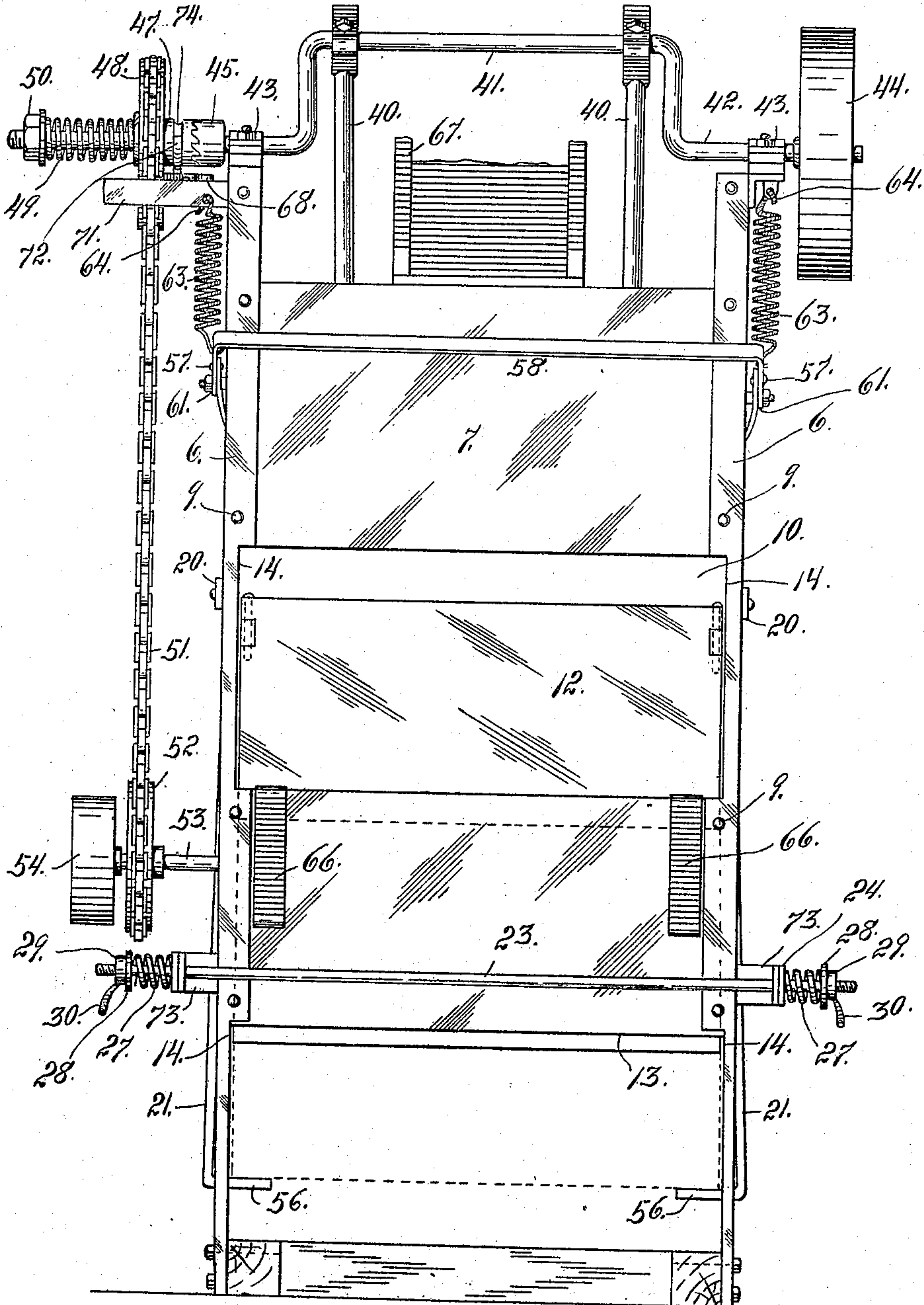


L. FLANAGAN.  
CONCRETE BLOCK MACHINE.  
APPLICATION FILED APR. 4, 1908.

920,851.

