

No. 642,581.

Patented Feb. 6, 1900.

E. H. CALLAWAY.  
MOLDING PRESS.

(Application filed Aug. 15, 1898.)

(No Model.)

3 Sheets—Sheet 1.

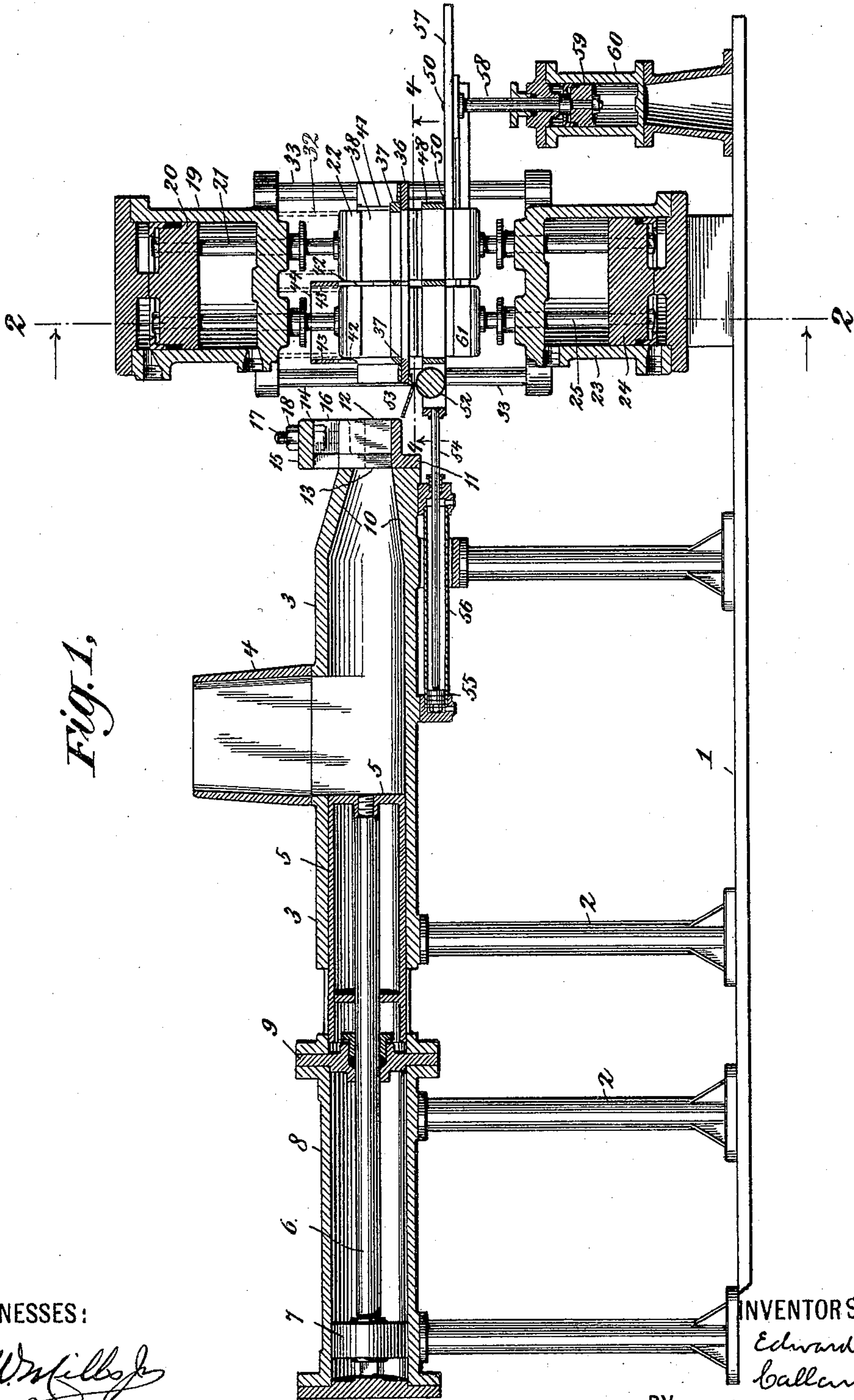


Fig. 1.

WITNESSES:

*Leoll. Mills*  
*Sidney Mann.*

INVENTORS.

*Edward H.*  
*Callaway*

BY *Witter & Kenyon*

ATTORNEYS.

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Fig. 3,

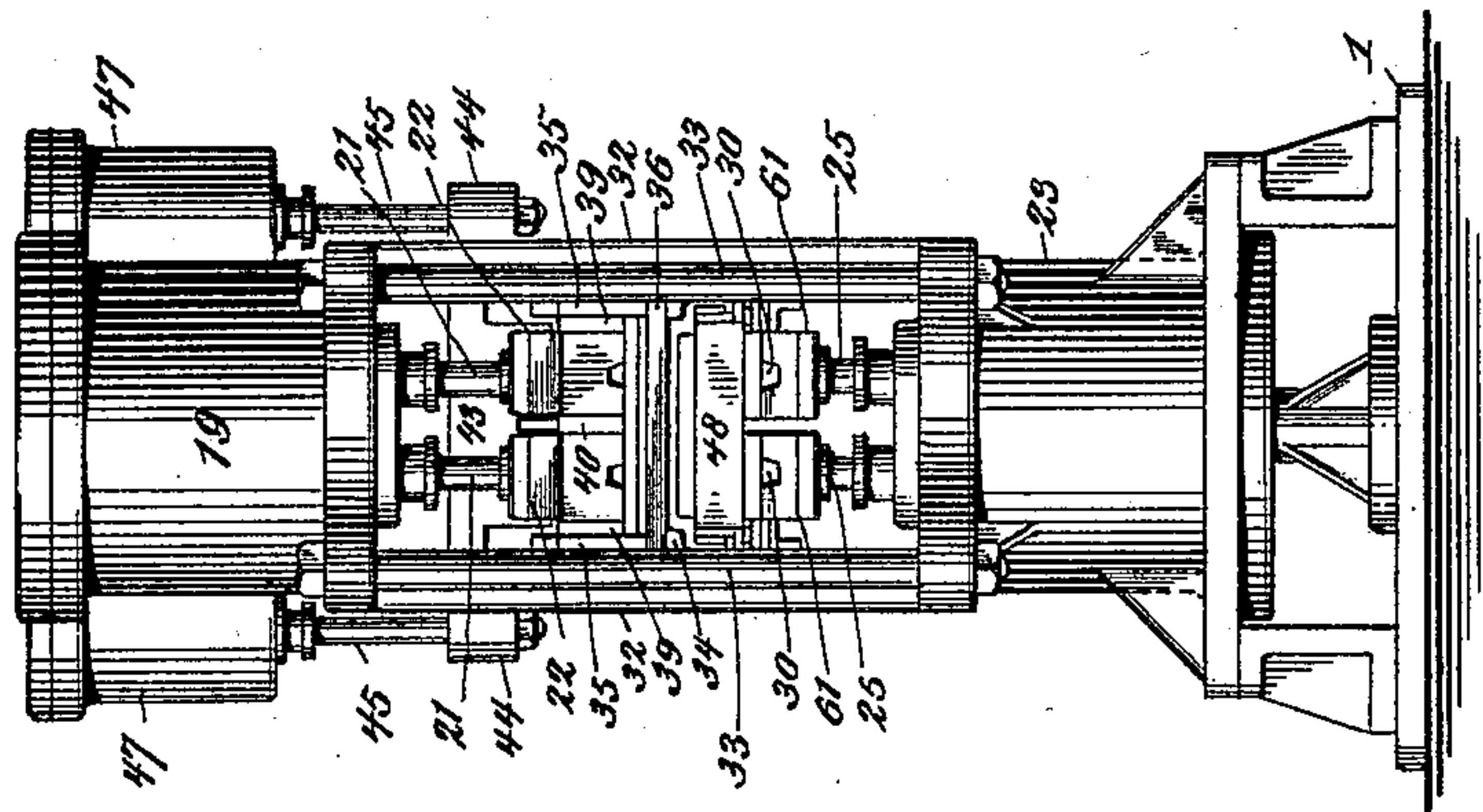
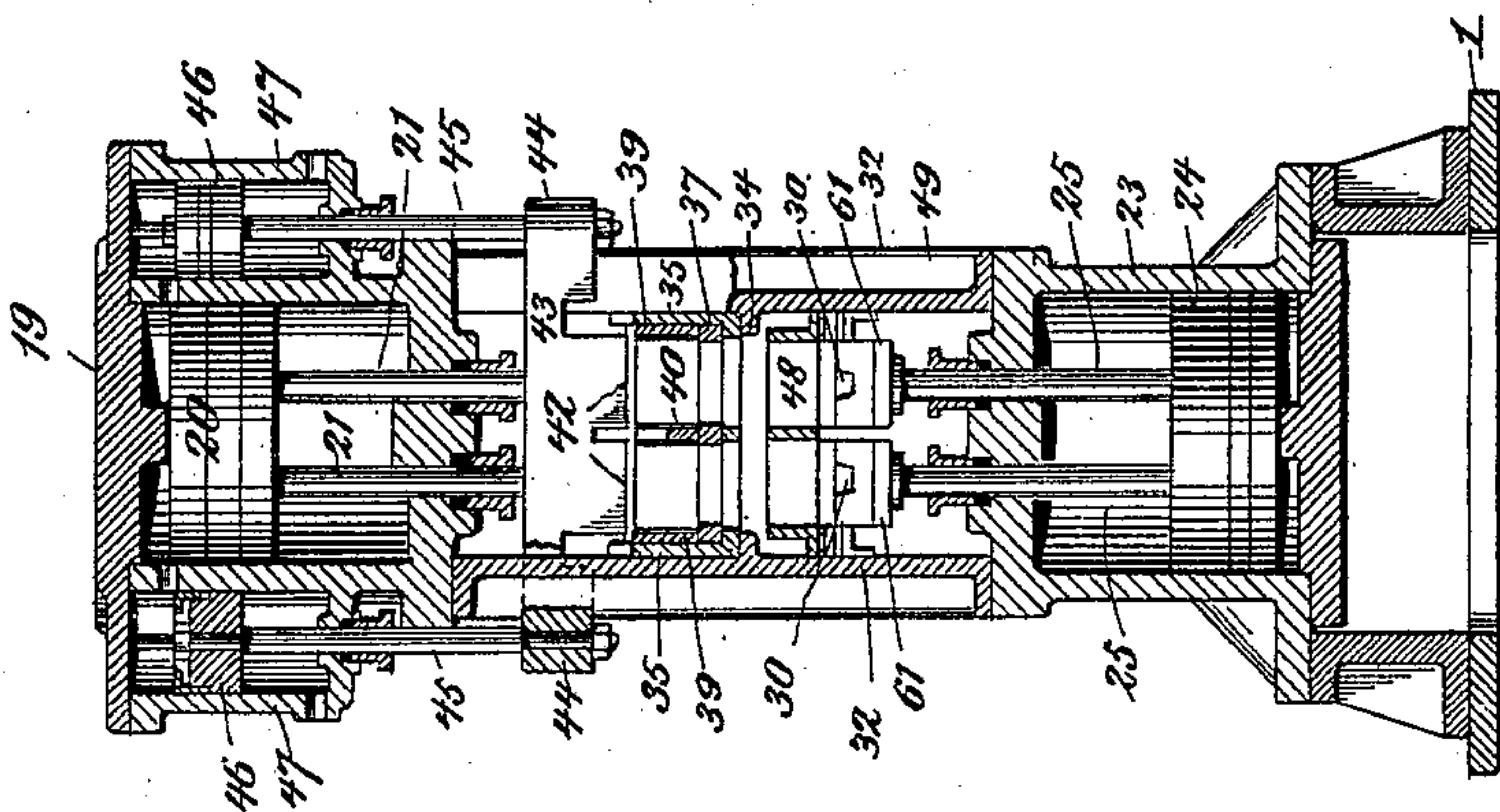


