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Oct. 9, 1928.

1,686,796

E. R. CASE

SUPPORT FOR ELECTRIC RESISTANCE ELEMENTS

Filed Aug. 20, 1925

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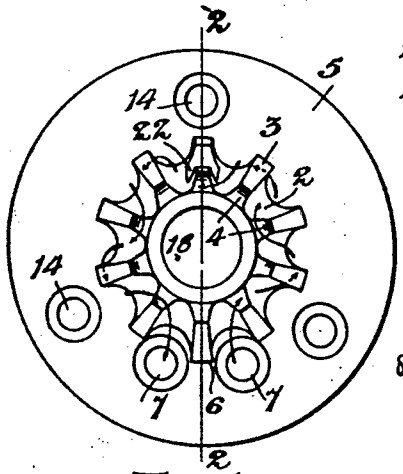


Fig. 1.

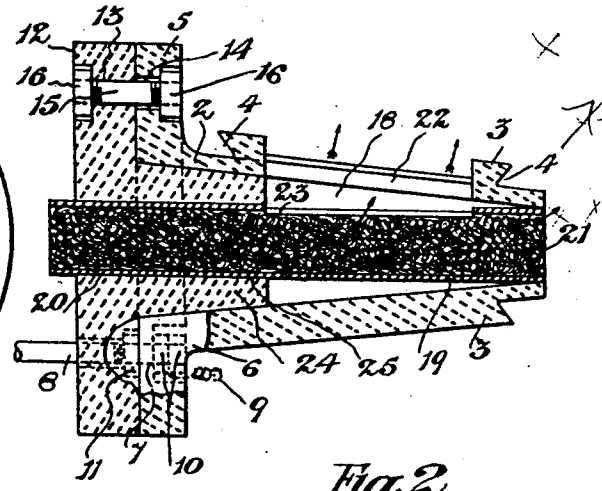


Fig. 2.

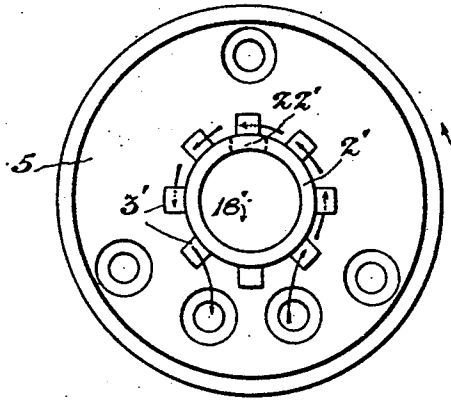


Fig. 3.

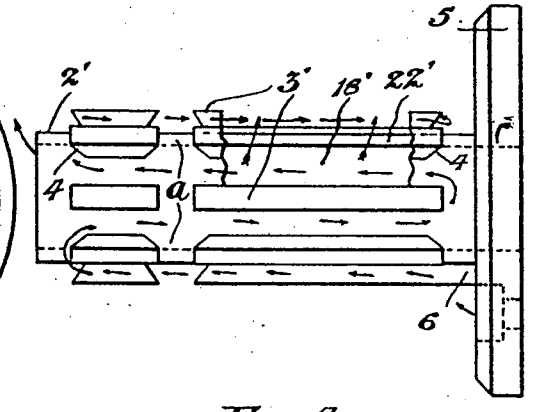


Fig. 4.

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UNITED STATES PATENT OFFICE.

EGERTON RYERSON CASE, OF TORONTO, ONTARIO, CANADA.

SUPPORT FOR ELECTRIC RESISTANCE ELEMENTS.

Application filed August 20, 1925. Serial No. 51,302.

My invention relates to improvements in supports for electric resistance elements, and the principal object of my invention, broadly speaking, is to provide a device of the class set forth having a resistance element associated therewith as hereinafter more particularly set forth, so that when it be necessary to replace the resistance element, this can be done by removing the said support from the supporting means therefor, and replace it by a new support, and without needing the service of an electrical workman, and so overcome any cost on the part of the manufacturer for maintenance purposes.

Another object of my invention, in its preferred form, is to so construct the support that a treating agent for air may be distributed thereby. A still further object of my invention is to so construct the support to provide a multiplicity of selectable resistance-element receiving-passages whereby resistance-elements of varying lengths may be interchangeably placed on the support, and whereby localization of the resistance-element in any given part of the support may be effected. And in the following specification, and drawings forming part thereof, I shall describe and illustrate two disclosures within my invention, and what I claim as new will be set forth in the claims forming part of this specification.

Fig. 1 is a front elevation of my preferred form of support. Fig. 2 is a vertical central longitudinal section on the line 2—2, Fig. 1, also showing in section a suitable supporting means for the support, and a metal conduit housed within said parts. Fig. 3 is a front elevation of a modified form of my support, and Fig. 4 is a side elevation of the form shown in Fig. 3.

In the drawings, like characters of reference refer to the same parts.

At the outset it must be understood that in the broad disclosure of my invention, the support for the resistance element need not be constructed to carry or convey a treating agent, consequently dry heat waves would be generated thereby.

