

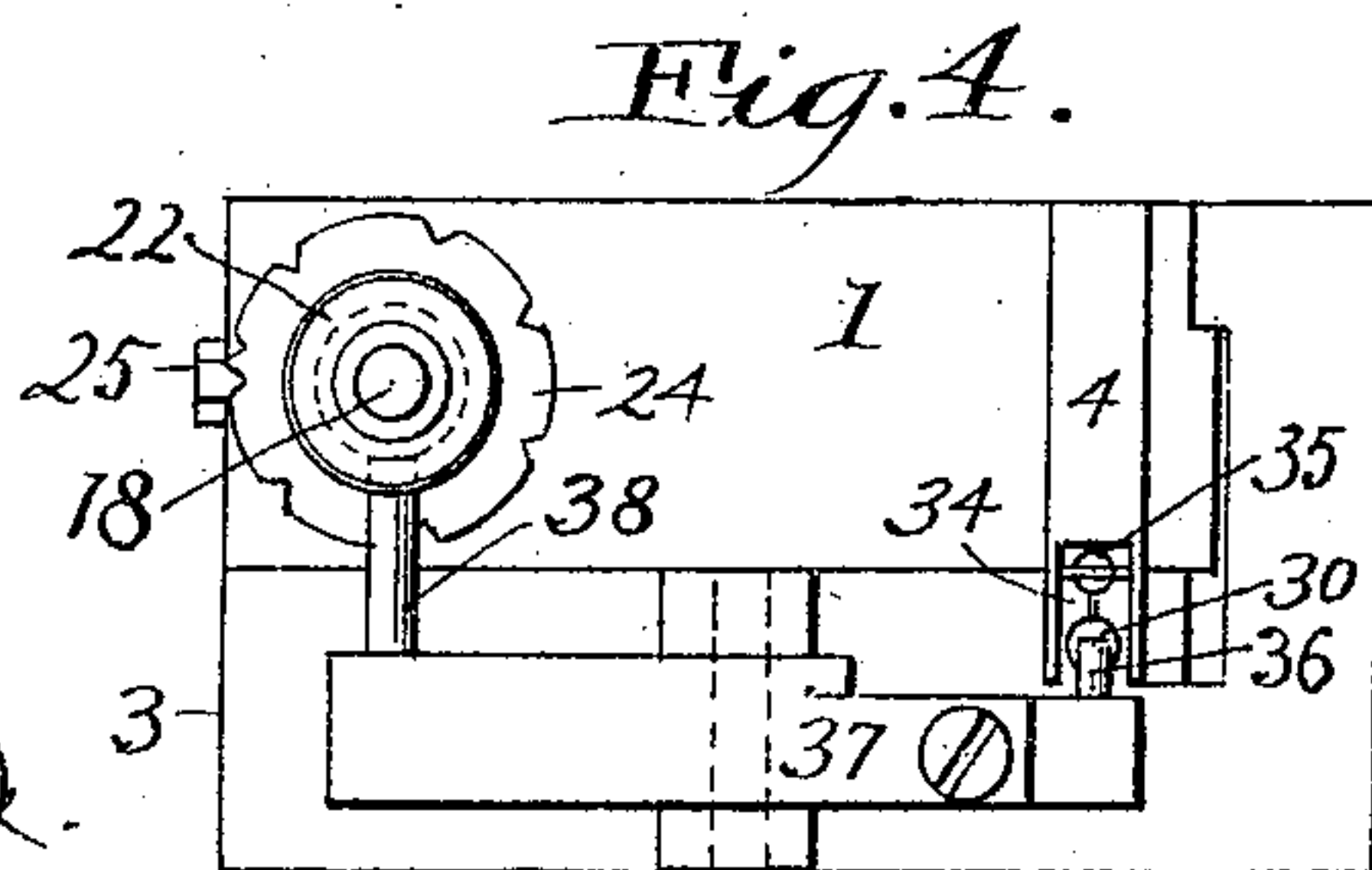
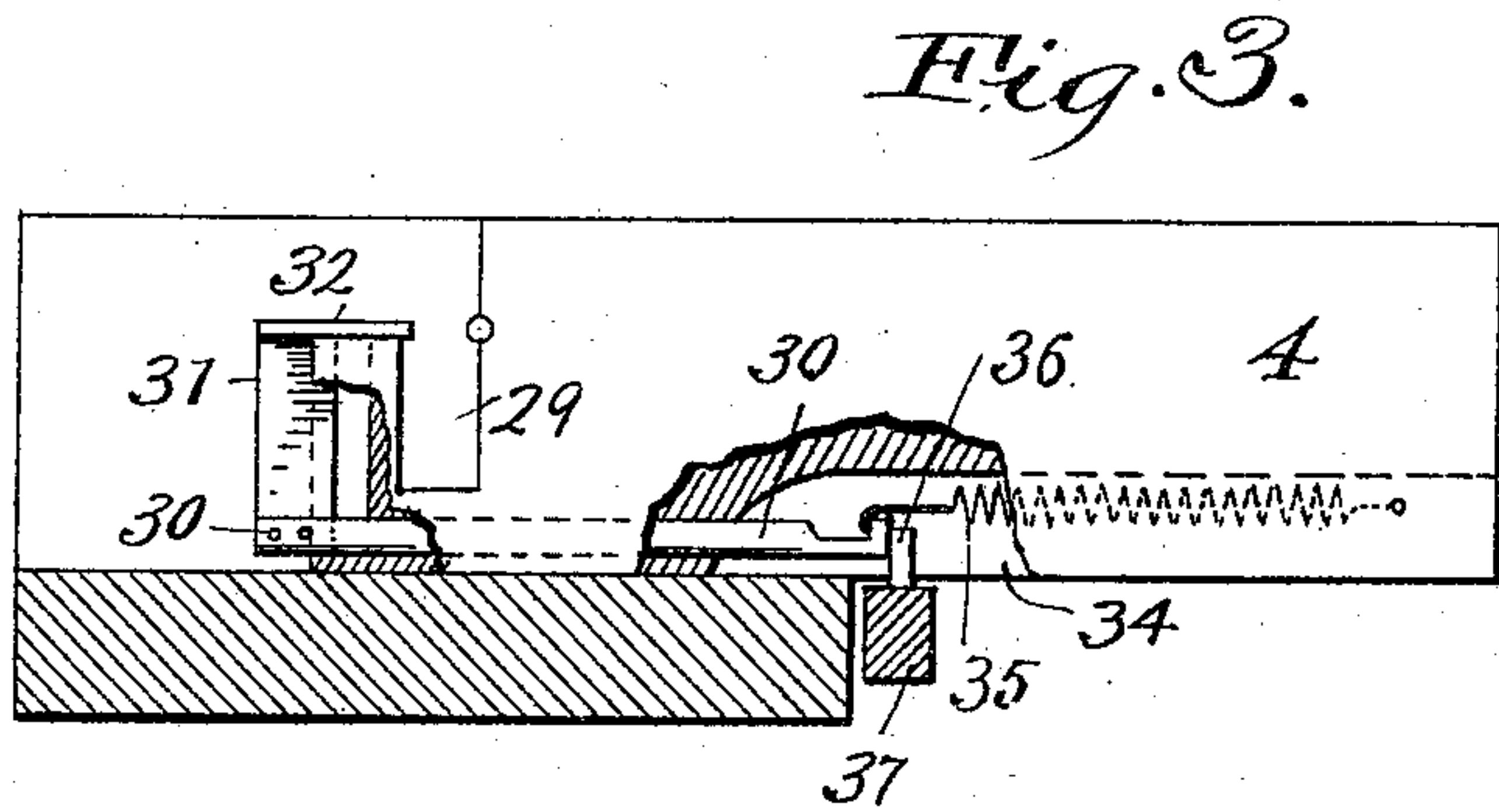
