

No. 786,566.

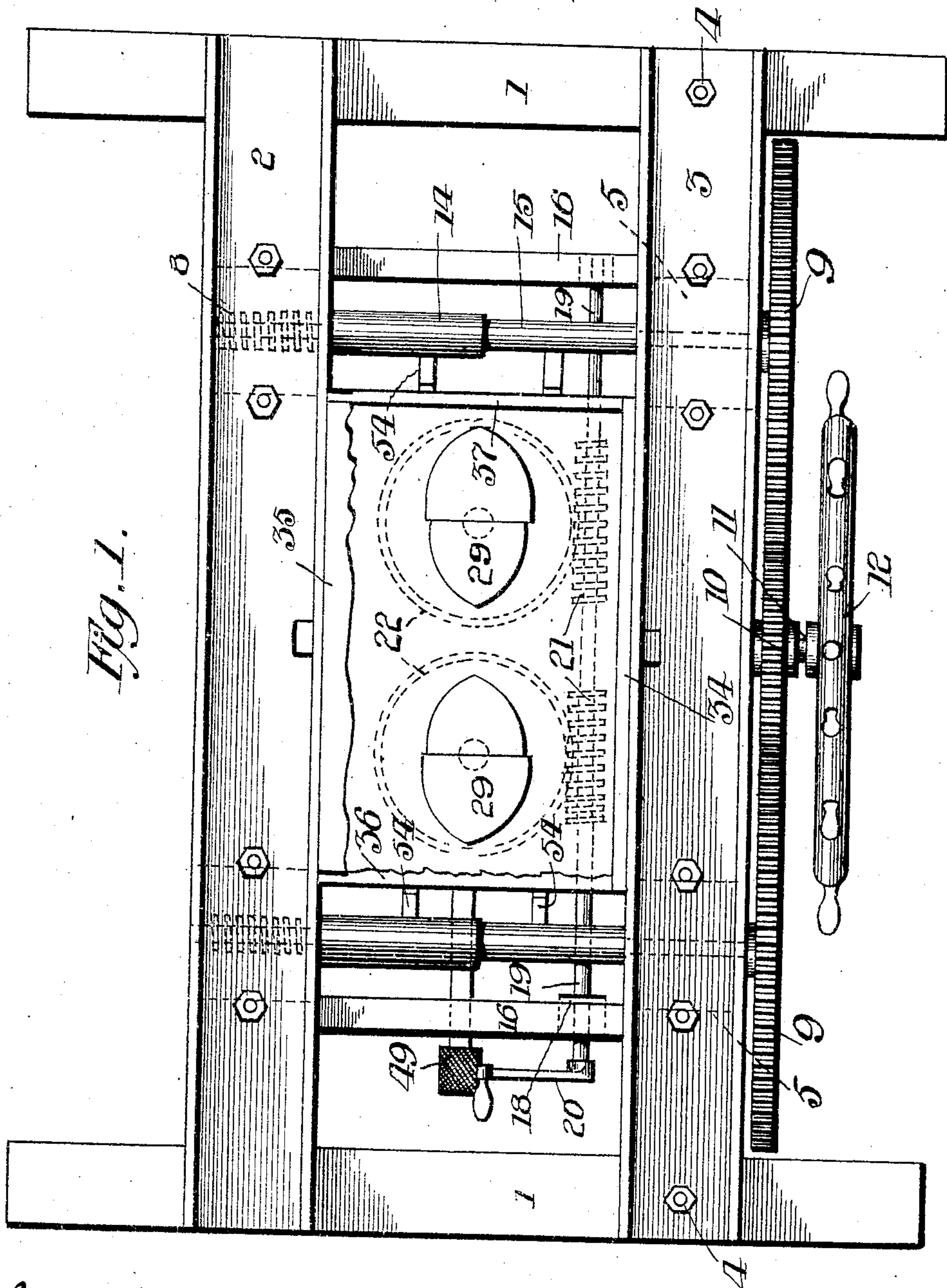
PATENTED APR. 4, 1905.

W. G. HUGHES.

APPARATUS FOR MAKING HOLLOW CONCRETE BLOCKS.

APPLICATION FILED DEC. 21, 1903. RENEWED AUG. 22, 1904.

