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ELECTRIC HEATER HAVING HEATING FABRICS

APPLICATION FILED MAY 11, 1920.

1,374,693. Patented Apr. 12, 1921

Fig. 1

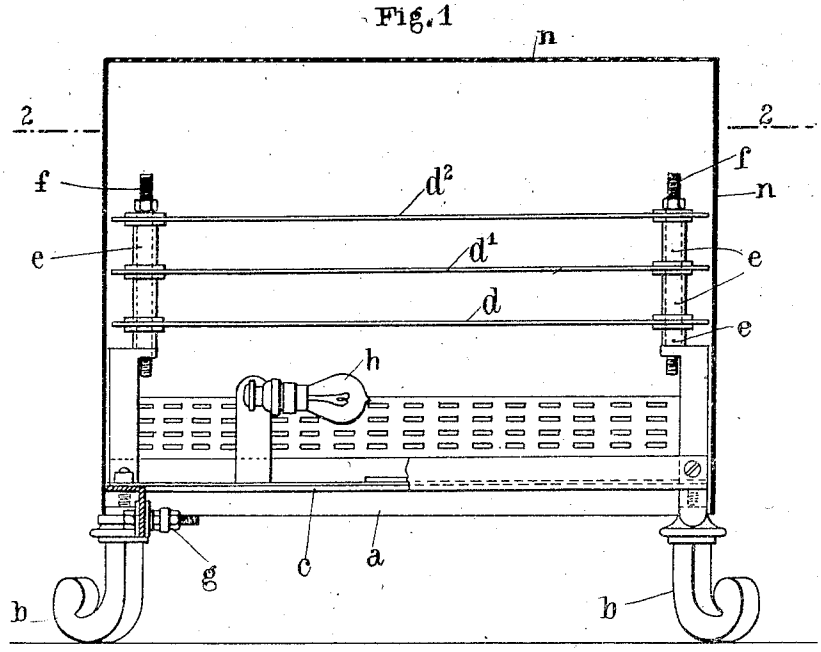


Fig. 2

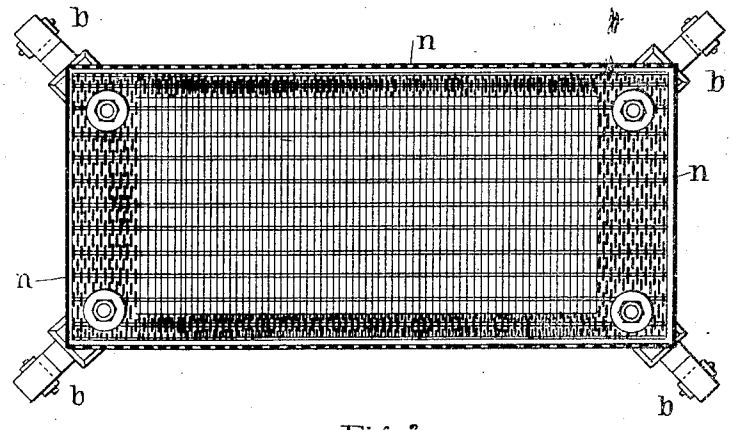
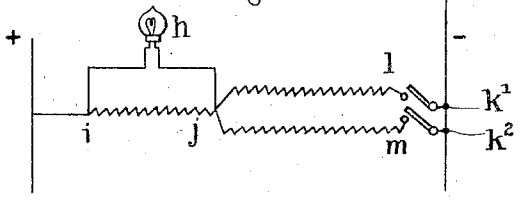


Fig. 3



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ELECTRIC HEATER HAVING HEATING FABRICS.

1,374,693. Specification of Letters Patent. Patented Apr. 12, 1921.

Application filed May 11, 1920. Serial No. 380,562.

To all whom it may concern:

Be it known that I, FRANÇOIS EMILIEN BÈNÉDICT VERNET, a citizen of the Republic of France, and a resident of 26 Rue de Navarian, Paris, France, have invented new and useful Improvements in Electric Heaters Having Heating Fabrics, of which the following is a specification.

The present invention relates to electric heaters of the kind in which the heating elements consist of heating fabrics formed for example by a weft of resistance wire and a warp of asbestos thread, a signal lamp being also provided to indicate when the apparatus is working, said lamp remaining lighted as long as the apparatus is working.