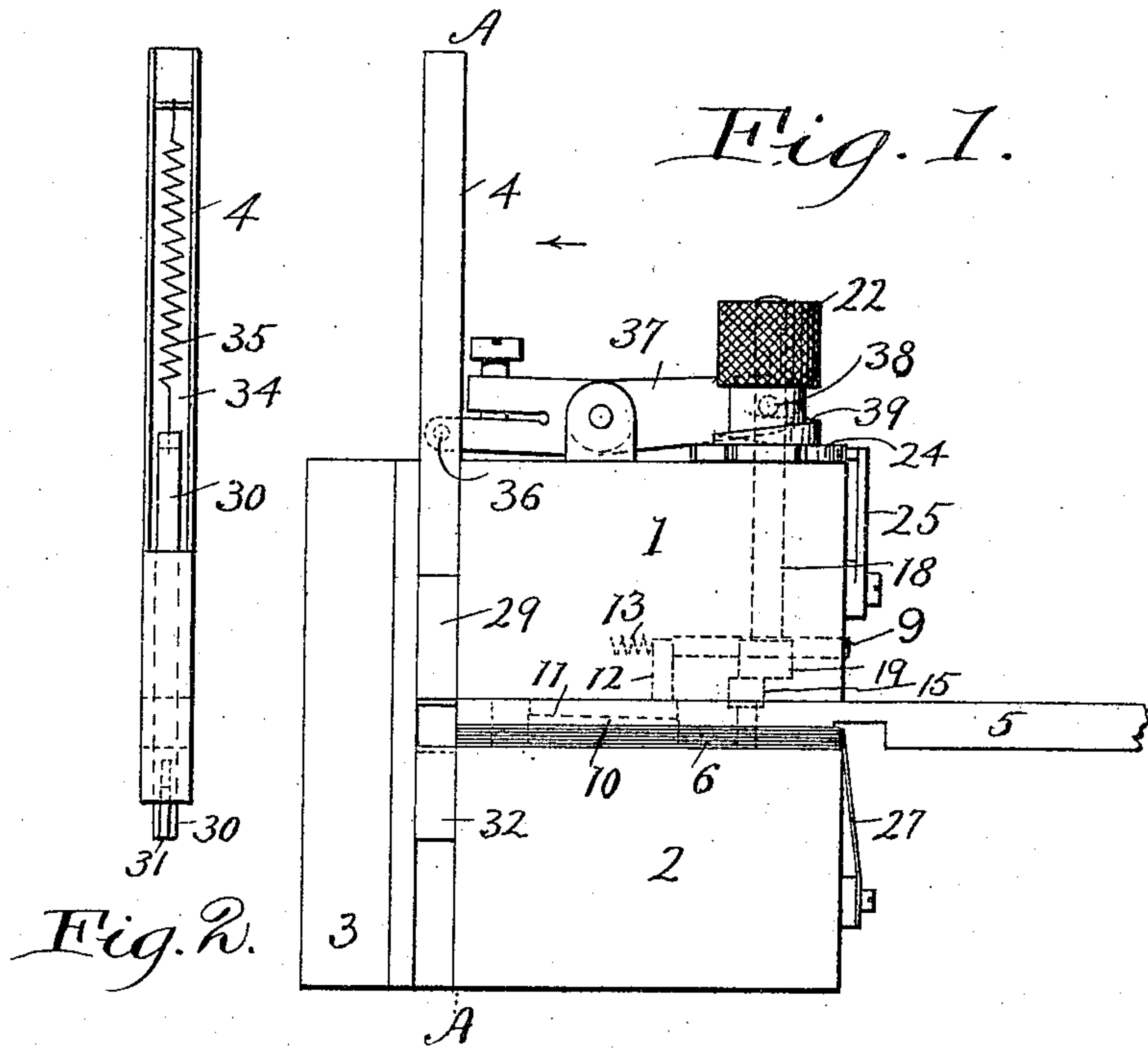
B. F. BELLOWS.  
UNIVERSAL TYPE MOLD.

