Dec. 16, 1952 S. HODGES 2,622,180

CLOTHES DRIER AND AIRER

Filed Feb. 9, 1951 2 SHEETS—SHEET 1

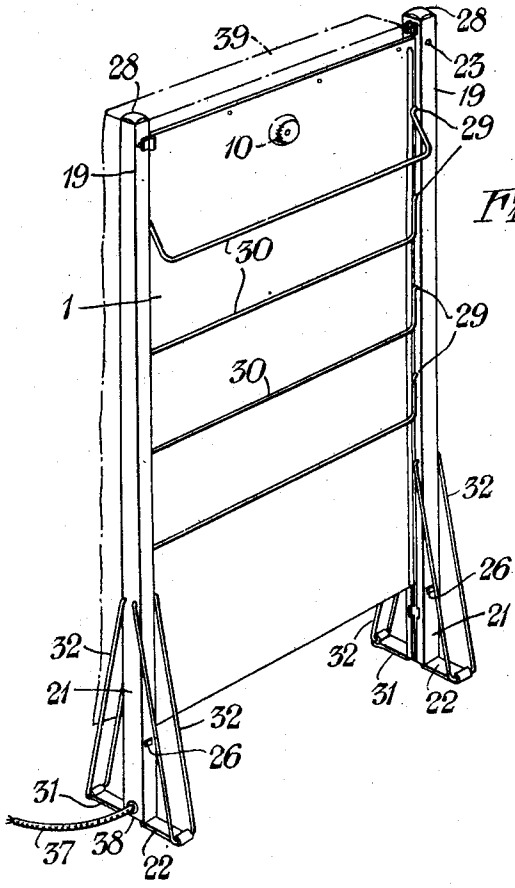


FIG. 1.

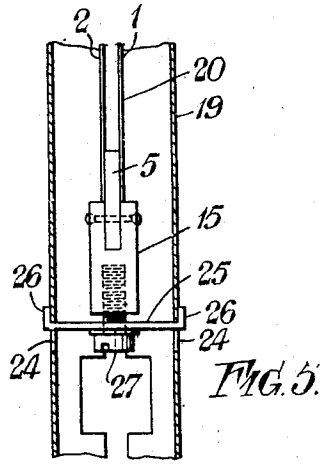


FIG. 5.

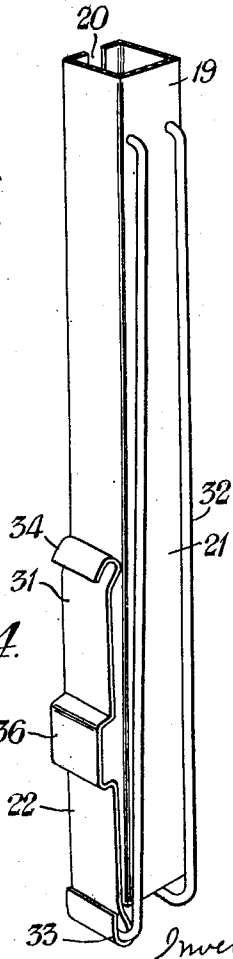


FIG. 4.

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CLOTHES DRIER AND AIRER

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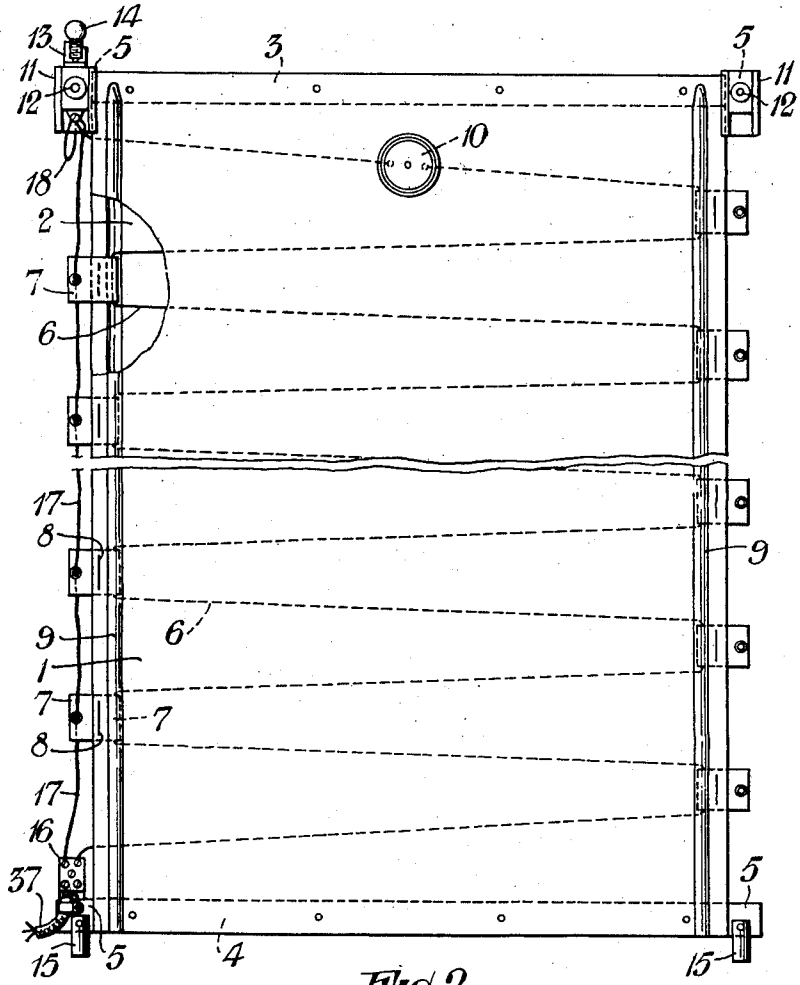