Patented May 4, 1909.

3 SHEETS—SHEET 1.



Witnesses  
Otto E. Haddock.  
Dena Nelson.

Fig. 1

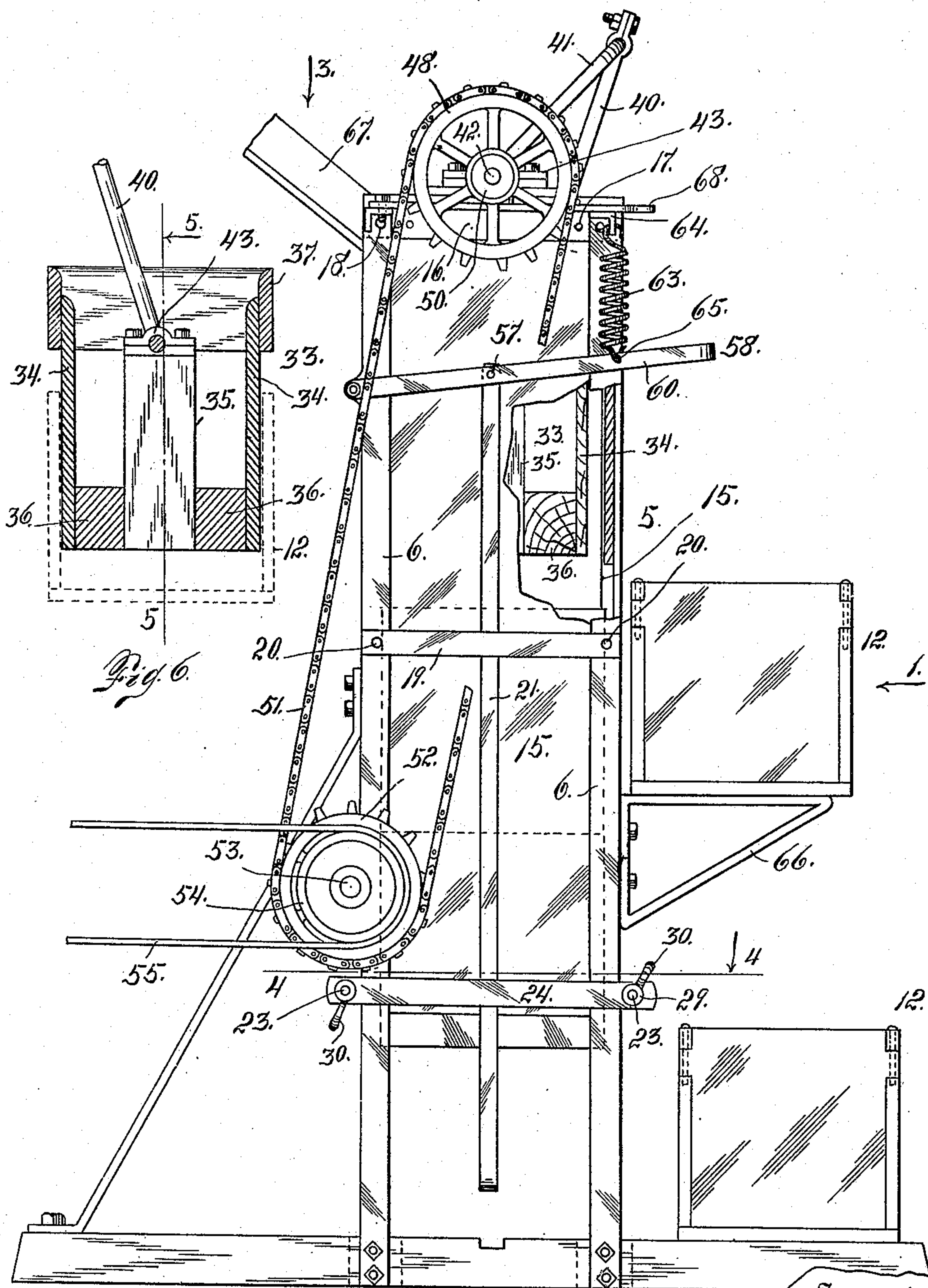
Inventor  
Lewis P. Flanagan.  
By: A. J. [Signature]  
Attorney

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Otho E. Haddock  
Dana Nelson.

