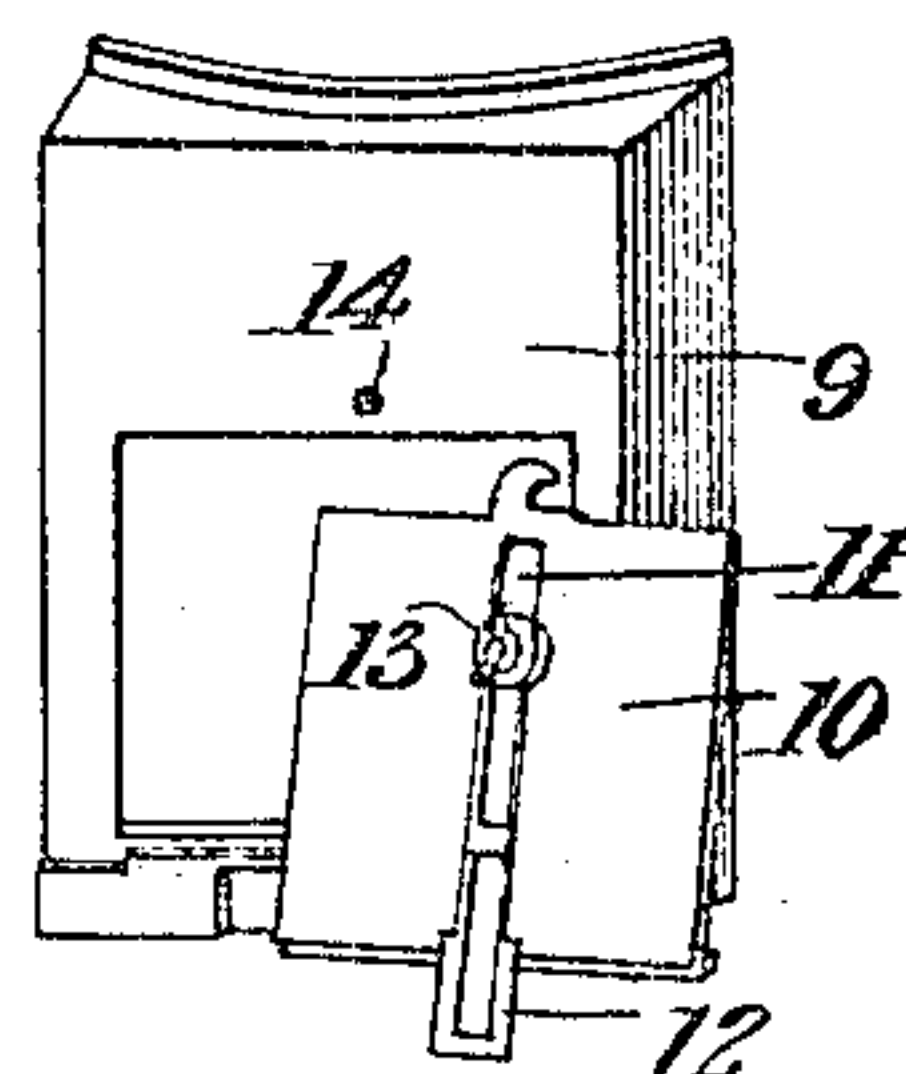
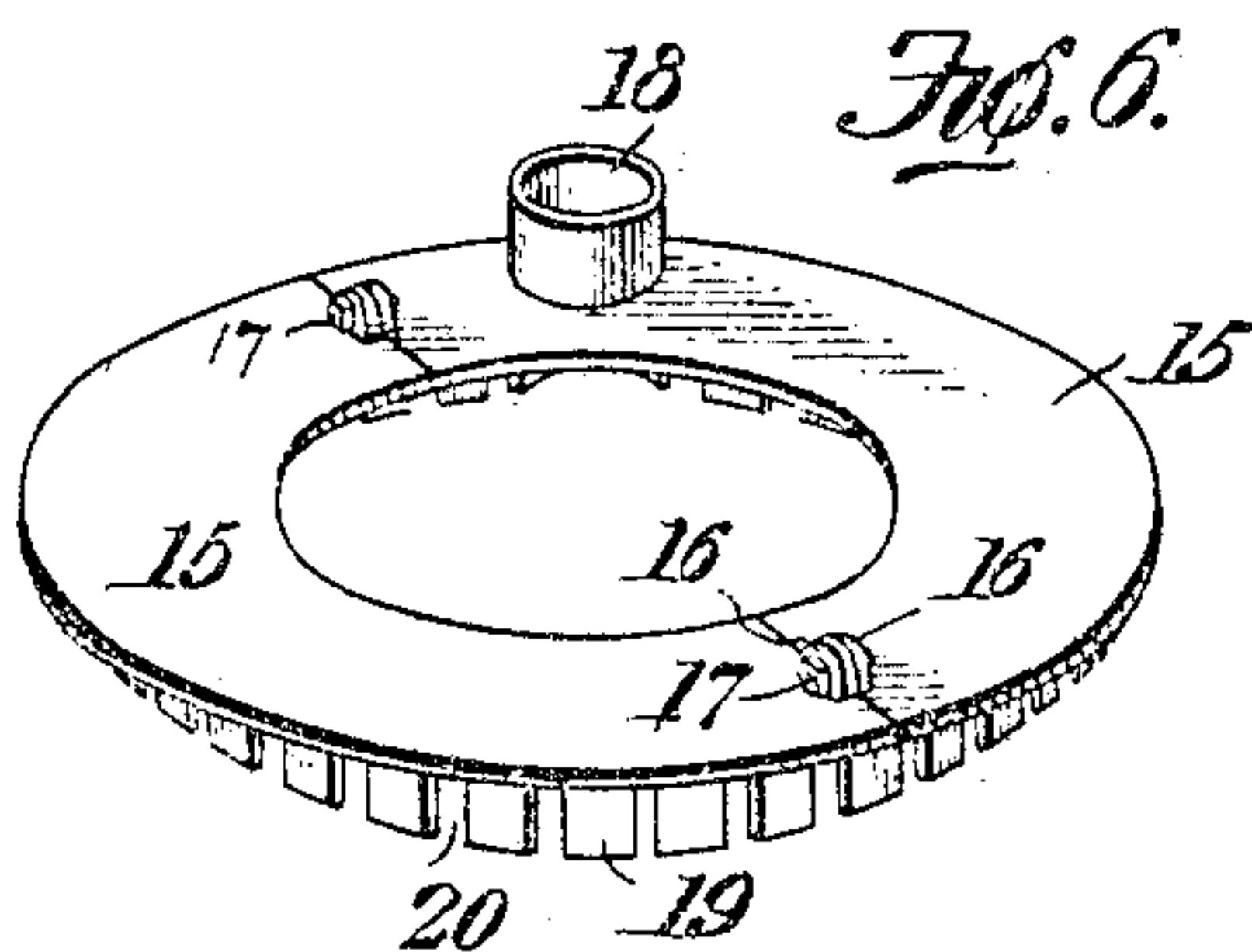
