

No. 702,458.

Patented June 17, 1902.

F. McCLINTOCK.
MACHINE FOR SETTING TYPE.

(Application filed June 24, 1901.)

(No Model.)

3 Sheets—Sheet 1.

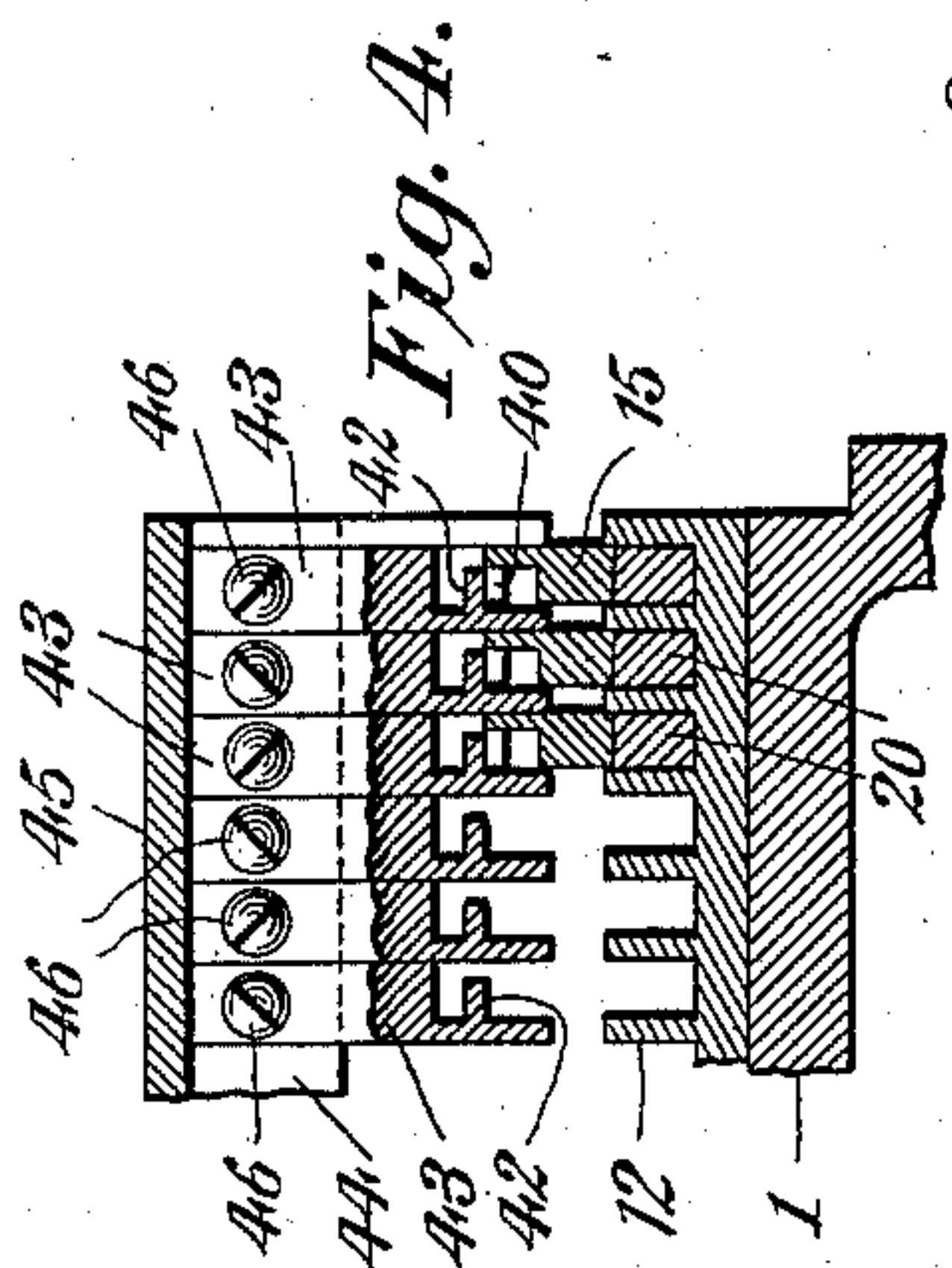
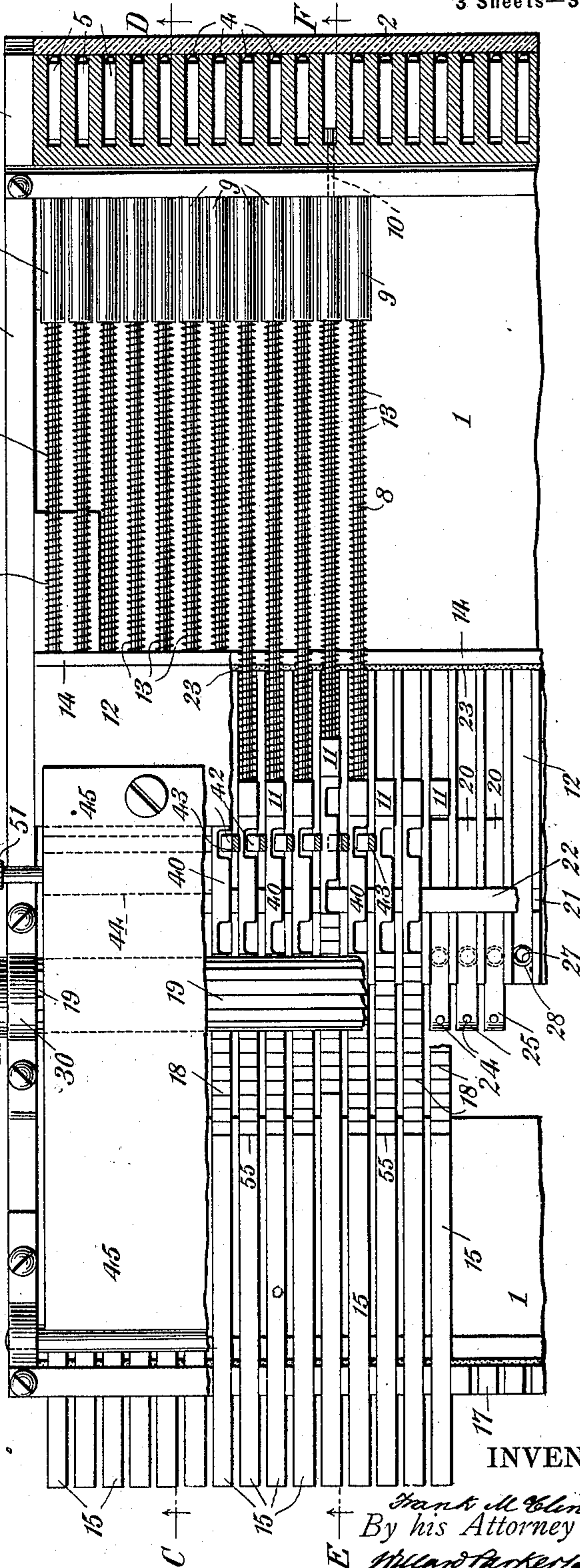
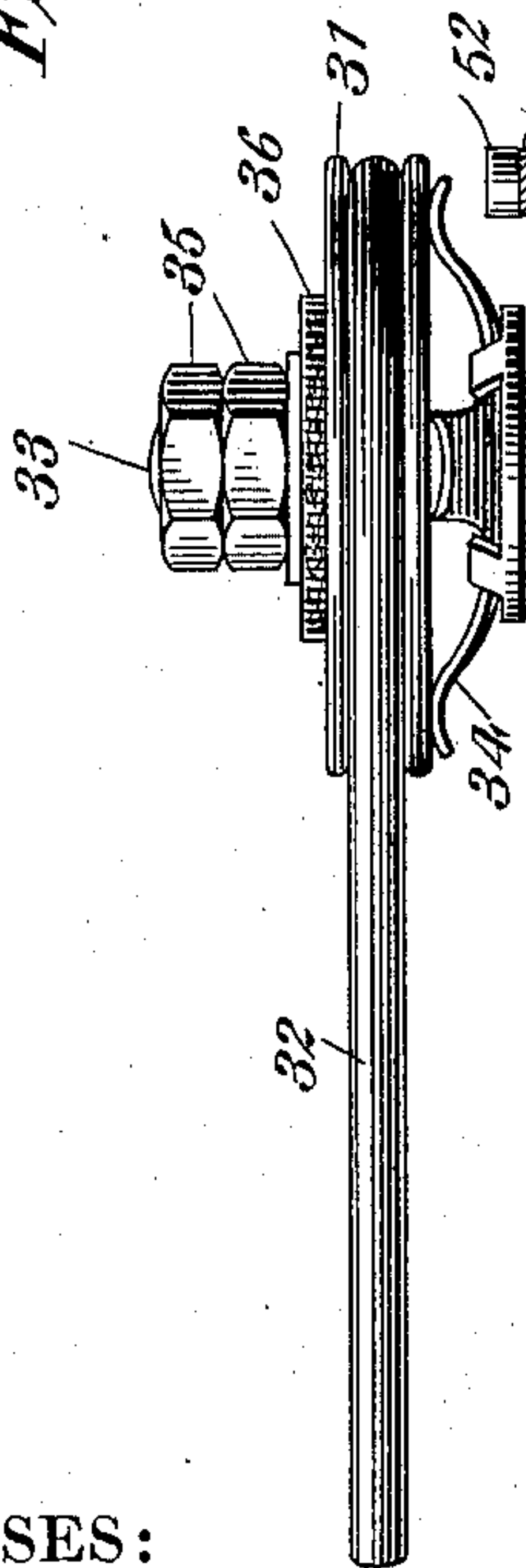


