

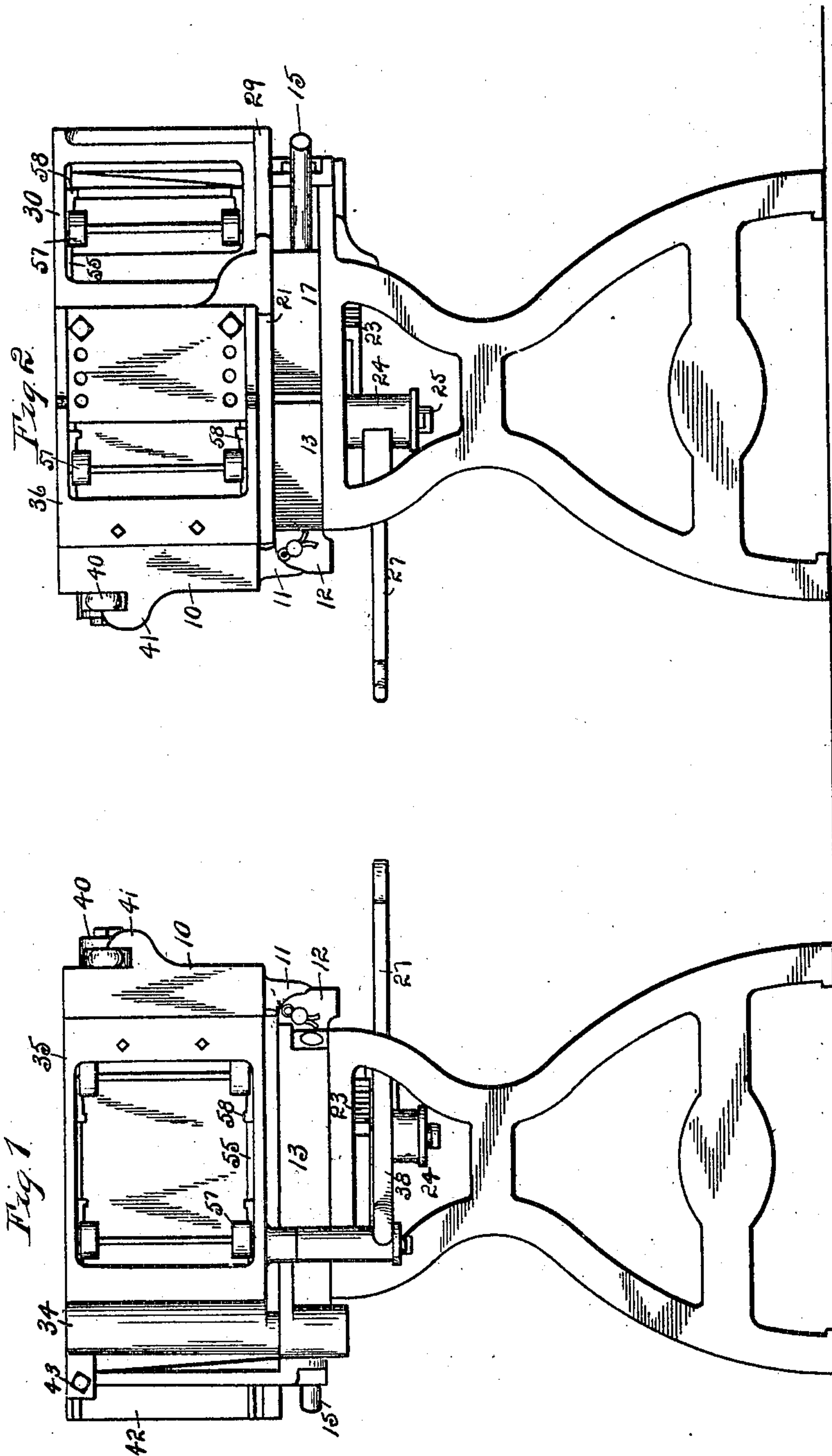
No. 837,520.

PATENTED DEC. 4, 1906.

W. G. TOWER.
MACHINE FOR MAKING CONCRETE BLOCKS.

APPLICATION FILED MAR. 22, 1906.