APPLICATION FILED AUG. 12, 1907. RENEWED MAY 18, 1909.

944,408.

Patented Dec. 28, 1909.

3 SHEETS—SHEET 1.



Witnesses  
E. B. Gilchrist.  
H. B. Sullivan.

Inventor.

Benjamin F. Bellows  
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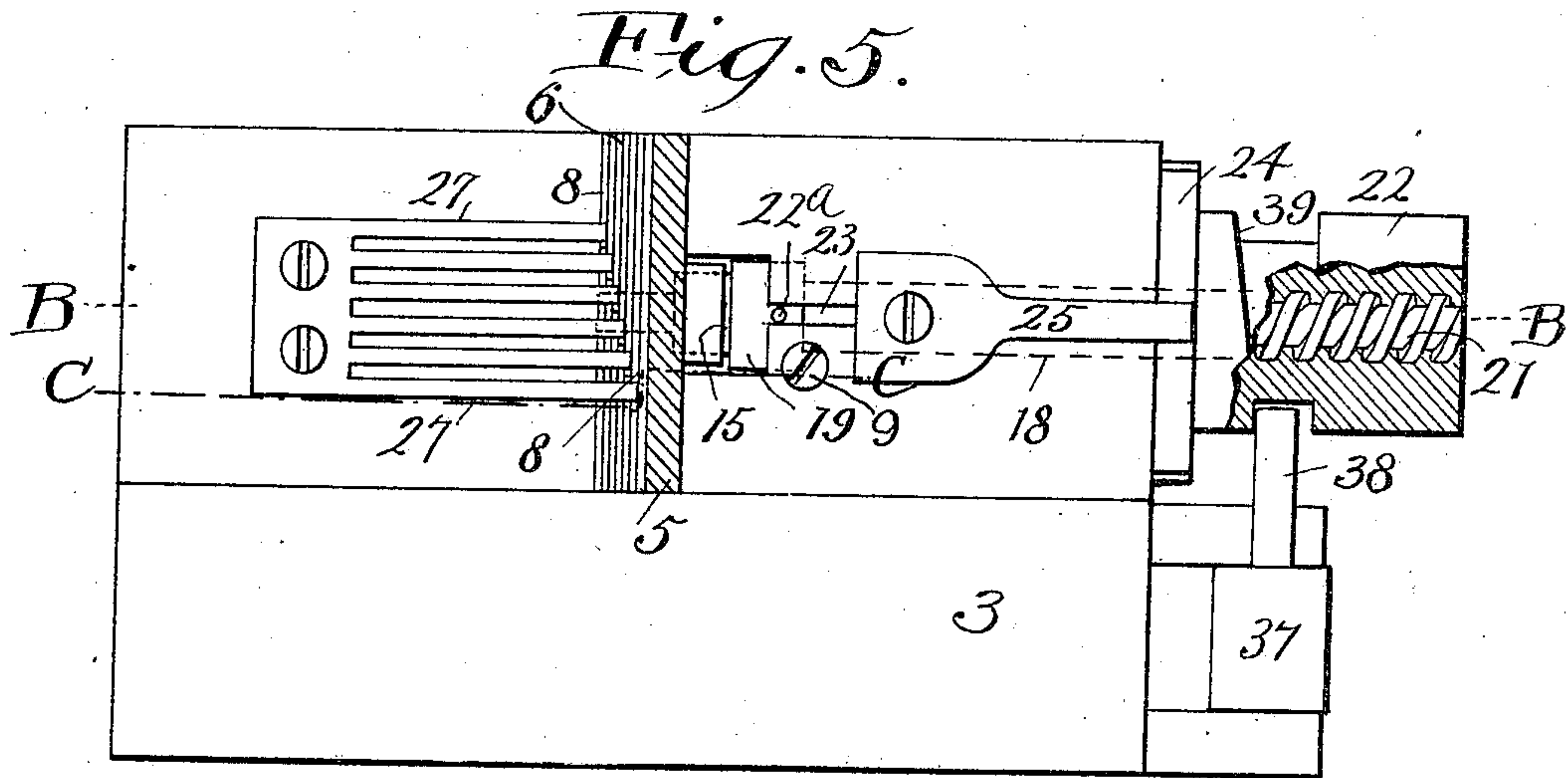
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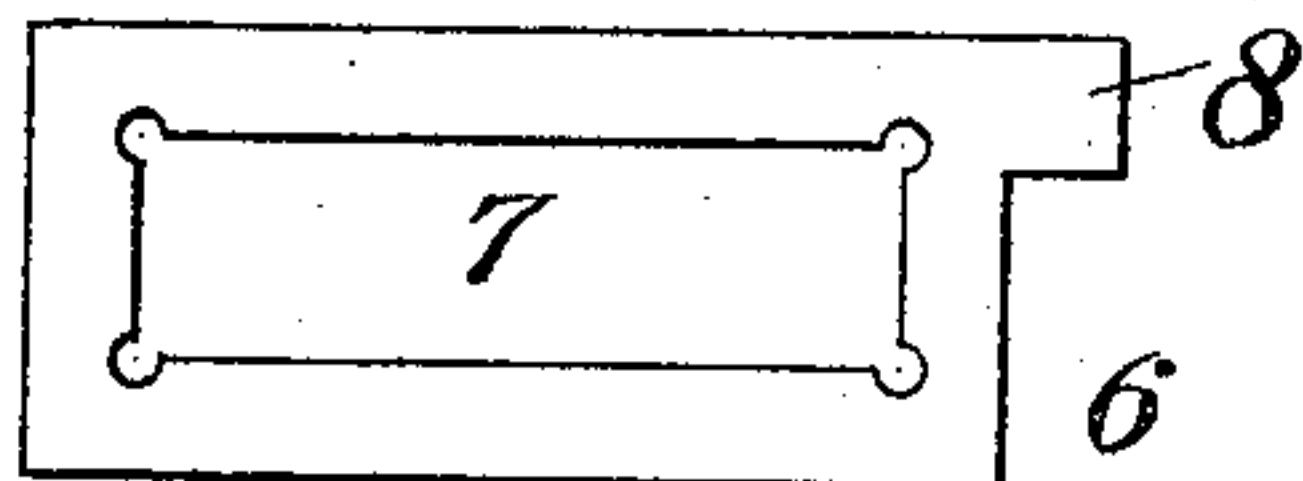
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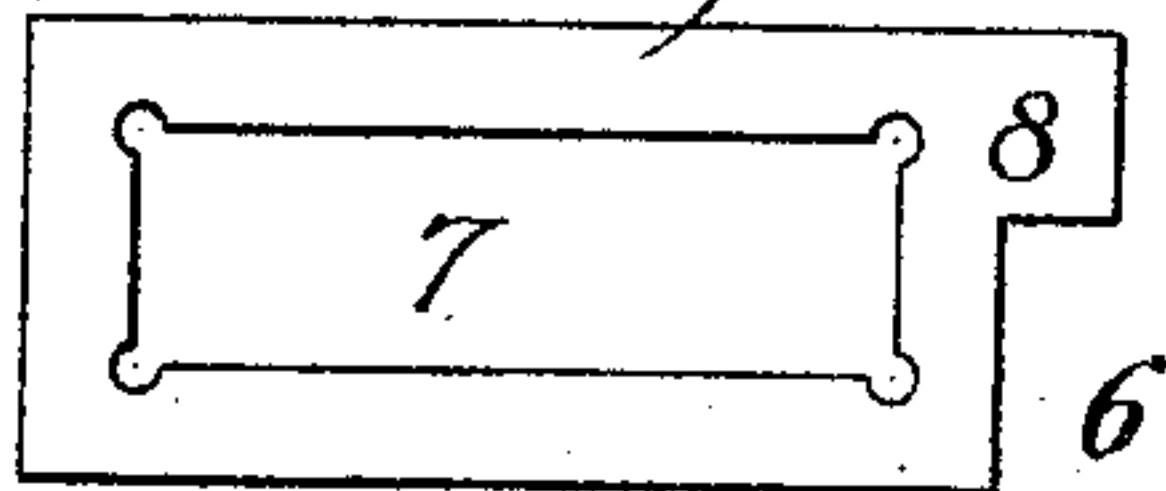
3 SHEETS—SHEET 2.