Fig. 2

Inventor  
Lewis Flanagan.

By A. J. M. M. Attorney



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3 SHEETS—SHEET 3.

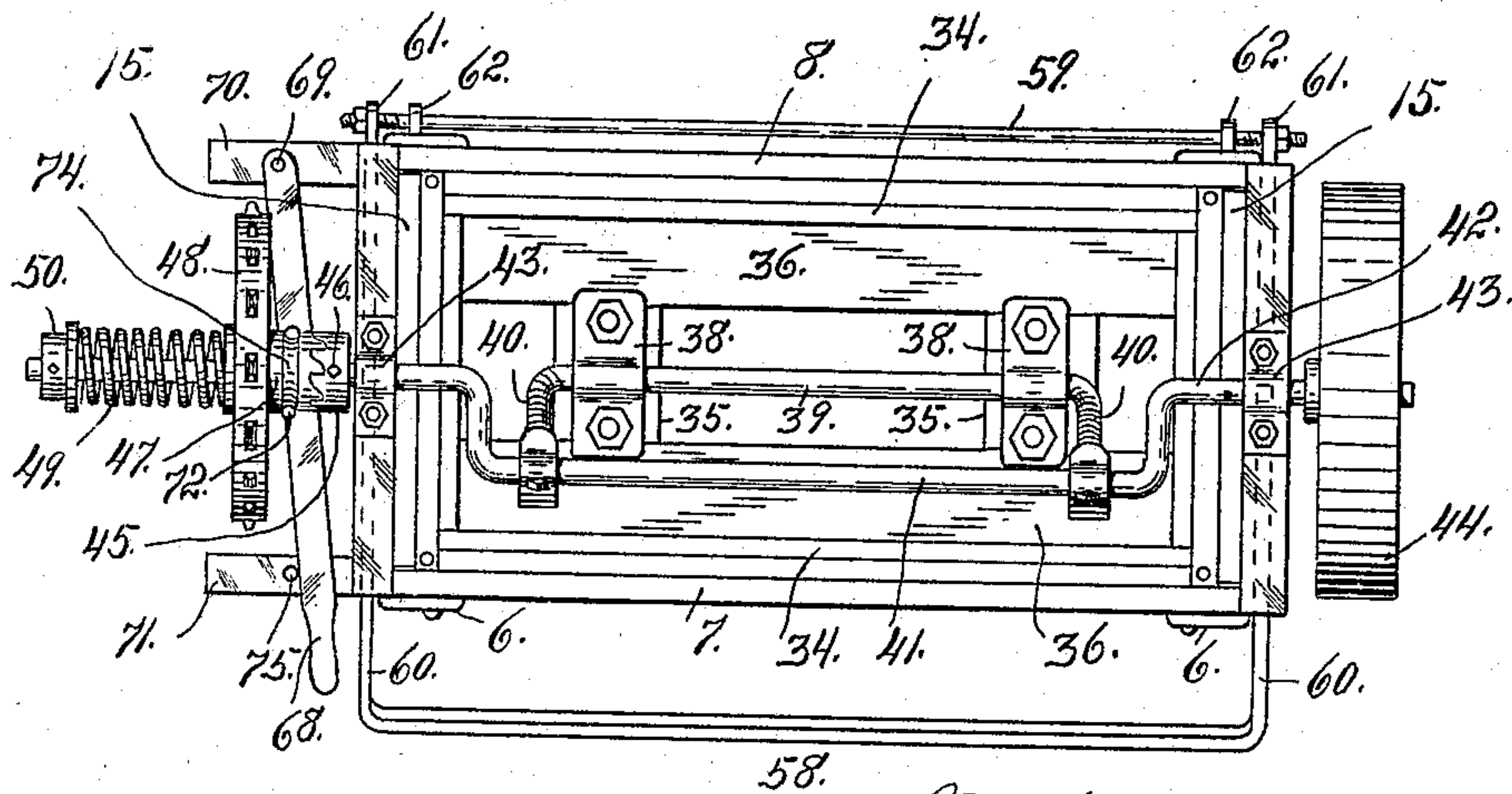


Fig. 3.