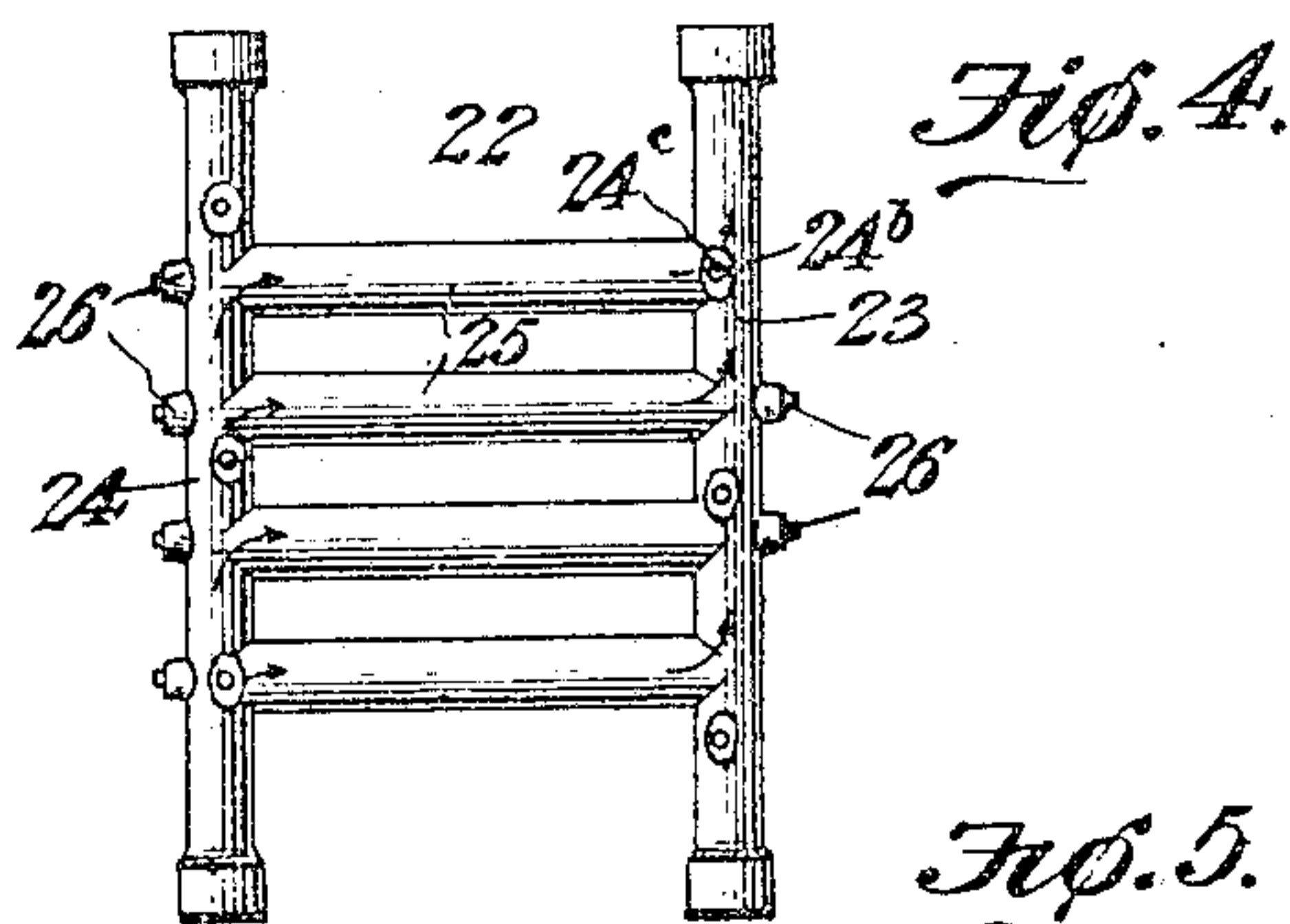
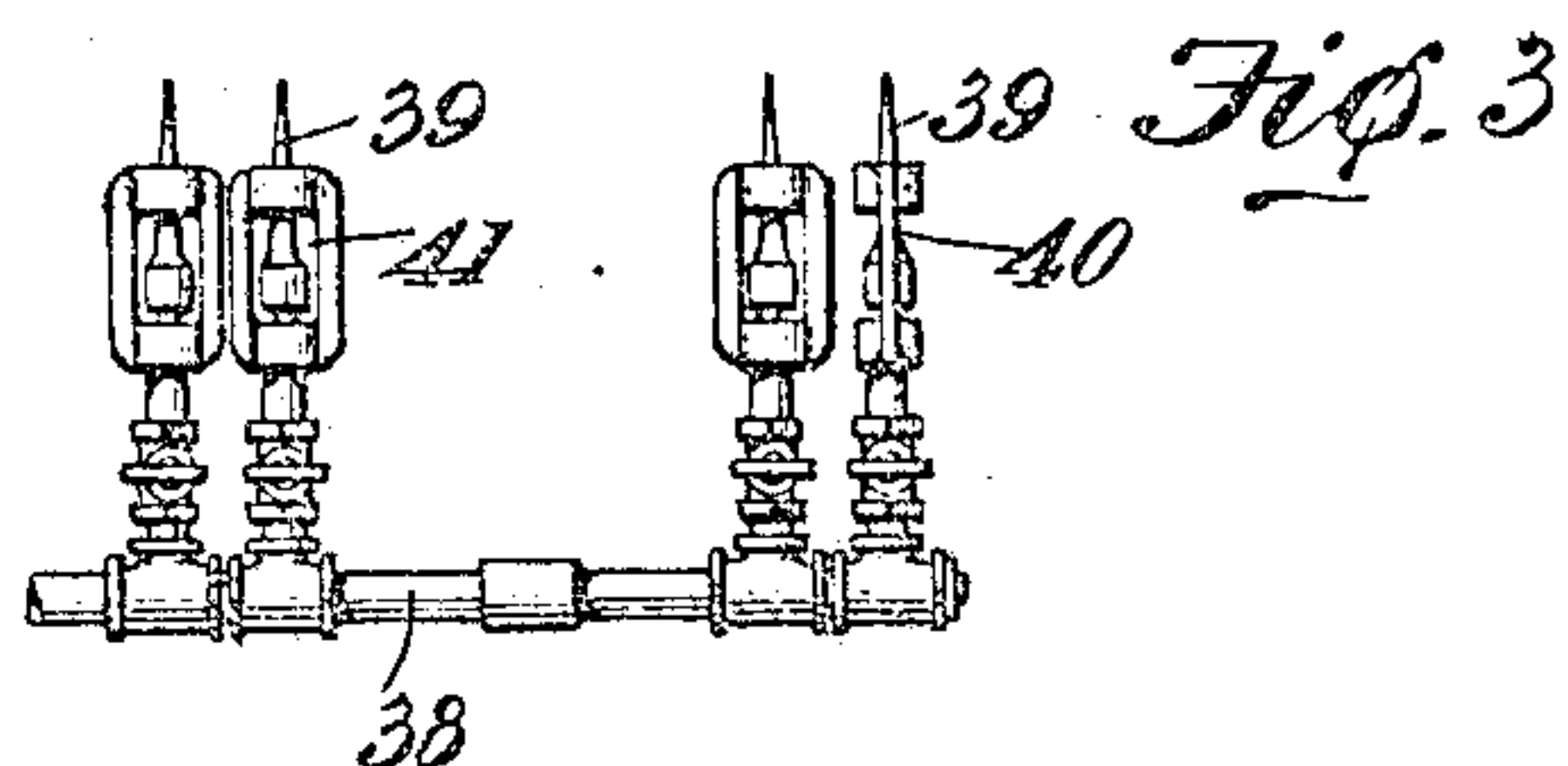