As ordinarily used for heating purposes, the electric current produces a very dry or arid condition of the atmosphere in a room, and the preferred embodiments within my invention will show whereby it is possible to introduce humidity into the air so that the ideal relationship between the humidity content of the air and the temperature thereof, can be reasonably maintained in the ordinary house. Not only is there a beneficial effect on the health of the individual where the conditions just set forth are reasonably maintained, but it has been proven that where the outdoor temperature is 30° F. and over, less electric current is needed to maintain the temperature of a room at a comfortable degree, than when dry electric heat is used.

2 is the body portion of the support which is made of suitable electric-current-insulating material, such as porcelain, and the same is provided with a plurality of radially disposed spaced ribs or bars 3 extending longitudinally thereof. The support may be tapered as shown in Fig. 2, wherein the ribs or bars 3 conform to the taper, or else the body portion 2′ of the support may be of uniform diameter, in which case the ribs or bars 3′ will conform to the general form of said body portion.

The ends of certain ribs or bars 3 and 3′ are undercut as shown at 4 to permit the resistance element (not shown) to be maintained in place.

Certain of the ribs or bars 3 and 3′ may continue right up to the flange or coupling means 5, as shown at 6. This construction may be advisable to reduce cost of manufacture, though it is not essential.

The said flange or coupling means is preferably integrally formed with the body portion of the support, and the same is apertured as shown at 7 to permit the ordinary terminals 8 (one only of which is shown in Fig. 2) to be coupled thereto. In the disclosure shown in Fig. 2 a portion 9 of the resistance element is shown as clamped between a pair of nuts 10 mounted on each of the terminals 8. 11 is a nut screwed on each of the terminals 8 and up against the inner face of the flange 5, thus coupling the said terminals to the support.

12 is any suitable support to which the support is coupled. Means not germane to this invention will be provided to carry the support 12. The said support 12 is provided with holes 13 which are in alignment with holes 14 formed in the flange 5. A bolt 15 occupies the aligned holes 13 and 14, and nuts 16 on each end of the said bolts are counter-sunk in the support 12, and flange 5. By removing the nuts counter-sunk in the flange 5, the support can be readily removed in case it be necessary to replace a defective resistance element. Since the terminals 8 are fixedly associated with said support, they will also be withdrawn from the support 12 when the support is dis-

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associated therewith. Another support with a new resistance element mounted thereon can be used to immediately replace the removed support, and then when these elements have been positioned the removed nuts are replaced on the bolts 15.

One of the ribs 3 is shown as made in two aligned spaced sections on the upper side of Fig. 2, and therefore this construction provides a passage-way between said aligned spaced sections. Likewise the ribs or bars 3′ are formed in two aligned sections spaced apart as shown at *a* in Fig. 4.

So constructing certain of the ribs or bars provides a multiplicity of selectable resistance-element receiving-passages whereby resistance-elements of varying lengths may be interchangeably placed on the support, and whereby localization of the resistance-element in any given part of the support may be effected.

The foregoing part of the specification has disclosed clearly a support within my invention not adapted to introduce a treating agent into the air, and in the following part of the specification, I shall describe my preferred embodiment, and a modification thereof, for the purpose of introducing a treating agent, such as water, to the air.

The body portion 2 is provided with a passage-way 18 therethrough, which passage-way also extends through the flange 5. For ease of manufacture, this passage-way is tapered. Extending through the passage-way 18 is a conduit 19, and the internal diameter of this conduit is slightly less than the internal diameter of the passage-way 18 at its outer end. To hold said conduit in position, the inner end passes through a passage-way 20 formed in the support 12. This passage-way 20 is substantially in alignment with the outer end of the passage-way 18 so that the conduit 19 may be supported in the position shown in Fig. 2.

By means not germane to this invention, the treating agent, such as water, is supplied to the conduit 19, and as this conduit is preferably lightly packed with a suitable incombustible material 21, such as asbestos, it becomes saturated with the treating agent. Through the action of heat this treating agent is vaporized, and this vapor escapes through the outer end of the conduit 19.

The amount of humidity that can be introduced into the air will depend upon the area of the opening or aperture through which the humidity escapes, and in order to keep the size of the support within reasonable limitations, I find that it is preferable to form a longitudinal slot 22 in the body portion 2, which slot opens into the passage-way 18, and for the convenience of manufacture, the middle portion of one of the ribs or bars 3 is omitted where this slot occurs. When the slot 22 is used, the conduit 19 must also be slotted as shown at 23 so that vapor may escape laterally from said conduit as well as through the outer end thereof.

In Fig. 4, 18′ is the passage-way through the body portion 2′ of the support, and 22′ is the slot formed in said body portion and communicating with the passage-way 18′. The formation of this slot 22′ necessitates the omission of the middle portion of one of the ribs or bars 3′.

It of course must be distinctly understood that I do not confine myself to using the slots or apertures 22 and 22′, though I find it convenient to make use of the same for the reason set forth.

