June 11, 1957 S. TEIGER 2,795,683

LOUVERED HEATER

Filed Sept. 7, 1954 3 Sheets-Sheet 1

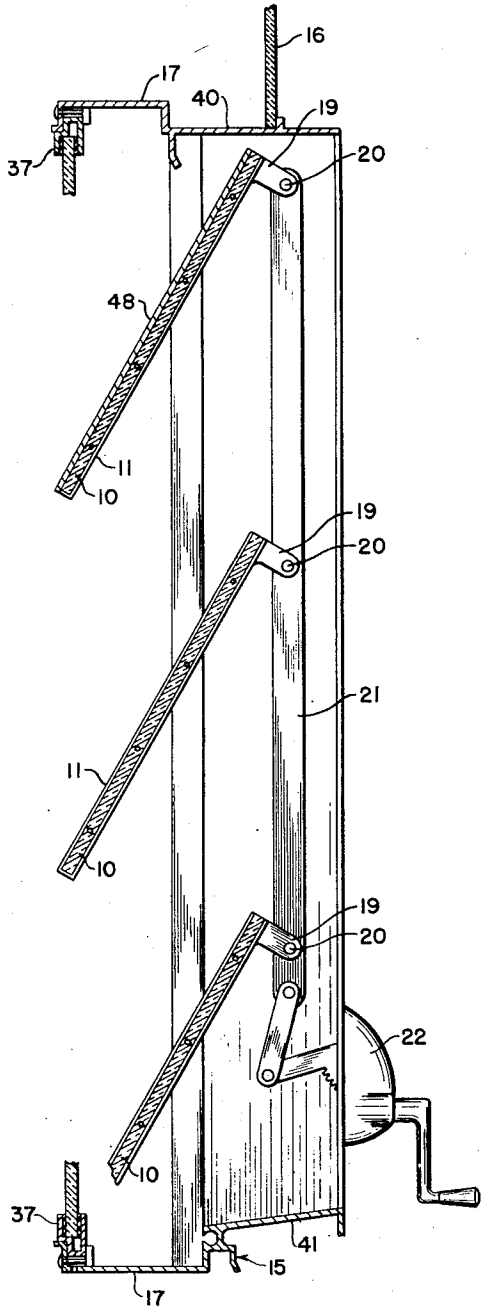


FIG. 2