Fig. 1.



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INVENTOR:

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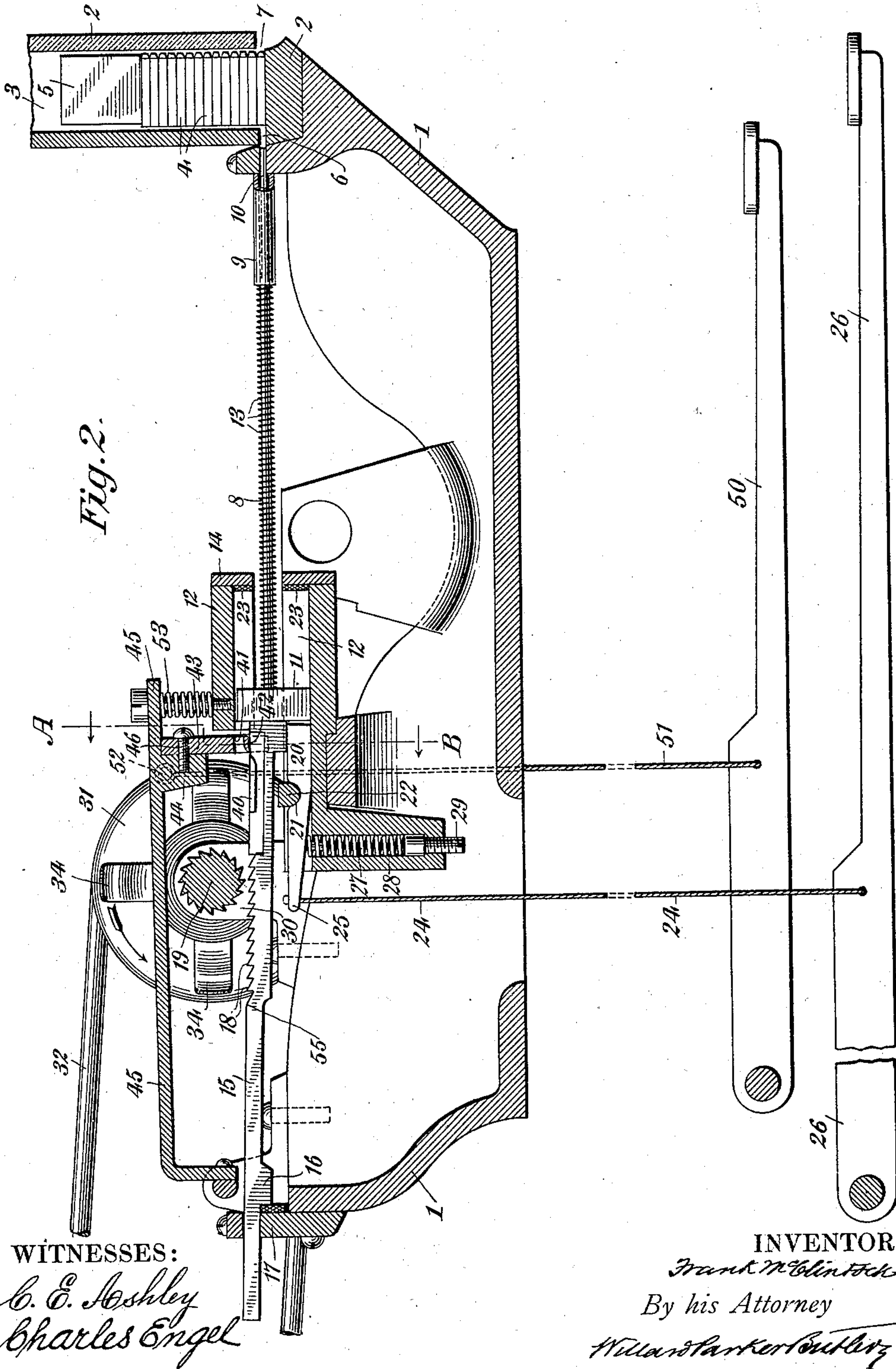