Fig. 2,



WITNESSES:

*Leopold W. Filbert*  
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Fig. 6,

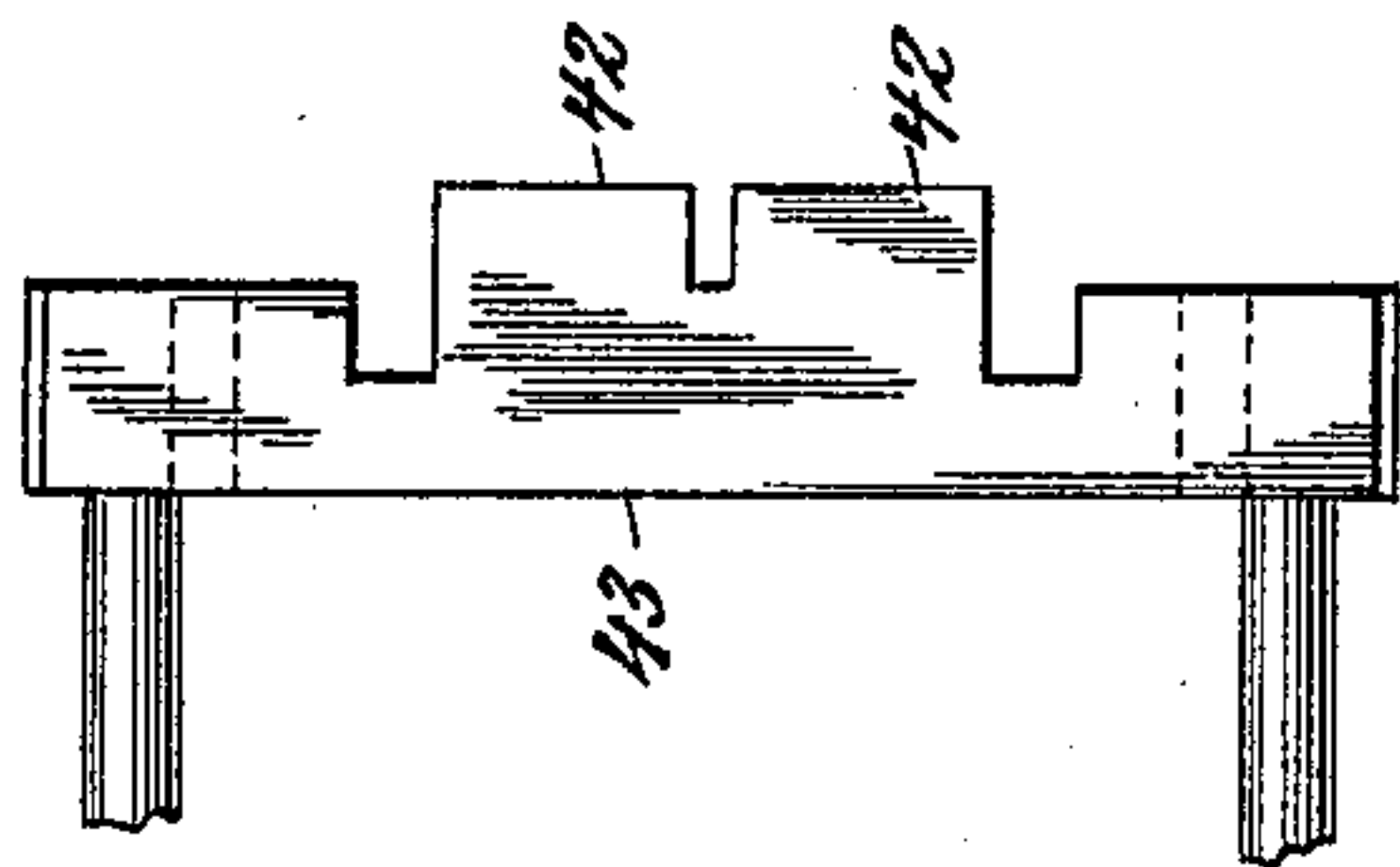


Fig. 5,

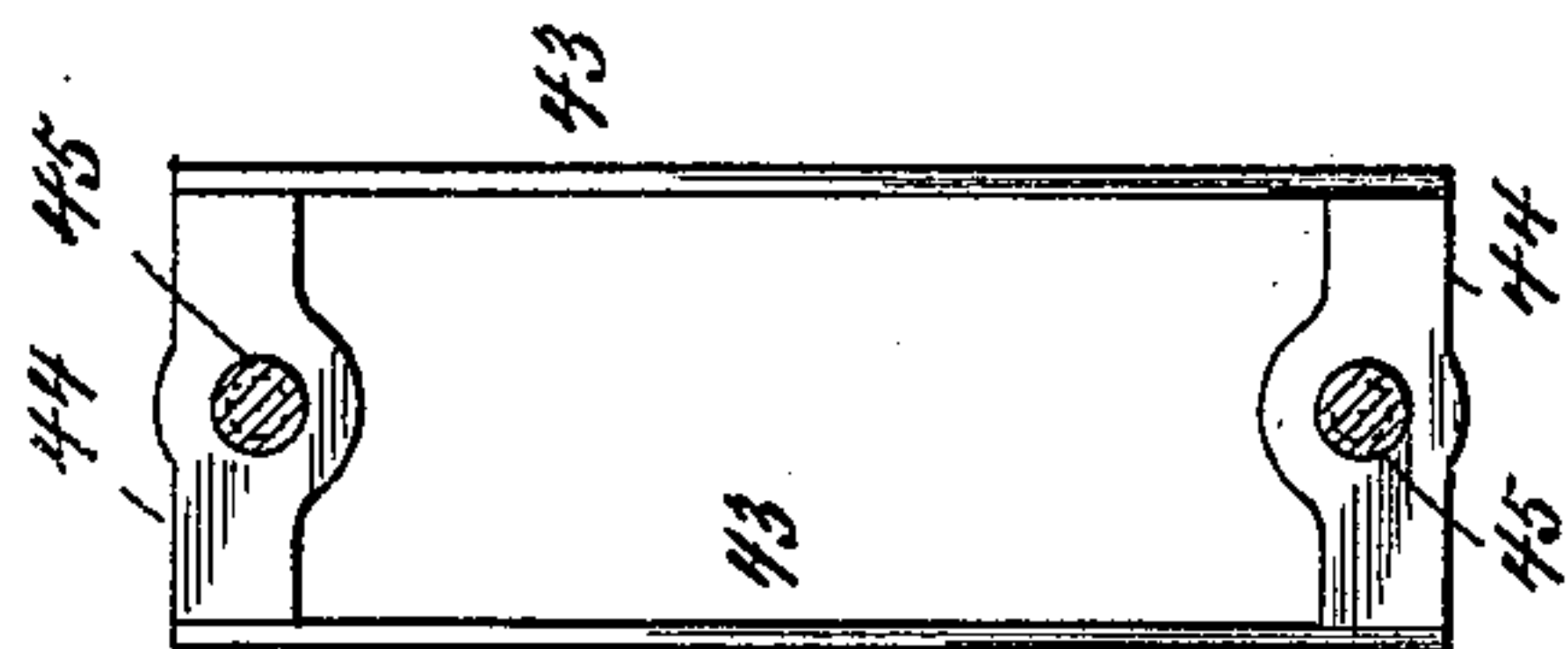


Fig. 9,

