

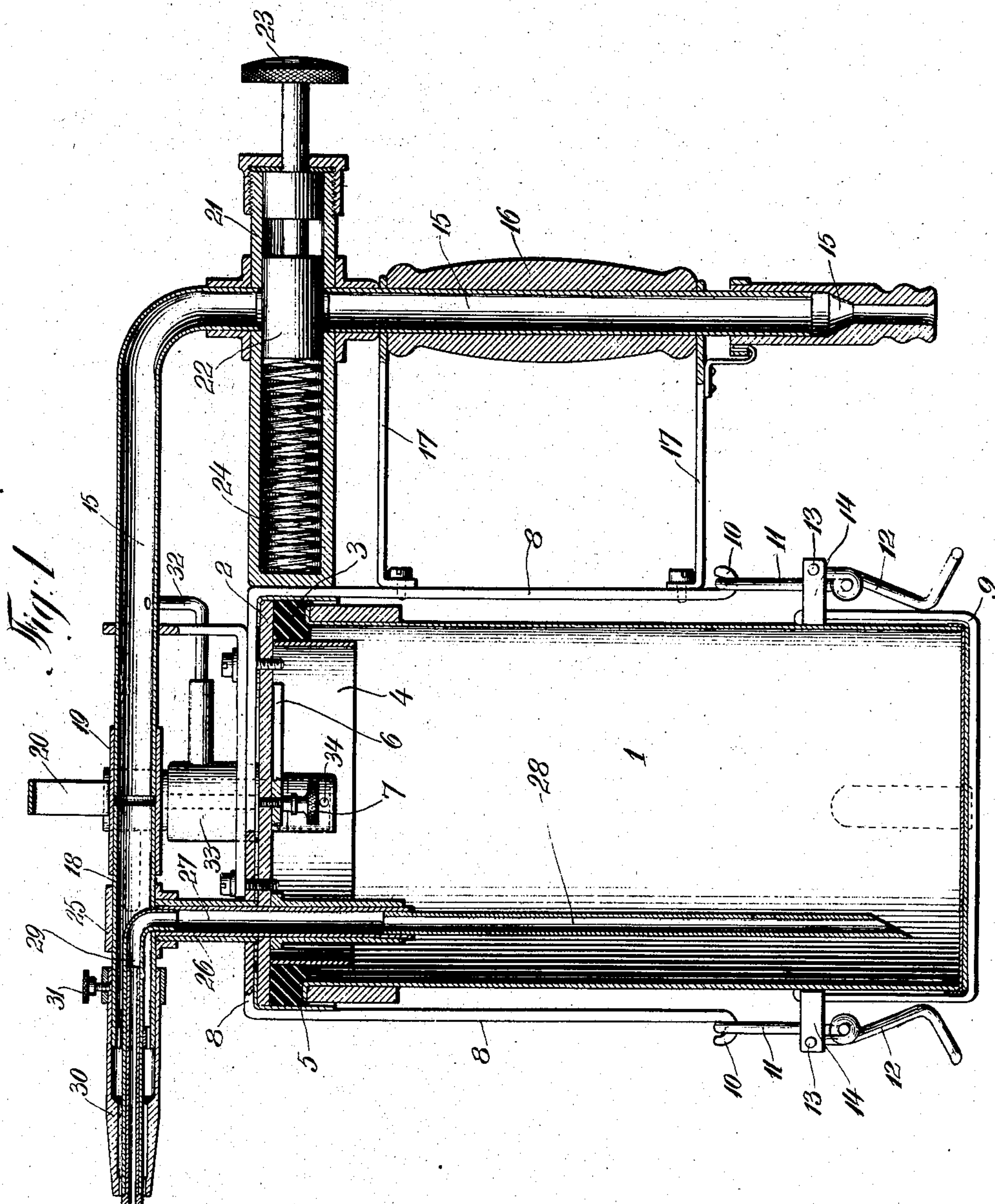
No. 885,027.

PATENTED APR. 21, 1908.

W. VON DÖHN.  
ATOMIZER.

APPLICATION FILED JULY 26, 1906.

