

No. 791,612.

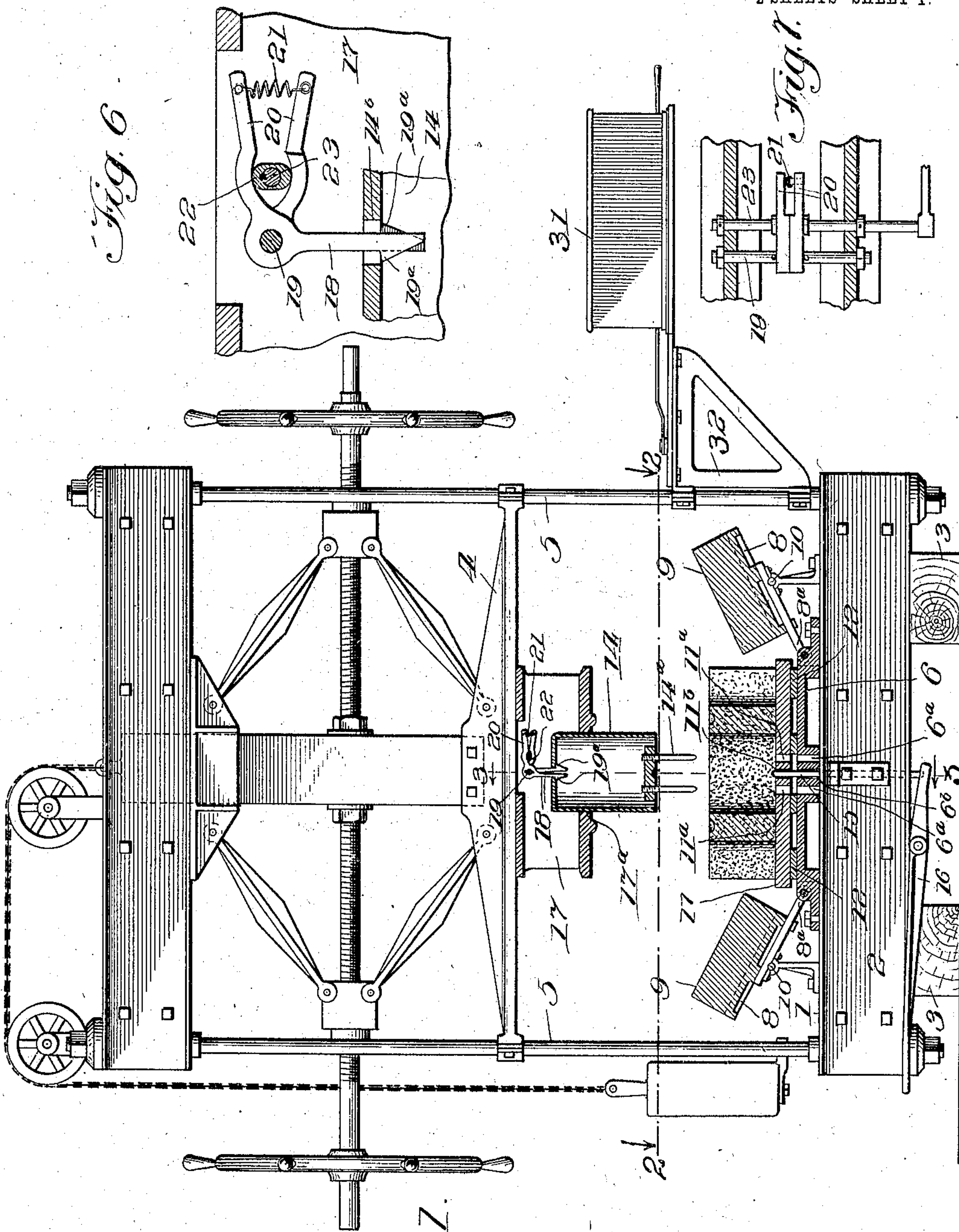
PATENTED JUNE 6, 1905.

W. L. DOW.

MACHINE FOR MAKING CONCRETE BUILDING BLOCKS.