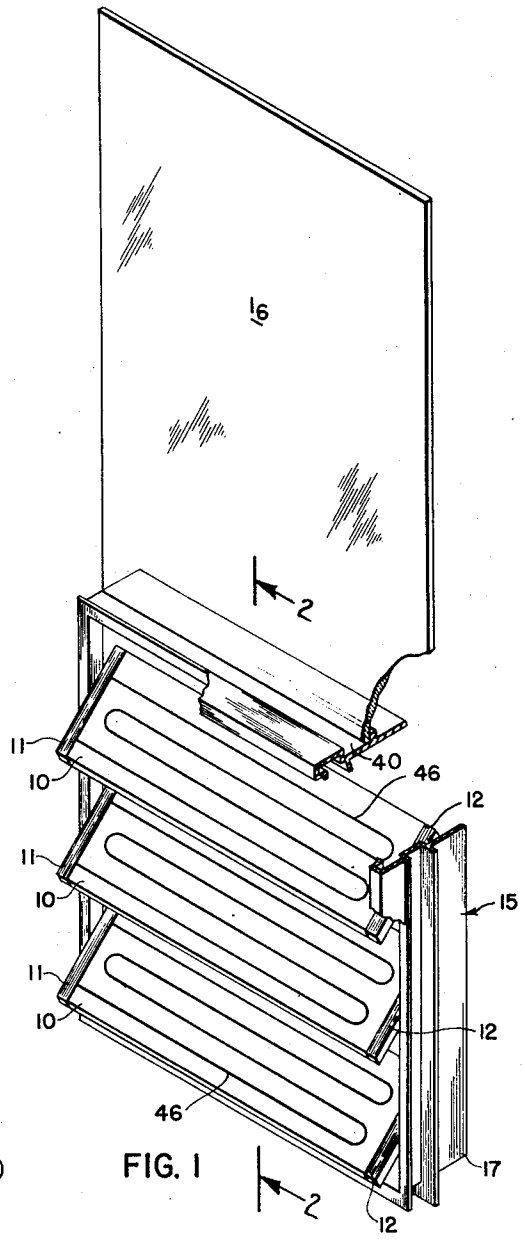


FIG. 1

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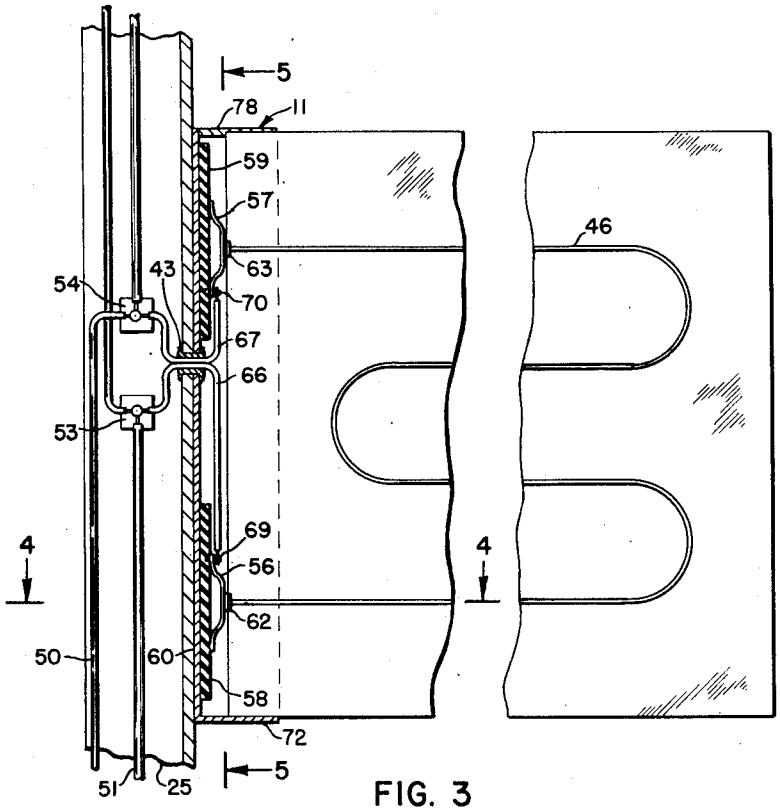