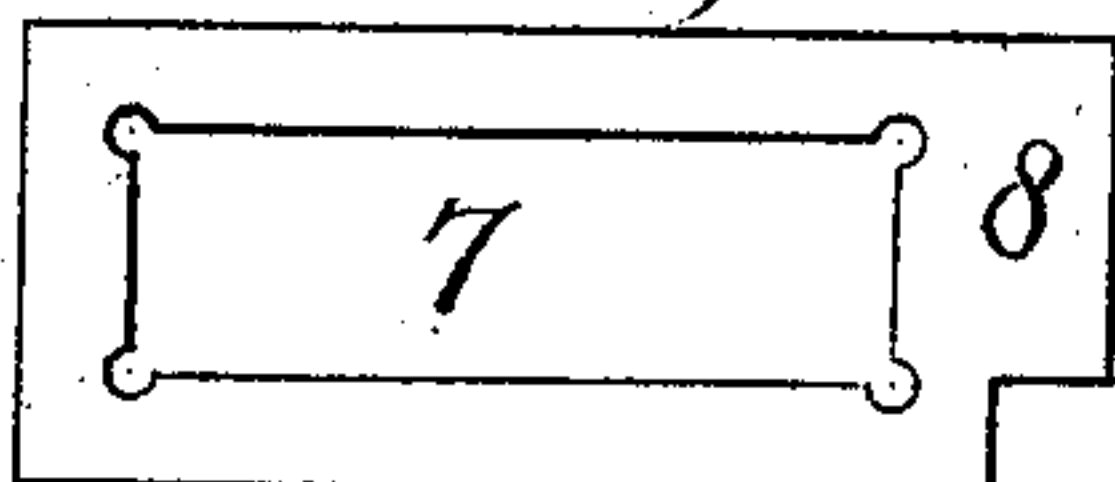
*Fig. 6.*



*Fig. 7.*



*Fig. 8.*



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APPLICATION FILED AUG. 12, 1907. RENEWED MAY 18, 1909.

Patented Dec. 28, 1909.

3 SHEETS—SHEET 3.



Benjamin F. Bellows  
by  
Thurston Woodward  
1878.



# UNITED STATES PATENT OFFICE.

BENJAMIN F. BELLOWS, OF CLEVELAND, OHIO, ASSIGNOR TO ELECTRIC COMPOSITOR COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

## UNIVERSAL TYPE-MOLD.

944,408.

