

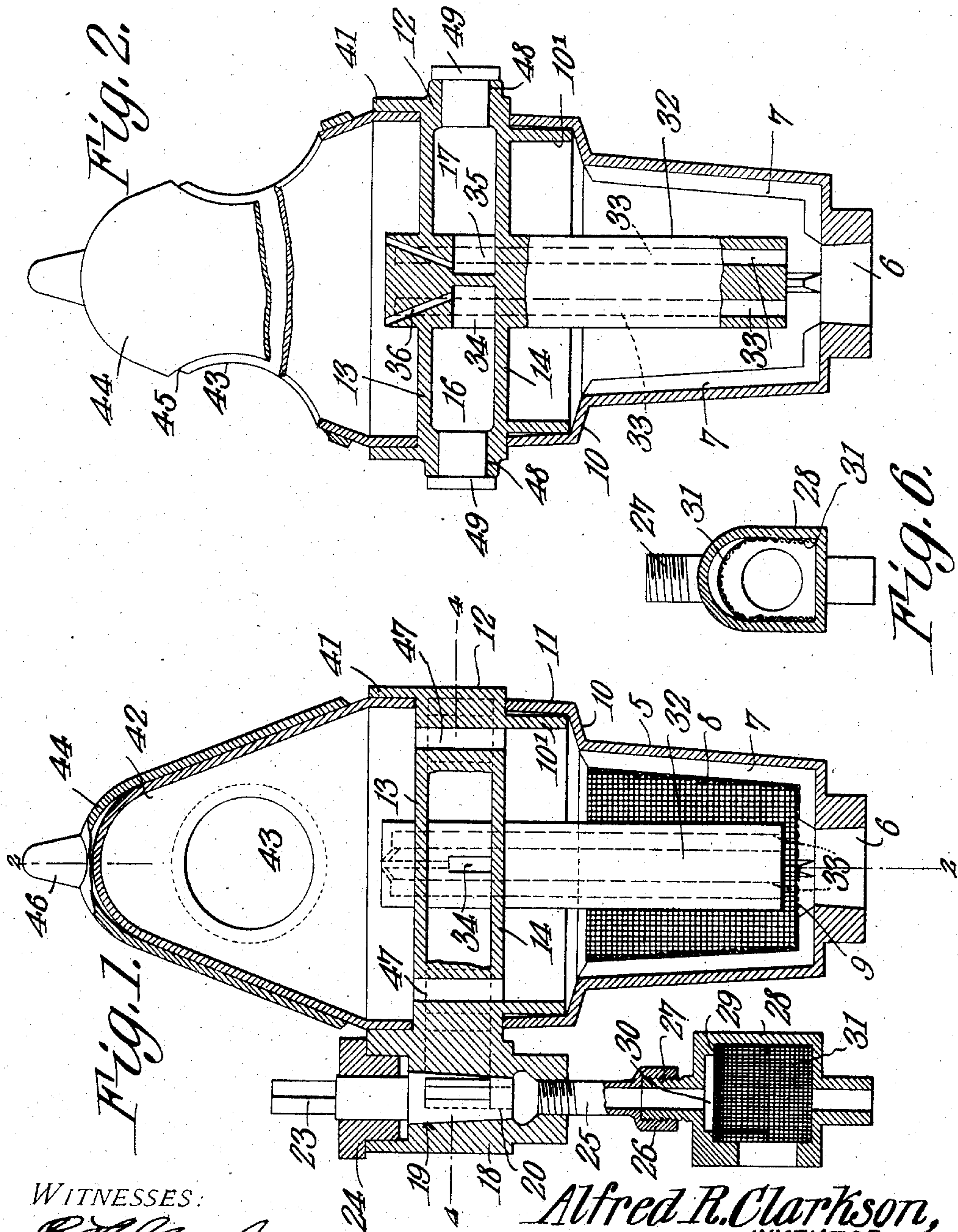
No. 865,295.

A. R. CLARKSON.
HUMIDIFIER.

PATENTED SEPT. 3, 1907.

