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ICE MELTING AND MELT COLLECTING DEVICE

Filed Feb. 6, 1961

FIG. 1.

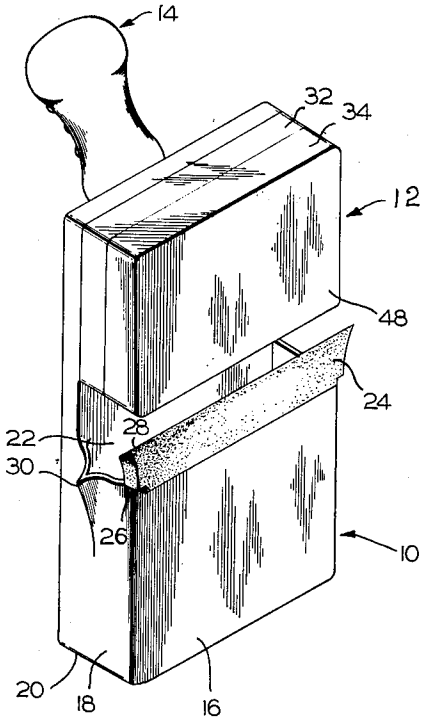


FIG. 2.

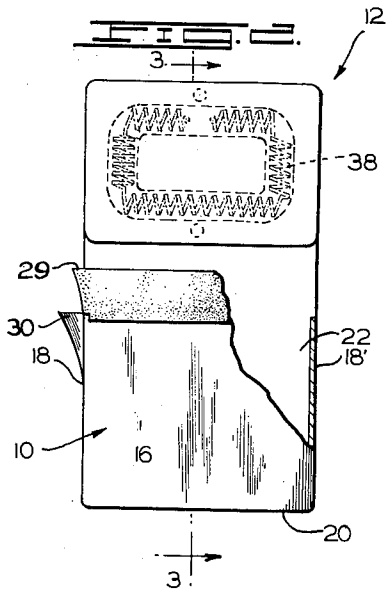
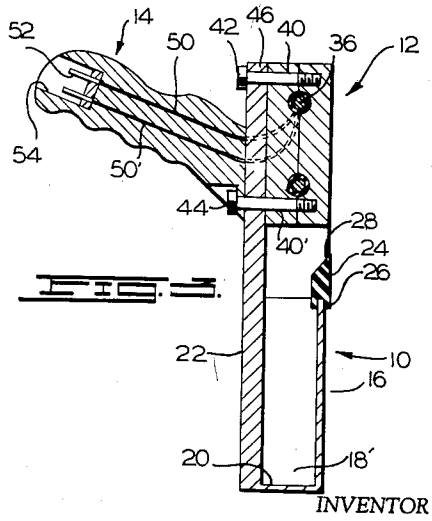


FIG. 3.



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ICE MELTING AND MELT COLLECTING DEVICE

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This invention relates to an ice melting and melt collecting device and more particularly to an electrically heated, preferably hand-operated tool for removing ice from cold surfaces such as the cooling surfaces of freezers, refrigerators, and the like.

While the ice melting and melt collecting device of the invention has particular utility for melting ice and collecting the melt from refrigerator and freezer surfaces, the invention may also be employed to deice or defrost surfaces exposed to the weather and on which ice has collected.

It is an object of the present invention to provide a relatively simple and inexpensive tool by means of which accumulations of ice may be quickly and effectively removed from surfaces and the resulting water collected and removed from the deiced surfaces, thereby preventing resolidification of the melted ice.

Another object of the present invention is to provide such a device which may be conveniently provided with an electrical resistance-type heating element and temperature control means whereby the ice melting heat conductive element thereof may be maintained at a predetermined temperature.

Throughout the specification and claims, the term "ice" means frozen water in all of its forms, such as frost sleet, consolidated snow, and the like.

These and other objects and advantages are provided by a device for melting ice and collecting the melt from a surface comprising a container having side, back, front and bottom walls, a resilient lip member carried along the upper edge of the front wall of the container, a heat conductive member having an extended heat conductive surface and means mounting the heat conductive member above the resilient lip member with the extended surface of said heat conductive member lying in the plane of the front wall of the container.

