

No. 791,131.

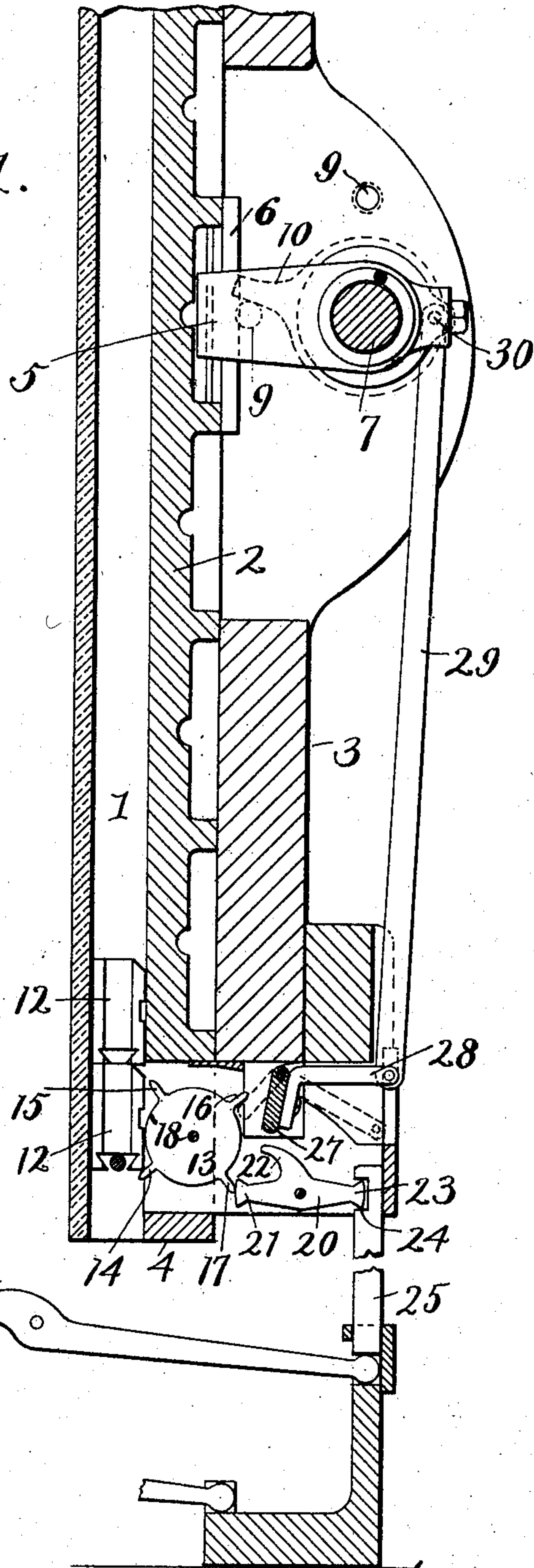
PATENTED MAY 30, 1905.

