Aug. 28, 1923. 1,466,093

E. M. ERB

HAIR DRYING APPARATUS

Filed Jan. 6, 1922 2 Sheets-Sheet 1

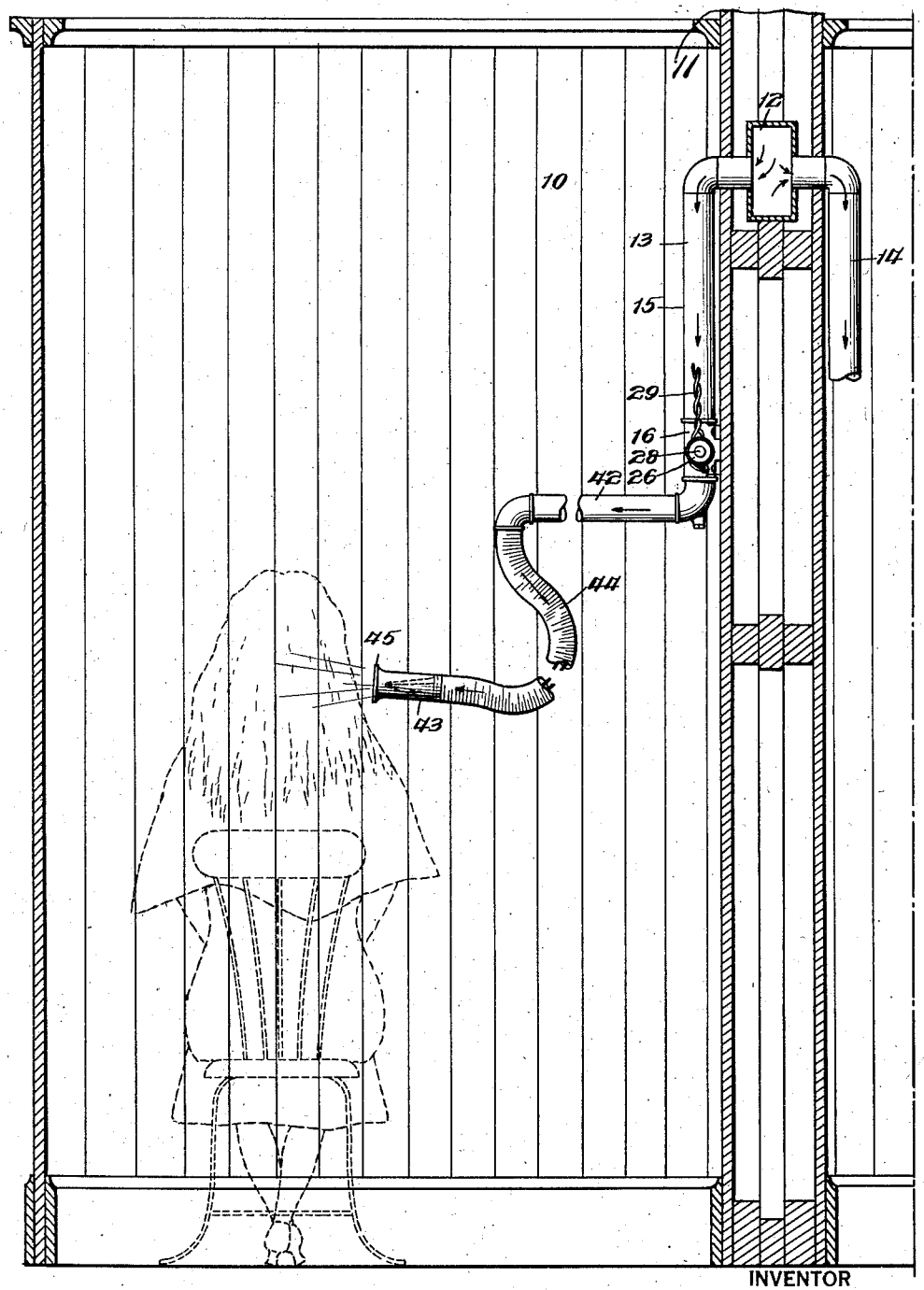


Fig. 1.

