No. 707,111. Patented Aug. 19, 1902.

G. W. HOPKINS.

COMPRESSED AIR HEATING APPARATUS.

(Application filed Apr. 10, 1902.)

(No Model.)

FIG. 1.

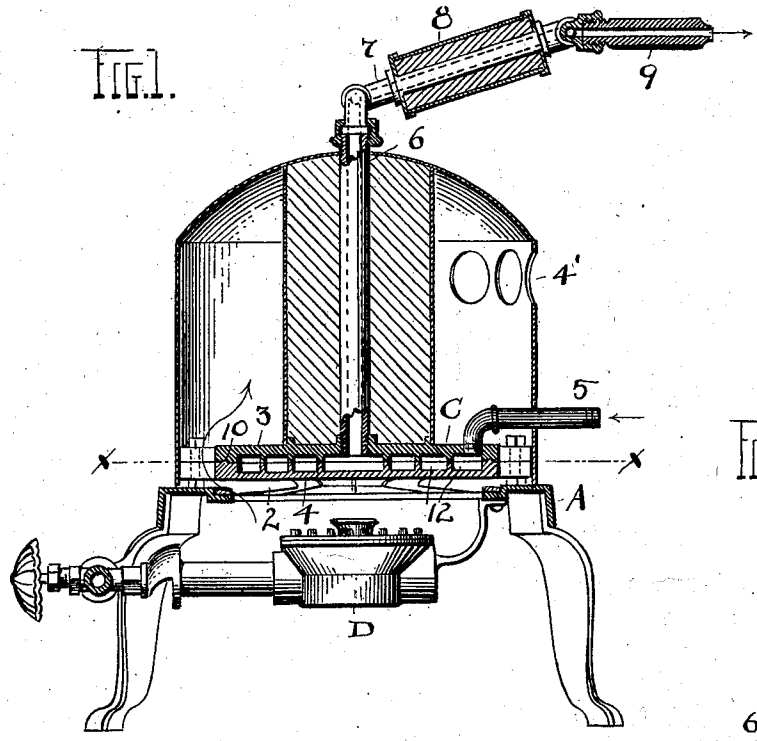


FIG. 3.

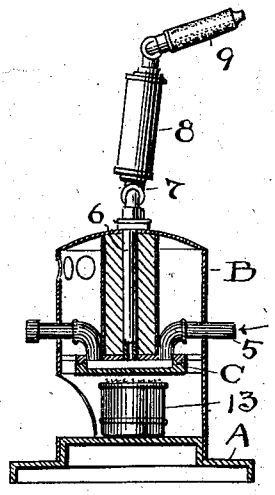
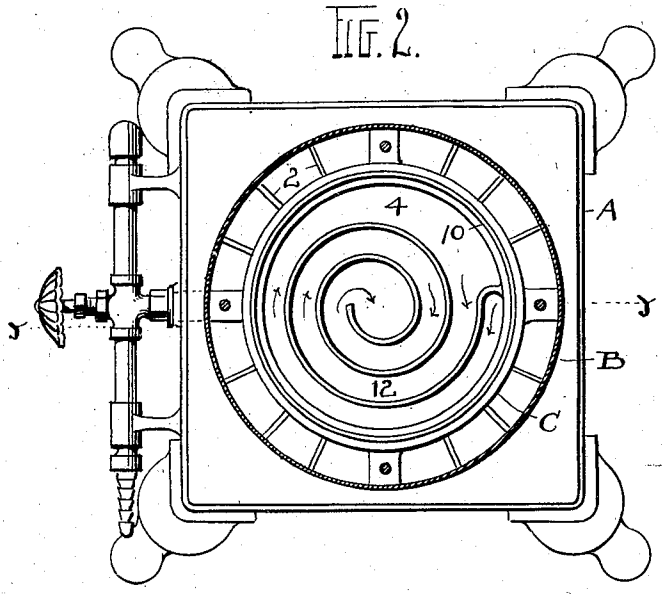


FIG. 2.



ATTEST

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UNITED STATES PATENT OFFICE.

GEORGE W. HOPKINS, OF CLEVELAND, OHIO, ASSIGNOR TO THE TERRY HEATER COMPANY, OF CINCINNATI, OHIO, A CORPORATION.

COMPRESSED-AIR-HEATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 707,111, dated August 19, 1902.

Application filed April 10, 1902. Serial No. 102,198. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. HOPKINS, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Compressed-Air-Heating Apparatus; and I do declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to compressed-air-heating apparatus for medical purposes; and the invention comprises an air-heating apparatus constructed to deliver air under compression at a very high degree of temperature, all as hereinafter fully described, and more particularly pointed out in the claims.

In the treatment of diseases and ailments by the application of hot air, and especially in the treatment of deafness, I find that a much improved result is obtained by the use of superheated compressed air over any other use of air known to me.