3 SHEETS—SHEET 1.



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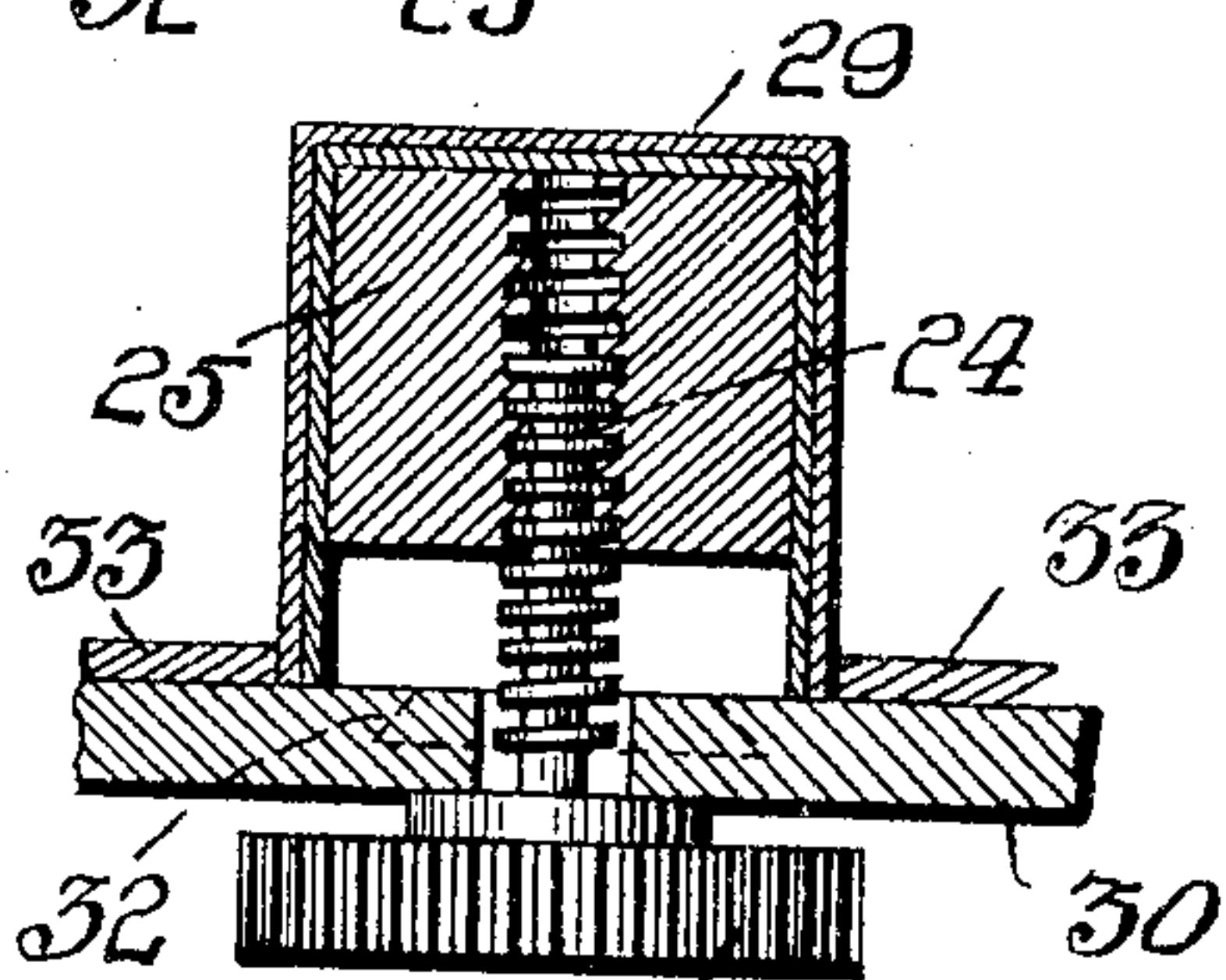
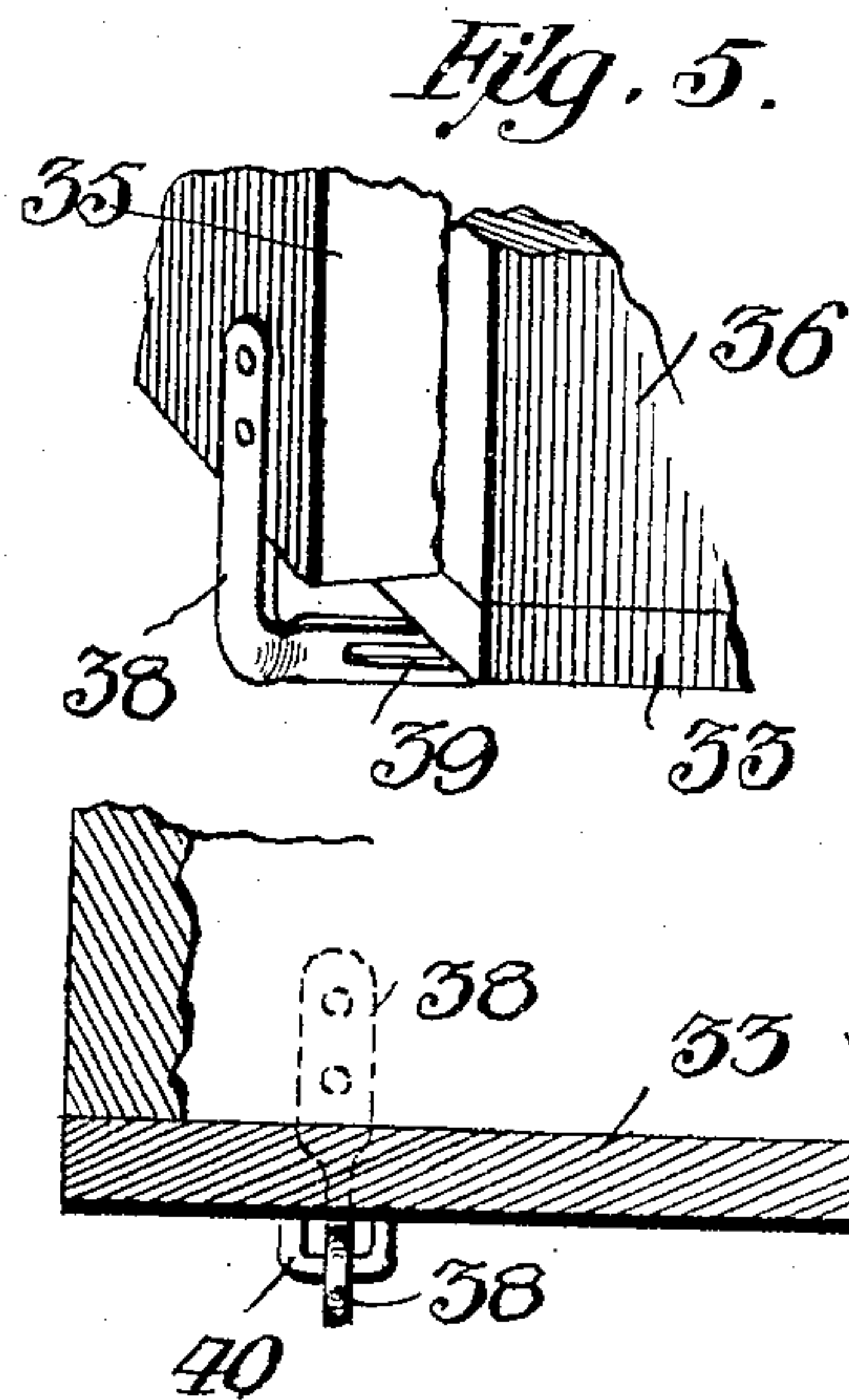
