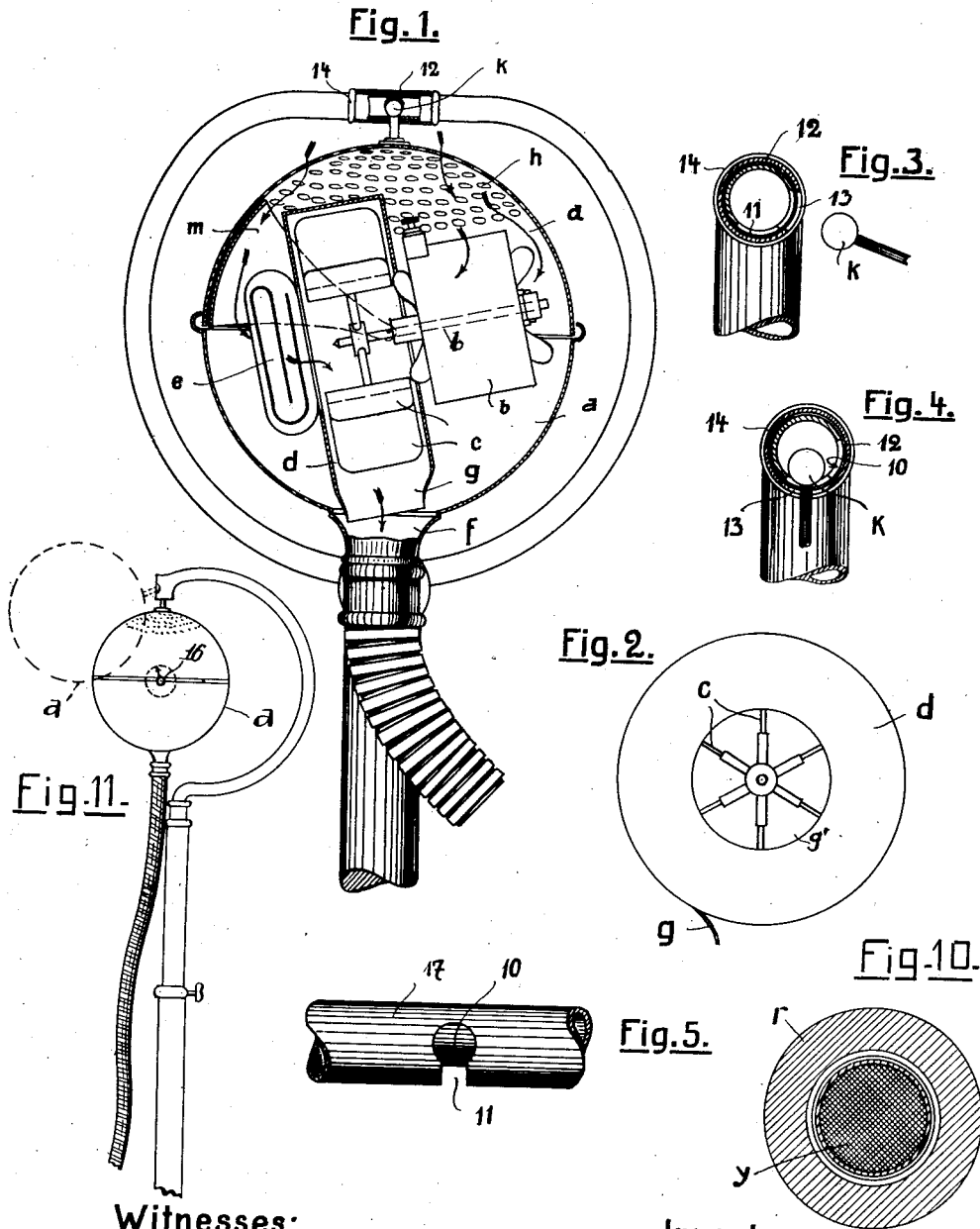


A. SCHAEFFER.
HOT AIR PRODUCER AND BLOWER.
APPLICATION FILED NOV. 29, 1909.

999,880.

Patented Aug. 8, 1911.