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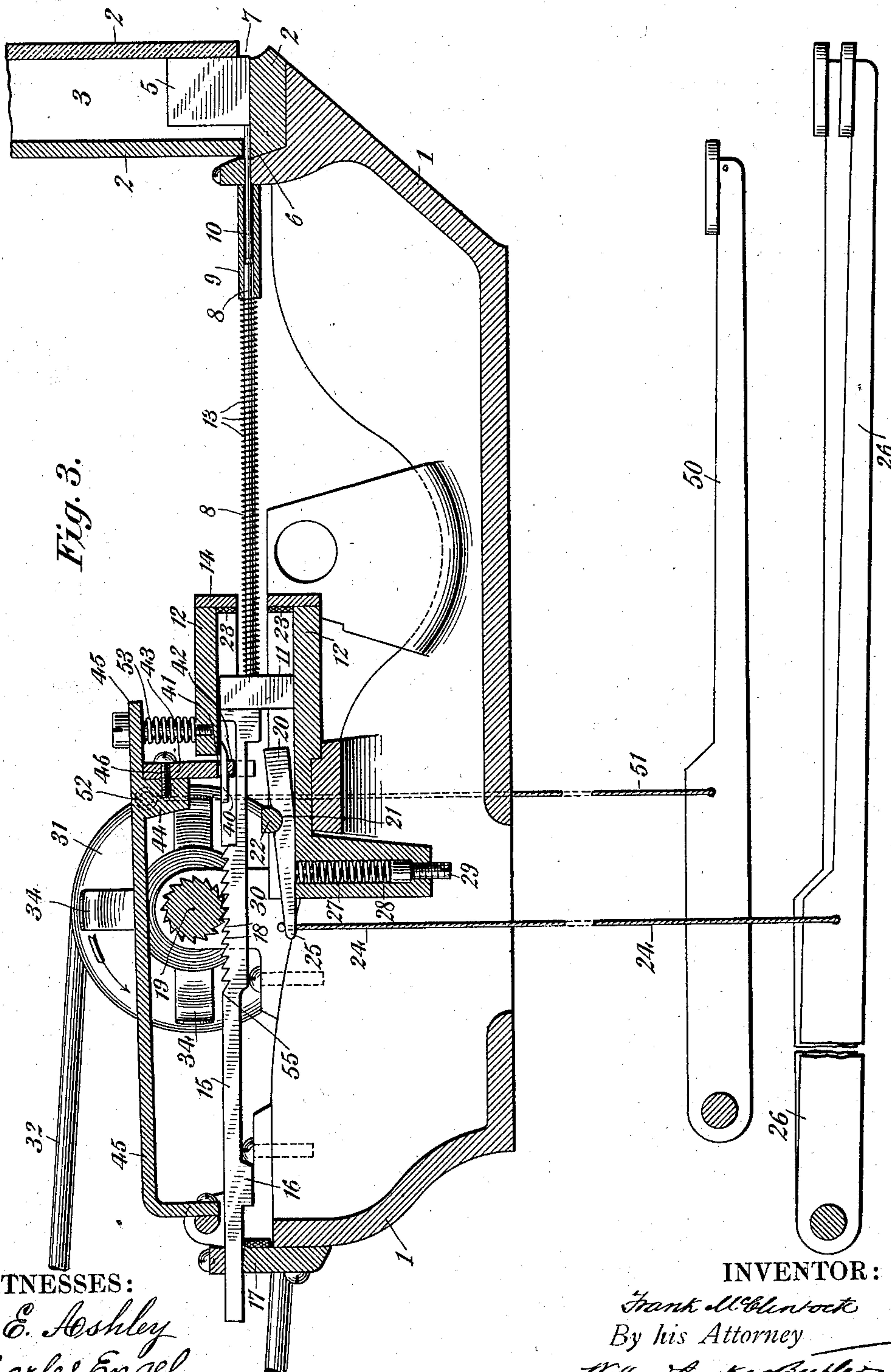
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3 Sheets—Sheet 3.



