

No. 860,079.

PATENTED JULY 16, 1907.

J. BINKS.

METHOD OF AND APPARATUS FOR TREATING WOOD WITH PARAFFIN.

APPLICATION FILED DEC. 13, 1905.

3 SHEETS—SHEET 1.

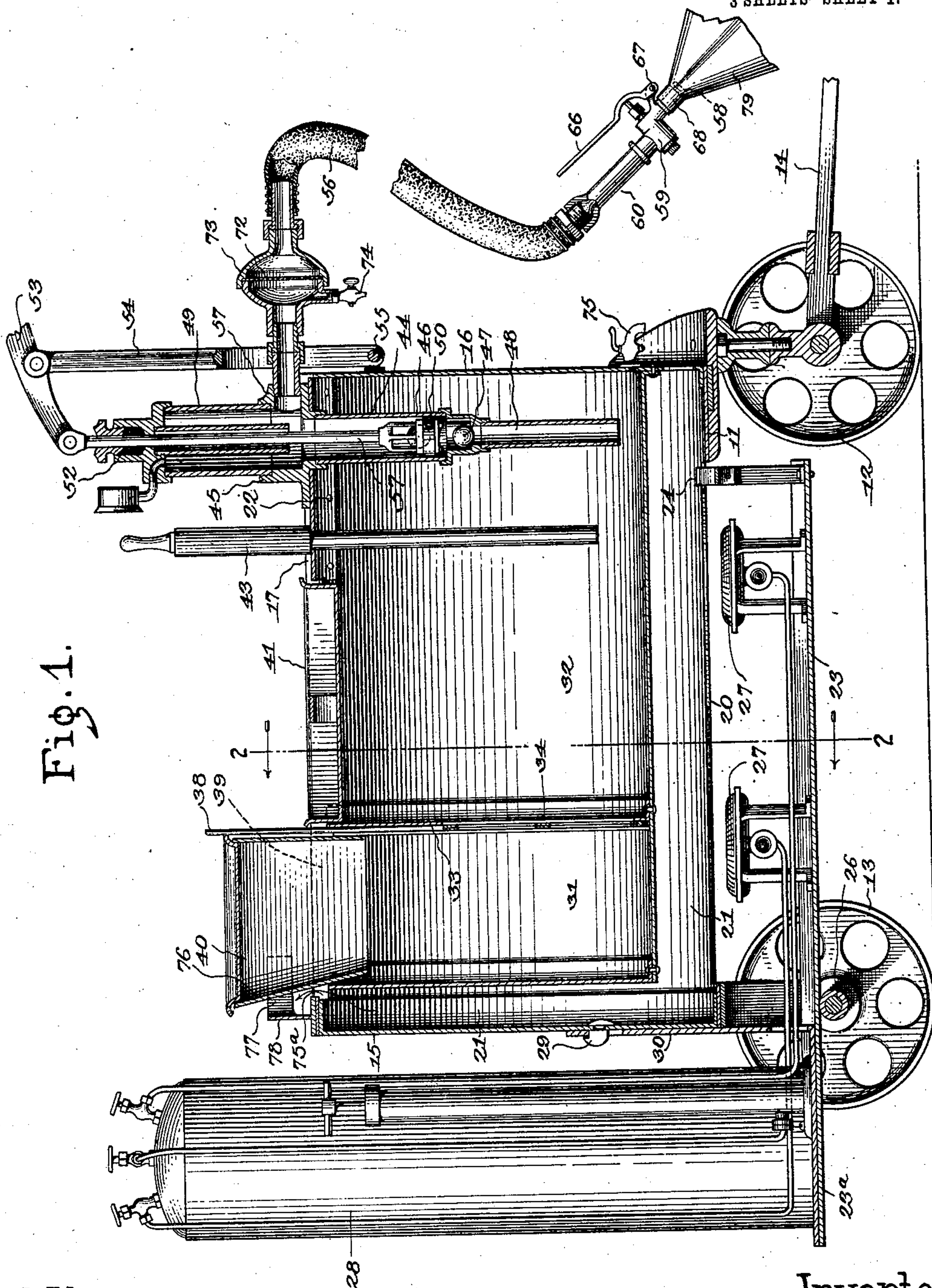


Fig. 1.

