Dec. 28, 1948. R. J. YOCUM 2,457,619

ICE SKATING RINK

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Fig. 1

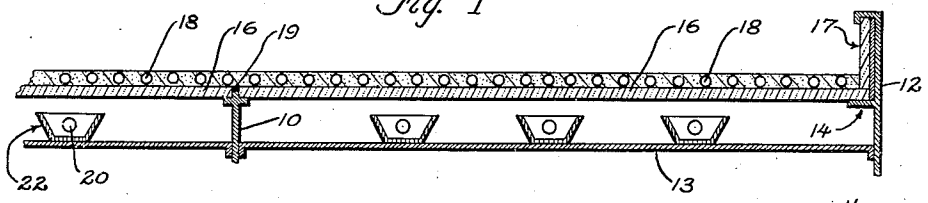

Fig. 2

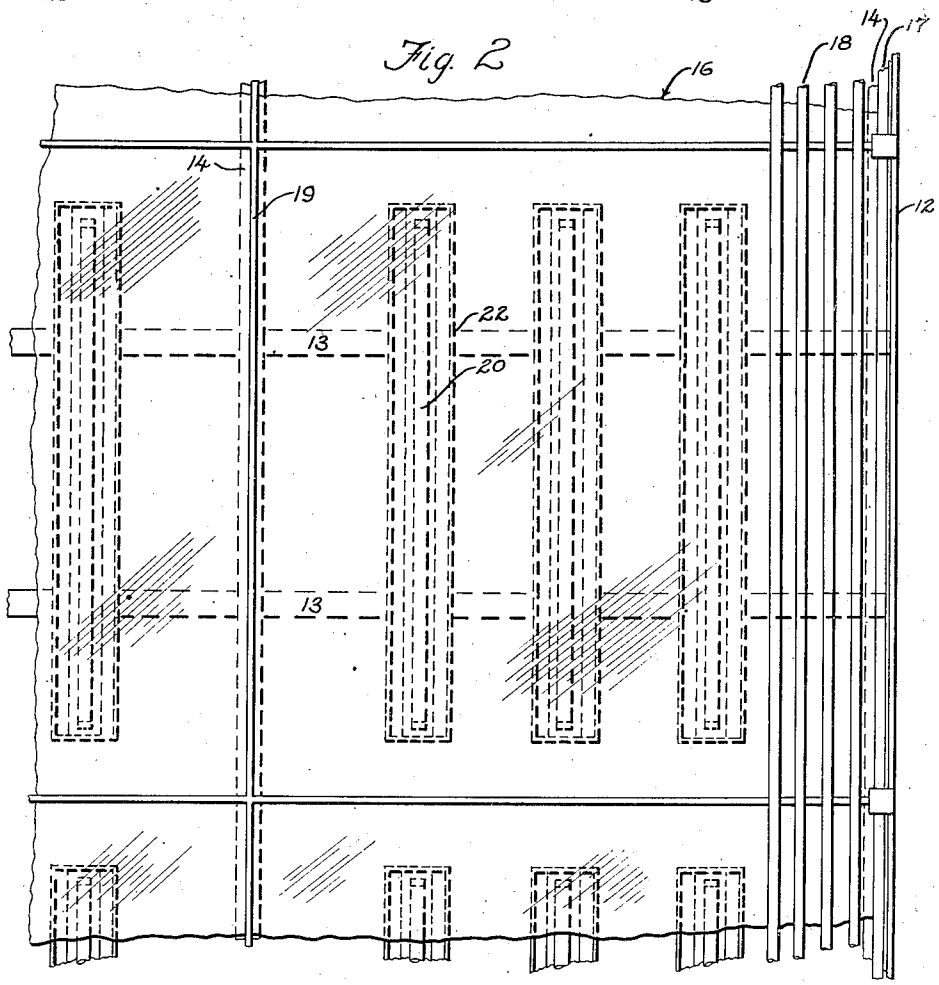

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Fig. 3

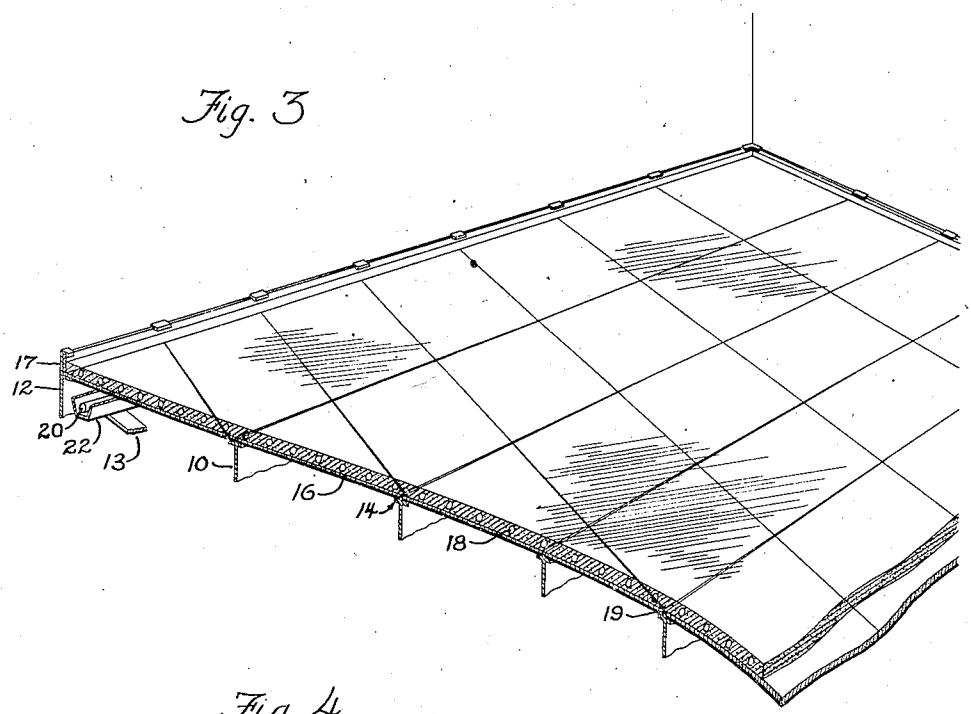


Fig. 4

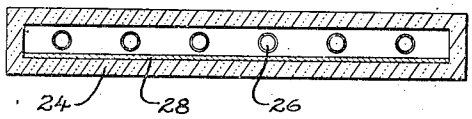


Fig. 5

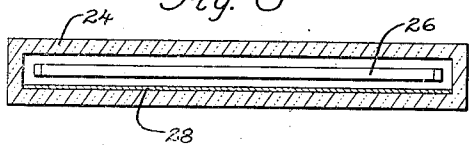


Fig. 7

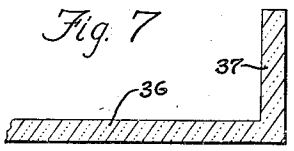
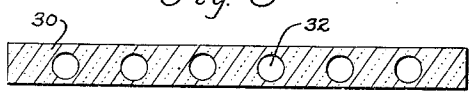


Fig. 6



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UNITED STATES PATENT OFFICE

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ICE SKATING RINK

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15 Claims. (Cl. 62—12)

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This invention relates to improvements in ice-skating rinks and, more particularly, to illuminated ice-skating rinks.

The principal object of the invention is to provide a combined ice-skating rink and illuminating means whereby novel illuminating effects not heretofore possible may now be obtained and utilized particularly for ice-skating shows or other exhibitions.

Another object of the invention is to provide a rink having an ice supporting floor and side walls of transparent or translucent material through which light may pass from either above or below and at the same time providing safe and operable skating surface support.

The invention further provides that the tubing for passage of refrigerant also be of transparent or translucent material and, where the utmost transparency or translucency is desired, the invention contemplates the use of a refrigerant of a water clear type.

Other and further objects and advantages of the invention will be apparent from the following description taken in conjunction with the accompanying drawings wherein a preferred embodiment of the principles of the invention have been selected for exemplification.

In the drawings:

Fig. 1 is a fragmentary vertical sectional view of an ice-skating rink and illuminating means constructed in accordance with the present invention;

Fig. 2 is a plan view of the rink shown in Fig. 1;

Fig. 3 is a perspective view of the rink shown in Figs. 1 and 2 complete with a surface of ice and broken away to show the floor and illuminating means construction;

Fig. 4 is a vertical section of a floor block of modified construction having illuminating means disposed within the block;

Fig. 5 is a transverse sectional view of the block shown in Fig. 4;

Fig. 6 is a vertical section of a further modified floor block having channels for the flow of refrigerant; and

Fig. 7 is a detailed section of a modified form of the invention showing an integral floor and side wall.

Referring more particularly to the drawings, wherein like numerals refer to like parts, a rink floor framework is composed of any suitable number of parallel steel beams 10 bounded by steel side walls 12 having inwardly extending angle or shelf members 14 welded thereto. Cross members 13 extend between adjacent beams 10

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to brace the same and to provide a support as will hereinafter be described.