B. F. BELLOWS.  
ESCAPEMENT MECHANISM FOR MATRIX ASSEMBLING MACHINES.

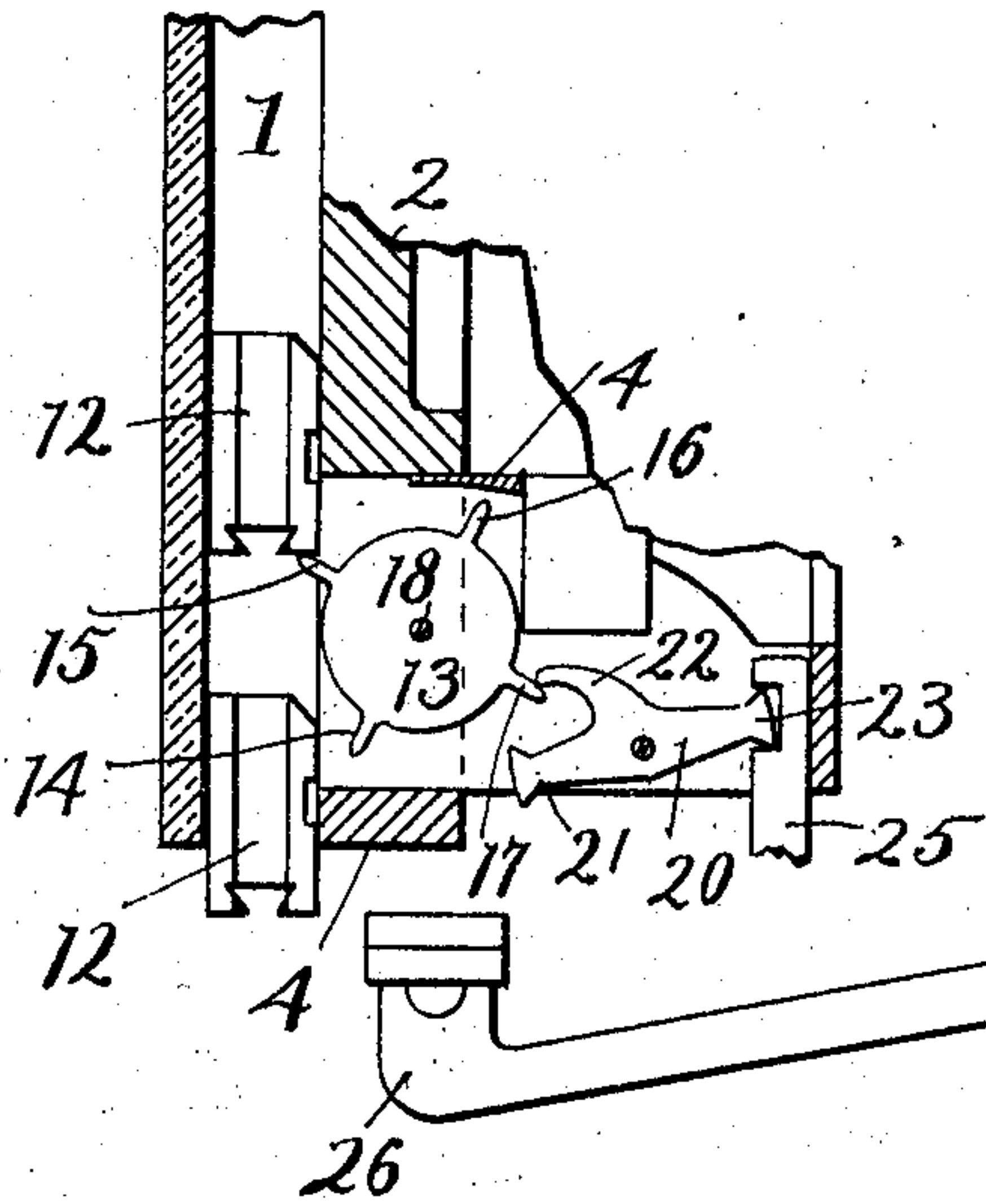
APPLICATION FILED JULY 11, 1904.