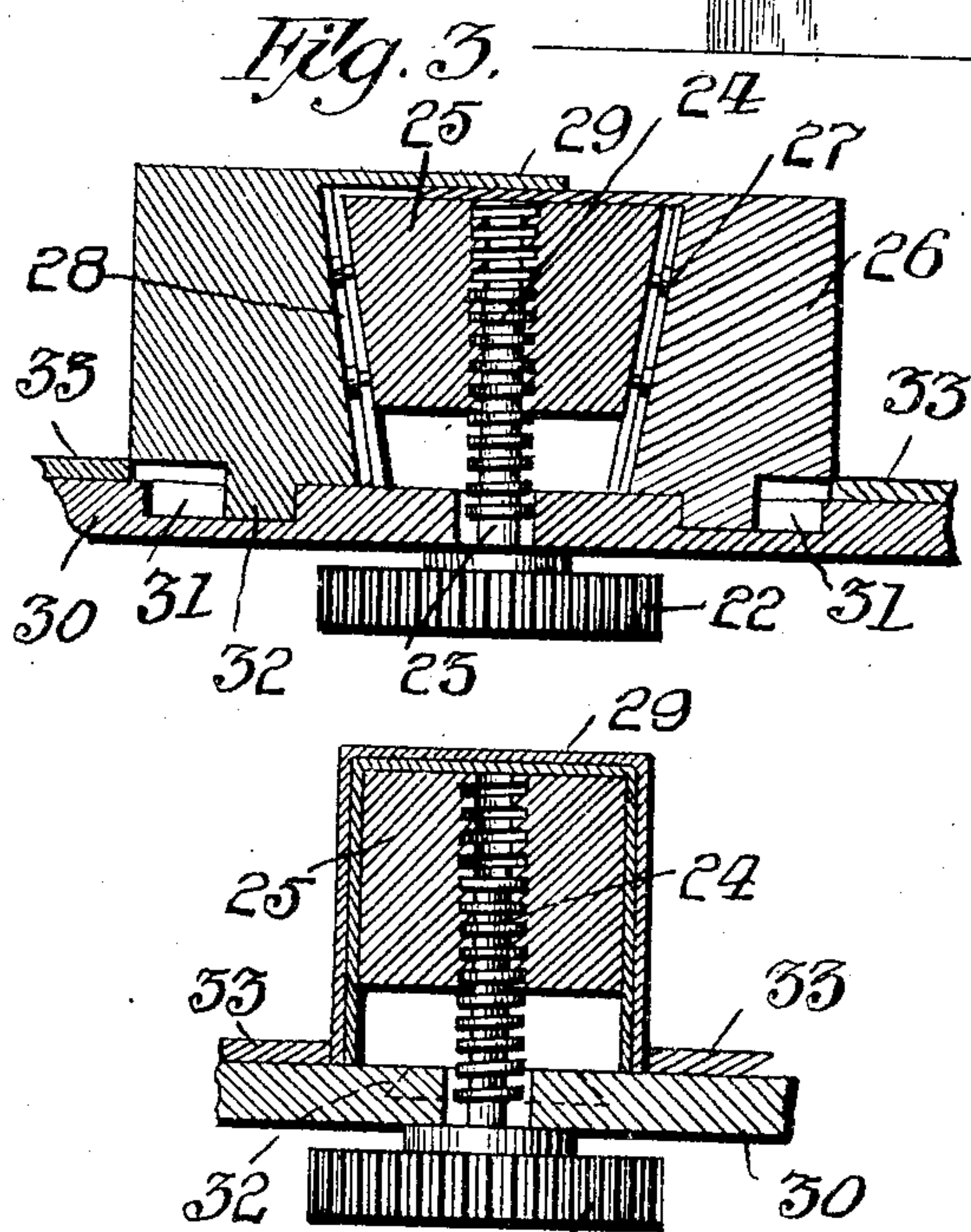
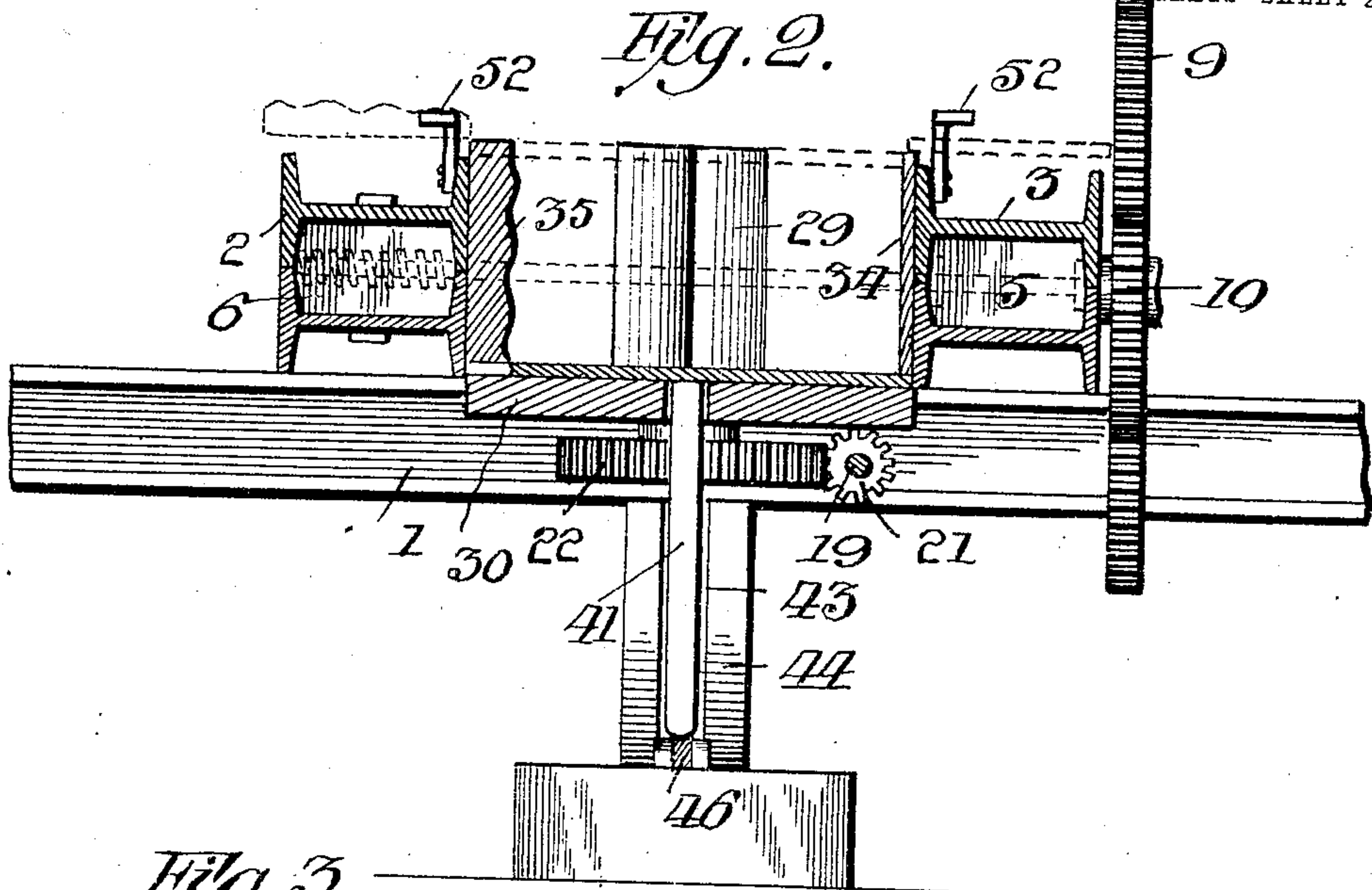


