

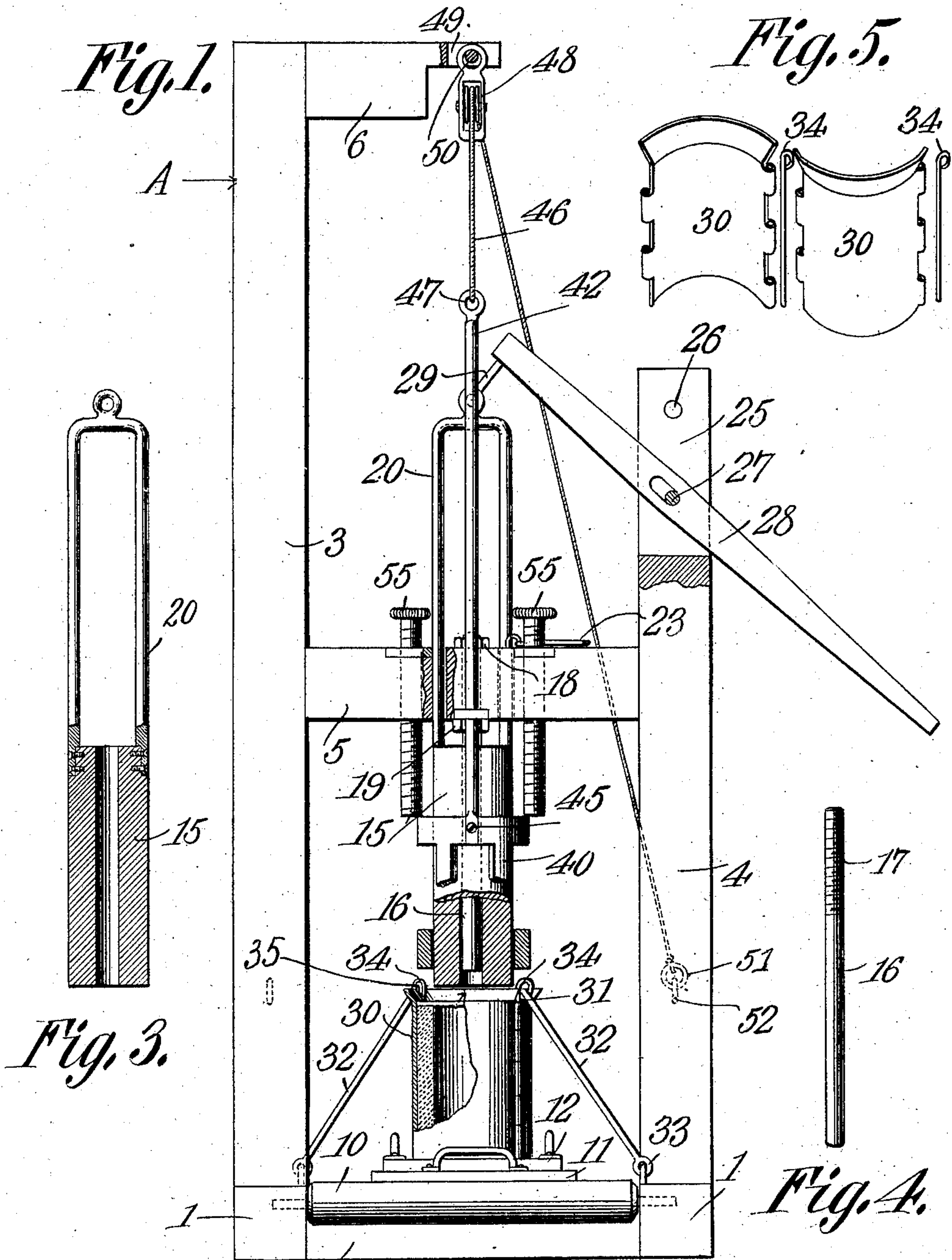
No. 850,513.

PATENTED APR. 16, 1907.

W. H. BEERY.
TILE MACHINE.

APPLICATION FILED AUG. 11, 1906.

3 SHEETS—SHEET 1.



WITNESSES:

E. J. Stewart

W. H. Crichton - Clarke

2 *William H. Beery,* INVENTOR.