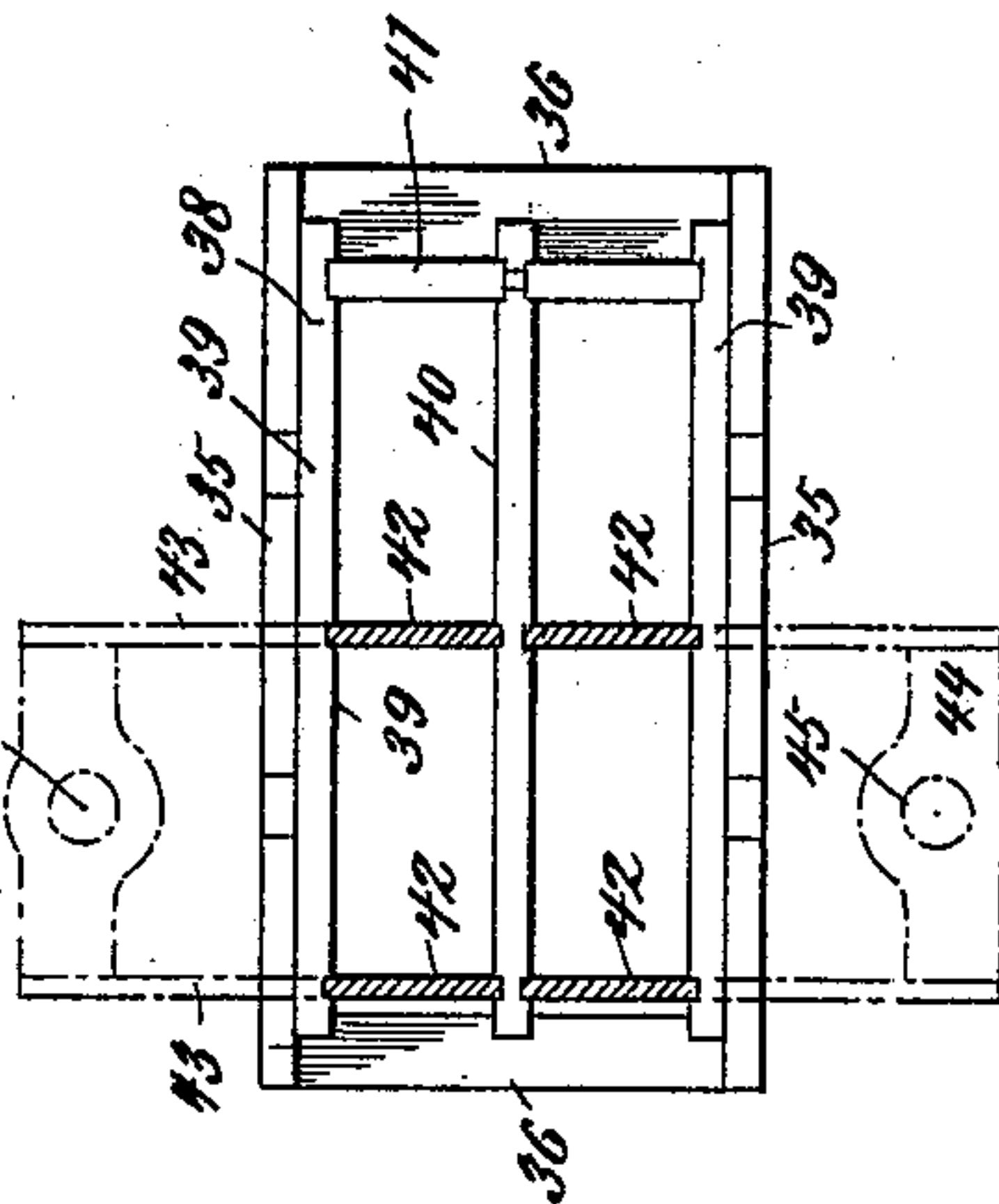


Fig. 4,

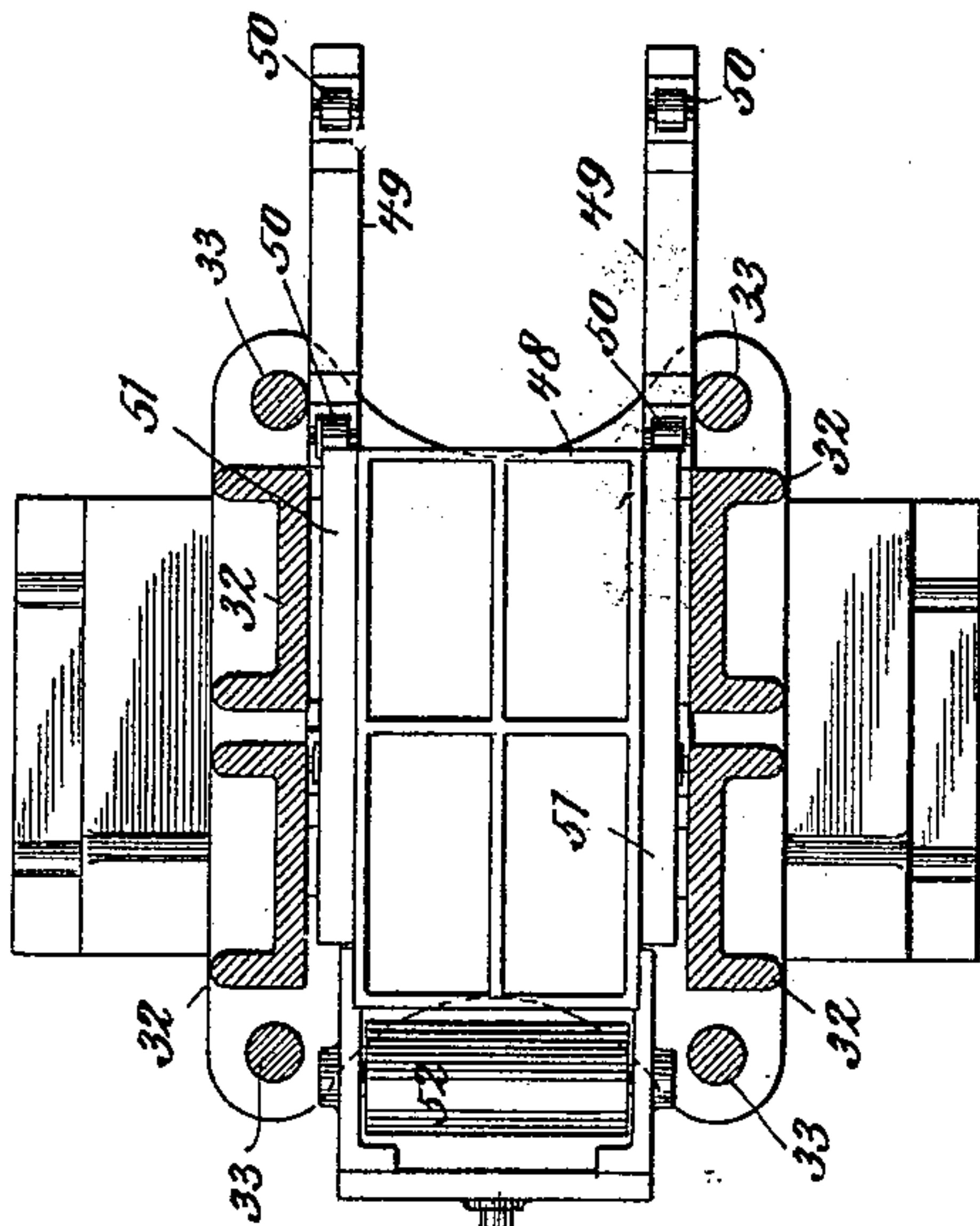


Fig. 8,

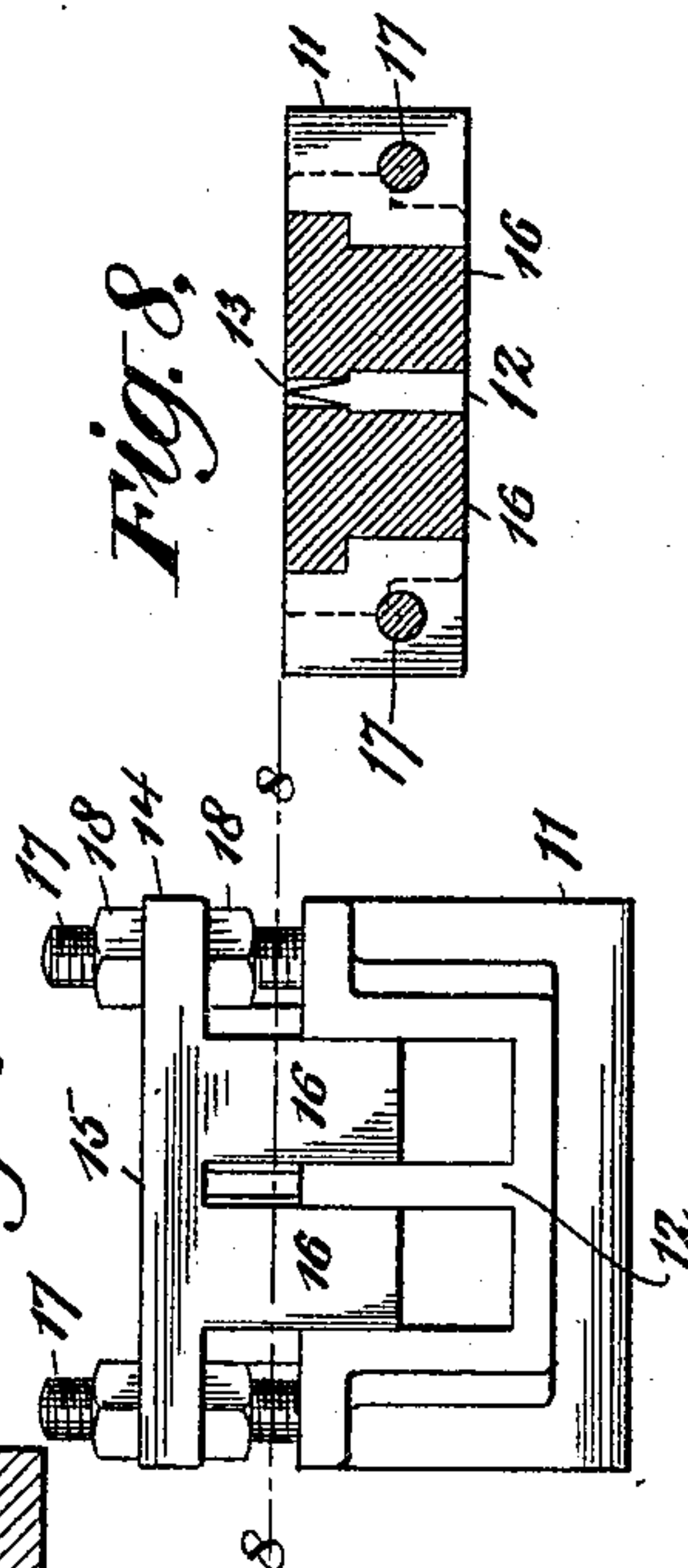


Fig. 7,

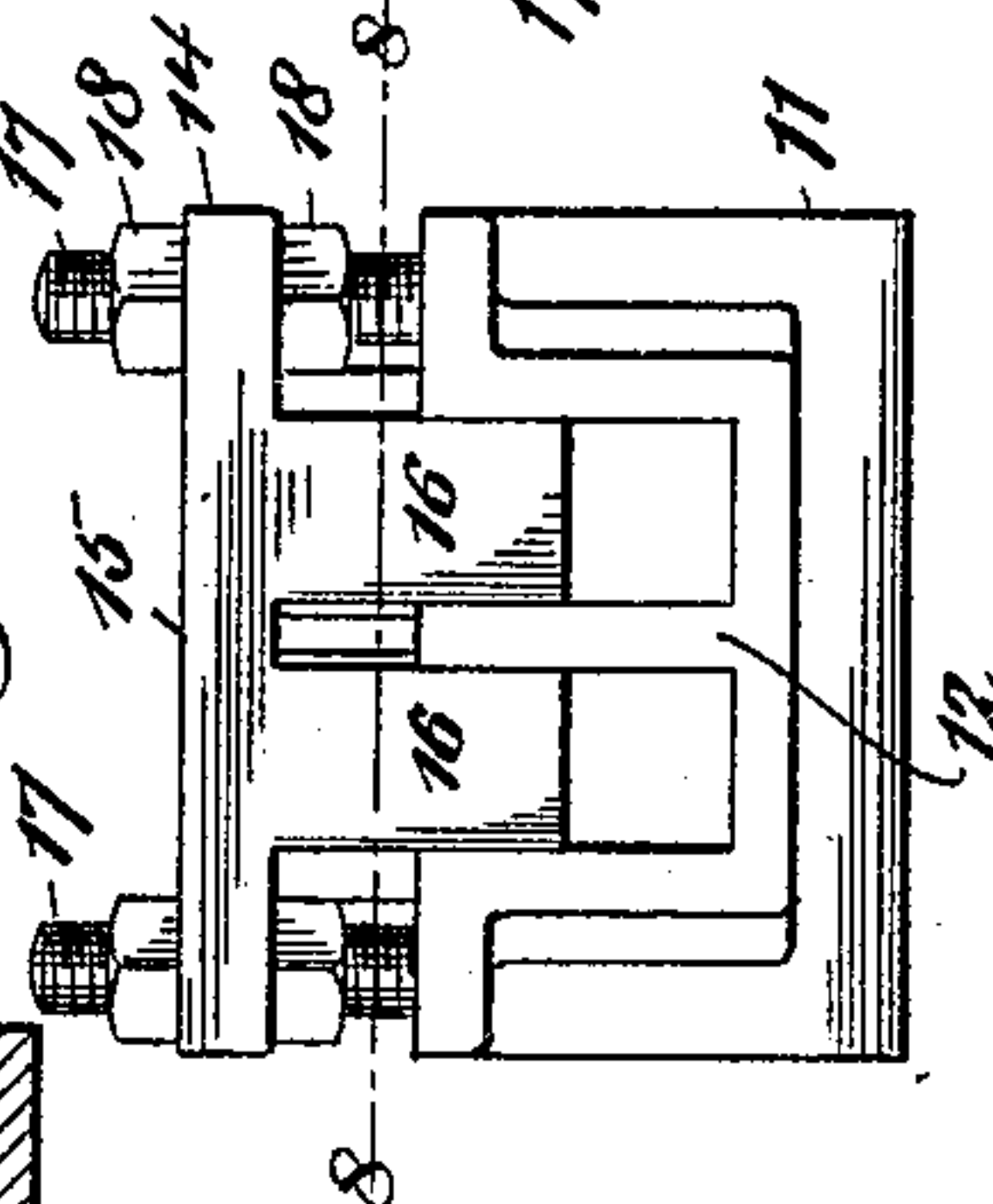


Fig. 10,

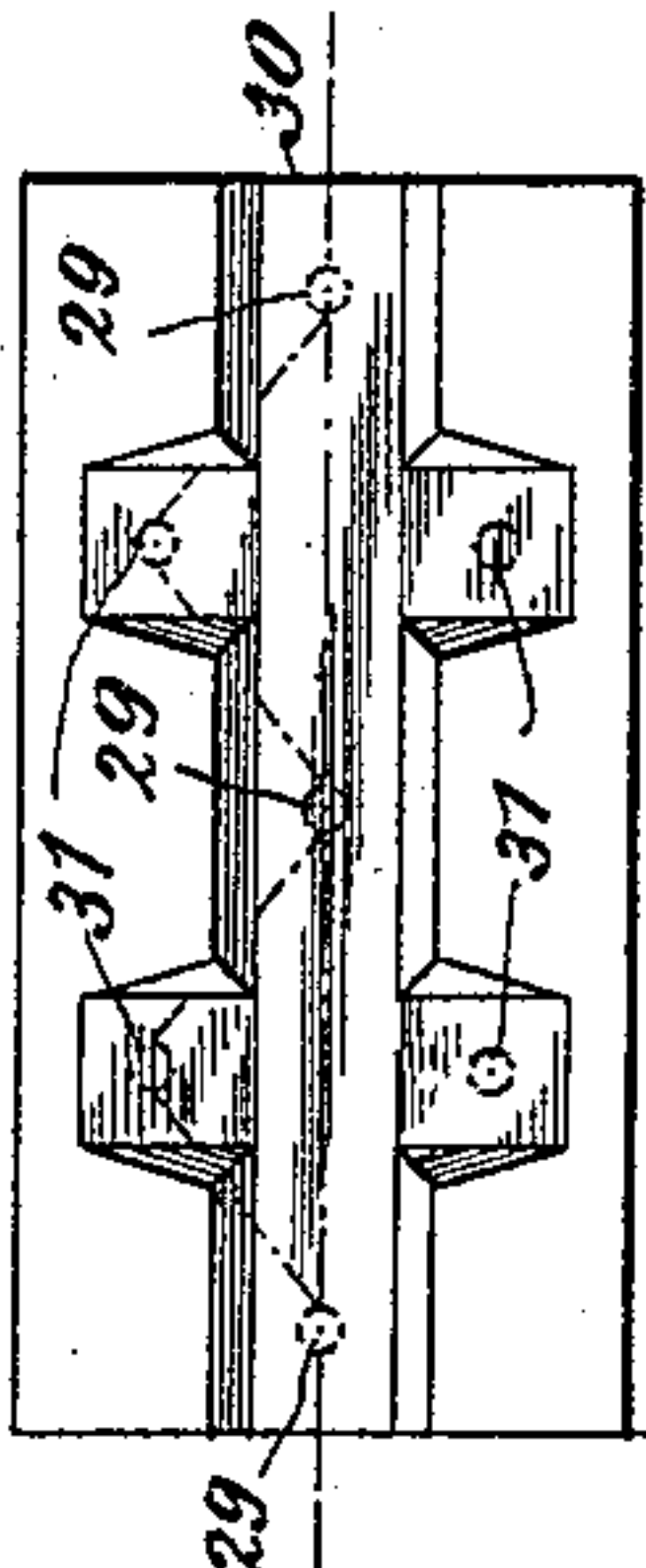
