United States Patent [19]

Von Kohorn

[11] **3,818,892**

[45] **June 25, 1974**

[54] **SYSTEM FOR REMOVING SNOW AND ICE FROM AND FOR SUBSEQUENTLY DRYING AN ATHLETIC PLAYING SURFACE**

[76] Inventor: **Henry Von Kohorn,** 22 Perkins Rd., Greenwich, Conn. 06830

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[21] Appl. No.: **399,171**

[52] **U.S. Cl.** ..... **126/271.1,** 34/237, 165/45, 165/47, 237/1 R

[51] **Int. Cl.** **F24j 3/02**

[58] **Field of Search** ..... 34/104, 225, 230, 233, 34/237, 243 R; 126/271.1, 271.1 R, 271.1 C, 343.5 R; 237/1; 165/45, 47; 219/213; 138/32.35

[56] **References Cited**

UNITED STATES PATENTS

945,546	1/1910	Jonasson	237/1 R
1,538,907	5/1925	Ritter	237/1 R
2,505,622	4/1950	McKee	237/1 R
2,644,790	7/1953	Harper et al.	34/237
3,195,619	7/1965	Tippmann	165/45
3,324,846	6/1967	Smith	34/243 R
3,568,924	3/1971	Chenault	237/1 R

FOREIGN PATENTS OR APPLICATIONS

677,358	6/1939	Germany	237/1 R

Primary Examiner—Kenneth W. Sprague
Assistant Examiner—James C. Yeung
Attorney, Agent, or Firm—Haynes N. Johnson

[57] **ABSTRACT**

A system is provided for removing snow and ice from and for subsequently drying an athletic playing surface such as a tennis court, basketball court, or the like. The system includes a porous playing surface mounted above a plenum chamber. A heating unit or furnace is associated with the chamber to introduce hot gases in the chamber under pressure sufficient to cause them to pass up through the porous surface. These hot gases then serve to melt the snow and dry the surface. The openings in the porous surface should be large enough to permit up-flow of the gases and drainage of the melted snow, but small enough so as to not adversely affect play on the surface.