Specification of Letters Patent.

Patented Dec. 28, 1909.

Application filed August 12, 1907, Serial No. 388,089. Renewed May 18, 1909. Serial No. 496,719.

*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 Universal Type-Molds, of which the following is a full, clear, and exact description.

This invention relates to improvements in type molds; and more particularly to type molds adapted for use in machines for making and setting type.

The object of the invention is to produce a mold universally applicable for the making of type of many different sizes—that is to say, type which differ in width (as do the type of different bodies) and in thickness (as do the type of any font).

The invention, which may be here summarized as the combination of parts which is shown in the drawing and hereinafter described and claimed, is illustrated in the accompanying drawing, in which—

Figure 1 is a plan view of a mold embodying the invention. Fig. 2 is a bottom view of the slide. Fig. 3 is a sectional view in the plane indicated by line A—A on Fig. 1. Fig. 4 is an elevation of the mold viewed from the top of Fig. 1. Fig. 5 is an elevation partly broken away of said mold viewed from the right side of Fig. 1. Figs. 6, 7 and 8 are elevations of different filler slides employed in the mold. Fig. 9 is a sectional plan view in the plane indicated by line B—B on Fig. 5; and Fig. 10 is a sectional plan view in the plane indicated by line C—C on Fig. 5.

Referring to the parts by numerals, 1 and 2 represent two blocks which are adjustably fixed upon a base block 3. The distance between the proximate faces of these blocks is equal to the width of the widest type which may be made in the mold. One side of the mold is formed by a slide 4 movable in a suitable guideway, of which the blocks 1 and 2 form one wall. Between the proximate faces of the blocks 1 and 2 is a slide made up of a main slide 5, the width of which is equal to the width of the smallest type adapted to be cast in the mold, and a number of supplemental slides 6, the width of each of which is equal to the difference between the width of the different type bodies. The mold space, when a type is cast

therein, will be bounded by the slide 4 on one side and on the other by end of the slide 5, and as many of the slides 6 as have been moved in company with slide 5 away from slide 4. The ends of the mold space will be bounded by the block 1 and by that one of the supplemental slides 6 nearest to block 1 which has not been moved from the position shown in Fig. 10.

The distance between the proximate faces of the blocks 1 and 2 is very nicely adjusted by means of a wedge 10 fixed to the block 2, and a movable wedge 11. It is necessary that means be provided for effecting the nice adjustment of the distance between the proximate face of slides 1 and 2 in order that the slides 5 and 6 may not only fill this space, but may fill it in such manner that they are capable of the movements therein, to be described. It is necessary that this distance be capable of variation to take up the very slight wear which may result from the operation of these slides. The means provided for moving the wedge 11 consists of a spring 13 seated in a recess in block 1 and thrusting against a pin 12 fixed to the wedge 11 and projecting into said recess. This spring will be compressed and will always act to move the wedge to the right, as shown in Fig. 10, which is in the direction which will permit the blocks 1 and 2 to be moved toward each other. The wedge 11 is moved in the contrary direction by means of a screw 9 screwing into block 1 with its inner end bearing against the pin 12. In the slides 5 and 6 are recesses 7, through which the wedge 10 passes. The width of the recess is equal to the width of the wedge. These recesses are longer than the wedge, whereby the slides may be moved as required. Means under the control of an operator are provided for making an operative connection between slide 5 and as many of the slides 6 as desired. The means shown consists of a pin 15 mounted in a suitable recess 16 in the slide 5 and adapted to project transversely therefrom at both ends. The inner end of this pin may lie wholly within slide 5, or may be projected therefrom various distances so as to enter the recess 7 in one or more of the slides 6. When it does, it engages with the adjacent end of each of such recesses. Therefore, when slide 5 is out, that is away from slide



4, it will draw with it as many of the slides 6 as this pin 15 engages with. A plunger 18 is mounted in the block 1. The inner end or head 19 on this plunger engages with the head of the pin 15. A spring 20 acts always upon the plunger 18 to push it against pin 15. The plunger has near its outer end a quick thread as at 21, and upon this a nut 22 is secured, which nut bears against the outer face of the block 1. A pin 22<sup>a</sup> secured to the head of the plunger lies in a kerf 23 in the block 1, and thereby prevents the plunger from turning. When, now, the nut 22 is turned in one direction, it draws the plunger outward in opposition to the spring 20, and this allows the spring pin 15 to be moved outward by its spring a greater or less distance, so that it may disengage itself from one or more of all of the slides 6. When nut 22 is turned in the opposite direction, it allows the spring 20 to move the plunger inward, and this pushes the spring pin 15 inward the required distance to cause it to engage with one or more or all of the plates 6 as required.

