Dec. 25, 1928. 1,696,469

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POWDERED MEDICAMENT DISPENSER FOR LUNG TREATMENTS

Filed July 26, 1927

Fig. 1.

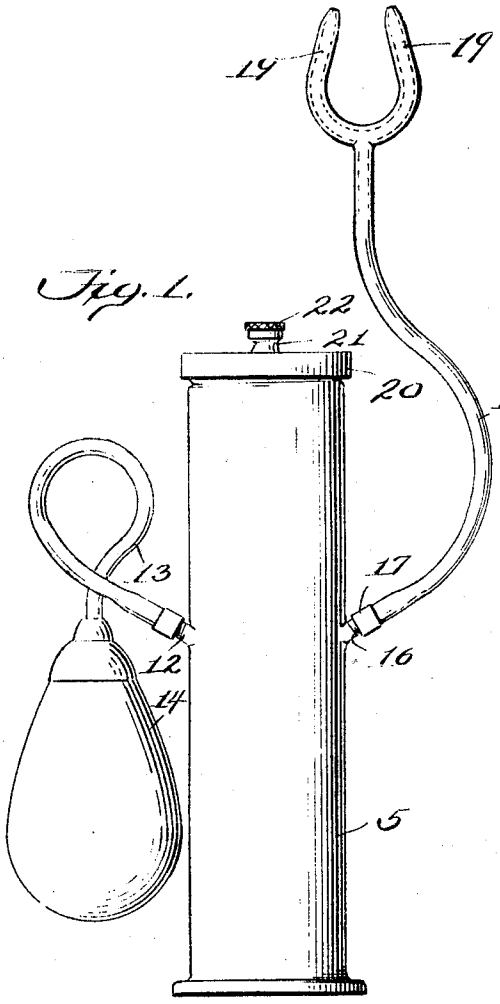


Fig. 2.

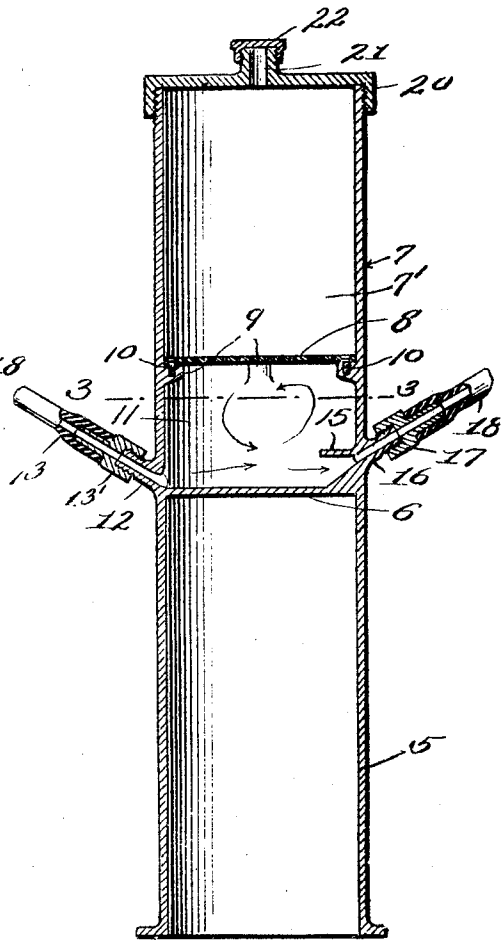
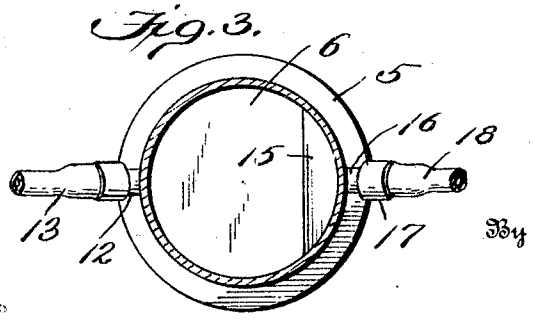


Fig. 3.



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UNITED STATES PATENT OFFICE.

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POWDERED-MEDICAMENT DISPENSER FOR LUNG TREATMENTS.

Application filed July 26, 1927. Serial No. 208,631.

This invention relates to improvements in a powdered medicament dispenser, one object of the invention being the provision of a device of this character in which the amorphous powder which is a very finely powdered medicinal agent may be readily applied by the patient without the necessity of the nurse or doctor, the same being so constructed that the in-rushing air has imparted thereto a whirling action to mix therewith a sufficient amount of the amorphous powder, which, in turn, is expelled and drawn into the lungs by the patient, who simultaneously with the air pressure inhales, the medicinal agent being of the kind compounded for the destruction and elimination of the tubercular bacillus from the lungs and for healing the damage the bacillus has created due to the disintegration of the tissues, etc.

Another object of this invention is the provision of a simple and inexpensive device of this character which is thoroughly efficient and practical in use and readily used by the indigent sick, without the necessity of a nurse or doctor.