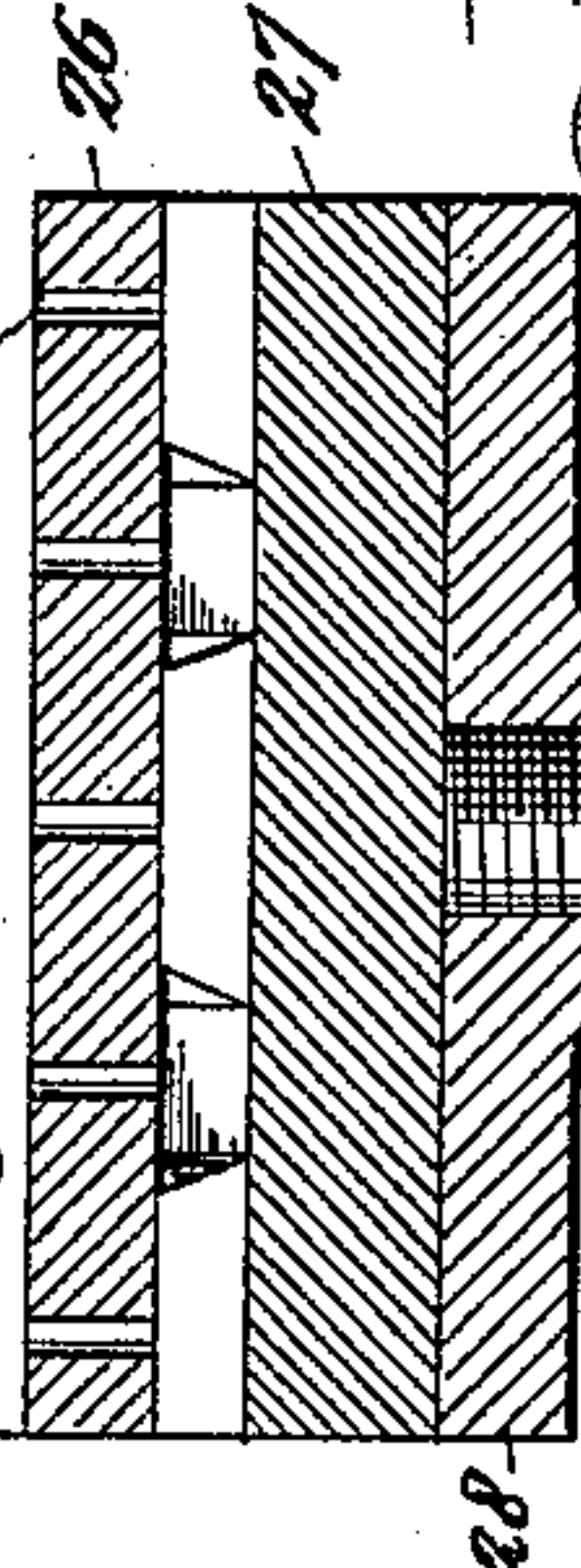


Fig. 11,



WITNESSES:

Goldfills  
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Edward H.  
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ATTORNEYS.