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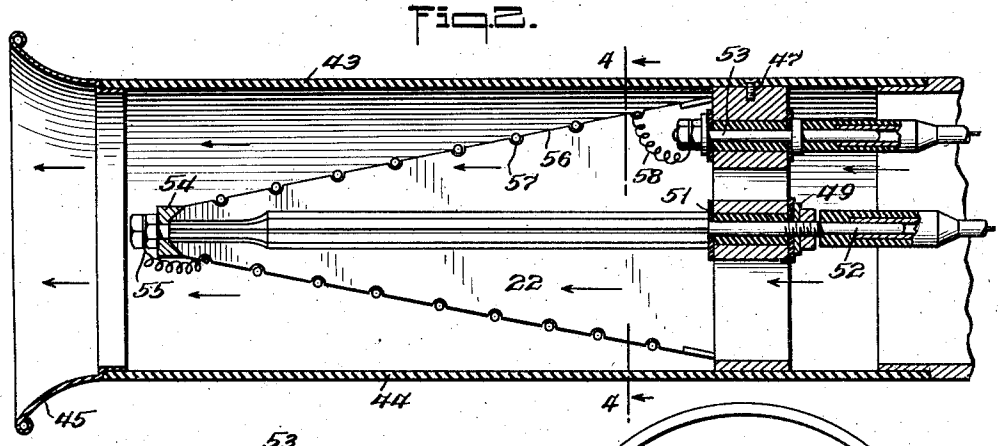
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Fig. 2.



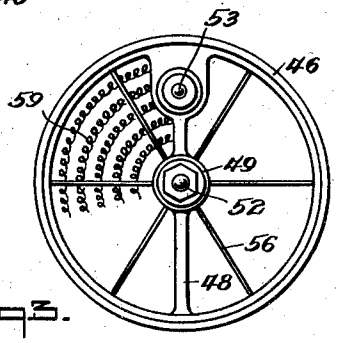


Fig. 3.

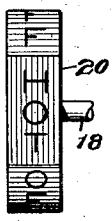


Fig. 7.

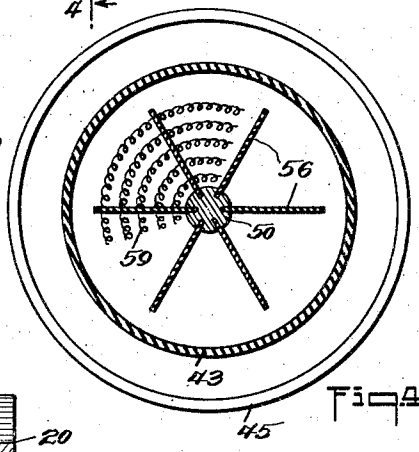


Fig. 4.

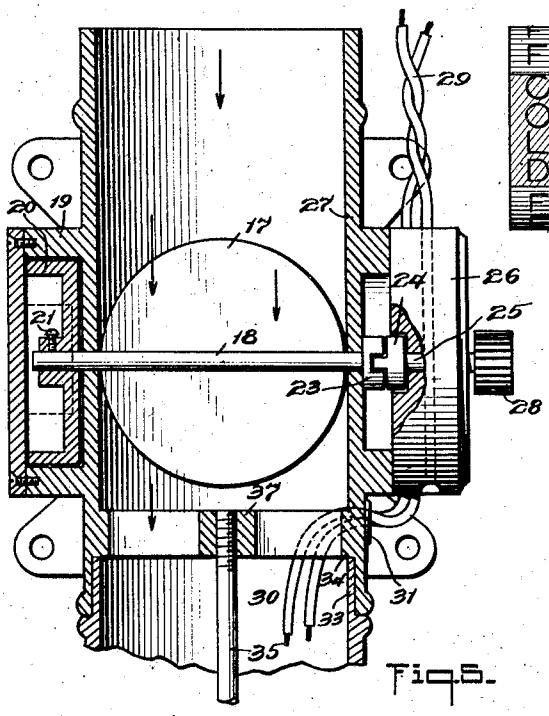


Fig. 5.

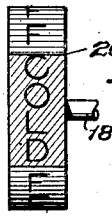


Fig. 8.