APPLICATION FILED JULY 6, 1904.

2 SHEETS—SHEET 1.



Witnesses:
H. S. Galtner
Fred G. Fischer

Fig. 1.

Inventor.
Wallace L. Dow
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his attorneys

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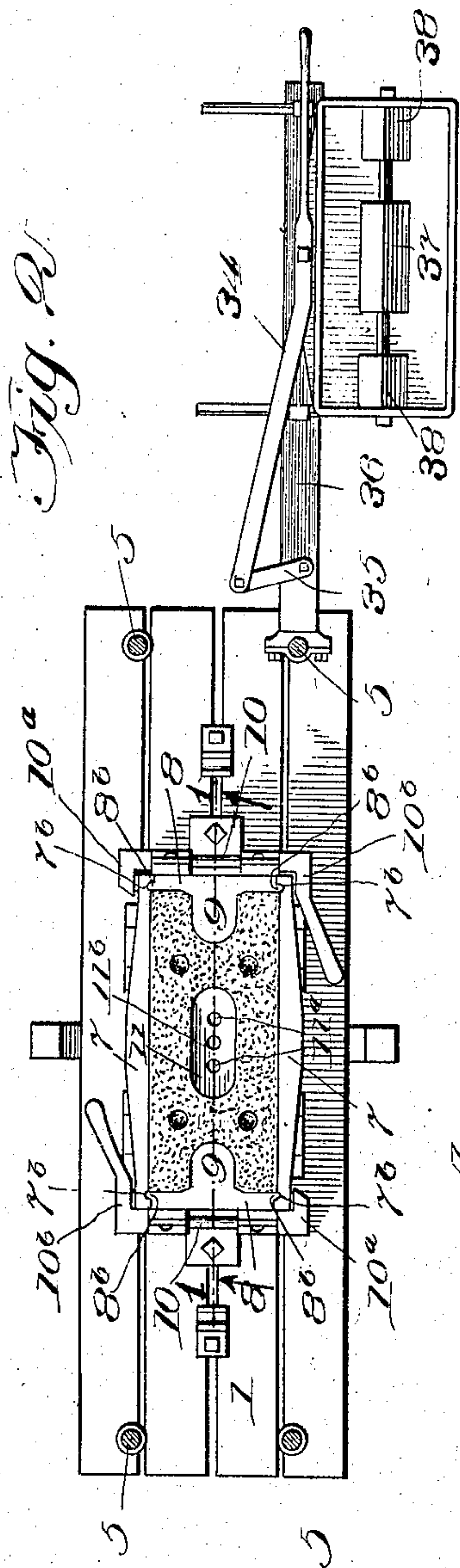


Fig. 4.