3 SHEETS—SHEET 1.



Witnesses:
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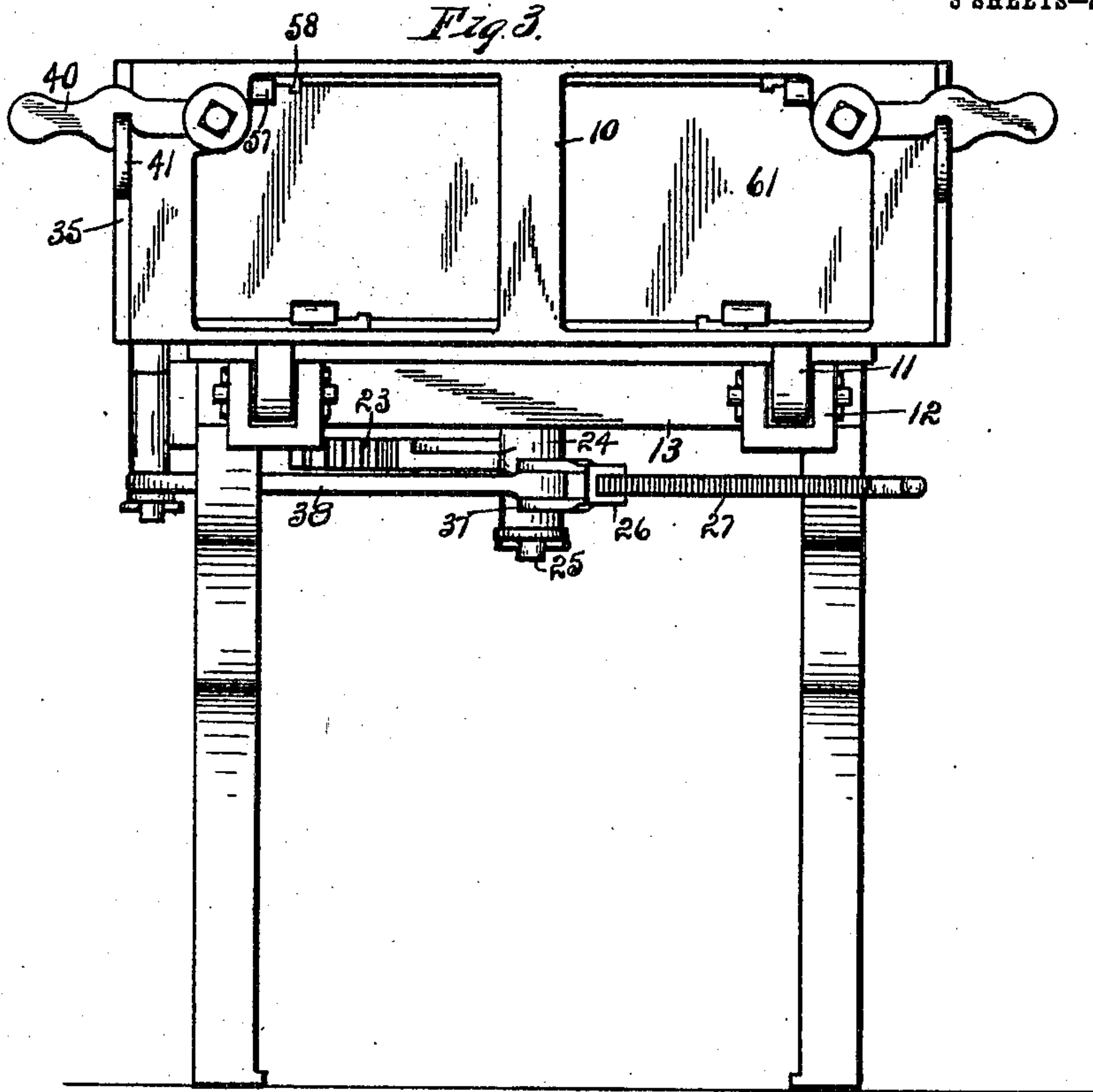


Fig. 9.

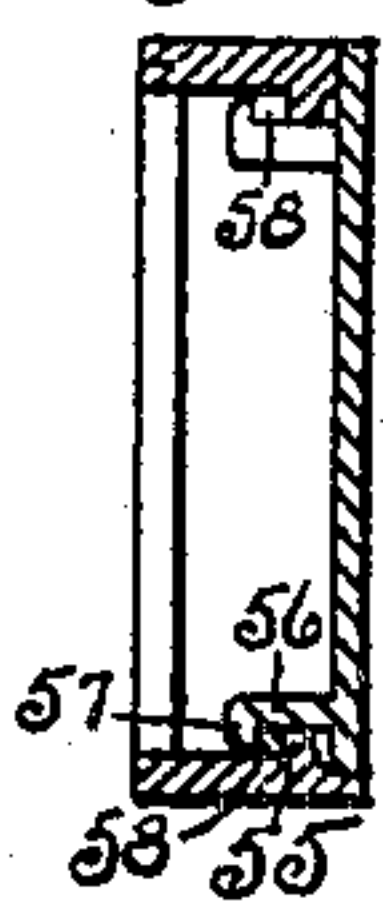


Fig. 6.