# UNITED STATES PATENT OFFICE.

EDWARD H. CALLAWAY, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF  
TO GEORGE W. COPLAND, OF SAME PLACE.

## MOLDING-PRESS.

SPECIFICATION forming part of Letters Patent No. 642,581, dated February 6, 1900.

Application filed August 15, 1898. Serial No. 688,575. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD H. CALLAWAY, a citizen of the United States, residing in New York, (Rosebank,) in the county of Richmond,  
5 State of New York, have invented a new and useful Improvement in Molding-Presses, of which the following is a specification, reference being had to the accompanying drawings, which form a part thereof.

10 My invention relates to presses for molding bricks or similar articles out of stiff-tempered clay or any suitable material. It is especially designed for use in the molding of first-class front-bricks or fire-bricks, although it can  
15 also be employed to advantage in molding other kinds of bricks, as well as other articles.

Some of the objects of my invention are to provide a machine that is capable of being operated by power and that will produce a  
20 pressed brick of the first quality from stiff-tempered clay, such as is adapted for use as front-bricks or fire-bricks, at a single operation; to produce four or more bricks or other articles at a single operation of the press; to  
25 produce bricks or other articles having a complete and substantially perfect form, the bricks or other articles containing a uniform amount of clay and being uniform in size and density—in other words, the product of the  
30 machine being at all times uniform and regular; to provide a machine that will be compact in construction and simple in operation; to secure economy by minimizing the amount of the machinery required and by reducing  
35 the labor and time necessary to the manipulation of the same, and to produce a brick or other article which is superior in quality and general characteristics to the bricks manufactured by machines previously in use.

40 My invention is fully shown in the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section of the machine. Fig. 2 is a cross-section on the line 2 2 of Fig. 1. Fig. 3 is a front or end  
45 view of the machine, not showing, however, the receiving-table. Fig. 4 is a horizontal section of the compressing part of the machine, taken on the line 4 4 of Fig. 1 and showing a top view of the delivery-frame.

Fig. 5 is a top view of the reciprocating knives 50 and cross-heads. Fig. 6 is a side view of the knife as shown in Fig. 5. Fig. 7 is a front view of the forming-die and regulating-block which are connected with the feed-cylinder. Fig. 8 is a horizontal section on the line 8 8 55 of Fig. 7. Fig. 9 is a top view of the mold-box, showing the reciprocating knives in section. Fig. 10 is a top view of the filling-block of one of the plungers. Fig. 11 is a longitudinal or vertical section of one of the plungers. 60

Similar numbers refer to similar parts in the different figures.

My invention consists, first, in the combination, in such a press, of a mold-box having one or more compartments or molding-chambers 65 having the shape of the brick or other article to be formed, one or more reciprocating knives movable with reference to the other parts of the mold-box or chamber and adapted to cut off a block of material in each compartment 70 or molding-chamber and to form one side of each compartment or molding-chamber and then to be drawn away from the other sides of the compartment or box, suitable devices for compressing the block or blocks in the 75 mold-box, and a suitable feeding device to feed a bar of material into the mold-box or if the mold-box contains more than one compartment to feed a bar of the material into each compartment. 80

The invention also consists in the combination, with the other devices above recited, of reciprocating plungers, one or more on each side of the mold-box, for compressing between them the material in the compartment 85 or compartments of the mold-box, whereby the brick or other article is compressed from both sides and a convenient means is provided for removing the block from the mold after it has been compressed. 90

My invention further consists in providing the mold-box with a plurality of long compartments and in combining with it a plurality of reciprocating knives so arranged as to cut the bar of material in each long compartment into a plurality of blocks and to form 95 one side of each of the smaller compartments or molding-chambers and a feeding device



which is adapted to feed a bar of material into each one of the long compartments of the mold-box.

My invention also consists in the combination, with some or all of the devices above mentioned, of a finishing-die on the discharge side of the mold-box, which is adapted to trim or finish off the block as it is expelled from the mold-box after being compressed. This finishing-die should have as many openings or passages as there are compartments in the mold-box, so as to trim or finish off each block as it is expelled therefrom.

My invention also consists in the special construction of the mold-box hereinafter more fully described and in the combination of this particular form of mold-box with the reciprocating plungers and knives already referred to.

My invention also consists in the particular construction of the reciprocating knives and the devices for supporting and operating the same.

My invention also consists of the special construction of the plunger which is used for compressing the material.

My invention also consists in the combination of plungers having the special construction hereinafter more fully described with some or all of the other devices above mentioned.

My invention also consists in the combination, with a delivery-frame and the other necessary elements, of reciprocating plungers for compressing a block or blocks, the plunger or plungers on the discharge side of the mold-box being adapted to pass through the delivery-frame, as a result of which the plungers after compressing the block or blocks force the block or blocks into the delivery-frame, by means of which the blocks are carried away from the mold-box to a point where they are discharged from the machine. When my complete invention is employed, I provide the delivery-frame with an oiling or lubricating roller having a diameter substantially equal to the distance between the compressing-plungers at the completion of their stroke and when the delivery-frame is moved, so as to carry the block or blocks away from the plungers, whereby the lubricating-roller oils or lubricates the faces of the plungers while the delivery-frame is being moved from one position to the other.

My invention also consists in the combination, with the delivery-frame, of a receiving-table onto which the delivery-frame is adapted to carry or deliver the block or blocks and means for raising or lowering the receiving-table.

My invention also consists in providing the feed-cylinder with a forming-die having a plurality of openings and having a regulating-block provided with depending portions adapted to extend into these openings and means for adjusting the regulating-block so as to regulate the size of the openings.

My invention also consists in certain other features of construction and combination of parts hereinafter described and claimed.

Referring to the drawings, 1 is the bed-plate of the machine.

2 2 are posts resting on the bed-plate and supporting at their upper ends the feed-cylinder 3 and its connected parts.

4 is a hopper which is placed over a suitable opening in the feed-cylinder and is preferably made larger at the lower than at its upper end, as shown in Fig. 1.

5 is a plunger which is adapted to work back and forth in the feed-cylinder. This plunger is preferably made hollow and is made of such a length that when it is in its forward position it extends backward beyond the opening from the hopper, so as to shut off that opening, and thereby prevent any clay or other material from dropping into the feed-cylinder behind the plunger. It is manifest that instead of making the entire plunger of such a length the plunger could be made of ordinary length and provided at its upper side with a hood extending backward, which would operate in the same manner and would practically amount to merely cutting away the lower half of the plunger toward the rear end. The plunger is connected by means of a suitable piston-rod 6 with a piston 7 in the hydraulic cylinder 8. This rod passes through the head 9 of the hydraulic cylinder and is provided at that point with a suitable gland and stuffing-box or is otherwise suitably packed. The rear head of the plunger 5 is placed a short distance forward of the rear end of the plunger in order to provide a recess into which the gland can project. The forward end of the feed-cylinder is provided with inclined or sloping walls 10 to guide the material into the openings of the forming-die.

11 is the forming-die, which is attached to the forward end of the feed-cylinder in any suitable manner. In the form shown the forming-die is provided with a flange on its under side, which is adapted to be bolted against the end of the feed-cylinder. The construction of the forming-die is shown in Figs. 1, 7, and 8. The forming-die is provided with as many discharge-openings as there are long compartments in the mold-box, and these openings are placed so as to be in line with said compartments, so that when the bars of material are forced through the openings of the forming-die they will be forced into the compartments of the mold-box. In the form of die shown there are two such openings, which are separated from each other by the intervening wall or septum 12. This wall is beveled at its rear end at 13, so as to form a cutting edge at that point, and thereby to readily divide the clay or other material into two streams or bars. 14 is a regulating-block which consists of the cross-bar 15 and the depending portions 16. There are as many depending portions as there are openings in the forming-die, and these de-



pending portions are adapted to enter and to nicely fit these openings. The depending portions are carried and supported by the cross-bar 15. Suitable means are provided for adjusting the regulating-block, so as to regulate the size of the openings in the die. In the form shown, 17 17 are screw-bolts which are fastened to the forming-die and which pass through holes in the projecting ends of the cross-bar 15. These bolts are provided with the nuts 18, by means of which the regulating-block can be raised or lowered on these bolts and fastened in any desired position. The depending portions of the regulating-block are provided with shoulders, as shown in Fig. 8, which bear against corresponding shoulders in the forming-die and which enable the depending portions 16 to resist the pressure of the material upon their rear faces when the material is being pressed out from the feed-cylinder.