FIG. 3

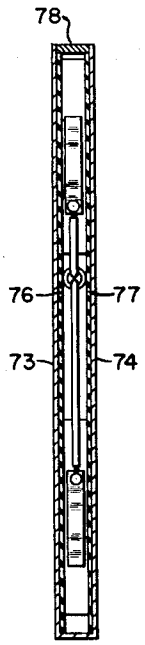


FIG. 5

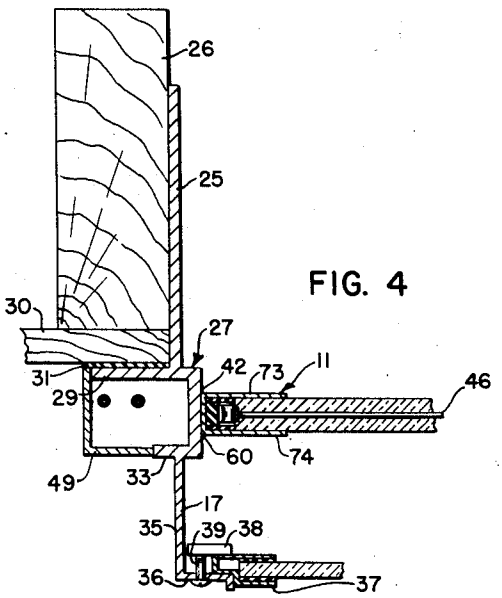


FIG. 4

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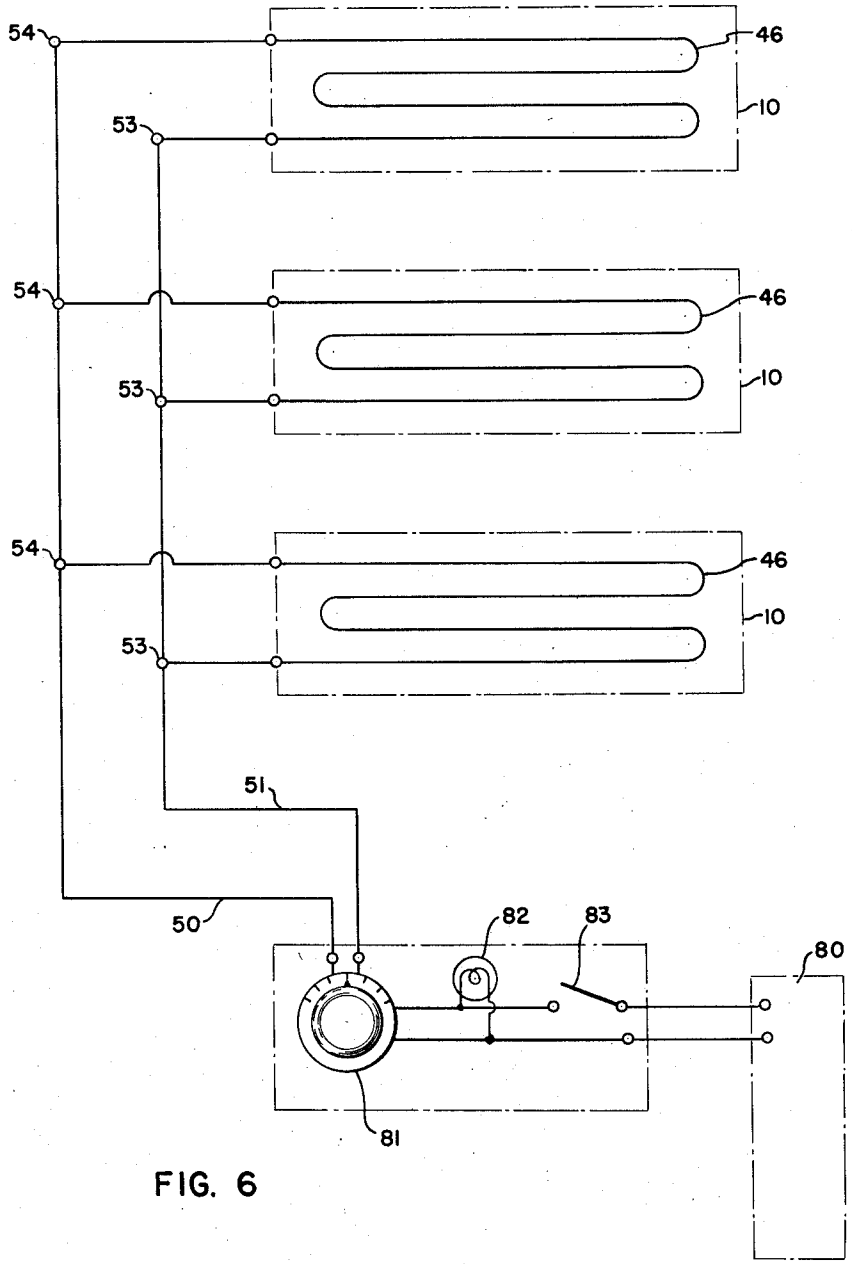


FIG. 6

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2,795,683

LOUVERED HEATER

Samuel Teiger, Newark, N. J.

Application September 7, 1954, Serial No. 454,429

2 Claims. (Cl. 219—34)

This invention relates to a heating and ventilating device for rooms, and has for its object the provision of a novel arrangement of louvers having heating elements therein which radiate heat into the room. More particularly, the invention provides a frame such as would be inserted in a wall in combination with a number of electrically heated louvers mounted for rotation with respect to the frame to change heating conditions in various parts of the room as the louvers are rotated. In a preferred and advantageous embodiment of my invention I provide an improved jalousie window in which the heating elements are imbedded in the glass louvers.

