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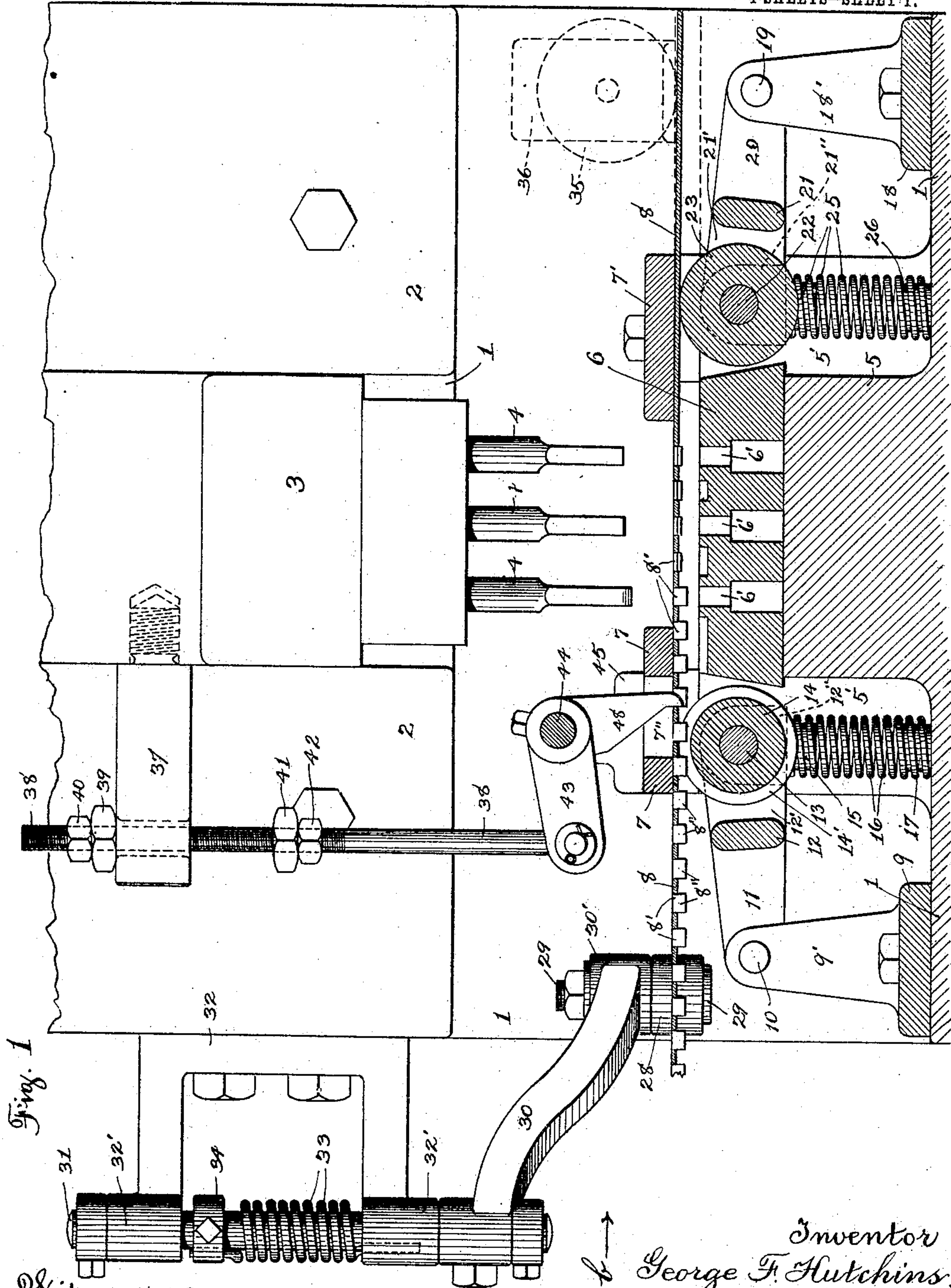
PATENTED JULY 12, 1904.

G. F. HUTCHINS.  
AUTOMATIC FEED MECHANISM.

APPLICATION FILED FEB. 21, 1902.

NO MODEL.

4. SHEETS—SHEET 1.



Witnesses  
J. A. Kinsley  
H. M. Rugg

Inventor  
George F. Hutchins.

ЗЗу

John Dewey.