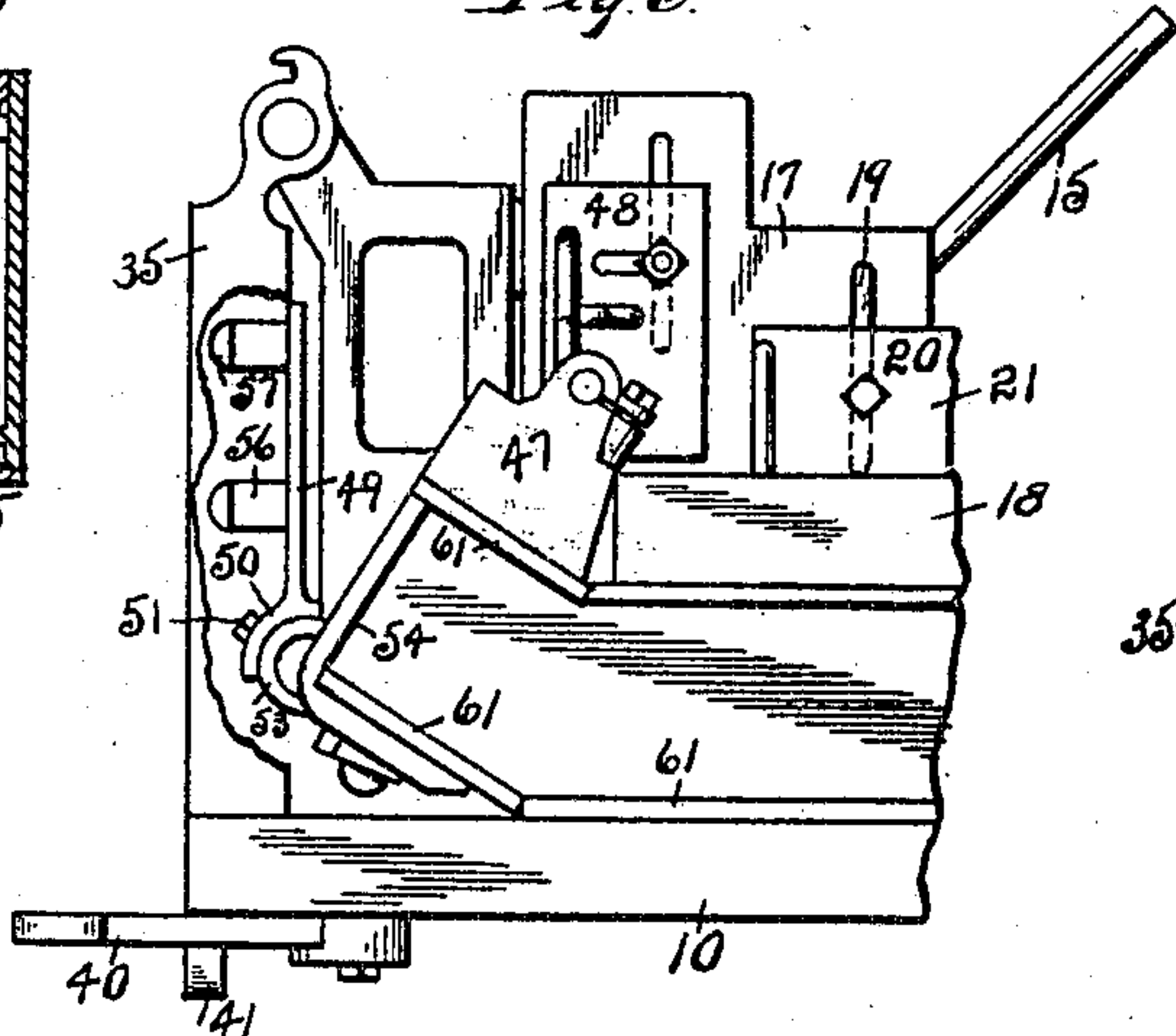


Fig. 7.

