

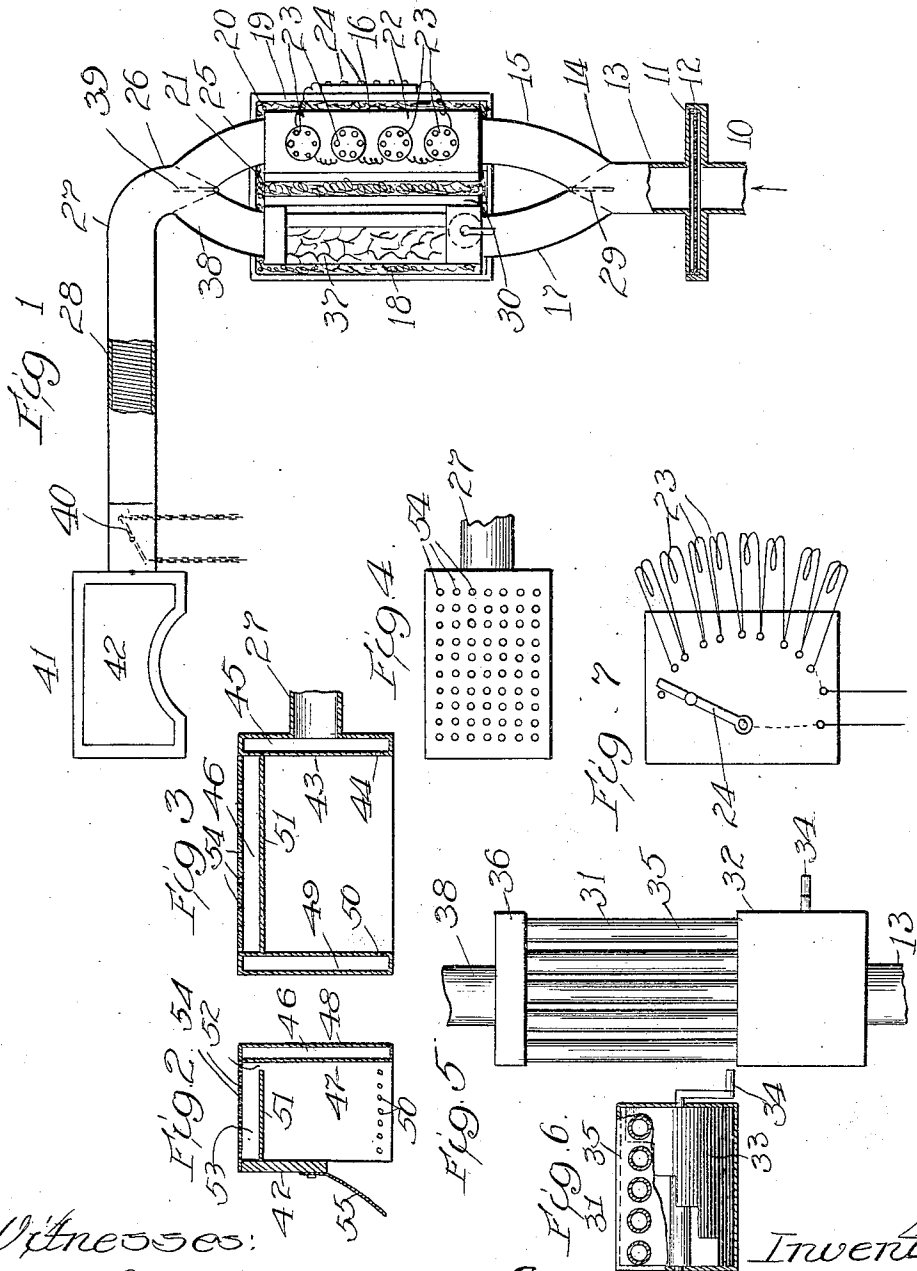
MIN DE LIN McGERRY. & F. P. MIES.

AIR TEMPERING DEVICE.

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Witnesses:

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UNITED STATES PATENT OFFICE.

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DIRECT AND MESNE ASSIGNMENTS, TO THE PLURAL SYSTEM VENTILATOR CO.

AIR-TEMPERING DEVICE.

1,050,484.

