

(No Model.)

3 Sheets--Sheet 1.

H. H. KELLER.

METHOD OF AND APPARATUS FOR FORMING BRICKS.

No. 514,421.

Patented Feb. 6, 1894.

Fig. I.

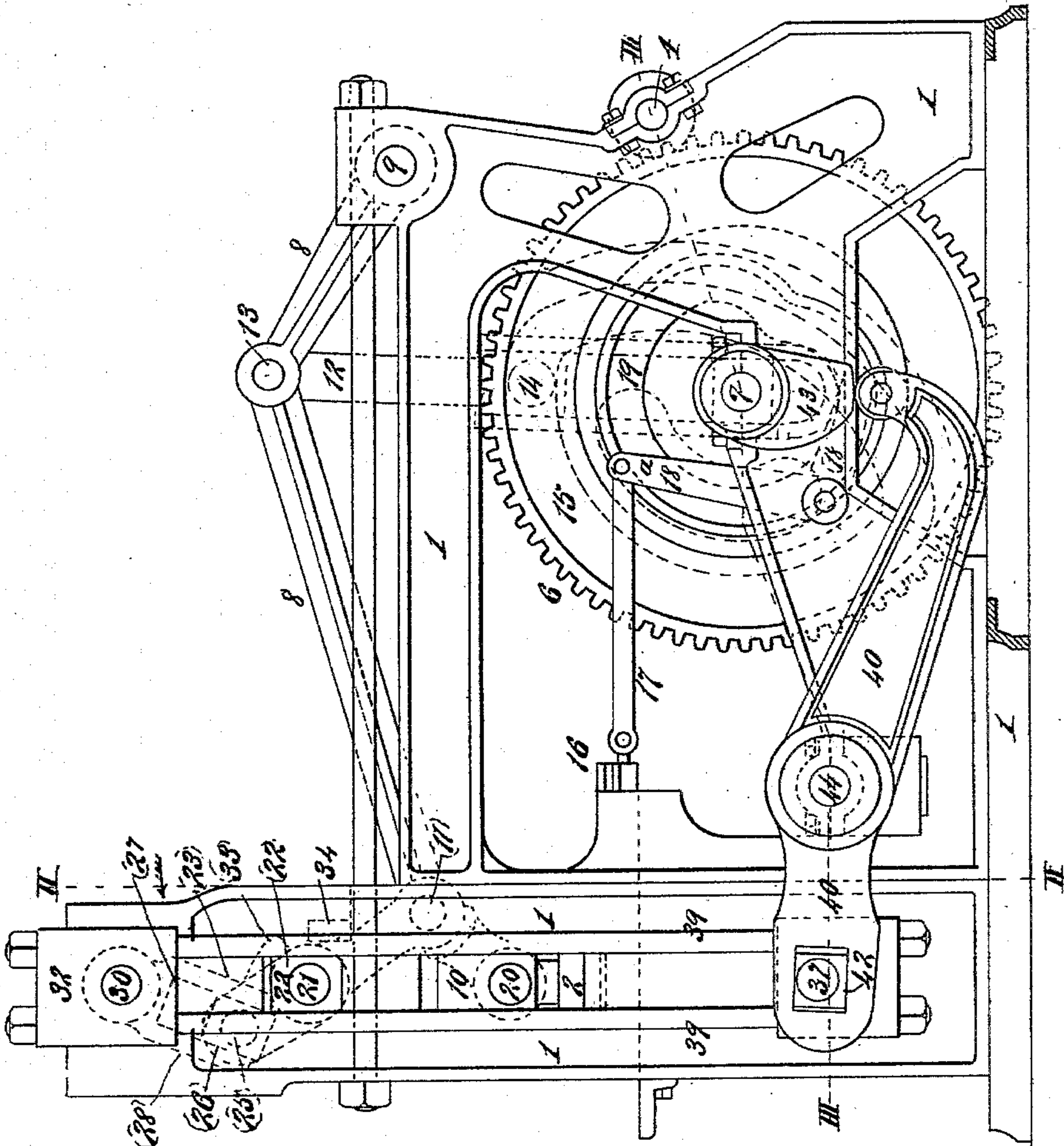
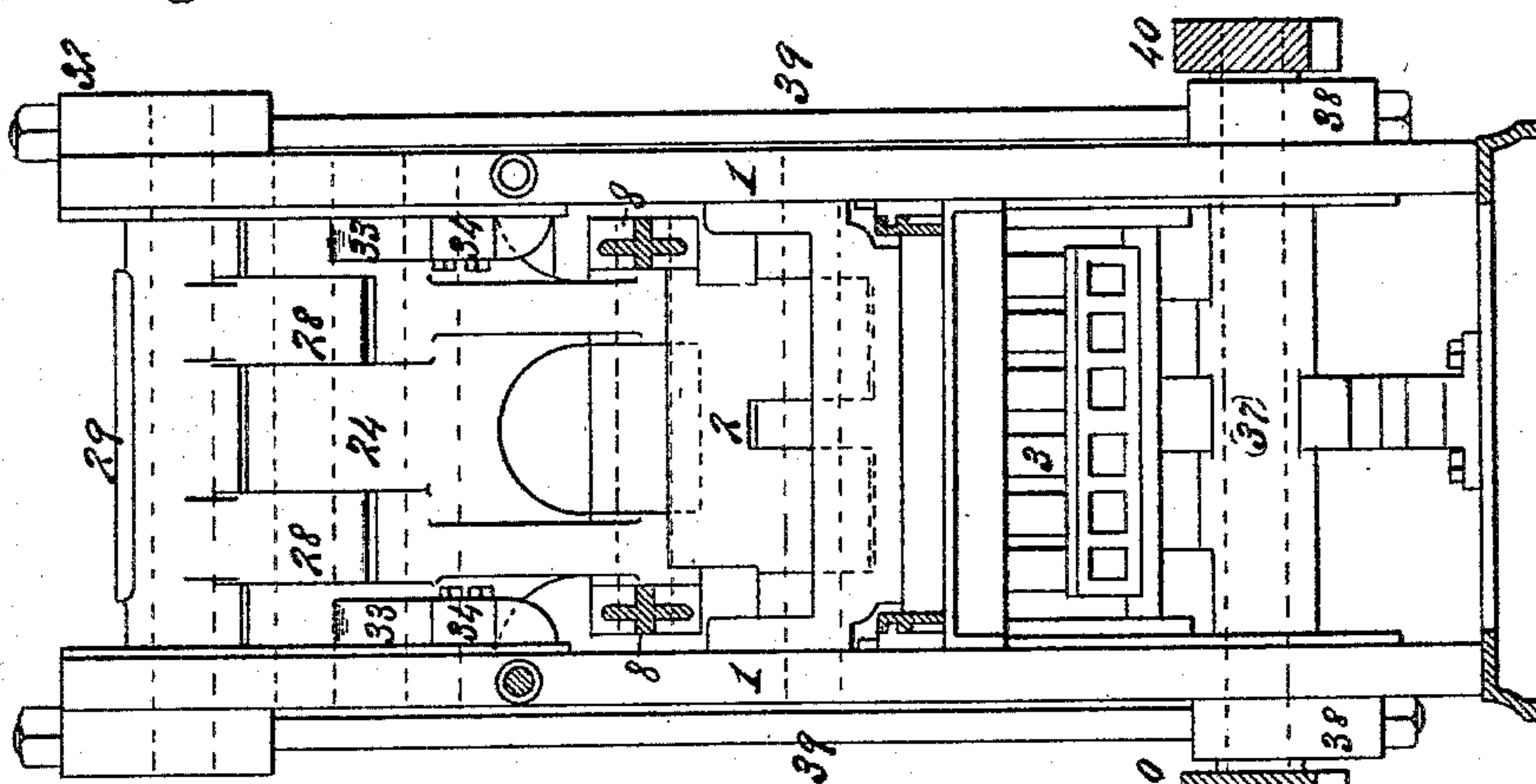


Fig. II.