3 SHEETS—SHEET 1.



WITNESSES:

*John O. Kumpfer*  
*Edmund Harris*

INVENTOR

*Wilhelm von Döhn*  
BY his ATTORNEYS *Kenyon & Kenyon*

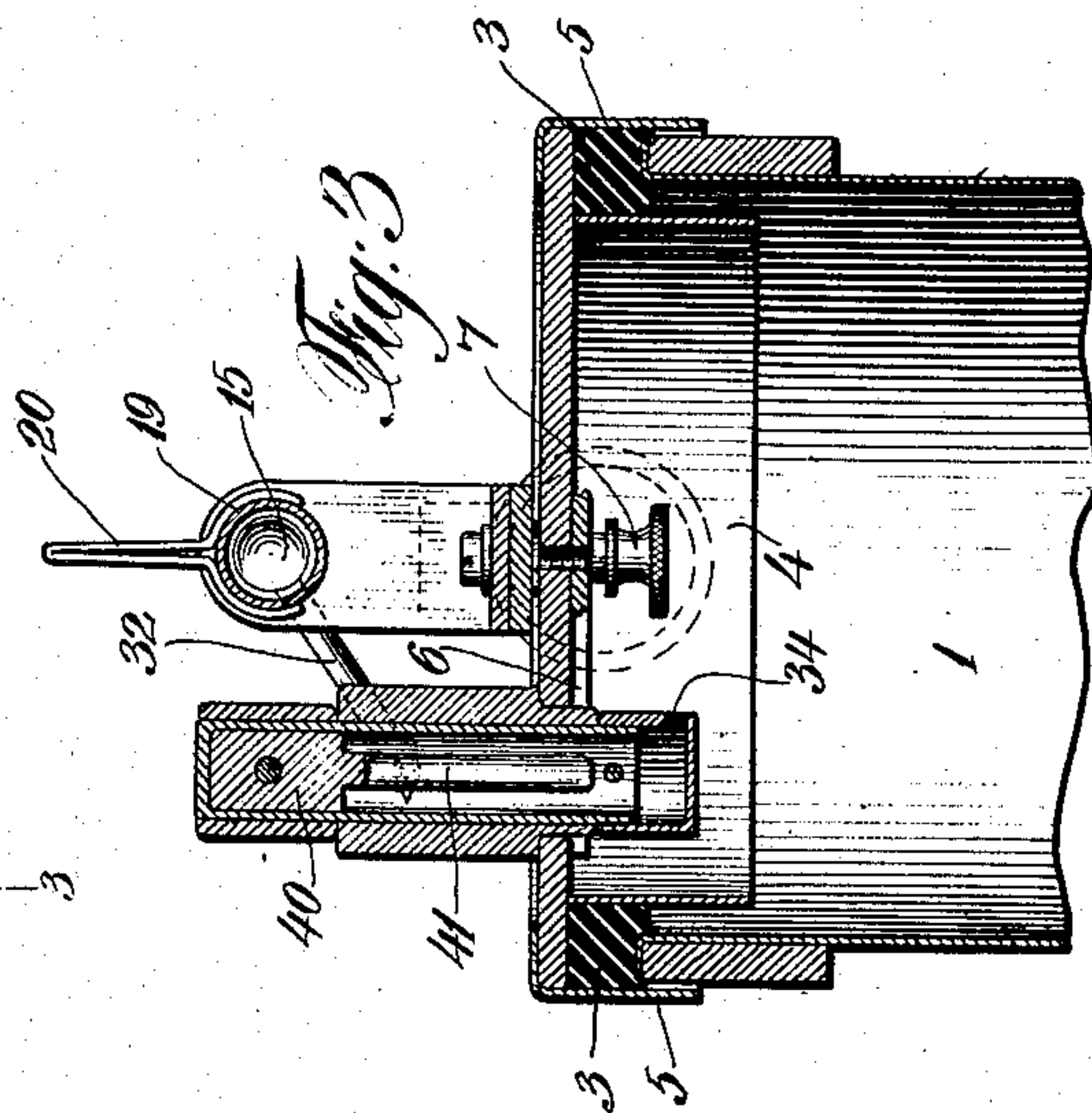
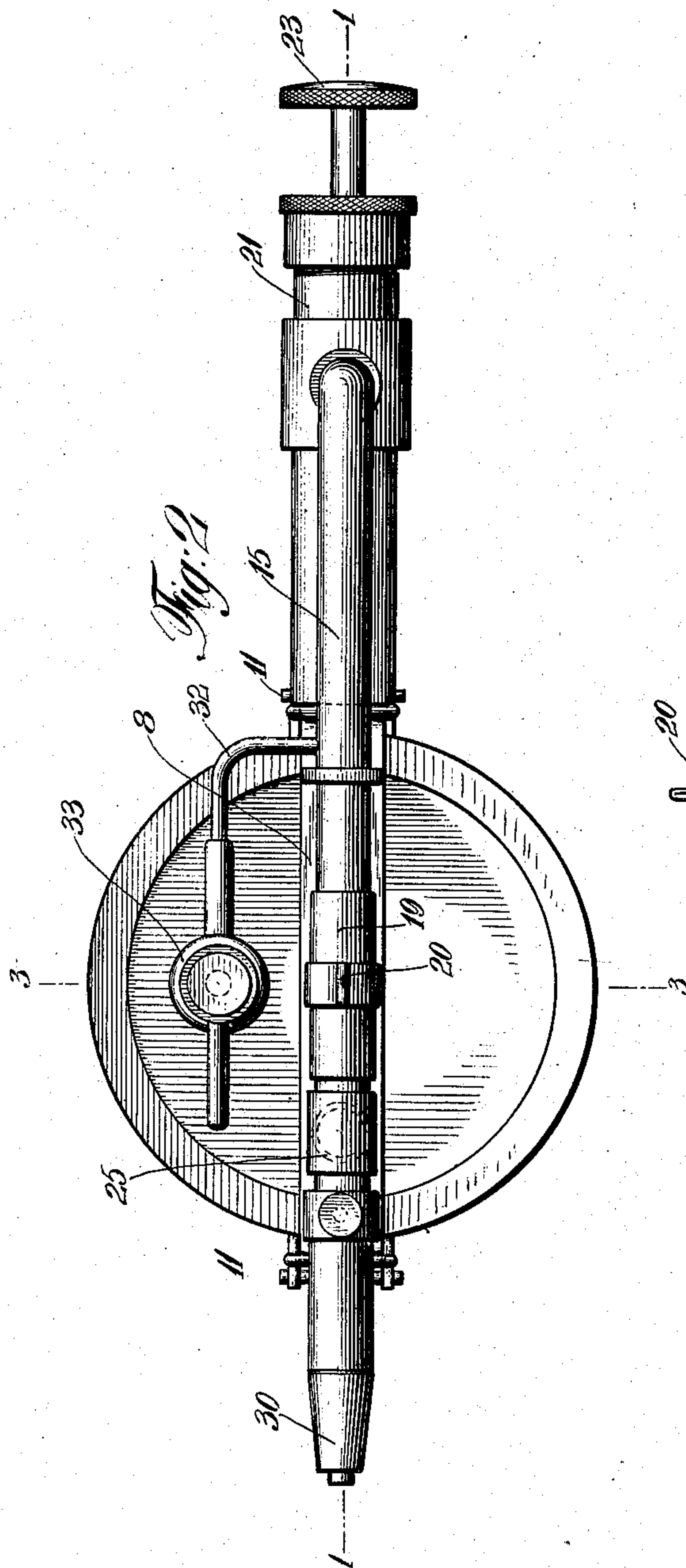
No. 885,027.