My heating device comprises in combination a plurality of electrically heated glass louvers in a louver-supporting frame adapted to be mounted in the wall of a room, advantageously as a jalousie window. Each of the louvers has an electrically conductive resistance element imbedded therein which may take the form of a nickel chromium alloy wire or any equivalent resistance element to heat the louver. Means are provided which mount each of the louvers for turning about parallel and uniformly spaced horizontal axes in the frame. An insulated electric circuit is enclosed within the frame structure and is adapted to be connected to a source of electric current. Means are also provided in the form of contacts which connect the source of electric current with the resistance element in each of the louvers. These electric contacts maintain a closed circuit for each of the louvers during rotation thereof in their mounting. Means are also included in the frame for turning each of the louvers about their axial mounts and thereby changing the direction of heat radiation into the room.

In the drawings:

Fig. 1 is a perspective view of one embodiment of the invention having a number of heating louvers rotatably mounted in a louver frame for a window;

Fig. 2 is a sectional view at 2—2 of Fig. 1;

Fig. 3 is an enlarged fragmentary sectional view showing the details for pivotally mounting each heating louver on the louver frame;

Fig. 4 is a sectional view taken along line 4—4 in Fig. 3;

Fig. 5 is a sectional view taken along line 5—5 in Fig. 3; and

Fig. 6 is a diagram of the electrical circuit for heating the louvers.

Fig. 1 illustrates a jalousie window embodiment of my invention comprising a number of horizontally arranged louvers **10**, each of the louvers being seated at their lateral extremities in a pair of holders **11** and **12**. Each of the holders are rotatably mounted by means which will be hereinafter described on a louver frame **15** adapted to be mounted in the wall of a room in a home or factory.

The present arrangement of louvers **10** and their frame **15** is advantageously designed for use both as a window and as a heater during all seasons of the year. For this purpose therefore, a picture window **16** may be mounted

in the frame **15** above the louvers and the louver frame **15** has an integral outwardly extending bracket **17** on the jamb, head, and sill for the louvers for mounting a storm window or a screen over the louvers. The louver frame **15** has the conventional louver-operating mechanism for jalousie windows, well known in the art, and includes the usual number of crank arms **19** integral with each louver holder at one end and rotatably pinned as at **20** at their other end to a vertical slide bar **21** suitably mounted in the louver frame. Also a suitable gear operator **22** is mounted on the inner side of the louver frame and is operably connected to the slide bar **21** in any well-known manner for vertical displacement of the slide bar and tilting of the louvers **10**.

For the purposes of the present invention it is desired to provide any number of the louvers **10** in the form of heaters which may be inserted into the desired pair of louver holders **11** and **12** in substitution for a conventional louver. Referring to Figs. 3 through 5, the details which allow the insertion of such heating louvers into the louver frame are shown. The louver frame **15** has an extruded jamb **25** of conventional configuration. Each jamb **25** is adapted to be connected to a vertical stud **26** in the wall section of the room and has an exterior louver-supporting portion **27** which has a channel-like cross section, the sides of the channel portion extending laterally away from the window opening. The inner side **29** of the channel portion of the jamb overlaps sheeting **30** or other facing material for the building and the joint therebetween is weather-proofed by the usual caulking **31**. The outer side **33** of the channel portion **27** also has the outwardly extending integral bracket member **17** angling inwardly as at **36** to provide a seat for a frame **37** of the usual storm window or screen frame, the latter being retained against the angled portion **36** by an adjustable clamp **38** which is threaded to a screw **39** mounted in the bracket portion **36**. The bracket **17** is also provided on suitable head and sill sections **40** and **41** for the louvers.