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Fig. III

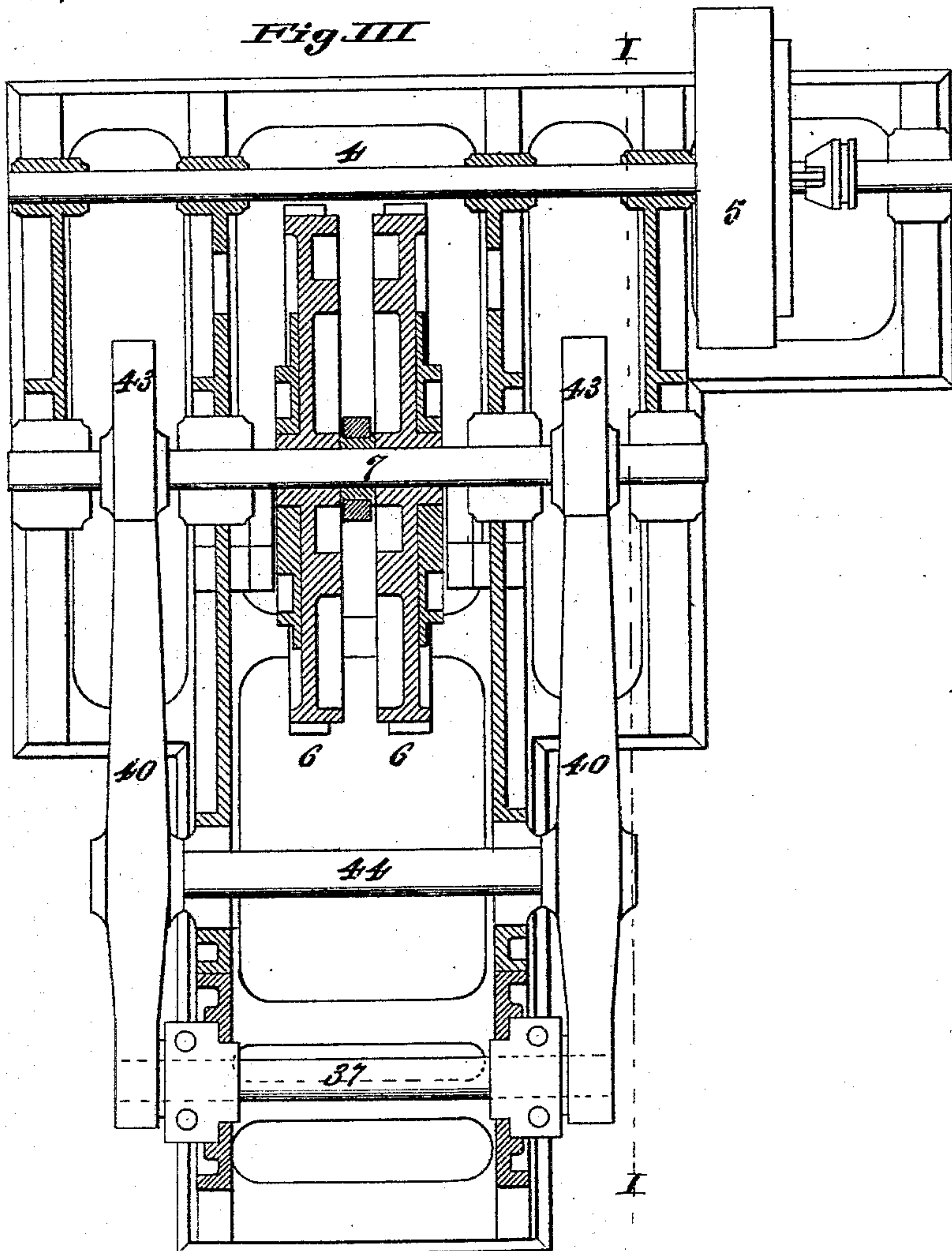


Fig. IV.