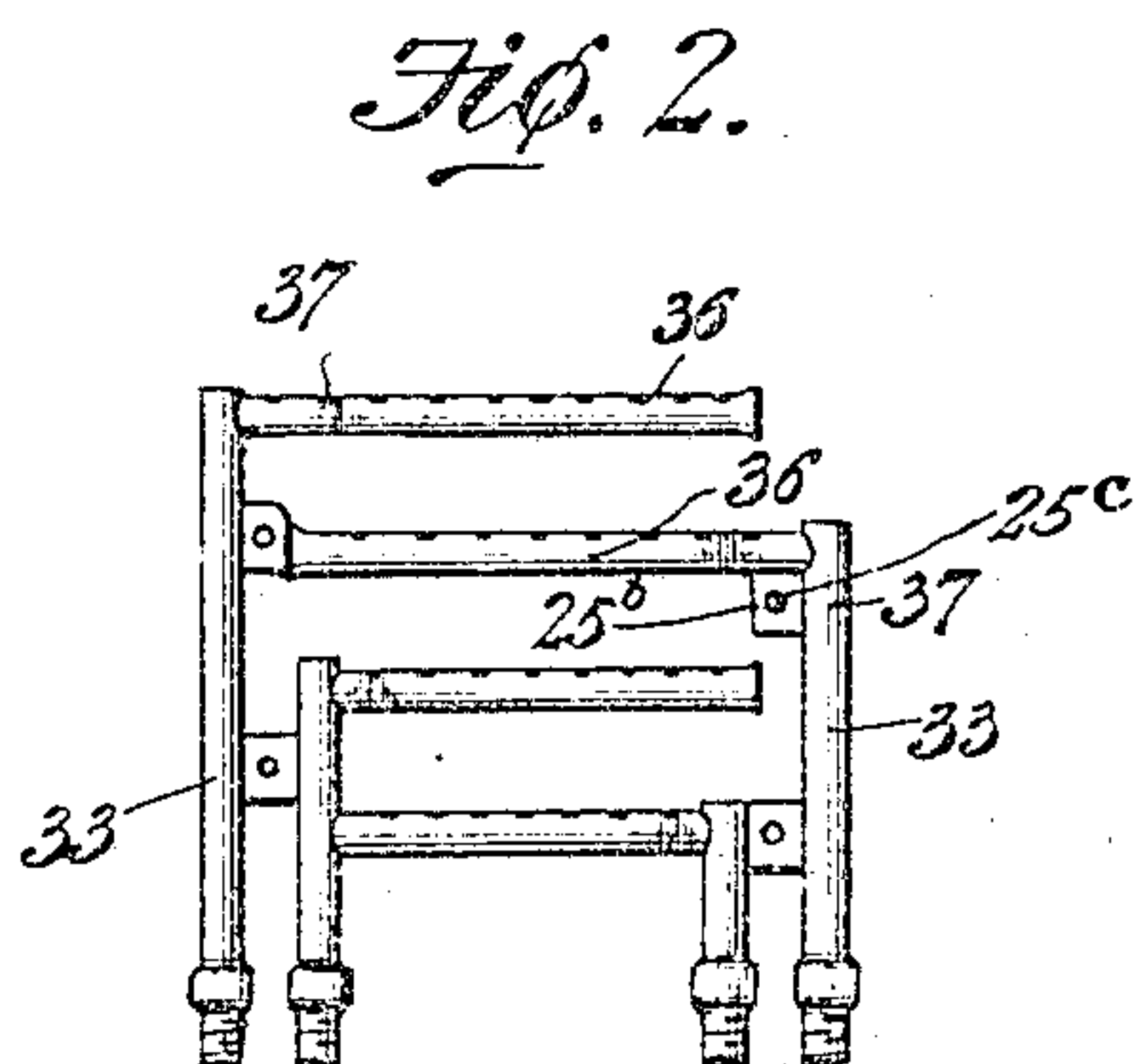
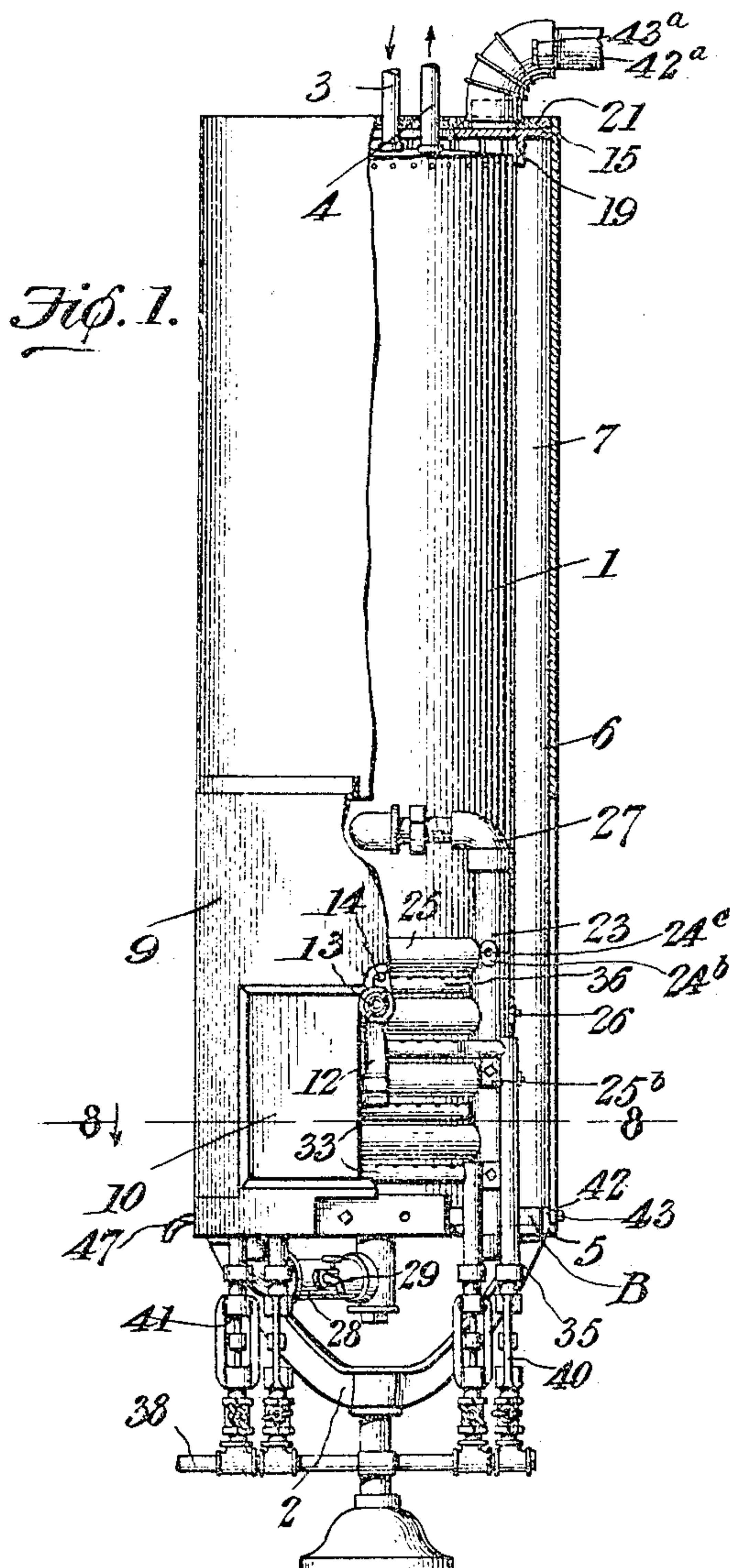