By

C. A. Snow & Co.

ATTORNEYS

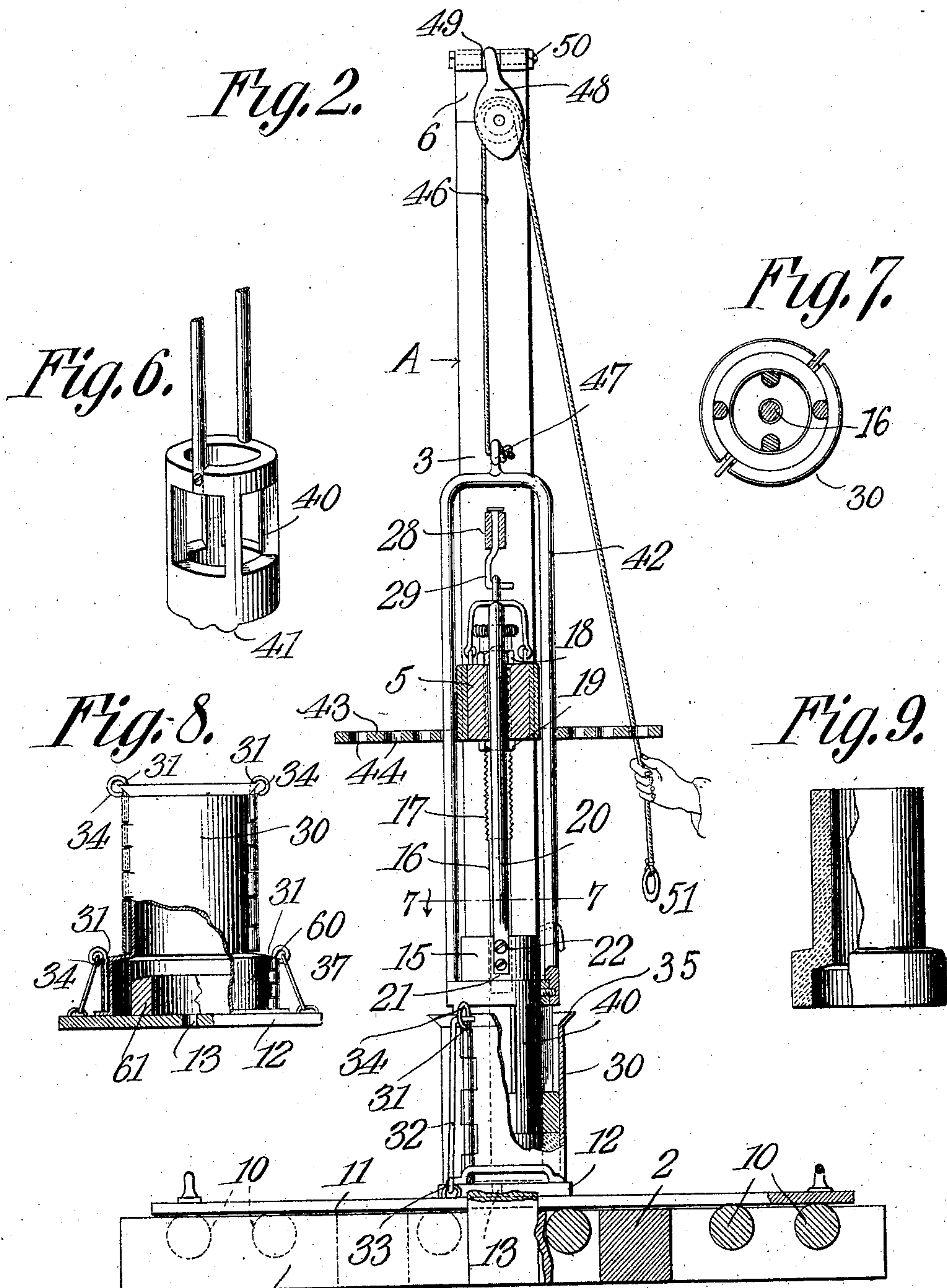
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 10.

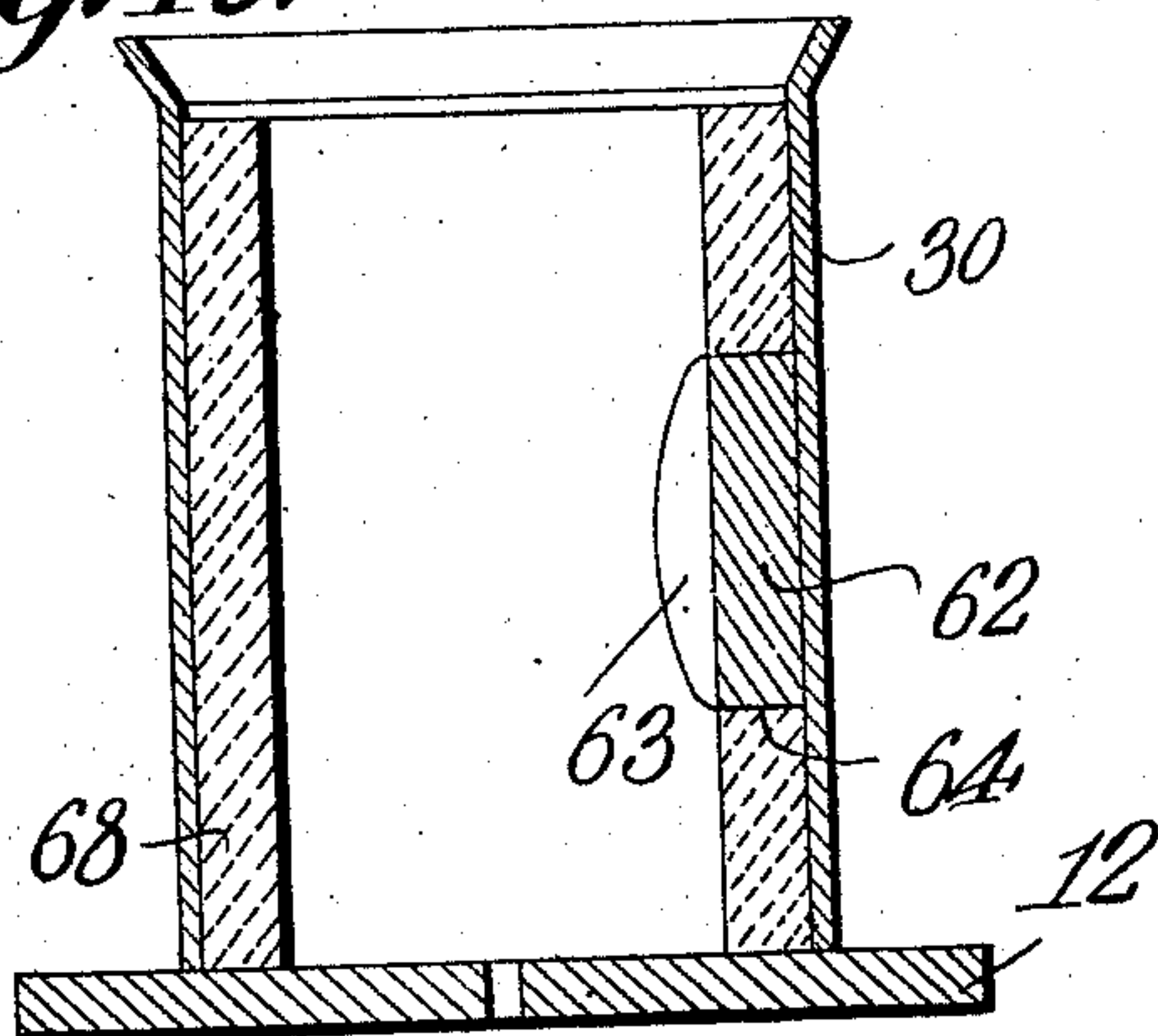


Fig. 11.