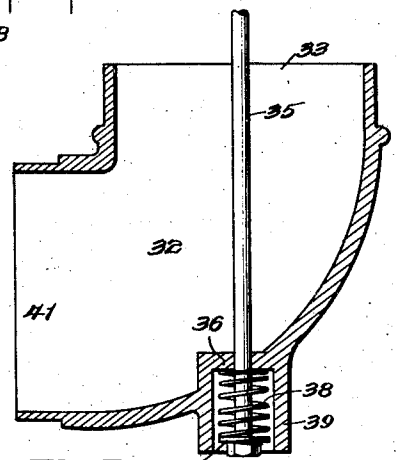


Fig. 6.

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Patented Aug. 28, 1923. 1,466,093

UNITED STATES PATENT OFFICE.

EDMUND M. ERB, OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO MERIT MACHINE MANUFACTURING CORPORATION, A CORPORATION OF NEW YORK.

HAIR-DRYING APPARATUS.

Application filed January 6, 1922. Serial No. 527,390.

To all whom it may concern:

Be it known that I, EDMUND M. ERB, a citizen of the United States, and resident of Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Hair-Drying Apparatus, of which the following is a specification.

The invention relates in general to air supplying system for distributing compressed air in either a hot or cold condition through a number of outlets in a building and where each outlet is under the control of an operator.

The invention finds a specific application in hairdressing establishments where it is desired to supply either hot or cold air at will in regulated amounts at all times under the accurate control of the operator for the purpose of drying hair rapidly and efficiently. In such establishments it is highly desirable for economic reasons to generate the large amount of compressed air necessary to supply the different outlets in such an establishment from some powerful air compressor, which is most conveniently located in some remote part of the building, such as the cellar or basement.

Accordingly, one of the objects of the invention is to provide a simple form of conduit structure, the major portion of which can be incorporated as a structural part of the building and which can be connected to a suitably disposed compressor and to provide different branch conduits leading from the main conduit built into the building wherever such branch conduits are desired.

It is usual in hair drying establishments to provide a portable air heater and fan from which extends a flexible tube for directing the air onto the person's head. Such constructions have not proven commercially satisfactory for the heated air has not been produced economically and the air rapidly looses its heat as it passes through the flexible conduit thus necessitating an abnormally large heating device which must be reheated every time it is used.

Accordingly, another object of the invention is to provide a means for heating the air just as it is being discharged from the nozzle and in this way effect an economy in the use of the electric or other heat producing energy used.

Broadly, I attain this phase of the invention by positioning an electric heater in the discharge nozzle at the end of the usual flexible air tube and to position the same as close to the discharge end of the nozzle as is physically possible.

Such constructions are subjected to rough usage and while it is herein suggested that the heating means be positioned in the nozzle, on the contrary the present disclosure features the positioning of all other parts which may be readily damaged in fixed position conveniently accessible to the operator but forming no part of the movable element of the air conduit.

Still featuring economy in the use of energy especially where electric energy is used, the invention features a form of heater in the nozzle which will permit a substantially free passage of the air therethrough and at the same time will constitute, in effect, a heating screen positioned across the bore of the nozzle and disposed so that all of the air must pass in close juxtaposition to hot parts of the heating screen and thus insure a heating of all parts of the air just before it is discharged.

The invention has as further objects certain other desideratums, for instance, the ready demountability and thus accessibility to interior parts for repair and substitution, and the perfections of a type of manually actuated control which will selectively give either hot or cold air, or intercept the air flow, and which will at the same time visually indicate the status of the control elements.

Various other objects and advantages of the invention will be in part obvious from an inspection of the accompanying drawings and in part will be more fully set forth in the following particular description of one form of mechanism embodying my invention, and the invention also consists in certain new and novel features of construction and combination of parts hereinafter set forth and claimed.

In the accompanying drawings:

Figure 1 is a view in vertical section of a hairdressing booth forming part of a build-

ing and showing a preferred embodiment of the invention installed therein;

Figure 2 is an enlarged detail view taken axially through the discharge nozzle shown in Figure 1;

Figure 3 is a view of the nozzle looking at the same from the right hand side of Figure 2;

Figure 4 is a transverse sectional view taken on the line 4—4 of Figure 2 looking in the direction indicated by the arrows.

Figure 5 is an axial sectional view taken through the valve casing shown in Figure 1;

Figure 6 is a similar view of the elbow which constitutes an extension of the lower end of the valve casing shown in Figure 5; and

Figures 7 and 8 are detailed views in side elevation of two positions of the rotatable element of the indicator shown to the left of Figure 5.