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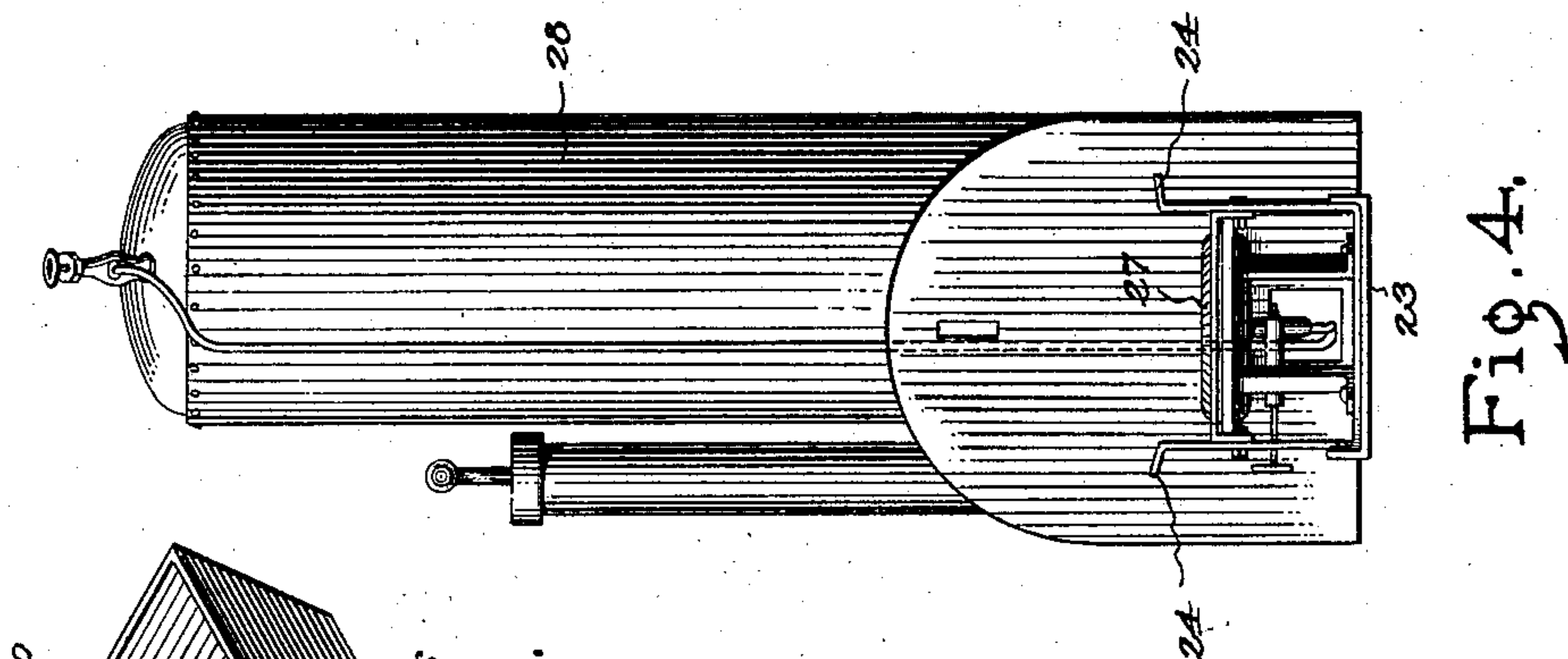


Fig. 3.

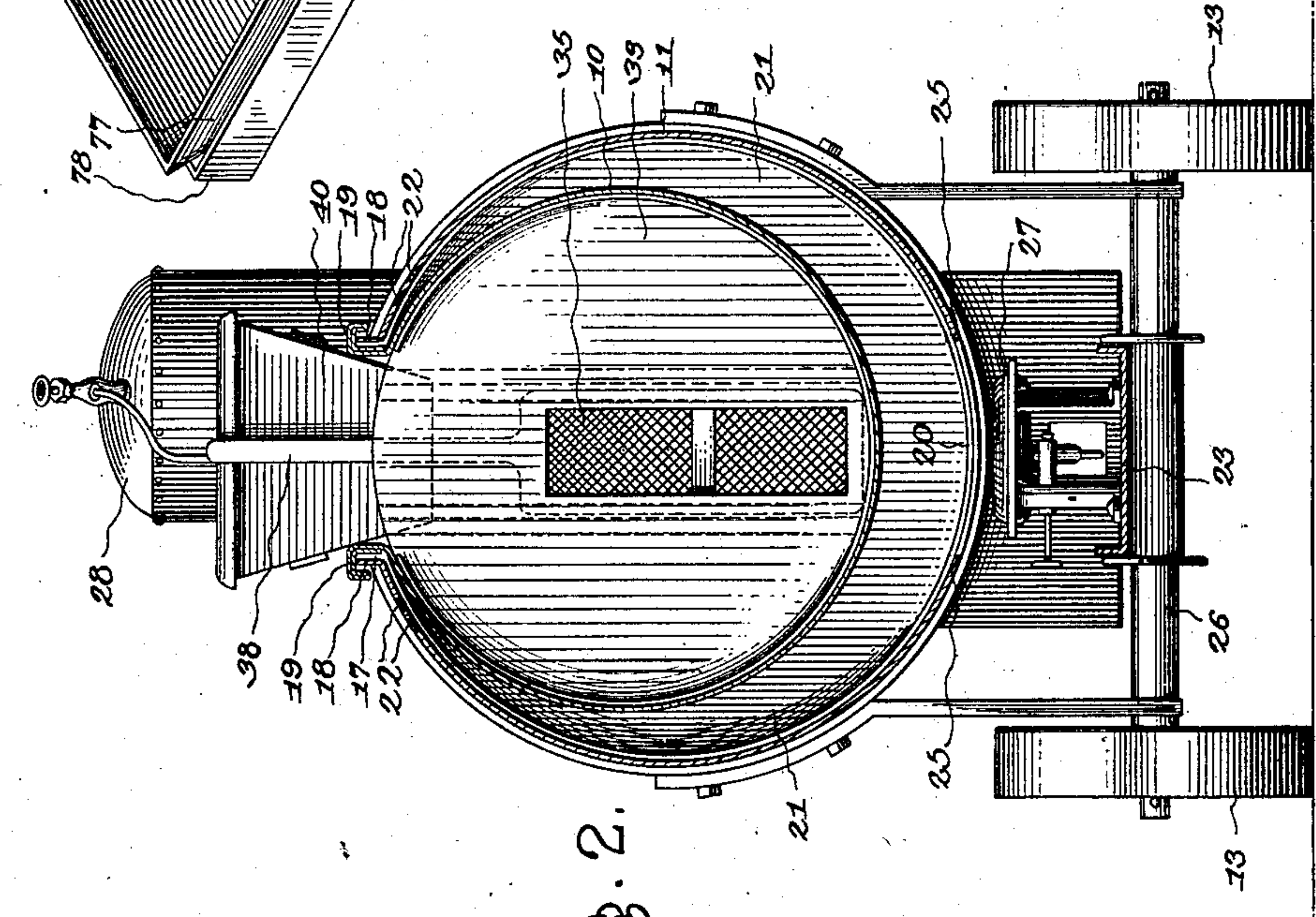


Fig. 2.