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C. E. Ashley
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UNITED STATES PATENT OFFICE.

FRANK McCLINTOCK, OF MOUNT VERNON, NEW YORK, ASSIGNOR, BY
MESNE ASSIGNMENTS, TO EDWIN C. HOYT AND FELIX ROSEN, OF
NEW YORK, N. Y.

MACHINE FOR SETTING TYPE.

SPECIFICATION forming part of Letters Patent No. 702,458, dated June 17, 1902.

Application filed June 24, 1901. Serial No. 65,738. (No model.)

To all whom it may concern:

Be it known that I, FRANK McCLINTOCK, a citizen of the United States, and a resident of Mount Vernon, Westchester county, State of New York, have invented a new and useful Improvement in Machines for Setting Type, of which the following is a specification.

My invention relates to improvements in the type-ejecting mechanism of type-setting machines, and particularly to that class of type-setting machines in which the types are contained in a series of vertical channels, from which they are successively forced out or ejected longitudinally by suitable type-ejectors adapted to engage and eject the bottom type in each channel only.

The objects of my invention are, first, to provide a power-actuated type-ejector and simple mechanism for operating the same whereby the ejector will be caused to make one complete positive movement at a definite and uniform speed upon the depression of a suitable key-lever, such key-levers and connections being so constructed that the ejecting mechanism will not "repeat" or cause the ejection of more than one type if the key should be held down indefinitely; second, to provide means whereby any obstruction to the free and complete forward movement of any type-ejector will be prevented from injuring either the mechanism or the type and which will furthermore prevent any further operation of any of the remaining type-ejectors until such obstruction is removed, thus immediately indicating to the operator such condition.

My invention is shown in its preferred construction in the accompanying three sheets of drawings, in which—

Figure 1 is a plan view from above of a portion of the frame which supports the mechanism and the type-case. Only twelve of the type-ejectors are shown; but as many are provided as will furnish one for each of the separate compartments in the type-case. Fig. 2 is a vertical sectional view on the line C D of Fig. 1, showing the parts in their normal position. Fig. 3 is a sectional elevation along the line E F of Fig. 1, showing the parts

in the position assumed when any obstruction prevents the free and complete forward movement of a type-ejector. Fig. 4 is a front sectional elevation on the line A B of Fig. 2, showing the series of blocks which carry the studs for retaining the pushers in gear with the ratchet-roller during the complete forward movement.

Similar numerals refer to similar parts in each of the views.