Att'y

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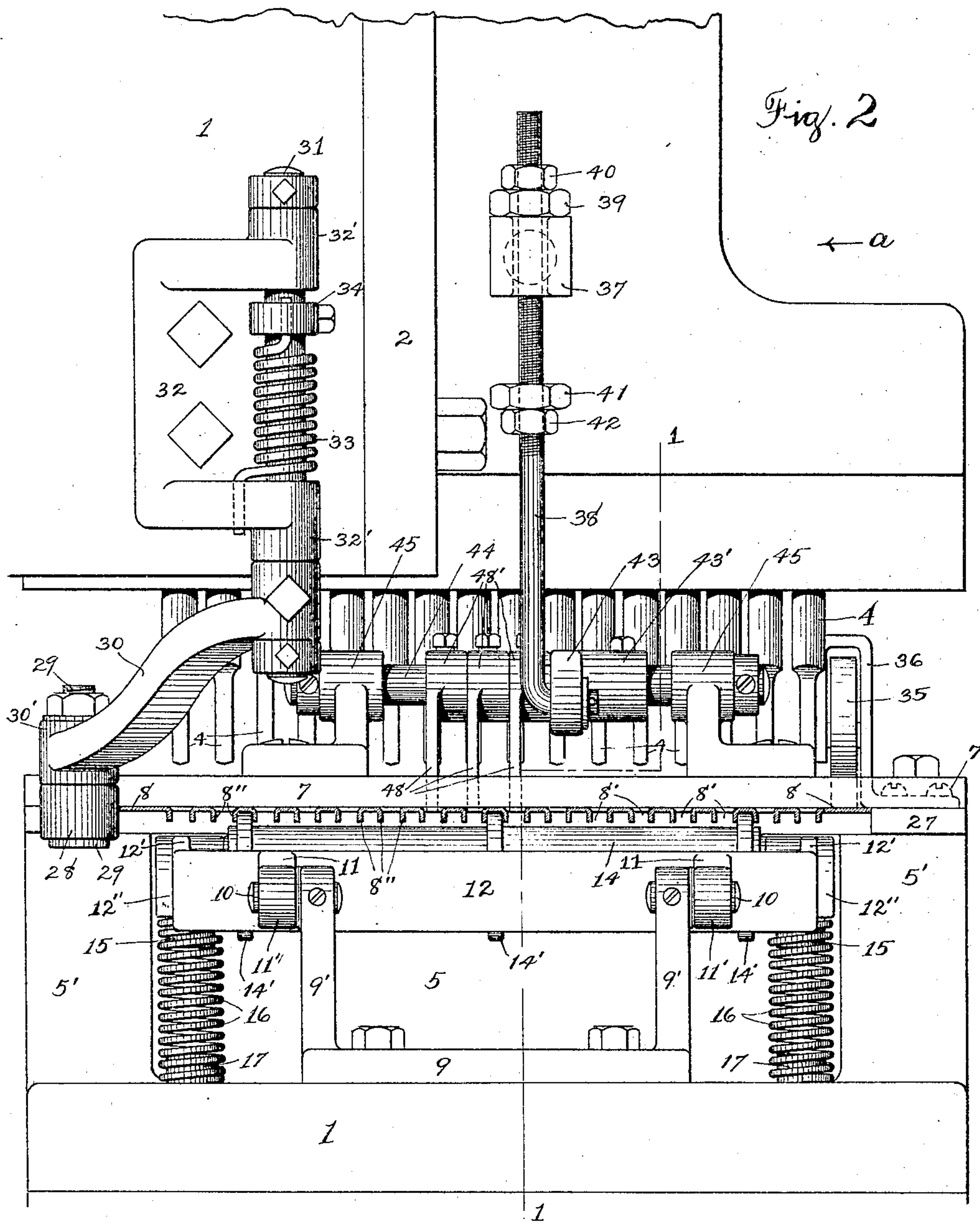
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J. A. Kinsley  
H. M. Rugg