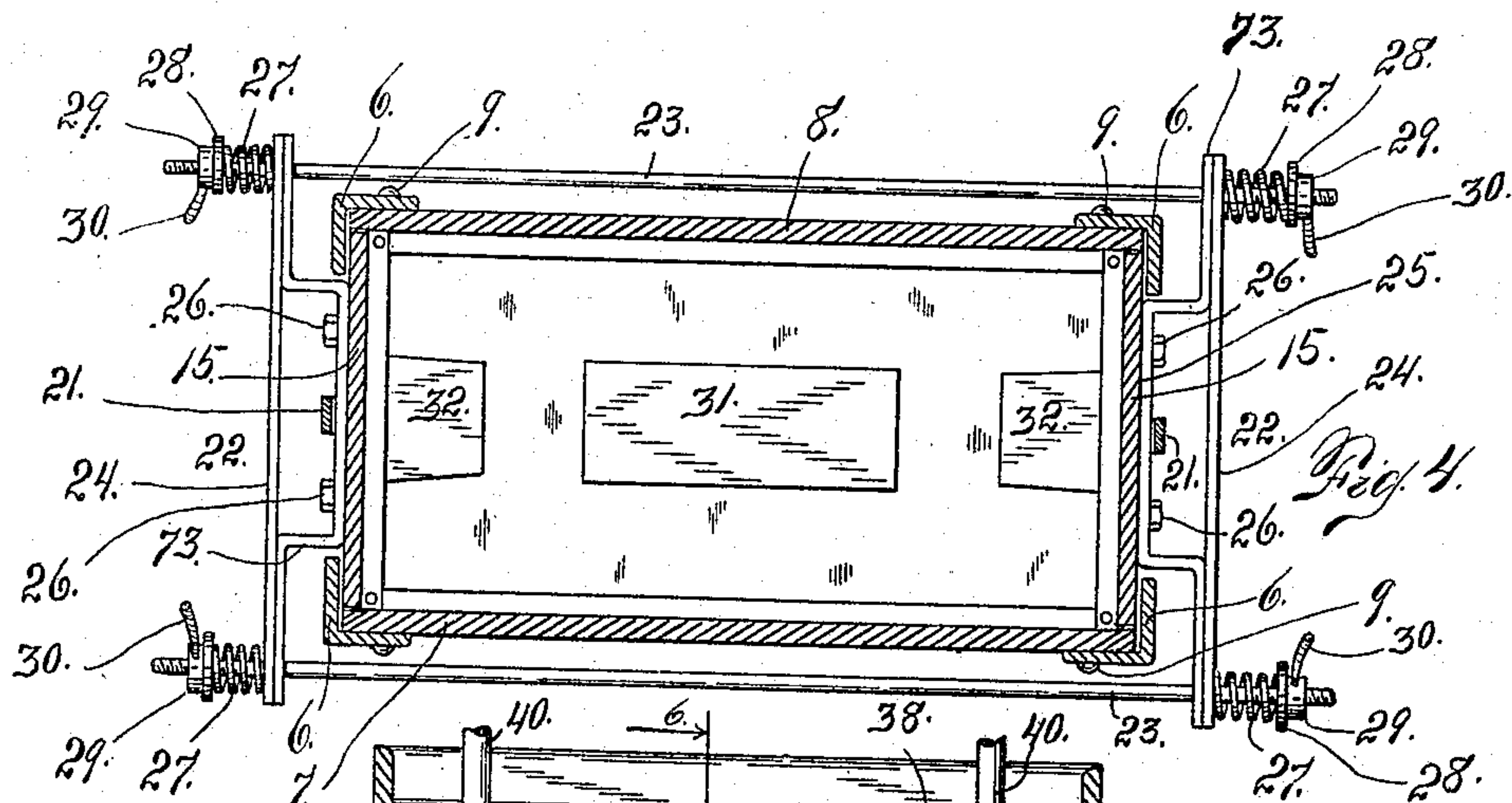


Fig. 4.