2 SHEETS—SHEET 1.

*Fig. 1.*



*Fig. 2.*



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*By his Attorneys,*  
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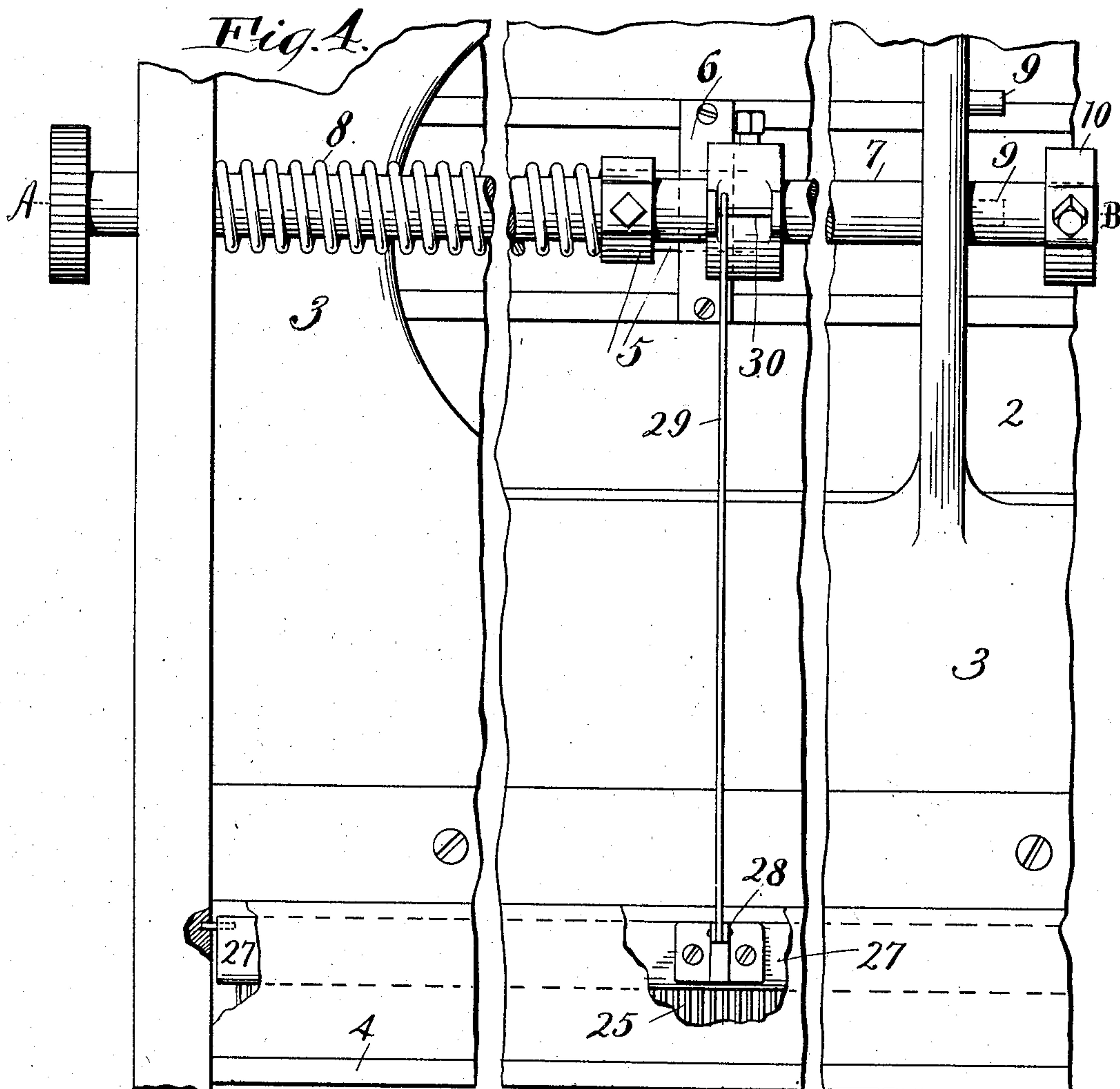
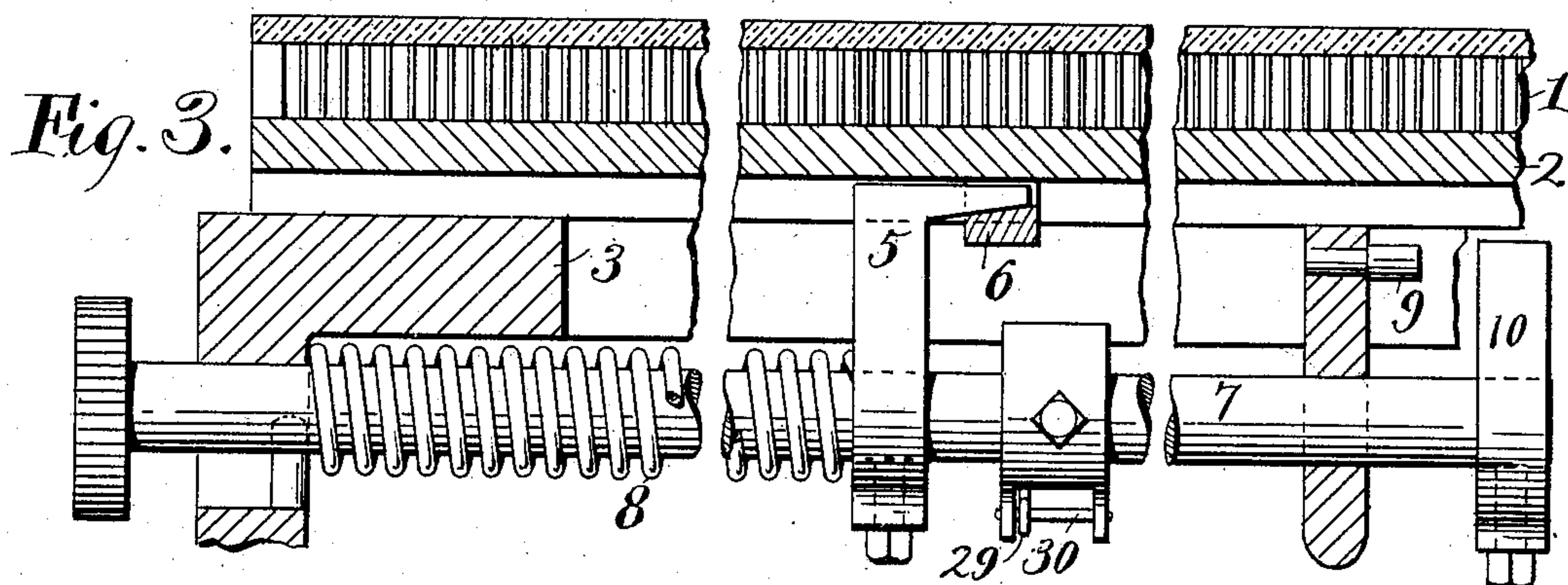
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2 SHEETS—SHEET 2.