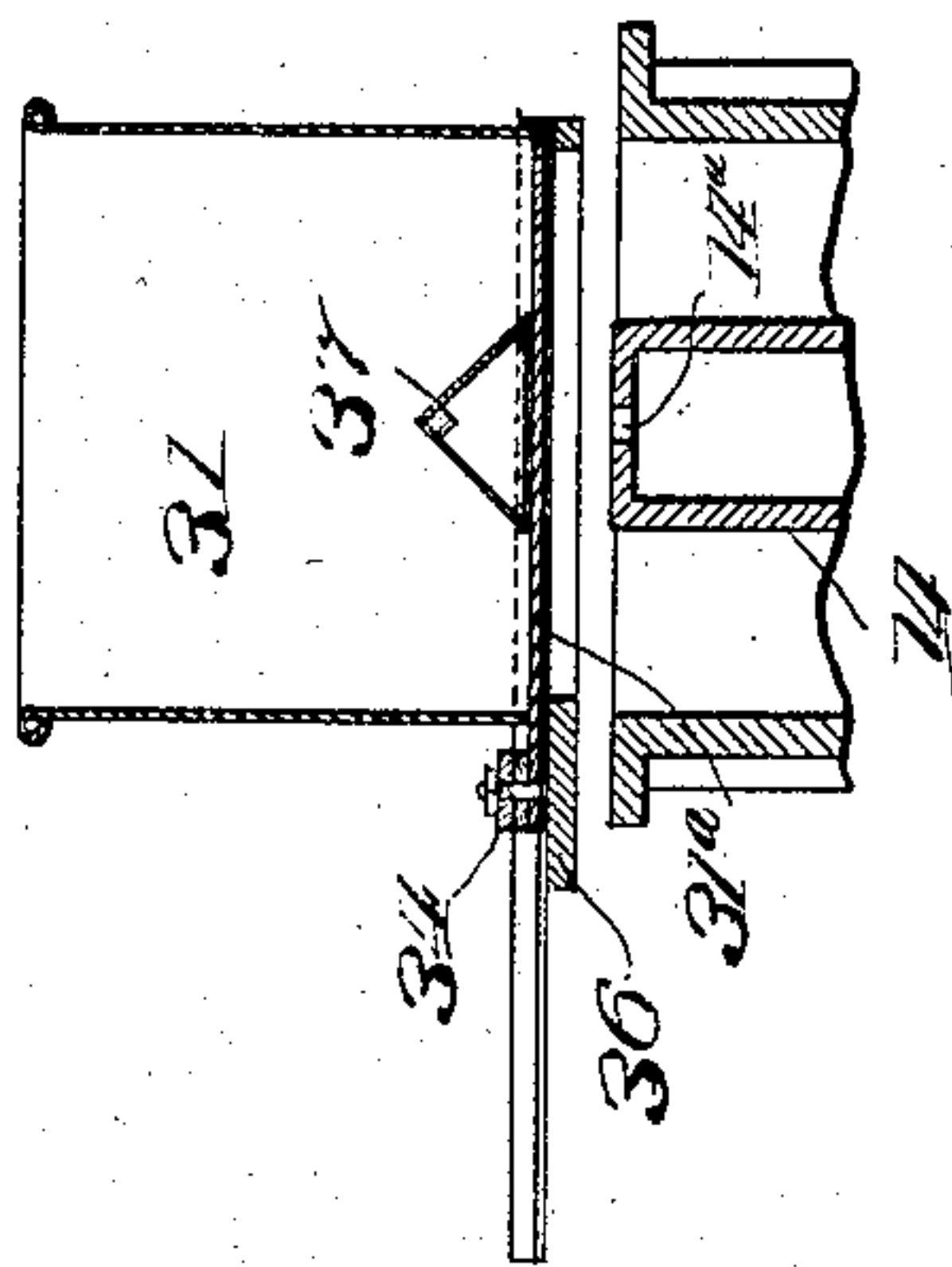
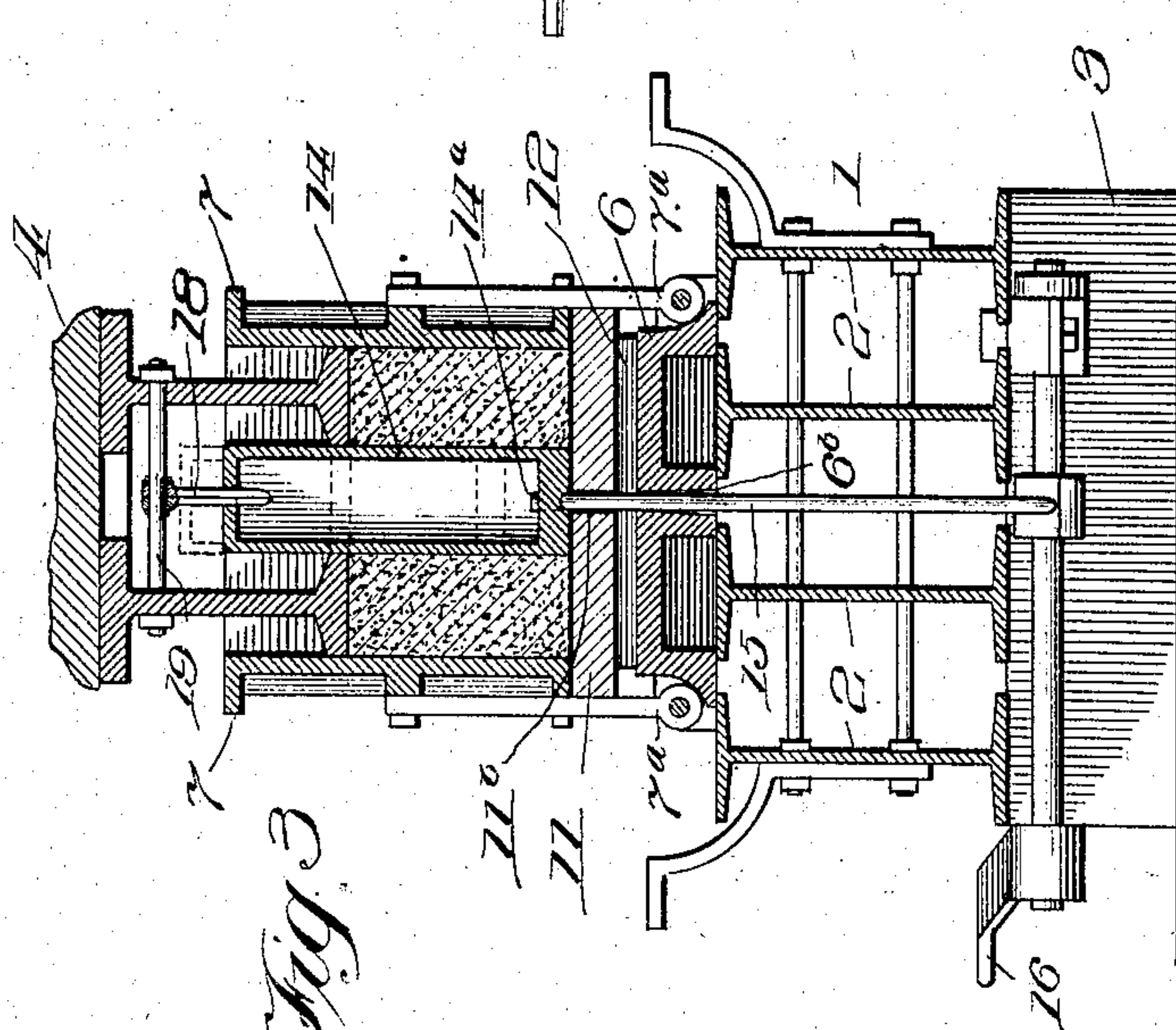