A notched wheel 24 is attached to the nut 22 and a spring pawl 25 fixed to block 1 is provided for engaging with the notches in this wheel. By this means, the operator is enabled to determine when he has turned the nut to the position necessary to cause pin 15 to occupy the required position in respect to the slides 6. If it be assumed that this adjustment has been made so that, as shown in Fig. 9, pin 15 engages with three of the slides 6, then, when slide 5 is moved to the right so as to form an opening between its end and the opposed face of the slide 4, three of the slides 6 will move with it, and the width of this type formed in this space will therefore be equal to the distance between the face of the block 1 and the opposed face of the fourth slide 6. The distance which slide 5 and the slides 6, then connected therewith, is moved out determines the thickness of the type which may be cast in the mold space. Means are provided for holding those slides 6 with which pin 15 does not engage in such position that their inner ends will engage with slide 4. The means provided may consist of the spring arms 27 secured to block 2, which arms severally engage with projections 8 on the plates 6.

The slide 4 not only serves as one side of the mold, but it also serves as means by which the type, as they are made in the mold, are taken from the mold and transferred to some other place. In order that the slide may be adapted to this purpose, it is provided with a recess 29 adapted, by a movement of said slide, to be brought into alinement with the mold, as shown in Figs. 1 and 10. After a type has been cast, slide 4 is to be moved to the position where its

recess is alined with the mold space. Then slide 5, and the connected slides 6 are moved in so as to push the type into this recess. Then slide 4 is again moved to close the side of the mold, and to carry the type to a position where it may be easily removed from the recess. It is desirable that this recess be capable of variation in width to correspond with the width of the type produced in the mold. In order to provide means for varying the width of this recess, a slide 30 is mounted in the lower part of the slide 4. On one projecting end it carries an upright plate 31 fitted in a suitable recess in the end of slide 4, which plate 31 has on its upper end a plate 32 whose right edge extends over the top of the cut down end of slide 4 and stands opposed to the permanent right side of the recess 29. The other end of the slide 30 extends into a slot 34 in the bottom of slide 4, in which it is connected with a contractile spring 35 which exerts its force always to draw slide 30 in the direction to close up the recess 29. A pin 36 projects into the recess 34 into the path of the end of slide 30, wherefore, when slide 4 is drawn in the direction (upward as shown in Fig. 1) to bring recess 29 into alinement with the mold, the end of the slide 30 will come in contact with the pin 36 and will be stopped while slide 4 continues its movement. Means are provided for varying the position of the pin 36 and consequently for varying the position in which slide 30 shall be stopped. As shown, the means consist of a lever 37 pivoted to the block 1,—pin 36 being attached to one arm of this lever. The other arm of the lever has a pin 38 which engages with a spiral shoulder 39 on the nut 22. When, therefore, the nut is turned to vary the position of the plunger 18 and to thereby determine whether none, one or more, or all of plates 6 shall move in unison with plate 5, the lever 37 will be correspondingly rocked, and its pin 36 will be moved to said position that when slide 4 is moved to bring the permanent edge of its recess 29 into alinement with the corresponding end of the mold space—that is to say, the inner face of block 1 into alinement, the slide 30 will be stopped in such position that the distance between the ends of the plate 32 and the permanent side of the recess 29 will correspond with the width of the mold space which will be opened up by the movement of slide 5.

It will be understood that when any particular type body, as brevier, pica, etc., is to be formed, the device is adjusted by the manipulation of nut 22 as described,—and that this adjustment is maintained so long as type of that body are required. The movement of slide 5 alone or in company with one or more of slides 6, opens up the



mold so that the thickness of the type to correspond with different letters may be varied.

It has not been thought necessary to show  
 5 any mechanism for moving slides 4 or 5, although some mechanism for this purpose will probably be required in a practical machine, of which the present invention is a part. But, so far as the present invention  
 10 is concerned, these slides might be moved by hand. Nor has it been thought necessary to show any matrix plate or pot nozzle for closing the top and bottom of the mold space. It will be understood by those  
 15 familiar with this art that these things, in some suitable form, must be provided before type can be cast in the described mold. The present invention, however, is wholly independent of these parts, or of their particular  
 20 form, or of the mechanism associated with them.

Having described my invention, I claim:

1. A type mold comprising two blocks having parallel sides, a partition spanning  
 25 the space between them at one end of said blocks, a main slide and one or more parallel supplemental slides fitted between said blocks, and means for connecting the main slide with any desired number of the sup-  
 30 plemental slides.