E. B. Gilchrist  
B. W. Brockett

Witnesses.

Inventor

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# UNITED STATES PATENT OFFICE.

BENJAMIN F. BELLOWS, OF CLEVELAND, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO ELECTRIC COMPOSITOR COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

## ESCAPEMENT MECHANISM FOR MATRIX-ASSEMBLING MACHINES.

SPECIFICATION forming part of Letters Patent No. 791,131, dated May 30, 1905.

Application filed July 11, 1904. Serial No. 216,046.

*To all whom it may concern:*

Be it known that I, BENJAMIN F. BELLOWS, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Escapement Mechanism for Matrix-Assembling Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to matrix-assembling machines in which the matrices are stored in a plurality of magazine-channels.

The primary object of the invention is to provide novel escapement mechanism capable of being operated by associated finger-keys, whereby the matrices will be released singly from their several magazines.

Another object of the invention is to lock all of the escapement mechanisms in operative positions, so that when the magazines are removed and other magazines substituted the escapement mechanisms will all be in position to retain the matrices in the several magazines and to release them at will.

The invention consists of the following mechanism associated with each magazine—to wit, a freely-rotatable wheel having a plurality of teeth which are capable of projecting one at a time into the associated magazine beneath the column of matrices therein and a pallet-lever operable by a finger-key to permit a step-by-step movement of said toothed wheel.

It also consists of a bar adapted to be swung into engagement with all of said toothed wheels and to act in conjunction with the several pallet-levers in preventing any movement of said toothed wheels.

In the drawings, Figure 1 is a sectional side elevation of that part of a matrix-assembling machine which includes the present invention. Fig. 2 is a sectional side elevation of an escapement-wheel and the parts immediately adjacent thereto, showing the same in the position they will occupy just as the lowest matrix is being released. Fig. 3 is a sectional plan view on line A B of Fig. 4, and Fig. 4 is a

rear elevation of so much of the machine as must be shown to disclose the present invention.

The magazines are vertical channels 1, formed in the front face of a plate 2, which may be removably secured to the upright frame member 3. When it is secured in place, it is, in effect, a part of the frame member, and therefore evidently the said channels might be formed in the frame member itself; but it is desirable to be able to remove all the magazines from the machine, because thereby one may quickly substitute other magazines containing matrices of a different style of type, and therefore the magazines are, as stated, formed in the removable plate 2. The plate 2, the lower edge of which is suitably supported on a shelf 4, is secured to the frame member 3 by means of a wedge-arm 5, which engages with a strap 6 on the rear side of the plate 2. This wedge-arm is secured to a shaft 7, mounted in bearings on the rear side of the frame member and in which it may turn and move endwise. The spring 8 acts to move the shaft in that direction which will drive the wedge into said strap and which will resist its movement in the contrary direction. When the wedge-arm is withdrawn by the endwise movement of the shaft, said shaft may be turned, the extent to which it may be so turned in either direction being limited by pins 9, secured to the frame member, between which lies an arm 10, secured to said shaft. A column of matrices 12 is stored in each one of these vertical magazines 1, each matrix resting upon the one below it and the entire column being supported by one tooth of a wheel 13, to be presently explained, which projects beneath the lowest matrix. Similar mechanism for supporting said matrix-columns and for releasing only the lowest matrix in each is provided for each of the magazines, wherefore a description of one of such mechanisms will answer for all. An escapement-wheel 13, having four radiating teeth 14, 15, 16, and 17, is loosely hung on a transverse axis behind its associated magazine, into which said teeth may project one at



a time. Specifically there is a transverse rod 18 secured to the framework of the machine, upon which all of the escapement-wheels 13 are loosely mounted, as stated. Normally one of the teeth 14 on the escapement-wheel projects into the magazine a short distance, and the lowest matrix rests upon it. The wheel is restrained from turning under the influence of the weight of the matrix-column resting upon said tooth by a pallet-lever 20, one arm, 21, of which engages with the tooth 17 of the escapement-wheel. Another arm, 22, of this pallet-lever lies in such a position that when the lever is rocked to withdraw arm 21 from its engagement with the tooth 17 the arm 22 is brought into the path of said tooth and engages therewith after the wheel has turned far enough to permit the lowest matrix to fall. Before it has reached this position, however, the tooth 15 of the wheel has passed beneath next to the lowest matrix. The matrices are beveled off at their upper rear corner to permit their action. When the pallet-lever is rocked in the contrary direction, it brings arm 21 into the path of the tooth 14 of the wheel 13 and contemporaneously withdraws arm 22 from its engagement with the tooth 17, whereupon the weight of the column of matrices rotates said wheel until further rotation is prevented by the engagement of the arm 14 with the lever-arm 21.