2 SHEETS—SHEET 1.



Witnesses:

Paul Schaeffer
Emil Stew

Inventor:

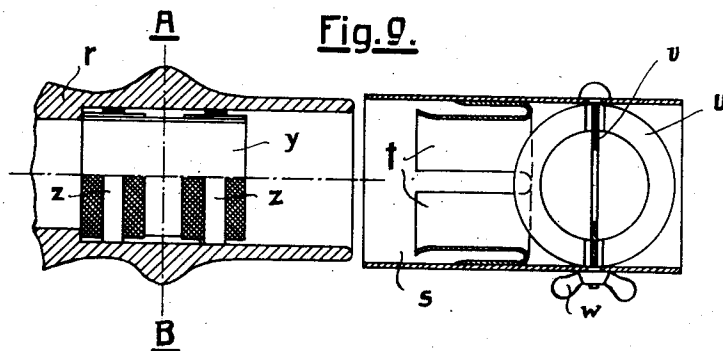
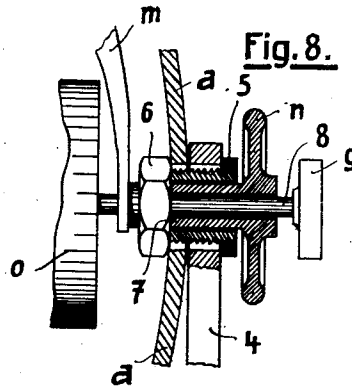
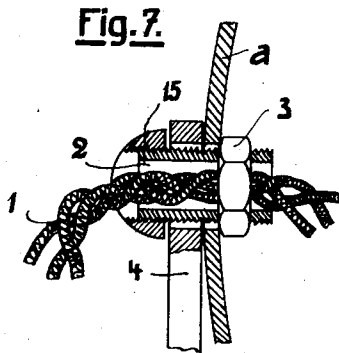
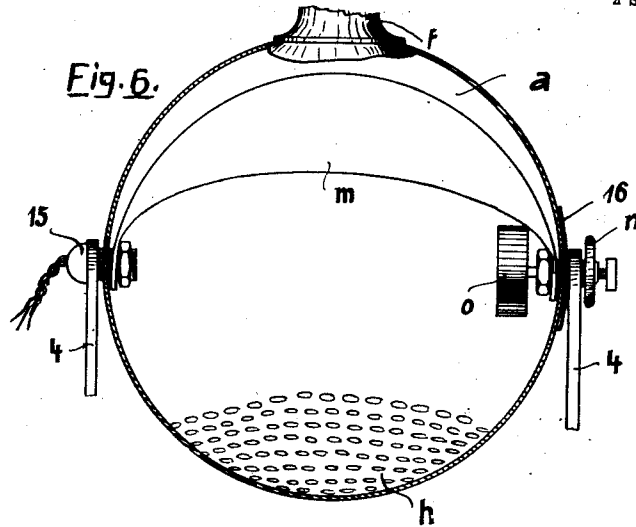
August Schaeffer

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2 SHEETS—SHEET 2.



Witnesses:

Paul Schaeffer
Emil Schaeffer

Inventor:

August Schaeffer

UNITED STATES PATENT OFFICE.

AUGUST SCHAEFFER, OF FRANKFORT-ON-THE-MAIN, GERMANY.

HOT-AIR PRODUCER AND BLOWER.

999,880.

Specification of Letters Patent.

Patented Aug. 8, 1911.

Application filed November 29, 1909. Serial No. 530,466.

To all whom it may concern:

Be it known that I, AUGUST SCHAEFFER, a citizen of the German Empire, residing at Moselstrasse 40, Frankfort-on-the-Main, Germany, have invented new and useful Improvements in Hot-Air Producers and Blowers, of which the following is a specification.

My invention relates to improvements in compressed and warmed air blowers of the class which is used in warmed or hot air douches and the objects of my invention are, first, to provide a device of the class referred to permitting to conveniently adjust and at pleasure change the temperature, quantity and force of the emitted air-current or blast, second with this object in view, to cause a division of the air in two currents of different temperatures and the ultimate mixture of these currents, all within the hollow, round body hereinbelow referred to; third, to provide means to open or obstruct and thus regulate the ingress of air into the said body; fourth to provide means permitting to change the force or pressure of the emitted blast; fifth to provide for the supply of the means for the operation of the mechanical parts in the said body; sixth, to provide for the convenient and secure suspension and manipulation of the round body, and, seventh, to further improve the hot-air-blower by providing means permitting the admixture of the blast with aromatic or medicinal matter. I attain these objects by the construction and arrangement of parts as herein specified and illustrated on the drawings herewith in which—