R. SMITH.
WATER HEATER.
APPLICATION FILED NOV. 30, 1904.

2 SHEETS—SHEET 1.



Witnesses
E. H. Stewart
Wm. Bagger

Rose Smith,
Inventor.
by *C. A. Snow & Co.*
Attorneys

R. SMITH.
WATER HEATER.

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2 SHEETS—SHEET 2.

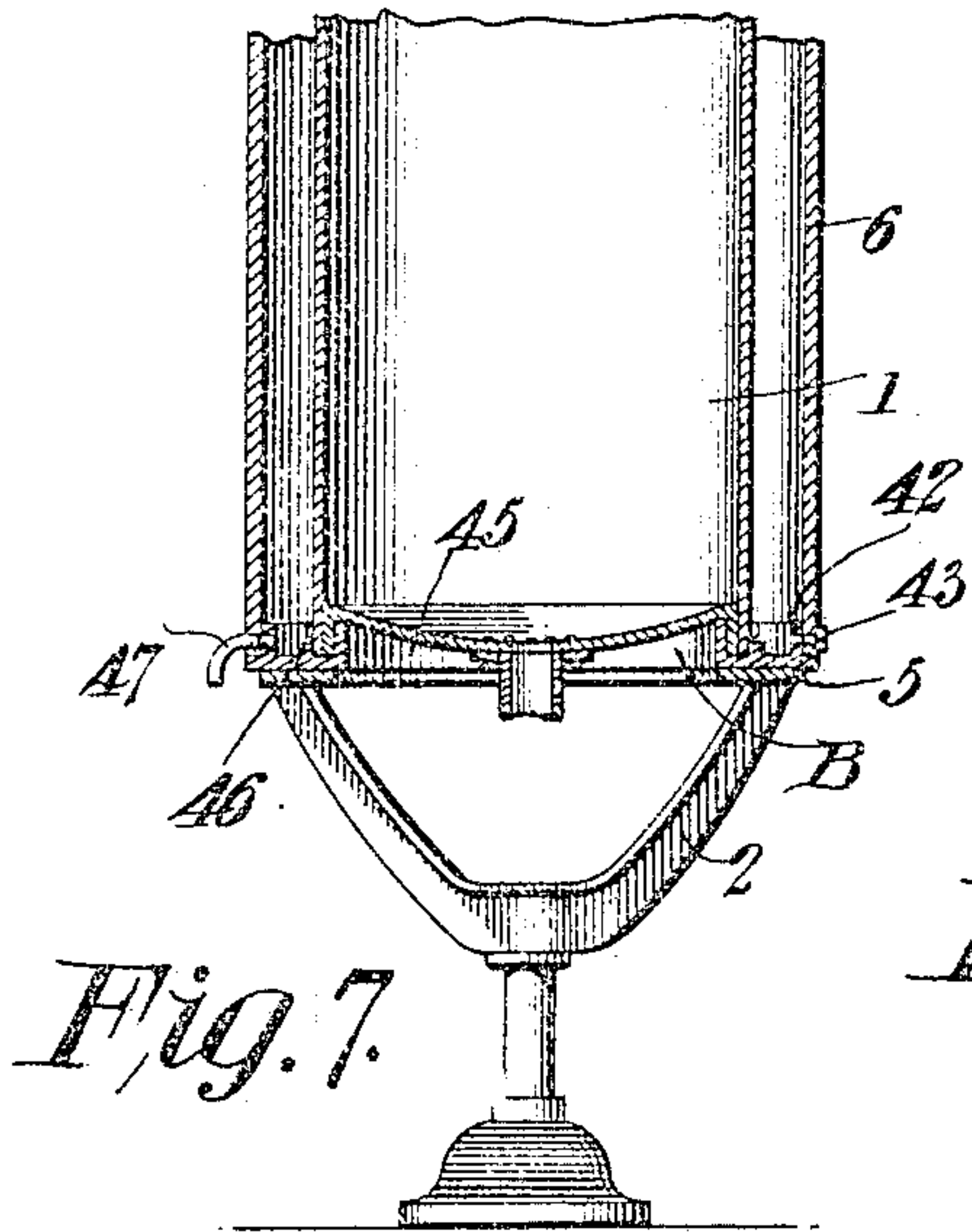


Fig. 7.