PATENTED APR. 21, 1908.

W. VON DÖHN.  
ATOMIZER.

APPLICATION FILED JULY 26, 1906.

3 SHEETS—SHEET 2.



WITNESSES:

*John O. Hempler.*  
*Edm. Harris.*

INVENTOR

*Wilhelm von Döhn*  
BY *his* ATTORNEYS *Kenyon & Kenyon*



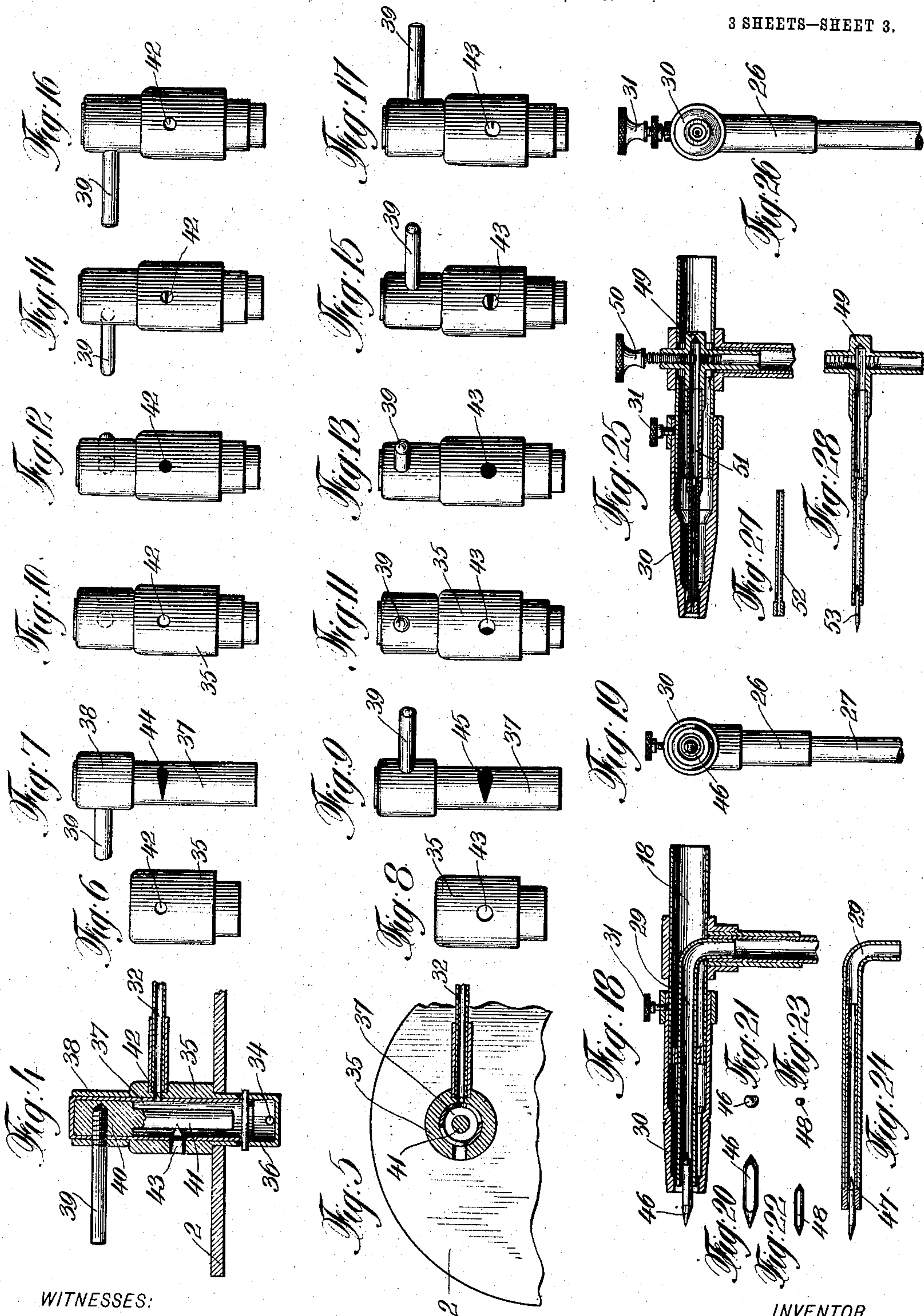
No. 885,027.

PATENTED APR. 21, 1908.

W. VON DÖHN.  
ATOMIZER.

APPLICATION FILED JULY 26, 1906.

3 SHEETS—SHEET 3.



WITNESSES:

John O. Kempley.  
Edw. Harris.

INVENTOR

Wilhelm von Döhn  
BY his ATTORNEYS  
Kempson & Kempson



# UNITED STATES PATENT OFFICE.

WILHELM VON DÖHN, OF BERLIN-SCHÖNEBERG, GERMANY, ASSIGNOR TO HENNING G. TAUBE, OF MONTCLAIR, NEW JERSEY.