Referring to Figs. 1, 2, and 3, 19 is a hydraulic cylinder which is provided with the piston 20. 21 21 are piston-rods, four in number, connected with the piston 20 and carrying at their lower ends the four reciprocating plungers 22 22. The piston-rods 21 pass through the lower head of the cylinder and are provided at that point with any suitable form of packing. 23 is another hydraulic cylinder at the under side of the machine, provided with a piston 24, with which are connected the piston-rods 25. These rods pass through the upper head of this cylinder, at which place they are provided with any suitable form of packing. The upper ends of rods 25 carry the lower reciprocating plungers 61. In the particular form of machine shown in the drawings there are four of these lower plungers corresponding with and operating in connection with the four upper plungers 22. These plungers may be constructed in any suitable manner; but when my complete invention is employed I construct the plungers as shown in Figs. 2, 10, and 11. The plunger is provided with a recess or cavity in its middle portion and with perforations leading into this recess from the face of the plunger, whereby air can pass back and forth through the perforations into and from the recess for the purposes hereinafter explained, and any clay or material that is forced through the perforations can be removed through or by means of the recess in the middle portion. As shown, the plunger consists of three parts—the die 26, the filling-block 27, and the flange-plate 28. The die is made of steel or any suitable material and is provided with the perforations 29. The filling-block is provided with a recess 30, which runs the length of the filling-block, as shown in top or plan view in Fig. 10. This recess is provided with offshoots or branch recesses 31. The perforations in the die-plate open into the recesses 30 and 31, as shown. The flange-plate is screwed or otherwise suitably fastened to the piston-rod 25. The three parts of the die are

secured together in any suitable manner, as by bolts, the heads of which are countersunk.

The clay or other material which is compressed in such a machine always contains a certain amount of air. It is important to provide some means of escape for this air when the material is subjected to great compression. The perforations 29 in the die-plate afford means for the escape of this air. The air passes through the perforations into the recesses 30 and 31 and escapes at the mouth of the recess 30 at the end of the filling-block. If this air were not permitted to escape, it would be apt to be entrapped or caught in the body of the block or brick, and thereby to cause air-holes. Furthermore, when a brick having such air entrapped is burned in the kiln the entrapped air is apt to force apart the molecules of the brick and cause imperfections therein. Another advantage resulting from the use of these perforations is that after the material has been compressed it is apt to cling to the face of the die and when the plungers are drawn away from the pressed block or when the block is forced off the face of the plunger some of the material is likely to adhere to the die, thereby making the brick imperfect and also interfering with the operation of the plungers. It is important at this time to provide some means whereby air can gain access to the different points of the face of the plunger, and such means are supplied by the perforations 29. The air passes through the recess 30 and through the perforations and obviates any tendency to the formation of any vacuum on the face of the die when the block is removed therefrom. By employing the simple means referred to if any material is forced through the perforations 29 it can easily be removed through the recess 30.

32 32 are side plates or struts which rest at their lower ends on the upper surface of the lower cylinder 23 and at their upper ends carry or support the cylinder 19, as clearly shown in Fig. 2. There are two of these struts on each side of the machine. (See Fig. 4.)

33 33 are tie-rods which bind the upper and lower cylinders together.

34 is a flange (see Fig. 2) projecting inwardly from the struts and serving to support the mold-box frame. This frame consists of the side plates 35 and the cross-pieces 36, these parts being all made, preferably, in a single casting. This frame rests upon the flanges 34, and the side plates 35 are bolted or otherwise suitably fastened to the struts 32.

37 is a finishing-die which rests on the mold-box frame, as shown in Figs. 1 and 2. This finishing-die is made of steel or other suitable material and is provided with as many openings as there are compartments in the mold-box, and these openings are placed immediately below the corresponding compartments of the mold-box, as a result of which when the compressed blocks are forced out from or expelled from the mold-box they are trimmed



or finished by this finishing-die, and thereby made of uniform and perfect size and shape. In the form shown in the drawings there are four compartments shown in the mold-box, and the finishing-die is therefore provided with four openings formed by the sides and ends and the cross-bar in the middle. (See Fig. 1.) The end of the finishing-die nearest the feed-cylinder and the cross-piece in the middle are beveled on their upper or rear edges, so as to fit and receive the beveled edges of the reciprocating knives to be hereinafter described. The finishing-die is fastened in place on the mold-box frame in any suitable manner.

The mold-box 38 rests on top of the finishing-die and is preferably doweled to the finishing-die, although any other suitable means of fastening these parts together can be employed. The mold-box consists of the two side plates 39, the central partition 40, and the end plate 41. The end plate 41 is preferably fastened to the side plates and the central partition by a dovetailed joint, as shown, as it is desirable to make a very firm and tight joint. This mold-box is thus made to contain two long compartments adapted to receive two long bars of material from the feed-cylinder. The mold-box is divided into a plurality of compartments—that is to say, four in the particular form shown in the drawings—each compartment having the shape of the brick or other article to be formed by means of the reciprocating knives 42 42. These knives are adapted to cutoff as many blocks of material as there are compartments in the mold-box, and each knife forms one side of its compartment. In the form shown in the drawings the knives at the middle of the mold-box serve as the intervening walls between the front and rear compartments. The construction of the knives is shown in Fig. 6. There are two sets of knives, each set containing two knives. These two knives are supported from and carried by a cross-bar 43. They may be considered as a single knife with two blades or cutting portions. The two cross-bars 43 are supported by the cross-heads 44, one at each end. These cross-heads are connected with the lower part of the piston-rods 45. These rods are connected with the pistons 46 in the auxiliary hydraulic cylinders 47. (See Fig. 2.) One of the cross-bars 43 is reciprocated up and down immediately to the rear of the rear struts 32. The other cross-bar 43 passes between the rear and the forward struts. The knives 42 are beveled at their lower ends, so as to form a cutting edge, and are adapted to fit the beveled upper ends of the finishing-die. The knives 42 work in grooves in the side pieces 39 and the middle partition 40 of the mold-box, as shown in Fig. 1. The middle partition of the mold-box, immediately under the forward knife, is slotted, as shown, for half its depth, as in Fig. 2, so that the bar 43 passes down into this slot, as a result of which the slot between the

knives slides over the middle portion and makes what is called a “half-and-half” joint between these parts. This is true of both of the double knives. The knives are reciprocated by means of the pistons 46 and auxiliary cylinders 47, these auxiliary cylinders being carried by the upper main cylinder 19.

Referring to Figs. 1 and 4, 48 is the delivery-frame. This frame is provided with as many compartments as there are blocks to be molded or as there are compartments in the mold-box. In the form shown the delivery-frame is provided with four such compartments, each one being adapted to receive one of the four bricks to be molded in each operation of the press. 49 are angle-irons bolted onto the struts of the machine. These angle-irons support friction-rollers 50, three on each side of the machine. The delivery-frame is provided with a flange 51 on each side, (see Fig. 4,) each flange adapted to ride on the friction-rollers. 52 is a lubricating or oiling roller which is mounted so as to revolve in bearings carried at the rear end of the delivery-frame. The roller is preferably made of wood and is covered with sheepskin, with the wool side out, or other suitable material for absorbing oil and applying it to the surface of the dies on the compression-plungers. 53 is a trough for holding oil or a suitable lubricant. This trough is provided with perforations through which the oil can drop down upon the roller when the roller is in its inner position. The roller is made of a diameter equal to the distance between the plungers at the time when the delivery-frame is moved forward, so as to carry the blocks away from the plungers and deliver them onto the receiving-table. As a result of this, when the delivery-frame is moved forward the lubricating-roller at the same time lubricates the faces of the upper as well as the lower plungers. It does this both in its forward and its rearward movement. The delivery-frame is connected, by means of the piston-rod 54, with the piston 55 in the hydraulic cylinder 56, which is supported on the under side of the feed-cylinder of the machine. It will be seen that the lower plungers are adapted to pass through the compartments of the delivery-frame when it is in its rear position and that the compressed blocks are forced from the mold-box by the action of the plungers into the delivery-frame, so that when the delivery-frame is moved forward it will carry the blocks away from the discharge-opening of the finishing-die or mold-box.

Referring to Fig. 1, 57 is a receiving-table which is adapted when in its highest position to be substantially on a level with the lower edge or surface of the delivery-frame, so that when the delivery-frame is moved forward it will pass onto the receiving-table and will push the compressed blocks over the surface of that table. This table may be operated in any suitable way by foot-power or by a counterbalance or by hydraulic pressure. The



latter form of operating mechanism is shown in the drawings, Fig. 1, in which 58 is the piston-rod supporting the table at its upper end and connecting at its lower end with the piston 59, working in the hydraulic cylinder 60.

I have described this machine as operated by hydraulic pressure. It is manifest that steam or any other suitable source of power may be employed.

The operation of my improved machine is as follows: The hopper of the feed-cylinder is kept continuously supplied with clay or whatever material is to be used. When the piston is drawn back, this material falls into the feed-cylinder in front of the piston. The piston is then moved forward and the material is forced through the openings of all the forming-dies, which have been regulated in size by means of the regulating-block. A bar of material is thereby fed into each long compartment of the mold-box. Before the material is fed into the mold-box the lower plungers are raised to their highest position, so that they have passed through the delivery-frame and finishing-die and their upper surfaces are on a level with the upper end of the finishing-die, thereby forming the bottom of the mold-box. When the long compartments of the mold-box have been supplied with the bar of material, the reciprocating knives 42 are forced down into the mold-box, so as to cut the bars of material into four blocks, the knives themselves dividing the mold-box into four compartments having the shape of and being just filled by these four blocks. The upper plungers are then forced down until they come into contact with the blocks, and they operate at first to force the blocks down a short distance in the mold-box. At the same time the lower plungers are forced down slightly below the upper edge of the finishing-die. Then pressure is admitted to the lower main cylinder and the blocks are compressed on both sides between the upper and lower plungers, the lower plungers being forced up again to their highest position. Then the pressure is reversed on the piston in the lower cylinder, as a result of which the upper plungers force the clods or compressed blocks out of the mold-box and through the finishing-die into the delivery-frame. The lower plungers have in the meantime reached their lowest position, in which their upper surfaces are substantially on a level with the lower edge of the delivery-frame. As the blocks are forced through the finishing-die this die trims off their edges or rough surfaces and gives them a perfect form. The upper plungers are brought down to a position a little above the upper surface of the delivery-frame and at a distance from the lower plungers substantially equal to the diameter of the lubricating-roller 52. The delivery-frame is then forced forward, so as to carry the bricks onto the receiving-table. As the frame moves forward the lubricating-roller rubs over the surface of both the upper and lower dies and

thoroughly lubricates them. The receiving-table is then lowered, so that the bricks drop out of the compartments in the delivery-frame, after which the frame is drawn back into its original position. The bricks are removed from the receiving-table, after which the receiving-table is raised to its highest position, so as to be again ready to receive the next lot of bricks. The upper and lower plungers are then raised to their highest position and the machine is now ready for the second operation.