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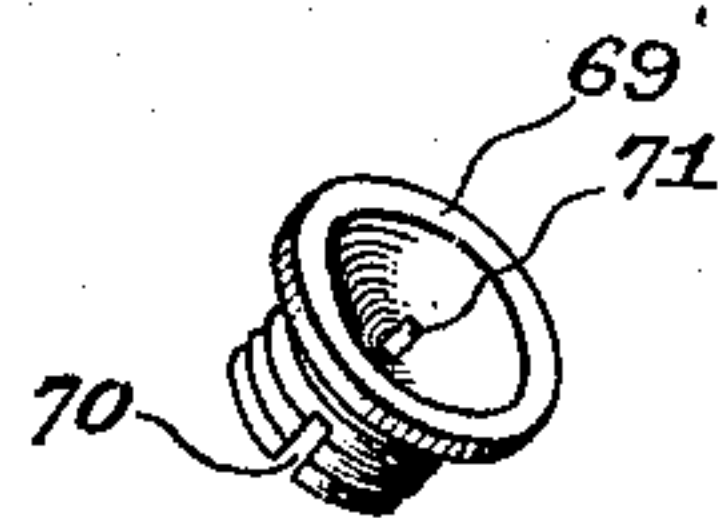


Fig. 8.

Fig. 6.

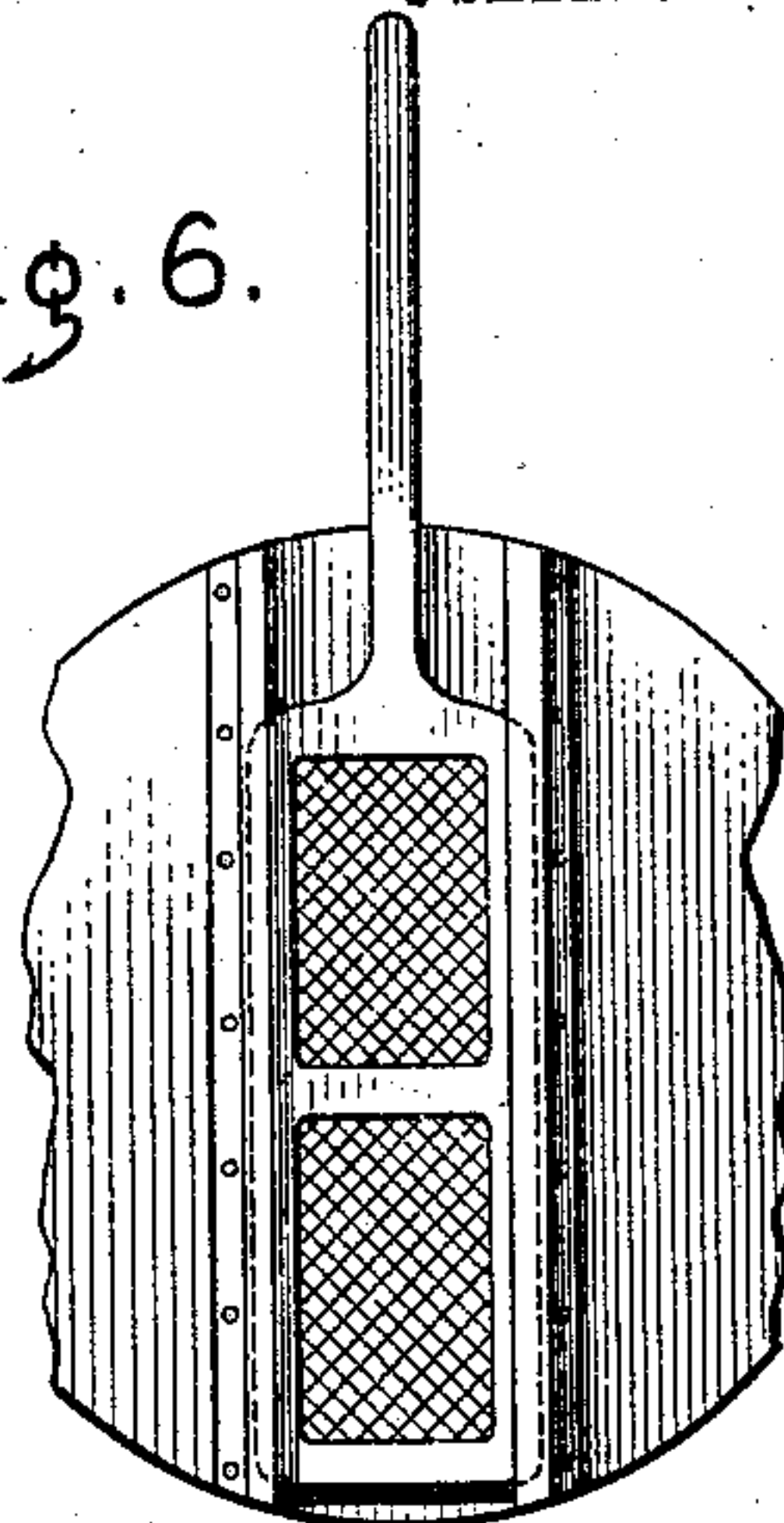


Fig. 5.