## ATOMIZER.

No. 885,027.

Specification of Letters Patent.

Patented April 21, 1908.

Application filed July 26, 1906. Serial No. 327,813.

*To all whom it may concern:*

Be it known that I, WILHELM VON DÖHN, a subject of the Empire of Germany, and a resident of Berlin-Schöneberg, Helmstrasse 1, Pt., Germany, have invented certain new and useful Improvements in Atomizers, of which the following is a specification.

This invention relates to atomizers or sprayers and more particularly to that class of these devices in which air or other fluid under pressure is utilized for projecting paint, varnishes or other liquids in a fine spray upon any given surface.

Some of the objects of this invention are the following: to utilize an atomizing agent or fluid under pressure so as to fully and completely atomize the outflowing liquid and to project said liquid outward with the best results; to regulate the outflow of the atomizing agent and the inflow thereof into the vessel containing the fluid; to utilize all of said agent at whatever pressure is desired without waste thereof; to provide apparatus whereby the material can be atomized either by suction alone or by the combined action of suction and of direct pressure upon its surface; to provide means whereby liquids of different degrees of density may be atomized at will; to provide a regulator permitting delicate regulation of the amount and pressure of the agent admitted upon the surface of the liquid and to provide apparatus for the above purposes of reliable and inexpensive construction easily assembled and cleaned.

This invention is illustrated in the accompanying drawings wherein

Figure 1 is a median vertical section of the entire apparatus, Fig. 2 is a plan view thereof, Fig. 3 is a partial cross section on the plane 3—3 of Fig. 2, Fig. 4 is a vertical section of the regulating valve, Fig. 5 is a horizontal section thereof, Figs. 6 to 17 are elevations of this valve in different positions, Fig. 18 is a vertical section of one form of discharge nozzle, Fig. 19 is an end view of the same, Figs. 20 and 21 are a side view and end view of a removable plug for modifying the spray, Figs. 22 and 23 are similar views of another plug, Fig. 24 is a cross section showing this latter plug in place, Fig. 25 is another form of discharge nozzle, Fig. 26 is an end view thereof, Fig. 27 is a sectional view of a spray modifying tube and Fig. 28 shows said tube used with a removable plug.

In Fig. 1 the vessel for holding the liquid is shown at 1. This is closed by a metal covered tube and an annular elastic packing 3 held between a depending ring 4 within the vessel and an exterior covering ring outside. The ring 4 is provided with an integral cross bar 6 and the thumb screw 7 serves to fasten ring 4 in place, passing through the bar 6 into the cover 2.

The cover is held in place on the vessel by means of an upper frame 8 and a lower frame 9. The upper frame extends over the top of the cover 2 and terminates on each side in a hook 10. Each hook 10 engages with a link 11 pivoted at its lower end to eyes in a clamping bar 12 which in turn is pivoted as at 13 to a bracket 14 on each side of the lower arm 9. By means of these links and clamps the cover can be easily adjusted and can then be subjected to tension by means of which the packing 3 is compressed and the cover is tightly sealed.

The upper frame 8 carries the principal conduits for the compressed air or other atomizing agent. Of these the main passage 15 passes through the handle 16 fastened to the arm 8 by means of the bars 17 and is then bent over into horizontal position across the top of the vessel 1, where it is joined to the main nozzle 18 by means of a sliding coupling sleeve 19 which is preferably provided with an upwardly extending bent strap 20 which serves as the handle.

At the top of the carrying handle 16 there is placed a valve case 21 within which slides a plunger valve 22 having an exterior thumb piece 23 and held normally outward in closed position by the coiled spring 24. This valve can be conveniently worked by the thumb while the remaining fingers of one hand support the handle 16 thus regulating the action of the atomizing agent.

In the form of main nozzle shown in Fig. 1 the principal tube 18 is carried by a junction piece 25 which is carried by and is able to revolve upon the upright tube 26 carried by the frame 8. The inner tube 27 passes down into the vessel 1 and is provided with an extension 28 extending to a point near the bottom of said vessel. It is through these tubes that the material to be atomized is discharged into the inner bent tube 29.

