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ARTIFICIAL ICE RINK EMPLOYING MODULAR UNITS

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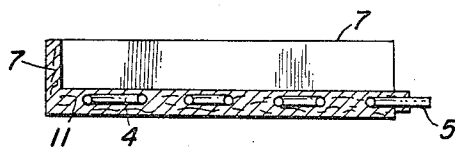
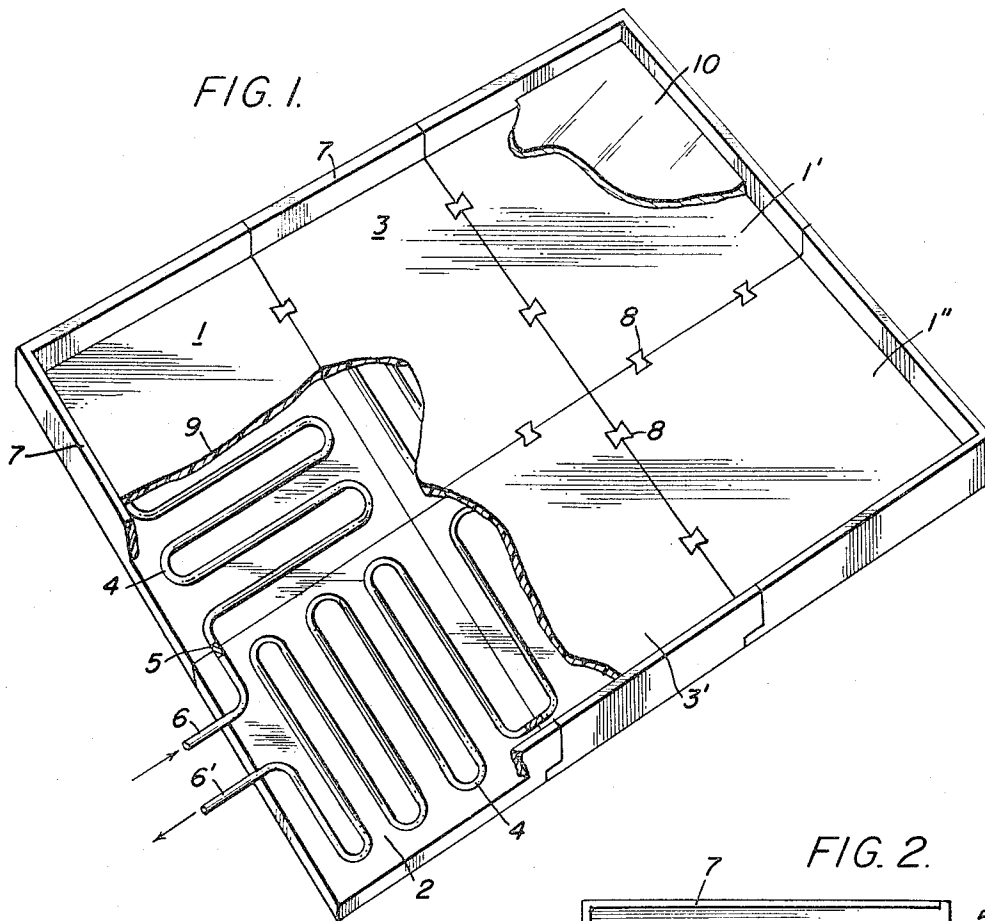
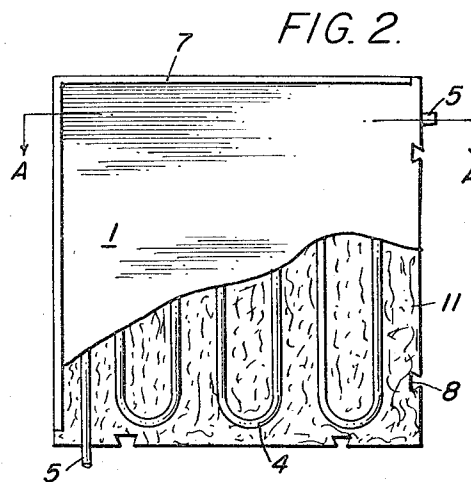


FIG. 3.



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ARTIFICIAL ICE RINK EMPLOYING MODULAR UNITS

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This invention relates to a new and useful type of artificial ice rink. More specifically, it is concerned with artificial ice rinks having module components wherein any combination of two or more units form a surface for ice formation.

Commercial artificial ice rinks have been known for many years. And it is a well-known fact that rinks which have been built for yearlong use are expensive. The two major components of such rinks are the cooling coils and the refrigeration equipment. Usually, there are hundreds of feet of piping laid onto a flat surface in parallel formation in order to provide the network of cooling coils needed for ice formation. After the piping is in place, the complete network is covered with concrete or asphalt, or any other like composition, thus resulting in a flat, smooth surface which facilitates ice formation when a cooling liquid, an example would be brine, is circulated throughout the piping network. In almost all instances, these rinks are of a permanent nature.

Objects and advantages of the invention will be set forth in part hereinafter and in part will be obvious herefrom, or may be learned by practice with the invention, the same being realized and attained by means of the combinations, compositions and improvements pointed out in the appended claims.

The invention consists in the novel steps, methods, combinations, compositions and improvements herein shown and described.

It is therefore an object of this invention to provide an inexpensive and easily fabricated artificial ice rink comprised of cooling modules capable of being assembled and disassembled by the ordinary homeowner.

Another object of this invention is to provide cooling modules which when assembled will form an artificial ice rink having configurations different from the well-known square and rectangular shapes.