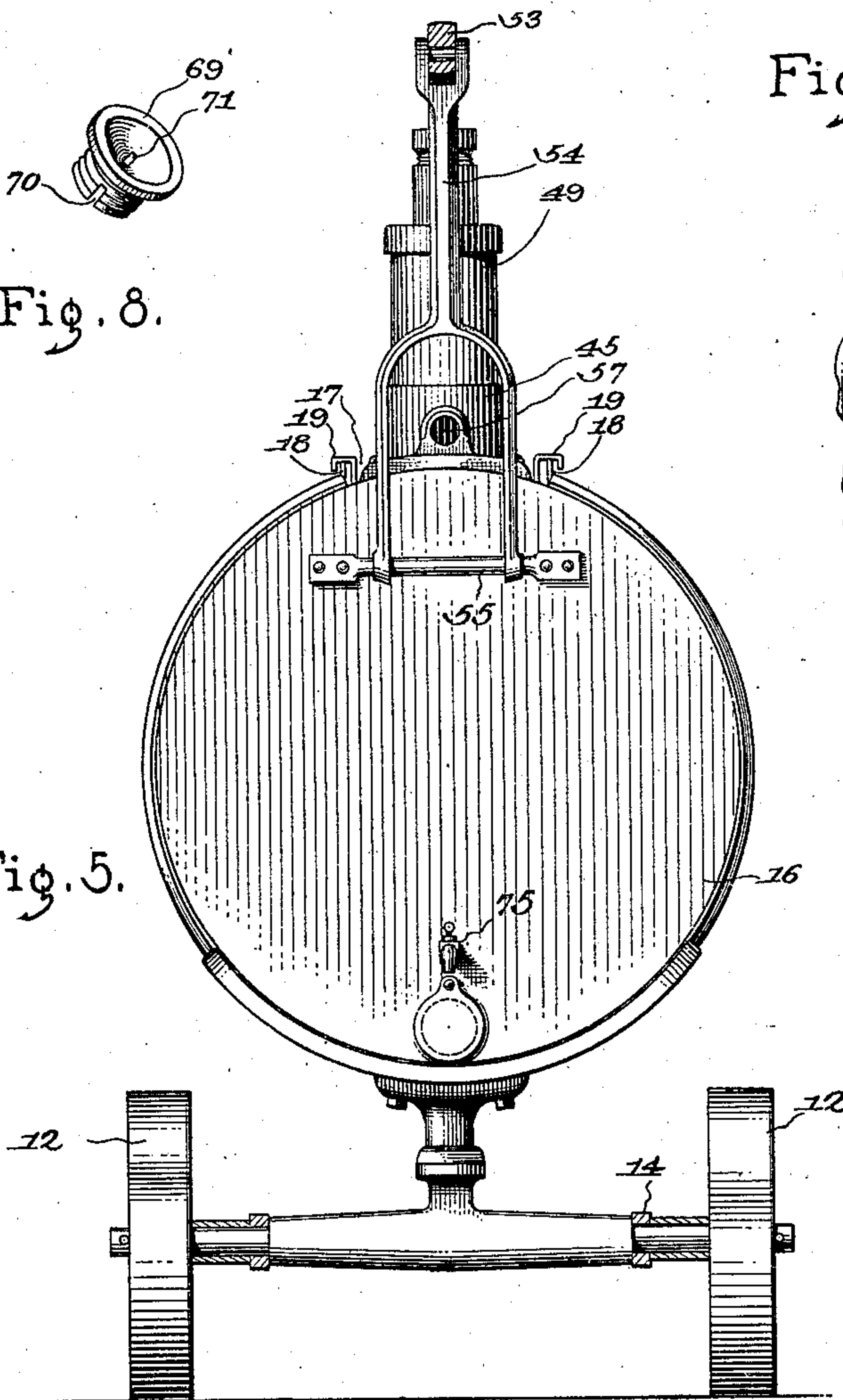


Fig. 9.