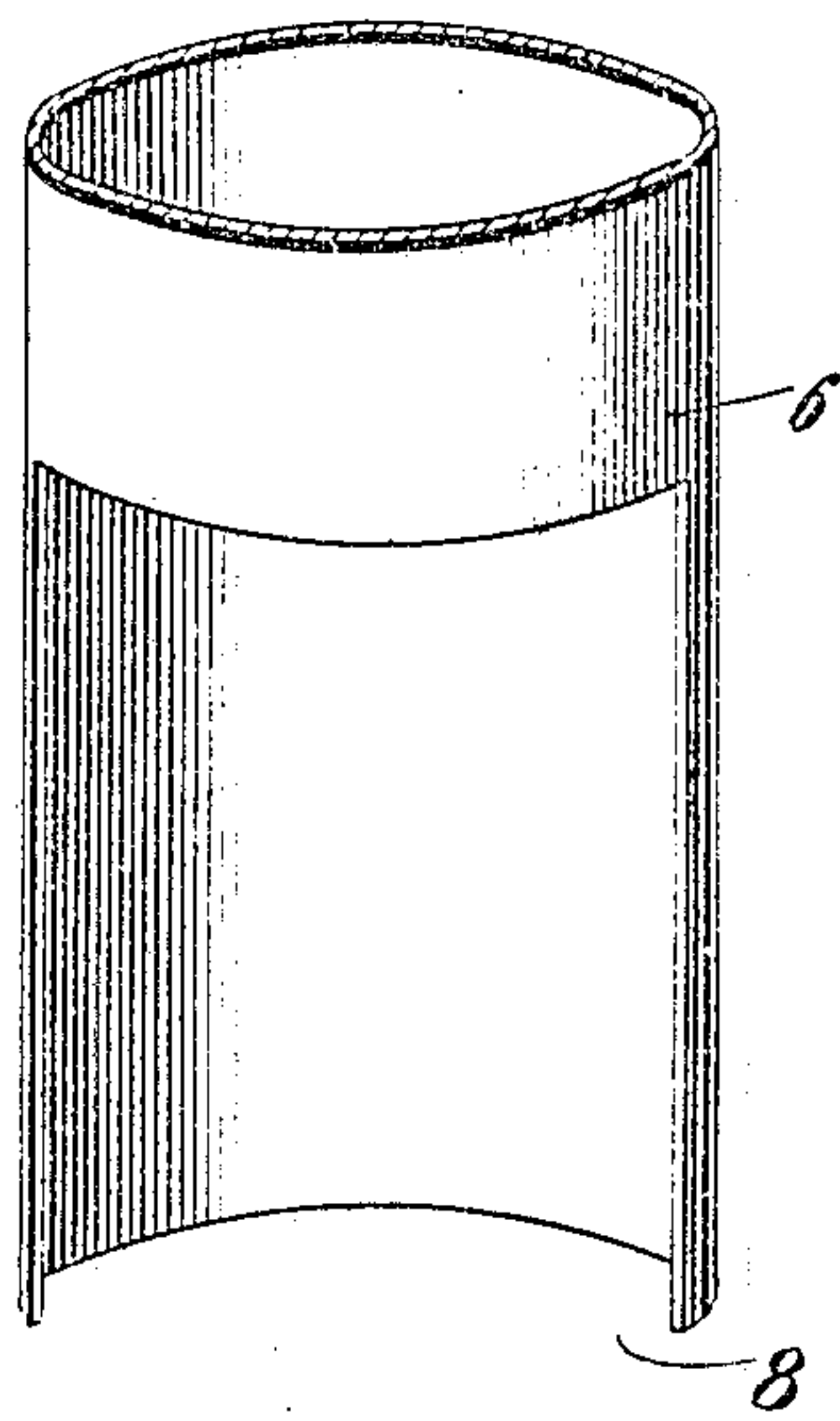


Fig. 9.

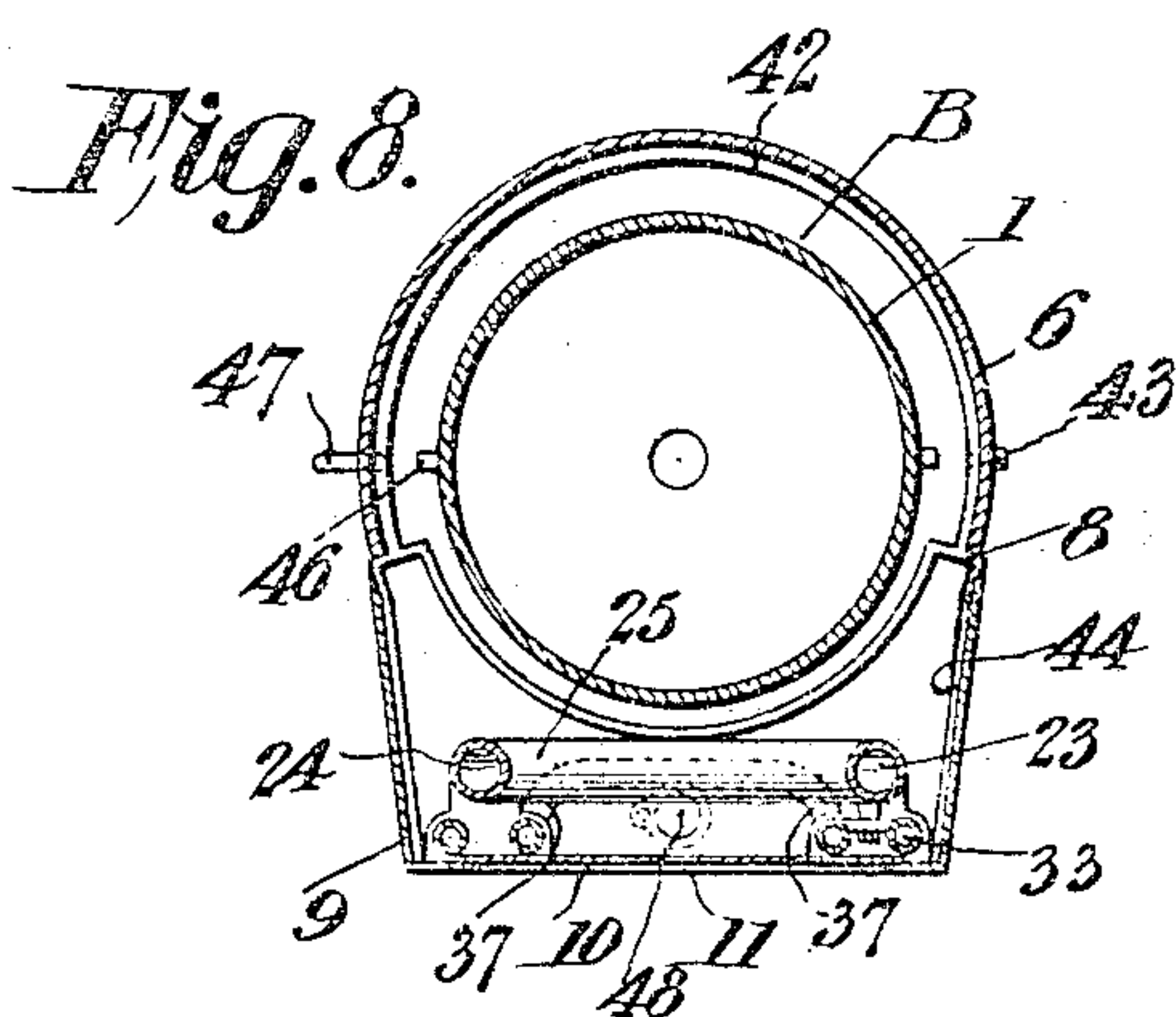


Fig. 8.