Inventor  
George F. Hutchins  
By John C. Dewey  
Att'y



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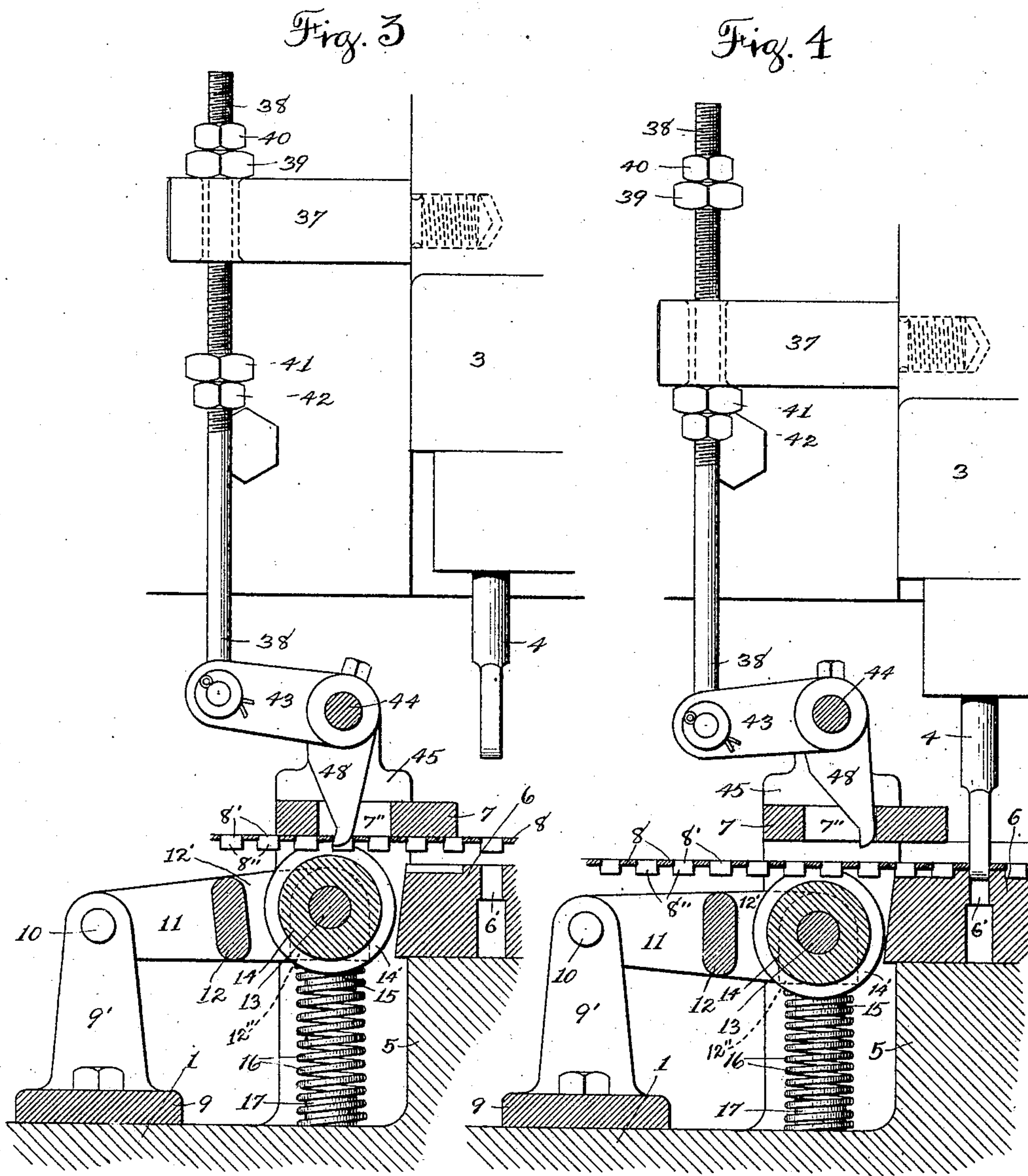
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Witnesses  
A. O. Kinley  
H. M. Rugg

By

John L. Dewey

Inventor  
George F. Hutchins

Atty

No. 764,851.