Other objects and advantages of the invention will be apparent to those skilled in the art from the following description of a preferred embodiment taken in conjunction with the accompanying drawings in which:

FIG. 1 is a perspective view of a tool for melting ice and collecting the melt constructed in accordance with the present invention;

FIG. 2 is a front elevational view of the device shown in FIG. 1; and

FIG. 3 is a section substantially on line 3—3 of FIG. 2.

Referring to the drawings, the device for melting ice and collecting the melt generally includes a container 10; a conductive member 12 and a handle portion 14.

The container 10 includes a front wall 16, side walls 18 and 18', a bottom wall 20, and a back wall 22.

The container 10 may be made as a single piece from any suitable material such as plastic, or metal, or formed from sheets of such materials. In the illustrated embodiment of the invention, the container 10 is illustrated as being of a cast construction.

Extending along the upper edge of the front wall 16 is a lip portion 24. In the preferred form of the invention, the lip 24 is constructed of a flexible or resilient material such as natural or synthetic rubber or plastic. The resilient lip 24 is secured along the upper edge of the front wall 16 by a tongue and groove joint generally designated 26.

It will be particularly noted from FIG. 3 that the flexible lip projects outwardly from the plane of the face

16 to insure that when the device is employed to melt ice and to collect the melt that the resilient lip is in sealing engagement with the surface supporting the ice.

The upper edge of the resilient lip 24 is beveled as at 28 to assist in directing the melt into the body of the container 10.

It has also been found to be advantageous to extend the corners 29 of the lip 24 to a slightly greater width than the width of the heat conductive member 12 to aid in directing melt into the container.

Preferably the container 10 includes a pouring spout 30 formed in one of the side walls of the container. The pouring spout 30, shown in side wall 18, assists in removing the collected melt from the container 10.

The heat conductive member 12 is preferably cast or molded from a good heat conductive material such as copper, iron, aluminum, die-cast metal, and the like, and is of a size to provide a mass capable of providing a substantial heat reservoir. The heat conductive body 12, for convenience of assembly and manufacture, may comprise a rear section 32 and a front or face section 34. Each of the sections is formed with an internal passage 36 adapted to receive a conventional electrical resistance heating element 38 including electrical insulation or the heat conductive member may be integrally die cast with the insulated resistor unit 38 as is well known in the art.

The rear section 32 is also bored as at 40 and 40' to receive attaching means 42 and 44 while the front section 34 is similarly bored and tapped to receive the threaded ends of the attaching members 42 and 44. As more clearly illustrated in FIG. 3 of the drawings, attaching element 42 comprises a bolt, the head portion of which engages the outer face of extension 46 of back wall 22 of container 10. The head portion of fastening bolt 44 is received in the handle 14 whereby the handle 14 and the heat conductive member 12 are secured to extension 46 of the back wall 22 of the container.

As shown in the drawings, the heat conductive member 12 projects from the inner face of back wall extension 46 a distance such that face 48 of the heat conductive member 12 lies substantially in the plane of the outer face of front wall 16 of the container 10 whereby when the ice melting and melt collecting device is held against an extended surface covered with ice, face 48 of the heat conductive member 12 is in heat transmitting relationship to the ice and the flexible lip 24 is against the surface thereof in a position to collect the melt.

In order to heat the heat conductive member 12, electrical current is directed to the electrical resistance unit 38 by electrical conductors 50 and 50' which pass through suitable openings in the handle 14, the back extension 46 and rear section 32 of heat conductive member 12 to opposite ends of the electrical resistance heater element. Adjacent the extended end of the handle 14 a conventional male connector 52 is provided in a suitable recess 54 whereby the unit may be connected to a source of electric current such as an electrical conductor from a house wall outlet or a suitable electrical conductor adapted to draw current from an automotive electrical system.

