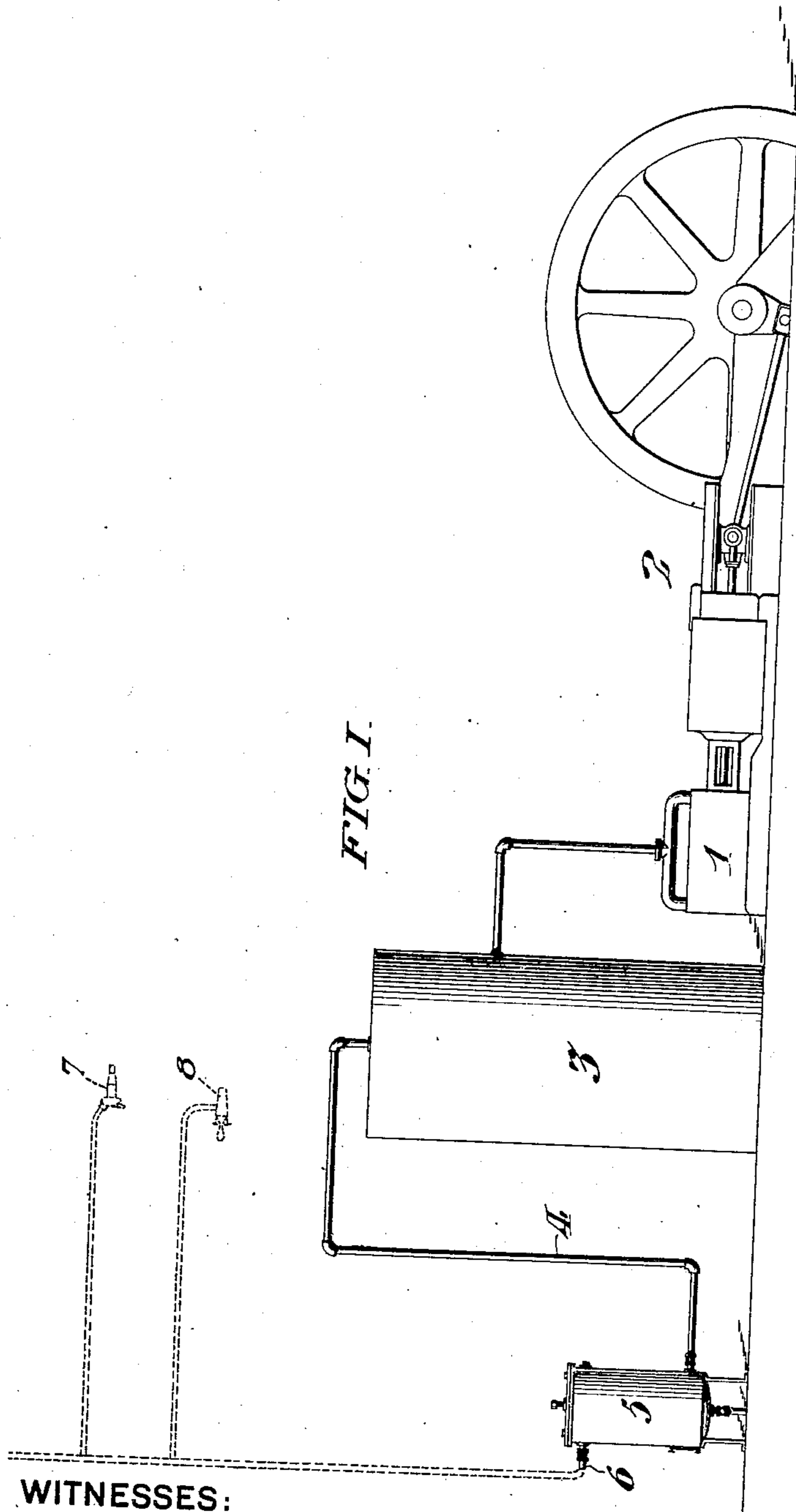


J. L. LAMB & T. C. SHEEHAN.
AIR DRIER FOR PNEUMATIC LINES.
APPLICATION FILED APR. 14, 1906.

917,619.

Patented Apr. 6, 1909.
2 SHEETS—SHEET 1.