Specification of Letters Patent.

Patented Jan. 14, 1913.

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To all whom it may concern:

Be it known that we, MIN DE LIN MCGERRY and FRANK P. MIES, citizens of the United States, both residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Air-Tempering Devices, of which the following is a specification.

Our invention relates to improvements in air tempering devices, and has especial reference to portable devices of this character for supplying pure air at proper temperature to invalids.

One of the objects of our invention is to provide a device whereby the air may be cleansed and tempered to the proper degree and conveniently supplied to invalids while in recumbent position.

Another object of our invention is to supply a device which will not only temper and conduct the air to the invalid but which may be used to impregnate the air with any desired medicated material and conduct it to the invalid while said material is held in suspension in the air, and means surrounding the invalid's head to shut off other air and to permit only the air coming through the device to be inhaled by the subject.

Other and further objects of our invention will become apparent to persons skilled in the art from a consideration of the specification taken in conjunction with the accompanying drawings, wherein—

Figure 1 is a plan view of the device, with the receiving cap turned so as to show a front elevation; Fig. 2 is a central cross sectional view of the receiving cap; Fig. 3 is a central longitudinal sectional view of the same; Fig. 4 is a plan view of the receiving cap, showing the perforations in the upper outer walls for the escape of the air or gases coming from the patient; Fig. 5 is a side elevation of the cooling device, showing a plurality of separate independent air ducts; Fig. 6 is an air valve for varying the number of air ducts to be contained in the air path; and Fig. 7 is a diagrammatic view of the electric circuits employed in the heating device.

In all of the views, the same reference characters indicate similar parts.

10 is a pipe, or other conduit, which may lead from without the apartment from an

air supply, or it may lead from an ozone or other supply of like substance, and may extend to any convenient distance, where such supply is afforded. 11 is a cleaning or screening device, provided with a perforate diaphragm, 12, for cleaning the air, or arresting the particles held in suspension in the air.

13 is a pipe from the cleaning device to a point, 14, where the pipe 13 is bifurcated, the branch, 15, leading to the heater, 16, and the branch, 17, leading to the cooler, 18.

The heater and cooler are both contained in the casing, 19, which is provided with a double wall with suitable heat insulation, 20, contained between the walls. The composite wall, 21, separates the heater and cooler. The heater consists of a chamber, 22, containing electro-thermic devices, 23, of which there may be any suitable number, provided with a controlling switch, 24, by which a larger or smaller part of the heating medium may be maintained in the electric circuit for the purpose of controlling the temperature of the air passing through the chamber 22. The air emerges from the chamber 22 into the pipe 25, to a point, 26, where said pipe is connected to a pipe 27, which is preferably flexible in character, for the purpose of convenience in manipulation, and which may be made by employing a helical wire coil covered with suitable air proof material, such as coated canvas, or the like, substantially as shown in cross section at 28.

At the junction of the pipes, 15 and 17, with the pipe, 13, there is a damper, 29, which controls the air that may enter the pipes 15 and 17, respectively, from the pipe 13. When the damper 29 is placed to its extreme position on the left, all of the air from the pipe 13 will pass into the pipe 15, and when the damper 29 is placed to the extreme position on the right, all of the air from the pipe 13 will enter the pipe 17, and when the damper is placed in intermediate position, the air that will enter the pipes 15 and 17, respectively, will be in proportion to the opening in the respective pipes afforded by the position of the damper 29, so that the proportion of the incoming air to the cooler and heater may be regulated to a nicety by this means. The cooling device consists of a chamber, 30, in

which is located the part marked, 31, consisting of a head, 32, containing a valve, 33, operated, or capable of being turned, by a handle, 34. From the head 32 there branches a plurality of conduits, 35, terminating in a head, 36. The chamber 30 is filled to a greater or less extent with ice as shown at 37, in which the tubes or conduits 35 with the respective heads, 32 and 36, are submerged for the purpose of cooling the air when it passes through said chamber. The pipe 38 is connected to the head 36, for conducting the air therefrom and joins the pipe 27 at the point 26.