The exterior tip of the main nozzle is shown at 30. It comprises a suitably shaped



tube surrounding the discharge tube 29 and slipping over the end of the tube 18, being secured in place by the thumb screw 31.

It will be seen that by the use of this construction the coupling sleeve 19 can be slipped to the right, permitting the main nozzle to be revolved upon the supporting tube 26 so as to make the interior of the nozzle and of the pipe 15 both accessible for cleaning.

In order to admit air from the tube 15 to the surface of the liquid within the vessel 1 a by-pass tube 32 leads from the side of the tube 15 into one side of the regulating valve 33 which communicates with the space in the top of the vessel 1 through the opening 34 (see Figs. 1, 3 and 4).

The regulating valve consists primarily of an outer sleeve 35 having an extension 36 passing through the cover 2 into the top of the vessel 1 and of an inner tube 37 fitting closely within the tube 35 and having an enlarged head 38 and provided with a horizontal lever 39 to facilitate the turning of one tube within the other. The tube 37 contains an inner core 40 having an extension 41 passing centrally through the tube 37 so as to leave a suitable space around it. Outer tube 35 is perforated on opposite sides as shown in Figs. 6 and 8. Through the smaller of these perforations 42, air is admitted through the pipe 32, while the larger perforations 43 communicate with the outer air. The inner tube 37 is also perforated on opposite sides as shown in Figs. 7 and 9 and these latter perforations which taper from one end to the other, as shown at 44 and 45, register respectively with the two opposite perforations 42 and 43 in the exterior sleeve.

The mode of use of this operating valve is clearly illustrated in Figs. 10 to 17. Figs. 10 and 11 show opposite sides of the valve with the inner tube turned so as to entirely close the inlet and partly close the outlet opening.

In this position none of the compressed air or other atomizing agent is admitted to the vessel 1, but the whole stream of air is caused to flow out through the nozzle acting by suction in a well known manner to atomize the liquid which is drawn up through the pipe 28. When it is desired to admit air to the surface of the liquid the amount of air admitted is determined by the position of the valve. If the maximum of air is to be admitted the valve is placed as shown at Figs. 4, 5, 12 and 13 where the wide, rounded end of each aperture 44 and 45 registers with the exterior apertures 42 and 43. This position is illustrated in Figs. 12 and 13 viewing the regulating valve from opposite sides. If less air is to be admitted to the vessel the valve is turned as shown from opposite sides in Figs. 14 and 15 and a delicate adjustment is rendered possible by narrowing of the interior apertures toward one side as shown in

Figs. 7 and 9. Figs. 16 and 17 show the position of the valve from opposite sides which admits a minimum of air. By the use of a valve of this character, the pressure regulating opening 43 is controlled simultaneously with the admission opening 42 and changes in one are made proportional to changes in the other. By carrying the air which is admitted from the vessel 1 through the valve which regulates the opening to the exterior air I am able to use my apparatus with suction alone or if desired in combination with direct pressure within the vessel.

The core extension 41 is provided between the two openings so as to prevent the air from passing directly from one opening to the other and thus possibility of carrying liquid from the vessel 1 out through the opening 43 is prevented.

Where it is desired to modify the form and extent of the stream of atomized material I employ adjustable plugs such as are shown at 46 in Figs. 18 to 21. These are arranged to fit within the internal tube 29 and may be given a form appropriate to the shape of stream to be produced. For instance the plug shown in Figs. 18 to 21 is flattened on one side so that a flat ribbon-like stream is produced.

Where a very fine stream is desired a choking tube 47 may be used which fits into the end of the tube 28 and a plug 48 of appropriate size and shape can be fitted to said choking tube.

The form of nozzle shown in Fig. 25 can be fitted into the exterior nozzle 18 and comprises an interior right angle junction 49 carrying a thumb screw 50 whereby the flow of material can be controlled. The inner nozzle extends forward from the junction 49 as shown at 51 and may be fitted with any desired size of choking tube 52 which may be supplied with any appropriate form of plug 53 as above described. This last described form of nozzle is particularly adapted to the use of thin fluid such as japans and alcoholic veneers.

Various changes may be made in this apparatus without departing from the invention and I do not limit myself to the details herein shown and described.