The web **42** of the channeled portion of the jamb has a number of hollow rivets or grommets **43** which pass through holes therein and through holes in the louver holders or clips **11** and **12** and hold them rotatably against the jamb **25**. For this purpose each grommet **43** is composed of a bronze or brass alloy to provide suitable bearing support for the louver.

Each of the heating louvers **10** has a sinusoidally arranged Nichrome wire **46** imbedded therein, the louver itself being preferably composed of a transparent or translucent glass. The heating pattern thus described by the Nichrome wire **46** provides a uniform heating area throughout the surface of the louver. Preferably, the terminals of the heating element **10** are located at one extremity of the louver, thereby simplifying the electric circuit for the wire **46**, as will be hereinafter described. Any suitable electrically conductive resistance element may be provided in place of the Nichrome wire **46**. Further, in many instances it will be advantageous to provide a reflective metallic sheet **48** on the exterior of one or more of the heating louvers **10** in order to reflect the heat generated by the heating element into the air of the room.

Advantageously the circuit for supplying electric current to the heating louvers **10** is arranged vertically within the channeled portion **27** of one of the jambs **25** and is covered for protection from the weather by a suitable angle frame **49** which may be clipped, screwed or otherwise suitably attached to the sides **29** and **33** of the channel section **27** to enclose the electrical conduits therebetween.

Each of the heating louvers **10** is connected in parallel to the conduits passing vertically through the channel

section **27** so that any one or all of the heating louvers can be replaced without breaking the circuit. For this purpose (Fig. 6) a pair of electrical conduits **50** and **51** are soldered to a pair of suitably insulated junction blocks **53** and **54** mounted within the channel section **27**. Also mounted within one of the louver holders or clips **11** for each heating louver **10** is a pair of stainless steel springs **56** and **57**. Each of the stainless steel springs are suitably mounted at their ends on Bakelite insulation strips **58** and **59** spaced at either side of the grommet **43** and in turn secured to a vertical end wall portion **60** for the louver holder. Each of the stainless steel springs **56** and **57** arch in a direction normal to the surface of the Bakelite strips and engage separate terminals **62** and **63** for the Nichrome wire **46**. These latter terminals or contacts are preferably provided in the form of silver contacts. The separate junction blocks **53** and **54** communicate with the silver contacts **62** and **63** for the heating louver through intermediation of the stainless steel springs **56** and **57** and a pair of suitably insulated conduits **66** and **67**, respectively, these latter conduits being soldered or otherwise connected to the junction blocks **53** and **54** and a pair of terminals **69** and **70** for the springs. The above electrical communication between the heating louvers and the electrical conduits **50** and **51** is again repeated for each louver by means of similar conduits respectively connected to the separate junction blocks **53** and **54**.

As seen more clearly in Fig. 4, the louver holder **11** includes, in addition to the end wall portion **60**, a lower supporting wall portion **72** and a pair of spaced vertical side wall portions **73** and **74** engaging opposite sides of the extremity of the heating louver **10**. Each louver may be inserted into its appropriate holder **11** by sliding the extremity of the louver between the side wall portions **73** and **74** and over the resilient stainless steel springs **56** and **57** until the lower edge of the louver is engaged by the bottom wall portion **72** of the holder and the silver contacts **62** and **63** come into registry with the springs. Thereafter suitable weather resistant electrical insulation may be inserted between the opposite faces of the heating louver and the side wall portions **73** and **74** of the louver clip as indicated at **76** and **77**, a suitable insulating material for this purpose being fish paper. A cap **78** is then inserted over the upper edge of the louver between the side wall portions **76** and **77** and the vertical wall portions **60** of the louver holder to retain the louver in place and cover the space resulting between the end wall section **60** and the edge of the louver. Advantageously, the stainless steel springs **56** and **57** serve the dual function of providing an adjustable resilient contact for the Nichrome wire **46** and also to stabilize the louver against rattling and edgewise movement as it is tilted in its frame. Likewise, the grommet **43** serves the dual function of providing means for rotatably mounting the louver on its frame while at the same time providing a passage for the electrical conduits **66** and **67**.