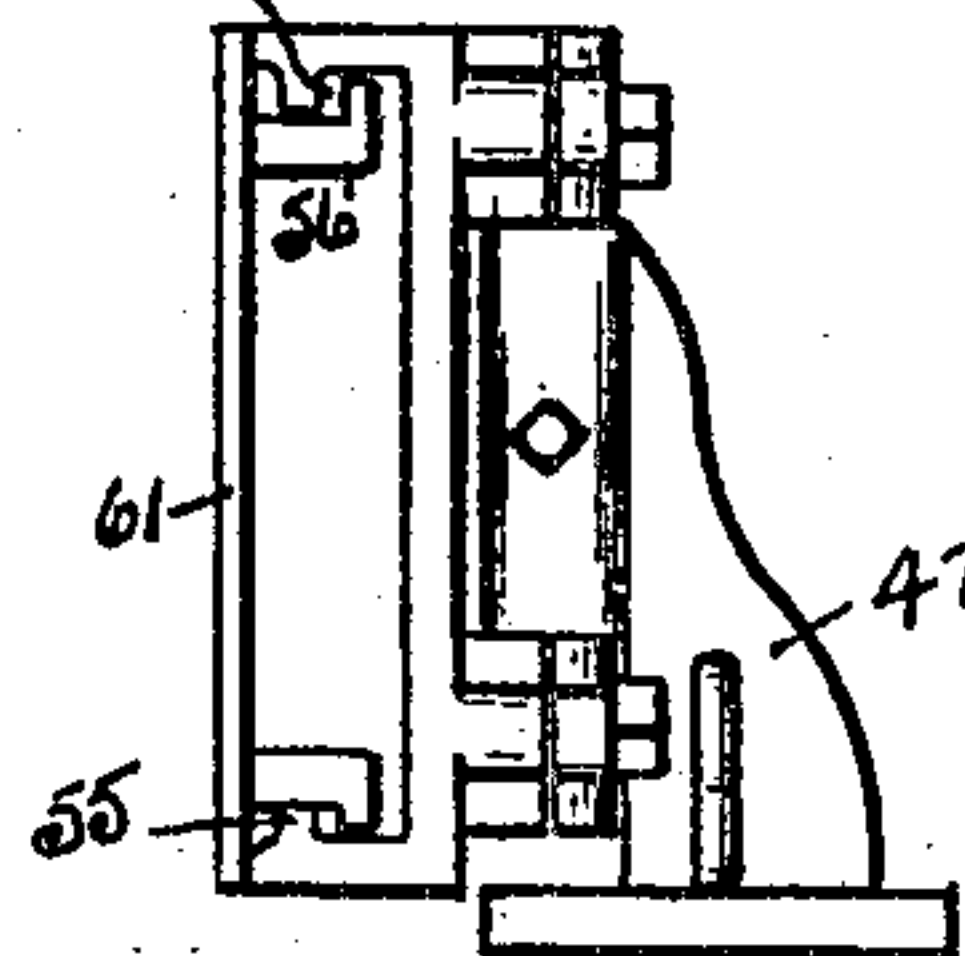
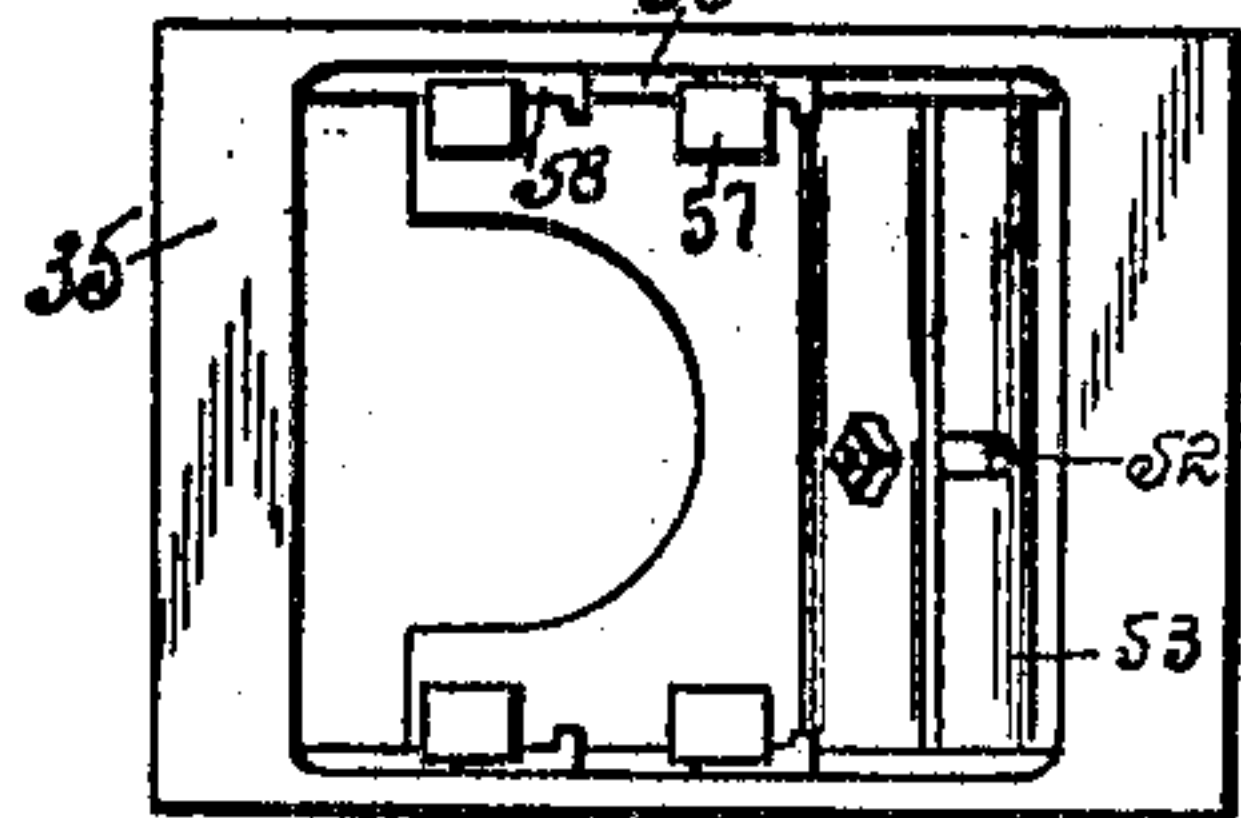


Fig. 8.