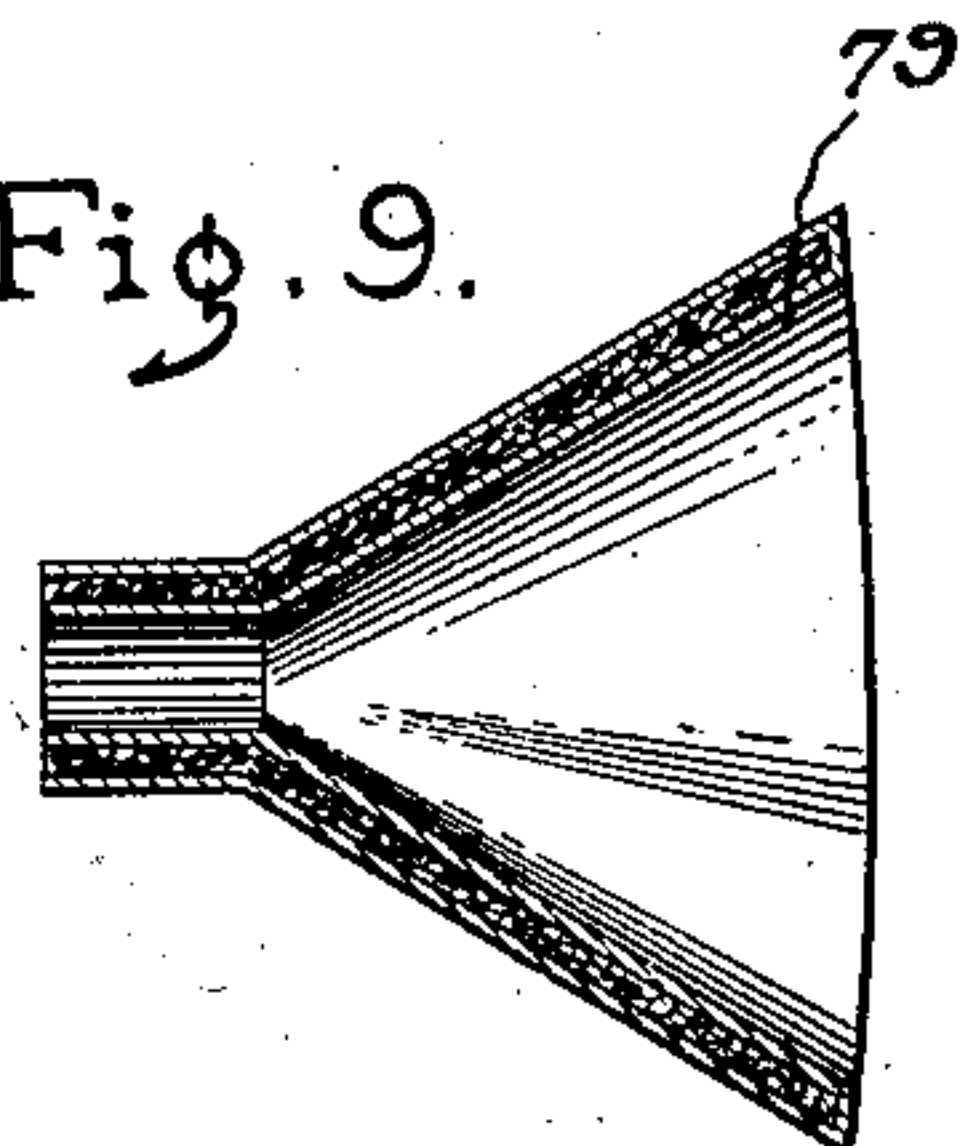


Fig. 10.

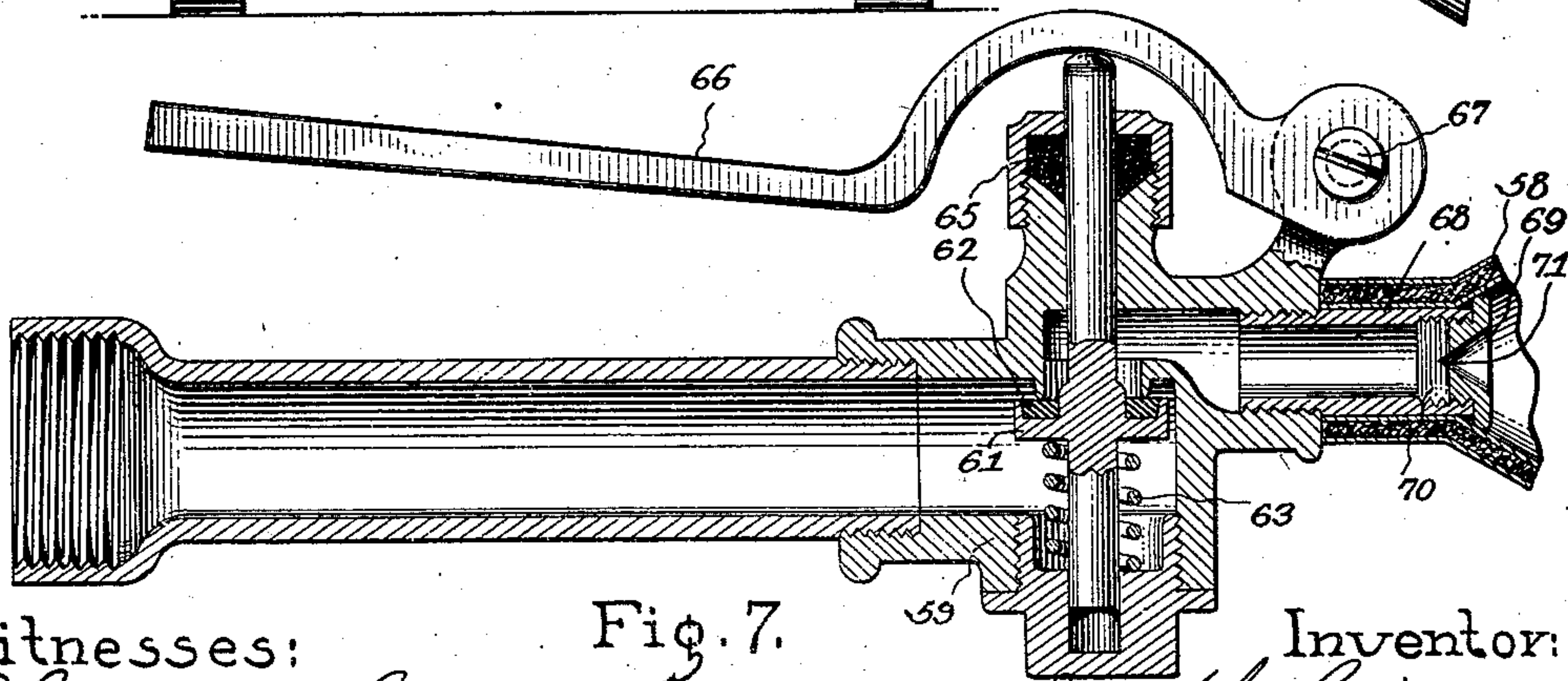
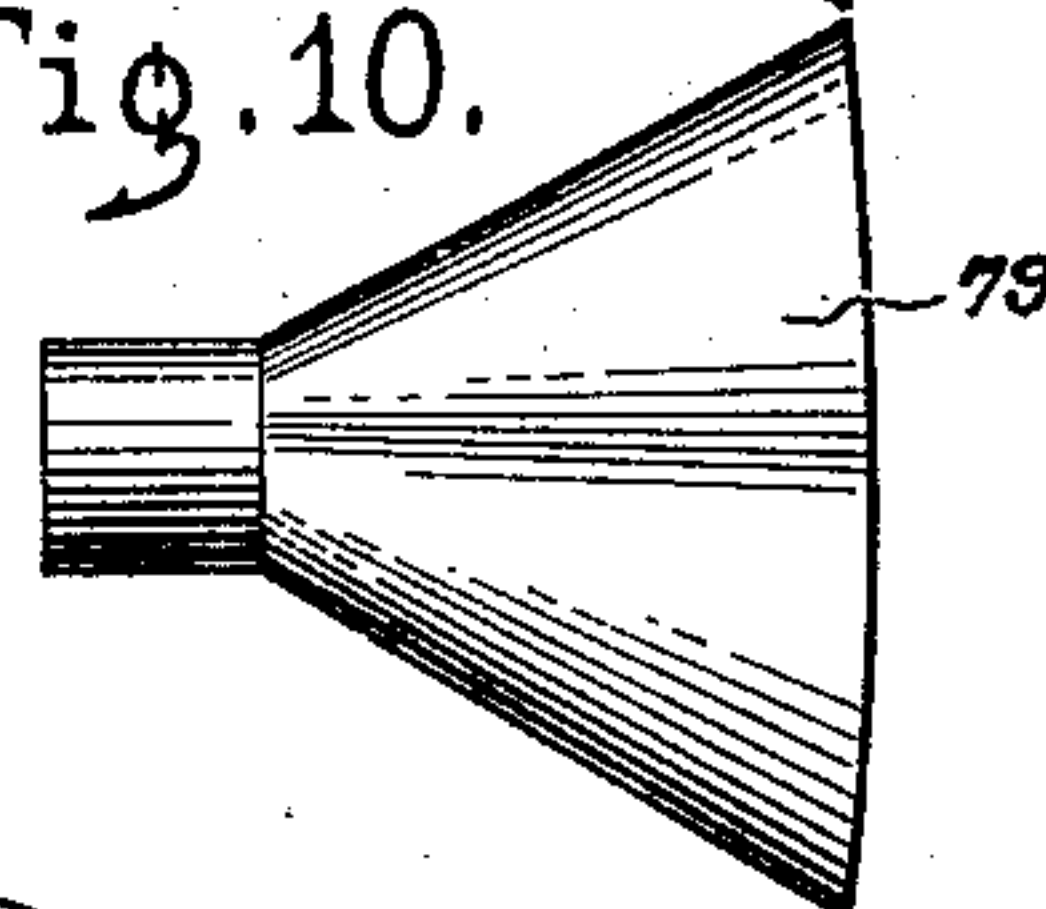