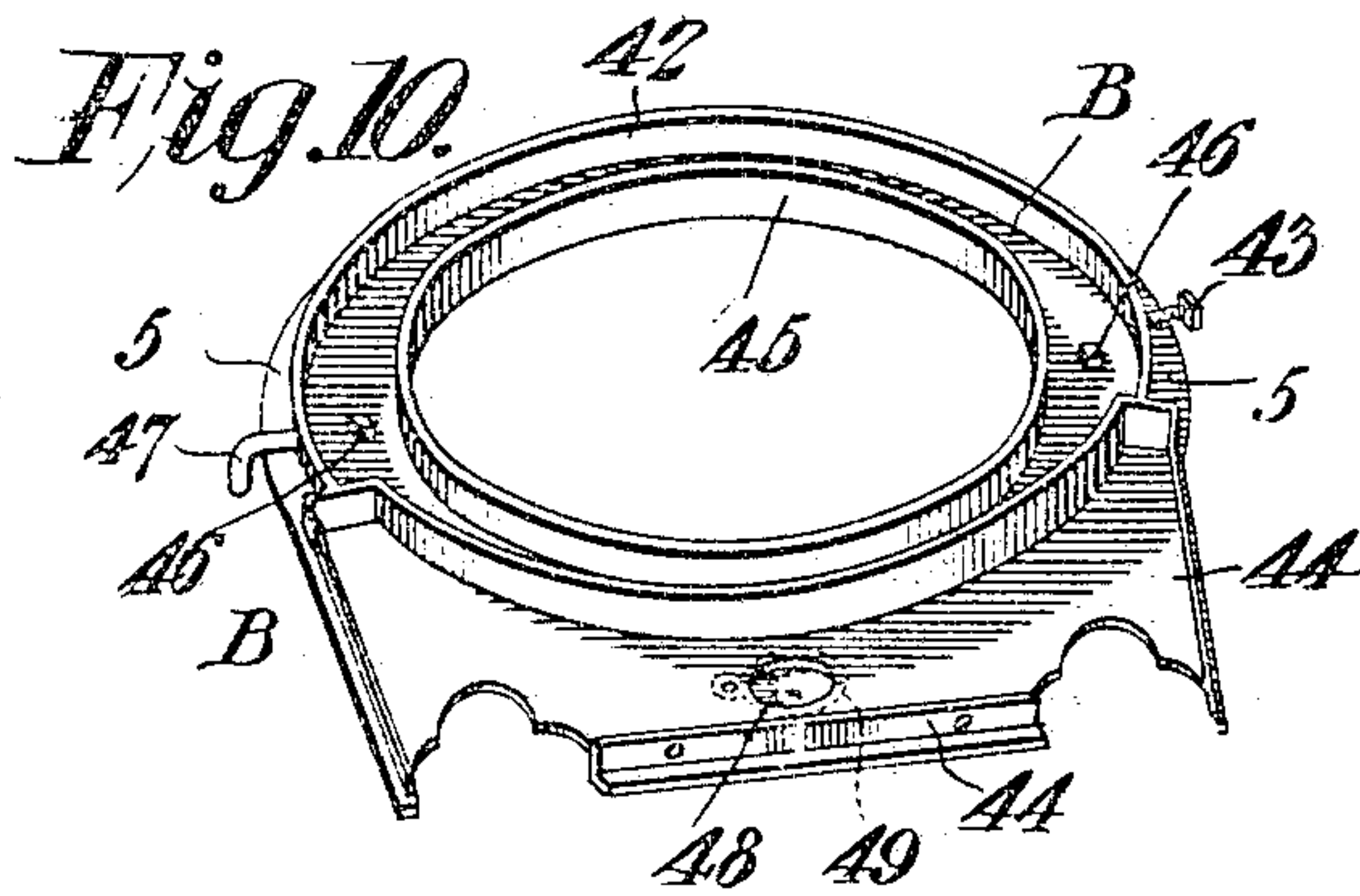


Fig. 10.

Fig. 12.

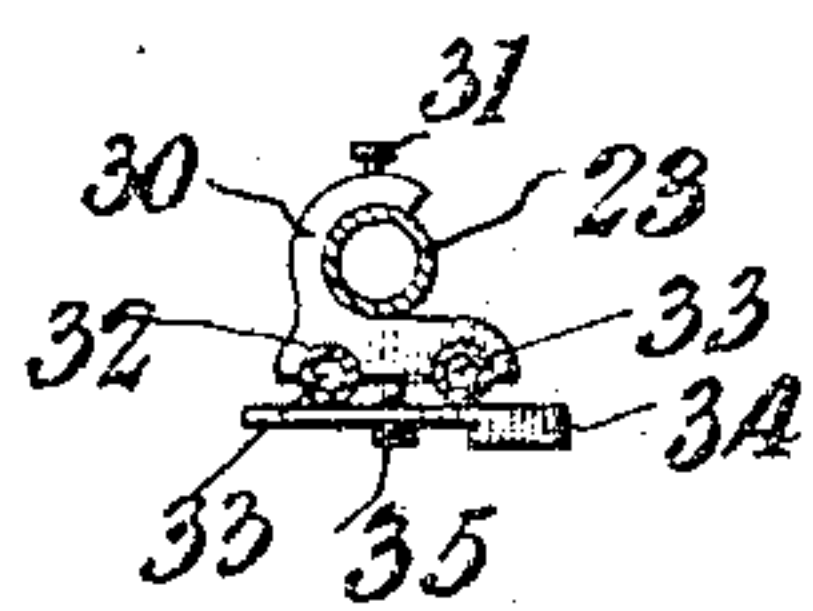
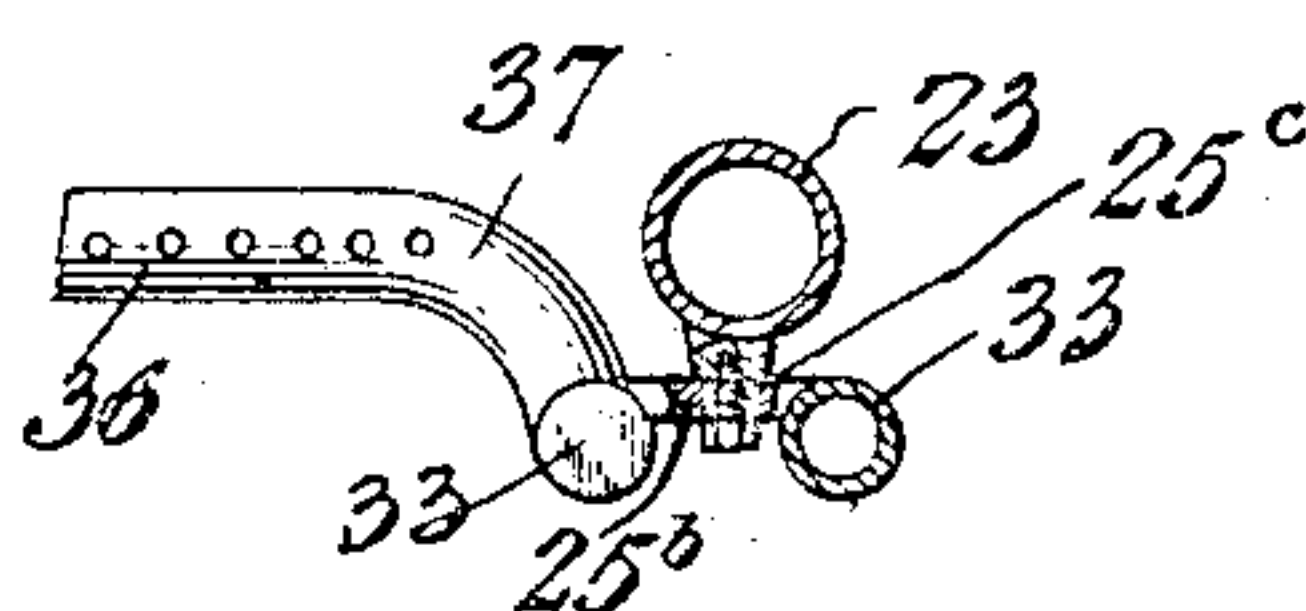