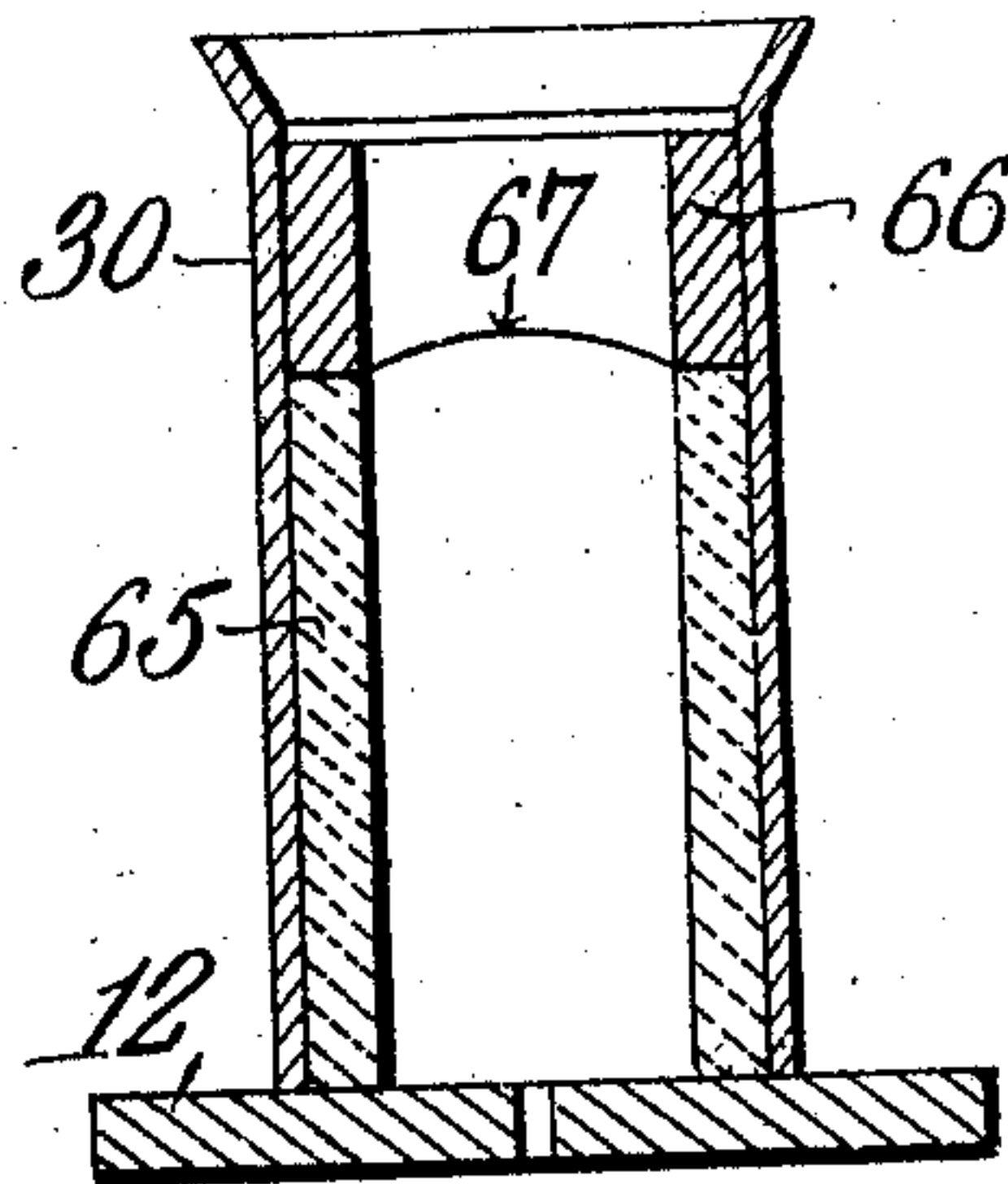


Fig. 12.