WITNESSES:

Clifton C. Hallows
John C. Berger

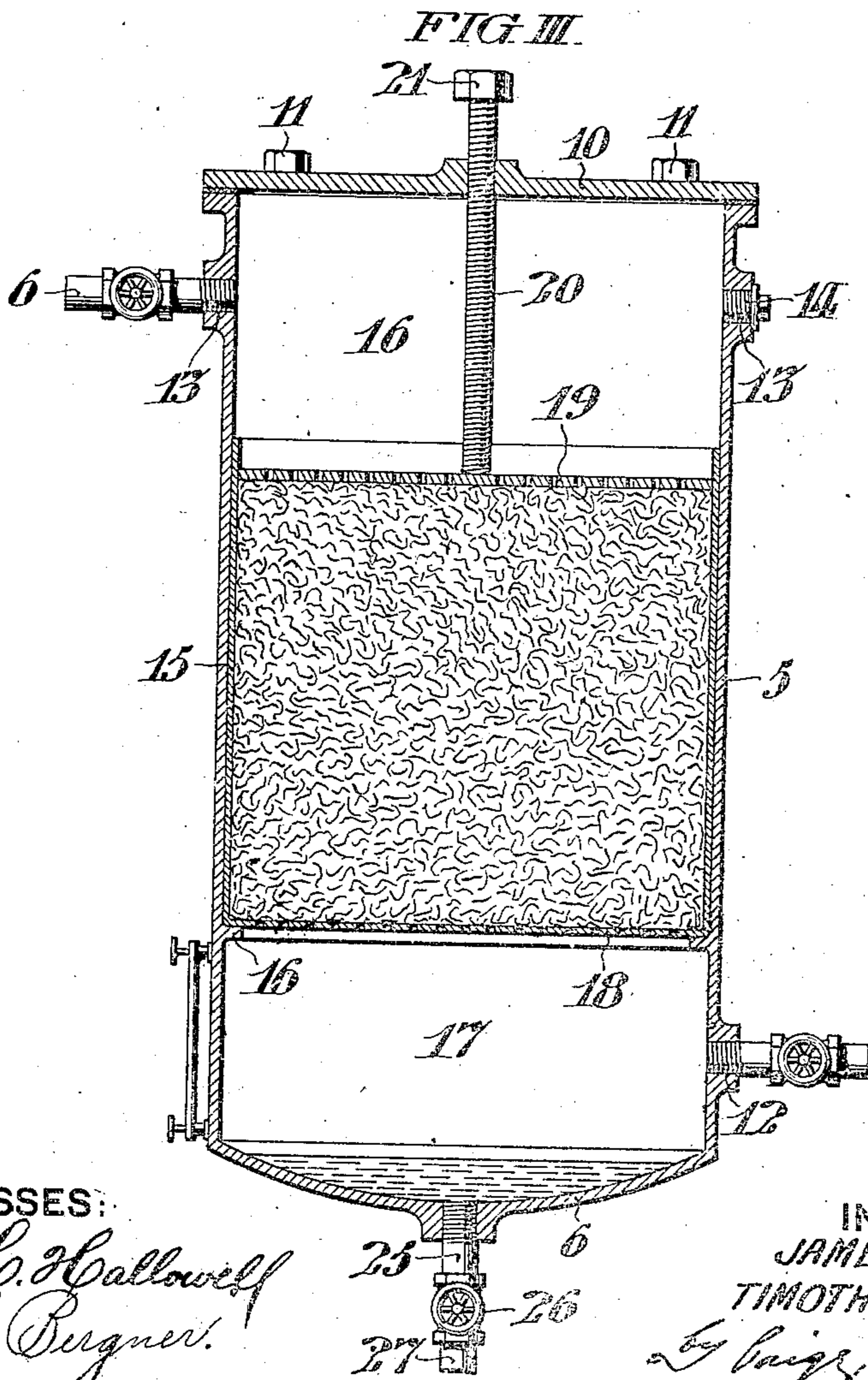
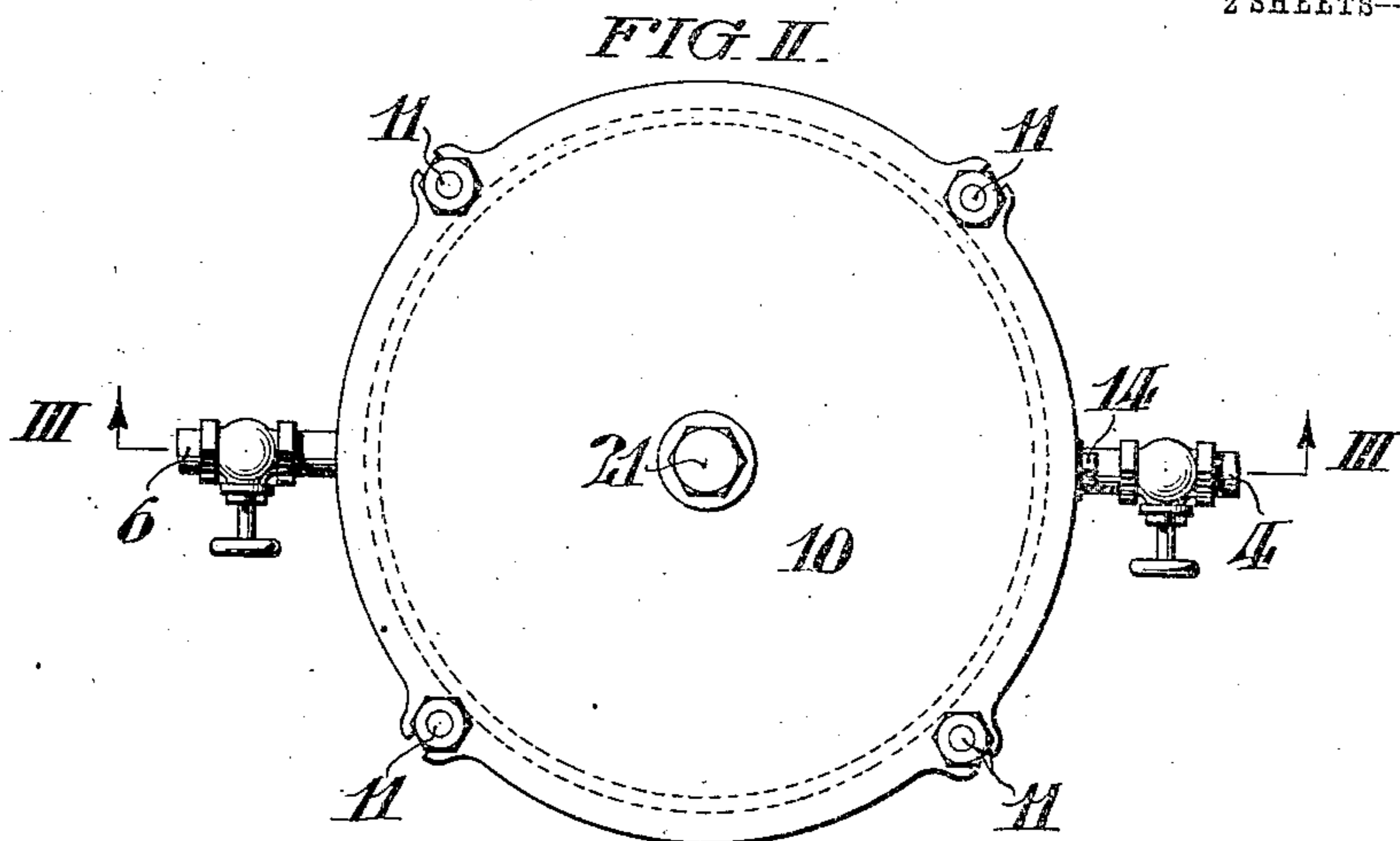
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UNITED STATES PATENT OFFICE.

