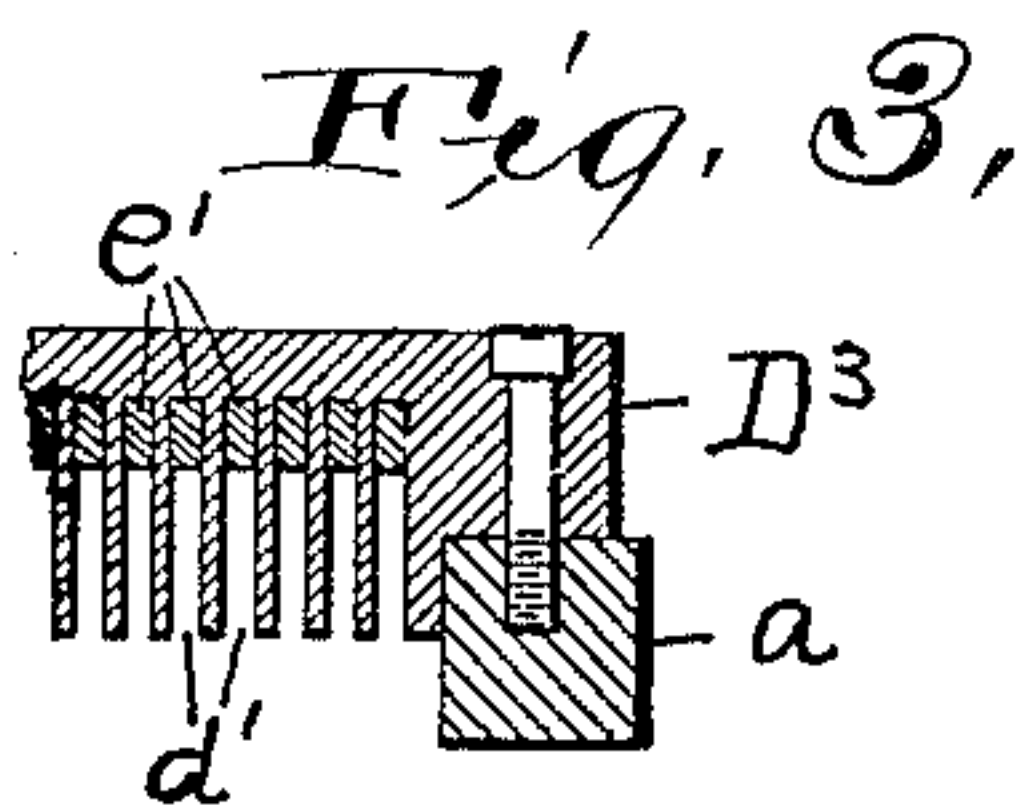
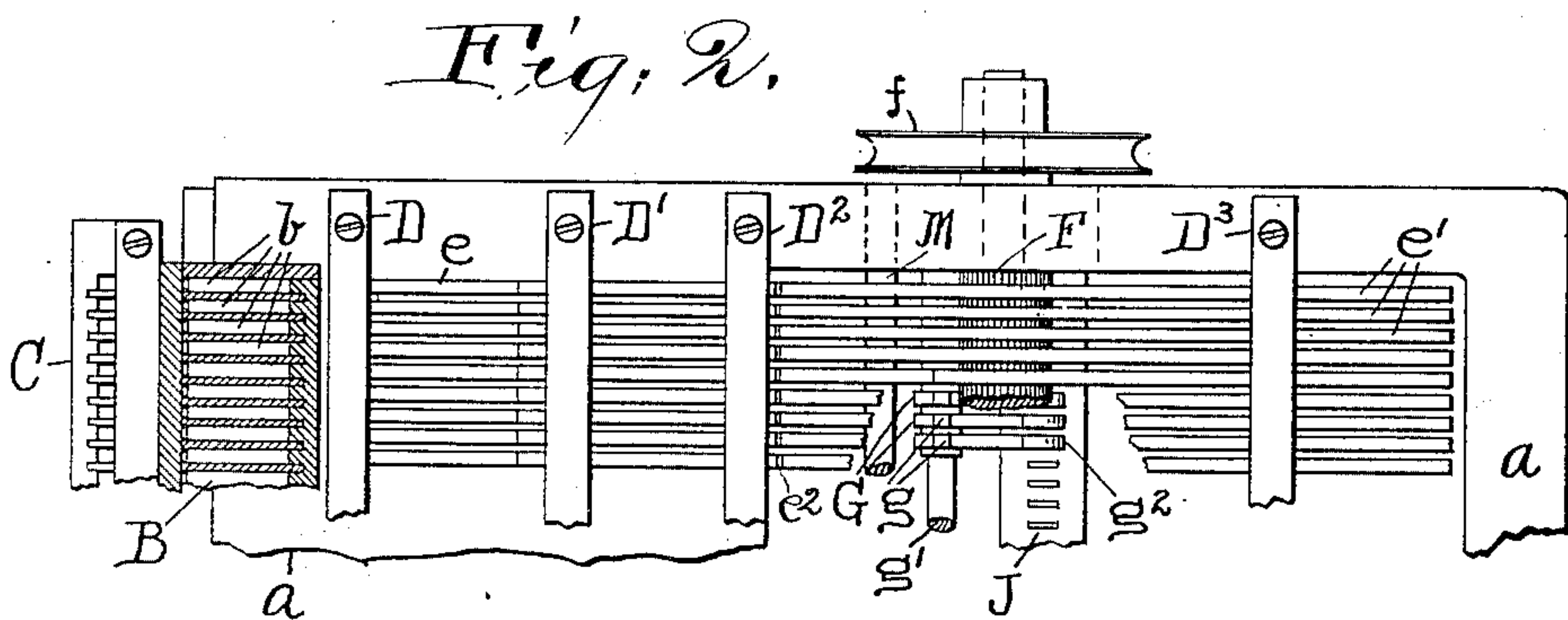