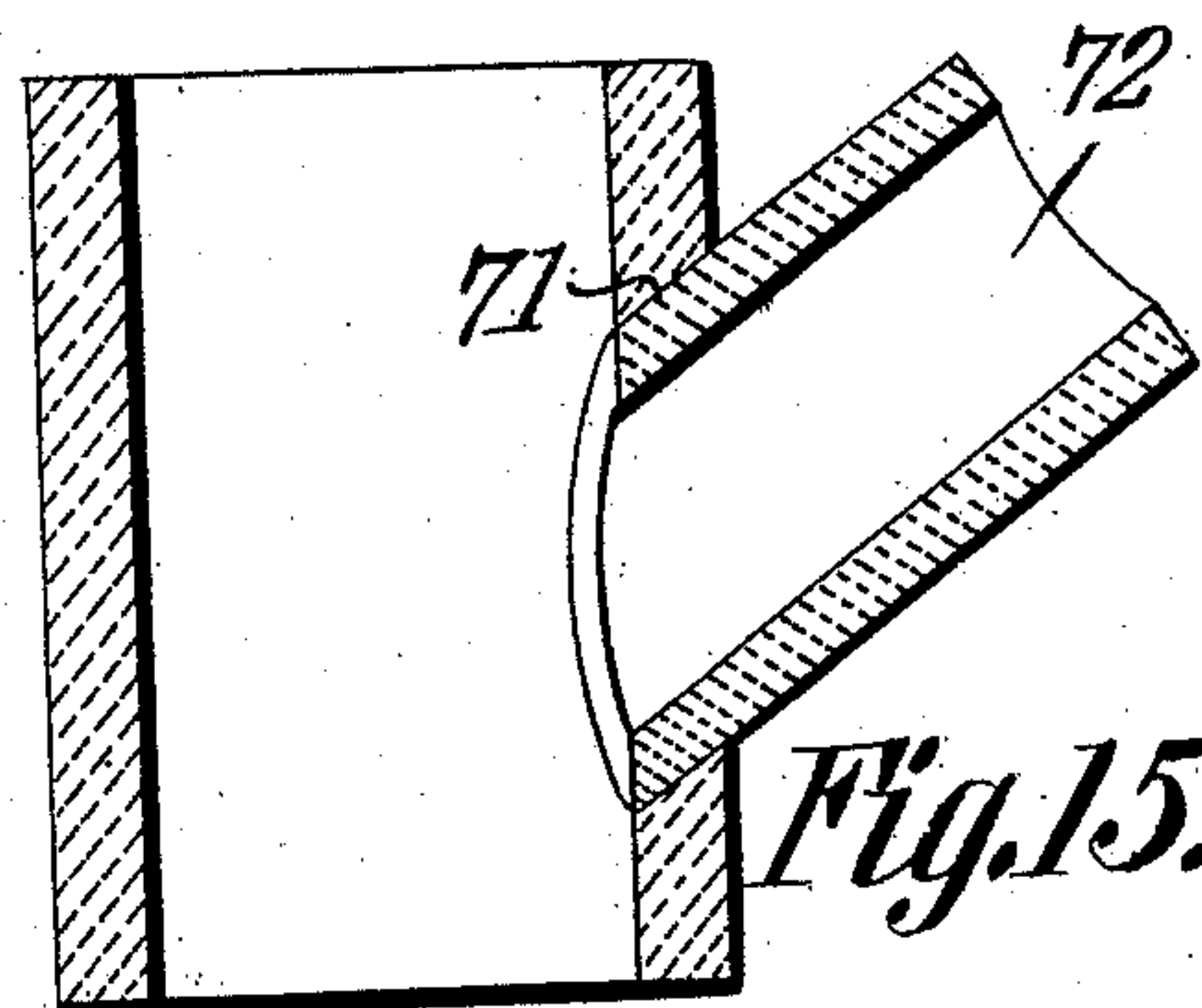
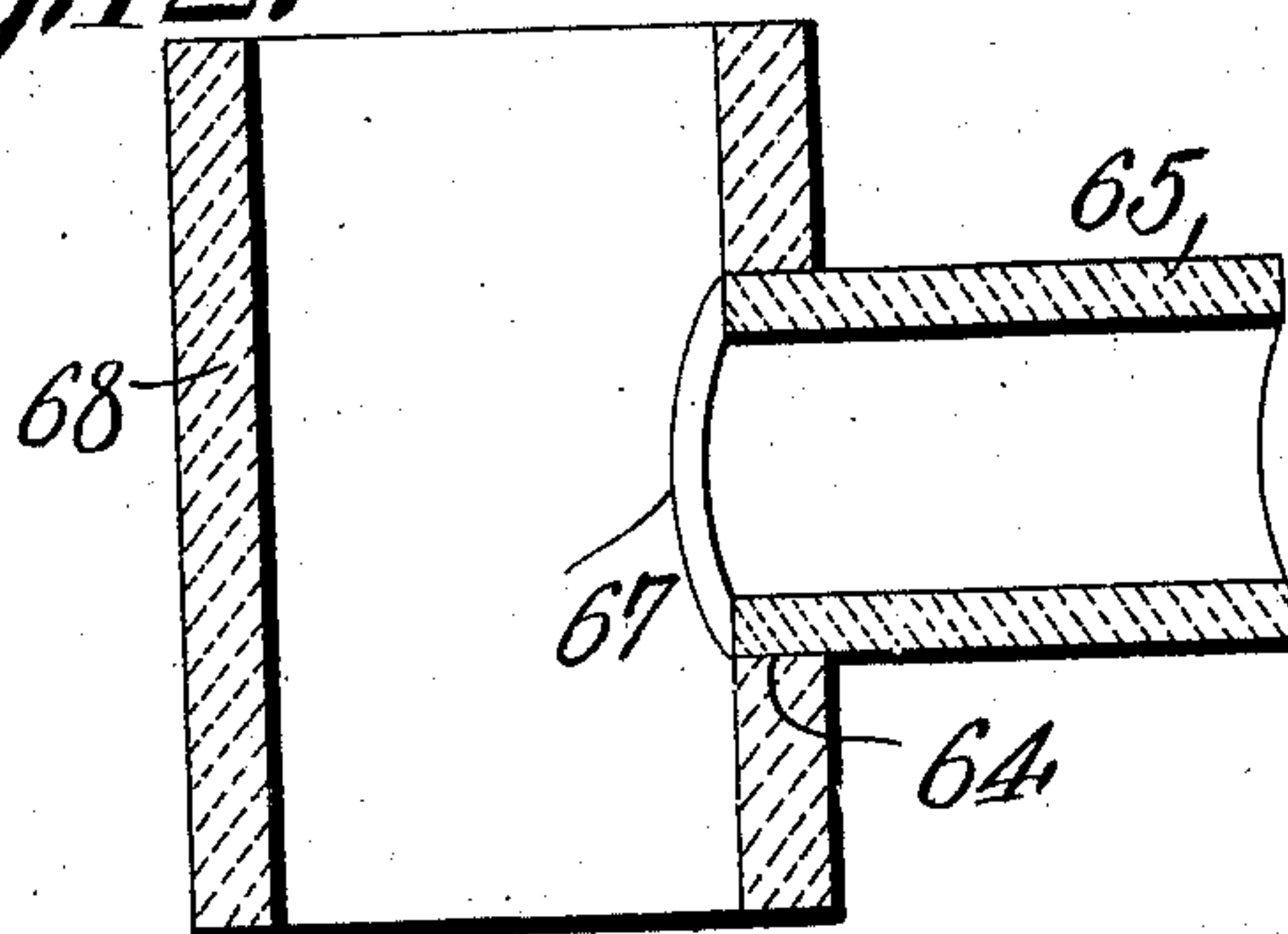


Fig. 13.