Fig. 6.

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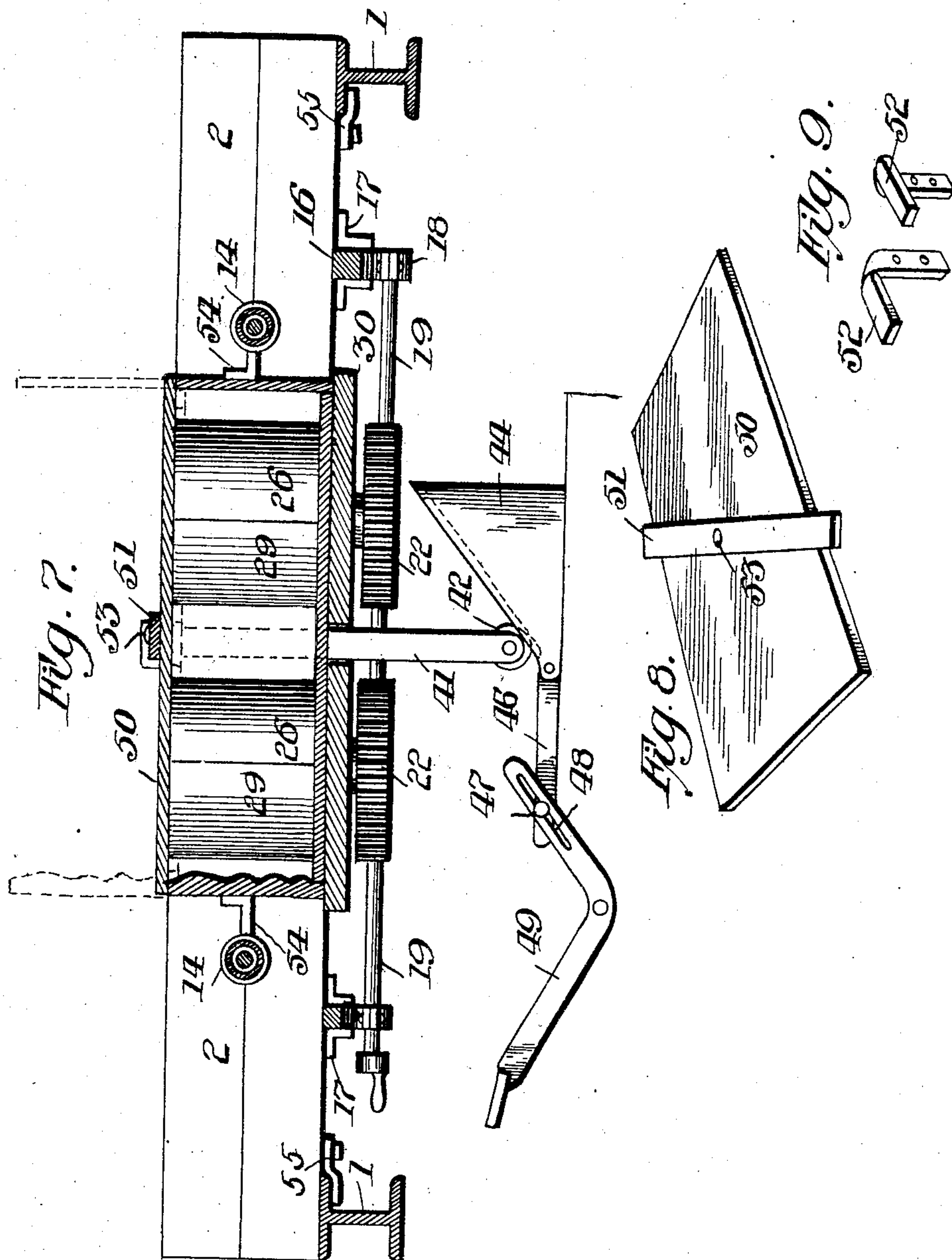
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APPLICATION FILED DEC. 21, 1903. RENEWED AUG. 22, 1904.