In the drawings, 1 is the cradle or frame, which supports at its front the type-case 2, which has a plurality of type-channels 3, in which are contained the types 4 and follower-blocks 5, both of which fit loosely in the channels 3. Each type-channel has openings 6 and 7 at its base on either side, the former of which is adapted to admit the forward end of the type-ejector rod 8, while the latter allows the lowermost type only in the channel 3 to be ejected therefrom when the ejector-rod is caused to move forward. The type-ejector rods 8 have their front ends flattened and extend through collars 9 and are fitted into guide-bearings 10, while the rear ends are secured to end blocks 11, which are fitted to slide freely in guide-slots 12. A coil-spring 13 serves to retain the type-ejector rod 8 in its retracted normal position (shown in Fig. 2) and to return it and the pusher-bar 15 to this position after being advanced, as will be hereinafter described. Stops 14, which are preferably cushioned with leather pads 23, limit the forward movement of the ejector-rods 8 and the pusher-bars 15, while the return movement is limited by the lugs 16 on the lower face of the pusher-bars 15 engaging a cushioned stop 17, secured to the rear end of the cradle 1.

The pusher-bars 15 are provided with a series of ratchet-teeth 18 on their upper edges, which are of the same pitch as the ratchet-teeth on the roller 19. The front ends of the pusher-bars 15 normally rest upon the free ends of the levers 20, which are adapted to raise the front ends of the pusher-bars 15 a sufficient distance to cause the engagement of the ratchet-teeth 18 with the ratchet-teeth on the roller 19. These levers are fulcrumed

at the point 21 to a longitudinal rod 22, extending across the cradle. Cords or wires 24 are attached to the projecting end 25 of each of the levers 20 and serve to connect each of
 5 said levers to one of a series of suitable key-levers 26. Springs 27, contained in tubular openings 28 in the frame of the cradle, serve to maintain each of the levers 20 and each of the key-levers 26 in the normal position
 10 shown in Fig. 2 and also to return them to such normal position after having been depressed by the operator, as shown in Fig. 3. The tension of the springs 27 may be adjusted as desired by means of the screws 29.

15 For the purpose of causing the required forward movement of the pusher-bars 15 a ratchet-toothed roller 19 is provided, which is fitted in suitable bearings 30 on the cradle 1 and is actuated by means of a driving-belt 32,
 20 running on a driving-pulley 31. The driving-pulley 31 is fitted loosely on the projecting end 33 of the ratchet-roller 19, being provided with some suitable friction device the tension of which will be sufficient to cause
 25 the pulley 31 to drive the ratchet-roller 19 positively under normal conditions, but yet in the event of any obstruction to the rotation of the ratchet-roller to be sufficiently
 30 loose to permit the revolution of the pulley to continue without injury or undue strain to the mechanism. The friction device shown consists of a four-armed spring-spider 34,
 35 which is rigidly secured to the ratchet-roller shaft 33. The nuts 35, coming in contact with a fiber washer 36, serve to hold the pulley 31 against the arms of the spring-spider 34. The tension of the friction device may be adjusted at will by screwing the nuts 35 in or out.

40 In order to positively retain each of the pusher-bars 15 in gear with the ratchet-roller 19 until it has accomplished its complete forward movement and has caused the ejection of a type from the appropriate channel, laterally-projecting shoulders or flanges 40 are
 45 provided on the sides of the pusher-bars 15, which are adapted to pass freely through the openings 41 above the projecting studs 42 in the guide-blocks 43 when the front ends of
 50 the pusher-bars have been raised to the operative position shown in Fig. 3. The guide-blocks 43 are preferably made independent of each other and are attached singly to the rib 44 on the hinged plate 45 by means of the
 55 screws 46. This allows any one block to be readily removed if worn or broken and replaced by a new one.

The method of operation is as follows: When it is desired to eject a type from any
 60 of the compartments in the type-case, the operator puts his finger upon the key of the lever 26, thus throwing down the end 25 of the lever 20 and raising the right-hand end in Fig. 2 of the pusher-bar 15. The teeth upon
 65 the upper edge of the pusher-bar 15 engage with the teeth upon the constantly-rotating ratchet-tooth roller 19, whereupon the pusher-

bar 15 begins to move forward. As this takes place the laterally-projecting shoulder or flange 40 passes over the projecting stud 70 42, thus releasing the pusher-bar from the lever mechanism and holding the teeth in contact with those upon the roller 19. When the end of the line of travel is reached, the flange 40 has passed over the projecting stud 75 42, and thereupon the end of the pusher-bar will be free to drop and will assume its original position, resting upon the end of the lever 20. If the key-lever 26 and the short lever 20 for any reason remain depressed, the 80 shoulder 40 on the pusher-bar will engage with the upper corner of the front end of the lever 20 and be thereby prevented from being forced entirely back to its position ready to be again actuated until such time as the 85 key-lever 26 be released, thereby preventing the possibility of two or more actuations or "repeating" of the pusher-bar 15 for one depression of the key-lever, which has usually been a disadvantage with mechanically-actu- 90 ated type-ejecting devices.