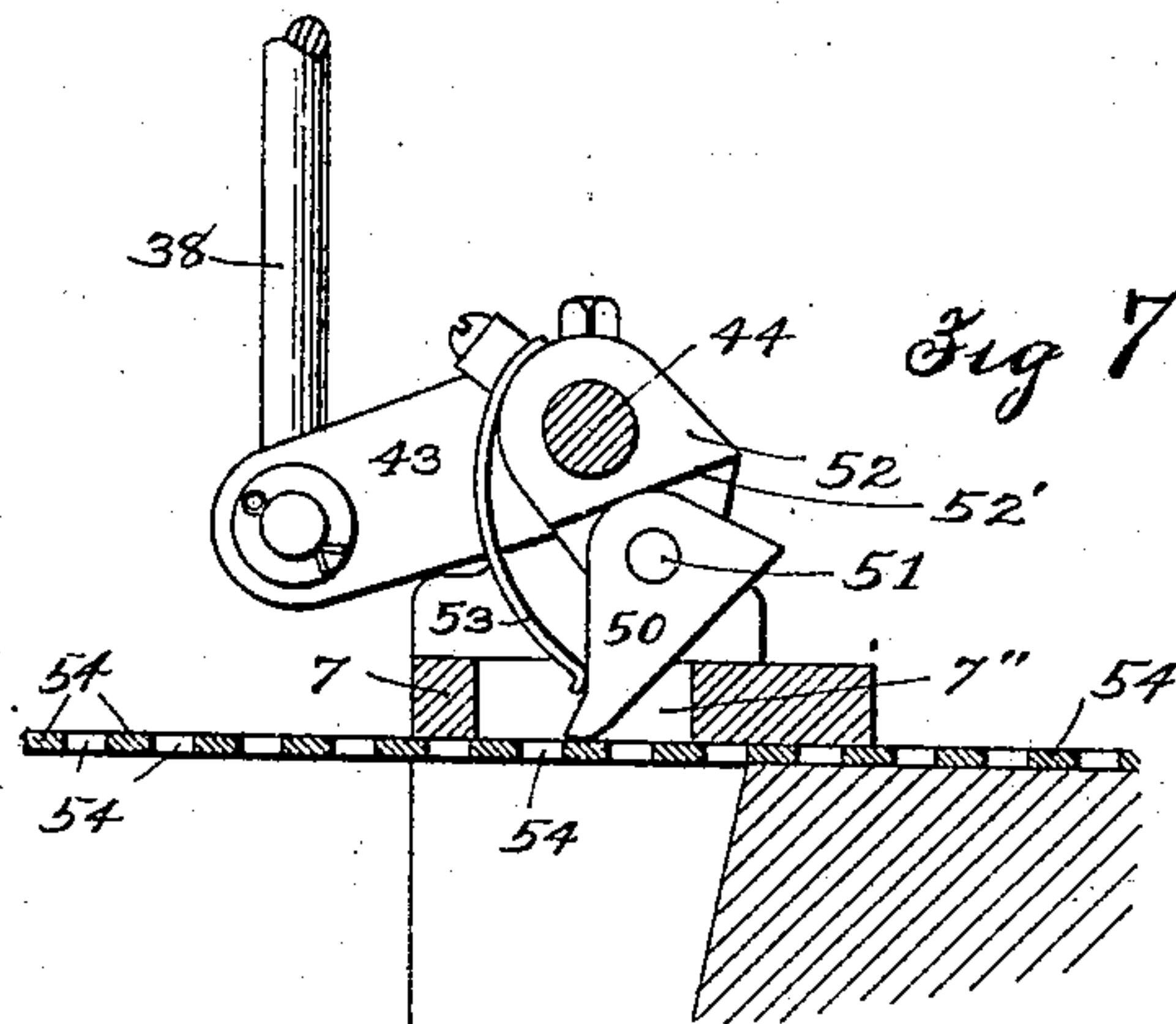
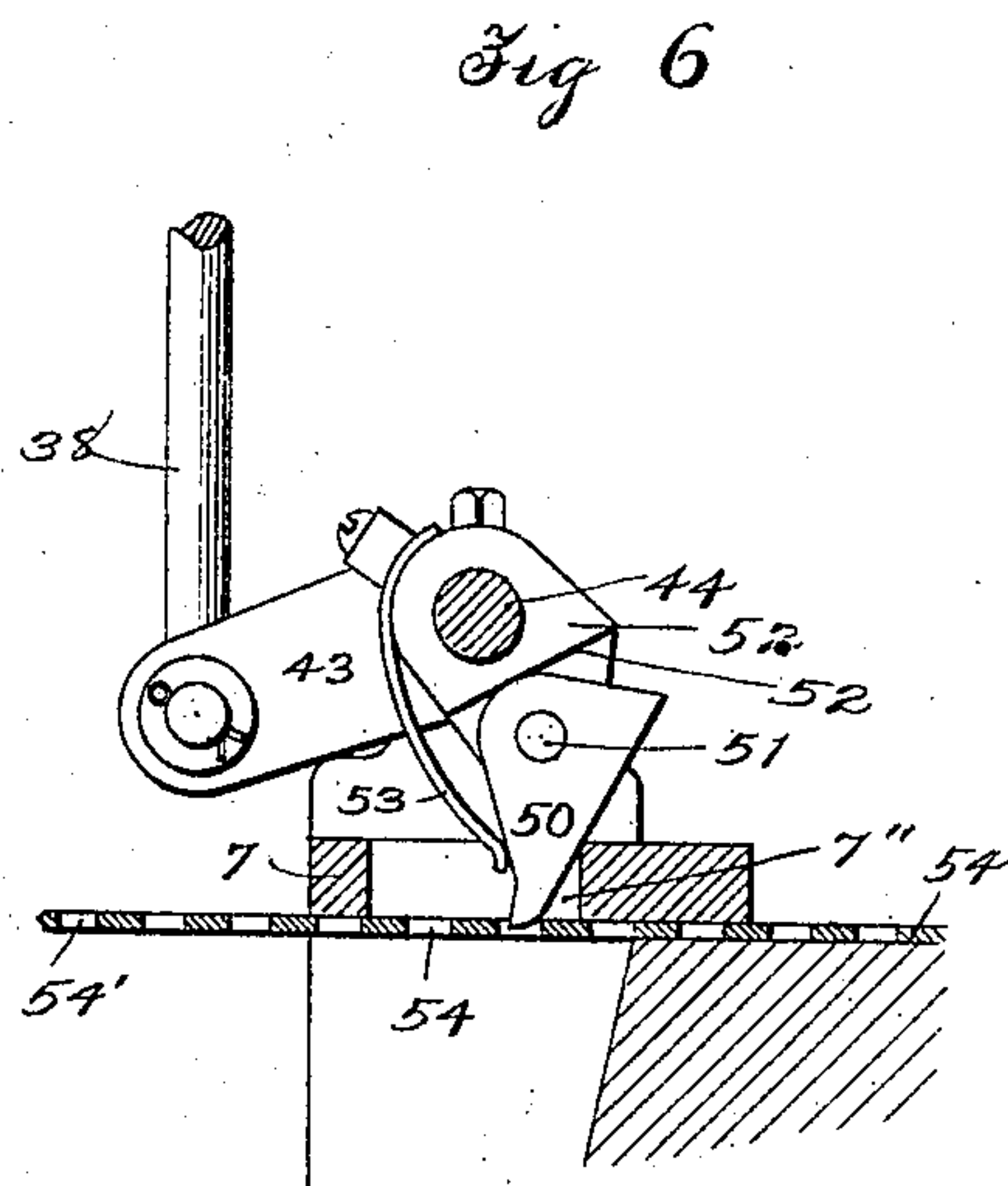
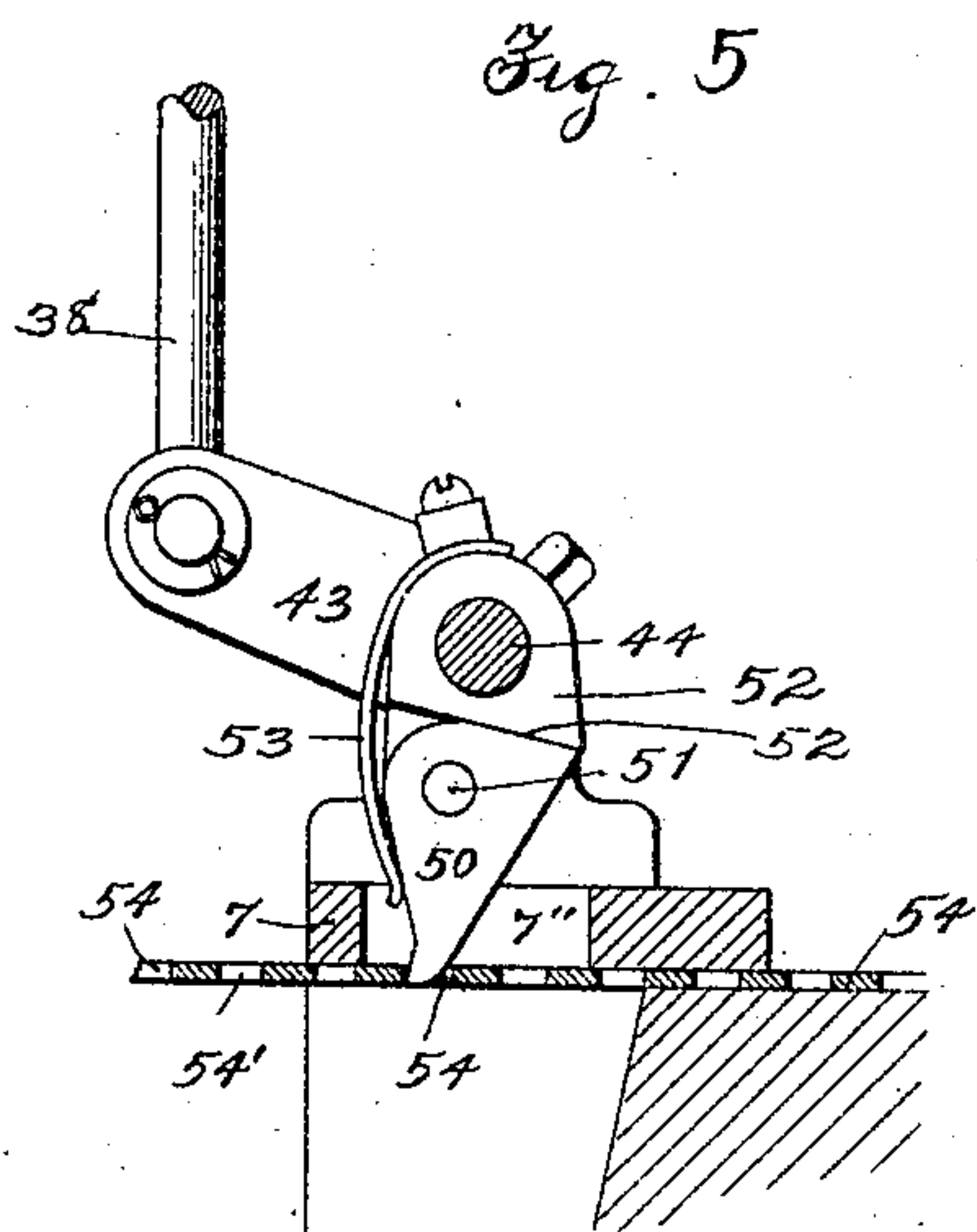
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Witnesses  
H. M. Rugg  
J. A. Kinsley