What I claim as new, and desire to secure by Letters Patent, is:—

1. An atomizer comprising a nozzle for the discharge of the material to be atomized, a passage way connected with the interior of said nozzle for said material, a nozzle for the discharge of the atomizing agent under pressure, a passage way for said agent connected with the interior of said nozzle, means for admitting an agent under pressure to the receptacle containing the material, and means for regulating the admission and outflow of said agent to and from said receptacle.

2. An atomizer comprising a nozzle for the



discharge of the material to be atomized, a passage way connected with the interior of said nozzle for said material, a nozzle for the discharge of the atomizing agent under pressure, a passage way for said agent connected with the interior of said nozzle, means for admitting an agent under pressure to the receptacle containing the material, and means for regulating at will the outflow from said agent to said receptacle.

3. An atomizer comprising a nozzle for the discharge of the material to be atomized, a passage way connected with the interior of said nozzle for said material, a nozzle for the discharge of the atomizing agent under pressure, a passage way for said agent connected with the interior of said nozzle, means for admitting an agent under pressure to the receptacle containing the material, and said means having a controlling outlet valve outside of said receptacle for the discharge of said agent from the receptacle, whereby the pressure of the same in said receptacle is regulated.

4. An atomizer comprising a nozzle for the discharge of the material to be atomized, a passageway connected with the interior of said nozzle for said material, a nozzle for the discharge of the atomizing agent under pressure, a passageway for said agent connected with the interior of said nozzle, means for admitting an agent under pressure to the receptacle containing the material, and provided with a valve controlled inlet to said receptacle and a valve controlled outlet for said agent.

5. An atomizer comprising a nozzle for the discharge of the material to be atomized, a passage way connected with the interior of said nozzle for said material, a nozzle for the discharge of the atomizing agent under pressure, a passage way for said agent connected with the interior of said nozzle, means for admitting an agent under pressure to the receptacle containing the material, and provided with a valve controlled inlet to said receptacle, and a valve controlled outlet for the said agent outside of said receptacle.

6. An atomizer comprising a nozzle for the discharge of the material to be atomized, a passage way connected with the interior of said nozzle for said material, a nozzle for the discharge of the atomizing agent under pressure, a passage way for said agent connected with the interior of said nozzle, means for admitting an agent under pressure to the receptacle containing the material, and provided with a valve controlled inlet to said receptacle, and a valve controlled outlet for said agent, and the valves controlling said inlet and outlet adapted to be simultaneously operated.

7. An atomizer comprising a nozzle for the discharge of the material to be atomized, a passage way connected with the interior of

said nozzle for said material, a nozzle for the discharge of the atomizing agent under pressure, a passage way for said agent connected with the interior of said nozzle, means for admitting an agent under pressure to the receptacle containing the material, and provided with a valve controlled inlet to said receptacle, and a valve controlled outlet and the valves controlling said inlet and outlet forming part of the same valve piece.

8. An atomizer comprising a nozzle for the discharge of the material to be atomized, a passage way connected with the interior of said nozzle for said material, a nozzle for the discharge of the atomizing agent under pressure, a passage way for said agent connected with the interior of said nozzle, means for admitting an agent under pressure to the receptacle containing the material, and provided with a valve controlled inlet to said receptacle, and a valve controlled outlet for said agent, and the outlet valve constructed to reduce the inlet opening when the outlet opening is reduced.

9. An atomizer comprising a nozzle for the discharge of the material to be atomized, a passage way connected with the interior of said nozzle for said material, a nozzle for the discharge of the atomizing agent under pressure, a passage way for said agent connected with the interior of the nozzle, means for admitting an agent under pressure to the receptacle containing the material, and provided with a valve controlled inlet to said receptacle, and a valve controlled outlet, and the outlet valve constructed to reduce the inlet opening when the outlet opening is reduced, and to increase the inlet opening when the outlet opening is increased.

10. An atomizer comprising a nozzle for the discharge of the material to be atomized, a passage way connected with the interior of said nozzle for said material, a nozzle for the discharge of the atomizing agent under pressure, a passage way for said agent connected with the interior of said nozzle, means connected with said passage way for admitting said agent to the receptacle containing the material, and means for regulating the pressure of said agent to said receptacle.