It will be appreciated that where the container 22 is cast as a unit, the handle portion 14 may be cast integrally therewith instead of being attachable to the back wall of the back extension 46 of the container 10. It will also be appreciated that where the container is constructed of a good heat conductive material it is preferable to either separately form handle 14 from a relatively poor heat conductor or to provide a heat insulating outer surface on the handle.

Operation

In use of the ice melting and melt collecting device of

the invention for removing frost from the inner wall of a freezer compartment, the electrical resistance heater element **38** is connected to a suitable source of electric current to heat the heat conductive member **12**. When heateld, the device is pressed against the surface to be defrosted and the melt formed by the heat from the heat conductive member **12** runs downwardly and is deflected into the interior of the container **10**. The device is moved to a new portion of the surface to be defrosted as soon as the particular section is ice-free. As the defrosting progresses, the container **10** is periodically emptied of melt, leaving the freezer chest substantially dry and without appreciably increasing the temperature of adjacent sections of the chest or its contents.

Where electrical current is not available for heating the heat conductive element **12**, the mass of material may be heated by an external source of heat such as a torch, fire, or the like and the device pressed against the surface containing the ice.

While a particular embodiment of the present invention has been shown in the drawings and described hereinabove, it will be appreciated by those skilled in the art that various modifications may be made in the form and construction of the improved ice melting and melt collecting device without departing from the scope of the appended claims. For example, it will be appreciated that the electrical conductive means for heating the heat conductive member **12** may include a simple pre-set bimetallic thermostat whereby the heat conductive member is substantially automatically maintained at a predetermined temperature. Further, where desired, a suitable adjustable thermostat may be employed whereby the operator of the tool may preselect the temperature at which the heat conductive element **12** is to be maintained.

It will also be appreciated that in the illustrated form of the invention, the ice melting and melt collecting device is primarily adapted for defrosting flat surfaces. Where the surface to be cleaned of ice is curved, it is preferable to provide a lip **24** having a curved outer surface to provide a seal between tthe container and the curved surface of the member to be defrosted, or both the outer surface of the front wall and the surface **48** of the heat conductive member **12** may be concave or convex, depending upon the surface configuration of the surface to be deiced.

I claim:

1. A devce for melting ice and collecting the melt from a surface comprising a container having side, back, front and bottom walls, a sealing lip member carried along the upper edge of the front wall of the container, said lip member comprising a resilient rubber-like material adapted to conform to the surface being freed of ice, a heat conductive member having an extended heat conductive surface, an electrical resistance heating element in heat conducting relationship to said heat conductive member, and means mounting the heat conductive member above the resilient sealing lip member with the extended surface of the heat conductive member lying in a plane parallel to the plane of the front wall of the container.

2. A device for melting ice and collecting melt from a surface comprising a container having side, back, front and bottom walls, a sealing lip member carried along the upper edge of the front wall of the container, said lip member comprising a resilient rubber-like material adapted to conform to the surface being freed of ice, a pouring spout provided in the upper edge of a side wall of the container, a heat conductive member having an extended heat conductive surface, an electrical resistance heating element in heat conducting relationship to said heat conductive member and means mounting the heat conductive member above the resilient sealing lip member with the extended surface of the heat conductive member lying in a plane parallel to the plane of the front wall of the container.

3. A device for melting ice and collecting the melt from a surface comprising a container having side, back, front and bottom walls, a sealing lip member carried along the upper edge of the front wall of the container, said lip member comprising a resilient rubber-like material adapted to conform to the surface being freed of ice, a pouring spout formed in the upper edge of one of the side walls of the container, a hand-gripping element supported from the back wall of said container, a heat conductive member having an extended heat conductive surface, an electrical resistance heater element within said heat conductive member, and means mounting the heat conductive member above the resilient sealing lip member with the extended surface of said heat conductive member lying in a plane parallel to the plane of the front wall of the container.

4. The invention defined in claim 3 wherein the mounting means for the heat conductive member comprises an upward extension of the back wall of the container and fastener means securing said heat conductive member to said back wall extension.

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