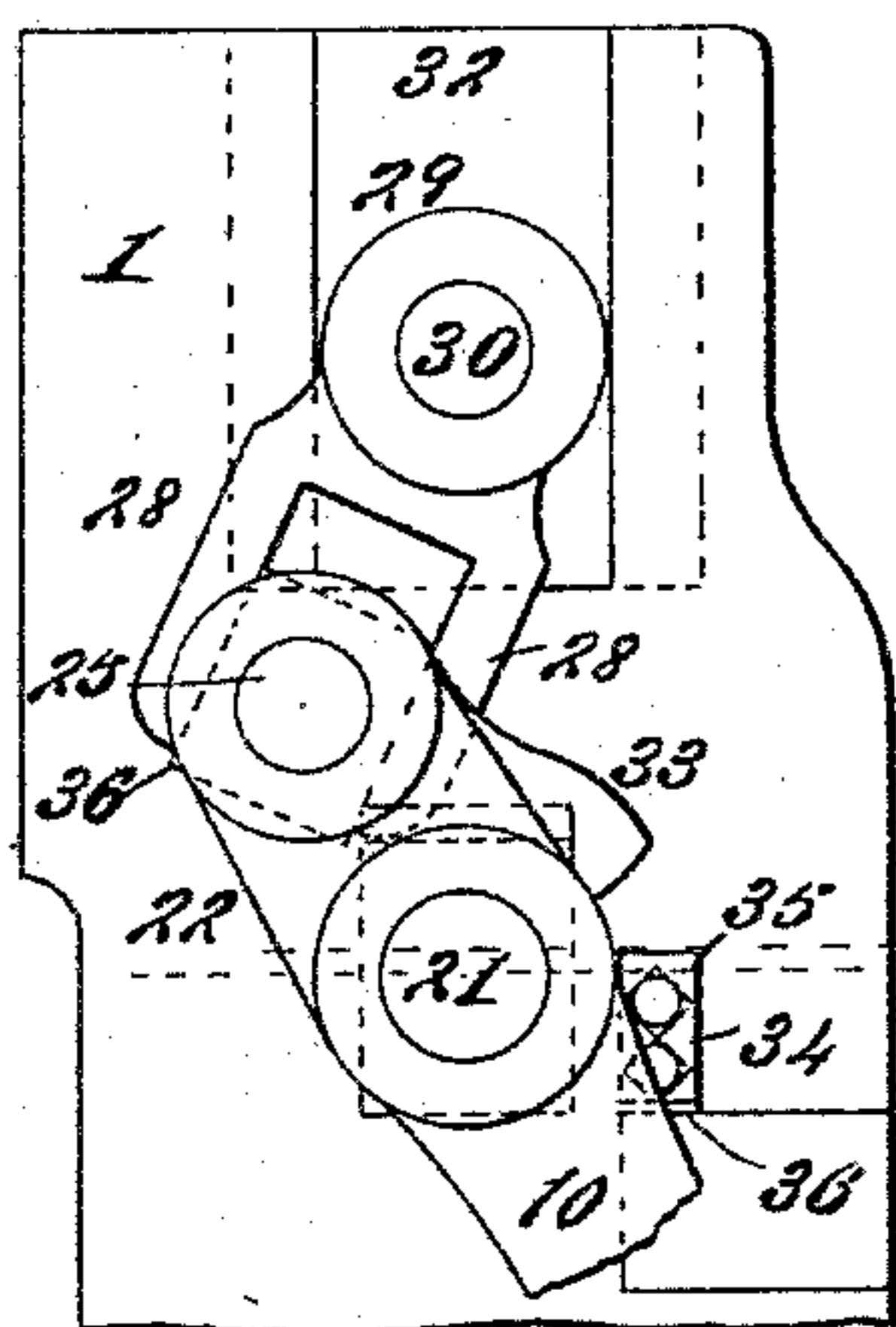