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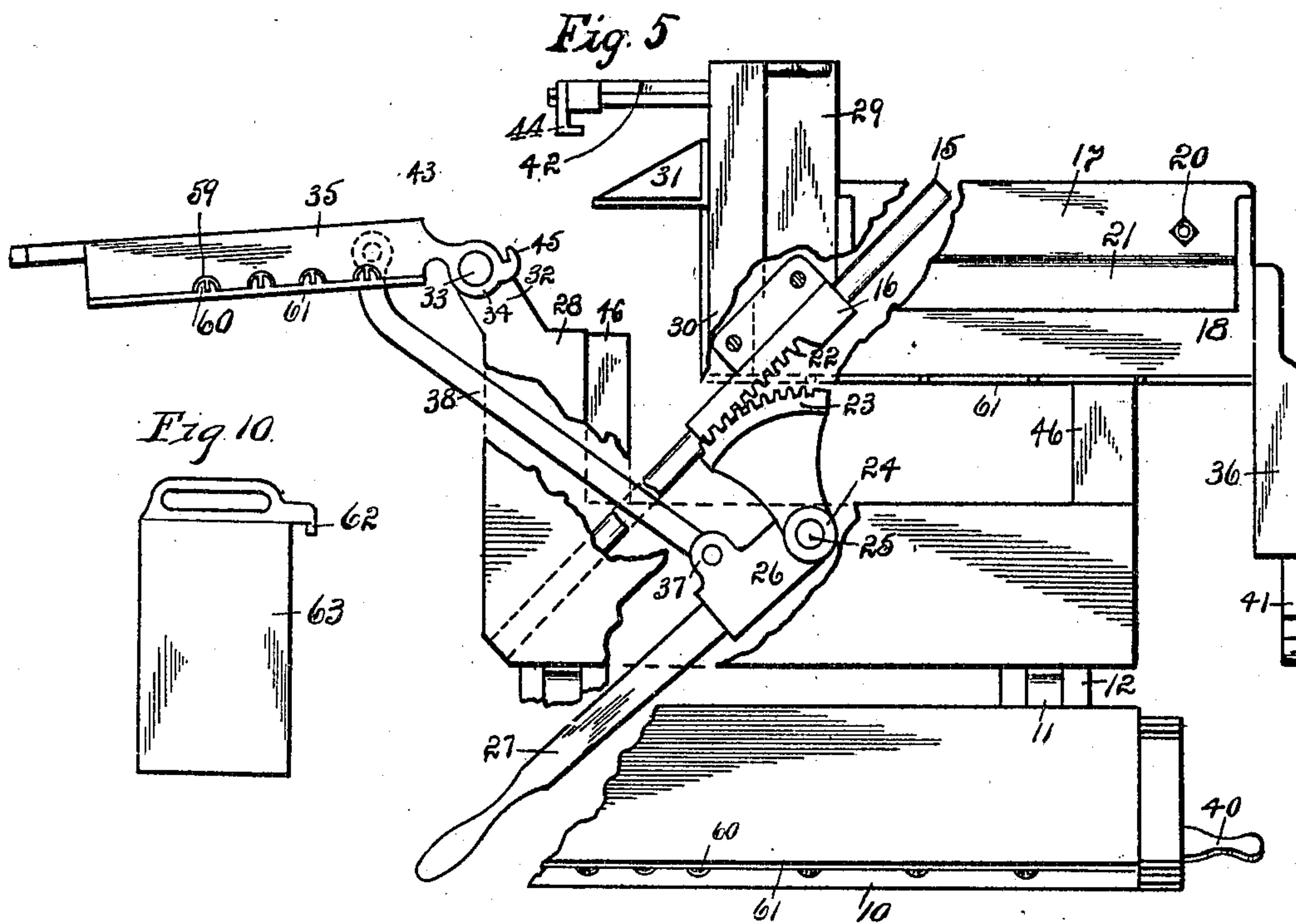
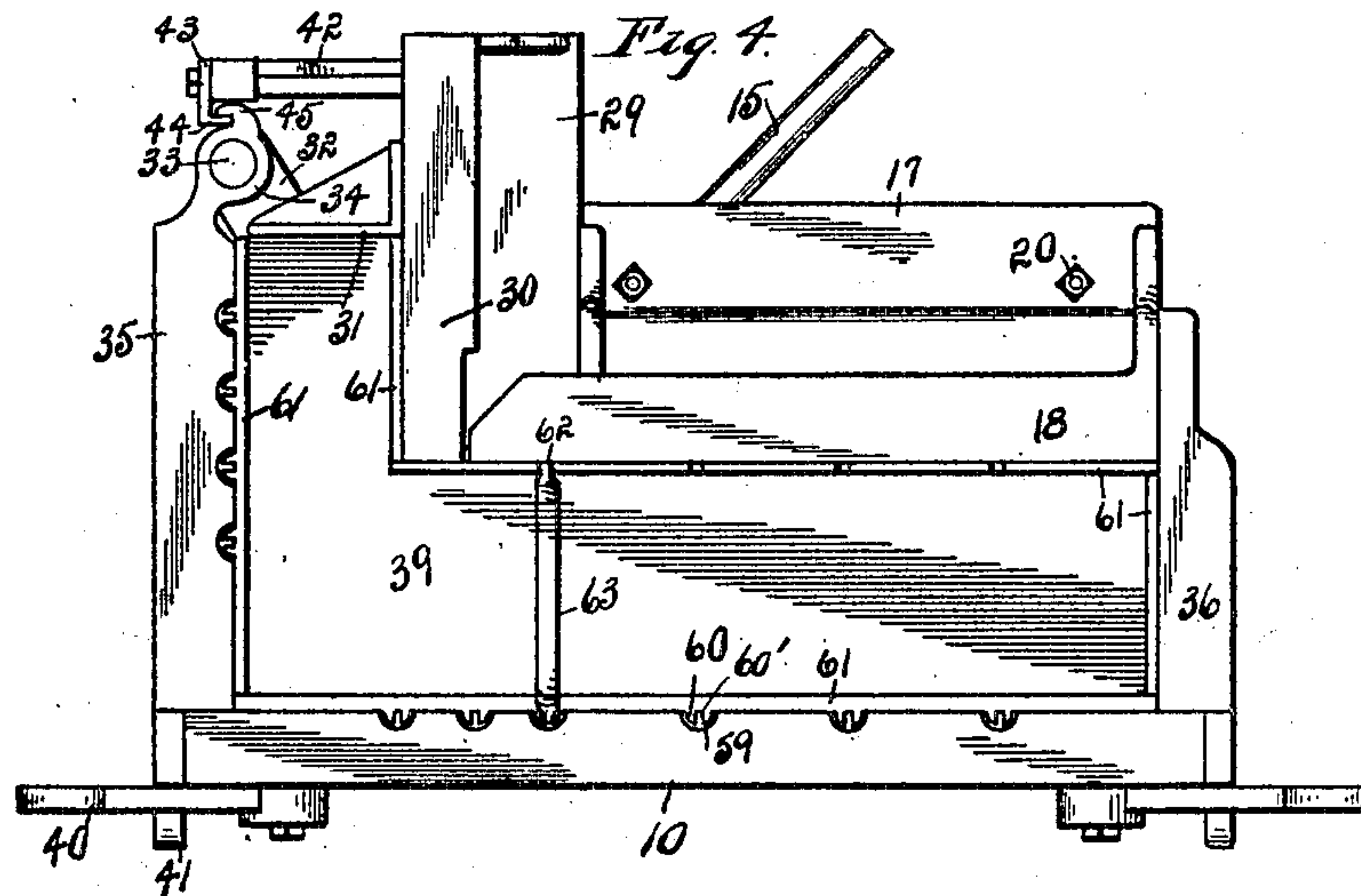
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR MAKING CONCRETE BLOCKS.