APPLICATION FILED JAN. 3, 1907.

2 SHEETS—SHEET 1.



WITNESSES:
E. H. H. H.
L. H. H.

Alfred R. Clarkson,
INVENTOR.
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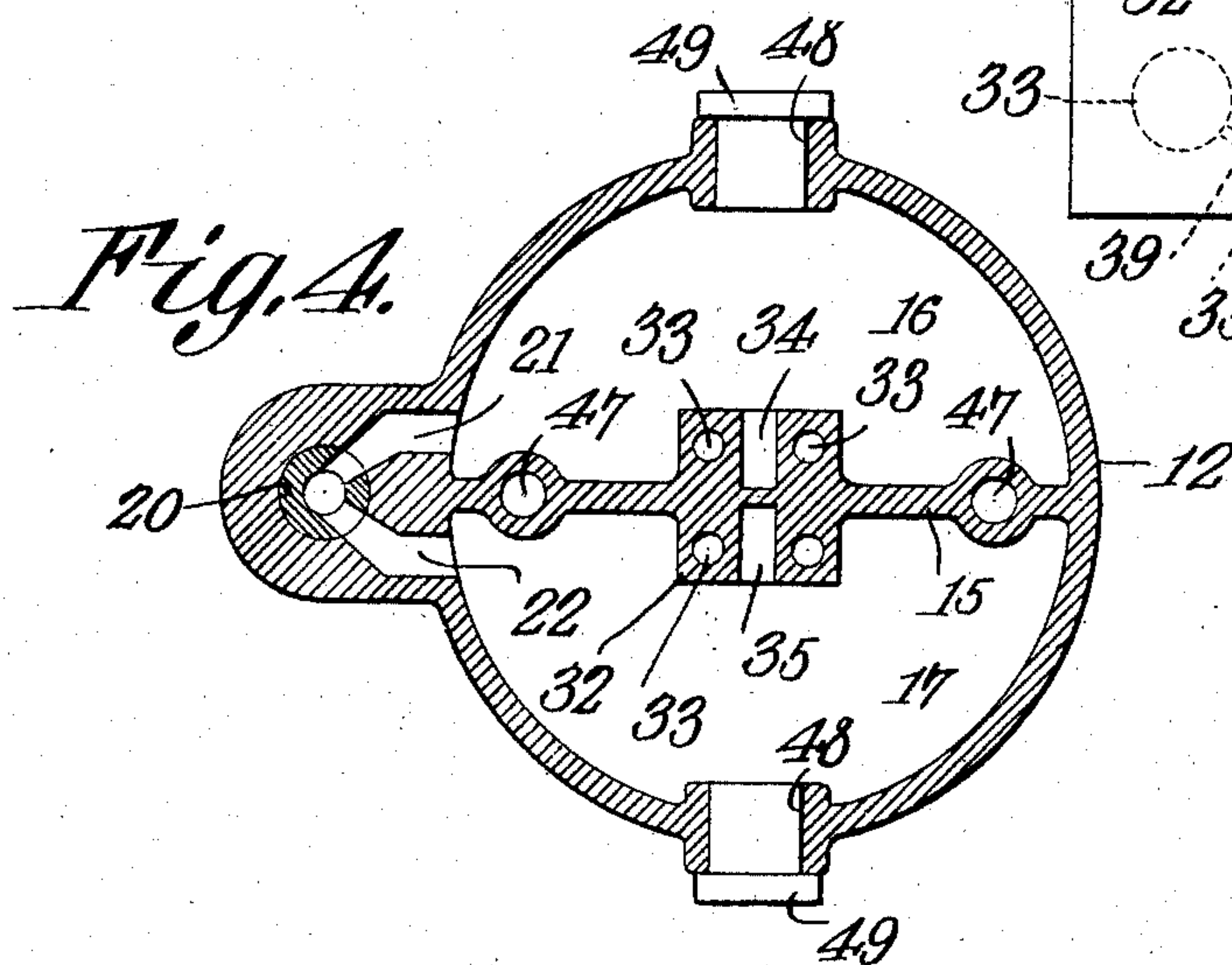
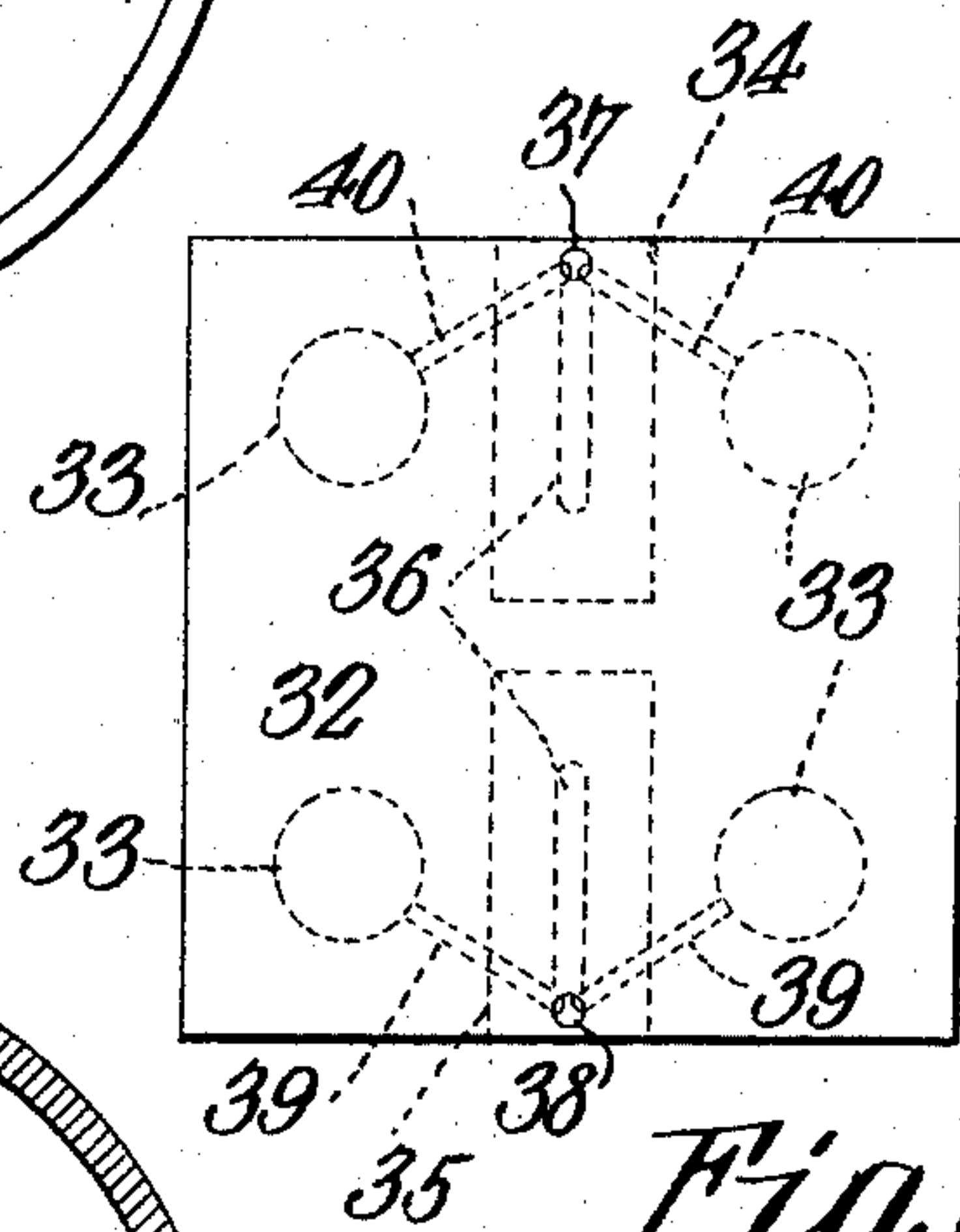