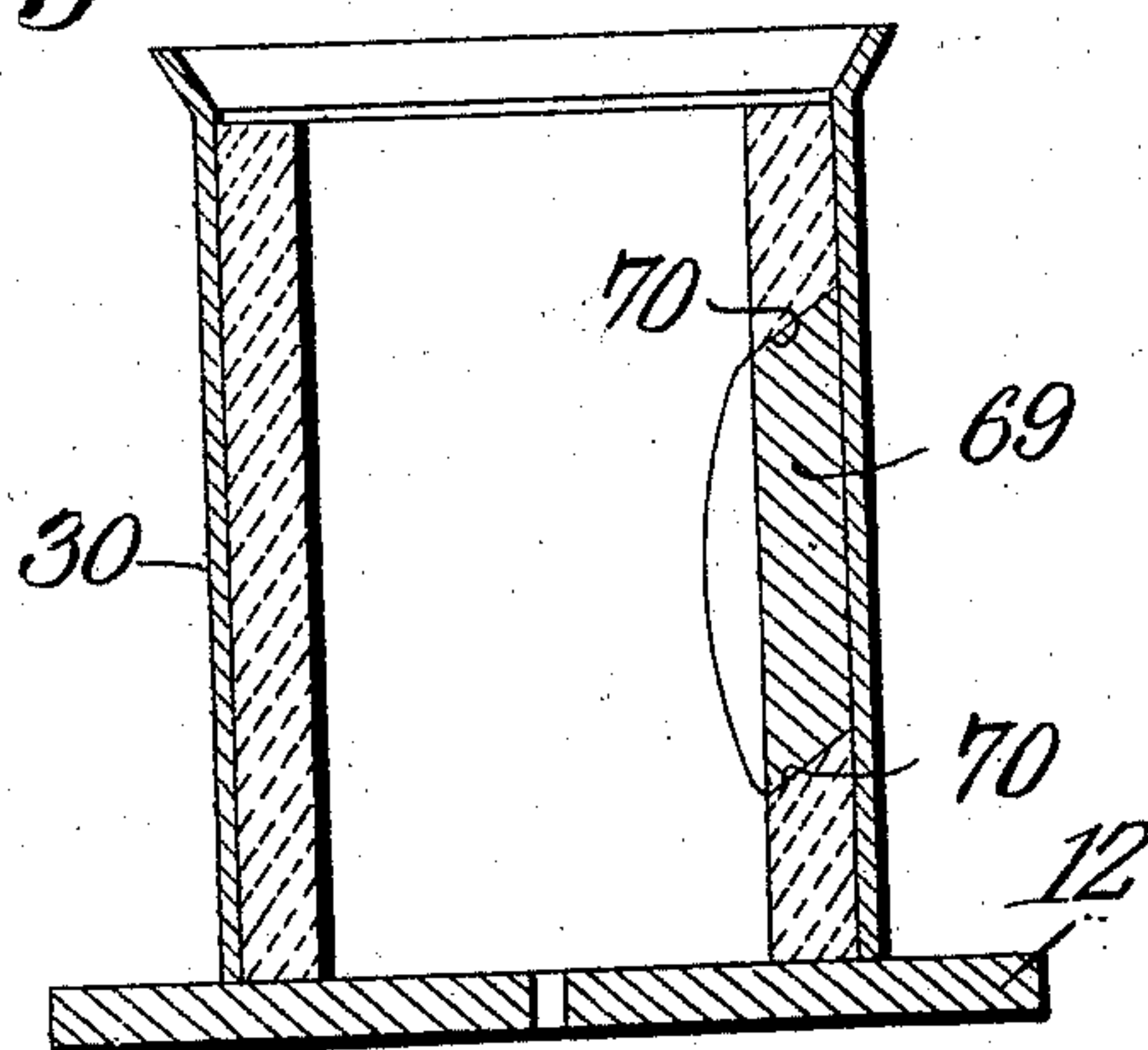
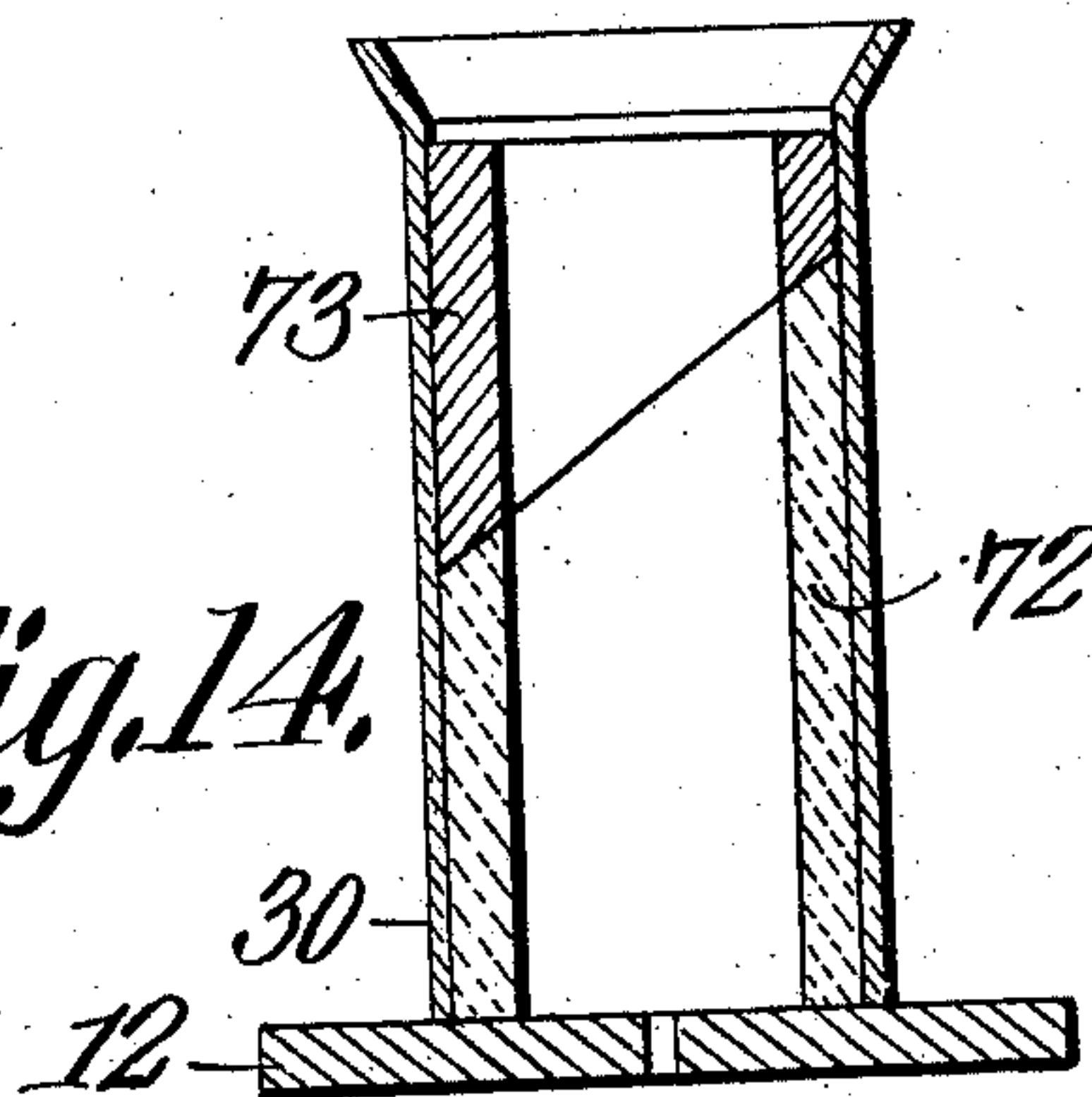