In the following description and in the claims, parts will be identified by specific names for convenience of expression but they are intended to be as generic in their application to similar parts as the art will permit.

In the drawings and referring particularly to Fifure 1 there is shown a booth 10 outlined on one side by a wall 11 constituting a structural part of the building. A main conduit 12 is housed within the outline of the wall and it is to be understood that this conduit leads to a suitable air compressor (not shown). The main conduit 12 is of sufficient capacity to supply the desired number of branch conduits two of which, 13 and 14, are shown in Figure 1.

Particularly describing the branch conduit 13 it is noted that it comprises a fixed tube 15 leading from the conduit 12 within the wall, to the exterior of the wall, and to the upper end of a valve casing 16. The branch conduits and the valve casings are fixed to the wall.

The valve casing is provided with an air controlling valve or damper 17 mounted on a control rod 18 which extends across the bore of the casing and projects at opposite ends from the casing. The valve casing is provided on one side with an integral extension 19 in the form of a ring concentrically disposed relative to the rod 18 and constituting a housing for the barrel-like rotatable member 20 of an indicator. This indicator element 20 is secured to the adjacent projecting end of the rod 18 by means of a set screw 21. The member 20 is provided on its periphery with certain indicating characteristics such as the word "hot" as shown in Figure 7, or "cold" as shown in Figure 8, or the word "off" to indicate the position of the valve 17 and of the switch for controlling the heating means 22 hereinafter described. The opposite end of the valve rod 18 is provided, exteriorly of the casing, with a clutch element 23 which is designed to be engaged by a coacting clutch element 24 constituting part of the movable element 25 of an electric switch 26. This electric switch is intended to be of conventional form and is mounted on an extension 27 projecting integrally from the side of the valve casing opposite to the extension 19, as more particularly shown in Figure 5. The switch is provided on its outer side with a rotatable finger piece 28 which constitutes the manually actuated control for regulating the switch 26, the valve 17 and the indicator element 20. The switch is supplied from a suitable source of electric energy through electric leads 29, and from the switch extension leads 30 pass through an opening 31 in the lower part of the casing and extend to the housed heating device 22 as hereinafter described.

The part of the branch conduit below the valve casing is formed of an elbow 32, the upper end or bell 33 of which is rotatably mounted for movement about a vertical axis in the lower end of the valve casing and contacts with a rim 34 formed on the inside of the valve casing. The elbow is held demountably and rotatably in place by means of a securing rod 35 which passes upwardly through a spring seat 36 formed on the lower side of the elbow and has its upper end threaded into a cross bar 36 which extends diametrically across the valve casing adjacent its lower end. A spring 38, housed within a tubular extension 39 depending from the elbow, bears at one end against the seat 36 and at the opposite end against a head 40 formed at the lower end of the rod 35. The other bell 41 of the elbow has a horizontally extending tube 42 secured thereto. It will be apparent from this construction that the tube 42 may be rotated in a horizontal plane into any desired operative position or may be swung out of the way against the wall. The free end of the branch conduit is defined by a nozzle 43 and a flexible tubular section 44 preferably an armoured rubber tube, connects the outer end of the tube 42 with the inner end of the nozzle 43. By this construction it is apparent that the nozzle can be moved about the person's head so as to direct the air at different angles thereto in the manner suggested by the showing in Figure 1.

The nozzle includes an open ended outer tubular shell 44 preferably formed of some heat insulating material so that the nozzle may be handled without inconvenience to the operator. The discharge end of the nozzle is formed into a flaring end piece 45 preferably formed of metal. The heating device 22 constitutes an insert which can be fitted into the shell and readily removed therefrom as a unit to facilitate the repair or substitution of the same. The heater includes a frame formed at the end adjacent