Figure 1 is an elevation of the apparatus, partly in vertical section, suspended in the way hereinbelow referred to; Fig. 2 is a top-view of the ventilator-box hereinbelow referred to; Fig. 3 is a portion of the annular suspending device hereinbelow referred to, showing the position of parts ready to receive the head of a button secured in the shell of the apparatus; Fig. 4 is a similar view showing the said button inserted; Fig. 5 is a side view of a portion of the said annular suspending device showing the perforation and slot hereinbelow mentioned; Fig. 6 is a vertical section through the hollow round body intended to receive the mechanical devices hereinafter described and set forth, the said body being shown upside down and turned at right angles to the position shown in Fig. 1; Fig. 7 is a detail

view, in section, illustrating the disposal of parts for the introduction of electric wires at a certain place and other parts hereinbelow mentioned; Fig. 8 is a similar detail view showing the disposition of certain parts at a place opposite to the former; Fig. 9 is a sectional view of the discharge which may be used for the regulation of the force of the emitted blast; Fig. 10 is a vertical transverse section through the gauze-box and the end-piece of the discharge tube hereinbelow referred to; and Fig. 11 is a side view of my improved device showing it suspended from a telescopic stand.

In the said drawings *a* is a hollow round body which may be a globular shell of any suitable material and may be composed of two or more corresponding parts; *b* represents a motor, the main-shaft *b'* of which carries a ventilator or rotatory fan *c* inclosed by a box *d* which may be a cylinder having a lateral discharge opening *g* and in each of the flat portions a circular opening *g'*. To the said ventilator box, on the flat side opposite to the one which is adjoining to the motor, there is attached a heater *e* of any suitable construction. In the bottom of the shell *a* there is a discharge piece *f* and diametrically to the latter the shell is perforated, the perforations *h* being distributed above the ventilator box and the motor which are together with the heater mounted in the order above set forth and are of such relative sizes and shapes that they have to be mounted in inclined position. There is further provided a radial damper *m*, vaulted to correspond in shape with the circumference of the shell. The said damper is of such relative size that when adjusted thereto it covers all or the greater part of the perforations *h*. I prefer the damper to be inside of the shell as shown on the drawing, being mounted as illustrated and as hereinbelow referred to and adjustable from without.

Any kind of power may be used for the operation of the motor, ventilator and heater. The drawings show a conductor of electricity 1 which is admitted through a male-threaded tubular piece 2 inserted at one end of the horizontal diameter and fixed on the inside of the shell *a* by means of a nut 3, while on the outside it may be closed by a cap 15. (See Fig. 7.) At the other end of the same diameter a tubular piece or journal 7 is inserted which is passed through an

other male-threaded tubular piece 5 secured by a nut 6 inside of the shell *a*. The portion 7 forms the bearing for the switch-shaft 8 the inner end of which is in the switch-box 9. The said piece 7 is independently turnable about the shaft 8 and has on the outer end a hand-wheel or other handle *n* while the inside-end carries one of the ends of the vaulted damper *m* which is thus rotarily movable by means of the said wheel or handle *n*. On the outside of the shell *a* a scale or dial 16 may be provided indicating the movements of the damper and its position within the shell *a*. (See Fig. 11.)

My device being chiefly intended to be used as a hot-air douche, the office of the motor, ventilator and heater contained in the shell *a* is to produce a current of air to be by a flexible tube or the like conducted to any desired place where it is to act. While it is often desirable to increase or reduce the temperature of the current or keep it for a time at a certain pre-determined temperature and while for certain work a strong high-pressure current is necessary and for other purposes a light and only moderately warmed current is required, the devices heretofore in use were not so constructed that all this could be attained with one apparatus. My improvements do away with this disadvantage and permit a control and regulation of the admission and discharge as well as of the temperature and force of the emitted air-current.

In my construction the perforations *h* in the shell *a* admit atmospheric air sucked in by the action of the ventilator *c*. The air sucked in through those of the perforations which are nearest to and accordingly within the action of the heater *e* becomes at once heated, before it is received by the ventilator, while the air which is being admitted through those perforations which are at some distance from the heater, that is those which are over the motor, is forced to pass over the several parts of the latter and thus cool these parts before it is drawn into the ventilator box, which it leaves again through the opening *g* near the discharge piece *f*. (See arrows in Fig. 1.) Thus there are two air-currents each of which is designed for and adapted to fill its particular purpose. One current becomes amply heated, while the other keeps the parts of the motor cool which would else run hot. The operation as described is greatly assisted by the round shape of the shell which prevents a breaking of the air-current, favors its balling and brings about an aggregation and mixture of the warm and the cool air-currents before they arrive in and are emitted through the discharge piece *f*.