The tail 23 of the pallet-lever projects into a notch 24 in a vertically-movable bar 25, which is guided so that it must move in a substantially vertical direction. The lower end of this bar rests upon the rear end of one of the key-levers 26. It is clear, therefore, that by depressing a key-lever the lowest matrix in the associated magazine will be released and allowed to fall. This is all there is to the escapement proper and all that would be necessary if the magazines were not formed as channels cut in the front face of a removable plate; but since they are so formed, instead of being formed in the frame member itself, it is desirable to have some means by which the escapement-wheels will be held in operative position when this magazine-plate is removed and another magazine-plate is substituted. If they are so held, they will be ready to perform their described functions in connection with the matrices in the magazine of the plate so substituted. The means provided for so holding said escapement-wheels consists of a flat bar 27, pivoted to the frame member on an axis parallel with the axes of said escapement-wheels. Normally this bar occupies a position out of the range of the wheel-teeth. There is attached to this rocking-bar, however, an arm 28, the outer end of which is pivoted to an upwardly-extending link 29, and the upper end of this link embraces a crank-pin 30, attached to the shaft 7. When, therefore, this shaft has been moved endwise, so as to withdraw the wedge from

the strap 6 on the magazine-plate, and is turned, as stated, the result will be that this rocking bar will be moved so that it will engage beneath one tooth on each of said escapement-wheels, (the tooth 16, as shown.) The pallet-levers will thereafter prevent said wheels from turning in one direction, while this bar will prevent them from turning in the other direction. In other words, they will be held stationary.

It will be understood that there is a plate 31, preferably of glass, which is secured across the front sides of said magazine-channels to close them. When a plate 2 is about to be removed, a rod is passed through a hole in one edge of said plate, and under all of the matrices in all of the channels and then through a hole in the other side of said plate. In this way the matrices are held in the magazines when the plate is removed.

Having described my invention, I claim—

1. The combination with a matrix-magazine channel, of a loosely-mounted wheel having teeth adapted to project singly into said magazine-channel, and a pallet-lever for controlling the turning of said wheel, a key-lever, a vertically-movable rod supported upon said key-lever and having a notch near its upper end for the reception of the tail of said pallet-lever, substantially as specified.

2. The combination of a plurality of matrix-magazine channels, a fixed horizontal rod secured behind said magazine-channels, a plurality of wheels which are independently rotatable upon said rod, each having teeth adapted to project singly into one of said magazines, independent pallet-levers for engaging with the teeth to restrain the movement of said several wheels, and key-levers for operating the several pallet-levers, substantially as specified.

3. The combination of a plurality of matrix-magazine channels, a fixed horizontal rod secured behind said magazine-channels, a plurality of wheels which are independently rotatable upon said rod, each having teeth adapted to project singly into one of said magazines, independent pallet-levers for engaging with the teeth to restrain the movement of said several wheels, key-levers for operating the several pallet-levers, and a pivoted bar adapted to be rocked into engagement with a tooth on all of said wheels, substantially as specified.

4. The combination of a frame member, a plate having a plurality of matrix-magazine channels, and means for removably securing said plate to said frame member, with a plurality of independently-operable escapement mechanisms supported on the frame member for the several magazines, means for locking all of said escapements against accidental movement, and connections between said locking means and the means for securing the magazine-plate to the frame member, where-



by the movement of the latter causes the movement of the former, substantially as specified.

5 The combination of a frame member, a vertical plate supported thereon and having in its front face a plurality of vertical magazine-channels, and having on its rear side a strap, a shaft mounted on the rear side of the frame member and capable of turning and of  
10 moving endwise in its bearings, a wedge secured to said shaft for engagement in said strap, with the following parts supported on the frame member, viz., a plurality of toothed

wheels, an equal number of pallet-levers for restraining the movements of said wheels, 15 keys for operating said pallet-levers, a rocking-bar adapted to be moved into engagement with teeth on all of said wheels, and connections between said bar and said shaft, substantially as described. 20

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

BENJAMIN F. BELLOWS.

Witnesses:

E. L. THURSTON,  
ALBERT H. BATES.