Fig. 7.

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UNITED STATES PATENT OFFICE.

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METHOD OF AND APPARATUS FOR TREATING WOOD WITH PARAFFIN.

No. 860,079.

Specification of Letters Patent.

Patented July 16, 1907.

Application filed December 13, 1905. Serial No. 291,629.

To all whom it may concern:

Be it known that I, JOSEPH BINKS, a citizen of the United States, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Methods of and Apparatus for Treating Wood with Paraffin, of which the following is a specification, and which are illustrated in the accompanying drawings, forming a part thereof.

The invention relates to a method of and apparatus for coating wood surfaces with paraffin; and has for its object to provide simple and efficient means of protecting such surfaces from the action of corrosive liquids.

The invention is particularly applicable to coating the interior surfaces of wooden vessels, as, for example, the wooden casks or containers used for storing beer during certain operations in the course of its manufacture. These casks, as usually employed, are made of wooden staves, which, if not protected from the action of the liquid contents of the casks, rapidly deteriorate and impart an undesirable color and flavor to the beer. The method of protecting the interior surfaces of these casks has heretofore been to coat them with varnish, but this method has been objectionable not only because of the great cost of varnishing material, but also because such coating does not last for any great length of time, and before it can be renewed all of the old coating must be removed by scraping. This is a tedious and expensive operation, occupying much time, which, together with the time required for the new coating of varnish to thoroughly dry, requires each cask to be out of service for a considerable period during each year.

The invention contemplates coating the interior surfaces of such casks by spraying melted paraffin upon them; and consists in the method and apparatus to be hereinafter described, reference being had to the accompanying drawings, in which

Figure 1 is a central vertical longitudinal sectional view of a structure showing the preferred form of apparatus involved in the invention; Fig. 2 is a vertical cross-section on the line 2—2 of Fig. 1; Figs. 3 and 4 show in detail a funnel and a heating appliance, respectively, employed in the apparatus; Fig. 5 is a front elevation of the structure; Fig. 6 is a detail view showing in elevation the reverse side of a reservoir partition shown in Fig. 2; Fig. 7 is a central longitudinal section of a spraying nozzle and its controlling valve, these devices being parts of the apparatus in its preferred form; Fig. 8 shows a detail of the spraying nozzle drawn in perspective; and Figs. 9 and 10 are a longitudinal section and an elevation, respectively, of a form of head for the spraying nozzle.