Inventor  
George F. Hutchins  
By John E. Duwey  
Attorney



# UNITED STATES PATENT OFFICE.

GEORGE F. HUTCHINS, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO CROMPTON & KNOWLES LOOM WORKS, OF WORCESTER, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

## AUTOMATIC FEED MECHANISM.

SPECIFICATION forming part of Letters Patent No. 764,851, dated July 12, 1904.

Application filed February 21, 1902. Serial No. 95,017. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE F. HUTCHINS, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Automatic Feed Mechanism, of which the following is a specification.

My invention relates to an automatic intermittent feed mechanism for feeding or moving along at regular predetermined intervals and for regular predetermined distances perforated or indented surfaces or plates.

The object of my invention is to provide an automatic positive-feed mechanism of simple and inexpensive construction; and my invention consists in certain novel features of construction of my feed mechanism, as will be hereinafter fully described.

I have shown in the drawings my automatic feed mechanism combined with a punching-machine for feeding through the punching-machine a plate in which a series of holes or perforations are punched; but it will be understood that my automatic feed mechanism may be combined with other kinds of machines for doing similar work, if desired.

My invention is of especial utility in connection with the production of the treads for stairs, pavements, and the like described in United States Letters Patent No. 638,666 of December 5, 1899.

I have only shown in the drawings sufficient portions of a punching-machine and my automatic feed mechanism combined therewith to enable those skilled in the art to which my invention belongs to understand the construction and operation thereof.

In the operation of the punching-machine the raising and lowering of the plunger carrying the punching dies or tools operates my feed mechanism to feed or move forward the plate in which the holes are to be punched and to bring it under the punching dies or tools preparatory to the action thereof and move it forward after the action of the dies, as will be hereinafter fully described.

Referring to the drawings, Figure 1 is a sec-

tional front elevation of my improvements, taken at a point indicated by line 1 1, Fig. 2, looking in the direction of arrow *a*, same figure, and showing the plunger and punching dies or tools combined therewith. Fig. 2 is an end view of the parts shown in Fig. 1 looking in the direction of arrow *b*, same figure. Fig. 3 shows a part of the mechanism shown in Fig. 1 with the actuating-pawl in its extreme forward position. Fig. 4 corresponds to Fig. 3, but shows a different position of the parts, the actuating-pawl being in its extreme rear position. Fig. 5 shows a modified construction of the actuating-pawl. The pawl is in its extreme forward position. Fig. 6 corresponds to Fig. 5, but shows the actuating-pawl in its extreme rear position; and Fig. 7 shows the actuating-pawl in its intermediate position.

In the accompanying drawings, 1 is the frame of a punching-machine having thereon stationary guide-plates 2, forming ways for the vertically-reciprocating plunger 3, operated in any usual way and carrying punching dies or tools 4, secured to the lower end thereof.

Upon an elevated portion or bed 5 is a die-block 6, having openings 6' therein to receive the punching dies or tools 4. Extending over the die-block 6 and under the transverse bars 7 7' is a plate 8, in which in this instance holes or perforations 8', having downwardly-extending lips 8'', are to be punched at regular intervals by the punching dies or tools 4.

I will now describe my improvements in feed mechanism, which in this instance are used to automatically feed or move forward at regular intervals the plate 8 to bring the same into position to be acted on by the punching dies or tools 4.