FIG. 2.

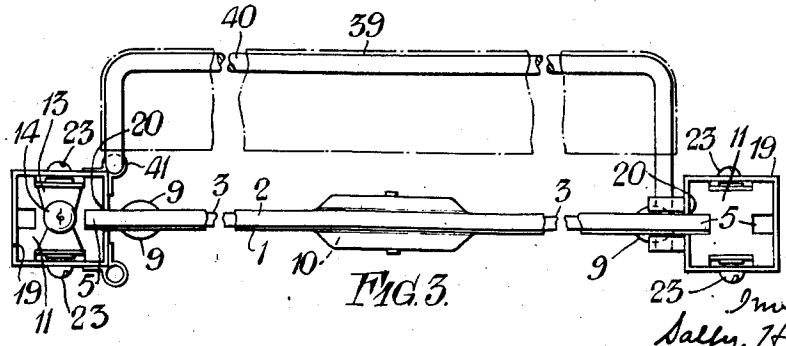


FIG. 3.

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CLOTHES DRIER AND AIRER

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7 Claims. (Cl. 219—19)

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The present invention relates to an electrically heated apparatus for use in drying or airing clothes, fabrics and like articles.

It is amongst the objects of the invention to provide a compact and robust apparatus of light weight and economical construction with which drying or airing operations may be carried out rapidly and without risk of damage to even very delicate fabrics.

In accordance with the present invention a drier or airer is provided comprising a pair of thin metal sheets connected to spacing members whereby the metal sheets are held in face-to-face relationship but spaced by a small distance from one another, an electrical resistance heating element enclosed between and insulated from said metal plates and disposed in a zig-zag or other tortuous path distributed over the major part of the area of the metal sheets, and supports attached to edges of the pair of metal sheets.

The electrical resistance heating circuit preferably includes a heat-responsive or thermostat element in a position where it is subjected to the heat between the metal sheets and a switch actuated by said element whereby the circuit is broken when a given temperature is attained and a lamp may be provided to indicate when heating current is flowing.

The invention is illustrated by way of example in the accompanying drawings in which

Fig. 1 is a view in perspective showing a complete drier or airer according to the invention.

Fig. 2 is a view in front elevation on a larger scale showing the metal sheet assembly detached from its supports.

Fig. 3 is a plan view of the apparatus.

Fig. 4 is a perspective view showing the lower end of one of the supports, and

Fig. 5 is an elevation partly in section showing part of the connection between the metal sheet assembly and a support.

Referring to the drawings, 1 and 2 represent two rectangular sheets of good heat conductivity metal such as aluminum, connected face-to-face but spaced from one another, by riveting to two thin metal bars 3 and 4 placed between the sheets 1 and 2 at the upper and lower ends thereof respectively, the length of the bars 3 and 4 being such as to provide outwardly extending end lugs 5. The upper edge of one of the metal sheets 1 or 2 may be lapped over the upper thin metal bar 3.

An electrical resistance heating conductor 6 suitably insulated, e. g., by means of one or more wrappings of woven glass fibre, is arranged to

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extend to and fro or over a zig-zag path between the side edges of the narrow space between the metal sheets 1 and 2, the traverses of the conductor 6 being spaced vertically so that the conductor is distributed over the whole area of the space between the sheets 1 and 2 as shown in Fig. 2.

In the case illustrated the turns of the conductor 6 are fixed in position by passing the conductor through folded loops 7 of asbestos strip, the loops of asbestos being held between the side edges of the metal sheets 1 and 2 and fixed by means of wire staples 8 passed through the edges of the metal sheets 1 and 2 and the asbestos, and a vertical bulge or channel 9 is formed in at least one, and in the case illustrated both of the metal plates near the side edges thereof to accommodate the bulges formed by the parts of the asbestos loops 7 where they envelop the conductor 6 and its insulating sheathing.