No. 837,520.

Specification of Letters Patent.

Patented Dec. 4, 1906.

Application filed March 22, 1906. Serial No. 307,347.

To all whom it may concern:

Be it known that I, WALLACE G. TOWER, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Machines for Making Concrete Blocks; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My present invention relates to a machine for making concrete blocks, and has for its object to provide a device of the class described in which the mold gates or frames may be easily and quickly assembled to form a mold-box and as easily and quickly spread apart to expose a formed stone.

Another object is to provide removable face-plates for the mold-frames and means by which said face-plates may be easily and quickly secured to and removed from the mold-frames and means by which said plates are rigidly held on the frames when set in position.

A still further object is to provide a mechanism for forming elbows on the block, which may extend in any desired angle to the block-body.

In accomplishing these objects I have provided the improved details of structure, which will presently be fully described, and pointed out in the claims, reference being had to the accompanying drawings, forming part of this specification, in which like reference-numerals refer to like parts throughout the several views, and in which—

Figure 1 is a view in end elevation of a machine constructed according to my invention, taken from the left-hand side of the machine. Fig. 2 is a similar view taken from the right-hand side. Fig. 3 is a front elevation of the machine. Fig. 4 is a top plan view of the same. Fig. 5 is a top plan view of the machine, the front frame being swung down and the back and end frames being spread away from the bed-plate, the off-bearing plate being removed and the bed-plate broken to illustrate the operation of the rack-and-pinion movement operating said back and end

frames. Fig. 6 is a top plan view of a portion of the machine, illustrating the adjustable elbow-mold. Fig. 7 is a side view of the angle-mold, taken from the rear of the machine and illustrating the manner of attaching same to the main bed-plate. Fig. 8 is a view taken from the left-hand end of the machine, showing the manner of attaching the forward portion of the angle-mold to the main machine. Fig. 9 is a vertical section taken on the line 9 9, Fig. 3, illustrating the manner of attaching the removable plates to the skeleton frames. Fig. 10 is a detail view of one of the division-plates.

In machines of this character it has been customary to provide face-plates having suitable rock or smooth faces, which may be hinged to the sides and ends of the machine bed-plate and which will be held firmly together when the mold is closed to form a mold-box within which the artificial stone is formed, such plates being disconnected and swung down away from the stone when the latter is completed to enable the stone to be removed.

In my present device I provide skeleton side frames, to which thin face-plates may be attached, the front plate 10 being provided with ears 11, which fit within the brackets 12, rigidly projecting from the bed-plate 13 and between which they are pivoted. Rigidly secured to the under side of the bed-plate and extending backwardly, preferably at an angle of forty-five degrees, is a shaft 15, and slidably mounted on said shaft is a block 16, which is rigidly secured to the under side of the auxiliary bed-plate or base 17. On base 17 is rigidly secured a back frame 18, said base being slotted, as indicated at 19, Fig. 6, and through said slots are projected the bolts 20, which also extend through flange 21 of the back plate 18 to provide lateral adjustment for said back frame in order that blocks of different widths may be constructed, as will presently be described.