Fig. 14.



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UNITED STATES PATENT OFFICE.

WILLIAM H. BEERY, OF CELINA, OHIO.

TILE-MACHINE.

No. 850,513.

Specification of Letters Patent.

Patented April 16, 1907.

Application filed August 11, 1906. Serial No. 330,267.

To all whom it may concern:

Be it known that I, WILLIAM H. BEERY, a citizen of the United States, residing at Celina, in the county of Mercer and State of Ohio, have invented a new and useful Tile-Machine, of which the following is a specification.

This invention relates to tile-machines, such as are adapted particularly for use in the manufacture of drain-tiles, although they may be used for other purposes, if desired.

The objects of the invention are to improve and simplify the construction of such machines, furthermore, to increase their efficiency in operation and to decrease the expense attending their manufacture and use.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of invention herein disclosed can be made within the scope of the following claims without departing from the spirit of the invention or sacrificing any of its advantages.

In the accompanying drawings, forming part of this specification, Figure 1 is a view, partly in section and partly in elevation, of a tile-machine constructed in accordance with the present invention. Fig. 2 is a similar view taken at a right angle to Fig. 1. Fig. 3 is a detail view of the core. Fig. 4 is a similar view of the adjustable core-guide. Fig. 5 is a detail perspective view showing the two members of the jacket separated. Fig. 6 is a detail perspective view of the plunger. Fig. 7 is a section on the line 7 7 of Fig. 2. Fig. 8 is a side elevation, partly broken away, of a modified form of jacket adapted to produce a flanged drain-pipe. Fig. 9 is a similar view of a flanged drain-pipe produced by the jacket shown in Fig. 8. Fig. 10 is a longitudinal sectional view showing the manner of making a T pipe or tile. Fig. 11 is a similar view showing the manner of making the branch pipe forming the T. Fig. 12 is a longitudinal sectional view of the T pipe or tile. Fig. 13 is a longitudinal section showing the manner of forming a Y-tile. Fig. 14 is a similar view showing the manner of making the branch pipe forming the Y, and Fig. 15 is a longitudinal sectional view of the Y pipe or tile.

Like reference-numerals indicate corresponding parts in the different figures of the drawings.

The frame A of the improved machine preferably consists of the longitudinal sills 1, which are connected with each other by means of the cross-piece 2. In addition to the sills 1 the frame A includes the uprights 3 and 4, which are connected by the cross-head 5, the upright 3 extending at its upper end above the upright 4 and having a lateral arm 6, as shown.

Journalled between the sills 1 of the frame A are a plurality of rollers 10, which serve to support the carriage 11, upon which is placed one or more pallets 12, upon which the tile will be molded, as hereinafter described. Each pallet 12 preferably is formed adjacent its center with a perforation 13, which serves to permit the circulation of air through the tile, so as to facilitate the drying and hardening thereof.

When the machine is in use, the carriage 11 is adjusted so that one of the pallets 12 is located between the uprights 3 and 4. The core 15, which may be of any suitable form and construction, is then lowered into position, so as to rest upon the central portion of the pallet 12. The core 15 preferably is guided in its up-and-down movement by a core-guide 16 in the form of a polished rod extending through a central bore in the core and fitted at its upper end into the cross-head 5, said core-guide being provided with a threaded portion 17, which is provided above and below the cross-head 5 with nuts 18 and 19, by means of which said core-guide can be vertically adjusted to accommodate cores of different sizes, it being understood that the lower end of the core-guide must be disposed a sufficient distance above the pallet 12 to permit the sidewise withdrawal of a molded tile. It will be obvious, therefore, that the threaded portion 17, together with the nuts 18 and 19, constitute means for adjusting the core-guide vertically.