the flexible section of a circular mounting ring or wheel 46 which has a snug fit in the shell; and is secured thereto by inset screws 47. The ring includes a diametrically extending bridge piece 48 the center of which is enlarged to form a hub 49. The hub 49 constitutes a support for an axially positioned conducting rod 50, insulated from the hub by means of insulating bushings 51. One end of the rod extends from the ring towards the flexible section and forms a binding post 52. The bridge 48 also carries a similarly mounted binding post 53. The opposite end of the rod 50 adjacent the discharge end of the nozzle is provided with a head 54 secured to the rod by nuts 55 which also act as a binding screw. A plurality of flat plates 56 extend radially from the rod 50 as shown in Figure 4, are positioned between the mounting ring 53 and the head 54 as shown in Figure 2 and are each of triangular form as shown in this later figure. The free edges 56 of each of the plates are provided with longitudinal spaced notches 57. A heating conductor 58 in the form of a wire having high resistance is connected at one end to the binding post 53, is wound spirally and in the form of a cone about the edges of the plate from the mounting ring to the head. The outer end of the wire 58 is connected to the binding screw 55 and the circuit is completed back to the binding post 52 through the conducting rod 50 which for this purpose is formed of metal. It is noted that the conical formation of the heating wire spaces the turns of the wire not only along the length of the conduit considered axially of the shell as shown in Figures 3 and 4 but also spaces the turns when considered radially of the axis as shown in Figure 2. In this way air spaces 59 are formed in the screen which may thus be considered as extending entirely across the bore of the shell. In this way there is provided a free passageway for the air but all parts of the air will necessarily come in contact with or pass relatively close to some part of the hot wire before the air is passed from the nozzle.

By means of the device disclosed it is possible to equip the entire hairdressing establishment with a system of air conduits, all of which can be supplied from a single suitable air compressor disposed wherever desired in the building and at the same time each operator can maintain an individual control at each of the outlets. If cold air from the main conduit is desired the manual control is simply manipulated to shut off the heating device and to open the air valve.

As the air is not heated until it is about to be used, conduction and convection heat losses have been minimized and it is even possible to bring the heating device in the nozzle into close relation to the part to be dried or heated thus attaining a direct heating effect, either with or as a substitution for the heating effect of the air.

As the switch is fixed in place and thus not liable to be thrown around with the flexible part of the device an expensive form of control switch may be utilized without fear of it being damaged by careless use during the hair drying operation. The several exposed parts can be readily separated for it is intended that the switch can be removed bodily from the valve casing; the indicator may be withdrawn from the valve rod by opening the housing and loosening the fastening screw; the rotatable elbow may be dropped away from the casing by loosening the connecting rod; the nozzle may be drawn off from the flexible section; and the heating insert in the nozzle may be readily removed by loosening the screws 47. As the leads 30 from the switch are contained in the flexible section, all loose parts are eliminated and in general the whole construction is designed for simplicity of structure and economy in manufacture and operation.

While Figure 2 shows but one conical heating unit in the nozzle it is to be understood that these units may be multiplied and in one commercial form of the device two such units are employed with the mounting ring 46 common to both of the heating units.

While I have shown and described, and have pointed out in the annexed claims, certain novel features of my invention, it will be understood that various omissions, substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention.

Having thus described my invention, I claim:

1. In a device for supplying cold and hot air at will to different places on a person's head to dry and cool the same, the combination of a support constituting a structural part of a building, a main air conduit incorporated within said support and carried thereby, said main conduit constituting a reservoir of compressed air and adapted to be connected to an air compressor in a remote part of the building, a plurality of branch conduits leading from said main conduit to the exterior of said support, one of said branch conduits including a movable discharge nozzle adapted to direct air about the person's head, a fixed tube secured to the support and a flexible tubular section providing communication between the movable nozzle and the fixed tube, an air valve in the fixed tube for controlling the air flow through the branch conduit, electric heating means in the nozzle and a manually actuated means mounted in fixed position adjacent the air valve for simultaneously con-

trolling the air valve and the electric heating means.

2. In a device of the class described, the combination of a support, an air supplying conduit secured at one end to the support, provided at the opposite end with a movable nozzle and including a flexible section between the nozzle and the end secured to the support, an air controlling valve in a fixed part of conduit, heating means in the nozzle and a single manually actuated control for both the valve and heating means.

3. In a device of the class described, the combination of a support, a conduit constituting a fixed reservoir of compressed air carried by the support, a movable nozzle, a flexible tube connecting the source and nozzle, heating means in the nozzle and movable therewith and a control means carried by the support for controlling the heating means.

4. In a device of the class described, the combination of a reservoir of compressed air, a movable discharge nozzle, a flexible tube connecting the nozzle with the source, heating means in the conduit, an air controlling valve in the conduit and a control for the heating means and valve.