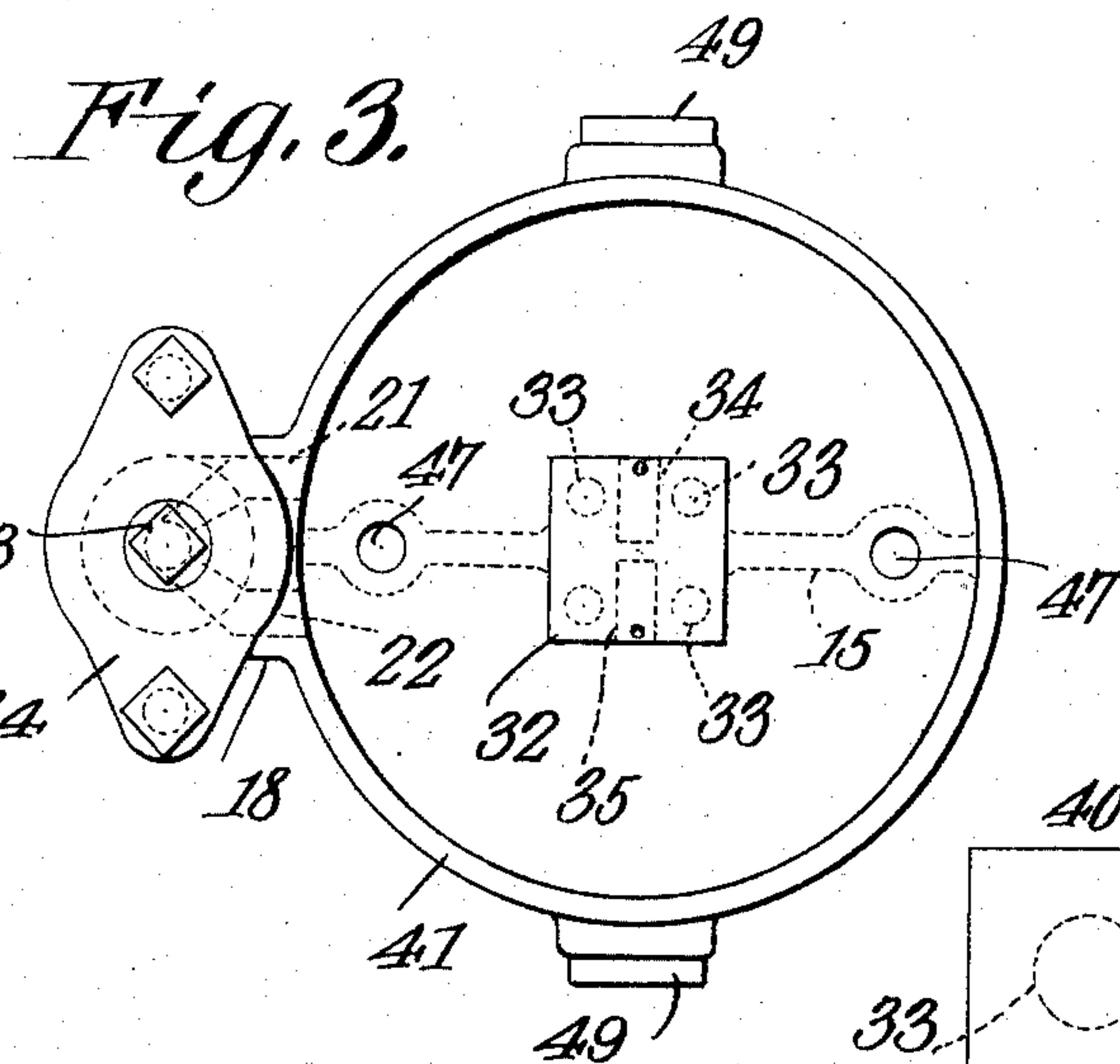
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UNITED STATES PATENT OFFICE.