At the centre of the upper end of the sheet assembly and between the sheets 1 and 2 is mounted a thermostat 10 of any suitable known kind, said thermostat being connected in series with the conductor 6.

To the projecting end lugs 5 of the upper spacing bar 3 are fixedly connected blocks 11 of moulded plastic or other electrically insulating material and provided with threaded holes 12 extending through the blocks from back to front, and upon one of these blocks 11 is mounted a holder 13 for a lamp 14.

To the projecting end lugs 5 of the lower spacing bar 4 are fixedly connected internally threaded and downwardly extending metal sleeve 15, and to one of the lugs is fixed an electrical terminal block 16.

One end of the conductor 6 is connected to the terminal block 16 and the other end to one side of the switch controlled by the theromstat 10.

The other side of the thermostat switch is connected to one of the terminals of the lamp holder 13 on one of the blocks 11 and an insulated return lead 17 extends from the other terminal of the lamp holder 13 to the terminal block 16. The return lead 17 may be held in position by passing it through holes in the parts of the absbestos loops 7 projecting outwards from the side edges of the metal sheets 1 and 2. An appropriate resistive shunt 18 is provided between the terminals of the lamp holder 13.

Each side edge of the above described assembly is covered by the application thereto of a split tubular member 19, the said tubular member 19 in the case illustrated being of square sec-

tion formed by bending sheet metal, the split 20 extending longitudinally of the center of one of the sides of the square.

The split 20 in each tubular member 19 is of a width to permit a side edge of the sheet assembly to pass into the interior of the tubular member 19, the latter being mounted by sliding them longitudinally over the blocks 11, and when mounted the tubular members 19 close and conceal the open side edges of the space between the sheets 1 and 2 and the tubular member 19 at one side covers and encloses the asbestos loops 7, the terminal block 16 and the return lead 17.

The tubular members 19 in the case illustrated are of a length to extend over the whole vertical length of the side edges of the sheet assembly and for a short distance below, the downwardly extending portions forming legs 21 for the apparatus and being provided with feet 22 affording a stable support.

Fixing of the tubular members 19 to the sheet assembly is effected at the upper end by registering holes in the front and rear walls of the members 19 with the holes 12 in the blocks 11 and inserting screws 23 from the front and rear.

At the lower end the members 19 are provided with apertures 24 in the front and rear walls. Apertured bridge pieces 25 with end lugs 26, are passed through the two opposite holes 24 in each tubular member 19 and screws 27 passed from the lower ends of the tubular members 19 through the bridge pieces 25 into the above described downwardly extending threaded sleeves 15 fixed to the end lugs 5 on lower spacing bar 4. With this arrangement the light-weight sheet assembly is effectively held under vertical tension in the stiff tubular members 19.

The upper ends of the tubular members 19 are closed by applied knobs 28 of which at least that one covering the lamp 14 in the holder 13, is of transparent or translucent material.

The inner walls of the tubular members 19 at each side of the split 20 are provided with a series of spaced holes 29 and into selected holes of the series are inserted the bent ends of rods 30 of spring metal adapted to carry the clothes or other articles to be dried or aired.

The supporting feet 22 for the apparatus may be formed as shown in Fig. 4 of strips of sheet metal 31 connected at each end to a strut 32 of bent metal rod the ends of which are engaged in holes in opposite walls of a tubular member 19.

The strips of sheet metal 31 are bent to provide at one end a hinged connection 33 with one strut 32 and at the other end a detachable spring-hook connection 34 with the other strut 32.

By uncoupling the spring hook connection 34 with the strut 32 the strip 31 may be swung about the hinged connection 33 with the other strut 32 and thereafter the strips 31 and the struts 32 folded flat against the outside of the tubular members 19, an arrangement offering the advantage of compactness when the apparatus is stowed away.

The strips 31 are preferably bent at the centre of their length to provide a channel section projection 36 fitting within the lower end of its respective member 19.

A suitable lead 37 is passed through an aperture 38 in one of the tubular members 19 and connected with the terminal block 16, the lead 37 being provided with a suitable end connector (not shown) for the purpose of connecting the apparatus to a source of current supply.

With an apparatus as described above in which the heating element is spread over the surface of metal sheet assembly, the heat distribution over the metal sheets is substantially uniform and whilst a large overall power may be consumed no part of the apparatus becomes hot enough to damage materials being dried, aired or heated. Normally, the heated sheet assembly, when the apparatus is in use, is covered by the materials being treated and relatively little heat is lost to the atmosphere.

In some cases however suitable covering sheets 39 may be provided at one or both faces of the apparatus to enclose the materials being treated, such coverings being suspended upon metal rods 40 pivoted in lugs 41 on one of the tubular members in such manner that the coverings may be swung towards and away from the heated surfaces of the apparatus (see Figs. 1 and 3).