Many advantages are secured by my invention, some of which are as follows: This machine makes a pressed brick suitable for use as a front brick or fire-brick of superior quality at a single operation. The usual method heretofore known of making this class of bricks has been to make a rough brick in one machine and then to re-press it in a second machine. I accomplish these results in a single operation. Great economy is secured through the saving of machinery, labor, and time. The machine is very compact in construction and is easily manipulated. It is very durable and is not likely to get out of order. It can be operated at a high rate of speed and is capable of producing a very much larger number of bricks in a given time than any of the machines heretofore used. The brick is given a complete and perfect form and is very accurately molded. Another advantage is that the bricks contain a uniform amount of clay and are uniform in size and density, thus affording a uniform and regular product. The size of the bricks can be varied and can be easily and accurately regulated. The reciprocating plungers operate in a superior manner, as already explained.

It will be understood that the reciprocating knife is not a part of the mold-box proper, but merely supplies the place of or acts as one side of that box when it has been forced down and made to cut off a block of the material. In the claims where the combination of the reciprocating knife and the mold-box, either with or without other elements, is claimed the mold-box refers to the mold-box proper, not including the knife.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a press for molding bricks or similar articles, the combination of a mold-box having the shape of the article to be formed, a reciprocating knife adapted to cut off a block of the material and to form one side of the mold-box and then to be drawn away from the other sides of the box, devices for compressing the block in the mold-box and a feeding device to feed a bar of material into the mold-box.

2. In a press for molding bricks or similar articles, the combination of a mold-box having the shape of the article to be formed, a reciprocating knife adapted to cut off a block of the material and to form one side of the mold-box and then to be drawn away from the other side of the box, reciprocating plungers for



compressing between them the material in the mold-box, and a feeding device to feed a bar of material into the mold-box.

3. In a press for molding bricks or similar articles, the combination of a mold-box having a plurality of compartments each having the shape of the article to be formed, one or more reciprocating knives, adapted to cut off as many blocks of material as there are compartments in the mold-box and to form one side of each compartment, devices for compressing the blocks in the mold-box, and a feeding device to feed a bar of material into each compartment.

4. In a press for molding bricks or similar articles, the combination of a mold-box having a plurality of compartments each having the shape of the article to be formed, one or more reciprocating knives, adapted to cut off as many blocks of material as there are compartments in the mold-box and to form one side of each compartment, reciprocating plungers for compressing between them the blocks in the several compartments of the mold-box, and a feeding device to feed a bar of material into each compartment.

5. In a press for molding bricks or similar articles, the combination of a mold-box having a plurality of long compartments, a plurality of reciprocating knives adapted to cut the bar of material in each long compartment into a plurality of blocks, and to form one side of each of the smaller compartments, and devices for compressing the blocks in the mold-box.

6. In a press for molding bricks or similar articles, the combination of a mold-box having a plurality of long compartments, a plurality of reciprocating knives adapted to cut the bar of material in each long compartment into a plurality of blocks, and to form one side of each of the smaller compartments, devices for compressing the blocks in the mold-box, and a feeding device to feed a bar of material into each long compartment, substantially as set forth.

7. In a press for molding bricks or similar articles, the combination of a mold-box having a plurality of long compartments, a plurality of reciprocating knives adapted to cut the bar of material in each long compartment into a plurality of blocks, and to form one side of each of the smaller compartments, reciprocating plungers for compressing between them the blocks in the several compartments of the mold-box, and a feeding device to feed a bar of material into each long compartment, substantially as set forth.

8. In a press for molding bricks or similar articles, the combination of a mold-box having the shape of the article to be formed, a reciprocating knife adapted to cut off a block of the material and to form one side of the mold-box, reciprocating plungers for compressing between them the material in the mold-box, a finishing-die on the discharge side of the mold-box adapted to finish off the

block as it is expelled from the mold-box, and a feeding device to feed a bar of material into the mold-box.

9. In a press for molding bricks or similar articles, the combination of a mold-box having a plurality of long compartments, a plurality of reciprocating knives adapted to cut the bar of material in each long compartment into a plurality of blocks, and to form one side of each of the smaller compartments, reciprocating plungers for compressing between them the blocks in the several compartments of the mold-box, a finishing-die on the discharge side of the mold-box, having as many openings as there are compartments in the mold-box, and adapted to finish off each block as it is expelled from the mold-box, and a feeding device to feed a bar of material into each long compartment, substantially as set forth.

10. In a press for making bricks or similar articles, the combination of the mold-box 38, consisting of the side pieces 39, the middle partition 40, and the end piece 41, the knives 42, adapted to slide in grooves in the side pieces and middle partition, means for operating the knives, and reciprocating plungers above and reciprocating plungers below the mold-box, adapted to compress between them the blocks in the several compartments of the mold, and means for operating the plungers, substantially as set forth.

11. In a press for making bricks or similar articles, the combination of the mold-box 38, consisting of the side pieces 39, the middle partition 40, and the end piece 41, the knives 42, adapted to slide in grooves in the side pieces and middle partition, means for operating the knives, and reciprocating plungers above and reciprocating plungers below the mold-box, adapted to compress between them the blocks in the several compartments, means for operating the plungers, and a feeding device to feed a bar of material into each long compartment, substantially as set forth.

12. In a press for making bricks or similar articles, the combination of the mold-box 38, consisting of the side pieces 39, the middle partition 40, and the end piece 41, the knives 42, adapted to slide in grooves in the side pieces and middle partition, means for operating the knives, and reciprocating plungers above and reciprocating plungers below the mold-box, adapted to compress between them the blocks in the several compartments of the mold, means for operating the plungers, the finishing-die, and a feeding device to feed a bar of material into each long compartment, substantially as set forth.

13. In a press for making bricks or similar articles, the combination of the mold-box 38, consisting of the side pieces 39, the middle partition 40, and the end piece 41, the knives 42, adapted to slide in grooves in the side pieces and middle partition, the bars 43 connecting and supporting the knives, the piston-rods 45, the pistons 46, the cylinders 47,



and reciprocating plungers above and reciprocating plungers below the mold-box, adapted to compress between them the blocks in the several compartments of the mold, and means for operating the plungers, substantially as set forth.

14. In a press for molding bricks or similar articles, the combination of a suitable mold-box, and a plunger for compressing the material, provided with a die 26, having perforations 29, a filling-block 27, having a recess 30 into which the perforations open, and the flange-plate 28, substantially as set forth.

15. In a press for molding bricks or similar articles, the combination of a mold-box having a plurality of long compartments, a plurality of reciprocating knives adapted to cut the bar of material in each long compartment into a plurality of blocks, and to form one side of each of the smaller compartments, reciprocating plungers for compressing between them the blocks in the several compartments of the mold-box, each plunger being provided with a recess in its middle portion and with perforations leading into the recess from the face of the plunger, and a feeding device to feed a bar of material into each long compartment, substantially as set forth.

16. In a press for making bricks or similar articles, the combination of the mold-box 38, consisting of the side pieces 39, the middle partition 40, and the end piece 41, the knives 42, adapted to slide in grooves in the side pieces and middle partition, means for operating the knives, the reciprocating plungers provided with the dies 26 having perforations 29, the filling-blocks 27, each having a recess into which the perforations open, and the flange-plates 28, means for operating the plungers, the finishing-die 37, and a feeding device to feed a bar of material into each long compartment, substantially as set forth.

17. In a press for molding bricks or similar articles, the combination of a mold-box, reciprocating plungers on opposite sides of the mold-box for compressing between them the block in the mold-box, a delivery-frame on the discharge side of the mold-box through which the lower one of the plungers is adapted to pass and into which the block is pushed from the mold-box by the action of the plungers, and means for moving the delivery-frame so as to carry the block away from the mold-box to the point of discharge from the delivery-frame.

18. In a press for molding bricks or similar articles, the combination of a mold-box, reciprocating plungers for compressing between them the block in the mold-box, a delivery-frame on the discharge side of the mold-box through which one of the plungers is adapted to pass and into which the block is pushed from the mold-box by the action of the plungers, and means for moving the delivery-frame so as to carry the block away from the mold-box to the point of discharge from the delivery-frame, and a finishing-die between

the mold-box and the delivery-frame to finish off the block while it is passing from the mold-box to the delivery-frame.

19. In a press for molding bricks or similar articles, the combination of a mold-box, means for compressing the material in the mold-box, a delivery-frame on the under side of the mold-box into which the block passes from the mold-box, a receiving-table, and means for moving the delivery-frame so as to carry the block away from the mold-box and onto the receiving-table and means for raising and lowering the receiving-table.

20. In a press for molding bricks or similar articles, the combination of a mold-box, reciprocating plungers for compressing between them the block in the mold-box, a delivery-frame on the under side of the mold-box through which one of the plungers is adapted to pass and into which the block is pushed from the mold-box by the action of the plungers, a receiving-table, and means for moving the delivery-frame so as to carry the block away from the mold-box and onto the receiving-table and means for raising and lowering the receiving-table.

21. In a press for molding bricks or similar articles, the combination of a mold-box, reciprocating plungers for compressing between them the block in the mold-box, a delivery-frame on the under side of the mold-box through which one of the plungers is adapted to pass and into which the block is pushed from the mold-box by the action of the plungers, a receiving-table, and means for moving the delivery-frame so as to carry the block away from the mold-box and onto the receiving-table and means for raising and lowering the receiving-table, and a finishing-die between the mold-box and the delivery-frame to finish off the block while it is passing from the mold-box to the delivery-frame.