ALFRED RAYMOND CLARKSON, OF SPARTANBURG, SOUTH CAROLINA.

HUMIDIFIER.

No. 865,295.

Specification of Letters Patent.

Patented Sept. 3, 1907.

Application filed January 3, 1907. Serial No. 350,577.

To all whom it may concern:

Be it known that I, ALFRED RAYMOND CLARKSON, a citizen of the United States, residing at Spartanburg, in the county of Spartanburg and State of South Carolina, have invented a new and useful Humidifier, of which the following is a specification.

This invention relates to humidifiers of that general class employed for maintaining the desired degree of humidity in the working rooms of mills, factories and similar buildings where spinning, carding, and the weaving of cotton and other fabrics is conducted.

The object of the invention is to provide improved means for supplying moisture to the atmosphere and diffusing the same uniformly throughout the different parts of a room or other confined area.

A further object is to provide a body portion having a plurality of chambers formed therein and connected with a source of water or other liquid supply whereby compressed air, steam or other fluid admitted to the compartments will atomize the liquid and discharge the same in the form of a fine spray.

A further object is to provide a depending core having a plurality of water passages formed therein for conducting the liquid from the water supply to the atomizer nozzles, the latter being extended above the fluid compartments and arranged to spray the liquid laterally through discharge openings in the casing or housing.

A further object is to provide a valve for controlling the supply of air or steam to the compartments thereby to permit either or both sets of atomizer nozzles to be used according to the degree of humidity desired.

A still further object of the invention is to generally improve this class of devices so as to increase their utility, durability and efficiency.

In the accompanying drawings forming a part of this specification: Figure 1 is a longitudinal sectional view of a humidifier constructed in accordance with my invention. Fig. 2 is a similar view taken on the line 2—2 of Fig. 1. Fig. 3 is a top plan view of the body portion with the dome and cover removed. Fig. 4 is a transverse sectional view taken on the line 4—4 of Fig. 1. Fig. 5 is an enlarged top plan view of the upper end of the core showing in dotted lines the position and arrangement of the several liquid and fluid passages. Fig. 6 is a transverse sectional view of the fluid receiving box or compartment detached.

Similar numerals of reference indicate corresponding parts in all of the figures of the drawings.

The improved device is principally designed for humidifying or moistening the atmosphere in the working rooms of mills, factories and the like where the air is charged with dust, lint and other foreign matter, and it will be understood that several of said humidifiers may be employed in a single room according to the size of the room or area to be treated.

The device consists of a liquid receptacle or tank 5 adapted to contain a quantity of water and having one end thereof provided with an inlet 6 for connection with a suitable water supply pipe. The interior of the tank or receptacle 5 is provided with spaced ribs or projections 7 which form a support for a circumferential wire screen 8, there being a similar screen 9 extended transversely across the inlet port 6 and resting on the ribs, as shown.

The upper end of the water receptacle or tank 5 is provided with an inclined shoulder 10 defining a vertically disposed flange 11, and disposed within the receptacle and bearing against the inclined shoulder 10 is the depending flange 10' of body portion of the humidifier, indicated as a whole at 12. The body portion 12 is provided with spaced heads 13 and 14 and extending transversely across the body portion is a partition or diaphragm 15 defining spaced chambers or compartments 16 and 17 adapted to receive a quantity of fluid such as compressed air, steam or the like. Extending laterally from the body portion 12 is an enlargement 18 having a conical shaped seat 19 formed therein for the reception of a three-way valve 20 two of the ports of which communicate with the compartments 16 and 17, respectively, through the medium of fluid passages 21 and 22 preferably cast, drilled or otherwise formed in the enlargement 18, as shown. One end of the valve 20 is provided with a squared terminal 23 which passes through a gland or bushing 24 for engagement with a wrench or other suitable tool whereby the valve may be adjusted so as to admit the air, steam or other fluid into either or both of the compartments 16 and 17. Threaded or otherwise secured to the opposite end of the valve 20 is a pipe 25 the lower end of which is provided with a socket 26 having its interior walls threaded for engagement with the correspondingly threaded nipple 27 of a fluid receiving box or compartment 28.