In the event of any obstruction which prevents the type-ejector rod 8 and pusher-bar 15 from completing their forward movement, as shown, for example, in Fig. 3, where the 95 types having been all ejected from the type-channel 3 the follower-block 5 rests at the bottom of the type-channel, and thereby blocks the forward movement of the type-ejector rod 8 and pusher-bar 15, the ratchet- 100 teeth 18 on the pusher-bars being in engagement with the teeth on the ratchet-roller 19 it must stop revolving; but the frictional connection between said roller and its driving-pulley 31 will allow it to continue without 105 undue strain on the mechanism. The ratchet-roller 19 being thus stationary, it will be impossible to operate any of the other type-ejectors, which will at once call the attention of the operator to the fact that the type-chan- 110 nel is empty.

The locked pusher-bar may readily be thrown out of engagement with the ratchet-roller by the depression by the operator of a key-lever 50, which is connected by the cord 115 or wire 51 to the pin 52 on the side of the hinged plate 45, provided with a vertical plate extending across the entire series of pusher-rods, which is thereby drawn downward against the tension of the spring 53 a 120 sufficient distance to depress the pusher-rod and cause the ratchet-teeth 18 thereon to be disengaged from the roller 19, whereupon the spring 13 will return the type-ejector rod 8 and the pusher-bar 15 to their normal posi- 125 tions.

I claim as my invention—

1. In a type-setting machine, the combination of a constantly-rotating shaft carrying a ratchet-wheel; a type-case from which the 130 types are ejected; a type-ejecting rod arranged to eject the lowest type from the type-case; a sliding rod provided with ratchet-teeth arranged to engage with the ratchet-

wheel and to intermittently advance the type-ejector; a lever actuated by a key-lever for effecting connection between the type-ejecting rod and the ratchet-wheel; means for automatically releasing the type-ejector after the same has been advanced; and spring devices for retracting the same to its original position.

2. In a type-setting machine, the combination of a constantly-rotating shaft carrying a ratchet-wheel; a type-case from which the types are ejected; a type-ejecting rod arranged to eject the lowest type from the type-case; a sliding rod provided with ratchet-teeth arranged to be temporarily brought into engagement with the ratchet-wheel and adapted to advance the type-ejector; devices, substantially as described, for holding the rod in engagement until the ejector has ejected a type; means for automatically releasing the type-ejector after the same has been advanced; a lever actuated by a key-lever for effecting the connection between the rod and the ratchet-wheel; and spring devices for retracting the type-ejector to its original position.

3. In a type-setting machine, the combination of a constantly-rotating shaft carrying a ratchet-wheel; a type-case from which the types are ejected; a type-ejecting rod, arranged to eject the lowest type from the type-case; a sliding rod, one end of which is arranged to engage the type-ejector, provided with ratchet-teeth arranged to engage with the ratchet-wheel, and having a projecting shoulder; a stud on the frame which holds the rod in engagement with the ratchet-wheel by means of the projecting shoulder until the end of the line of travel is reached and then permits it to drop, and a lever actuated by a key-lever for effecting the connection between the rod and the ratchet-wheel.

4. In a type-setting machine, the combination of a constantly-rotating shaft carrying a ratchet-wheel; a type-case from which the types are ejected; a type-ejecting rod, arranged to eject the lowest type from the type-case; a sliding rod, one end of which is arranged to engage the type-ejector, provided with ratchet-teeth arranged to engage with the ratchet-wheel, and having a projecting shoulder; a stud on the frame which holds the rod in engagement with the ratchet-wheel by means of the projecting shoulder until the end of the line of travel is reached and then permits it to drop, and a lever actuated by a key-lever one end of which raises the sliding rod into engagement with the ratchet-wheel, and a spring for retracting the lever after the engagement has been effected.