5. In a device of the class described, the combination with a support, a main conduit constituting a reservoir of compressed air carried by the support, a branch conduit leading from the main conduit and terminating in a discharge nozzle, a valve for controlling the flow of air through the branch conduit, means in the branch conduit for heating the air as it flows therethrough and manually actuated means carried by the support for controlling the valvular means and the heating means, and an indicator operatively associated with said manually actuated means for indicating the status of the air controlling means.

6. In a device of the class described, the combination with a support, a main conduit constituting a reservoir of compressed air carried by the support, a branch conduit leading from the main conduit and terminating in a discharge nozzle, a valve for controlling the flow of air through the branch conduit, means in the branch conduit for heating the air as it flows therethrough and manually actuated means carried by the support for controlling the valvular means and the heating means.

7. A flexible conduit adapted to be connected at one end to a reservoir of air under compression and having a discharge nozzle at the opposite end, electric air heating means in said flexible conduit adjacent its discharge end, an air valve for controlling the flow in the conduit, an electric switch for controlling the heating means and a single control for both the valve and switch.

8. In a device of the class described, the combination with a reservoir of cold air under compression, of a flexible conduit leading therefrom, means for heating the air as it is discharged from the conduit, and a control for selectively intercepting the flow, or for discharging either hot or cold air at will.

9. In a device of the class described, the combination with a reservoir of cold air under compression, of a flexible conduit leading therefrom, means for heating the air as it is discharged from the conduit, and a control for selectively intercepting the flow, or for discharging either hot or cold air at will and an indicator operatively associated with said control for indicating the character of air being discharged.

10. In a device of the class described, the combination of a conduit, an air valve mounted therein and including a control rod projecting in opposite directions from the conduit, an electric heating means in said conduit, an electric switch for controlling said heating means, said switch being operatively connected to one of the projecting ends of the control rod whereby the turning of the movable element of the switch will turn the valve, and an indicator including a movable element connected to the other projecting end of the control rod.

11. In a device of the class described, the combination of a conduit, an air valve mounted therein and including a control rod projecting in opposite directions from the conduit, an electric heating means in said conduit, an electric switch for controlling said heating means, said switch being operatively connected to one of the projecting ends of the control rod whereby the turning of the movable element of the switch will turn the valve.

12. In a device of the class described, the combination of a conduit, an air valve mounted therein and including a control rod projecting in opposite directions from the conduit, an electric switch operatively connected to one of the projecting ends of the control rod whereby the turning of the movable element of the switch will turn the valve.

13. In a device of the class described, a valve casing provided with extensions on opposite sides thereof, an indicator element mounted in one of said extensions, a valve in the casing, a valve rod extending across the casing and connected at one end to the indicator element, the opposite end of the rod provided with a clutch element, an electric switch carried by the other extension and including a control member provided with a clutch element adapted to engage the clutch element on the end of the valve rod.

14. In a device of the class described, the combination of a valve casing, provided with an upstanding bore, a cross bar extending

across the bore, an elbow constituting an extension of the casing with one end telescoping the lower end of the valve casing said elbow being readily removable from the casing to provide access to the interior of the valve casing, and a securing rod passing upwardly through the elbow from the underside thereof and engaging said cross bar, and a cushioning spring disposed between the elbow and the exposed lower end of the securing rod.

15. In a device of the class described, the combination of a valve casing, provided with an upstanding bore, a cross bar extending across the bore, an elbow constituting an extension of the casing with one end telescoping the lower end of the valve casing said elbow being readily removable from the casing to provide access to the interior of the valve casing and a securing rod passing upwardly through the elbow from the underside thereof and engaging said cross bar.

16. In a device of the class described, an air conduit provided with a discharge nozzle and including a flexible conduit leading to the nozzle, electric heating means in the form of a screen extending across said nozzle for heating the air adjacent the discharge end of the conduit and electric conductors housed in the flexible conduit and leading to said heating means.

17. In a device of the class described, an air conduit provided with a discharge nozzle and including a flexible conduit leading to the nozzle, electric heating means in said nozzle for heating the air adjacent the discharge end of the conduit and electric leads housed within the flexible conduit for supplying electric energy to the heating means.

Signed at New York in the county of New York and State of New York this 21st day of December A. D. 1921.

EDMUND M. ERB.