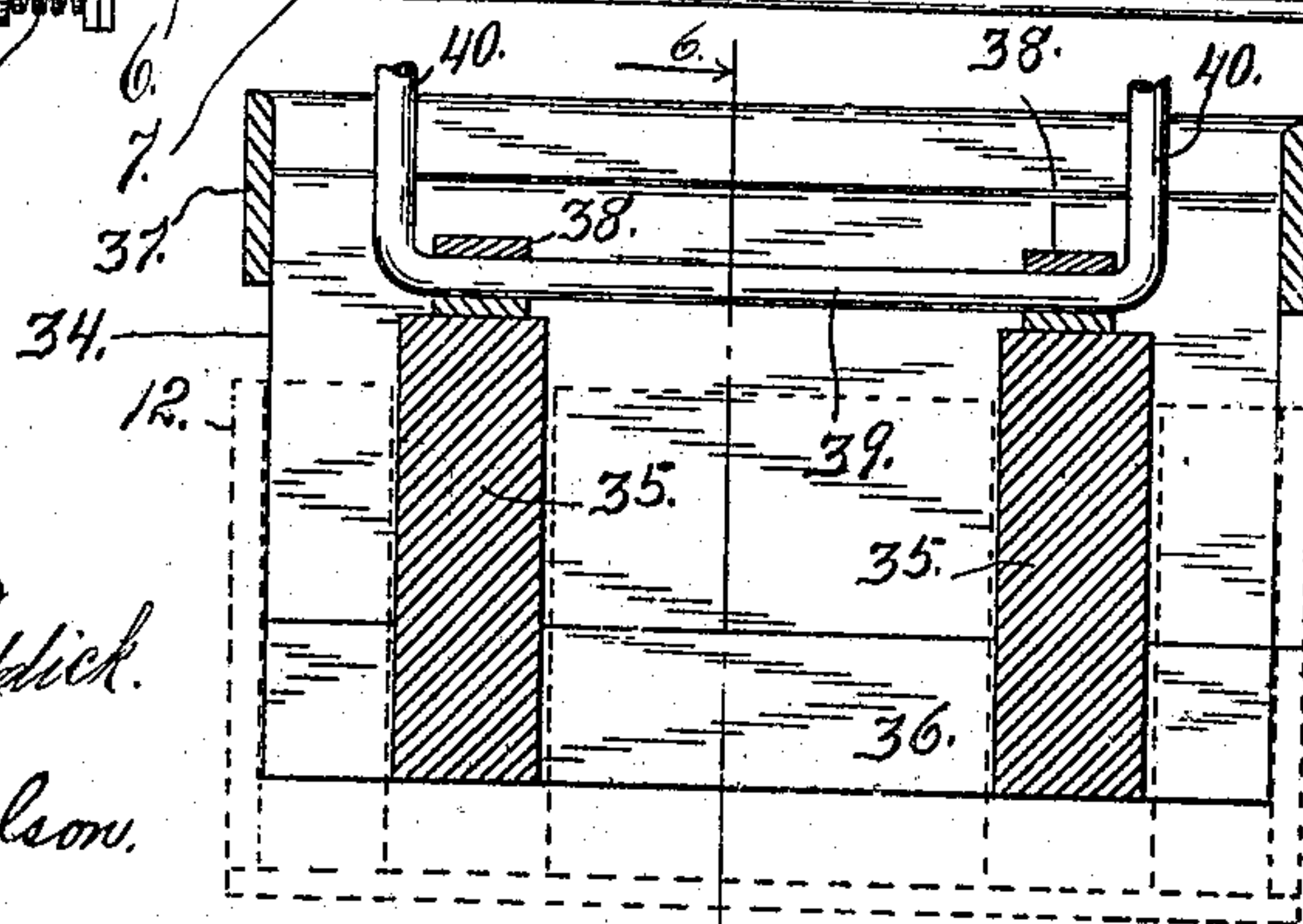


Fig. 5.