In apparatus of this kind, the heating fabrics are usually placed vertically and parallel to each other. This arrangement, however, is unsatisfactory since it allows a free circulation of the air which cannot for this reason reach a high temperature.

According to the present invention, the improvements consist in arranging the heating fabrics horizontally one above the other, so that the air, heated by the lowest fabric, comes successively into contact with the fabrics above it and thus its temperature is progressively increased from one fabric to the other, and in connecting the signal lamp to the heating fabrics in such a manner that the intensity of its illumination grows according to the number of heating circuits put into operation.

The increase in the temperature of the air due to the particular arrangement of the fabrics, is further assisted by the fact that the convection current which is set up is slowed down by the resistance offered to it by each fabric.

One form of an electric heater constructed according to the invention is illustrated in the accompanying drawing by way of example:—

Figure 1 is a view in elevation, the exterior covering being shown in section, and

Fig. 2 is a plan view thereof, the exterior covering being removed;

Fig. 3 is a diagram showing the method of mounting the signal lamp.

On a frame *a*, shown for example as rectangular, supported on feet *b* and strengthened by cross pieces *c*, the heating fabrics *d*, d^1, d^2 are mounted. These fabrics *d*, d^1, d^2 arranged horizontally, are maintained at the desired distance apart by means of tubular insulating sleeves *e* threaded on the supporting bars *f*.

The fabrics *d*, d^1, d^2 are connected to terminals *g* so as to obtain according to the connection, the operation of a part or of the whole of the fabrics; a signal lamp *h*, mounted in shunt across the common circuit *i*—*j*, indicates, according to the intensity of its illumination, the different stages of the operation of the apparatus, the stages being established by two switches k^1 and k^2 which allow the operation of the circuits *ij*—j^1, *ij*—*jm*, or *ij*—j^1 and *jm*. As the difference of potential at the lamp terminals, varies proportionally to the intensity of the current passing through the fabrics and as this intensity increases from one circuit to the next, the intensity of the illumination of the lamp thus increases with the intensity of the heating.

The whole arrangement is covered by a metal cover *n* forming a chimney. This cover is provided on its periphery below the first heating fabric with openings for the passage of cold air, and at its upper part with other openings for the escape of heated air.

The lower part of the frame *a* is open so as not to interfere with the inspiration of the air caused by the convection currents set up when the apparatus is working. The exchanges of temperature between the heating elements and the surrounding air take place chiefly by convection in such a manner that the supports of the apparatus remain almost cold even at the maximum flow and temperature of the air.

The air heated by contact with the first fabric undergoes an increase in temperature; becoming less dense it rises, coming into contact with the fabric immediately above it, passing through same and undergoing a new increase in temperature; it continues its rising movement fabric so that a progressive heating of the air is obtained from its entry into the apparatus right up to its escape therefrom.

It will be obvious that the invention is not limited to the details of construction described and shown. For example, the shape

and size of the heaters may be varied and in each apparatus the number and constitution of the heating fabrics may be varied.

Claims.

1. An electric heater, comprising heating fabrics arranged horizontally one above the other, a sheet metal casing inclosing said heating fabrics, means for putting into circuit an adjustable number of said heating fabrics, and means permitting the circulation of air upward successively through said heating fabrics.

2. An electric heater, comprising heating fabrics arranged horizontally one above the other, a sheet metal casing inclosing said heating fabrics, means for putting into circuit an adjustable number of said heating fabrics, said casing having openings at the bottom and at the top of the casing to permit the upward circulation of air through the fabrics.

3. An electric heater, comprising heating fabrics arranged horizontally one above the other, a sheet metal casing inclosing said heating fabrics, means for putting into circuit an adjustable number of said heating fabrics, said casing having openings at the bottom and at the top thereof to permit the upward circulation of air through the fabrics, together with an electric signal connected with the electric circuits of the heating fabrics and varying its indicator with the number of heating circuits put into operation.

4. An electric heater, comprising heating fabrics arranged horizontally one above the other, a sheet metal casing inclosing said heating fabrics, means for putting into circuit an adjustable number of said heating fabrics, said casing having openings at the bottom and at the top to permit the upward circulation of air through the fabrics, the electrical circuits of said heating fabrics comprising a common part, and a signal lamp shunted across the said common part of the electrical heating circuits, for the purpose described.

In testimony whereof I have signed my name to this specification.

FRANÇOIS EMILIEN BÈNÉDICT VERNET.

Witnesses:
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