The interior walls of the compartment 28 are provided with annular shoulders 29 defining a recess which communicates with the pipe 25, and bearing against said shoulders is a strip of wire netting or other foraminous material 31 which forms a screen and serves to prevent the passage of lint, dust and other foreign material through the pipe 25 to the fluid compartments. Attention is here called to the fact that by having the screen 31 spaced from the top of the compartment the air, steam or other fluid is free to pass through the wire mesh of the screen without danger of clogging or otherwise obstructing the same.

Depending from the lower head 14 of the body portion and extended within the water receptacle 5 is a core 32 which also extends within the compartments 16 and 17 and above the upper head 13 of said body portion, as shown. Extending longitudinally of the core 32 are a plurality of longitudinal water passages 33 preferably four in number and each having its upper

end spaced from the top of the core, as indicated by dotted lines in Figs. 1 and 5 of the drawings. That portion of the core 32 disposed within the compartments 16 and 17 is provided with oppositely disposed recesses 5 or chambers 34 and 35 which form pockets for the reception of the air, steam or other fluid admitted through the valve 20, there being inclined openings or passages 36 extending from the pockets 34 and 35 and opening through the top of the core 32 to form discharge ports 10 37 and 38. The discharge ports 37 and 38 communicate with the water passages 33 by means of inclined openings or passages 39 and 40 similar in construction to the inclined passages 36 only the latter are somewhat smaller in cross sectional diameter. The ports 37 and 15 38 constitute atomizing nozzles, the water or liquid being sucked or drawn up through the passages 33 and discharged in the form of a fine spray through the ports 37 and 38 when fluid is admitted to the chambers 16 and 17.

Extending vertically from the body portion 12 is an annular flange 41 and bearing against the head 13 and engaging the flange 41 is a top section or dome 42 provided with one or more discharge openings 43. Mounted for rotation on the dome 42 is a cover 44 having similar openings 45 formed therein and adapted to register 20 with the openings 43 so as to permit the discharge of the spray through the openings 43 when the cover is rotated 25 by manipulating the handle 46.

Attention is called to the fact that the discharge ports 37 and 38 are preferably arranged in alinement with the 30 discharge opening 43 so that when fluid is admitted to the compartments 16 and 17 the atomized fluid will be discharged laterally and upwardly through said openings thus effectually moistening the air and allaying particles of dust and other foreign matter. It will also 35 be observed that by adjusting the valve 20 steam may be admitted to either of the compartments 16 and 17 thus permitting either or both of said compartments to be used according to the size of the room or the area to be treated.

40 The diaphragm or partition 15 is formed with spaced vertically disposed openings 47 which communicate with the interior of the liquid containing receptacle 5 and form vent openings so that the water may readily flow within the receptacle 5 and also serve as discharge 45 openings through which the water of condensation within the dome 42 may be discharged into the receptacle 5 when steam is employed as the atomizing medium. The body portion 5 is also preferably formed with one or more openings 48 which communicate with 50 the interior of the compartments 16 and 17 and are normally closed by suitable plugs 49 so that by removing said plugs the interior of the compartments or chambers may be cleaned when desired.

In operation the box 28 is connected with a suitable 55 source of air or steam supply and said air or steam admitted to the chambers 16 and 17 by regulating the valve 20. The fluid admitted to the chambers 16 and 17 will enter the pockets 34 and 35 and thence pass upwardly through the passages 36 to the discharge ports 60 37 and 38 and in doing so will draw the water in the tank 5 upwardly through the passages 33 and 39 and 40 to said ports. The water coming in contact with the air or steam will be atomized and discharged laterally through the openings 43 in the form of a fine spray, as 65 before stated. By regulating the valve 20 the quan-

tity of steam admitted to the chambers may be regulated at will and either or both sets of spraying nozzles put in service.