On block 16 is a rack 22, and meshing with said rack is a pinion 23, which is rigid on or integral with a collar 24, revolvably mounted on an axle 25, rigidly secured to and depending from the bed-plate 13. Also rigidly secured to collar 24 is a dog 26, the outer end of which is provided with a socket adapted to receive a handle 27, by which collar 24 is

rocked on its pivot to transfer movement to pinion 23 in order that the base 17 and the plates carried thereby may be moved away from and toward the main bed-plate in the manner which is apparent from the drawings, but which will presently be fully described.

In most machines of this class the bed-plate is provided with an end L 28, the sides and ends of which are provided with frames, all similar to those attached to the front and back of the machine. With my device I secure to the back base-plate 17 a base 29, similar to and rigidly connected with base 17. Base 29 is provided with a skeleton frame 30, similar to frame 18, which forms a side of the mold covering the inside edge of the L. Mounted on frame 30 is a plate 31, adapted to cover the end of the L, and projecting from the bed-plate on the outer side of the L is a bracket 32, in which is a perpendicular axle 33. Fitting over axle 33 is the collar 34, which forms the hinge member of the frame 35, which together with the face-plate carried thereby forms one end of the mold when the parts are assembled. Rigidly secured to the end of base-plate 17 opposite the L is a frame 36, which extends forwardly and forms that end of the mold when the parts are closed. On dog 26 is an ear 37, in which is pivoted an arm 38, extending to and being pivoted on the under side of the end frame 35. In the operation of this portion of the device an off-bearing plate 39 is placed on the bed-plate 13 and the parts closed, as shown in the main figure, when the latches 40, which are pivoted to front frame 10, are engaged in notches in lugs 41, projecting forwardly from the end frames 35 and 36. When in this position, a perfect mold-box is formed, and the material is placed therein and tamped or left to harden. When the block has gained sufficient solidity to retain its shape when freed from the mold, the latches 40 are raised out of contact with the end frames and the front frame 10 is lowered on its hinges, uncovering the front the block. After said front frame has been lowered the handle 27 is forced to the left until it has reached the position indicated in Fig. 5, when the pinion 23, which is always in mesh with the rack 22, will have been carried by block 16 backwardly on rod 15 at an angle and out of contact with the formed stone. When the L-mold, which has been previously described, is in use and the angle of movement of the back and end parts is as indicated in Fig. 5, the parts will move at an angle away from the block instead of pulling directly therefrom, in this manner gradually loosening themselves and obviating the tendency of portions of the stone, which is necessarily in a soft or "green" condition, from clinging to said parts. As the rack and pinion is moving the parts carried by the back bases 21 and 29 away from the stone the

arm 38 being forced outwardly and backwardly by the movement of the handle will carry the end frame 35 around and away from the end of the stone, so that by one movement of the handle the entire stone is cleared of the mold sides and the operator may easily lift the off-bearing plate from the bed-plate and remove the stone from the machine.

In order to impart additional rigidity to the end portion of the mold, I prefer to attach a bracket 42 to the base 29, which bracket carries an end flange 43, having a hook 44 thereon adapted to be engaged on a lip 45 on the sleeve 34 of frame 35, so that as handle 27 is moved backwardly or to the right and the back frames move inwardly to again close the mold and the end frame 35 is swung back around by the arm 38 said lip 45 will engage the flange 44 and form a brace to prevent any separation of the parts during the tamping process. I also provide the shelves 46, which project backwardly from the under side of the bed-plate 13 and over which the bases 21 and 30 are carried as the parts are assembled, it being intended that there should be a friction between said brackets and bases to form a contact therebetween, which will help to hold the parts in place.

When it is desired to form a stone having an elbow extending at an angle other than a right angle to the body of the stone, I provide the auxiliary frame 47, which is carried on an auxiliary base-plate 48, which base-plate is secured to the main base-plate 21 and may be swung around over the main bed-plate until a desired angle is secured. Adapted to be secured to the end frame 35 is a bracket 49, having a segment 50, through which is projected a bolt 51, said bolt also projecting through a slot 52 in a drum 53, which is rigidly secured to and supports the auxiliary frame 54, which acts in conjunction with the frame 47 to form the elbow described.

The frames 35 and 51 carry face-plates of suitable length to cooperate with the main plates, as indicated in the drawings.

As previously stated, the mold-frames have been previously constructed in a single piece which is of sufficient weight to give the necessary rigidity to the mold, which frame it is necessary to change whenever it is desired to form a different pattern or face to the stone. As before stated, part of my present invention relates to a device for obviating the necessity of removing the entire frame when it is desired to alter the pattern or length of the stone, which device consists partly of skeleton frames, which may be carried by the bed-plate and back bases and to which face-plates may be easily and quickly attached and from which they may be easily and quickly removed.