11 Claims, 9 Drawing Figures

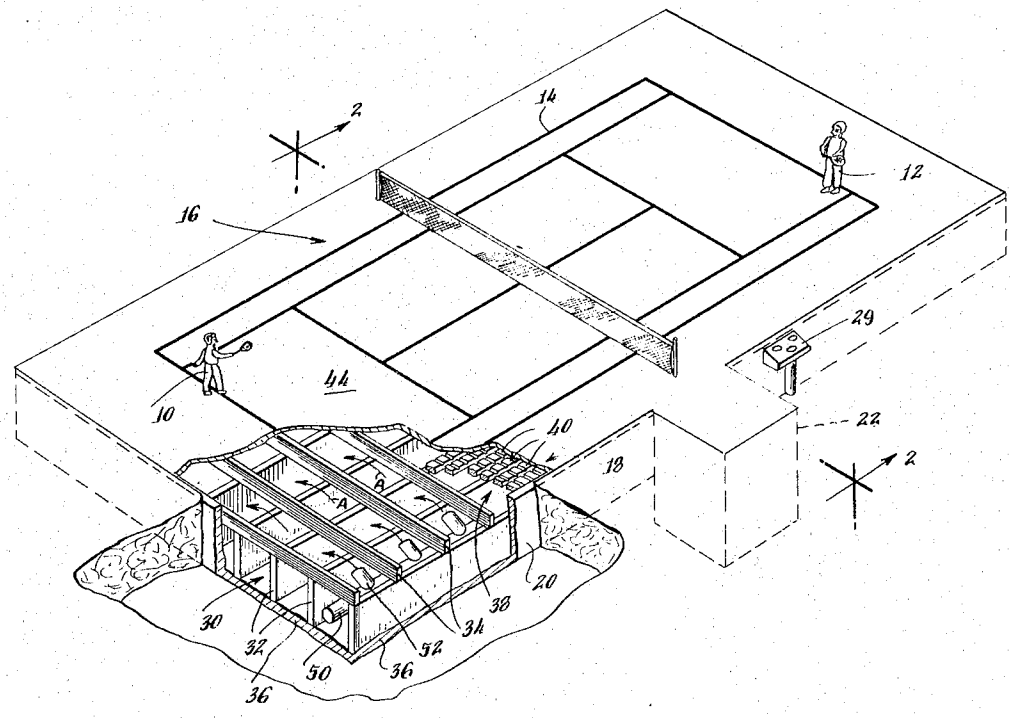
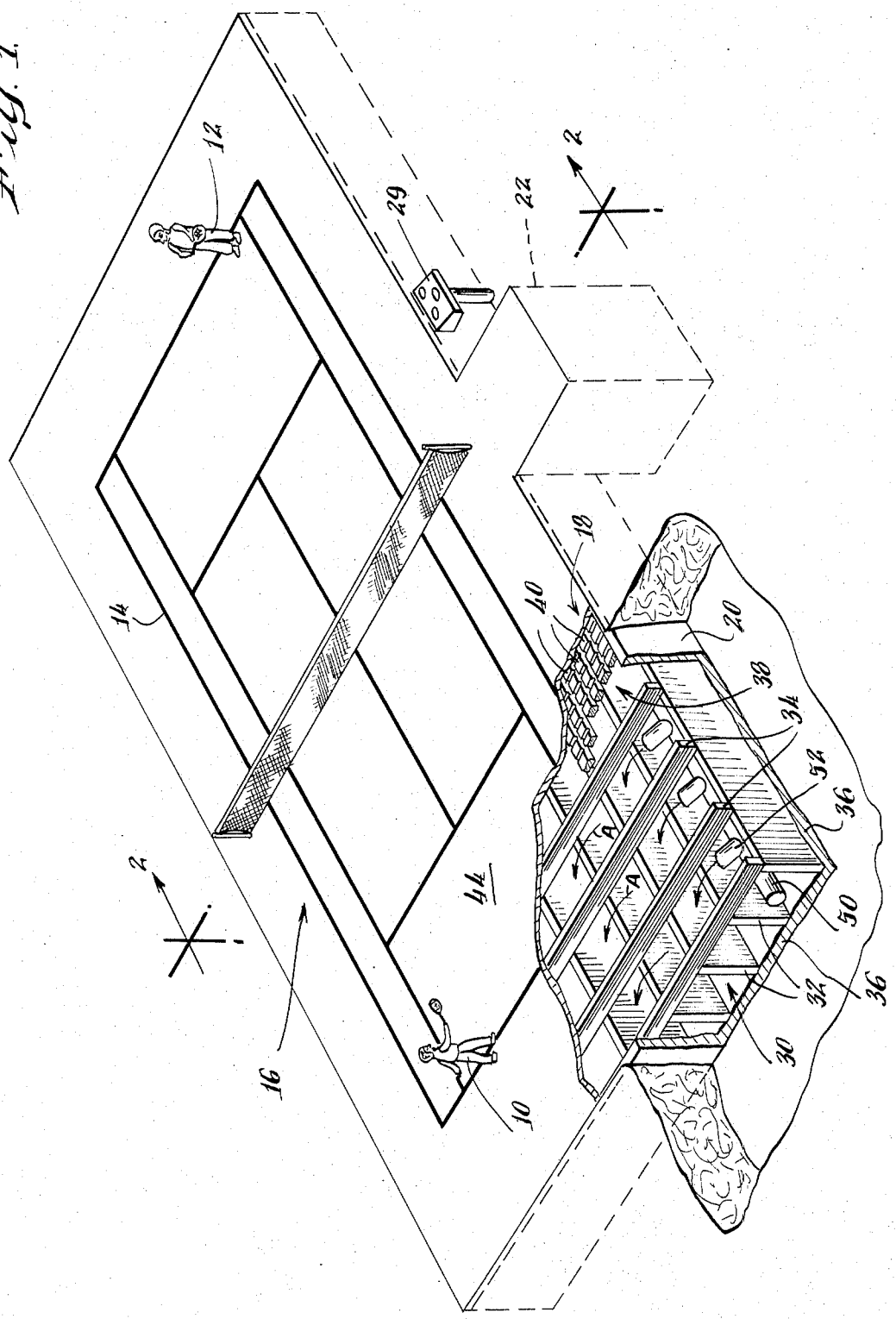


Fig. 1.