Fig. 11.



Witnesses
E. H. Stewart
Wm. Bagger

Rose Smith,
Inventor
by C. A. Snow & Co.
Attorneys

UNITED STATES PATENT OFFICE.

ROSE SMITH, OF CLEVELAND, OHIO.

WATER-HEATER.

SPECIFICATION forming part of Letters Patent No. 793,164, dated June 27, 1905.

Application filed November 30, 1904. Serial No. 234,954.

To all whom it may concern:

Be it known that I, ROSE SMITH, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Water-Heater, of which the following is a specification.

This invention relates to water-heaters intended, primarily, for domestic purposes; and it has for its object to present a simple and improved construction whereby the contents of a tank or boiler may be heated by the jets of a constantly-ignited gas-burner.

The invention consists in the improved construction and novel arrangement and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of embodiment of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that the right is reserved to any changes, alterations, and modifications to which recourse may be had within the scope of the invention and without departing from the spirit or sacrificing the efficiency of the same.

In said drawings, Figure 1 is a front elevation, partly in section, of a water-heater embodying the invention. Fig. 2 is a front elevation of the burner-pipes or jet-pipes. Fig. 3 is a front elevation of the burners. Fig. 4 is a front elevation of the circulating-tubes. Fig. 5 is a perspective view, reduced, of the door-frame and the door. Fig. 6 is a perspective detail view of the top of the casing. Fig. 7 is a vertical sectional detail view of the lower end of the device, showing the supporting-stand in elevation. Fig. 8 is a horizontal sectional view taken on the line 8 8 in Fig. 1. Fig. 9 is a perspective detail view of the lower part of the casing. Fig. 10 is a perspective detail view of the base-plate. Fig. 11 is a sectional detail view illustrating the preferred method of connecting the burner-pipes with the circulating-pipe. Fig. 12 is a sectional detail view illustrating a

modified means for connecting the burner-pipes with the circulating-pipe.

Corresponding parts in the several figures are indicated by like characters of reference.

In the drawings the invention has been shown as applied to an ordinary tank or boiler 1, suitably supported upon a stand 2, and which is provided with inlet and outlet pipes 3 4. The stand 2 supports a base B, which may be made integral with the stand, but which has here been illustrated as a separate piece or casting. Said base is provided with a flange 5, engaging the lower edge of a casing 6, which is thereby supported upon said stand. This casing, which is preferably constructed of two sheets of metal with an intermediate layer of asbestos or other non-conducting material, is usually cylindrical in shape to correspond with the shape of the tank or boiler, from which it is separated by an intermediate air-space 7. The lower end of the casing has a cut-away portion forming an opening 8 in the front side thereof, and to the said opening is fitted a frame 9, having a door 10, provided with a vertical slot 11, adapted to close by a vertically-movable slide 12. Said slide has a handle 13, whereby it may be manipulated. A turn-button or other suitable fastening device 14 is provided to retain the door in position upon the frame, which latter is suitably supported upon the base B in front of the casing 6, with which it may, if necessary, be connected in any suitable manner to prevent it from being displaced accidentally.

The top of the casing 6 is composed of a collar or annulus composed of two separate parts 15 15, having upwardly-extending lugs 16, adapted to be connected by means of bolts 17. One of the members 15 has an upwardly-extending pipe-collar 18, and the annulus formed by the members 15 is provided with a downwardly-extending flange 19, having a plurality of vertical slots or notches 20. In applying this cover to the casing the annulus is supported upon the top of the tank or boiler, which is usually convex, as is shown in Fig. 1, the annulus being of a size to fit

snugly within the casing 6, the walls of which are extended a short distance above said annulus. The slotted flange of the latter exteriorly engages the upper end of the tank or boiler. After placing the annulus in position it is covered with a layer of non-conducting material in a plastic state, such as asbestos, mixed with a suitable cement or binding medium, as indicated at 21. In this matter the parts are tightly connected, and loss of heat by radiation is prevented.

22 designates a circulating-pipe which is composed of two uprights or stand-pipes 23 24, connected by a plurality of horizontals 25, said stand-pipes being provided in a line with the horizontals with plugs 26 for cleaning purposes. The stand-pipe 23, which is the inlet-pipe, is closed at its lower end, and its upper end is connected with the boiler at a point intermediate the ends of the latter by the connections 27. The pipe 24 is closed at its upper end, and its lower end is connected with the bottom of the boiler by a connecting-pipe 28, having a drain-tap 29. The circulating-pipe, together with the top connections 27, is accommodated within the door-frame 9.

Upon the stand-pipes 23 24 are formed a plurality of bosses 24^b, having screw-threaded recesses 24^c. These are for the purpose of securing upon the circulating-pipe the burner-pipes 33, of which in the accompanying drawings four have been shown, being one for each of the horizontals of the circulating-pipes. These burner-pipes are provided with laterally-extending lugs 25^b, having perforations 25^c, adapted to register with the bosses formed upon the stand-pipes below the horizontals. It will be observed that the stand-pipes are provided with two auxiliary or extra bosses, one upon each, which are located in alinement with and above the uppermost horizontal. These additional bosses are for the purpose of enabling the circulating-pipe, when necessary, to be reversed end for end, thus exposing to the action of the flames the sides which have not previously been exposed, so that by simply reversing the circulating-pipe it would be practically renewed. It will be clearly evident that when the circulating-pipe is thus reversed the auxiliary or extra bosses which were theretofore the uppermost ones and which were not in active use now become the lowermost ones and serve for the attachment of the lowermost lugs of the burner-pipes, while the bosses which were previously at the lower end of the circulating-pipe now become the uppermost ones and while in this position not in active use. In connecting the burner-pipes with the circulating-pipe the perforated lugs upon the former are simply placed in alinement with the bosses upon the latter, when they may be secured by means of ordinary machine-screws or stud-bolts.