The ice supporting floor is of annealed glass or any other suitable transparent or translucent material. In a preferred construction the floor is formed of a plurality of glass blocks 16, set in and sealed in the steel framework structure. In one particular embodiment of the invention the blocks are of shatter-proof glass and approximately four feet square and an inch and a quarter thick, capable of withstanding in the neighborhood of five hundred pounds per square inch in load and the shock load of two skaters of a hundred and fifty pounds each jumping on an area of approximately ten square inches. Such plates or blocks further have a very low coefficient of expansion so that when water is frozen on their upper surfaces they will be subjected to a minimum of stress. Rink floor side walls 17 are also provided preferably of the same material as the floor blocks 16. The side walls 17 extend around the perimeter of the floor and are of sufficient height to receive a layer of ice of any particular depth desired. Ordinarily, the thickness of the ice in skating rinks is from one-half inch to four inches and it is preferable that the side walls 17 extend slightly above the surface of the ice. Spaces between the blocks 16 and side walls 17 are, of course, suitably water-proofed to provide an impervious surface and preferably a compressible material such as sponge rubber 19 is employed to absorb expansion as the result of freezing and to relieve stress on the floor and side wall materials.

For receiving the refrigerant needed for freezing the ice surface layer, a series of tubes 18 is provided extending parallelly and transversely a slight distance above the surface of blocks 16 which form the ice supporting floor. The tubes 18 are connected at opposite ends to suitable headers of known construction, and not therefore shown in detail. Both the headers and tubes 18 are formed of transparent or translucent material as, for example, Pyrex or other suitable glass or plastic composition. Where maximum transparency is desired, a water clear refrigerant such as Prestone, carbon tetrachloride or any other hydrocarbon derivative having a good index of refraction may be employed as the refrigerating medium in the tubes 18.

The invention thus provides an ice supporting floor, side walls and refrigerating means all composed of transparent or translucent material whereby to permit the passage of the maximum amount of light therethrough. Combined with

such a rink floor and freezing means is illuminating means disposed below the floor and directed upwardly through the floor and ice layer to provide a great variety of novel illuminating effects on the ice as well as the skaters. The illuminating means may be of any desired character to provide the effect desired and, in the form of the invention shown, is composed of a series of neon or other gaseous discharge tubes **20** associated with reflectors **22** supported by the cross members **13**. Any other lights of the steady type, intermittent or stroboscopic may also be employed alone or in combination and arranged in any manner desired by those skilled in the art. The present invention provides an ice-skating rink which may be illuminated from beneath and through the ice so that distinctively novel illuminating effects not heretofore possible are for the first time made available. Ice-skating rinks constructed in accordance with the invention are of particular value in connection with ice-skating shows and other exhibitions to provide novel illumination for the performers and their costumes and scenery as well as for the skating surface.

In the modified form of floor block **24** shown in Figs. 4 and 5 the block is hollow and receives within its interior transversely extending gaseous discharge tubes or other illuminating means **26**. Novel effects may be obtained by providing a mirrored reflecting surface **28** which may be supported on the interior lower wall of the block.

Instead of providing separate floor blocks and refrigerant tubing such as shown in Figs. 1 and 2, a further modified form of block as shown at **30** in Fig. 6 may be provided having molded transversely extended channels **32** for the passage of refrigerant whereby to combine the refrigerant tubes directly in the floor blocks which are laid so that the channels are in alignment. It will be understood that the floor blocks shown in Figs. 4 to 6, like the blocks **16**, are formed of transparent or translucent material as above described.

As a further modified feature, the invention contemplates that the transparent or translucent floor and side walls may, where desired, be cast integrally as shown at **36** and **37** in Fig. 7 instead of being formed of separate elements.

It will be understood that the invention embraces within its scope ice-skating rinks of various other constructions and arrangement of parts than herein specifically shown and described provided the particular novel illuminating feature is embodied therein and is limited only by the following claims.

I claim:

1. An illuminated ice-skating rink comprising, a floor of light transmitting material, means providing a light transmitting ice-skating surface on said floor, boundary walls extending upwardly of said floor for retaining said ice-skating surface and a light source for illuminating said rink disposed below said ice-skating surface and arranged to direct illuminating beams upwardly through said ice-skating surface.

2. An illuminated ice-skating rink comprising, a floor of light transmitting material, means providing a light transmitting ice-skating surface on said floor, boundary walls of light transmitting material extending upwardly of said floor for retaining said ice-skating surface and a light source for illuminating said ring disposed below said ice-skating surface and arranged to direct illuminating beams upwardly through said ice-skating surface.