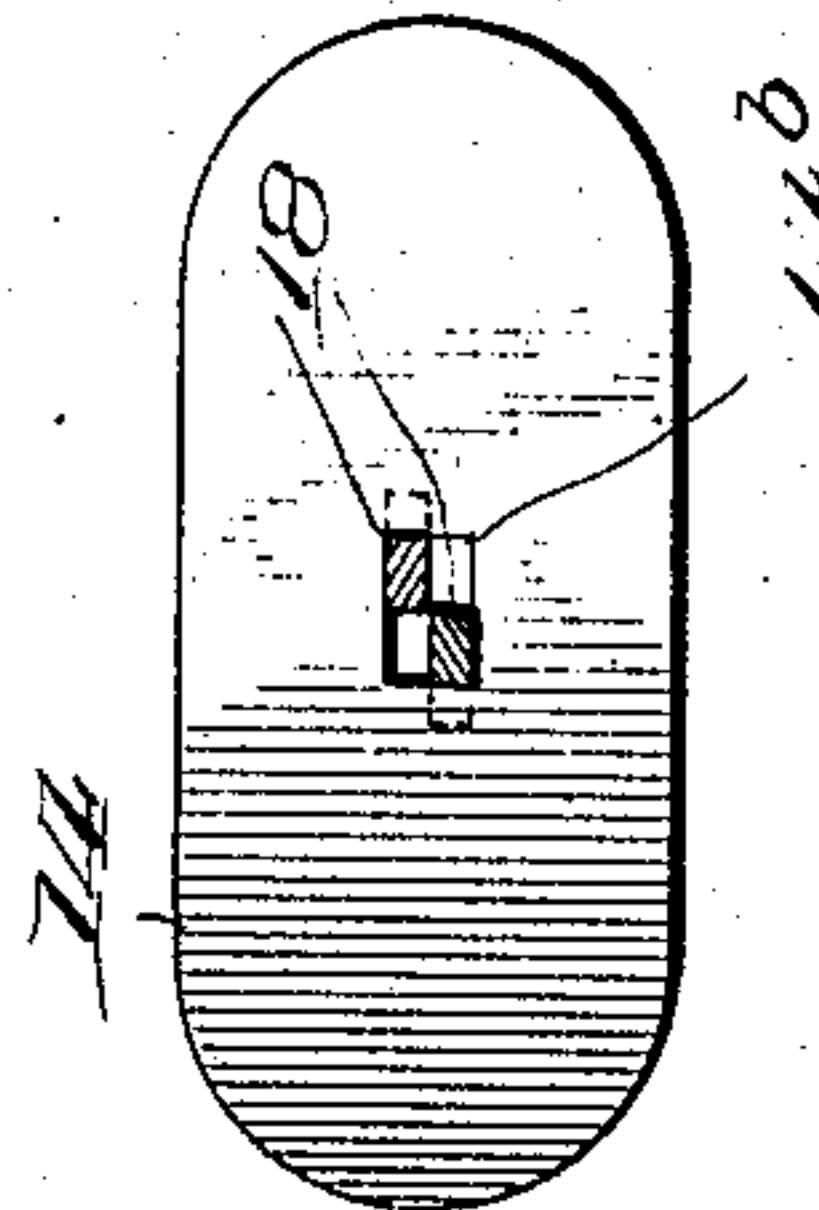