Witnesses  
Otto E. Haddick.  
Dena Nelson.

Inventor  
Lewis Flanagan.  
By *[Signature]*  
Attorney



# UNITED STATES PATENT OFFICE.

LEWIS FLANAGAN, OF DENVER, COLORADO.

## CONCRETE-BLOCK MACHINE.

No. 920,851.

Specification of Letters Patent.

Patented May 4, 1909.

Application filed April 4, 1908. Serial No. 425,145.

*To all whom it may concern:*

Be it known that I, LEWIS FLANAGAN, a citizen of the United States, residing in the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Concrete-Block Machines; 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 invention relates to machines for the manufacture of cement or concrete blocks.

In my improved construction I employ a reciprocating plunger or follower which acts to pack the material within the mold, and also to feed the latter vertically downwardly through the machine, two opposite walls of the machine being under sufficient tension, to maintain the mold in place except as it is forced downwardly by the plunger. The casing of the machine has an upper front opening into which the molds may be introduced and a lower front opening for removing the molds after they have been filled with the plastic material.

Having briefly outlined my improved construction, I will proceed to describe the same in detail reference being made to the accompanying drawing in which is illustrated an embodiment thereof.

In this drawing, Figure 1 is a front view of my improved machine or a view looking in the direction of arrow 1 Fig. 2. Fig. 2 is a side elevation of the same, parts being broken away and parts sectionized. Fig. 3 is a top plan view of the machine. Fig. 4 is a section taken on the line 4—4 Fig. 1 looking downwardly. Fig. 5 is a vertical section taken through the plunger, the cooperating mold being indicated by dotted lines. Fig. 6 is a vertical section taken on the line 6—6 Fig. 5.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate an upright casing which as shown in the drawing is rectangular in cross section and provided at its corners with vertically disposed angle bars 6 to which are secured front and rear walls 7 and 8 by means of suitable fastening devices 9. The front wall is provided with an upper opening 10 for the introduction of the mold

or box 12; while the lower portion of the wall is provided with an opening 13 for the removal of the said box or mold after it has been filled with the cement, concrete or other plastic material. Where these openings are located, the front flanges of the angle bars are cut away as shown at 14, so that the mold may be of a size to fit closely between the side walls 15 of the casing. These side walls are attached to the frame at their upper extremities in any suitable manner. As shown in the drawing (see Fig. 2), the side wall is secured to a top piece 16 by means of fastening devices 17. This top piece is attached to the angle bars at the top as shown at 18, the ends of the piece 16 projecting inside of the side flanges of the angle bars as indicated by dotted lines.

About midway of the casing on each side, transverse pieces 19 are secured to the corner angle bars by fastening devices 20. These transverse pieces bear against side suspension rods 21 which engage the side walls 15 on the outside. The pieces 19 thus exercise a certain degree of pressure upon the side walls below the top. At the lower extremities of these side walls, tension devices 22 mounted upon rods 23, are employed to impart to the loose depending side walls the necessary tension for retaining the molds in place until moved downwardly by the plunger as hereinafter described. Each of these tension devices includes two bars 73 and 24, the bar 73 being bent inwardly to engagement with the side walls 15 as shown at 25 and secured thereto by bolts 26. Each bar 24 is straight and engages its cooperating bar 73 at the extremities of the latter where both are slidably mounted upon the rods 23 and engaged by coil springs 27 whose outer extremities engage washers 28 which are forced against the springs by tension nuts 29 provided with operating arms 30. There is one of these tension devices on each side of the machine and as they are identical in every respect, a description of one is a description of both. It is evident that by adjusting the nuts 29, the springs 27 may be given any desired tension which acting on the side walls 15 through the bars 73 and 24, impart to the side walls the necessary yielding pressure for supporting the molds or boxes 12 in position within the casing until they are forced downwardly either by the direct action of the plunger or by the molds or boxes above, the uppermost of these



molds being always acted upon by the plunger. As shown in the drawing the mold is provided with three core pieces, one being centrally located and designated 31, the others being located at opposite sides and each designated 32. The mold, however, may be of any suitable construction. If it is desired to form the blocks hollow as is usual, a suitable core or cores must be employed.