To prevent the cooled air or heated air from backing into the opposite chamber, we provide a damper 39 which in all respects is similar to damper 29, so that when the air is flowing through the heater only, the damper 39 may be placed so as to close the pipe 38, so that the heated air will not back up into the cooled chamber, and when the damper 39 is placed so as to close the pipe 25, the cooled air will not back up into the heating chamber.

The valve 33 is so arranged that a greater or less number of conduits, 35, may be included in the air passage through the cooling chamber, so that the quantity of air passing through the cooling device may be by this means varied, and likewise the temperature of the air may be varied. The valve 33 comprises a crescent-shaped and stepped or notched shield of a generally tapering character as indicated in Fig. 6, so that the number of conduits that will be opened or closed, as the case may be, will be determinately varied by the position of the shield. The structure is plainly indicated in the drawing, and operates so that a single conduit may be opened, or the full number, according to the position of the shield, or all of the conduits may be opened or closed as desired by the manipulation of the handle 34.

A damper 40 is placed in the pipe 27, so as to provide a means near the patient for the purpose of varying the quantity of tempered air delivered to the receiving cap, the latter being generally indicated by 41. This damper is so located that the nurse or attendant may vary the quantity of air without the necessity of leaving the patient, or the patient may himself operate the damper for the intended purpose. The receiving cap is preferably a double wall structure providing a glass front, 42, so that the vision of the patient is not cut off by the cap when placed over the head. The incoming air from the pipe 27 passes into the chamber 45, strikes the wall 43, and is downwardly deflected to the openings, 44, a part of the air passing through the chamber 45, to the chamber 46, provided in the back of the cap, by the walls, 47 and 48. The air

passes through the chamber 46 into the chamber 49, in the opposite end of the cap where it passes out through the apertures 50. To prevent further direct draft of the air, a baffle wall, 51, is provided near the top of the cap, with an opening, 52, through which the air passes to the chamber 53, and out through the openings, 54, provided in the top of the cap. A curtain, 55, is provided on the front of the device, closing the space between the curved surface of the glass and the patient's neck, to retain the air in the cap. When it is desired to supply air of certain or desired quality or character to a patient, the cap 41 is placed over his head, while he is reclining in bed, and the air is forced through the cap provided by the device by means of a fan or other air propelling agency which is not necessarily shown in the drawing of this case.

The operation of the device will become apparent readily to persons skilled in the art without further description. If it is desired to have any additional qualities in the air, by having it carry a fluid or the like, such medicated body or material may be placed in the heating chamber, 22, or in the head, 32, as the case may be, so that if the air carrying such quality is to be heated, it will be advantageous to place the material in the heating chamber, and if it is to be cooled it will be advantageous to place it in the cooling chamber or separate medicated substance may be placed in each of the chambers, and the means for heating or cooling the air so medicated may be used or not as desired.

Having fully described our invention, its operation and use, and realizing that many changes may be made in the details of construction without departure therefrom within the scope of the claims, what we claim as new and desire to secure by Letters Patent of the United States, is:

1. A cap for administering air to a patient consisting of a rectangular structure having double walls on three sides, one of the outer walls provided with an opening, and the inner walls provided with a series of perforations discharging from the space between said inner and outer walls into the interior of the structure, another wall of said structure being perforate, a baffle plate within said perforate wall, and another wall of said structure being suitably shaped to permit emplacement of said structure over the head of a reclining patient.

2. A cap for administering air to a patient consisting of a rectangular structure providing a double wall on four sides, and a transparent wall, said transparent wall being cut away to partially encompass the neck of the patient, said side walls perforated to admit air, and the top walls perforated to permit escape of air, and an air

conduit connection communicating with the space contained between the side walls of said cap.

3. In a device of the character described, the combination of a cap adapted to inclose the head of a patient, an air conduit associated therewith, air tempering means in said conduit comprising regulable heating means, regulable cooling means, and independent air passageways over both, the conduit being bifurcated for communication with the passageways over either of said regulable means, a damper in said conduit at the bifurcated point for closing either

branch thereof a desired amount, and a damper at the juncture of said branches between the air-tempering means and the cap operable to close either branch for prevention of back flow from one regulable means to the other.

In testimony whereof we hereunto set our hands.

MIN DE LIN MCGERRY.
FRANK P. MIES.

In the presence of—
NORMAN A. BECK,
OTTO G. RYDER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."