3. An illuminating ice-skating ring comprising, a floor of light transmitting material, means providing an ice-skating surface on said floor, boundary walls extending upwardly of said floor for retaining said ice-skating surface, refrigerating means for said ice-skating surface and a light source for illuminating said rink disposed below said ice-skating surface and arranged to direct illuminating beams upwardly through said ice-skating surface.

4. An illuminated ice-skating rink comprising, a floor of light transmitting material, means providing a light transmitting ice-skating surface on said floor, boundary walls extending upwardly of said floor for retaining said ice-skating surface, a light source for illuminating said rink disposed below said ice-skating surface and arranged to direct illuminating beams upwardly through said ice-skating surface and light transmitting refrigerating means for said ice-skating surface disposed between the light source and ice-skating surface.

5. An illuminated ice-skating rink comprising, a floor of light transmitting material, means providing a light transmitting ice-skating surface on said floor, boundary walls extending upwardly of said floor for retaining said ice-skating surface, a light source for illuminating said rink disposed below said ice-skating surface and arranged to direct illuminating beams upwardly through said ice-skating surface and light transmitting refrigerating means for said ice-skating surface, said refrigerating means comprising headers and interconnecting tubes of light transmitting material containing a non-opaque fluid medium disposed between the light source and ice-skating surface.

6. An illuminated ice-skating ring comprising, horizontal frame members, a floor of light transmitting material supported by said frame members, means providing a light transmitting ice-skating surface on said floor, boundary walls extending upwardly of said floor for retaining said ice-skating surface, cross members extending between said frame members below said floor and a light source supported by said cross members and arranged to direct illuminating beams upwardly through said floor.

7. An illuminated ice-skating rink comprising, a frame, a floor of light transmitting material supported by said frame, means providing a light transmitting ice-skating surface on said floor, boundary walls extending upwardly of said floor for retaining said ice-skating surface, and a light source supported by said frame beneath said floor and arranged to direct illuminating beams upwardly through said floor.

8. An illuminated ice-skating rink comprising, a frame, a floor of light transmitting material supported by said frame, means providing a light transmitting ice-skating surface on said floor, refrigerating means for said ice-skating surface and a light source supported by said frame and arranged to direct illuminating beams upwardly through said floor.

9. An illuminated ice-skating rink comprising, a frame, a floor of light transmitting material supported by said frame, means providing a light transmitting ice-skating surface on said floor, a light source supported by said frame beneath said floor and arranged to direct illuminating beams upwardly through said floor and light transmitting refrigerating means for said ice-skating surface disposed between the light source and ice-skating surface.

10. An illuminated ice-skating rink comprising, a frame, a floor of light transmitting material supported by said frame, means providing a light transmitting ice-skating surface on said floor, a light source supported by said frame beneath said floor and arranged to direct illuminating beams upwardly through said floor and light transmitting refrigerating means for said ice-skating surface, said refrigerating means comprising headers and interconnecting tubes of light transmitting material containing a non-opaque fluid medium disposed between the light source and ice-skating surface.

11. An illuminated ice-skating rink comprising, a plurality of light transmitting blocks forming a floor, an ice layer having a skating surface supported by said floor, boundary walls of light transmitting material extending upwardly of said floor for retaining said ice layer and skating surface and a light source for illuminating said rink disposed below said skating surface.

12. An illuminated ice-skating rink comprising, a plurality of light transmitting blocks forming a floor, an ice layer having a skating surface supported by said floor, boundary walls of light transmitting material extending upwardly of said floor for retaining said ice layer and skating surface, a light source for illuminating said rink disposed below said skating surface and light transmitting conduits for a refrigerant disposed between said light source and said skating surface.

13. An illuminated ice-skating rink comprising, a plurality of light transmitting blocks forming a floor, an ice layer having a skating surface supported by said floor, a light source for illuminating said rink disposed below said skating surface and light transmitting conduits for a refrigerant disposed between said light source and skating surface.

14. An illuminated ice-skating rink comprising, a floor, means providing a light transmitting ice-skating surface supported by said floor, refrigerating means for said ice-skating surface, and a light source for illuminating said rink disposed below said ice-skating surface and arranged to direct illuminating beams upwardly through said ice-skating surface.

15. An illuminated ice-skating rink comprising, a floor, an ice layer having a skating surface supported by said floor, refrigerating means for said ice layer, and a light source for illuminating said rink disposed below said ice-skating surface and arranged to direct illuminating beams upwardly through said ice-skating surface.

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