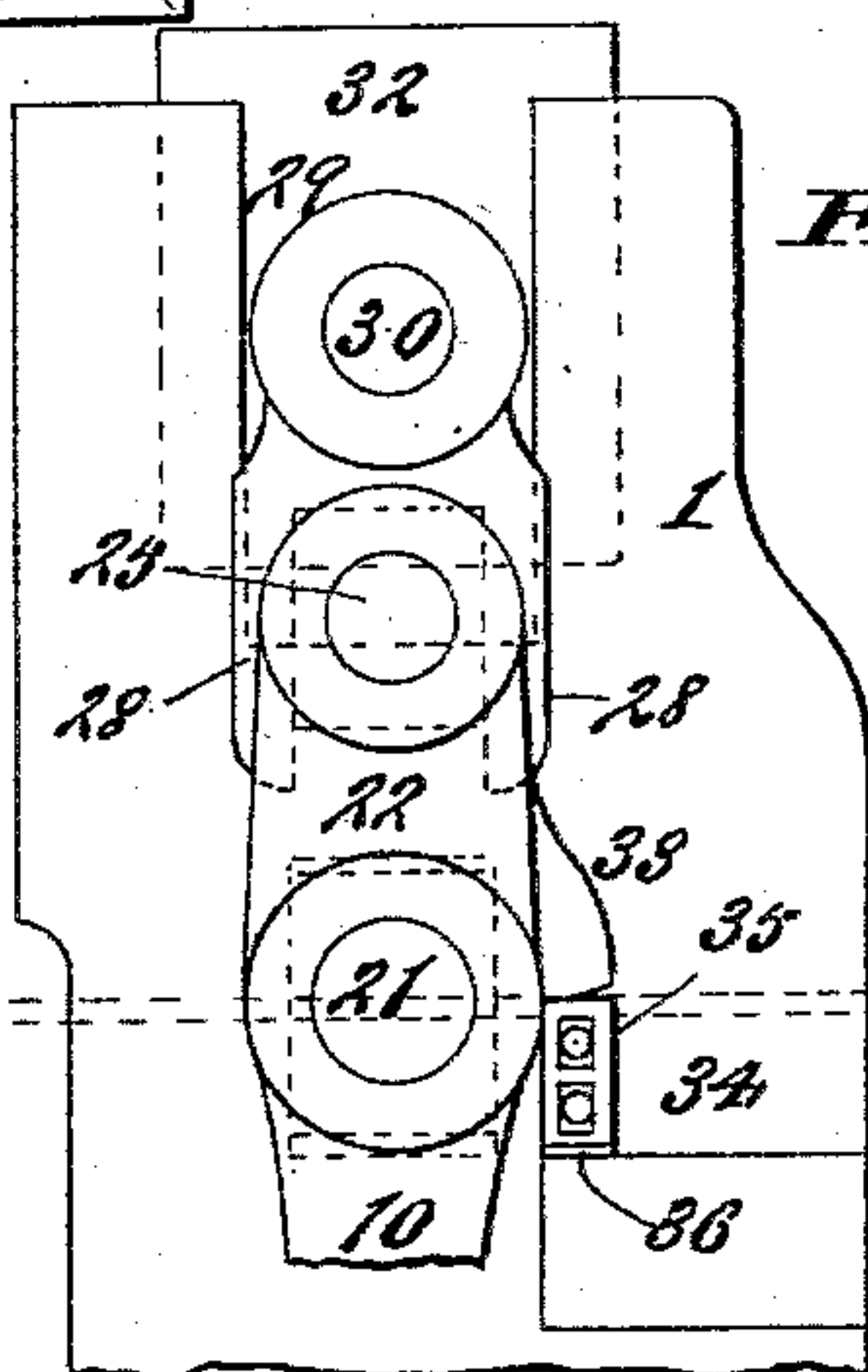