While in similar devices as known heretofore only one uniformly strong current of

air could be produced and by means of a switch shut off, my invention intends to permit to regulate and at pleasure change the temperature as well as the quantity of the air to be admitted and this I accomplish by providing the aforesaid rotarily movable, vaulted damper *m* which may, as aforesaid, be operated by means of the wheel *n* outside of the shell. As long as the damper is in the position shown in Fig. 1 it is not in action. On turning it a trifle upward a number of the perforations *h*, *h* will be covered and accordingly the quantity of air going to the heater becomes smaller while the quantity of air passing over the motor remains the same and thus the cold current becomes predominant and reduces the temperature of the mixture of the two currents. By turning, however, the damper far enough to cover the portion of the perforations which are above the motor while those above the heater are uncovered, the cold current is cut off and the temperature accordingly increased. Thus by turning the damper so as to cover all or a certain portion of the perforations the admission of the air as well as the temperature may at pleasure be regulated, such regulation being facilitated and rendered accurate by the dial 16 permitting to read from the same the exact position of the damper when it is inside of the shell *a*. (See Fig. 11.) I prefer the damper to be of such size, that when it is turned so that it is just above the middle of the two currents, there are still uncovered perforations on each side, so that there is some air admitted, though in considerably smaller quantity, while the temperature remains normal.

To increase the pressure of the quantity of air thus reduced and emitted through the discharge *f* the same may be constructed in the way illustrated by Fig. 9 which shows it as a tubular piece adapted to go over the end of the rigid joint-piece *r* of the flexible tube and having an elastic inverted annular clamp *t* behind which there is provided a pair of rings *u*, *v* concentric, but placed crosswise to each other and transversely within the discharge-piece *f*, the bores of the said rings being of different diameters and there being provided on the outside an adjusting device *w* permitting to place the bore of any of the said rings in alinement with the discharge passage. Suppose, the piece *f* has been placed over the joint-piece *r* of the flexible tube and the apparatus discharges a quantity of air reduced as above described, the rings *u*, *v* may be so adjusted that the smaller passage is open and accordingly the pressure of the reduced quantity of air forced through the narrower passage becomes thereby stronger than that of the normal quantity, if the same were emitted through the larger opening. By this way any quantity of air-current may

be increased or reduced in force as circumstances may require. Thus whenever my device is used as a hot-air douche for medicinal purposes the operator is in a position to at pleasure adjust or change the quantity of air to be emitted as well as its force or pressure and its temperature.

In the joint-piece *r* of the flexible tube there may be placed a removable gauze-box consisting of a small tubular piece the two openings of which may be covered each by a piece of gauze *y*, the box being intended to receive any material adapted to saturate the passing air-current which may be conducted to the spot or place intended for treatment.

My device may be provided on the outside with any means permitting its free suspension and unimpeded manipulation. I prefer for this purpose the parts shown on the drawings in which 17 is an annular tube which is in its upper portion, on the lower side, provided with a circular perforation 10, having a slotted extension 11 embraced by a collar 12 provided with a similar circular opening and slot adapted to receive a button or head or ball *k* on a neck mounted on the globular shell *a* opposite to the discharge. By inserting the said button or ball *k* into the opening 10 and moving it along in the slot 11 the apparatus may be securely suspended in the annular piece 17 and the security against accidental dropping may be increased by giving the collar 12 a further turn to cover the perforation and slot in the piece 17. (See Figs. 3 and 4.) A swelling or flange 14 may be provided on each end of the collar 12 to limit the movement of the latter. For the further support of the hanging globular shell *a* ears or lugs may be provided which are in Figs. 7 and 8 indicated at 4 embracing the aforementioned tubular pieces 13 and 5, respectively. The tube 17 may, of course, be given a vertical, horizontal or any other position and it may be replaced by any other kind of body suitable for the purpose.

While I have described and in the drawings illustrated what I consider as a very practical embodiment of my invention I wish to state that I do not limit myself thereto as it is obvious that various changes may be made without departing from the spirit of my invention.

I claim:

1. A hot-air producer and blower comprising the combination of a hollow round body, partially perforated, means of admission, circulation and discharge of air within the said body, a heater within the said body and a vaulted damper adapted to be adjusted to cover part of the perforations, the said body having a discharge opening and the said perforations being distributed

in the shell of the said body diametrically to the said discharge opening, substantially as described and for the purposes set forth.

2. A hot-air blower and producer comprising the combination of a hollow round body, partially perforated, means of admission, circulation and discharge within the said body, a heater within the said body, a vaulted damper adapted to be adjusted to cover a portion of the perforations and a discharge-piece adjustable for different passage widths, the said perforations being distributed in the shell of the said body diametrically to the opening for the said discharge piece, substantially as described and for the purposes set forth.