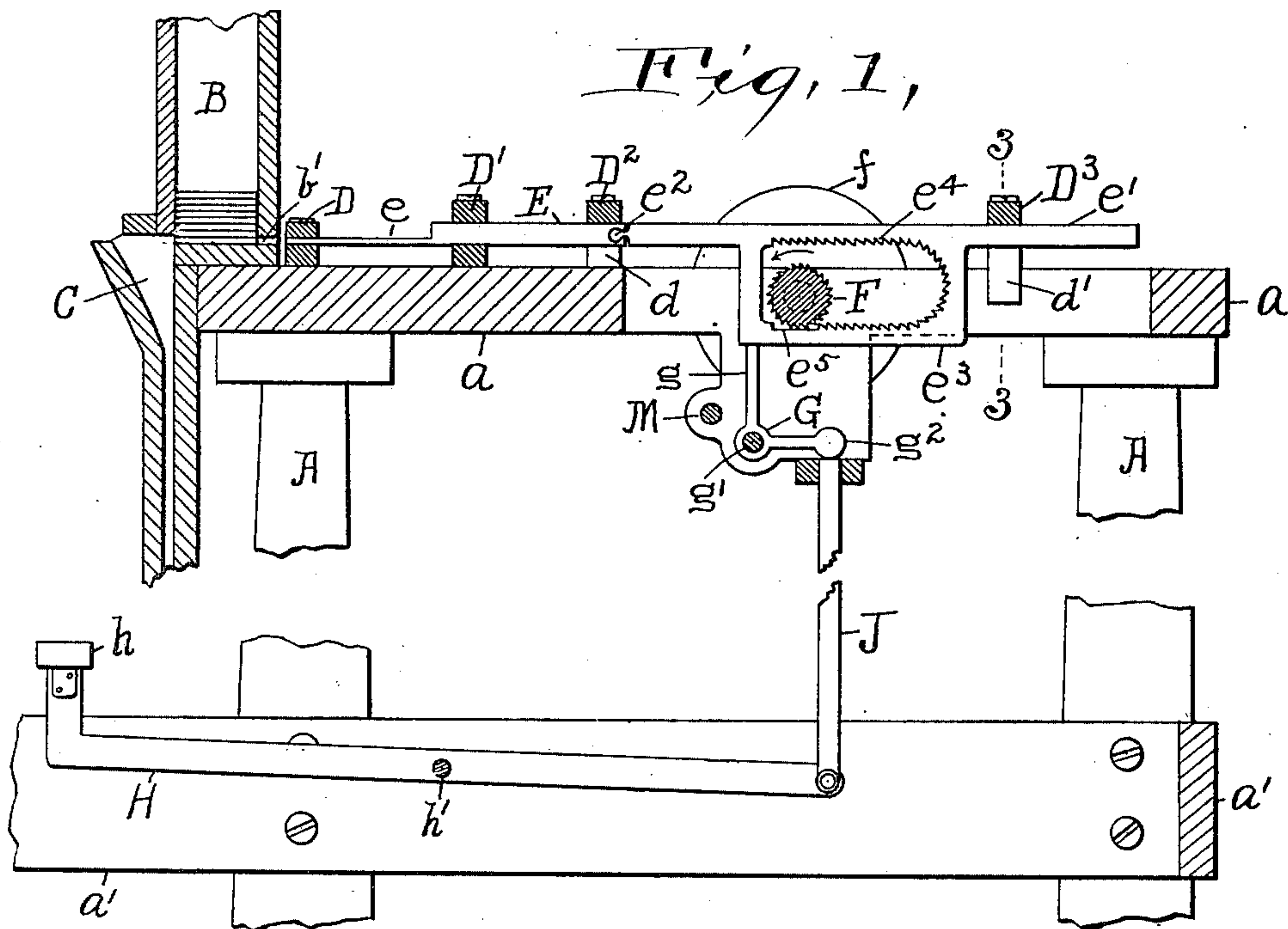
No. 657,282.