Fig. V.



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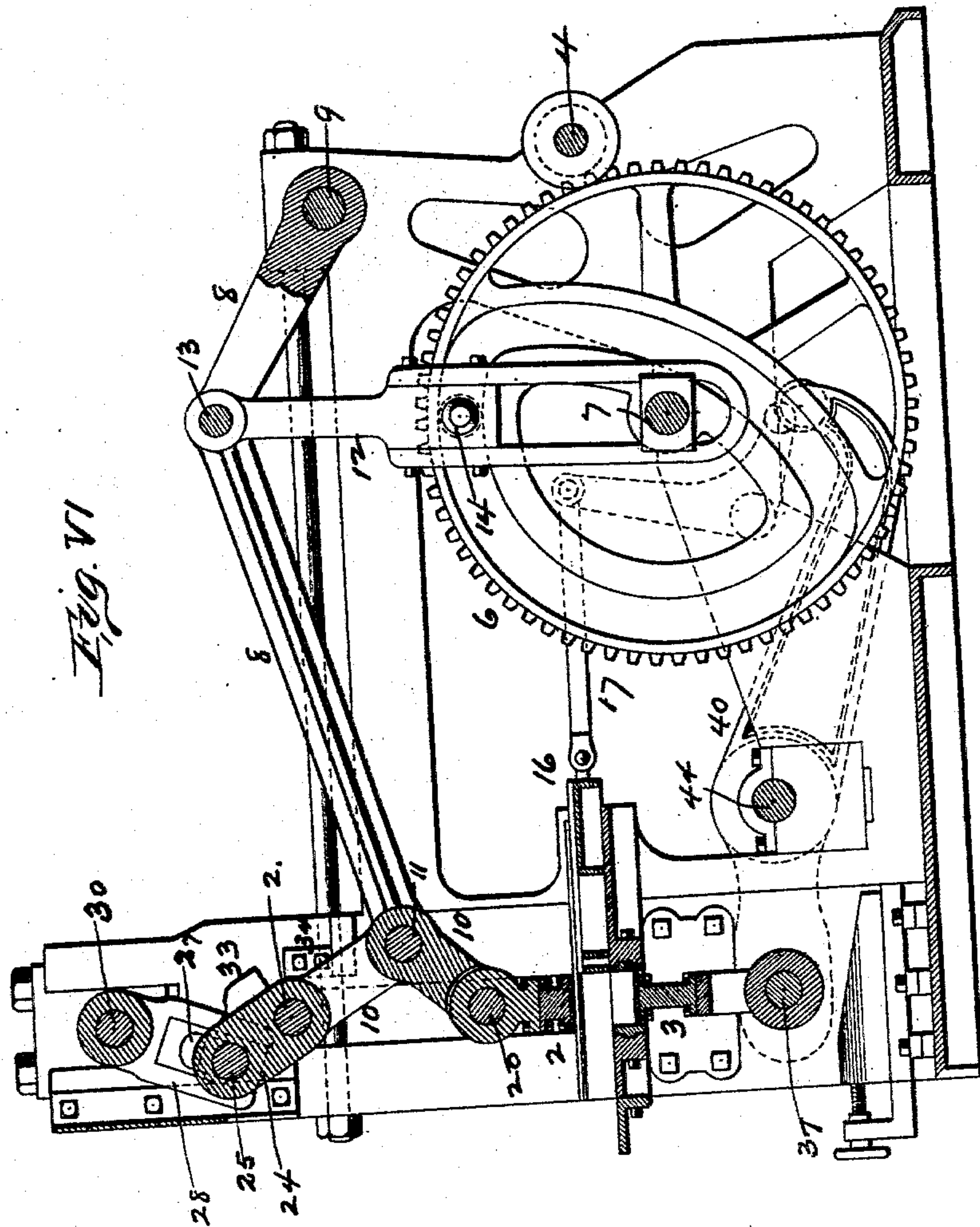


Fig. VI

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UNITED STATES PATENT OFFICE.

HENRY H. KELLER, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE ROSS-KELLER
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METHOD OF AND APPARATUS FOR FORMING BRICKS.

SPECIFICATION forming part of Letters Patent No. 514,421, dated February 6, 1894.

Application filed March 1, 1893. Serial No. 464,263. (No model.)

To all whom it may concern:

Be it known that I, HENRY H. KELLER, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Methods of and Apparatus for Forming Bricks, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to certain improvements in the method of forming bricks, and also in the machine therefor, and it consists in features of novelty hereinafter fully described and pointed out in the claims.