The electrical conduits **50** and **51** communicate with a suitable fuse box and power supply **80** through intermediation of a suitable adjustable thermostatic control **81** and a pilot light **82**, the thermostat and pilot light being connected in parallel to the power circuit. The thermostat and pilot light are preferably mounted on a control panel located at any convenient place and are operated by a single "on and off" throwswitch **83** also in the electrical circuit.

It will be apparent from the foregoing discussion that the heating and ventilating device of my invention finds utility both in warm and cold climatic conditions. The louvers may be opened to any desired degree to admit fresh air which can be heated as it enters the room, thus giving a combination of heating the air by conduction and the persons in the room by directed radiation. In the winter the frame **37** of a storm window can be mounted on the bracket **17** of the frame by the clamps **38**. The

heating elements **46** of the louvers **10** generate heat which is reflected by its metallic sheet **48** into the room, while the storm window prevents entry of cool air proximate the heating louvers. The louvers can be rotated about the grommets **43** on substantially uniformly spaced parallel horizontal axes by manipulation of the gear operator **22** acting on the crank arms **19** through intermediation of the slide bar **21**, thereby adjusting the direction in which heat is radiated into the room. Any shifting of the louvers **10** with respect to their holders **11** and **12** is resiliently compensated for by the stainless steel springs **56** and **57** in the holder **11**. Similar leaf springs may also be mounted in the holder **12**. The opening in grommet **43** for each louver **10** provides an entry for the electrical conduits **66** and **67** which is coaxial with the axis of rotation for each louver **10**. This avoids undue stress on the soldered connections of the conduits **66** and **67** with the junction blocks **53** and **54** and terminals **69** and **70** for the springs, providing a permanent electrical circuit for the louvers **10** despite continual repositioning of the louvers in their frame.

Each louver **10** is electrically in parallel with every other louver so that removal of one or more of the louvers does not impair operation of remaining louvers. The silver contacts **62** and **63**, being located on the same enclosed peripheral end edge of the louver simplifies the electrical circuit. The glass body for the louver and the insulation **58**, **59**, **76** and **77** provides proper insulation for housing the several electrical joints for each louver. The electrical conduits **50** and **51** are protected from the weather by the angle frame **49**.

I claim:

1. A device for rotatably mounting a heating element on a frame adapted to be located on the wall of a room which comprises a louver of electrically non-conductive material having an electrically conductive resistance element imbedded therein with a pair of spaced terminals along the peripheral edge of said louver, louver-holding means embracing a portion of the peripheral edge of said louver, at least one bearing rotatably mounting said louver-holding means on said frame, said bearing having an opening therein coaxial therewith for entry of electric conduits into communication with the electric terminals of said louvers, insulating means mounted intermediate the louver-holding means and the embraced portion of the peripheral edge of said louver, a pair of electrically conductive resilient springs mounted in spaced relation on said insulating means intermediate the insulating means and the peripheral edge of said louver, said springs being arranged opposite the electrical terminals of said louver in contacting relation therewith and resiliently bearing against the peripheral edge of said louver, and a pair of electric conduits entering the louver-holding means through the opening in said bearing and communicating with said pair of electrically conductive springs.

2. A device for rotatably mounting a louver with an electrically conductive resistance element imbedded therein having a spaced pair of electrical terminals on a peripheral edge of the louver which comprises a louver frame, a louver holder having a pair of spaced opposite side wall sections and a bottom wall section, the louver being slid into said holder between said wall sections and retained on the extremities of its front and back surface and its lower edge, said holder having an end wall section normal to the side and bottom wall sections, means rotatably mounting the end wall of said holder on the louver frame having an opening therein coaxial with the axis of rotation of said holder, a spaced pair of resilient springs engaging the end edge of said louver and the electric terminals for said resistance element, said spring being electrically conductive and insulated from the wall sections of said holder, and a pair of electric conduits passing through the opening in said holder-mounting means and communicating with said springs whereby said louver may be tilted in its frame while being resiliently

retained in electrical communication with a source of electricity.

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