Fig. 5.



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UNITED STATES PATENT OFFICE.

WALLACE L. DOW, OF SIOUX FALLS, SOUTH DAKOTA, ASSIGNOR TO THE
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MACHINE FOR MAKING CONCRETE BUILDING-BLOCKS.

SPECIFICATION forming part of Letters Patent No. 791,612, dated June 6, 1905.

Application filed July 5, 1904. Serial No. 215,431.

To all whom it may concern:

Be it known that I, WALLACE L. DOW, a citizen of the United States, residing at Sioux Falls, in the county of Minnehaha and State of South Dakota, have invented new and useful Improvements in Machines for Making Concrete Building-Blocks or Artificial Stone, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

The purpose of this invention is to provide an improved machine for making concrete blocks and building-stone employing power for compacting or compressing the material in the mold.

It consists in the features of construction set out in the claims.

In the drawings, Figure 1 is a partly-sectional front elevation of my improved machine, section being made through the mold at the line 1 1 on Fig. 2, the mold being shown with both ends open and the molded block in place and the follower and core withdrawn. Fig. 2 is a section at the line 2 2 on Fig. 1, showing the mold closed and bottom frame of the machine in plan view, posts or strain-rods being cut in horizontal section. Fig. 3 is a section at the line 3 3 on Fig. 1, showing in full line the parts in the position occupied upon completing the compression of the concrete and showing in dotted line the core started up before the follower. Fig. 4 is a detail vertical section through the feed or filling box and the upper part of the mold. Fig. 5 is a top plan view of the removable core. Fig. 6 is a detail view of the device for releasably engaging the core with the follower with the parts shown in position for releasing the core. Fig. 7 is a detail plan view of the device for releasably engaging the core with the follower.

This machine is essentially a press comprising a base-frame or bed 1, consisting of the sills or timbers 2 2 2 2, suitably bolted together and supported upon cross-sills 3 3 or other foundation. Above the base-frame the descending head 4 is supported and guided vertically by the strain-rods or corner-posts

5 5 5 5, a customary structure, which need not be described, being employed to force this head down for compression and to elevate it for filling and emptying and closing and opening the mold.