Figure I is a side elevation of my improved machine. Fig. II is a vertical, transverse section, taken on line II—II, Fig. I, and looking in the direction of the arrow. Fig. III is a horizontal, longitudinal section, taken on line III—III, Fig. I. Figs. IV and V are enlarged, detail views illustrating the movement of the toggle. Fig. VI is a vertical longitudinal section of the machine taken through the middle of Fig. II.

Referring to the drawings, 1 represents the frame of the press.

2 represents the upper plunger, and 3 the lower plunger.

4 represents the main shaft, having a driving pulley 5, and pinions, not shown, which mesh into large cam-wheels 6 on a counter-shaft 7.

8 is a jointed lever, pivoted to the frame at 9, and to the mold toggle 10 at 11.

12 is a link pivoted to the lever 8 at the joint 13, and which has a pin 14 fitting in cam grooves 15 in the wheels 6. The form of the groove 15 is illustrated by dotted lines Fig. I, and by full lines Fig. VI and is such as to impart a vertical movement to the joint 13 of the lever 8.

16 is the charger connected by a link 17 to the upper end of a bell-crank lever 18^a, the lower arm of which has a pin fitting in cam-grooves 19 in the wheel 6.

The parts thus far referred to, in themselves form no part of my invention.

The lower arm of the toggle 10 is connected

at 20 to the upper plunger 2, and the upper arm of the toggle is journaled on a shaft 21 fitting in boxes 22 adapted to fit and slide in vertical ways or slots 23 in the frame 1.

24 represents an extension of the upper arm of the toggle 10, through which a shaft or rod 25 passes.

26 represents boxes on the shaft 25, and which fit in slots 27, in the depending arms 28 of a cross-head or sleeve 29 through which a shaft 30 extends, the ends of the shaft having bearing in vertically sliding blocks or boxes 32 fitted in the frame of the machine.

By the use of the boxes 26 on the ends of the shaft 25, a free sliding movement of the shaft and the slotted arms of the cross-head is obtained, and ample provision is made for oiling the shaft bearings, and the upper ends of the slots of the arms do not become worn as they would if the round shaft turning with the toggle, were to come directly against the arms, and thus a uniform thickness to the bricks is maintained.

33 represents projections or lugs on the upper arm of the toggle 10, and 34 projections or lugs secured to the frame of the machine. The projections 34 are preferably secured to the frame by means of bolts 35, (see Figs. IV and V) so that they can be adjusted slightly in a vertical direction, the bolts fitting in slots either in the frame or in the projections, and when the projections are adjusted, strips or plates 36 may be placed beneath them to resist downward movement.

The lower plunger is supported by a rod or shaft 37, fitting in blocks 38 adapted to have vertical movement in the slots or ways 23 of the frame. The blocks 38 are connected to the boxes 32 by means of vertical rods 39, which pass freely through the boxes 38, so that the latter can have movement thereon. Thus it will be seen that the shafts 30 and 37 bear a fixed relation to each other, so that when the lower plunger begins to move up these shafts still retain their fixed relation. Therefore during the operation of the machine it is evident that when the toggle continues to straighten the upper plunger

must be moving toward the lower plunger, while the whole structure is moving upwardly.

The operation of the machine is as follows:

5 The mold being filled in the usual way, the cam wheels 6 are set in motion, and the joint 13 of the lever 8 is drawn downwardly. This causes a forward movement of the joint 11 of the toggle 10, the first movement of
10 which is to cause the downward movement of the plunger 2. As soon as the downward movement of the plunger is resisted, to an extent which will overcome the weight of the parts, the boxes 26 move upwardly in the
15 slots 27 of the arms 28, until they come against the ends of the slots. The further movement of the toggle 10 will now cause the lower plunger to be raised while the upper plunger continues to descend, the bricks
20 being thus pressed between the two oppositely moving plungers. The continued movement of the toggle 10 causes the lugs 33 to come against the projections 34, the result of which is that while the plungers continue to
25 approach each other, they both, with the bricks between them, begin to move in an upward direction in the mold, the result being that the bricks are being pressed while moving upwardly in the mold, which causes them to
30 be polished, and which avoids seams or creases in the bricks, as well as causing the mold to wear uniformly from the point where the bricks receive their first pressure up to the top of the mold. By the time that the
35 toggle 10 is fully straightened, the bricks have been thoroughly compressed and formed, and have been moved to near the top of the mold. As the toggle commences to recede, the weight of the parts causes the bricks to
40 descend in the mold until the lower plunger commences to ascend under the action of levers 40 pivoted at 44, outside of the frame of the machine, their outer ends engaging boxes 42 on the rod or shaft 37, and their inner ends
45 being engaged by cams 43 on the shaft 7; the cams 43 coming against the inner ends of the levers soon after the toggle 10 commences to recede, and thus cause the lower plunger to ascend until the bricks are removed from the
50 mold. The upper plunger will remain in contact against the bricks until the boxes 22 reach the limit of their downward movement, the mere weight of the parts holding the upper plunger against the bricks, and when the
55 boxes 22 reach the limit of their downward movement, the continued backward movement of the toggle lifts the upper plunger from the bricks, so that the bricks can be forced from over the mold in the usual man-
60 ner.

By locating the levers 40 outside of the frame of the machine, they do not become covered with dirt and the portion of the machine between the frame is left clear and
65 open.

Through means of the described method of

pressing the bricks while they are moving upwardly in the mold, their quality is greatly enhanced, for the reason, as stated, that no seam is allowed to form, and the sides of the
70 bricks are polished by being moved while under severe pressure in the mold, and the downward and upward movement of the bricks in the mold, after the pressing is done, polishes the bricks still more.
75

I claim as my invention—

1. The improved method of making bricks herein described, which consists in exerting a downward pressure thereon from above, then exerting an upward pressure from be-
80 neath, and then causing the bricks to move upwardly in the mold while the pressure from above continues to move downwardly and the pressure from beneath continues to move upwardly; substantially as set forth.
85

2. The improved method of making bricks herein described, consisting in exerting a downward pressure from above, then exerting an upward pressure from beneath, then causing the bricks to move upwardly in the
90 mold while the pressure from above continues to move downwardly and the pressure from below continues to move upwardly, and finally causing the bricks to descend in the mold after pressure and before they are finally
95 ejected; substantially as set forth.

3. In a brick machine, the combination of an upper plunger, a toggle for operating the plunger, a cross-head having slotted arms, and a connection between the upper member
100 of said toggle and said cross-head; said connection consisting of a shaft fitting in the upper member of the toggle, and boxes fitted on the shaft and working in the slotted arms of the cross-head; substantially as set forth.
105

4. In a brick machine, the combination of a lower plunger, an upper plunger, a toggle pivoted to the upper plunger, and having an extension, a movable bearing for the upper member of the toggle, a cross-head, a movable
110 bearing between said cross-head and said extension, a connection between said cross-head and the lower plunger, and means for moving the toggle; substantially as set forth.

5. In a brick machine, the combination of a
115 lower plunger, an upper plunger, a toggle hinged to the upper plunger and having an extension on its upper member, a projection on said toggle adapted to engage a projection on the frame of the machine, a cross-head
120 having arms adapted to engage said extension, a connection between said cross-head and the lower plunger, and means for moving said toggle; substantially as and for the purpose set forth.
125

6. In a brick machine, the combination of a lower plunger, an upper plunger, a toggle pivoted to the upper plunger, and having an extension beyond the upper pivot of the toggle, a projection on the toggle adapted to engage
130 an adjustable projection on the frame, a cross head engaging the extension of the toggle, a

connection between the cross-head and lower plunger, and means for moving the toggle, substantially as shown and described.

5 7. In a brick machine, in combination with the lower plunger, the levers 40 for elevating the plunger to eject the bricks, the boxes 42 fitted in elongated openings in the ends of the levers, said levers being located outside

of the frame of the machine, and means for moving the levers, substantially as and for the purpose set forth.

HENRY H. KELLER.

In presence of—

E. S. KNIGHT,

ALBERT M. EBERSOLE.