No. 720,083. PATENTED FEB. 10, 1903.

J. S. THURMAN.

PNEUMATIC RENOVATOR.

APPLICATION FILED FEB. 24, 1902.

NO MODEL.

Fig. 1.

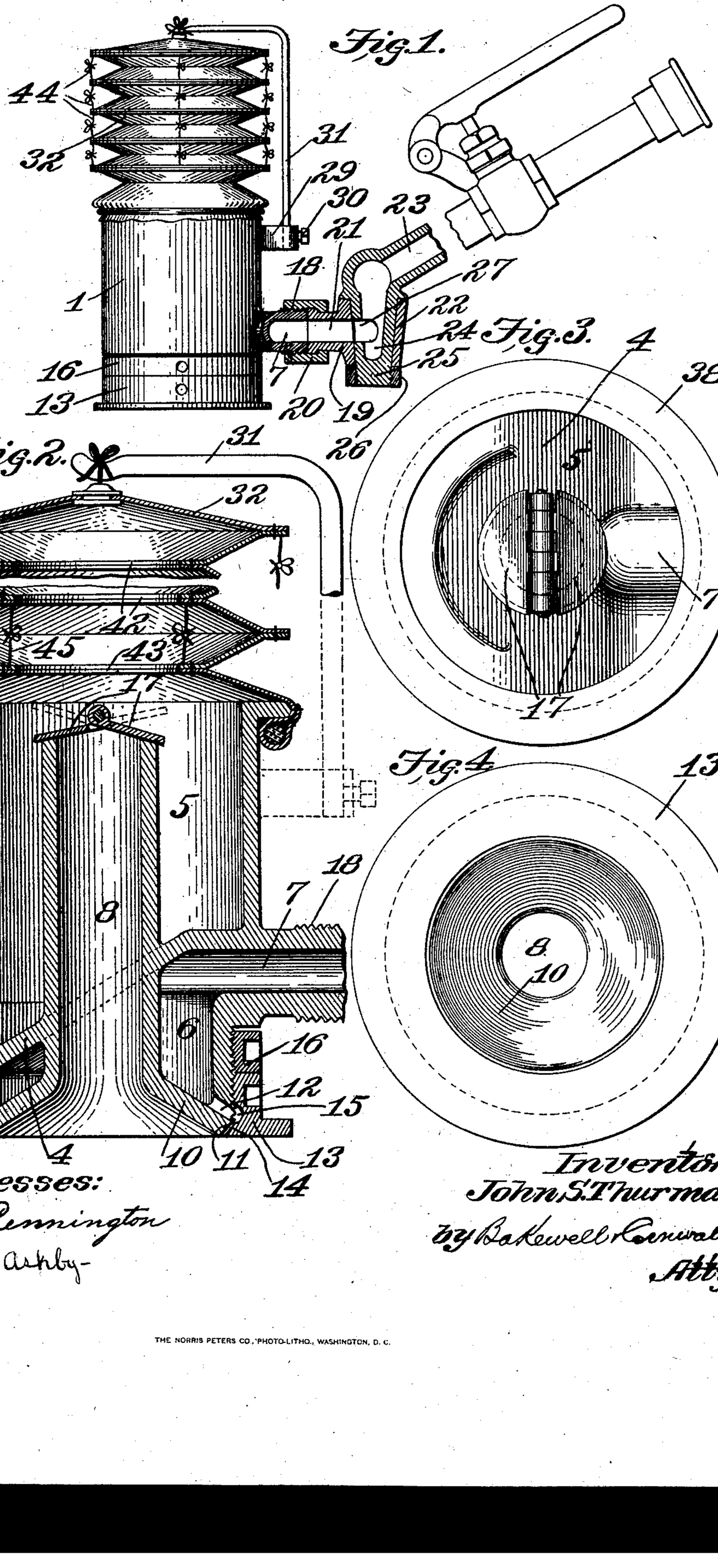

Fig. 3.

Fig. 2.

Fig. 4.

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UNITED STATES PATENT OFFICE.

JOHN STROTHER THURMAN, OF ST. LOUIS, MISSOURI.

PNEUMATIC RENOVATOR.

SPECIFICATION forming part of Letters Patent No. 720,083, dated February 10, 1903.

Application filed February 24, 1902. Serial No. 95,364. (No model.)

To all whom it may concern:

Be it known that I, JOHN STROTHER THURMAN, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented a certain new and useful Improvement in Pneumatic Renovators, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation, partly in section. Fig. 2 is a vertical central sectional elevation. Fig. 3 is a top plan view of the casing, and Fig. 4 is a bottom plan view of the same.

My invention relates to improvements in pneumatic renovators, the objects being to provide a renovator of simple construction in which the outlet-opening of the nozzle is conveniently formed and can be closely adjusted, to adjustably connect the apparatus to the handle by which the same is operated, and to provide an improved form of arresting-bag for the dust-laden air.

To these ends and also to improve generally upon apparatus of the character indicated, my invention consists in the various matters herein described and claimed.