5. In a type-setting machine, the combination of constantly-rotating shaft carrying a ratchet-wheel; a type-case from which the types are ejected; a type-ejecting rod, arranged to eject the lowest type from the type-case; a sliding rod, one end of which is arranged to engage the type-ejector, provided

with ratchet-teeth arranged to engage with the ratchet-wheel and having a projecting shoulder; a stud on the frame which holds the rod in engagement with the ratchet-wheel by means of the projecting shoulder until the end of the line of travel is reached and then permits it to drop; a lever actuated by a key-lever for effecting the connection between the rod and the ratchet-wheel; and devices actuated at the will of the operator for restoring the parts if they become blocked.

6. In a type-setting machine, the combination of a constantly-rotating shaft carrying a ratchet-wheel; a type-case from which the types are ejected; a type-ejecting rod, arranged to eject the lowest type from the type-case; a sliding rod, one end of which is arranged to engage the type-ejector, provided with ratchet-teeth arranged to engage with the ratchet-wheel and having a projecting shoulder; a stud on the frame which holds the rod in engagement with the ratchet-wheel by means of the projecting shoulder until the end of the line of travel is reached and then permits it to drop, a lever actuated by a key-lever one end of which raises the sliding rod into engagement with the ratchet-wheel and serves as a stop to engage the projecting shoulder of the sliding rod, and prevent the mechanism from repeating, a spring for retracting the lever after the engagement has been effected; and a guide-block for positively retaining the sliding rods in engagement.

7. In a type-setting machine, the combination of a constantly-rotating source of power; a type-case from which the types are ejected; a type-ejecting rod arranged to eject the lowest type from the type-case; means, substantially as described, for intermittently advancing the space-ejector bar by means of the rotating shaft; means actuated by a key-lever for effecting the connection between the actuating devices and the shaft; a suitable frictional connection between the source of power and the devices for intermittently advancing the space-ejector; and spring devices for retracting the space-ejector to its original position.

8. In a type-setting machine, the combination of a constantly-rotating shaft; a ratchet-wheel connected thereto by a frictional connection; a type-case from which the types are ejected; a type-ejecting rod arranged to eject the lowest type from the type-case; a sliding rod provided with ratchet-teeth arranged to engage with the ratchet-wheel and to intermittently advance the type-ejector; a rod actuated by a key-lever for effecting the connection between the ejector-rod and the ratchet-wheel; and spring devices for retracting the space-ejector to its original position.

9. In a type-setting machine, the combination of a constantly-rotating shaft; a ratchet-wheel connected thereto by a frictional connection; means, substantially as described, for intermittently advancing the space-ejector

tor by means of the rotating shaft; spring devices for retracting the same to its original position; and devices connected with the channels in the type-case, substantially as described, whereby the exhaustion of the type
5 causes the locking of the mechanism.

10. In a type-setting machine, the combination of a constantly-rotating shaft; a ratchet-wheel connected thereto by a frictional connection; means, substantially as described, for intermittently advancing the space-ejector by means of the rotating shaft; spring devices for retracting the same to its original position; devices, connected with the channels in the type-case, substantially as described, whereby the exhaustion of the type
15 causes the locking of the mechanism; and devices, substantially as described, actuated at the will of the operator, for unlocking and restoring the mechanism to its original position.
20

11. In a type-setting machine, the combination of a constantly-rotating shaft; a ratchet-

wheel connected thereto by a frictional connection; means, substantially as described, for intermittently advancing the space-ejector by means of the rotating shaft; spring devices for retracting the same to its original position; devices, connected with the channels in the type-case, substantially as described, whereby the exhaustion of the type
25 causes the locking of the mechanism; mechanism, substantially as described, for unlocking and restoring the parts to their original position, and a lever for actuating the unlocking mechanism.
30

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 22d day of June, 1901.
35

FRANK McCLINTOCK.

Witnesses:

WILLARD PARKER BUTLER,
CHARLES ENGEL.