3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR MAKING HOLLOW CONCRETE BLOCKS.

SPECIFICATION forming part of Letters Patent No. 786,566, dated April 4, 1905.

Application filed December 21, 1903. Renewed August 22, 1904. Serial No. 221,704.

To all whom it may concern:

Be it known that I, WILLIAM G. HUGHES, a citizen of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Making Hollow Concrete Blocks, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in apparatus for making hollow concrete building-blocks; and the invention has for its object the provision of means for the molding of a block and the compression of the material within the mold, whereby to solidify the same, and the provision of novel means for the removal of the completed block from the mold.

A further object of the invention is to provide a device in which no tamping of the material is required to solidify the same, thus materially facilitating the manufacture of the blocks.

The invention resides in the novel construction, combination, and arrangement of parts to be hereinafter more fully described, and specifically pointed out in the claims.

In describing the invention in detail reference is had to the accompanying drawings, forming a part of this application, and wherein like numerals of reference indicate like parts throughout the several views, in which—

Figure 1 is a top plan view of my improved apparatus. Fig. 2 is a transverse vertical sectional view. Fig. 3 is a longitudinal sectional view of the core and expanding means therefor. Fig. 4 is a transverse vertical sectional view of the core. Fig. 5 is a detail perspective view of a part of the mold. Fig. 6 is a sectional view of a part of the mold. Fig. 7 is a longitudinal sectional view of the device. Fig. 8 is a detached detail perspective view of the lid or cover for the mold. Fig. 9 is a detached detail perspective view of the clips which hold the lid or cover in position on the mold.