2. In a type mold, a combination of two blocks having parallel faces, a slide movable across the ends of said blocks, and adapted to span the gap between them, a main slide  
 35 and several thin supplemental slides parallel with the main slide,—said slides being fitted between the parallel faces of said blocks, and means for connecting and disconnecting the main slide and any desired number of said  
 40 supplemental slides.

3. In a type mold, the combination of two blocks having parallel faces, a transfer slide movable across the ends of said blocks and adapted to span the gap between them,—  
 45 said transfer slide having a type receiving recess adapted to be brought into alinement with the gap between said blocks, a main slide, and several thin supplemental slides parallel with the main slide,—said slides,  
 50 being fitted between the parallel faces of said blocks, and means for connecting and disconnecting the main slide and any desired number of said supplemental slides.

4. In a type mold, a combination of two  
 55 blocks having parallel faces, a main slide and several thin parallel supplemental slides fitting the space between said blocks, said supplemental slides having holes through them, a connecting device carried by the  
 60 main slide, and means for moving it into various positions whereby it may project into the holes in one or more or all of said supplemental slides.

5. In a type mold, a combination of two  
 65 blocks having parallel faces, a main slide

and several thin parallel supplemental slides fitting the space between said blocks, said supplemental slides having holes through them, a connecting device carried by the main slide, and means for moving it into any  
 70 desired position whereby it may project into the holes in one or more or all of said supplemental slides, and a series of springs which severally engage with said supplemental slides and acting to move said slides  
 75 to one end of the path of their permissible movement.

6. In a type mold, a combination of two blocks having parallel faces, a slide fitting between said faces, and comprising a main  
 80 slide and one or more parallel supplemental slides which have holes through them, a spring actuated pin carried by the main slide, a device carried by one of said blocks and adapted to engage with said spring ac-  
 85 tuated pin whereby to determine its position relative to said supplemental slides.

7. In a type mold, a combination of two blocks having parallel faces, a slide fitting between said faces, and comprising a main  
 90 slide and one or more parallel supplemental slides which have holes through them, a spring actuated pin carried by the main slide, a plunger movably mounted in one of said blocks, a spring thrusting it toward  
 95 said pin, a nut screwed onto the projecting end of the plunger for drawing it in the opposite direction.

8. In a type mold, a combination of two blocks having parallel faces, a slide fitting  
 100 between said faces, comprising a main slide and one or more parallel supplemental slides which have holes through them, a spring actuated pin carried by the main slide, a plunger movably mounted in one of said blocks,  
 105 a spring thrusting it toward said pin, a nut screwed onto the projecting end of the plunger for drawing it in the opposite direction, a notched wheel secured to said nut, and a spring pawl engaging with said wheel.  
 110

9. In a type mold, a combination of two blocks having parallel faces, a slide fitting between said faces, and comprising a main  
 115 slide and one or more parallel supplemental slides which have holes through them, a spring actuated pin carried by the main slide, a plunger movably mounted in one of said blocks, a spring thrusting it toward said pin, a nut screwed onto the projecting end  
 120 of the plunger for drawing it in the opposite direction, a spiral shoulder upon said nut, a lever engaging said shoulder, a slide for closing one end of the space between said blocks and having in it a type receiving re-  
 125 cess of variable width, and means operated by said lever for determining the width of said type receiver recess.

10. In a type mold, a combination of two blocks having parallel faces, means for vary-  
 130 ing the effective width of the space between



said blocks, a slide engaging with the ends of said blocks and adapted to close one end of said space, said slide having a type receiving recess, a sliding side to said type receiving recess, and means for moving said side to widen the type receiving recess according to the variation in the width of the mold space.

11. In a type mold, a combination of two blocks having parallel faces, a main slide and one or more supplemental slides filling a space between the opposing faces of said blocks, each of said slides having a transverse hole through it, a wedge secured to one of said blocks and projecting through the holes in said slides, a movable wedge engaging the first named wedge, and means for moving the movable wedge.

12. In a type mold, a combination of two blocks having parallel faces, a main slide and one or more supplemental slides filling a space between the opposing faces of said blocks, each of said slides having a transverse hole through it, a wedge secured to one of said blocks and projecting into the holes in said slide, a movable wedge engaging the first named wedge, a spring for moving the wedge in one direction, and a screw for moving said wedge in the other direction.

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

BENJAMIN F. BELLOWS.

Witnesses:

ARTHUR J. B. HUDSON,  
ROY J. SOULER.