The plunger which is designated in its entirety by the reference numeral 33, forms at the same time both a feed hopper and a device for packing the concrete or other plastic material into the mold and simultaneously feeding or forcing the latter downwardly within the casing. This plunger is provided with side walls 34, two upright interiorly located members 35 and bottom members 36 located on opposite sides of the members 35. The members 35 and 36 are so arranged that when the plunger enters the mold 12, the said members fill the spaces within the mold between and around the cores 31 and 32. It will thus be observed that when the plunger is above the cores, it is provided with openings having an area equal to that of the mold cores and as the material is fed into the plunger when the latter is above the mold, the said material passes through the said openings into the mold which is supported below as hereinafter explained. In Figs. 5 and 6, the mold is indicated by dotted lines and from this it will be understood that the sides of the plunger are adapted to enter the mold in which they fit closely. To the top of the plunger and surrounding the same, an extension 37 is secured. This extension is in alinement with the mold, and engages the upper edge of the latter when the bottom of the plunger is in engagement with the bottom of the mold.

To the top of the plunger members 35 are secured boxes 38 in which is journaled a shaft 39 which as shown in the drawing is formed integral with two pitmen 40 whose outer extremities are connected with the crank 41 of a shaft 42 whose opposite extremities are journaled in boxes 43 secured to the top of the casing.

To one extremity of the crank shaft is made fast a fly wheel 44. To the opposite extremity of the crank shaft is made fast a clutch member 45 by means of a fastening device 46. A cooperating clutch member 47 is made fast to a sprocket wheel 48, the latter as well as the clutch member being normally loose upon the crank shaft. Outside of the sprocket wheel and also mounted upon the crank shaft is a coil spring 49 acted upon by a tension nut 50. The tension of this spring is normally such as to hold the clutch member 47 in operative engagement with its cooperating member 45. The sprocket wheel 48 is connected by a chain 51 with a sprocket

52 fast on a shaft 53 journaled in the casing. Upon this shaft is also mounted and made fast an operating pulley 54 which may be connected by means of a belt 55 with a line shaft or any suitable motor (not shown).

There are two suspension rods 21 each of which is provided at its lower extremity with an inwardly bent hook or member 56. The upper extremities of these rods are connected as shown at 57 with a U-shaped handle 58 whose arms 60 are pivotally connected with a rod 59 as shown at 61, the said rod being mounted in apertured ears 62 formed upon the two rear angle bars 6. The handle 58 is supported forward of its connection with the rods 21 by means of coil springs 63 one being located on each side of the machine, their upper extremities being connected with the machine as shown at 64 and their lower extremities with the handle arms 60 as shown at 65. These springs support the handle 58 in such a position that the hook extremities 56 of the suspension rods 21 are supported some distance above the bottom of the casing (see Figs. 1 and 2), thus forming a yielding support for the lowermost mold as the latter is forced downwardly by the molds above. As soon as the mold comes in contact with the hooks 56, the operator by pressing downwardly upon the handle 58, may lower the same to the bottom of the casing and remove it through the opening 13, before the next mold is in position to engage the suspension rods. By virtue of this arrangement, there is no danger of an accident by reason of having the casing filled with molds, whereby the plunger would not have room for its downward movement without breaking some of the apparatus. As soon as the attendant observes by the action of the handle, that one of the molds is in engagement with the rod extremities 56, he knows that it is time to remove the mold and presses downwardly on the handle as heretofore explained.