From the foregoing description it is thought that the construction and operation of the device will be readily 70 understood by those skilled in the art and further description thereof is deemed unnecessary.

Having thus described the invention what is claimed is:

1. In a humidifier, a liquid receptacle, a fluid receptacle, 75 an atomizer having one end thereof communicating with the liquid receptacle and its opposite end extended through and communicating with the interior of the fluid receptacle, and means for controlling the supply of fluid to the latter receptacle.
2. In a humidifier, a liquid receptacle, a fluid receptacle 80 having a plurality of compartments, an atomizer forming a source of communication between the liquid receptacle and the several compartments, and means for controlling the flow of fluid to said compartments.
3. In an atomizer, a casing, a liquid receptacle, a fluid 85 receptacle, an atomizer housed within the casing and forming a source of communication between the liquid and fluid receptacles, a valve for controlling the supply of fluid to the fluid receptacle, and a screen interposed between 90 the valve and fluid supply.
4. In a humidifier, a liquid receptacle, a fluid receptacle, a core extending within the liquid receptacle and provided with a longitudinal passage, and a port forming a source of communication between the longitudinal passage and 95 the fluid receptacle.
5. In a humidifier, a liquid receptacle, a fluid receptacle having a partition defining a plurality of compartments, said partitions being provided with fluid receiving pockets, a core extending through said compartments and project- 100 ing within the liquid receptacle, ports communicating with the longitudinal passages, and passages forming a source of communication between the ports and the fluid receiving pockets.
6. In a humidifier, a liquid receptacle, a fluid receptacle 105 having a partition defining a plurality of compartments, a core extending through the compartments and projecting within the liquid receptacle, said core being provided with longitudinal passages having ports communicating there- 110 with and with the compartments, a cover forming an auxiliary compartment, and vent openings formed in the partition and communicating with the auxiliary compartment and liquid receptacle.
7. In a humidifier, a liquid receptacle, a fluid receptacle, a core extending within the liquid receptacle and project- 115 ing above the fluid receptacle, said core being provided with ports communicating with the liquid and fluid receptacles, a housing covering the fluid receptacle, openings connecting the interior of the cover and liquid receptacle, and a valve for controlling the supply of fluid to the fluid 120 receptacle.
8. In a humidifier, a liquid receptacle, a fluid receptacle having spaced heads connected by a transverse partition forming a plurality of compartments, a core projecting above one of the heads and extending within the liquid 125 receptacle, said core being provided with longitudinal passages, discharge ports communicating therewith, pockets formed in the core and communicating with the fluid compartments, and a valve for controlling the supply of fluid to the compartments, there being inclined passages con- 130 necting the ports and the pockets.
9. In a humidifier, a liquid receptacle, a fluid receptacle having spaced heads and provided with a transverse parti- 135 tion forming independent compartments, a core projecting above one of the heads and extending within the liquid compartment, said core being provided with longitudinal passages and having discharge ports communicating with the passages, pockets formed in the core and opening in the compartments, there being inclined openings connect- 140 ing the ports and pockets, respectively, a dome forming a housing for the ports and provided with discharge openings, a cover closing the discharge openings, and a valve for controlling the supply of fluid to the compartments.

10. In a humidifier, a liquid receptacle, a fluid receptacle provided with spaced heads and having a transverse partition defining compartments, a core having one end thereof extended above one of the heads and its opposite end projected through said compartments and extended within the liquid receptacle, said core being provided with longitudinal passages having discharge ports communicating therewith, and fluid containing pockets formed in the core and communicating with the compartments and ports, respectively.

11. In a humidifier, a liquid receptacle, a fluid receptacle having spaced heads and provided with a transverse partition forming a plurality of compartments, a core projecting above one head and extended through the compartments and projecting within the liquid receptacle, said core being provided with longitudinal passages and having discharge ports communicating therewith, there being fluid pockets formed in the core and connected with the ports, said partitions being provided with spaced openings piercing the heads of the fluid receptacle and communicating with the liquid receptacle.