Upon the base-frame or bed 1 there is mounted the mold-bed 6, to which the mold sides 7 7 and mold ends 8 8 are connected by hinges 7^a and 8^a, whose pivot-lines are some distance below the plane of the upper surface of the mold-bed. The mold sides 7 7 have grooves 7^b 7^b near and parallel to their vertical edges, which receive the tongues 8^b 8^b, which project from the vertical edges of the mold ends 8, and to said mold ends there are secured the core-plates 9 9 for forming the end recesses in the molded blocks. The mold ends are closed up first, and the mold sides being closed up afterward engage the tongues 8^b by their grooves 7^b, and the parts are then locked together by the locking-abutments 10^a 10^b on a rock-shaft 10, which are journaled on the outer side of the mold ends, being most conveniently provided with journal-bearings, as illustrated, on the hinges, which extend suitably for that purpose. One of the abutments, as 10^b, is extended to form a lever-handle of the rock-shaft, by which it may be rocked to thus lock the mold, as described. The mold-bottom is formed by a plank 11, which rests upon the mold-bed, being spaced therefrom by spacing-blocks 12 12 and being of suitable dimensions to extend out under both the mold sides and ends, which are carried by their hinges high enough to close in above and not around said wooden mold-bottom. This mold-bottom is designed to serve as a platen for lifting out and carrying the molded block while it is being dried, and a sufficient number are provided to keep the mold in service through the period of drying.

The mold ends 8 8 have formed and mounted rigidly upon them the core-pieces 9 9 for forming in the ends of the molded blocks the half-cavities which are matched together to form an entire cavity in the wall which may be built with these blocks. For forming an intermediate entire cavity in each block a

core 14 is provided, which is made removable upwardly from the mold, and for this purpose said core is provided with downwardly-projecting tenons 14^a 14^a, which take through
 5 apertures 11^a 11^a in the mold-bottom 11 and into sockets 6^a 6^a in the mold bed or base 6. The mold-bottom 11 has intermediate the apertures 11^a 11^a a third aperture 11^b, and the base or mold-bed 6 has a corresponding
 10 aperture 6^b, through which a thrust-bar 15 operates to thrust upward the core carrying the tenons free of the sockets. This thrust-bar is properly connected to a pedal-lever 16, so that it can be operated by the foot to re-
 15 lieve the core from the frictional grasp of the molded and compressed block while the compression is maintained. The compression is effected by means of the follower 17, operated by the screw mechanism illustrated, which is of familiar construction and requires
 20 no specific description at this point. It is designed that after the compression has been made and the proper density of the block has been thus secured the operator will thrust up the core by the pedal-lever, and in order to
 25 permit such upward movement of the core the follower has a recess 17^a to accommodate the core. Since the core must be completely withdrawn in the same direction—that is, up-
 30 ward—and the follower has to take the same direction in withdrawing from the mold, I provide for automatic engagement of the core with the follower as the latter descends, in such manner as to permit the core to be lifted inde-
 35 pendently of the follower to the extent necessary to relieve it from the molded block. This engaging means comprises two latches 18 18, mounted side by side on a common pivot 19 on the follower, said latches having
 40 their noses tapered and having engaging hooks 19^a projecting in opposite directions, so that they may engage opposite sides of an aperture 14^b in the top web of the core 14. The latches have laterally-projecting lever-arms
 45 20 20, which are yieldingly drawn together by a spring 21, the angular relation of said arms to the latches, respectively, being such that the approach of the lever-arms under the action of the spring spreads the hooks 19^a at
 50 the ends of the latches to cause their engagement, as described, with the opposite sides of the aperture 14^b. For the purpose of disengaging the core from the follower the latches are unhooked by means of an oblong cam 22
 55 on a rock-shaft 23, which extends between the lever-arms of the latches, the shaft being rocked to one position for spreading the arms, and thereby retracting the hooked noses of the latches into position which will permit
 60 them to withdraw from the aperture and to a position ninety degrees around from the first to permit the lever-arms 20 20 to approach and cause the hooks to spread ready for snapping automatically into engagement with the core
 65 when the tapered noses enter the aperture 14^b