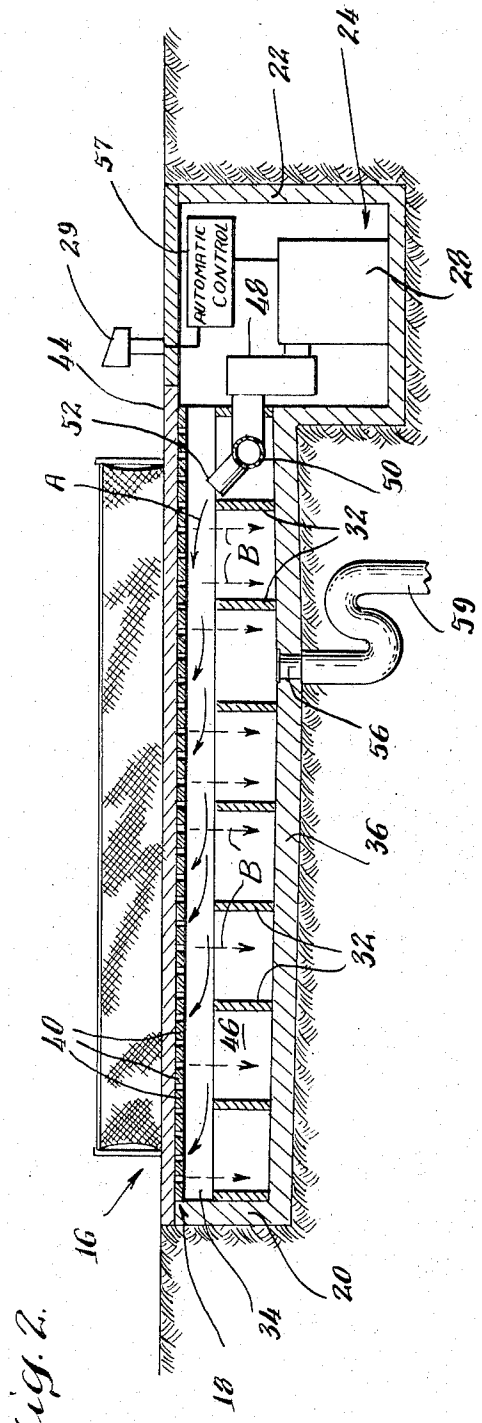

AUTOMATIC CONTROL
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Fig. 2.

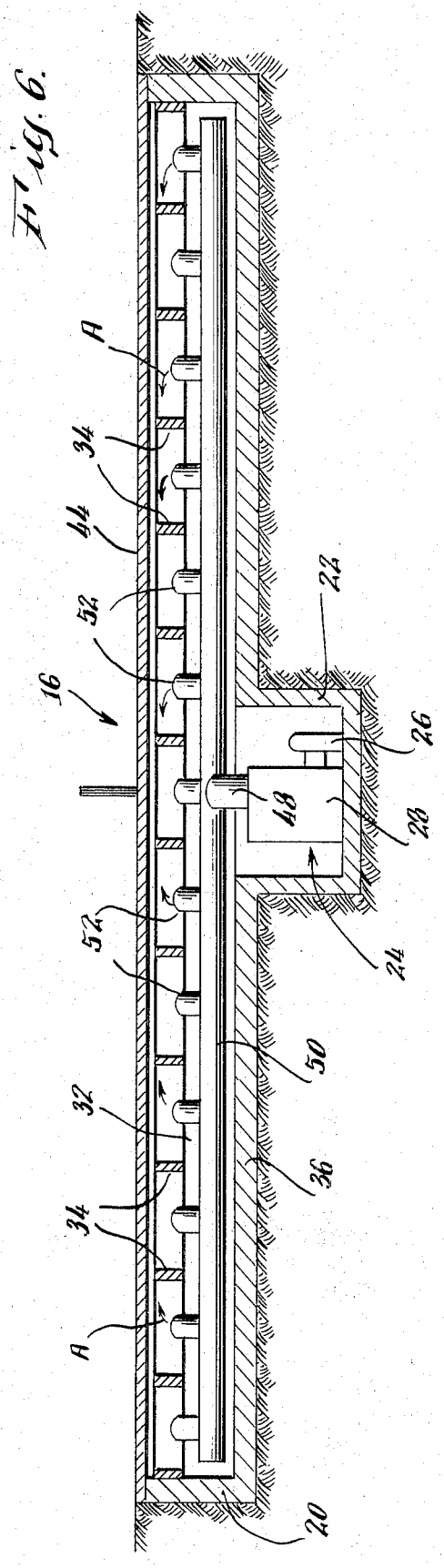

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Fig. 6.