Referring now more particularly to the drawings, 1 indicates a cylindrical casing whose lower end is threaded, as at 3. Extending, preferably obliquely, across the said casing is a diaphragm 4, which serves to divide the casing into a dust-receiving chamber 5 and an air-chamber 6, said air-chamber lying between the said diaphragm and the lower end of the casing and having an air-inlet pipe 7 leading thereinto at the larger side of the same. The inclined diaphragm serves to reduce the size of the chamber as the same extends from the air-inlet pipe, and thus the pressure of the air in said chamber is substantially equalized at all points, notwithstanding the distance of such points from the inlet-port. 8 is a flue which extends upwardly in the casing and through the said diaphragm, the said lower wall of the casing inclining downwardly and outwardly from the lower end of said flue at 10 and having its outer face beveled, as at 11. Discharge-ports 12 lead through the side wall of the casing from the air-chamber 6, and a ring or nut 13 is adjustably supported upon the threaded portion of the casing, said ring having its lower inner edge beveled inwardly and upwardly, as at 14, to lie substantially parallel to the beveled face 11 of the casing. The inner wall of this ring is provided with a channel 15, which when the ring is in place registers with the discharge-ports 12 to provide a passage for the air from said air-chamber to the opening formed between the wall 14 and the face 11. The said wall 14 and face 11 are spaced from each other to provide an outlet-opening for the air, and the size of this opening can readily be regulated by adjusting the ring upon the casing, a locking-collar or jam-nut 16 above the ring serving to firmly lock the same in adjusted position. Upwardly-opening flap-valves 17 are suitably pivoted at the upper end of the flue and serve to normally close the same and to prevent backward flow of the dust-laden air into the apparatus.

The supply-pipe 7 projects from the casing and has its outer end threaded, as at 18, and a handle-section 19 fits against the end of said pipe and is rotatable against the same about a substantially horizontal axis, the said handle-section 19 being locked in position by means of a collar 20, which suitably engages the said handle-section and also the threads 18. The said handle-section is provided with a passage 21, which registers with the passage in the pipe 7 and also has a substantially vertical socket 22, which communicates with said passage 21. Upon the hollow handle 23, which is adapted to be connected to a source of compressed air, is a depending hollow plug 24, whose lower or outer end is closed by a wall 25. Said plug fits in the said socket 22 (the said parts being preferably tapered) and is secured in position by means of a nut 26, which engages the threaded extending lower end of the plug and bears against the lower face of the socket member, said plug having an elongated passage or port 27, which when the plug is in position registers with the passage 21 in the handle-section 19. It will thus be apparent that the renovator is mounted upon its operating-handle in such a manner that the parts are adjusted as may be desired and then locked in this adjusted position, the

collar 20 serving to lock the handle-section 19 upon the pipe 7 and the nut 26 serving to lock the handle-section 23 upon the handle-section 19.

Adjustably extending through a bracket 29 upon the casing and clamped in position by means of a set-screw 30 is the vertical arm 31 of an angular support for a bag 32. A flange 38 extends outwardly at the upper end of said casing and is integral therewith, whereby the lower portion of the bag can be drawn over said flange and held securely in position, as by means of an elastic or puckering string 40, held in a pocket formed by sewing the cloth of the bag around said elastic.

The dust-arresting bag is composed of a series of horizontally-disposed bellows-fold chambers 41, the said several chambers communicating with each other through openings 42 and the lower or end chamber having an opening 43 in its lower wall and above the open upper end of the casing when the said bag is in position. The several chambers of the bag can be held properly spaced apart by means of tying-strings 44, and tying-strings 45 can also be provided between the walls of an individual chamber in order to limit the separation of said walls from each other.

In the operation of my device the handle is suitably adjusted upon the casing, the discharge-opening from the casing is made of the desired size by suitably adjusting the ring 13, and the bag is properly adjusted and supported above the casing. The casing being placed upon a carpet, a wall, tapestry, or other object desired to be renovated, air is admitted through the hollow handle and enters the air-chamber 6, said air being discharged through the air-eduction opening from the casing and after passing through or against the object being operated upon and dislodging the dirt and dust therein the dust-laden air enters the flue 8 and lifting the valves 17 discharges into the chamber 5 of the casing. The air has an opportunity to settle to some extent in the said chamber 5 and the heavier particles carried by said air fall. The lighter particles are carried by the air-current into the bag 32, and as the air is substantially at rest in said bag said lighter particles have ample opportunity to settle. The said bag is made of cloth of sufficiently close weave to prevent the passage of dust through the same, although the escape of the dust-freed air is allowed.

From the above it will be seen that when the apparatus is used for cleaning walls and the like the body portion of the renovator can be adjusted to any desired angle with relation to the handle to enable the operator to most conveniently manipulate the same. In this manner it is possible for the device to be worked in corners and around moldings with the greatest convenience.

The air admitted to the apparatus under pressure is derived from some suitable source of compressed-air supply through the medium of a flexible supply-pipe. (Not shown.) In entering the supply-chamber 6 the air is distributed around the "nozzle-opening," as it might be called, in the form of a continuous circular slot, which discharges the air downwardly and inwardly in a circular sheet. Thus the particles of dust and the air have no inclination to be forced out under the edges of the casing; but, to the contrary, a current of air is induced from all sides under the casing, and in this manner the device is rendered more efficient. This blast action is highly advantageous, and by reason of the annular form of the sheet of air it makes no difference in what direction the apparatus is moved, the same conditions prevailing with respect to this annular sheet being forced downwardly and inwardly and creating the blast from all sides, as above described.