JAMES L. LAMB AND TIMOTHY C. SHEEHAN, OF PHILADELPHIA, PENNSYLVANIA.

AIR-DRIER FOR PNEUMATIC LINES.

No. 917,619.

Specification of Letters Patent.

Patented April 6, 1909.

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To all whom it may concern:

Be it known that we, JAMES L. LAMB and TIMOTHY C. SHEEHAN, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Air-Driers for Pneumatic Lines, whereof the following is a specification, reference being had to the accompanying drawings.

10 In manufacturing establishments where pneumatic tools are employed it is customary to equip the plant with a pneumatic air system from which compressed air may be drawn at convenient intervals for the purpose of operating the pneumatic tools, within which phraseology I include not only mechanical tools, but oil or gasolene torches, such as are employed in large manufacturing establishments as for example, ship yards, etc. Difficulty has been experienced in the use of such apparatus by reason of the condensation of water within the pipes and tools, owing to the pumping of moist air into the pneumatic line, directly from the compressor. By reason of such condensation, the pneumatic tools become rusted, and their operation is rendered irregular, moreover with its use in pneumatic torches the flame which they produce becomes intermittent, and will often be extinguished at a critical moment, as for example during an annealing operation.

35 We have discovered that by passing the air, which is pumped to a pneumatic system of this sort, through an air drier, the moisture contained in the air may be removed and the difficulty which has been described overcome.

40 The air drier which we have invented, and which we have found well adapted to this purpose, comprises a mass of spongy material suitably supported upon a perforated surface and interposed within the pneumatic system.

45 We have illustrated, and will now describe, a convenient form of apparatus embodying our invention, as we have employed it; but it is to be understood that the description is illustrative only, and that our invention is capable of other and varying embodiments according to the nature and requirements of the system in connection with which it is employed.

55 In the accompanying drawings, Figure I, illustrates diagrammatically the essential devices required in a pneumatic system;

including an air drier constructed in accordance with our invention and the tools to be operated. Fig. II, is a plan view of the drier. Fig. III, is a vertical sectional view 60 of the same taken along the line III, III, in Fig. II.