Fig. 3.

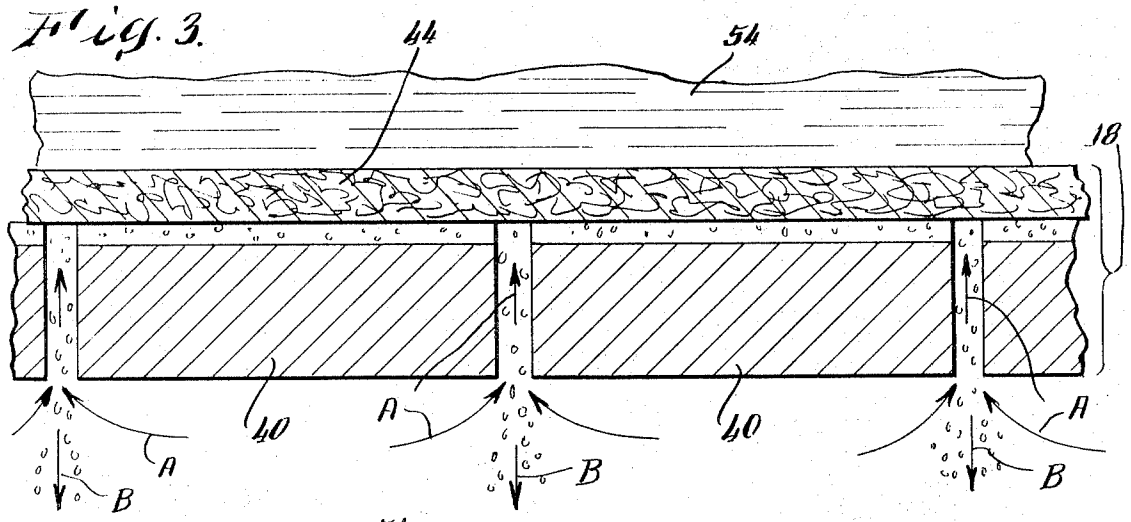


Fig. 4