In the accompanying drawings:—

Figure 1 is a side elevation of the complete device;

Figure 2 is a vertical sectional view therethrough, showing a portion of one of the tubes;

Figure 3 is a section taken on line 3—3 of Figure 2.

Referring to the drawings: The numeral 5 designates the tubular base which constitutes a means for supporting the device in an upright position and for providing a handgrip when the device is being manipulated. A partition 6 is carried by the base and provides the upper compartment 7, which, in turn, is divided by the perforated partition or diaphragm 8 supported upon the lugs 9 by means of the screws 10 into an upper compartment 7′ and a lower mixing compartment 11. The finely pulverized amorphous powder is adapted to be placed in the upper compartment 7′ upon the diaphragm 8 and to be delivered therethrough into the lower compartment 11, as will presently appear, the diaphragm 8 also constituting a sieve by means of which foreign particles or lumps of the powder may be retained and not permitted to pass into the lower compartment. The air nozzle 12 is in communication with the lower compartment near the bottom 6 thereof and carries a nipple 13′ by means of which the air-conducting tube 13 and the pump 14 are connected for operation.

At the opposite side of the compartment 11 and parallel to the bottom 6 is provided a baffle 15, while the nopple 16 is in communication with the space provided between the baffle and the bottom and receives the nozzle 17, which, in turn, is connected to the air and power directing tube 18. This tube as clearly shown in Figure 1, is provided with the bifurcated nostril-engaging terminals 19. The compartment 7′ is provided with a removable cover 20 having the concentric opening 21 sealed by the cap 22.

When it is desired to use the present invention, the compartment 7′ is partially filled with the amorphous powder carrying the medicinal agent through the cap-controlled portion thereof, the cap being closed tightly. The nostril-engaging members 19 are then inserted in the nostrils of the patient and the pump 14 is manipulated simultaneously with the inspiration of the patient, to cause the air to pass into the chamber 11, and due to the baffle and the bottom, such air passes in the directions of the arrow before entering the outer nipple 16, and as there is a free egress for the air during the inspiration period the powder is carried with the air and administered to the lungs. This action of the air has a tendency to create a pressure or suction within the chamber 11 and to agitate and draw the finely pulverized amorphous powder through the diaphragm 8 where it is thoroughly commingled with the air before passing through the tube 18 and through the nostril-engaging nozzles 19, where the patient, at the same time inhaling, draws the medicament-laden air through the nostrils and throat into the lungs. Thus, it will be seen that the present device may be used by the patient when in an upright or reclined position, and that with very little effort on the patient's part, through the medium of the pump 14, the desired air and powder commingling is performed.

I claim:—

1. A powdered medicament dispenser, including a casing having a chamber divided by a perforated powder-sifting diaphragm into superposed air receiving and powder receiving comparments, and means for directing air diametrically through the lower compartment and exhausting it at a diametrically opposite point, the passage of the air into and

through the compartment producing a suction and a thorough commingling of the amorphous powder with the air.

2. A powdered medicament dispenser, including a casing having superposed communicating chambers, the upper one of which is the powder-holding chamber, and from which the powder is supplied as needed and the lower one of which is provided with an exhaust outlet, and means for creating a whirling action of air adjacent the bottom of the lower chamber whereby powder is drawn from the upper chamber commingled with the air and exhausted with the same.

3. A powdered medicament dispenser, including a casing having superposed communicating chambers, the upper one of which is the powder-holding chamber, an air pump connected adjacent to and at an incline to the bottom and to one side of the lower chamber, and an air and powder directing member connected to the opposite side of the lower chamber.

4. A powdered medicament dispenser including a cylindrical casing having superposed communicating chambers and handgrip, the partition between the chambers being in the form of a sieve whereby fine particles of powder may be sifted therefrom into the lower chamber, an air-directing nozzle disposed at an angle to the bottom of the lower chamber whereby air introduced impinges the bottom and has imparted thereto a whirling action, the compartment being provided with an outlet at a diametrically opposite point adjacent the bottom for directing the dust-laden air from the chamber.

5. A powdered medicament dispenser including a casing having superposed communicating chambers, the partition between the chambers being in the form of a sieve whereby fine particles of powder may be sifted therefrom into the lower chamber, an air-directing nozzle disposed at an angle to the bottom of the lower chamber whereby air introduced impinges the bottom and has imparted thereto a whirling action, the compartment being provided with an outlet at a diametrically opposite point adjacent the bottom for directing the dust-laden air from the chamber, and a pump connected to the air inlet and an air-directing tube connected to the outlet.

6. A powdered medicament dispenser including a cylindrical casing, a perforated diaphragm mounted in said casing and dividing the same into an upper and a lower compartment, the upper compartment above the diaphragm being a powder-containing compartment, the lower chamber being provided with diametrically disposed air in-take and exhaust ports adjacent the bottom thereof, a baffle disposed above the air outlet and substantially parallel to the bottom of the lower compartment, an air pump connected to the inlet port and an air and dust-directing hose tube connected to the outlet port.

In testimony whereof I have hereunto set my hand.

DAVID NEWTON E. CAMPBELL.