Patented Sept. 4, 1900.

F. B. CONVERSE, JR.  
EJECTING MECHANISM FOR TYPE MACHINERY.

(Application filed Dec. 30, 1899.)

(No Model.)



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# UNITED STATES PATENT OFFICE.

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## EJECTING MECHANISM FOR TYPE MACHINERY.

SPECIFICATION forming part of Letters Patent No. 657,282, dated September 4, 1900.

Application filed December 30, 1899. Serial No. 742,042. (No model.)

*To all whom it may concern:*

Be it known that I, FRANCIS B. CONVERSE, Jr., a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented a certain new and useful Improvement in Ejecting Mechanism for Type Machinery, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

I style my invention an "ejecting mechanism for type machinery" because it is adapted for ejecting type (either cameo, matrix, or spaces) in various type-manipulating machines, as in a type-setting machine or a type-distributing machine or a type-justifying machine or in type-casting, type-embossing, or other type-forming machines or in a line-casting machine where the type are matrices. In the form shown herein it is illustrated as part of a type-setting machine. In my pending application, Serial No. 1,272, filed January 13, 1900, the invention is embodied in a type-distributing machine. It may also be used for ejecting such type or character-type from a mold in which it is cast.

The object of the invention is to provide mechanism for such ejection which shall be extremely simple and cheap to construct and at the same time be efficient and durable, while being adapted for very rapid operation.

The invention consists, broadly, of the combination, with means for holding the type, of a toothed wheel or cylinder adapted to be continuously revolved and an ejecting member having internal teeth which are adapted to engage opposite sides of the cylinder, the means for causing such engagement, whereby the rotation of the toothed wheel causes a reciprocation of the ejecting member, thus ejecting the type. The form in which I have shown this mechanism embodied is also of my invention, wherefore the invention may be best summarized as consisting of combinations of elements hereinafter described, and set out in the claims.

The drawings show the ejecting mechanism embodied in a type-setting machine, finger-keys being provided for causing the ejection. Figure 1 is a side elevation of such construction. Fig. 2 is a plan of a portion thereof,

and Fig. 3 is a vertical section on the line 3 3 of Fig. 1.

Referring to the parts by letters, A represents upright standards which carry a horizontal frame *a*. Near the forward end of this frame is a case B, consisting of a number of channels *b*, adapted to contain type. In front of the type-case is a race-plate C, down which the type are adapted to fall by gravity when ejected from the case. In the rear of the case, at the back of each channel, is an opening *b'*, through which a bar may enter to eject the type.