22. In a press for molding bricks or similar articles, the combination of a mold-box, reciprocating plungers for compressing between them the block in the mold-box, a delivery-frame on the discharge side of the mold-box through which one of the plungers is adapted to pass and into which the block is pushed from the mold-box by the action of the plungers, a lubricating-roller mounted in the delivery-frame and of a diameter substantially equal to the distance between the plungers when the delivery-frame is moved, and means for moving the delivery-frame so as to carry the block away from the mold-box to the point of discharge from the delivery-frame and at the same time to cause the lubricating-roller to lubricate the faces of the plungers, substantially as set forth.

23. In a press for molding bricks or similar articles, the combination of a mold-box having the shape of the article to be formed, a reciprocating knife adapted to cut off a block of the material and to form one side of the mold-box, reciprocating plungers for compressing between them the material in the



mold-box, and a feeding device to feed a bar of material into the mold-box, a delivery-frame on the discharge side of the mold-box through which one of the plungers is adapted to pass and into which the block is pushed from the mold-box by the action of the plungers, and means for moving the delivery-frame so as to carry the block away from the mold-box to the point of discharge from the delivery-frame.

24. In a press for molding bricks or similar articles, the combination of a mold-box having the shape of the article to be formed, a reciprocating knife adapted to cut off a block of the material and to form one side of the mold-box, reciprocating plungers for compressing between them the material in the mold-box, and a feeding device to feed a bar of material into the mold-box, a delivery-frame on the under side of the mold-box through which one of the plungers is adapted to pass and into which the block is pushed from the mold-box by the action of the plungers, a receiving-table, and means for moving the delivery-frame so as to carry the block away from the mold-box and onto the receiving-table and means for raising and lowering the receiving-table.

25. In a press for molding bricks or similar articles, the combination of a mold-box having a plurality of long compartments, a plurality of reciprocating knives adapted to cut the bar of material in each long compartment into a plurality of blocks, and to form one side of each of the smaller compartments, reciprocating plungers for compressing between them the blocks in the several compartments of the mold-box, a delivery-frame under the mold-box having the same number of compartments as the mold-box and adapted to register therewith, through which the lower plungers are adapted to pass and into which the blocks are pushed from the mold-box by the action of the plungers, and means for moving the delivery-frame so as to carry the blocks away from the mold-box to the point of discharge from the delivery-frame, substantially as set forth.

26. In a press for molding bricks or similar articles, the combination of a mold-box having a plurality of long compartments, a plurality of reciprocating knives adapted to cut the bar of material in each long compartment into a plurality of blocks, and to form one side of each of the smaller compartments, reciprocating plungers for compressing between them the blocks in the several compartments of the mold-box, a delivery-frame under the mold-box having the same number of compartments as the mold-box and adapted to register therewith, through which the lower plungers are adapted to pass and into which the blocks are pushed from the mold-box by the action of the plungers, a receiving-table, and means for moving the delivery-frame so as to carry the blocks away from the mold-box and onto the receiving-table and means for

raising and lowering the receiving-table, substantially as set forth.

27. In a press for molding bricks or similar articles, the combination of a mold-box having a plurality of long compartments, a plurality of reciprocating knives adapted to cut the bar of material in each long compartment into a plurality of blocks, and to form one side of each of the smaller compartments, reciprocating plungers for compressing between them the blocks in the several compartments of the mold-box, a delivery-frame under the mold-box having the same number of compartments as the mold-box and adapted to register therewith, through which the lower plungers are adapted to pass and into which the blocks are pushed from the mold-box by the action of the plungers, a receiving-table, and means for moving the delivery-frame so as to carry the blocks away from the mold-box and onto the receiving-table and means for raising and lowering the receiving-table, and a feeding device to feed a bar of material into each long compartment of the mold-box, substantially as set forth.

28. In a press for molding bricks or similar articles, the combination of a mold-box having a plurality of long compartments, a plurality of reciprocating knives adapted to cut the bar of material in each long compartment into a plurality of blocks, and to form one side of each of the smaller compartments, reciprocating plungers for compressing between them the blocks in the several compartments of the mold-box, a delivery-frame under the mold-box having the same number of compartments as the mold-box and adapted to register therewith, through which the lower plungers are adapted to pass and into which the blocks are pushed from the mold-box by the action of the plungers, a lubricating-roller mounted in the delivery-frame and of a diameter substantially equal to the distance between the plungers when the delivery-frame is moved, a receiving-table, and means for moving the delivery-frame so as to carry the blocks away from the mold-box and onto the receiving-table and at the same time to cause the lubricating-roller to lubricate the faces of the plungers, and means for raising and lowering the receiving-table, and a feeding device to feed a bar of material into each long compartment of the mold-box, substantially as set forth.

29. In a press for molding bricks or similar articles, the combination of a feed-cylinder, a plunger in said cylinder, the forming-die having a plurality of openings, the regulating-block 14, consisting of the cross-bar 15 and the depending portions 16, and means for adjusting the regulating-block, substantially as set forth.

30. In a press for molding bricks or similar articles, the combination of a feed-cylinder provided with a hopper and a plunger of such a length that when it is in its forward position it extends backward beyond the opening



from the hopper into the cylinder so as to cut off that opening, the forming-die 11 having a plurality of openings, the regulating-block 14, consisting of the cross-bar 15 and the depending portions 16, and means for adjusting the

the size of the openings in the forming-die, and means for adjusting the regulating-block, substantially as set forth.

31. In a press for molding bricks or similar articles, the combination of a mold-box having a plurality of compartments each having the shape of the article to be formed, one or more reciprocating knives, adapted to cut off as many blocks of material as there are compartments in the mold-box and to form one side of each compartment, devices for compressing the blocks in the mold-box, a feed-cylinder, a plunger in said cylinder, and a forming-die connected with said cylinder having as many openings as there are compartments in the mold-box, in line with said compartments, substantially as set forth.

32. In a press for molding bricks or similar articles, the combination of a mold-box having a plurality of compartments each having the shape of the article to be formed, one or more reciprocating knives, adapted to cut off as many blocks of material as there are compartments in the mold-box and to form one side of each compartment, devices for compressing the blocks in the mold-box, a feed-cylinder, a plunger in said cylinder, and a forming-die connected with said cylinder having as many openings as there are compartments in the mold-box, in line with said compartments, and a regulating-block to regulate the size of said openings, and means for adjusting the regulating-block, substantially as set forth.

33. In a press for molding bricks or similar articles, the combination of a mold-box having a plurality of long compartments, a plurality of reciprocating knives adapted to cut the bar of material in each long compartment into a plurality of blocks, and to form one side of each of the smaller compartments, reciprocating plungers for compressing between them the blocks in the several compartments of the mold-box, a delivery-frame under the mold-box having the same number of compartments as the mold-box and adapted to register therewith, through which the lower plungers are adapted to pass and into which the blocks are pushed from the mold-box by the action of the plungers, a receiving-table, and means for moving the delivery-frame so as to carry the blocks away from the mold-box and onto the receiving-table and means for raising and lowering the receiving-table, a feed-cylinder provided with a hopper and a plunger of such a length that when it is in its forward position it extends backward beyond the opening from the hopper into the cylinder so as to cut off that opening, a forming-die connected with the feed-cylinder and having as many openings as there are long compartments in the mold-box in line with said compartments, a regulating-block to regulate

34. In a press for molding bricks or similar articles, the combination of a mold-box having a plurality of long compartments, a plurality of reciprocating knives adapted to cut the bar of material in each long compartment into a plurality of blocks, and to form one side of each of the smaller compartments, reciprocating plungers for compressing between them the blocks in the several compartments of the mold-box, a delivery-frame under the mold-box having the same number of compartments as the mold-box and adapted to register therewith, through which the lower plungers are adapted to pass and into which the blocks are pushed from the mold-box by the action of the plungers, a lubricating-roller mounted in the delivery-frame and of a diameter substantially equal to the distance between the plungers when the delivery-frame is moved, a receiving-table, and means for moving the delivery-frame so as to carry the blocks away from the mold-box and onto the receiving-table and means for raising and lowering the receiving-table, a feed-cylinder provided with a hopper and a plunger of such a length that when it is in its forward position it extends backward beyond the opening from the hopper into the cylinder so as to cut off that opening, a forming-die connected with the feed-cylinder and having as many openings as there are long compartments in the mold-box in line with said compartments, a regulating-block to regulate the size of the openings in the forming-die, and means for adjusting the regulating-block, substantially as set forth.

35. In a press for molding bricks or similar articles, the combination of a mold-box having a plurality of long compartments, a plurality of reciprocating knives adapted to cut the bar of material in each long compartment into a plurality of blocks, and to form one side of each of the smaller compartments, reciprocating plungers for compressing between them the blocks in the several compartments of the mold-box, a delivery-frame under the mold-box having the same number of compartments as the mold-box and adapted to register therewith, through which the lower plungers are adapted to pass and into which the blocks are pushed from the mold-box by the action of the plungers, a lubricating-roller mounted in the delivery-frame and of a diameter substantially equal to the distance between the plungers when the delivery-frame is moved, a finishing-die between the mold-box and the delivery-frame adapted to finish off the blocks while they are passing from the mold-box to the delivery-frame, a receiving-table, and means for moving the delivery-frame so as to carry the blocks away from the mold-box and onto the receiving-table and means for raising and lowering the



receiving-table, a feed-cylinder provided with  
a hopper and a plunger of such a length that  
when it is in its forward position it extends  
backward beyond the opening from the hop-  
5 per into the cylinder so as to cut off that open-  
ing, a forming-die connected with the feed-  
cylinder and having as many openings as  
there are long compartments in the mold-box  
in line with said compartments, a regulating-  
10 block to regulate the size of the openings in

the forming-die, and means for adjusting the  
regulating-block, substantially as set forth.

In testimony whereof I have signed my  
name to this specification in the presence of  
two subscribing witnesses.

EDWARD H. CALLAWAY.

Witnesses:

EDWIN SEGER,

GEO. W. UFELLS, Jr.