when the core is lifted. The construction of the core and the means of locating and removing it, as described, make it possible to withdraw the same upwardly by means of the
 70 follower, but in such relation thereto that it may be started up independently of the latter and make it possible to dispense with expensive construction of the bottom plate of the mold and to employ for such bottom the
 75 simple plank shown, which by reason of extending out under the ends and sides of the mold requires no accurate fitting to the mold and is not materially injured for its purpose by the swelling and shrinking to which wood
 80 is necessarily subject, especially when used where it is exposed to the wide changes of moisture which are necessarily unavoidable in its use as a platen for carrying the molded
 85 block, as above described. The difficulty in this respect which is encountered in the use of the customary plank bottom landing or
 90 false bottom for molds, having construction involving a metal bottom through which cores are withdrawn downward, is evidently avoided in the construction herein shown, and there-
 95 by there is avoided the necessity for constantly refitting such wood lining to the molds, which is necessary to prevent same from being sprung for closing up the mold when they are
 swollen or from leaving space around them into which the concrete is forced when they are shrunk.

The amount of material for filling the mold to the extent necessary to produce when com-
 100 pressed a block of the given depth requires careful measurement in order to produce blocks of uniform density, and for this purpose a measuring or filling box 31 is provided to carry by a swinging crane 32, mounted on
 105 one of the corner-posts or strain-rods 5 and swinging thereabout from the position shown in Fig. 2 to a position shown in Fig. 4 at which the box accurately overhangs the mold. This filling-box is designed to be charged
 110 when in the position shown in Fig. 1 from any source of supply whose discharge overhangs the box at that position, and for discharging the contents of the box into the
 115 mold the bottom 31^a of the box is arranged to slide in and out, being operated for that purpose by a link-lever 34, connected by a
 120 link 35 to the horizontal arm 36 of the crane on which the box is mounted. The mode of operation will be obvious and needs no further description. For the purpose of direct-
 125 ing the contents of the box properly into the mold-cavities and preventing them from being delivered on top of the cores the box has in the lower part angular deflectors 37 and 38
 130 with their apexes upward and supported sufficiently at the bottom to overhang the middle and end cores of the mold, and thereby direct the material into the space around the
 cores and prevent it from being discharged on top of the latter.

I claim—

1. In a machine for the purpose indicated, in combination with the mold, a follower for compressing the material therein; means for actuating it for such compression and for retraction from the mold; a core stepped on the bottom of the mold and adapted to be lifted out of the same; means operating upwardly through the bottom of the mold for starting the core upward, and means for releasably engaging the core automatically with the follower.

2. In a machine for the purpose indicated, in combination with the mold comprising a fixed base and withdrawable sides and ends, a removable bottom lodged upon the base; a core stepped upon the bottom, and having a tenon projecting through the bottom, the base having a socket to receive such tenon; means operating upwardly through the base and removable bottom to start the core upward and disengage the tenon from the socket; a follower and means for operating it to compress the contents of the mold and to retract such follower, and means for automatically and releasably engaging the core and follower.

3. In a machine for the purpose indicated, in combination with the mold comprising a fixed base and withdrawable sides and ends, a removable bottom lodged upon the base and extending out under the edges of the sides and ends when the latter are closed up; a core stepped on the removable bottom and having a tenon extending therethrough for engagement with the base, the base having a socket to receive such tenon; means operating from below the base to lift the core for disengaging the tenon from the socket; a follower and means for operating it to compress the contents of the mold and to retract the follower, and releasable means for automatically engaging the core with the follower.

4. In a machine for the purpose indicated, in combination with the mold, a core which is removable upwardly from the mold; a follower and mechanism for operating it to compress the material in the mold and to retract the follower after such compression, such follower having a recess into which the core may be withdrawn upward; means for thrusting the core upward into such recess when the follower is depressed to the limit of compression; automatic devices for engaging the core with the follower thus thrust up into the latter, and means for disengaging the core from the follower at will.