The means for raising and lowering the core 15 preferably comprises a U-shaped suspension-rod 20, the parallel ends of which extend downward through suitable perforations in the cross-head 5 and are seated in recesses 21, formed in the upper outer surface of the core 15, said suspension-rod ends being held in position by means of bolts or other devices 22. The means for locking the core

in lowered position, so as to prevent it from accidentally moving during the molding operation, preferably consists of a pivoted catch 23, which is adapted to be engaged with the upper end of the U-shaped suspension-rod 20 when the core is lowered and which can be readily disengaged therefrom when it is desired to raise the core in order to permit the removal of a tile. For the purpose of effecting the convenient raising of the core the upright 4 is provided at its upper end with spaced supporting-arms 25, having perforations 26 to receive an adjustable pin 27, which forms the fulcrum of a lever 28, having at its inner end a hook 29, adapted to be engaged with the upper end of the U-shaped suspension-rod 20. It will be obvious that by depressing the outer end of the lever 28 the core 15 can be readily raised.

The jacket 30, which rests upon the pallet 12 and concentrically surrounds the core 15 when in lowered position, is preferably formed in two semicylindrical sections, which are held assembled by means of the removable hinge-rods 31. The means for holding the jacket securely in position upon the pallet 12 preferably comprises a pair of pivotally-mounted hooks 32, which are connected at their lower ends with the sills 1, as shown at 33, by means of staples or the like and are adapted to be engaged at their upper ends with the eyes 34, formed on the hinge-rods 31 of the jacket 30. It will be obvious that when the jacket is placed properly upon the pallet the hooks 32 will not only hold the same securely in position, but will also prevent the withdrawal of the hinge-rods 31. The jacket 30 preferably is provided adjacent its upper end with the usual flared flange 35, which facilitates the introduction of the plastic material, consisting usually of Portland cement and clean sharp sand or fine crushed stone in proper proportions mixed with sufficient water to form a plastic mass of sufficient firmness to cause a tile to retain its shape until removed from the machine and dried.

The plunger 40 may be of any suitable form and construction and preferably is slightly scalloped at one portion of its operative end, as indicated at 41, in order that each tile that is formed may be scalloped at one portion of one end, so that when a number of tiles are placed in the ground with their scalloped portions downward the water will be permitted to enter the drain through the scalloped portions, as will be readily understood. The plunger 40 is provided with a U-shaped suspension-rod 42, which is disposed at a right angle with respect to the suspension-rod 20 of the core and extends upward on opposite sides of the cross-head 5, the upper end of the suspension-rod 42 being disposed above the cross-head, as shown. The plunger 40 is guided in its movements by

the oppositely-extending bracket-arms 43, which are secured to the cross-head 5 and are provided with a plurality of perforations 44, so as to adapt them to receive the suspension-rods of different sizes of plungers, it being understood that the suspension-rod 42 of each plunger 40 can be readily detached therefrom by simply removing the bolts 45, so that when it is desired to change the size of the plunger the suspension-rod is detached and withdrawn upward through the bracket-arms 43. The plunger is then removed and a larger or smaller plunger is substituted, the larger or smaller suspension-rod of the new plunger being passed down through the proper perforations 44 of the bracket-arms 43 and attached to the plunger. For the purpose of raising and lowering the plunger in the operation of tamping the material of the tile means are provided consisting of a flexible element 46, which is secured to an eye 47 upon the suspension-rod 42 and extends upward through a pulley 48, secured in a slot 49 of the lateral arm 6 by means of a pin 50. By drawing upon the flexible element 46 the plunger can be readily raised and lowered by hand or by means of any other suitable power. The flexible element 46 preferably is provided at its end with a retaining-ring 51, which can be engaged with a hook 52 when it is desired to hold the plunger in raised position.

Extending through the cross-head 5 is a pair of adjustable stops or threaded rods 55, which constitute means for holding the plunger 40 in lowered position when it is desired to raise the core 15, it being understood that after a tile has been properly tamped the stops 55 are adjusted downward until their lower ends contact with the upper end of the plunger 40, so as to hold the same stationary while the lever 28 is being manipulated to raise the core. After the core has been properly raised without disturbing the tile the stops 55 are withdrawn upwardly, so as to permit the plunger 40 to be raised away from the tile. The hooks 32 are then disengaged from the hinge-rods 31 of the jacket 30, and the carriage 11 is moved so as to draw the pallet 12, containing the tile, and the jacket 30 from beneath the core 15 and plunger 40. The hinge-rods 31 can then be withdrawn, so as to permit the removal of the jacket 30, thus permitting the tile to dry, the circulation of air through the tile being permitted by the perforation 13 in the pallet, as previously described. Whenever the core 15 is changed for a larger or smaller core, the core-guide 16 is suitably adjusted upwardly or downwardly, as the case may be, to accommodate the new core, and yet have its lower end disposed a sufficient distance above the pallet 12 to permit the ready removal of the tile.

The improved tile-machine of this inven-

tion is strong, simple, durable, and inexpensive in construction, as well as thoroughly efficient in operation.

When it is desired to produce tiles of the form illustrated in Fig. 9, the jacket shown in Fig. 8 is employed. This jacket is substantially the same as the jacket illustrated in Figs. 1 and 2, except that it is annularly enlarged at its lower end, as indicated at 60, and is provided with two sets of hinge-rods 31, the lower set being adapted to hold together the joints of the annular enlargement 60 and to receive the hooks 32 for locking the jacket in position. In this form of the invention the pallet 12 preferably is provided with a pallet-ring 61, which is adapted to surround the lower end of the core 15 and form the lower flanged end of the drain-tile, as shown in Fig. 9.