Suitably guided in openings in cross-bars *D D' D<sup>2</sup> D<sup>3</sup>*, extending across the frame *a*, are ejecting members E. These, as shown, consist of a forward portion *e*, adapted to enter the back of the type-case, and the rear portion *e'*, which is pivoted to the forward portion at *e<sup>2</sup>*. This rear part of the ejecting member is capable of an up-and-down movement on its pivot, being simply guided in notches *d* and *d'* in the cross-bars *D<sup>2</sup>* and *D<sup>3</sup>*. The "tail" of the ejector, as I call the rear portion, is formed into or carries a yoke *e<sup>3</sup>*, which may consist of a downward extension having an internal opening rounded at the rear end. The yoke may be of any desired form, however, its essential characteristic being that it is adapted to carry internal teeth on three sides of an opening. Thus along the upper and lower sides of the yoke-opening and extending around the rear end, and thus forming a U shape, are teeth *e<sup>4</sup>* of the ratchet shape shown, the right-angle side of the tooth being to the rear on the upper reach of the U and to the front on the lower reach. The teeth on the lower reach do not extend as far forward as on the upper, and this leaves a recess *e<sup>5</sup>* in front of them.

Within the yoke is a toothed wheel F, which wheel is preferably in the form of a long cylinder extending through the yokes of all the ejector-bars. The teeth on this cylinder and on the yoke are preferably ratchet-shaped in opposite directions, whereby they may mesh easily throughout their engagement. A pulley *f* on the end of the cylinder furnishes means by which it may be continuously re-

The yoke on the ejector-bar is normally



held elevated, so that its teeth are out of engagement with the toothed cylinder, the lower edge of which occupies the recess  $e^5$ . In a type-setting machine the yokes are preferably held elevated by the vertical legs  $g$  of a system of bell-crank levers  $G$ , which are pivoted on a rod  $g'$ , extending across the machine. A key-lever  $H$ , having a suitable finger-key  $h$ , is pivoted, as at  $h'$ , in the key-board-frame  $a'$  and carries at its rear end the upright rod  $J$ , the upper end of which lies beneath the other leg  $g^2$  of the bell-crank lever  $G$ . This leg  $g^2$  is slightly weighted to give it normally this position. When the finger-key  $H$  is depressed, the rod  $J$  is elevated and the leg  $g$  is forced out from under the yoke. A rod  $M$ , extending across the machine, prevents the bell-crank being swung too far. As soon as the leg  $g$  thus passes out from under the yoke the latter drops by gravity, and its upper reach of teeth engage with the teeth on the gear-cylinder  $F$ , which is continuously revolving in a left-hand direction in Fig. 1. The result of this is that the cylinder drives the yoke and the rest of the bar forward, tipping the bell-crank  $G$  until the lower edge of the yoke rides over it. As the ejector-bar approaches the forward end of its travel the teeth on the curved rear portion of the yoke successively engage with the rear side of the cylinder  $F$ , which raises the yoke up until the teeth on the lower side of the yoke engage with the under side of the cylinder  $F$ , which operates to withdraw the ejector-bar. In the meantime as soon as the yoke is elevated the leg  $g$  of the bell-crank lever is allowed thereby to come back to its normal position, and thus holds the lower reach of teeth in the yoke in engagement with the gear-cylinder until the rotation of the latter brings the yoke back to its original position, the gear-cylinder thereafter rotating idly in the recess  $e^5$ . It will thus be seen that a simple depression of the finger-key  $H$  causes the ejector-bar to advance, shoving a type out from the case  $B$  to a position from which it will fall by gravity into the race-plate, and then to immediately return to its normal position, automatically returning the cooperating parts, so that it is at once in position to be used again.

Having described my invention, I claim—

1. The combination, with means for holding type, of a toothed wheel adapted to be continuously revolved, and an ejecting member having internal teeth which are adapted to engage opposite sides of the wheel, and means for causing such engagement successively whereby the rotation of the wheel causes the reciprocation of the ejecting member thus ejecting type, substantially as described.

2. In combination, means for supporting type, a rotatable toothed wheel, a yoke having internal teeth adapted to engage with opposite sides of said wheel, means for causing relative movement between the yoke and

wheel to bring them into engagement, means for automatically changing the relative position of the yoke and wheel to shift the engagement of the yoke from one side of the wheel to the other, and a connection between the yoke and supply of type whereby the movement of the yoke is adapted to cause ejection of a type, substantially as described.