The base 9 of a stand is bolted to the base of the frame 1, and in the upper ends of the vertically-extending arms 9' of said stand are fast studs 10, on which are pivotally mounted the hubs 11' on the parallel arms 11, between which extends the transverse bar 12, having at its ends the parallel arms 12', having bearings 12'' thereon for the shaft 13, on which is



fast a roll 14, extending under the plate 8 at one end of the die-block 6 and having thereon in this instance three annular flanges 14', adapted to engage the under side of the plate 8 between the turned-down lips 8'', formed in this instance by the operation of the punching dies or tools 4 in making the holes or perforations 8'. Roll 14 partially supports and guides the plate during its forward movement, so that the coöperating punches and dies effect the punching of the holes through the plates in straight parallel lines. On a stud 15, projecting down from the bearings 12'' on the parallel arms 12', is mounted the upper end of a spiral compression-spring 16. The lower end of said compression-spring 16 is mounted upon a stud 17 on the base of the frame 1. On the opposite end of the frame 1 (see Fig. 1) are corresponding parts consisting of a base 18 with vertically-extending arms 18', carrying studs 19, on which are pivotally mounted the hubs on the parallel arms 20, between which extends the transverse bar 21, having at its ends the parallel arms 21', having bearings 21'' thereon for the shaft 22, on which is fast the roll 23, said roll extending under the plate 8 at the outer end of the die-block 6 and having a plane surface without the annular flanges on the roll 13. On a stud 24, extending down from the bearings 21'' on the parallel arms 21, is mounted the upper end of a spiral compression-spring 25. The lower end of the spring 25 is mounted upon a stud 26 on the base of the frame 1. The action of the springs 16 and the springs 25 on the rolls 14 and 23 is to raise said rolls and also raise the plate 8, supported thereon, above the die-block 6 and against the transverse bars 7 and 7' (see Fig. 1) after the punching dies or tools 4 on the plunger 3 have been raised to allow of the feeding or moving forward of the plate 8 by means of my automatic feed mechanism. The plate 8 is guided in this instance in its forward motion through the punching-machine by a bar 27, extending along one edge and secured upon stands 5' on the base of the frame 1, as shown in Fig. 2, and a roll 28, engaging the other edge of the plate and mounted on a stud 29, supported in a hub 30' on the end of an arm 30, fast on an upright rocking shaft 31, having its bearings in hubs 32' on a bracket 32, secured to the frame of the machine. A spiral spring 33, secured at one end to the hub 32' on the bracket 32 and at its other end to a collar 34, fast on the upright shaft 31, acts to hold the roll 28 in yielding engagement with the edge of the plate 8. A roll 35, suitably mounted in a stand 36, may be used to bear on the upper surface of the plate 8 at its edge opposite from the roll 28, as shown in Fig. 2.

I will now describe my mechanism for automatically feeding forward the plate 8 at regular intervals. This mechanism is in this instance operated by the vertical movement of

the reciprocating plunger 3. An arm 37 is secured at its inner end to the plunger 3 and moves up and down with said plunger. The outer end of said arm 37 has an opening there-through through which loosely extends the threaded end of a rod 38, which has thereon above the arm 37 a nut 39 and a check-nut 40. The rod 38 has thereon below the arm 37 a nut 41 and a check-nut 42. The lower end of the rod 38 is in this instance bent, as shown in Fig. 2, and extends through a crank 43, the hub 43' of which is fast on a rock-shaft 44, having bearings in the stands 45, secured in this instance upon the transverse bar 7. On the shaft 44 are fast in this instance the hubs 48' of the three actuating-pawls 48. The lower ends of the pawls 48 are of reduced size and adapted in this instance to extend into the holes or perforations 8', formed in the plate 8 by the punching dies or tools 4.

I will now describe the operation of my improvements above described, and shown in Figs. 1 to 4, inclusive. As the plunger 3, carrying the punching dies or tools 4, descends, operated in any well-known way, the engagement of the dies or tools 4 with the plate 8 (see Fig. 4) forces the plate 8 down onto the bed 5 and at the same time depresses the rolls 14 and 23. The downward movement of the plunger 3 causes the arm 37 to engage the nut 41 and move down the rod 38 and through crank 43 rocks the shaft 44 and also the pawls 48, fast thereon, and moves them into the position shown in Fig. 4. After the punching dies or tools 4 have punched holes in the plate 8 and are raised by the upward motion of the plunger 3 the springs 16 and 25 act to raise the rolls 14 and 23, and consequently the plate 8, above the bed 5 on the die-block 6 and against the transverse bars 7 and 7' and cause the lower ends of the pawls 48 to enter into the holes or perforations 8' in the plate 8, as shown in Fig. 1. The continued upward movement of the plunger 3 causes the arm 37, engaging the nut 39 on the rod 38, to move upwardly said rod and through crank 43 rock the shaft 44 and the pawls 48, fast thereon, and move the pawls 48 from their extreme rear position (shown in Fig. 4) to their forward position, (shown in Fig. 3,) and the lower ends of the pawls 48, extending into the holes or perforations 8' in the plate 8, will cause the plate 8 to move forward in this instance for a distance equal to the distance between the holes 8' in the direction of the length of the plate 8.