In order to make a T-tile, the jacket 30 is partially filled with cement or other suitable plastic material and the plug 62 placed in the jacket with the concave side 63 thereof against the core, as best shown in Fig. 10, after which additional cement is introduced into the molding-chamber and tamped in the manner before described, the plug being subsequently removed by tapping the same with a suitable tool, so as to leave an opening 64 in the side walls of the tile for the reception of the branch pipe 65. The branch pipe 65 is formed in a separate mold or jacket of the required cross-sectional diameter, in which is placed a block or die 66 for engagement with the tamping element, thereby to form one end of the pipe with a curved end 67, adapted to conform to the curvature of the interior walls of the tile 68. The branch pipe 65 is then placed in the opening 64, so as to produce the T-tile shown in Fig. 12 of the drawings.

In making a Y-tile a plug 69 is employed having inclined upper and lower walls 70 to form the inclined opening 71 for the reception of the branch pipe 72. The branch pipe 72 is formed in the same manner as the branch pipe of the T-tile, only an inclined block or die 73 is used for producing the beveled end of the pipe, the latter being subsequently introduced into the opening 71 in the manner before stated to form the Y-tile shown in Fig. 15 of the drawings.

What is claimed is—

1. A tile-machine including a vertically-movable core and an adjustable core-guide.

2. A tile-machine including a frame provided with a cross-head, a vertically-movable core, and an adjustable core-guide consisting of a polished rod having a threaded upper end extending through said cross-head and provided with a plurality of adjusting-nuts.

3. A tile-machine including a plunger provided with a U-shaped suspension-rod, and a core provided with a U-shaped suspension-rod.

4. A tile-machine including a plunger provided with a U-shaped suspension-rod, and a core provided with a U-shaped suspension-rod, said suspension-rods being disposed at right angles with respect to each other.

5. A tile-machine including a frame provided with a cross-head, a movable core having a U-shaped suspension-rod extending through said cross-head, and a plunger having a U-shaped suspension-rod disposed at a right angle with respect to the suspension-rod of said core and extending downward on opposite sides of said cross-head.

6. A tile-machine including a cross-head, a movable core provided with a suspension-rod extending through said cross-head, and a pivoted catch mounted upon said cross-head and adapted to engage the upper end of said suspension-rod for locking the core in lowered position.

7. A tile-machine including a frame provided with a pair of uprights and a cross-head, a pair of spaced perforated arms on one of said uprights, an adjusting-pin extending through said perforated arms, a lever fulcrumed upon said pin and having a hook, and a movable core having a U-shaped suspension-rod extending through said cross-head and adapted to be engaged by the hook of said lever for raising the same.

8. A tile-machine including a frame provided with a cross-head, oppositely-extending bracket-arms secured to said cross-head and provided with perforations, and a plunger having a detachable U-shaped suspension-rod extending through some of the perforations of said bracket-arms.

9. A tile-machine including a plunger, and guide means for said plunger adapted to receive a number of plungers of different sizes.

10. A tile-machine including a plunger provided with a suspension-rod and bracket-arms for guiding said suspension-rod, said bracket-arms being adapted to receive suspension-rods of different sizes of plungers.

11. A tile-machine including a vertically-movable core, a vertically-movable plunger, and means for holding the plunger in lowered position to permit the core to be raised.

12. A tile-machine including a cross-head, a movable core, a movable plunger, and adjustable stops extending through the cross-head for holding the plunger in lowered position.

13. A tile-machine including a cross-head, a core-guide connected with said cross-head, a core movable upon said core-guide, a movable plunger, and rods extending through said cross-head and constituting adjustable stops for holding said plunger in lowered position.

14. A tile-machine including a frame, a movable core, an adjustable core-guide, a movable plunger, a jacket normally surrounding said core and having removable hinge-

rods, and locking means connected with said frame and engaging said hinge-rods for holding said jacket in position.

15. A tile-machine including a frame, a
5 movable core, an adjustable core-guide, a
movable plunger, a jacket surrounding said
core and having removable hinge-rods, and
hooks pivotally connected with said frame
and engaging the said hinge-rods for holding
10 said jacket in position.

16. A tile-machine comprising a frame
having sills, rollers journaled in said sills, a
pair of uprights connected with said sills and
having a cross-head, an adjustable core-
15 guide connected with said cross-head, a core
movably mounted upon said core-guide and
having a U-shaped suspension-rod extending
through said cross-head, a plunger surround-
ing said core and having a U-shaped suspen-
20 sion-rod disposed at a right angle to the sus-
pension-rod of the core, bracket-arms con-
nected with said cross-head and serving as
guides for the suspension-rod of the plunger,
said bracket-arms being adapted to receive
25 different sizes of suspension-rods, means for
raising and lowering said core and plunger, a
carriage mounted upon the rollers of said
sills, a pallet mounted upon said carriage, a
jacket mounted upon said pallet and having

removable hinge-rods, and hooks connected 30
with said sills and engaging said hinge-rods
for locking said jacket in position.

17. A tile-machine including a jacket, a
core member movable vertically to operative
position within the jacket, a vertically-ad- 35
justable core-guide, and a removable plug
interposed between the core and jacket for
producing an opening in the walls of the tile.

18. A tile-machine including a jacket, a
core member movable vertically to operative 40
position within the jacket, a vertically-ad-
justable core-guide, and a die-block engaging
the interior walls of the jacket for shaping
one end of the tile.

19. A tile-machine including a jacket, a 45
vertically-slidable core member movable to
operative position within the jacket, a ver-
tically-adjustable core-guide, a die-block en-
gaging the interior walls of the jacket for
shaping one end of the tile, and a tamping 50
element adapted to engage the die-block.

In testimony that I claim the foregoing as
my own I have hereto affixed my signature in
the presence of two witnesses.

WILLIAM H. BEERY.

Witnesses:

P. E. KENNEY,

ELLA RAUDABAUGH.