5. In a machine for the purpose indicated, in combination with the mold, a follower for compressing the material therein; means for actuating it for such compression and for retraction from the mold; a core having at its lower end tenons extending through the bottom of the mold, the mold having its base provided with sockets to receive such tenons and

apertured between the tenons; a thrust-bar and means for operating it at will to thrust it up through such aperture against the core for lifting the latter to withdraw the tenons from the sockets, the follower having a recess to accommodate such upward movement of the core and means for automatically engaging the core with the follower, and means for disengaging the same.

6. In a machine for the purpose indicated, in combination with the mold comprising a fixed base and withdrawable sides and ends, a removable bottom lodged upon the base and extending out under the edges of the sides and ends when the latter are closed up, the base having sockets for holding the core, and the removable bottom having apertures above said sockets, the core having downwardly-projecting tenons taking through the apertures in the bottom and into the sockets of the base, the bottom and base having an additional aperture intermediate the sockets; a thrust-bar and means for operating it to thrust it up through said bars against the core; a follower and means for operating it to compress the contents of the mold and to retract such follower, the latter having a recess to receive the core adapted to permit upward movement of the latter when the follower is depressed to the limit of compression; releasable means for engaging the core with the follower.

7. In a machine for the purpose indicated, in combination with the mold, a core therein removable upward; a follower and means for operating it to compress the material in the mold and to withdraw the follower, and the releasable device for engaging the core with the follower consisting of the oppositely-hooked dogs mounted on a common pivot on the follower and adapted to enter an aperture in the top of the core; a spring tending to spread the dogs; a rock-shaft having a cam located between the extended arms of the dogs and adapted to retract their hooked ends by spreading said extended arms, and means for operating the rock-shaft on the exterior of the follower.

8. In a machine for the purpose stated, in combination with the mold and the press-frame in which it is mounted, a measuring and filling box mounted for horizontal movement on said frame and adapted to be moved from a position overhanging the mold within the frame to a position outside the frame, said box having deflectors overhanging the cores of the mold contained within the box above the level of the bottom, the bottom being removable while the box is full to permit the discharge of the contents into the mold.

9. In a machine for the purpose stated, in combination with the mold and the press-frame in which it is mounted for pressing, a measuring and filling box; a crane mounted on the press-frame for supporting said box, and

adapted to be swung about its support to carry the box from a position outside the frame to a position overhanging the mold within the frame, the box having a bottom which is removable edgewise for discharging the contents into the mold.

10. In a machine for the purpose stated, in combination with the mold and press-frame in which it is mounted fixedly for compressing the contents, a filling-box supported on the frame and means for moving it horizontally from a position outside the frame to a position overhanging the mold within the frame, such box having a bottom which is removable edgewise to deliver the contents of the box into the mold, and having deflectors within the box above the bottom overhanging the cores of the mold.

11. In a machine for the purpose stated, in combination with a mold, a measuring and filling box and means for moving it horizontally to and away from a position overhanging the mold and for supporting it in such overhanging position, such box having a slidable bottom and deflectors supported independently of the bottom above the same within the box in position to overhang the cores of the mold for deflecting the contents of the

box into the mold-spaces without lodgment upon the cores.

12. In a machine for the purpose stated, in combination with the mold, a press-frame in which the mold is mounted having corner-posts or strain-rods, the follower or reciprocating upper member of the mold guided vertically on such corner-posts or strain-rods; a crane pivoted on one of such corner-posts; a filling and measuring box mounted on such crane and adapted to be carried by the swinging of the crane from a position exterior to the frame to a position within the latter overhanging the mold, said mold having a slidable bottom and means for withdrawing it horizontally while the box overhangs the mold and means within the mold above such slidable bottom, all carried by the crane in carrying the mold for guiding the contents of the box into the mold-cavities.

In testimony whereof I have hereunto set my hand, in the presence of two witnesses, at Sioux Falls, South Dakota, this 4th day of June, 1904.

WALLACE L. DOW.

In presence of—

F. C. WHITEHOUSE,
E. W. Dow.