When the resistance-element-provided support is removed from its support 12, since the conduit 19 is held in the passage-way 20, this conduit of course cannot be removed. Now in order to give the conduit 19 the maximum of support in the support 12, this support 12 is preferably provided with a conical-shaped extension 24 which projects centrally beyond one side thereof, and this extension is provided with a passage-way 25 therethrough which is in alignment with the passage-way 20. The outer shape of the extension 24 is made to conform to the taper of the inner end of the passage-way 18, consequently the body portion 2 of the support, and its associated ribs or bars, together with the resistance element mounted thereon, are largely supported by said extension 24: but it must be clearly understood that the said extension may be omitted if desired.

The outer ends of the ribs or bars 3 and 3′ are preferably located behind the outer end of the body portions 2 and 2′ of the support so that the vapor escaping through the outer end of the passage-way 18 will not come in contact with the resistance element.

It will be observed from both disclosures within my invention that the ends of the heating element are adjacent, and are located at one end only of the support: this fact enables me to locate the terminals 8 in respect of the flange 5 so that the ordinary push-and-pull plug may be used therewith.

The disclosures in this present application show specific forms of a device which in part embrace the principle disclosed in my pending application #755,489, filed December 12th, 1924, for "electric heating units and method of assembling same", and it will be noticed particularly from Figs. 1 and 3 of this application that the supports therein-shown are symmetrical in cross section: This construction will provide for substantially equal expansion and contraction so as to avoid internal stresses or strains of a character to cause fractures. It is very important that the expansion and contraction in an article of this class, used as herein-disclosed, shall be substantially uniform throughout all its parts.

While I have described what I consider to

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be the best embodiments within my invention, it must be understood that the principle thereof may be embodied in many different forms, and I desire not to be limited beyond the requirements of the prior art and the terms of my claims.

What I claim as my invention is:

1. As a new article of manufacture, a resistance-element support made of any suitable material, and exteriorly provided with a plurality of radially-disposed spaced ribs integrally formed therewith and extending substantially longitudinally thereof; an exterior attaching flange provided with a pair of spaced openings therethrough located laterally of and in spaced relation to said support adapted to receive each terminal, at one end of said support and further provided with apertures located laterally of the longitudinal axis of said support to permit removable fastening means to be passed therethrough; the ends of the desired ribs adjacent said attaching flange being spaced apart therefrom.

2. In a resistance-element support as defined in claim 1, the making of certain ribs in spaced sections to provide a multiplicity of selectable resistance-wire receiving-passages whereby resistance elements of varying lengths may be interchangeably placed on the support, and whereby localization of the resistance element in any given part of the support may be effected.

3. As a new article of manufacture, a single resistance-element support made of any suitable material, exteriorly provided at one end with coupling means, and having a longitudinal passageway substantially centrally therethrough adapted to perform the function of a vapor conduit, said passage-way passing through said coupling means which is apertured laterally of said central passage-way to permit removable fastening means to be passed therethrough, said support further exteriorly provided with a plurality of radially-disposed spaced ribs projecting beyond the outer surface thereof and extending substantially longitudinally thereof with the inner ends of the desired ribs spaced apart from said exterior coupling means to provide a passage-way therebetween through which said resistance-element may be passed.

4. As a new article of manufacture, a single resistance-element support having a longitudinal passage-way therethrough adapted to perform the function of a conduit for a vapor and into which opens a lateral passage-way formed in said support and exteriorly provided with a plurality of spaced ribs integrally formed therewith and extending substantially longitudinally thereof, and coupling means at one end of said support, the ends of the desired ribs adjacent said coupling means being spaced apart therefrom.

5. As a new article of manufacture, a single resistance-element support having a longitudinal passage-way therethrough into which opens a lateral passage-way formed in said support, and exteriorly provided with a plurality of spaced ribs integrally formed therewith and extending substantially longitudinally thereof; an attaching flange at one end of said support, the ends of the desired ribs adjacent said flange being spaced apart therefrom, and an open conduit located in said passage-way, and laterally provided with an opening leading to the passage-way extending through said support.

6. In combination, a chambered single resistance-element support made of any suitable material, and provided with a plurality of spaced ribs integrally formed therewith and extending substantially longitudinally thereof; an attaching flange at one end of said support, the ends of the desired ribs adjacent said flange being spaced apart therefrom, the said flange being provided with a pair of spaced openings therethrough adapted to receive each a terminal, and a supporting member to which said flange is adapted to be removably coupled, the said member being provided with apertures which are in alignment with the terminal openings in said flange, and further provided with an extension adapted to extend into the chamber formed in said support.

7. In combination a support made of any suitable material exteriorly provided with a plurality of radially-disposed spaced ribs integrally formed therewith and extending substantially longitudinally thereof; an exterior attaching flange at one end of said support, provided with a pair of spaced openings therethrough located laterally of and in spaced relation to said support; the ends of the desired ribs adjacent said flange being spaced apart therefrom; a resistance element mounted on said support and around and between said ribs, and a terminal located in each of the said openings and to which the ends of said resistance element are secured.

8. In combination, a support, for a resistance element, having a longitudinal passage-way therethrough from which opens a lateral outlet; a plurality of spaced ribs integrally formed with said support and extending substantially longitudinally thereof; means closing communication to the outside atmosphere at the inner end of said passage-way, and means whereby a treating agent is passed into said passageway.

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