11. An atomizer comprising a nozzle for the discharge of the material to be atomized, a passage way connected with the interior of said nozzle for said material, a nozzle for the discharge of the atomizing agent under pressure, a passage way for said agent connected with the interior of said nozzle, means connected with said passage way for admitting said agent to the receptacle containing the material, and said means having a controlling outlet valve outside of said receptacle for the discharge of said agent, whereby the pressure of the same in said receptacle is regulated.



12. An atomizer comprising a nozzle for the discharge of the material to be atomized, a passage way connected with the interior of said nozzle for said material, a nozzle for the discharge of the atomizing agent under pressure, a passage way for said agent connected with the interior of said nozzle, means connected with said passage way for admitting said agent to the receptacle containing the material, and provided with a valve controlled inlet to said receptacle, and a valve controlled outlet to the surrounding medium.

13. An atomizer comprising a nozzle for the discharge of the material to be atomized, a passage way connected with the interior of said nozzle for said material, a nozzle for the discharge of the atomizing agent under pressure, a passage way for said agent connected with the interior of said nozzle, a valve casing having its interior communicating with the receptacle containing the material, an inlet in said casing for an agent under pressure, an outlet in said casing for said agent, a valve for regulating the inlet and outlet openings, and constructed to reduce the inlet opening while the outlet opening is reduced.

14. An atomizer comprising a nozzle for the discharge of the material to be atomized, a passage way connected with the interior of said nozzle for said material, a nozzle for the discharge of the atomizing agent under pressure, a passage way for said agent connected with the interior of said nozzle, a valve casing having its interior communicating with the receptacle containing the material an inlet in said casing for an agent under pressure, an outlet in said casing for said agent, a hollow valve piece fitting into said casing for regulating the inlet and outlet openings, and constructed to reduce the inlet opening while the outlet opening is reduced.

15. An atomizer comprising a nozzle for the discharge of the material to be atomized, a passage way connected with the interior of said nozzle for said material, a nozzle for the discharge of the atomizing agent under pressure, a passage way for said agent connected with the interior of said nozzle, a cylindrical valve casing having its interior communicating with the receptacle containing the material, an inlet in said casing for an agent under pressure, an outlet in said casing for said agent, a cylindrical valve piece for regulating the inlet and outlet openings, and constructed to reduce the inlet opening while the outlet opening is reduced, and means connected

with said valve piece for turning the same, whereby the said openings may be regulated.

16. In an atomizer a regulating valve comprising an outer tube and an inner tube turning therein, opposite registering openings in both of said tubes and a central core within the inner tube interposed between said openings.

17. In an atomizer a vessel having a cover, an atomizing tube extending across said cover, a controllable air valve on said cover communicating with the interior of said vessel and with the surrounding medium and a by-pass tube exterior to said vessel and leading from the atomizing tube to said valve.

18. In an atomizer a tube for delivering compressed fluid a main atomizing nozzle and a sliding sleeve joining the two having a projecting piece so it may be quickly adjusted.

19. In an atomizer an atomizing nozzle mounted so as to be revolved at will, a supply tube for compressed fluid registering with said nozzle in one position thereof and a sliding sleeve fitting said nozzle and tube for coupling the same.

20. In an atomizer a cover for the same a supporting tube at right angles to the cover, an atomizing nozzle fitting in said tube and capable of turning therein, a pipe for supplying compressed fluid extending across the cover and a sliding sleeve for coupling said nozzle and pipe.

21. In an atomizer an outer tube, an inner tube within the the same and a removable modifying plug for insertion at the tip of said inner tube.

22. In an atomizer an outer tube, an inner tube within the same and a removable plug flattened at one side and capable of insertion into the tip of said inner tube.

23. In an atomizer, an outer tube, an inner tube within the same and a choking tube inserted into the tip of the inner tube.

24. In an atomizer an outer tube, an inner tube, a passage leading to said inner tube from the source of supply and a screw valve regulating the opening from said latter passage into the inner tube.

In testimony whereof, I have signed my name to this specification, in the presence of, two subscribing witnesses.

WILHELM VON DOHN.

Witnesses:

WOLDEMAR HAUPT,  
HENRY HASPER.