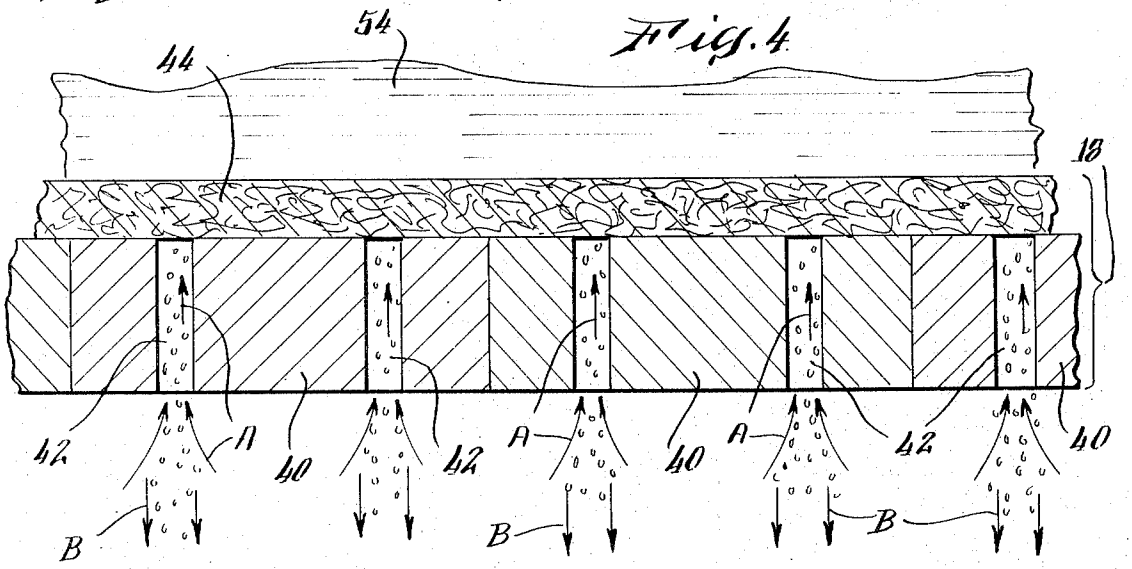
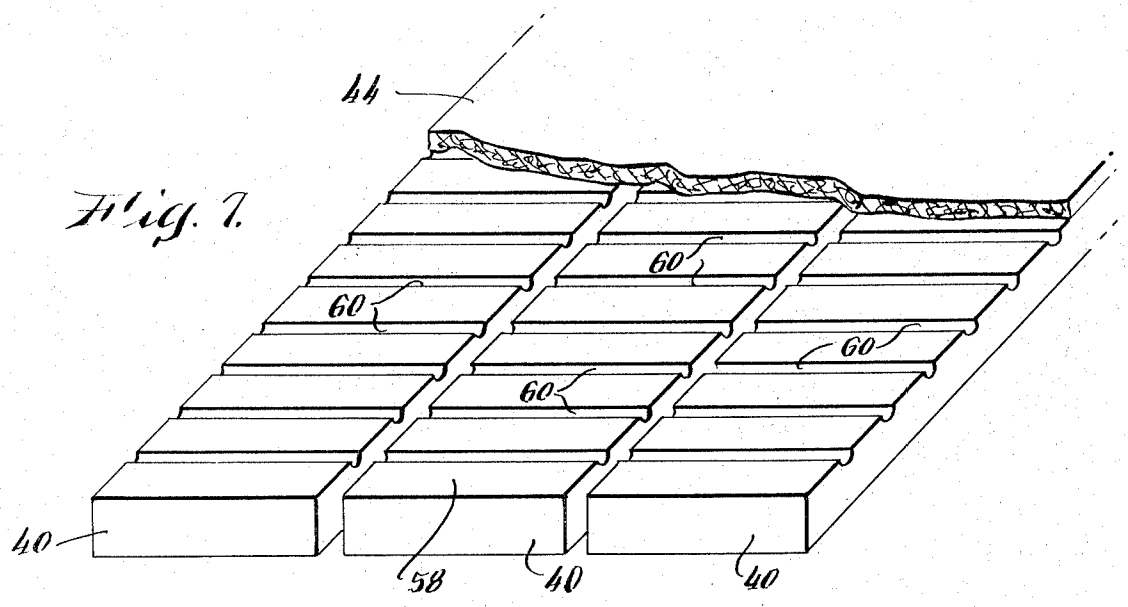


Fig. 7.