In the construction I have provided frames of sufficient weight to impart the nec-

essary rigidity to the mold, and in said frames I provide rails or flanges 55, which extend longitudinally throughout the length of the frames at both top and bottom. The face-plates 61, the outer surfaces of which contact with the stone-forming matter, may be either plain or figured and are only of sufficient weight to retain their shape. Extending backwardly from said plates are lugs 56, having the lips 57, adapted to fit behind the rails 55. After each face-plate has been placed in its frame, which is preferably accomplished by sliding same in from one end of the frame, wedge-shaped keys 58 are placed between the lips 57 of lugs 56 and the rails 55 and forced snugly therebetween for the purpose of tightening the plate to the frame. In the skeleton frames I provide the vertical grooves 59, which extend downwardly a short distance from the top to receive the lugs 60, extending from the face-plates when said plates are in position on the frames. In lugs 60 are sockets 60', within which the fingers 62 on the division-plates 63 may fit for the purpose of anchoring said division-plates. Lugs 60 may be provided on both the front and back plates, if desired, or vertical slots may be provided in the back plate, within which the edge of the division-plate may fit. By having the division-plate thus carried by the face-plate a perfect alinement is had and the necessity for a perfect adjustment of the skeleton frame is obviated.

When it is desired to alter the pattern or length of the stone, the keys locking the face-plates to their frames are removed and the face-plate slipped out and another plate of a different pattern or length is inserted and fastened in the manner previously described. As I provide each of the frames with means for carrying these removable plates, an innumerable variety of stones may be formed by inserting different face-plates, and owing to the lightness of said plates the expense of securing such varieties is a great deal less than would be the expense of providing solid frames carrying the different patterns and being of different lengths.

While I have described and shown the opening and closing portions of my machine in combination with skeleton frames and removable plates, it can readily be seen that said opening and closing mechanism may be applied to the machines of the style previously in use and the skeleton frames and removable plates may be used in combination with machines not provided with my opening and closing device. I therefore do not wish to be understood as limiting myself to the exact combination for the reason stated.

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

1. In a device of the class described, a hori-

zontal bed-plate, gates adapted to cooperate with said bed-plate to form a mold-box, and an auxiliary base supporting a number of said gates and adapted to move horizontally at an angle to said bed-plate, for the purpose set forth.

2. In a device of the class described, a bed-plate, hinged front and end gates, a back gate adapted to move transversely in a plane parallel with said bed-plate, and means for moving said back gate forwardly and back to close and open the mold.

3. In a device of the class described, a bed-plate, a front gate hinged to said bed-plate and adapted to move vertically, a hinged end gate adapted to swing laterally, an auxiliary base, a back gate and an end gate carried by said base, and means for moving said base forwardly and back to open and close the mold-box.

4. In a device of the class described, a bed-plate, front and end gates hinged to said bed-plate, a back plate suitably mounted for lateral movement in a plane parallel with said bed-plate, and means for simultaneously moving said back plate laterally and swinging said end gate on its hinges, to open the mold-box.

5. In a device of the class described, the combination of frames arranged to form a mold-box, rails carried by said frames, face-plates supported on said frames and having lugs projecting over said frame-rails, flanges on and extending at an angle to said lugs and wedges fitting between said rails and flanges, substantially as and for the purpose set forth.

6. In a device of the class described, the combination with a bed-plate of skeleton frames adapted to cooperate with said bed-plate to form a mold-box, flanges on said frames, face-plates supported on said frames, lugs on said face-plates fitting over said frame-flanges, wedges adapted for insertion between said flanges and lugs, and a lip on one end of each of said wedges, substantially as and for the purpose set forth.

7. In a device of the class described, a bed-plate, a front gate suitably connected with the bed-plate, an end gate hinged to said bed-plate and adapted to swing laterally, a base adapted to move laterally in the plane of said bed-plate and carrying a back gate adapted to cooperate with said front and end gates in forming a mold-box, a rack on said base, a pinion pivoted to said bed-plate and engaging said rack, a lever-arm connected with said pinion, a second arm connecting said lever-arm and said end gate substantially as and for the purpose set forth.

8. In a device of the class described, a bed-plate, a suitable front gate, an end gate hinged to said bed-plate and adapted to swing laterally, a base carrying a back gate and adapted for direct lateral movement; an

arm carried by said base having a hooked flange at its end, and a lip on said end gate adapted to engage said hooked flange, substantially as and for the purpose set forth.

5 9. In a device of the class described, an L-shaped bed-plate, a front gate and an end gate hinged to said bed-plate, a base carrying a back gate and side L-gate, an end gate carried by said back gate, an L end gate carried
10 by said L side gate, and means for locking all of said gates together to form a mold-box.

10. In a device of the class described, a bed-plate carrying suitable front and end frames, an auxiliary base carrying a back and end
15 frame, a standard carried by said base and supporting an adjustable frame for forming a portion of an angling end frame, and an adjustable frame carried by the end gate and completing said end frame, substantially as
20 set forth.

11. In a device of the class described, the combination with the skeleton frames and removable face-plates of a division-plate and

means on said face-plates for carrying division-plates.

25 12. In a device of the class described, the combination with the skeleton frames and removable face-plates, of a division-plate, lugs on one of said face-plates having sockets therein, and fingers on said division-plates
30 adapted to fit in said sockets.

13. In a device of the class described, the combination of skeleton frames having vertical grooves, face-plates carried by said frames, lugs on said face-plates fitting within
35 said grooves and provided with sockets, a division-plate, and a finger on said division-plate fitting within the socket in one of said division-plate lugs, substantially as set forth.

In testimony whereof I affix my signature
40 in presence of two witnesses.

WALLACE G. TOWER.

Witnesses:

A. M. MAXWELL,
C. A. WELSH.