12. In a humidifier, a liquid receptacle, a fluid compartment provided with spaced heads and having a transverse partition defining a plurality of compartments, said fluid receptacle being provided with a lateral enlargement having a valve seat formed therein and provided with fluid passages communicating with the valve seat and compartments, a core projecting above one of the heads of the fluid receptacle and extending within the liquid receptacle, said core being provided with longitudinal passages having discharge ports communicating therewith and with the interior of the compartments, a valve mounted in the valve-seat and adapted to register with the fluid ports, and a source of fluid supply connected with the valve.

13. In a humidifier, a liquid receptacle provided with a laterally extending shoulder and terminal flange, a fluid receptacle having a plurality of compartments and provided with a depending flange resting on the shoulder, an atomizer disposed within the liquid receptacle and extending through and communicating with the several compartments, respectively, and a valve for controlling the supply of fluid to the compartments.

14. In a humidifier, a liquid receptacle having an intake at one end thereof and provided at its opposite end with an inclined shoulder defining a vertically disposed flange, a fluid receptacle provided with compartments and having a depending flange resting on the inclined shoulder, a core extending through the compartments and projecting within the liquid receptacle, said core being provided with longitudinal passages having ports communicating therewith and with the interior of the compartments, a housing engaging the fluid receptacle and provided with discharge openings, a cover inclosing the discharge openings, a valve for controlling the supply of fluid to the compartments, and a source of fluid supply connected with the valve.

15. In a humidifier, a liquid receptacle, a fluid receptacle provided with oppositely disposed heads and having a transverse partition defining separate compartments, a core extending through the compartments and projecting within the liquid receptacle, said core being provided with longitudinal passages having ports communicating there-

with and with the interior of the compartments, a valve for controlling the supply of fluid to the compartments, there being openings extending vertically through the heads of the fluid receptacle, cleaning ports formed in the walls of the compartments of said receptacle, and plugs for normally closing the cleaning ports.

16. In a humidifier, a liquid receptacle, a fluid receptacle provided with spaced heads having a transverse partition defining a plurality of compartments, a core projecting above one of the heads and extending through the compartments and within the liquid receptacle, said core being provided with longitudinal passages having ports communicating therewith, a housing covering the ports and provided with discharge openings, there being inclined openings formed in the core and communicating with the compartments and ports, respectively, said openings being disposed in alinement with the discharge openings in the housing, a source of fluid supply communicating with the compartments, and a valve for controlling the supply of fluid to said compartments.

17. In a humidifier, a liquid receptacle having an intake and provided with spaced ribs extending vertically of the walls of the receptacle and between said walls and the intake at the bottom of the receptacle, a screen resting on said ribs, a fluid receptacle having spaced heads and provided with a transverse partition defining compartments, a core projecting above one of the heads and extending through the compartments and projecting into the liquid receptacle, said core being provided with longitudinal passages having ports communicating therewith and with the interior of the compartments, a liquid supply pipe communicating with the interior of the compartments, and a valve for controlling the supply of fluid to said compartments.

18. In a humidifier, a liquid receptacle, a fluid receptacle, an atomizer forming a source of communication between the two, a fluid supply pipe, a valve connected with one end of the supply pipe for controlling the flow of fluid to the fluid receptacle, a box engaging the opposite end of the fluid pipe and provided with spaced shoulders defining an intermediate recess communicating with the fluid pipe, and a screen disposed within the box and bearing against said shoulders.

19. In a humidifier, a casing, a liquid receptacle, a fluid receptacle, an atomizer housed within the casing and forming a source of communication between said receptacles, and means for controlling the supply of fluid to the fluid receptacle.

20. In a humidifier, a casing, a liquid receptacle, a fluid receptacle, an atomizer forming a source of communication between the two, a dome covering one end of the atomizer and provided with a discharge opening, a cover for regulating the discharge through said opening, and means for controlling the supply of fluid to the fluid receptacle.

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

ALFRED RAYMOND CLARKSON.

Witnesses:

JOHN CATLETT,
J. F. ACKER.