In breweries in which the invention will be employed, the casks or containers for storing beer are of enormous size and are usually arranged in long rows

within a large room, leaving but a narrow aisle between adjacent rows for the purpose of obtaining access to the several casks, and each cask has near its base a manhole, opening into the aisle through which, when the cask is empty, the operator may enter its interior. In order, therefore, that the invention may be applicable for use in places of this kind, the apparatus by means of which it is practiced must be capable of being moved about in the aisles between the rows of casks, and to this end this apparatus takes the form of a portable truck and comprises a reservoir 10, inclosed within a jacket or casing 11, of somewhat greater dimensions and mounted upon front and rear carrying wheels 12 and 13, a draft handle 14 being attached, in any convenient manner, to the forward end of the truck. The jacket 11 is preferably cylindrical in form and horizontally disposed, as shown one of its ends, as 15, is permanently closed, and an openable cover 16 is provided for the opposite end.

At the top of the casing or jacket there is a longitudinal opening 17 extending for substantially its entire length, the side margins of this opening being upturned to form ways 18, 18, most clearly shown in Fig. 2. The reservoir 10 is supported within the casing 11, preferably in such a way that the bottom of the reservoir is raised a considerable distance above the floor of the casing, and in the device, as illustrated, this is accomplished by means of suitable flanges 19, 19, formed on the body of the reservoir and bearing upon the ways 18, 18, of the casing. The cover 16 for the forward end of the casing is preferably identical with the end wall of the reservoir, and the latter may therefore be drawn bodily out of the end of the casing, the flanges 19, 19, sliding on the ways 18, 18.

At the base of the casing there is provided an elongated opening 20 for the application of heat to the bottom of the reservoir 10, and in view of the fact that the dimensions of the reservoir are less than those of the casing, an interspace 21 is provided which permits access of heated air entering through the opening 20, to the side and end walls of the reservoir. Openings 22, 22 are also provided in the wall of the casing at either side of the opening 17 for the escape of this heated air, so that a circulation of air through the interspace 21 may be maintained.

A shelf 23 is supported beneath the opening 20 for carrying a heating appliance. As shown, flanges 24 rise from the shelf and slidably engage the margins 25 of the opening 20 for supporting the forward end of the shelf, its rear end being supported by means of an axle 26, which connects the rear carrying wheels 13 of the truck. The heating appliance carried by the shelf may be of any convenient form, preferably, however, a plurality of gasolene burners 27 are employed and are supplied with fuel in the customary manner from a storage tank 28, mounted on a portion 23^a of

the shelf which projects beyond the rear of the casing 11. It will be readily observed that the shelf 23 may be drawn backwardly from beneath the casing 11 to permit of an inspection of the burners 27, the flanges 24, for this purpose, sliding upon the margins 25 of the opening 20. Normally, however, this movement of the shelf is prevented by means of a catch 29 secured to the rear wall 15 of the casing and engaging the margins of a suitable aperture formed in a bracket 30 rising from the shelf.

The interior of the reservoir 10 is divided into compartments 31, 32, by means of a vertically disposed partition wall 33, having in its lower portion an opening 34 normally crossed by a screen 35, and in order that the screen may be removed for the purpose of cleaning it is mounted in a suitable frame 36, slidable in ways 37, formed on the partition wall, and is provided with a handle 38 extending to the top of the reservoir, so that it may be easily reached by the attendant.

A filling opening 39 is provided at the top of the reservoir and communicates with the interior of the compartment 31. It is preferably fitted with a funnel 40, which most conveniently takes the form shown in detail in Fig. 3. An additional opening 41, normally closed by a suitable cover, is provided at the top of the reservoir to permit access to the interior of the compartment 32, and a thermometer 43 extends into the chamber of this compartment, preferably through a small opening 42 provided for the purpose.

A force pump 44 is employed for discharging the contents of the reservoir and, as shown, extends into the compartment 32, and is rigidly attached to the reservoir by means of a bushing 45 permanently secured to the reservoir wall at its top and preferably near its forward end. The pump barrel 46 extends from the bushing 45 into the chamber of the compartment and is provided with the usual foot valve 47 and a stem 48 leading from the valve to substantially the bottom of the chamber. The compression chamber 49 of the pump is mounted on the bushing 45, above the reservoir, and the usual pump plunger 50 reciprocates within the pump barrel 46, being in this case connected by a rod 51 extending up through the compression chamber 49 and a stuffing box 52 formed in its upper wall, to the pump lever 53, the fulcrum 54 of which is oscillatably connected to the front wall 16 of the reservoir by means of a bail 55. The discharge of the pump is preferably through a flexible tube 56, attached to the compression chamber 49 preferably at a threaded aperture 57, formed in the wall of the bushing 45, and to which a nozzle 58, which will usually be of a peculiar construction, as will be hereinafter more fully described, is applied.

The discharge from the nozzle is controlled by means of a valve mechanism 59, such, for example, as that employed for controlling the discharge from the nozzles of machines for spraying whitewash and paints and shown in detail in Fig. 7. This valve mechanism is provided with a shank 60, preferably of considerable length to form a convenient grip for the hand of the operator, and the valve 61, which is faced with a layer of yielding material 62, as the ordinary indurated fiber of commerce, is normally closed by means of a spring 63. The valve plunger 64 extends through a stuffing box 65, formed in the wall of the valve casing,

and may be shifted to open the valve in opposition to the spring 63 by a lever 66, pivoted to the valve casing at 67 and having an elongated handle so as to be conveniently reached by the hand of the attendant upon the grip 60.

The nozzle 58, in its preferred form, is connected to the valve mechanism 59 by means of a nipple 68, and as shown entirely closes the discharge opening of the nipple except for a small slotted opening 71 formed by the intersection of a tapering recess 69 in the face of the nozzle, and a saw-cut 70 at the back of the nozzle. The nozzle is so formed as to subdivide the liquid into a fine spray. In order to prevent the particles of the spray from cooling before reaching the surface being treated under the influence of the entrained air, the nozzle is inclosed within a hood, preferably funnel-shaped, as shown at 79. The efficiency of this hood may be increased by conforming its end generally to the surface being treated, thereby permitting it to be brought directly into contact with such surface to exclude the air almost entirely.