The object of my invention, therefore, is to provide an apparatus for delivering air under compression and for heating the air to a temperature of about 300° to 400° for use.

Another object of my invention is to provide safety and convenience in handling and operating the device and with such arrangement of parts at the delivery end of the apparatus as will make it readily adaptable to any position of the patient.

In the accompanying drawings, Figure 1 is a central vertical sectional view of my improved apparatus; and Fig. 2 is a cross-section in plan taken on line x x, Fig. 1. Fig. 3 is a sectional view of a modified form of the apparatus and wherein an alcohol-lamp is used for heating.

A represents the base or legged support of the apparatus, and B a dome-shaped drum or casing carried by said base. Within casing B and resting upon arms or projections 2 upon base A is a hollow flat air heating and conveying body or member C, which is preferably constructed of two pan-shaped plates or disks 3 and 4 bolted together. A gas or vapor burner D of the blue-flame type is suspended from base A directly beneath and in close proximity to air-heating member C, and the products of combustion after striking the bottom of said member pass up and around its edge through the spaces between projections 2 into drum B, from whence they are permitted to escape through openings 4′ at the top thereof. An air-inlet pipe 5 connects through an elbow with the air-space in member C at one side of its center, the immediate center having an air-outlet pipe 6 secured therein, which extends above and out of the top of drum B, where a rotatable connection is made with a double-jointed air-delivery tube or pipe 7. Pipe 6 is incased in suitable non-conducting material, such as asbestos, in order that no loss by radiation might occur. Tube 7 and its joints might also be incased with asbestos, and, in fact, the greater portion of the metallic part of pipe 7 is thus protected by an asbestos-lined hand-grip 8. The end tube or tip 9 is preferably of vulcanized fiber to withstand the heat and is removable. As here shown, the shape of tube 9 is similar to an ear-speculum; but other forms might be used for different applications of treatment. With an adjustably-constructed delivery-tube the application of the heated air is directed wherever willed and is adaptable to any position of the patient. The heated air is so intense that it is essential that the apparatus should be provided with an air-delivery tube of a construction and material to withstand this heat and yet in a measure have the adjustability to direct the heated air wherever desired. Now referring again to member C, I provide plate 4 with a rib 10 and plate 3 with a channel, within which said rib rests and whereby a close and air-tight connection is made when said plates are bolted together. A circular travel of the incoming air through member C is obtained by a circuitous passage 12, which leads from inlet-pipe 5 to outlet-pipe 6 and which brings the air in contact with the entire flat surface of the flame-exposed bottom or plate 4 before it can pass to outlet-pipe 6. The vertical wall of said passage provides further heat-radiating surface.

In Fig. 3 I show the apparatus modified to the adaptation of a lamp, such as an alcohol or spirit lamp 13. Member C is shown here-

in as having an open chamber without the vertical walls and circuitous passage for the air.

In operation compressed air from a tank, pump, or bulb is conveyed to inlet-pipe 5, and assuming that the burner or lamp has been started the air in its travel through member C is heated to a very high temperature.

The flat and hollow surface of member C provides a large heating and confining surface for the air, and owing to the small discharge-opening in ear tube or tip 9 a large body of compressed air is constantly held in check and exposed to the direct play of the flame from burner D.

With this apparatus I can obtain a direct, definite, and positive application of the heat. The construction embodies safety and convenience in handling and in the application of the heated compressed air and an enormous volume and high degree of heat can be secured at will.

What I claim is—

1. In a compressed-air-heating apparatus, a hollow air-confining member having inlet and outlet pipes, a delivery-tube for the air connected with said outlet-pipe and comprising jointed sections, a discharge-tip of non-heat-radiating material at the end of said delivery-tube, and means to heat the air in its passage through said hollow member, substantially as described.

2. In a compressed-air-heating apparatus, a hollow air-confining member having an inlet and an outlet, an air-delivery tube attached to said outlet comprising rotatable and jointed sections, a protecting hand grip and cover on said tube, a removable vulcanized-fiber discharge-tip at the end of said tube, and means to heat the air in its passage through said hollow member, substantially as described.

3. In a compressed-air-heating apparatus, a hollow air heating and confining member having an air-inlet pipe and an outlet-pipe at its center provided with a non-heat-conducting covering, and an inclosing casing about said parts, in combination with a jointed air-delivery tube connected with said outlet-pipe, and a burner to heat said hollow member, substantially as described.

4. In a compressed-air-heating apparatus, a hollow air heating and confining member having a circuitous air-passage over its bottom, an inlet and outlet pipe at each end of said passage, a burner beneath said member and an adjustable tube attached to said outlet-pipe, substantially as described.

Witness my hand to the foregoing specification this 29th day of March, 1902.

GEORGE W. HOPKINS.

Witnesses:
R. B. MOSER,
T. M. MADDEN.