Referring to Fig. I,—the air compressor 1, is connected to be operated, by the engine 2, but obviously any other prime mover may 65 be employed. The air which is compressed by the compressor is forced into the reservoir 3, and from there is led by the pipe 4, to the drier 5, through which it passes to the pneumatic line 6, which in practice extends 70 and ramifies as desired, being provided with valve apertures at suitable intervals with which connection may be made for supplying the compressed air to pneumatic tools, such as hammers 7, torches 8 or other imple- 75 ments as required. The drier 5, comprises a cylindrical shell, having a conical or dished bottom 6, and provided with a removable cover 10, clamped upon its upper end by the swing bolts 11. The shell is provided with 80 an aperture 12, near the bottom through which compressed air is admitted, and with a plurality of apertures 13, near the top from any of which the compressed air may be led to the pneumatic tools. Those apertures 85 not actually employed may be capped, by a screw plug 14, as shown in Fig. III.

Within the cylindrical shell and supported in more or less central relation thereto is the basket 15, which divides the interior of the 90 cylinder into opposed chambers 16, and 17, at the top and bottom respectively. Said basket 15, is preferably cylindrical and fits snugly within the cylindrical shell of the drier resting around its lower edge upon the 95 flange 16. The bottom of this basket 15, consists of the perforated diaphragm 18. The cover of the basket consists of a similarly perforated diaphragm 19, which rests loosely within the basket supported only by 100 the contents thereof and capable of being pressed down thereupon by pressure provided by the screw 20, which extends centrally through the cover of the cylindrical shell in threaded engagement therewith, and 105 is provided with the hexagonal head 21, by which it may be rotated to adjust the pressure upon the sponge. At the bottom of the cylinder a water exit 25, is provided fitted with an ordinary globe valve 26, leading to 110 a discharge pipe 27.

In operation the basket 15. is filled with a

mass of ordinary sponge: The cover 19, of the basket is then placed upon it, and the cylindrical shell being closed a suitable degree of pressure is imparted to the mass of sponge by means of the screw 20. Air from the compressor is then admitted to the lower side of the drier below the mass of sponge by way of the entrance 12, and is forced therefrom through the upper aperture 13, to the pneumatic line. As the air passes through the mass of sponge the moisture therein contained is condensed and drips, carrying impurities with it, to the bottom of the drier from whence it is blown out by the compressed air through the valve 26.

We have found that the spongy mass continues to perform its function of removing water from the air even after it has become itself thoroughly saturated with water, the excess continuing to drip therefrom and to be discharged at the bottom as has been described.

By reason of the interposition of a drier of this description in a pneumatic line, we have found that the difficulties resulting from condensation of moisture therein are effectually overcome.

It is an incidental advantage of the use of our drier that, along with the water, a considerable quantity of impurities are removed from the air so that the air fed to the pneumatic tools is free from dust which thus tends to enhance the life of the tools; but it will be understood that the main advantage, as we have observed it, which results from the use of our device in the combinations specified is the overcoming of the disadvantages which result from the condensation of moisture in pneumatic systems such as have been described. Although we have named sponge as the specific material to be employed, this being the material which we have found best adapted to the purpose, yet it will be understood that other materials

having similar absorbent qualities may be employed.

Having thus described our invention, we claim:—

1. An air drier for a pneumatic system comprising a perforated surface and a mass of mechanically absorbent spongy material interposed within the line of traverse of the air of the pneumatic system, the spongy material being supported upon the perforated surface, whereby the moisture which has been removed by the spongy material from the air is in turn drained from the spongy material.

2. An air drier for a pneumatic system, comprising a suitable receptacle; a perforated diaphragm dividing the receptacle horizontally; a mass of spongy material supported upon said perforated diaphragm; an air entrance and an air exit on opposite sides of said mass of spongy material; and an aperture below the perforated diaphragm from which the excess of moisture withdrawn from the air is discharged.

3. An air drier for a pneumatic system comprising a suitable receptacle; perforated diaphragms within the receptacle; an air entrance near the bottom and an air exit near the top of the receptacle; a mass of spongy material supported within the receptacle between the perforated diaphragms; an aperture near the bottom of the receptacle from which the moisture withdrawn from the air is discharged; and means for causing one of the diaphragms to exert pressure upon the mass of spongy material.

In testimony whereof, we have hereunto signed our names, at Philadelphia, Pennsylvania, this 7th day of April 1906.

JAMES L. LAMB.

TIMOTHY C. SHEEHAN.

Witnesses:

JAMES H. BELL,
E. L. FULLERTON.