3. In a type-ejecting mechanism, the combination, of means for holding type, a yoke having internal teeth placed on three sides of an opening, a wheel having external teeth within the yoke, a connection between the yoke and a supply of type, and means for maintaining the teeth on the yoke out of engagement with the toothed wheel but adapted to allow them to come into such engagement, substantially as described.

4. In an ejecting mechanism, in combination, a toothed wheel adapted to be continuously rotated, a yoke extending both above and below the wheel and having internal teeth adapted to engage with the upper side or the lower side or the rear side of said wheel, means for supporting the yoke normally out of engagement with the teeth on the wheel, and means for withdrawing such support and allowing the teeth on the yoke above the toothed wheel to drop into engagement therewith, whereby the toothed wheel causes the advancement of the yoke then its elevation and then its retraction, substantially as described.

5. In combination, a toothed wheel, a yoke extending onto opposite sides thereof, and having two reaches of internal teeth on opposite sides of the toothed wheel and internal teeth placed in a curve and connecting the two reaches of teeth, means for maintaining said yoke out of engagement with the toothed wheel, means for allowing it to move into such engagement whereby the continuous rotation of the toothed wheel gives a reciprocation to the yoke, there being provided means whereby the yoke at the completion of each stroke automatically maintains itself out of engagement with the toothed wheel, substantially as described.

6. In ejecting mechanism, a toothed wheel, an ejector extending loosely around said wheel on the three sides thereof and having internal teeth, means for allowing the ejector to pass into engagement with the wheel whereby it is moved forward, elevated and moved rearward, in combination with means for holding type, and a connection between such type and the ejector whereby the movement of the latter may eject type, substantially as described.

7. In combination, means for holding a supply of type, a bar adapted to shove type from the supply, a yoke pivoted to said bar, said yoke having internal teeth occupying three sides of an opening, a wheel adapted to be continuously rotated and occupying said yoke normally out of engagement therewith, means for allowing the yoke to swing on its



pivot into engagement with said wheel whereby the yoke is advanced and retracted and the type ejected, substantially as described.

8. In combination, means for holding a supply of type, an ejector adapted to shove type therefrom, said ejector carrying an internal toothed yoke, a toothed wheel loosely occupying said yoke, a bar supporting said yoke out of engagement with said wheel, a finger-key and a connection between the same and said bar whereby the actuation of the key moves the bar to allow the yoke to pass into engagement with the wheel, substantially as described.

9. In combination, a toothed wheel, an internal toothed yoke lying above and below and on the rear side of the wheel, and a bar supporting said yoke out of engagement with said wheel, means for moving said bar out from under the yoke and allowing the latter to drop by gravity into engagement with the wheel whereby the yoke is advanced, the parts being so arranged that as the yoke arrives at its extreme forward position the bar passes beneath the yoke and maintains it in engagement with the wheel during its retractive movement, substantially as described.

10. The combination of a toothed wheel, a yoke having internal teeth in the form of a letter U which lie above, below and at the rear of said wheel, a bell-crank lever having one arm engaging with the under side of the yoke and holding it out of contact with the

wheel, a finger-key and a connection between it and the other arm of the bell-crank lever whereby the actuation of the finger-key tips the other arm forward from beneath the yoke, allowing the latter to drop into engagement with the wheel, means for giving said bell-crank lever a tendency to return to its normal position whereby when the yoke arrives at its forward movement the bell-crank lever does so return and supports the yoke in engagement with the wheel during the retractive movement, substantially as described.

11. In an ejecting mechanism, the combination of a wheel having ratchet-teeth on its periphery, an ejector extending loosely around said wheel on three sides thereof and having internal ratchet-teeth facing in the opposite direction to those on the wheel, means for allowing the ejector to pass into engagement with the wheel whereby it is moved forward, elevated and moved rearward, and means for holding type adapted to be ejected by the forward movement, said wheel passing out of engagement with the retracting-teeth at the end of the rearward movement, substantially as described.

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

FRANCIS B. CONVERSE, JR.

Witnesses:

ALBERT H. BATES,  
H. M. WISE.