3. A hot-air producer and blower comprising the combination of a hollow round body, partially perforated, a motor, a ventilator and a heater within the said body and mounted in such relative position to the same and the perforations therein that part only of the latter are within the direct action of the heater, the said body having a discharge opening and the said perforations being distributed in the shell of the said body diametrically to the said discharge opening, substantially as described and for the purposes set forth.

4. The combination of a hollow round body partially perforated, containing a motor, a ventilator and a heater which are mounted in such relative position to the same and the perforations therein that part only of the latter are within the direct action of the heater, and an adjustable radial vaulted damper adapted to cover any part of the said perforations, the shell of the said body having a discharge opening and the said perforations being distributed in the said shell diametrically to the said discharge opening, substantially as described and for the purposes set forth.

5. The combination of a hollow round body, partially perforated, a motor, a ventilator and a heater which are mounted within the said body in such relative position to the same and the perforations therein that part only of the latter are within the direct action of the heater, an adjustable radial vaulted damper, rotarily movable and adjustable to cover any of the said perforations, the said damper being inside of the said body and adjustable from the outside of the same, the shell of the said body having a discharge opening and the said perforations being distributed in the said shell diametrically to the said discharge opening, substantially as described and for the purposes set forth.

6. The combination of a hollow round body partially perforated, a motor, a ventilator and a heater which are mounted within the said body in such relative position to the same and the perforations therein that part only of the latter are within the direct

action of the heater, the shell of the said body having a discharge opening and the said perforations being distributed in the said shell diametrically to the said discharge opening, of a radial vaulted damper rotarily movable and adjustable to cover any of the said perforations, the said damper being mounted inside of the body and adjustable from the outside of the same, and a dial on the said outside adapted to indicate the position of the damper, substantially as described and for the purposes set forth.

7. A hot-air producer and blower consisting of a hollow round body, partially perforated, means of admission, heating, circulation and discharge of air, a rotarily movable, radial vaulted damper adjustable to cover any of the perforations, the shell of the said body having a discharge opening and the said perforations being distributed in the said shell diametrically to the said discharge opening and a discharge comprising the combination of a tubular discharge-piece in the said discharge opening, an elastic inverted annular clamp therein, concentric rings of different widths transversely placed to each other within the said discharge piece, and adjusting means for the said rings, substantially as described and for the purpose set forth.

8. A hot-air producer and blower comprising a hollow round body, partially perforated, means of admission, heating, circulation and discharge of air, a rotarily movable, vaulted damper adjustable to cover any of the perforations in the said body, the shell of the said body having a discharge opening and the said perforations being distributed in the said shell diametrically to the said discharge opening and an outlet in the said discharge opening comprising the combination of a tubular discharge-piece, an elastic inverted annular clamp therein, concentric rings of different widths transversely placed to each other and transversely turnable within the said discharge-piece, an adjusting device on the outside connected with the said rings and a flexible tube attachable to the said discharge piece, substantially as described and for the purposes set forth.

9. A hot-air producer and blower comprising a hollow round body, partially perforated, means of admission, heating, circulation and discharge of air, a rotarily movable, vaulted damper adjustable to cover any of the perforations in the said body, the shell of the said body having a discharge opening and the said perforations being distributed in the said shell diametrically to the said discharge opening, and an outlet in the said discharge opening comprising the combination of a tubular discharge piece containing a gauze box adapted to receive and hold any aromatic or medicinal matter, substantially as described and for the purposes set forth.

10. A hot-air producer and blower consisting of a hollow round body, partially perforated, means of admission, heating, circulation and discharge of air, the shell of the said body having a discharge opening and a number of perforations diametrically disposed to the said discharge opening, a vaulted radial damper, a male-threaded tubular piece at one end of the horizontal diameter of the hollow round body and secured by a nut inside of the said body, a conductor of electricity passed through the said tubular piece, another male-threaded piece at the other end of the same diameter, also secured by a nut within the hollow round body, a journal in the said last-mentioned tubular piece, the said journal having on the outside-end a handle while the inner end carries one of the ends of the aforesaid vaulted damper, a switch-shaft in the said journal, a switch-box connected therewith inside of the hollow body and a handle connected therewith on the outside end, the said journal and switch-shaft being severally turnable independent of each other, substantially as described.

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

AUGUST SCHAEFFER.

Witnesses:

EMIL REUSCH,
CARL GRUND.