From the foregoing description the use and operation of my improved machine will be readily understood. The front side of the machine is equipped with a pair of brackets 66, which form a support for one of the mold boxes 12. These brackets support the mold box directly in front of the opening 10 formed in the front wall of the casing. When it is desired to introduce the mold into the casing, the mold is simply forced inwardly from the bracket 66 through the opening 10 where by it assumes its position between the tension-controlled side walls 15. As soon as the mold is in the casing, the plastic material as cement or concrete, is fed into the machine through a chute 67, being delivered to the hollow plunger 33 and passing through the core openings therein, falls downwardly into the mold box which is directly beneath the plunger. In order to operate the plunger, motion is transmitted to the pulley 54 and



the shaft 53, whence it is communicated to the crank shaft 42 through the medium of sprocket wheels 52 and 48 and the clutch members 47 and 45. Every time the plunger descends, it enters a mold box 12 and has a stroke sufficient to reach the bottom of the box when the latter is first introduced as heretofore explained. However, as the plastic material as cement or concrete passes through the plunger into the box, the said material forms a stop above the bottom of the mold box, with the result that the latter is forced downwardly by the plunger a distance equal to the depth of the material within the box. As this operation is continued, the plunger continues to engage the material in the box forcing the latter downwardly a certain distance every time the plunger descends, until the box is filled, the plunger having served to pack the material therein. As soon as this occurs, another mold box is introduced in the manner heretofore explained, the second box occupying a position directly above the filled box, after which the operation is continued, each successive box, serving as it moves downwardly under the influence of the plunger, to drive the box next below downwardly until the lowermost box reaches the hooked extremities 56 of the suspension rods, when the operator thrusts the handle 58 downwardly, lowering the lowermost box into position to be removed through the front opening 13.

When for any reason it is desired to stop the movement of the plunger, the loose clutch member 47 is disengaged from the fast clutch member 45, by means of an operating lever arm 68 fulcrumed at 69 upon a top projection 70. This lever arm rests upon a similar top projection 71 and may be thrust outwardly or toward the left as shown in Fig. 1 and is operatively connected with the clutch member 47, to disengage the latter from the clutch member 45. For this purpose, the lever is provided with upwardly projecting arms 72 which engage a circumferential groove 74 formed in the clutch member 47. The lever 68 when the crank shaft is in motion, occupies a position on the right (see Figs. 1 and 3) of a stop pin 75. This lever arm has sufficient vertical movement to permit it to be lifted over the stop pin when disengaging the clutch members whereby it may be caused to occupy a position on the left of the pin which holds the lever in the adjusted position whereby the clutch members are disengaged to stop the movement of the plunger. When it is desired to operate the plunger again, the position of the lever arm is reversed by lifting it over the stop pin and placing it in the position illustrated in Figs. 1 and 3.

The side walls 15 of the casing while at-

tached to the upper extremity thereof are of such length that they may be pressed inwardly by the tension devices heretofore described in order to maintain the molds in place until they are fed downwardly by the plunger as heretofore explained. In other words there is sufficient spring or yielding capacity to these side walls to allow them to perform the function heretofore attributed to them.

Having thus described my invention, what I claim is:

1. In a machine of the class described, the combination with an upright casing, of a mold adapted to enter the casing and normally maintained in a predetermined position, the mold, however, being capable of downward movement in response to force applied from above, a plunger mounted to reciprocate within the casing and enter the mold, means extending along the sides of the machine and adapted to receive the mold as it leaves the casing and means for feeding material into the mold, the arrangement being such that as the depth of material increases within the mold, the latter is fed downwardly in response to the action of the plunger, substantially as described.

2. The combination with an upright casing, of yieldingly retained casing sides spring-retained vertically disposed suspension rods mounted on opposite sides of the casing, a mold adapted to enter the casing and engage the said sides, the lower extremities of the suspension rods being inwardly turned to engage the mold as the latter is fed downwardly, and means for actuating the mold within the casing whereby it is moved downwardly into engagement with the inwardly-turned extremities of the suspension rods, substantially as described.

3. The combination with an upright casing, of spring retained vertically disposed suspension rods mounted on opposite sides of the casing, a mold adapted to enter the casing and engaging its sides, and means actuating the mold within the casing whereby it is moved downwardly into engagement with the lower extremities of the suspension rods, substantially as described.

4. The combination with an upright casing, of spring retained suspension rods mounted on the sides of the casing, a mold adapted to enter the casing, and means for actuating molds within the casing whereby it is moved downwardly into engagement with the rods, substantially as described.

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

LEWIS FLANAGAN.

Witnesses:

A. J. O'BRIEN,  
DENA NELSON.