In a companion application filed by me contemporaneously herewith and serially numbered 95,363 I have shown a form of apparatus employing a circular blast, wherein the air is directed outwardly and passes over the upper edge of what would be the equivalent of the flue-walls herein shown, the heavier particles of dust being deposited in said centrally-located chamber in my said other application, which chamber has a closed bottom. A similar type of apparatus is also shown in an application filed by me contemporaneously herewith and serially numbered 95,362, in which a circular blast is illustrated as a modification. This circular blast, however, is likewise directed outwardly and not inwardly, as in this present case. I do not in either of these above-mentioned applications broadly claim the idea of a casing provided with a nozzle-opening about the same, nor the particular means herein shown and described for regulating the size of the air-passage.

I am aware that many minor changes in the construction, arrangement, and combination of the several parts of my device can be made and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with the casing of a pneumatic renovator, of a handle therefor, a connection between said handle and said casing whereby the latter is movable with respect to the handle, and a duct or passage formed through the handle for compressed air entering said casing through the pivoted connection of the handle; substantially as described.

2. The combination with the casing of a pneumatic renovator, of a handle adjustable with relation to said casing about a substantially vertical axis, said handle being provided with a passage for compressed air; substantially as described.

3. The combination with the casing of a pneumatic renovator, of a handle therefor, and a connection between said handle and said casing whereby the casing is movable about a vertical and horizontal axis with relation to said handle; substantially as described.

4. The combination with the casing of a pneumatic renovator, of a handle-section adjustable with relation to said casing, and a second handle-section adjustably connected to said first-mentioned handle-section, both of said handles being formed with communicating passages for supplying compressed air to the renovator; substantially as described.

5. The combination with the casing of a pneumatic renovator, of a handle-section adjustable with relation thereto about a substantially horizontal axis, and a second handle-section upon said first-mentioned handle-section and adjustable with relation thereto about a substantially vertical axis, both of said handles being formed with communicating passages for supplying compressed air to the renovator; substantially as described.

6. The combination with the casing of a pneumatic renovator, of a handle, and a clamping-collar engaging said handle and a part upon said casing and adjustably securing said handle to said casing, said handle being provided with a passage for compressed air; substantially as described.

7. The combination with a renovator-casing having a part provided with a passage and a socket communicating with said passage, of a handle having a hollow plug entering said socket and provided with a passage registering with said passage in said part with which said casing is provided; substantially as described.

8. The combination with a renovator-casing having a part provided with a passage and a socket communicating therewith, of a handle having a hollow plug adjustably seated in said socket and provided with a passage registering with said first-mentioned passage, one of said registering passages being elongated to accommodate adjustment of said plug in said socket; substantially as described.

9. The combination with a renovator-casing having a part provided with a passage and a socket communicating therewith, of a handle pivotally connected therewith having a hollow plug with closed end seated in said socket and provided with a port registering with said passage; substantially as described.

10. In an apparatus of the character indicated, a renovator-casing provided with an adjustable nozzle-opening about the same, and a movable handle connected thereto; substantially as described.

11. In an apparatus of the character indicated, a renovator-casing provided with a flue, a pivoted handle for said casing, and an adjustable nozzle-opening substantially surrounding said flue; substantially as described.

12. In an apparatus of the character indicated, a renovator-casing, and a ring thereon having its outer portion spaced therefrom to produce an air-passage, said ring being adjustable upon said casing to regulate the size of said air-passage; substantially as described.

13. In an apparatus of the character indicated, a renovator-casing, a ring thereon having its outer portion spaced therefrom to form an air-passage, said ring being adjustable upon said casing to regulate the size of said air-passage, and a locking-collar coöperating with said ring; substantially as described.

14. In an apparatus of the character indicated, a renovator-casing, and a ring adjustable thereon, said members having contiguous faces at the end of the casing producing an air-passage, one of said faces being inclined, whereby the size of said passage can be regulated by the adjustment of said ring; substantially as described.

15. In an apparatus of the character indicated, a casing having an air-chamber, and a ring upon said casing and having a portion spaced therefrom to produce an air-passage, there being a port through the wall of said casing between said chamber and said passage; substantially as described.

16. In an apparatus of the character indicated, a casing having a plurality of discharge-ports, and an inclined diaphragm in said casing and serving to produce an air-chamber from which said discharge-ports lead, there being an inlet-port to said chamber; substantially as described.

17. In an apparatus of the character indicated, a casing, a diaphragm across said casing and producing an air-chamber, there being inlet and discharge ports leading into and from said chamber, and a flue within said casing and extending through said diaphragm, said flue opening above said diaphragm; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 22d day of February, 1902.

JOHN STROTHER THURMAN.

Witnesses:

GEORGE BAKEWELL,

GALES P. MOORE.