Under the modified construction illustrated in Fig. 12 there is mounted upon the lower end of each of the stand-pipes a hooked clamp, as 30, provided with a set-screw 31, whereby it is secured in position. Each of the clamps 30 is provided at the front side thereof with vertical recesses 32 for the accommodation of the burner-pipes 33, which are secured in said recesses by means of a clamping-plate 34 and a stud-bolt 35.

The burner-pipes are provided at their upper ends with the laterally-extending perforated jet-pipes 36, which are curved or offset, as shown at 37, so that the perforated portions of said jet-pipes shall be disposed directly below the horizontals 25 of the circulating-pipe in order that the latter may be directly disposed to the heat of the jets. The gas-supply pipe 38 is provided with nozzles 39, which are extended into the lower ends of the burner-pipes, with which they are connected by means of couplings 40, having openings 41 for the free passage of air around the tips of the nozzles and into the burner-pipes, within which the admixture of gas and air takes place prior to its consumption at the jet-openings.

The base B of the device, as shown in Fig. 10 of the drawings, is provided in addition to the flange 5, which supports the lower edge of the casing, with a vertically-disposed flange 42, fitting within the lower end of the casing and having a set-screw 43 extending through the lower end of said casing for the purpose of securing the latter in position. Said base is also provided with flanges 44 for the support of the door-frame and with an annular flange 45 to support the lower end of the tank, the body of which fits outside of the said flange, as clearly shown in Fig. 7, and between a pair of lugs 46 upon the upper side of the base-plate.

Extending through the flange 42 at the lower edge of said flange is a small elbow-pipe 47, which also extends through the lower end of the casing, thus to assist in securing the latter in position. Said elbow-pipe is for the purpose of permitting water accumulating from the sweating of the tank to be drained off.

The base is provided with a suitably-disposed opening 48, under which is pivotally secured a damper 49, through which air for the support of combustion may be admitted.

The operation of the invention and its advantages will be readily understood from the foregoing description, taken in connection with the drawings hereto annexed. When the jets are ignited, the water contained in the horizontals 25 will be heated and will ascend through the pipe 23 into the boiler, while the cold water will be drawn from the latter through the pipe 24 to replace that which has been heated. A constant circulation is thus set up, which will result in speedily heating the contents of the boiler and in maintaining

said contents at a relatively high temperature. The jacket or casing which surrounds the tank or boiler will prevent the loss of heat by radiation. It will be observed that the hot air is compelled to pass to the pipe through the slots 20 in the flange 19, and the latter will thus act as a retarder to the escape of the hot air, which is compelled to circulate entirely around the boiler before it can readily escape.

Access to the burners may be had through the door 10, and admission of air to the interior of the casing for the purpose of supporting combustion may be regulated by means of the slides 12.

A conductor-pipe 42^a, having a damper 43^a, is adapted to be connected with the pipe-collar 18 for the purpose of conveying the products of combustion to a chimney or other outlet. Sometimes, however, and especially during the winter season, it may be found desirable to connect the circulating-pipe with the water-back of the range or heater. When this is the case, the conducting-pipe may be dispensed with, and the air contained in the space 7 and heated by the radiation from the tank may be permitted to escape into the room where the device is located.

The general construction of this device and of the several parts of the same is simple and inexpensive, and the parts may be readily assembled and taken apart as occasion may demand. The initial expense of construction is moderate, and the device is economical in its operation.

Having thus described the invention, what is claimed is—

1. In a device of the class described, a tank having a convex upper end, a jacket or casing for said tank open at its upper end and spaced from said tank, and a lid or hood fitted in the casing, interiorly engaging the same and having a downwardly-extending slotted flange exteriorly engaging the upper end of the tank.

2. In a device of the class described, a tank or boiler having a convex top, a jacket or casing for said tank spaced therefrom and open at its upper end, an annular hood interiorly engaging the upper end of said casing and having a slotted annular flange exteriorly engaging the tank, an exit-pipe connected with said hood, and a plastic non-conductive covering for the latter.

3. In a water-heater, a tank or boiler, a jacket or casing surrounding said tank and having a cut-away portion at its lower end, a base-frame and a door-frame fitted to each other and both fitted to said cut-away portion, and a door connected with said door-frame and having a draft-opening and a regulating-slide.

4. In a water-heater, a supporting-stand, a tank or boiler and a casing for the same supported upon said stand, said casing being provided with a cut-away portion at its lower end,

a detachable frame fitted to the cut-away portion of the casing and having a door provided with a draft-opening and a regulating-slide, a circulating-pipe connected with the boiler and accommodated within the door-frame, and burner-pipes connected with said circulating-pipe.

5. In a water-heater of the class described, the combination with a tank or boiler, of a circulating-pipe comprising two vertical members or stand-pipes and a plurality of horizontals connecting the same, connecting means between said stand-pipes and the boiler, and burner-pipes connected detachably with said stand-pipes, said burner-pipes having curved or offset portions whereby the main portions of said burner-pipes are extended and supported directly beneath the horizontals of the circulating-pipe.

6. In a water-heater of the class described, a circulating-pipe comprising two vertical members or stand-pipes and a plurality of horizontals connecting the same, said stand-pipes having bosses formed thereon and provided with screw-threaded recesses, in combination with burner-pipes having perforated lugs formed thereon in alinement with the bosses upon the stand-pipes, and connecting-screws.

7. In a water-heater of the class described, a circulating-pipe comprising two vertical members or stand-pipes and a plurality of horizontals connecting said stand-pipes, in combination with burner-pipes adapted for detachable connection with said circulating-pipe; said burner-pipes being provided with attaching means and said circulating-pipe being likewise provided with attaching means cooperating with those upon the burner-pipes; said attaching means upon the circulating-pipe being so disposed that a number of them will be in proper alinement with the attaching means upon the burner-pipes when the said circulating-pipe is turned end for end.

8. In a water-heater of the class described, a suitably-supported base-plate having annular flanges and door-frame-engaging flanges, in combination with a tank supported upon the inner annular flange, a casing engaging the outer annular flange, a door-frame, and securing means extending through the outer flange and the lower end of the casing.

9. In a water-heater of the class described, a suitably-supported base having a draft-opening, a regulating-slide for said opening, a tank, and a cylindrical casing supported upon said base, a door-frame supported upon the base and connected with the lower part of the casing, a circulating-pipe comprising stand-pipes connected with the tank and horizontals connecting said stand-pipes, and burner-pipes supported upon said circulating-pipe; said circulating-pipe and burner-pipes being confined within the door-frame.

10. In a water-heater of the class described,
a suitably-supported base-plate having annu-
lar flanges, a tank supported upon the inner
annular flange, a cylindrical casing engaging
5 the outer annular flange, and a drain-pipe
threaded through said casing and outer flange.
In testimony that I claim the foregoing as

my own I have hereto affixed my signature in
the presence of two witnesses.

ROSE SMITH.

Witnesses:

L. CARDIE,
F. C. BOND.