My invention aims to provide a device of comparatively simple and inexpensive con-

struction which embodies a framework preferably made of structural I-beams. In this framework is mounted a mold in which the hollow concrete blocks are formed, this mold being of such construction that one of the side walls and one of the end walls thereof are movable toward the other side wall and other end wall, respectively, whereby to compress the material in the mold. Means is provided for the actuation of these two movable walls. Means is also provided in the interior of the mold for the purpose of producing cavities in the blocks, this latter means also serving as a compressor to solidify the material. Means is also provided for elevating the mold, so as to remove the block from the cores in the mold and for permitting a ready removal of the finished block.

The construction as outlined above will now be described in detail, the form of apparatus embodying the same being shown in the accompanying drawings.

1 represents a pair of structural I-beams, which are adapted to be supported in any suitable manner, and on these I-beams I mount the framework of the apparatus, which consists of two pairs of structural I-beams 2 and 3, that are placed parallel, the beams of each pair having their flanges abutting, as seen in Figs. 2 and 7. The I-beams 3 are securely bolted or otherwise fastened, as at 4, to the I-beams 1, the I-beams 2 being unsecured to said I-beams 1 in order that they may be moved toward the I-beams 3, as will hereinafter more fully appear. Arranged between the webs of the I-beams 3 are blocks 5, and arranged between the webs of the I-beams 2 are like blocks 6. Journaled in the blocks 5 are shafts 7, which extend into the blocks 6 and have screw-threaded ends 8 working in said blocks 6. On the other ends of the shafts are gears 9, which mesh with the gear 10, carried on the stub-shaft 11, suitably secured in the I-beams 3, this stub-shaft 11 carrying a suitable operating-wheel 12. The I-beams 2 being unsecured to the I-beams 1, they are held against longitudinal movement by means of telescoping sleeves 14 15, surrounding the shafts 7, the sleeve 14 being secured to the

I-beams 2 and the sleeves 15 to the I-beams 3, the said sleeves 15 telescoping into the sleeves 14. Connected at their ends to the I-beams 3 are cross-bars 16, which at their other ends are received in brackets 17, carried by the I-beams 2 on the underneath face thereof. These cross-bars 16 carry bearings 18, in which the core-operating shaft 19 is journaled and is provided on its one end with a suitable crank 20. This shaft 19 is provided intermediate its ends with worms 21, which are adapted to mesh with the pinions or gears 22, carried on the lower ends of the worm-shafts 23, the worm portions 24 of said shafts engaging wedge-shaped expansion-blocks 25, which are arranged within the wedge-shaped recess between the two members of the expanding core 26. The expansion-blocks 25 connect the two members of the core 26 together by providing the expansion-blocks 25 with headed studs or pins 27, which work in T-shaped grooves 28, provided therefor on the inner faces of the two members of the core. Each member of the core carries an extending lip or plate 29 on its upper face, one of the plates overlapping the other, whereby to cover up the expansion-block and prevent the material from entering the recess in the core to prevent a perfect working of the latter. The two members of the core 26 work in the bed-plate 30, the latter being provided with a dovetailed groove 31 to receive the dovetailed tenon 32, formed on the two members of the expansible core. Mounted on this bed-plate is a mold or box in which the block is formed and which comprises a bottom 33, side walls 34 35, and end walls 36 37. The side wall 34 and end wall 37 are made movable only on their hinges, while end wall 36 and side wall 35 are movable inwardly, the side wall 35 toward the opposite side wall and the end wall 36 toward the opposite end wall. Either the end wall 36 or the side wall 35, or both, is made with a roughened interior face to impart a like exterior to the finished block. I also provide means whereby when the mold is raised either the side walls or end walls will fall away from the block in order to permit the ready removal of the latter. In the present illustration I have shown a device in which the side wall 35 and end wall 36 are movable toward the opposite side wall and end wall, and a special means of connecting the side wall and end wall to the bottom must of necessity be provided. To this end I provide the angle-strap 38, one leg or arm of which is rigidly attached to the side wall 35 and the other leg or arm of which has a slot 39 to work in the staple 40, secured in the underneath face of the bottom 33. One of these hinges is secured near each end of the side wall 35. The end wall 36 is similarly connected, so that it may be moved in toward the opposite end wall. The side wall 34 and end wall 37 may be connected to the bottom

by a like form of hinge, or an ordinary hinge connection may be employed therefor.