The objects of this invention may be realized by first forming a cooling module containing a network of veins or channels for circulating a cooling liquid throughout its internal structure, and secondly, positioning at least two cooling modules adjacent to one another so that their network of veins are connected with each other, thus providing a large cooling surface for ice formation, and thirdly, supplying to the internal circulatory system of the modules means for cooling and circulating a refrigerant.

In the drawings:

FIGURE 1 is an isometric view of an artificial ice rink utilizing six cooling modules of this invention.

FIGURE 2 is a cut-away view of a corner cooling module showing the cooling veins.

FIGURE 3 is a cross-sectional view of FIGURE 2 taken through A—A.

It is clearly seen that the artificial ice rink of this invention is based upon the module unit concept. These modules are formed having at least three sides, in sheet-like mats from either thermoplastic resins such as, for instance, polyvinyl chloride, polyamides, polyethylene, polypropylene, polyacetal, polycarbonate, or resins like polyester and epoxy impregnated with fibre-glass. The internal vein or coil structure is provided for by forming channels within the module structure or by imbedding tubing within the resin composition. The tubing is constructed from any type of material capable of tubular formation, and capable of withstanding the pressure ultimately generated by the circulating cooling liquid. Means are provided for at-

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taching two or more modules together along the edges. In the instance of corner modules having four sides, two adjacent edges contain means for attaching to other modules, while the remaining two edges have lips or high sides for retaining ice. Edge modules having four sides consist of three adjacent edges containing means for attaching to other modules and one remaining edge having a lip or high side for retaining ice. Center modules having four sides consist of four adjacent edges containing means for attaching to other modules.

It will be understood that the foregoing general description and the following detailed description as well as exemplary and explanatory of the invention but not too restrictive thereof.

Referring now in detail to the invention, FIGURE 1 illustrates a preferred assembly of cooling modules in accordance with the invention, although such form is given by way of example only, and other forms may be used. As shown in FIGURE 1, the ice rink consists of four corner modules 1, 1', 1'' and 2, and two edge modules 3 and 3'. Each module is attached to another by means of attachment 8.

The cooling veins 4 of each module are joined at 5. The outer edges of all the modules have a special high side 7, which acts as a batter board for stopping ice pucks when ice hockey is played upon the rink's surface, and also serves as a dam for keeping in water when the temperature of the cooling liquid is allowed to raise above the freezing point of ice. The ice 10, is simply frozen to the surface 9 of each module. A special module 2, has been provided with cooling veins 6 and 6', in order to allow a cooling liquid to be first cooled by a refrigeration unit, and then circulated throughout the network of veins 4, provided for in each module. Special gaskets are supplied at each joint 5, in order to insure against leakage.

FIGURES 2 and 3 illustrate a corner module 1, containing a tubular vein 4, with connection ends 5, imbedded in a resin fibre-glass composition 11. The high side 7, is an integral part of the module. Means for attaching the module 1 to another are provided at 8.

The modules of this invention would be preferably square, and have dimensions of the order of 4 by 4, 5 by 5, 6 by 6 feet and the like, although large module units can be constructed having dimensions of the order of 20 by 20 feet. The veins within the module may be made from unoriented or oriented thermoplastic tubing, or from metallic tubing. The diameter of the tubing would be in the order of 0.5 to 3.0 inches. The thickness of the modules would be of the order of about 0.75 to 4.0 inches. Wherever possible, the veins can be fashioned as hollow channels or voids within the module structure, thus eliminating the need for tubing. In this instance, only a short connecting vein member is required to attach the cooling vein portion of one module to that of another.

The composition of the module unit is selected from the group consisting of either long chain linear thermoplastic polymers and co-polymers or resins of a thermosetting nature reinforced with fibre-glass. It is possible to fabricate a completely non-metallic module by employing molding and extrusion techniques.

Of course the invention is not limited to the embodiments herein before described and illustrated, but may by varying scope be modified in particular as to the type and size of cooling module employed, the arrangement of modules in forming a cooling surface and the composition thereof, without thereby departing from the scope of the instant invention.

I claim:

1. An artificial ice rink comprising at least two, interconnected, fibre-glass reinforced polyester resin, cooling modules having integral sides for ice retention thereon and having internal veins for the circulation of a cool-

ing liquid which maintains the surface of said modules at a temperature below the freezing point of water to allow for formation of ice thereon.

2. An artificial ice rink comprising a plurality of interconnected, cooling modules composed of a foamed polymer and arranged in such a fashion as to allow the formation of a surface of ice upon which ice hockey can be played, and wherein said modules have integral sides for ice retention thereon and have internal veins for the circulation of a cooling liquid which maintains the surface of said modules at a temperature below the freezing point of water to allow for formation of ice thereon.

3. A portable artificial ice rink especially adapted for use by homeowners, apartments occupants and the like, comprising a plurality of a self-supporting, interconnectable, hand portable modular units having a single inlet and outlet positioned in one modular unit for a refrigerant, and wherein each of said units has an integral passage therethrough interconnectable with the passages of said other units and to said single inlet and outlet to form a continuous integrated passage through said units for the circulation of refrigerant to maintain the upper surface of each modular unit at a temperature below the

freezing point of water for the formation of ice thereon.

4. The portable artificial ice rink set forth in claim 3, wherein the passage in each modular unit is retroverted, and wherein said inlet is connected to the passage within said one unit and wherein said outlet is connected to the passage in an adjoining unit.

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