Usually a filtering screen 72, inclosed within a chambered receptacle 73, will be interposed between the discharge opening 57 of the pump and the flexible tube 56. This device is of ordinary construction, as used for filtering flowing liquids, and as shown is provided with a drain opening 74, at the inner side of the screen 72, through which any material which does not pass the screen may be discharged. The contents of the reservoir 10 may be drawn off, when desired, through a faucet 75, applied to the front wall 16, near the bottom of the reservoir.

As shown, the opening 17 at the top of the casing 11 extends beyond the rear end of the reservoir 10 a sufficient distance to permit of the escape of heated air from the interspace 21, as at 75^a, Fig. 1. The parts are so proportioned that air passing out at this point comes in contact with an inclined wall 76 of the funnel 40, so as to heat its contents and, to cause the heated air to come in contact with a greater area of the funnel wall 76, a flue or double wall 77 is provided at the back of the funnel, the outer wall 78 of the flue fitting over the wall of the casing 11.

The improved method of treating wood with paraffin consists, broadly, in spraying melted paraffin upon the surface of the wood. This method may be performed in any way desired, but most conveniently by using the improved apparatus just described, in the following manner:—Immediately after lighting the burners 27 of the heating appliance carried by the shelf 23, blocks of solid paraffin will be thrown into the funnel 40, those being too large to fall at once from the funnel into the chamber 32 of the reservoir being melted down by contact with the heated wall 76. As the material within the chamber 32 is melted by the heat from the burners 27, it will pass through the screen 35 to the compartment 33, which will gradually become filled with melted paraffin, and when its contents have become heated to the desired temperature, as noted upon the thermometer 43, the pump 44 may be employed for discharging the melted paraffin through the hose and nozzle 56 and 58, respectively, upon the wood to be treated. If, however, the method and apparatus are to be employed for coating the interior surface of the wooden casks of breweries, the ap-

paratus will be drawn, by means of the draft handle 14, through the aisles between the rows of casks to that one to be treated. An attendant will then enter the cask with the flexible tube 56, the pump 44 being operated by a second attendant who remains outside of the cask. By opening the valve mechanism 59 and judiciously directing the nozzle 58, an even coating of paraffin may be deposited over the entire inner surface of the cask, the supply of material within the reservoir of the apparatus being replenished from time to time by the addition of solid paraffin to the funnel 40. The wood to be treated should be heated, by any suitable means, preparatory to the application of the spray, in order to increase its porosity. The paraffin should be heated quite hot, I have found a temperature of upwards of 400 degrees Fahrenheit desirable, and the quantity applied is preferably only such as will be instantly taken up by the pores of the wood, so that no film or coating remains on the surface; thereby preventing waste of material. Wood thus treated remains impervious to the beer or other corrosive liquids for a long period, longer than it is necessary to leave the beer in the tanks for its proper treatment. Hence there is no contamination of the liquid by the wood, or by the material used in treating the latter.

While I have referred particularly to the use of the apparatus and method in connection with casks employed in breweries, the invention is applicable as well to any situation where it is desired to render a porous material impervious to water and protect it from corrosive action by filling its pores with such a material as paraffin.

I claim as my invention—

1. In an apparatus of the kind described, in combination, a jacket, a heating appliance at the base of the jacket, ways formed on the jacket, a reservoir housed within the jacket and supported by the ways, a pump delivering from the reservoir; and a hose and nozzle attached to the discharge opening of the pump.

2. In an apparatus of the kind described, in combination, a horizontally disposed cylindrical casing mounted

on wheels and having an openable end, a heating appliance at the base of the casing, a longitudinal opening at the top of the casing, a reservoir fitting within the casing and having flanges for slidably engaging the margins of the opening, and a pump delivering from the reservoir.

3. In an apparatus of the kind described, in combination, a casing mounted on wheels and having an openable end, a longitudinal opening at the base of the casing, a longitudinal opening at the top of the casing, a reservoir fitting within the casing and having flanges for slidably engaging the margins of the openings at the top of the casing, a pump delivering from the reservoir, a shelf below the casing and having flanges for slidably engaging the margins of the opening at the base of the casing, and a heating appliance carried by the shelf.

4. In an apparatus of the kind described, in combination, a casing mounted on wheels, an opening at the top of the casing and a heating appliance at the base of the casing, a reservoir within the casing and having a filling opening registering with the opening of the casing, a funnel fitting into the filling opening of the reservoir and having a double wall, the outer wall of the funnel bearing on a margin of the opening of the casing.

5. In combination, a reservoir, a funnel discharging into the reservoir, a jacket inclosing and spaced apart from the reservoir, a jacket inclosing and spaced apart from the funnel, and a burner discharging the products of its combustion into such casings.

6. The herein described method of treating wood surfaces, consisting in first heating the wood and then applying thereto paraffin at a temperature above that at which it fuses.

7. In an apparatus for spraying a curved surface with heated liquid, the combination with a spraying nozzle, of a hood surrounding the nozzle, the end of the hood conforming in shape to the surface to be treated.

8. The herein described method of treating wood surfaces, consisting in first heating the wood, and then depositing melted paraffin on its surface in the form of a spray.

9. In an apparatus for spraying a curved surface with a heated liquid, the combination with a flexible conductor, of a spraying nozzle therefor and a hood surrounding the nozzle, the end of the hood conforming in shape to the surface to be treated.

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