The operation above described is repeated at every operation of the punching dies or tools 4, and the plate is thus automatically fed or moved through the machine.

I will now describe the modified construction of the actuating-pawls. (Shown in Figs. 5, 6, and 7.) In these figures the actuating-pawls 50 are not rigidly attached to the rock-shaft 44 to move with it, but are pivoted on a



pin 51 on a collar or carrier 52, fast on the shaft 44, to have a pivotal motion relative to said collar. A spring 53, secured at one end on the collar 52 and with its free end bearing on the front edge of the pawl 50, acts to move the pawl into its rear position when it is released from the hole 54' in the plate 54. The engagement of the rear edge of the pawl 50 with the rear edge of the opening 7" in the transverse plate 7 limits the backward movement of the pawl. The engagement of the upper edge of the pawl 50 with a shoulder or projection 52' on the collar 52 causes the pawl to move forward with the collar 52 on the rocking of the shaft 44. (See Fig. 5.) The giveaway or yielding connection of the pawl 50 with the collar or carrier 52 allows the pawl, in case the plate 54 is not depressed by the action of the punching-dies or tools, to move backward from the position shown in Fig. 5 over the top of the plate, as shown in Fig. 7, to the position shown in Fig. 6. The raising of the plunger 3 will, through intermediate mechanism described in connection with Figs. 1 to 4, inclusive, move the pawl 50 from the position shown in Fig. 6 to the position shown in Fig. 5, and the lower end of the pawl 50, extending into a hole 54' in the plate 54, will cause the plate 54 to move forward, as above described in connection with the plate 8.

It will be understood that the details of construction of my improvements may be varied, if desired, and the same may be used in connection with any mechanism or machine where it is desired to have an automatic feed mechanism.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An automatic feed mechanism, comprising a pawl adapted to engage the surface, to be fed or moved along, and means for actuating said pawl intermittently, at regular predetermined intervals, to cause it to engage and move the surface to be moved, and a die-block; punching-dies and means which engage the under side of the plate to guide the same while it is moving during the punching operation, substantially as shown and described.
2. An automatic feed mechanism, comprising a pawl adapted to engage the surface, to be fed or moved along, and means for actuating said pawl intermittently, at regular predetermined intervals, to cause it to engage and move the surface to be moved and to be disengaged therefrom, and a die-block; punching-dies and means which engage the under

side of the plate to guide the same while it is moving during the punching operation, substantially as shown and described.

3. An automatic feed mechanism, comprising a pawl having a pivotal motion and adapted to engage the surface to be fed or moved along, and means for actuating said pawl intermittently, at regular predetermined intervals, to cause it to engage and move the surface to be moved, and a die-block; punching-dies and means which engage the under side of the plate to guide the same while it is moving during the punching operation, substantially as shown and described.

4. In an automatic feed mechanism for plates, &c., the combination with a yielding support for the plate, of a pawl having a pivotal motion, and means for actuating said pawl intermittently, at regular predetermined intervals, to cause it to engage and move the plate, and to be disengaged therefrom, preparatory to again engaging and moving the plate, and a die-block; punching-dies and means which engage the under side of the plate to guide the same while it is moving during the punching operation, substantially as shown and described.

5. In an automatic feed mechanism for plates, &c., the combination with means for guiding and yieldingly supporting the plate, so that it may have an up-and-down motion, of a pawl or pawls having a pivotal motion, and means for operating said pawl or pawls intermittently, to cause them to engage and move forward the plate at regular intervals, and a die-block; punching-dies and means which engage the under side of the plate to guide the same while it is moving during the punching operation, substantially as shown and described.

6. In an automatic feed mechanism for metal plates, &c., the combination with a pawl, adapted to engage the plate or surface to be moved, and pivotally mounted to have a movement independent of its support, and form a giveaway or yielding connection, of means for operating the support on which the pawl is pivoted, to move said pawl, and a die-block; punching-dies and means which engage the under side of the plate to guide the same while it is moving during the punching operation, substantially as shown and described.

GEORGE F. HUTCHINS.

Witnesses:

J. C. DEWEY,  
M. HAAS.