G. N. BLANCHARD.

ELECTRIC HEATER AND DRIER.

APPLICATION FILED FEB. 21, 1908.

901,871. Patented Oct. 20, 1908.

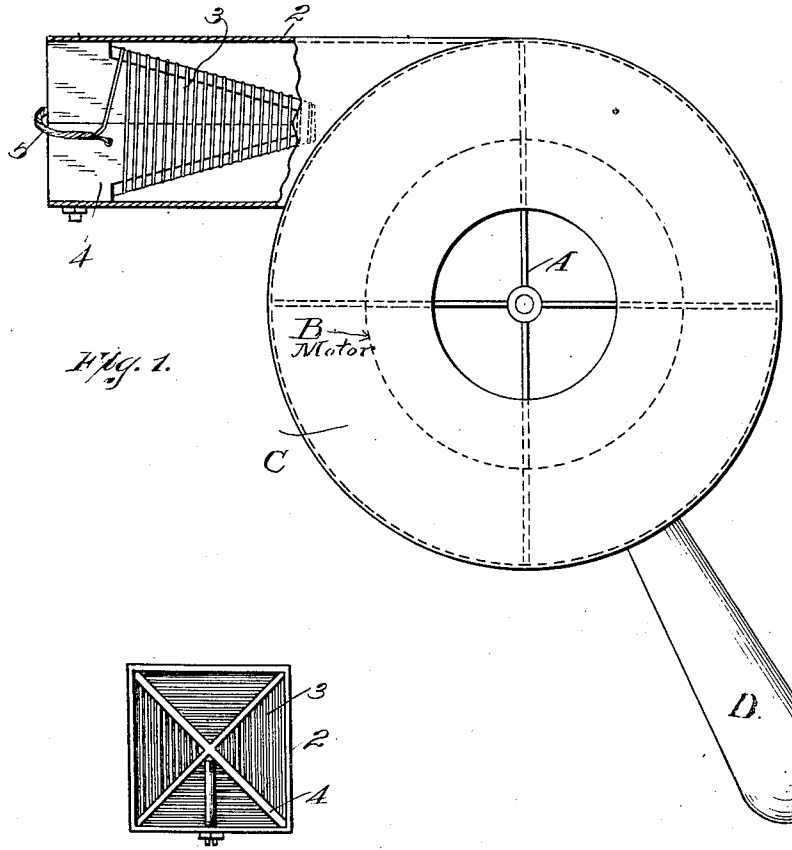


Fig. 1.

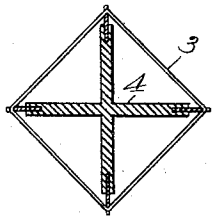


Fig. 4.

Fig. 3.

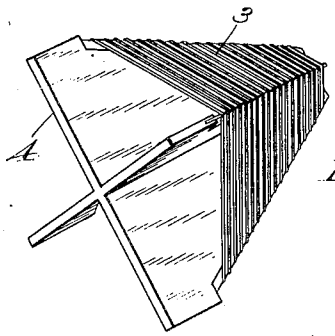


Fig. 2.

WITNESSES

D. E. Maynard.

L. L. Stowell

INVENTOR

George N. Blanchard

BY Geo. H. Strong.

ATTORNEY

UNITED STATES PATENT OFFICE.

GEORGE N. BLANCHARD, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR OF ONE-HALF TO THE ELECTRIC MANUFACTURING CO., OF SAN FRANCISCO, CALIFORNIA.

ELECTRIC HEATER AND DRIER.

No. 901,871. Specification of Letters Patent. Patented Oct. 20, 1908.

Application filed February 21, 1908. Serial No. 417,077.

To all whom it may concern:

Be it known that I, GEORGE N. BLANCHARD, citizen of the United States, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Electric Heaters and Driers, of which the following is a specification.

My invention relates to an apparatus for producing currents of hot air for therapeutic and various other or similar uses where hot air is required.

It consists in the novel construction and disposition of the electrical resistance coil through which air is driven for the purpose of heating the same, and in details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a side elevation, partly in section, of the device. Fig. 2 is a perspective view of the resistance coil. Fig. 3 is an end view of tube and coil. Fig. 4 is a transverse section of a coil.

Various devices have been employed for heating a current of air to be subsequently used; such devices usually including electrically resistant wires of small diameter so disposed that currents of air may be passed over these wires, which being heated by the electrical current will impart the heat to the air which is passing.

Difficulty is experienced in maintaining an equable temperature of the heating wires, and at the same time utilizing to the fullest extent their heating ability.

Within a suitable case, C, the fan, A, is adapted to operate through power communicated thereto from any well known type of electric motor, B, shown by dotted lines in Fig. 1, said fan case having a discharge pipe or passage through which the blast of air is driven. This passage may be round or rectangular as shown.

The heating coil consists of fine wires 3 which are wound upon a pyramidal shaped supporting frame 4 having a base adapted to fit the rectangular passage 2. This base may be constructed of any suitable material, and the plates are here shown united so that in transverse section they form a cross. The edges of these plates carry a suitable non-conducting support for the wires, which may be mica plates, or other suitable non-conductor, such as lava. The wires 3 are wound over the edges of these plates which are notched or toothed so that each winding of wire will be kept separate from the next adjacent one, and each winding will form a rectangle; these rectangles gradually enlarging from the smaller to the larger end. When thus wound, the ends of these resistant wires are respectively connected with conducting wires 5, through which a current may be passed, and the current being in excess of the capacity of the wires 2, the wire will be heated to as high a temperature as may be desired. This resistance coil being completed, is then inserted into the rectangular tube 2, the edges of the cross plates at their largest dimension fitting into the angles of the tube, and the resistance wires 2 which are wound upon the largest portion of this frame are substantially close to the inner periphery of the tube, while at the opposite end, the wires of this coil are near to the center.

It has been found that where coils of wire are disposed longitudinally within an air-conveying tube, and these coils of substantially the same diameter, the air striking the first coil will commence to be heated, and the coil at this end will be correspondingly cooled. As the heated air passes on through the coil, its temperature rises, and near the discharge end it becomes so high, that the coil itself will be unduly heated at this end; thus the coil will have a comparatively low temperature where the air first strikes it, and a high temperature where the air is leaving it.

If the wires are simply disposed transversely of the passage in a single plane, it would not be possible to insert a sufficient length of resistance wire without unduly choking the air passage.

By my invention the whole surface of the resistance wire is uniformly subjected to the cold blast of air from the propelling fan, at the same time on account of the pyramidal shape of the resisting unit, a sufficient length of resistance wire can be used, with ample space between the turns of said resistance wire to admit of free passage of air.

The rectangular or pyramidal form of the coil, renders it easy to insert and remove from the conducting tube.

The fan case may be provided with a suit-

able handle D whereby the device may be freely moved about so as to dry the parts to be subjected to the current of air.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. In an air-heating apparatus, an air-forcing mechanism, a discharge tube, and a pyramidal electrical resistance coil fixed within said tube.

2. In an apparatus of the character described, an air discharge passage, a resistance coil, consisting of wires wound upon a divergent or pyramidal insulated frame, and located in said passage.

3. In an apparatus of the character described, an air discharge passage, a frame having insulated edges adapted to receive naked electrically resistant wires which are coiled thereon, and gradually divergent from one end to the other, said frame being fitted in the air discharge passage, and electrical current connections with the resistant coil.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

GEORGE N. BLANCHARD.

Witnesses:

GEO. H. STRONG,

CHARLES A. PENFIELD.