In order to remove the finished block from the mold, the latter is elevated, so as to clear the core, the latter being contracted prior to the elevation of the mold and the bottom of the mold being cut out, so as to clear the core as it is being elevated. The mold is elevated by means of the arm 41, connected to the bottom of the mold and having a wheel 42 at its lower end to travel in the groove or way 43, provided therefor in the wedge-shaped block or cam 44, which operates on a suitable support 45. Connected to the end of this wedge-shaped block or cam 44 is a link 46, having a headed pin or stud 47, which works in the slot 48, provided therefor in the treadle 49, pivoted at a suitable point convenient for operation. Before operating the gears to solidify the material in the mold the lid or cover 50 is placed on the top of the mold and held in position by the cross-bar 51, the ends of which are engaged under hooks 52, carried by the I-beams 2 and 3, the said hooks being fastened in opposite directions, whereby as the bar 51 is turned on its pivot 53 it may be engaged underneath both of the hooks or disengaged therefrom.

As shown in Fig. 1, the apparatus is in position for the concrete to be placed in the mold to be formed into a block. When the material has been placed in the mold, the lid or cover 50 is placed on the top of the mold and the wheel 12 is then turned so that the worms 8 operate in their blocks 5 to move I-beams 2 toward I-beams 3, and thus force side wall 35 inwardly toward side wall 34, compressing the material in the mold. The material is further compressed by turning the crank 20 to operate shaft 19, causing the worm 21 to turn pinion 22 and cause worm 24 to draw expanding block 25 forwardly and expand the sections of the core 26. When the material has been sufficiently compressed and solidified, the sections of the core are retracted, wheel 12 operated to return I-beams 2 and side walls 35 to their normal position, and treadle 49 then depressed, so as to cause wedge block or cam 44, through the medium of the arm 41, to elevate the mold to the position which is shown in dotted lines in Fig. 7, and the side walls being hinged will drop down by gravity, so as to permit of the ready removal of the compressed and finished block.

In practice I preferably secure braces 54 to the telescoping sleeves 14 15, which abut against the end walls, but are not connected thereto, and serve to brace these walls against the expanding pressure of the cores when the latter are operated. To prevent the lifting of the I-beams 2 as they are moved laterally, I provide the same with clips 55 to engage under a flange of the I-beams 1, as seen in Fig. 7.

It will be obvious that various slight changes

may be made in the details of construction without departing from the general spirit of my invention.

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

1. In an apparatus of the class described, a framework embodying side rails, one of which is movable and the other of which is stationary, means for actuating the movable side rail, a mold having a hinged side wall, expansible cores arranged in said mold, and means for expanding said cores, substantially as described.

2. In an apparatus of the type described, supporting-beams, and side rails one of which side rails being movable toward the other side rail, means for actuating the movable side rail, a mold having a side wall movable in unison with the movable side rail, expansible cores arranged in said mold, and means for expanding said cores, substantially as described.

3. In an apparatus for making hollow concrete blocks, the combination with supporting-beams, of a pair of structural I-beams mounted thereon, one of said I-beams being rigidly secured and the other of said I-beams being movable toward and away from the

rigid beam, a mold arranged between the I-beams and having a hinged side wall, means for actuating the movable side rail, expansible cores within the mold, and means for expanding said cores, substantially as described.

4. In an apparatus of the type described, the combination with a supporting-frame having a movable side rail, of a mold supported by the frame and having a movable side wall actuated by the said rail, expansible cores in said mold, means for expanding said cores, and means for elevating the mold above the cores to permit the removal of the finished block, substantially as described.

5. In an apparatus of the type described, a frame embodying a pair of side rails one of which is movable away from and toward the other side rail, means for operating said movable side rail, a mold, expansible cores within said mold, means for expanding and retracting said cores, and means for elevating the mold above the cores to permit the removal of the finished block, substantially as described.

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

WILLIAM G. HUGHES.

Witnesses:

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E. E. POTTER.