I claim:

1. Drying or airing apparatus comprising a pair of spaced metal sheets disposed in face-to-face relationship, an electrical resistance heating element enclosed between and insulated from said metal sheets and disposed in a tortuous path distributed over the major part of the area of the said spaced metal sheets, and supports for said spaced metal sheets, said supports comprising split tubular members embracing opposite edges of the assembly comprising the said pair of spaced metal sheets.

2. Drying or airing apparatus comprising a pair of spaced metal sheets of general rectangular form disposed in face-to-face relationship, an insulated electrical resistance heating element enclosed between said metal sheets and disposed in a tortuous path distributed over the major part of the area of the said metal sheets, spacing members disposed between the said pair of sheets at two opposite edges of the assembly comprising the said pair of sheets and closing the space between the said pair of metal sheets at said two opposite edges, and supports for said spaced pair of metal sheets, said supports comprising split tubular members embracing the other two opposite edges of the assembly comprising the said pair of spaced metal sheets and closing the space between the said pair of metal sheets at said other two opposite edges.

3. Drying or airing apparatus comprising a pair of spaced metal sheets disposed in face-to-face relationship, an electrical resistance heating element enclosed between and insulated from said metal sheets and disposed in a zig-zag path between two opposite edges of the assembly comprising said pair of spaced metal sheets and distributed over the major part of the area of the said spaced metal sheets, loops of insulating strip material holding the said electrical resistance heating element at points adjacent said two opposite edges, and supports for said metal sheets, said supports comprising split tubular members each embracing one of said two opposite edges and the points of connection of the said loops of insulating material adjacent the said one of said two opposite edges.

4. Drying and airing apparatus comprising a pair of spaced metal sheets disposed in face-to-face relationship and at least one of said sheets having bulges near two opposite edges thereof and extending outwards from the space between the said pair of metal sheets, an electrical resistance heating element enclosed between and insulated from said metal sheets and disposed in a zig-zag path between the said two opposite edges of the metal sheet containing the said bulges and

distributed over the major part of the area of said spaced metal sheets, loops of insulating strip material enveloping the ends of the turns of the zigzag heating element with the parts of said loops enveloping the said resistance element in register with the said bulges near the said two opposite edges of one of the sheets, and supports for said spaced metal sheets, said supports comprising split tubular members each embracing edges of the two sheets at one of said two opposite edges.

5. Drying or airing apparatus comprising a pair of spaced metal sheets of general rectangular form disposed in face-to-face relationship, an insulated electrical resistance heating element enclosed between said metal sheets and disposed in a tortuous path distributed over the major part of the area of the said metal sheets, spacing members disposed between the said pair of sheets at two opposite edges of the assembly comprising the said pair of sheets and closing the space between the said pair of metal sheets at said two opposite edges, and extensions of said spacing members, extending beyond the other two opposite edges of the said assembly, and supports for said spaced pair of metal sheets, said supports comprising split tubular members embracing said other two opposite edges of the said assembly and the end extensions of the said spacing members, and fixing means fixedly connecting the supports and the said end extensions.

6. Drying or airing apparatus comprising a pair of spaced metal sheets of general rectangular form disposed in face-to-face relationship, an insulated electrical resistance heating element enclosed between said metal sheets and disposed in a tortuous path distributed over the major part of the area of the said metal sheets, spacing members disposed between the said pair of sheets at two opposite edges of the assembly comprising the said pair of sheets and closing the space between the said pair of metal sheets at said two

opposite edges, and extensions of said spacing members, extending beyond the other two opposite edges of the said assembly, and supports for said spaced pair of metal sheets, said supports comprising split tubular members embracing said other two opposite edges of the said assembly and the end extensions of the said spacing members, and screw fixing means disposed longitudinally of the said split tubular support members and making fixing engagement with the end extensions of the spacing members and imposing tension upon the said spaced metal sheets in the direction between the said spacing members.

7. Drying or airing apparatus comprising a pair of spaced metal sheets disposed in face-to-face relationship, and electrical resistance heating element enclosed between and insulated from said metal sheets and disposed in a tortuous path distributed over the major part of the area of the said spaced metal sheets, and supports for said spaced metal sheets, said supports comprising split tubular members embracing opposite edges of the assembly comprising the said pair of spaced metal sheets, and extending longitudinally of and beyond the ends of said opposite edges to form legs for the apparatus.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,521,241	Hale	Dec. 30, 1924
1,743,638	Tefft	Jan. 14, 1930
1,914,190	Herr	June 13, 1933
2,110,660	Doczekal	Mar. 8, 1938
2,494,861	Chapman	Jan. 17, 1950
2,567,434	Hoskings	Sept. 11, 1951