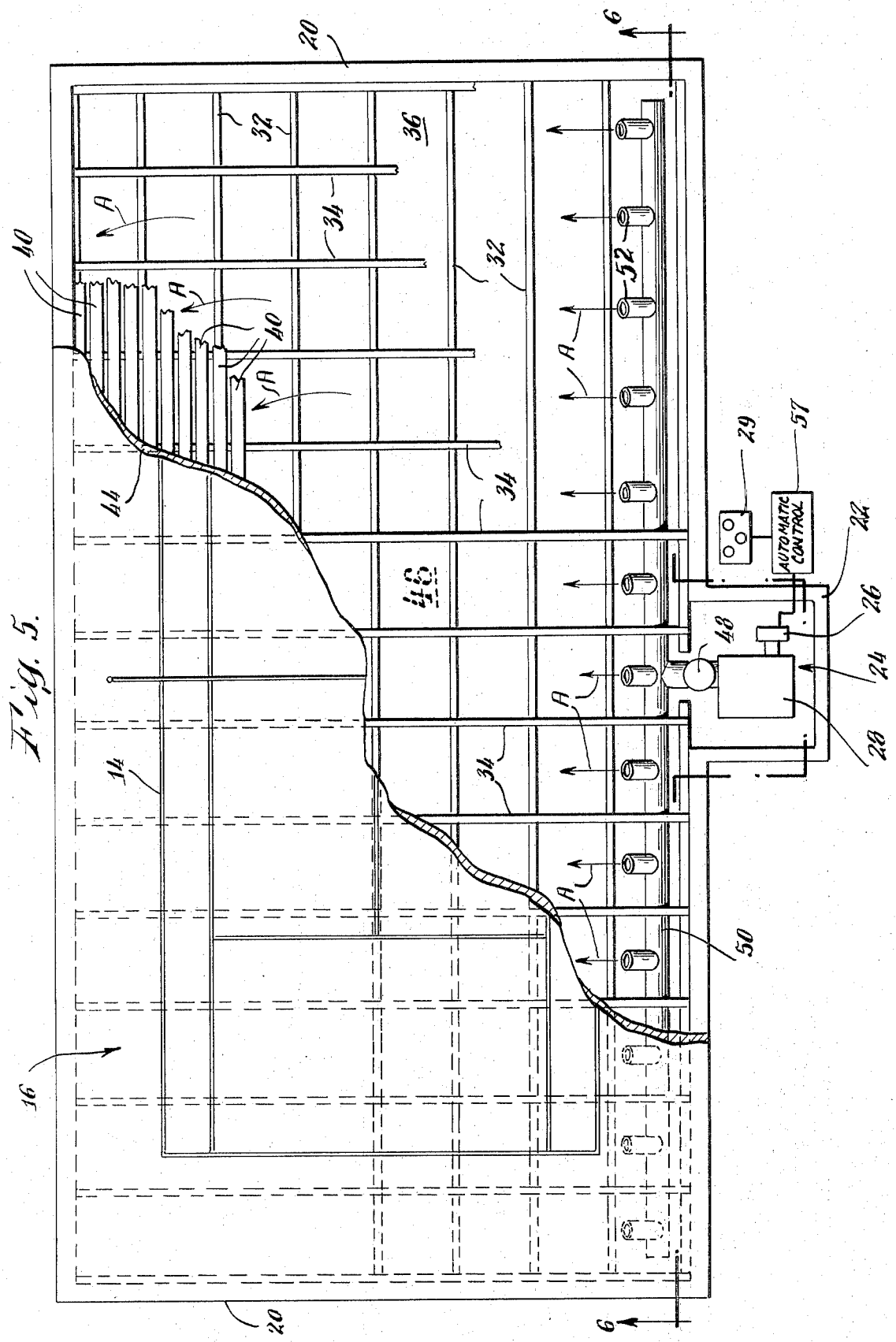

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AUTOMATIC CONTROL
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Fig. 5.

Fig. 9.

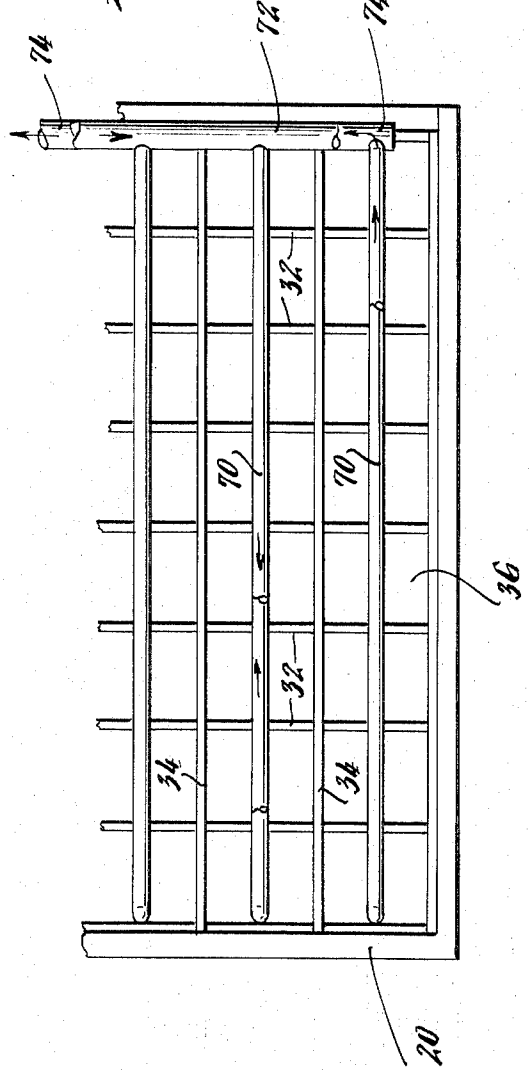
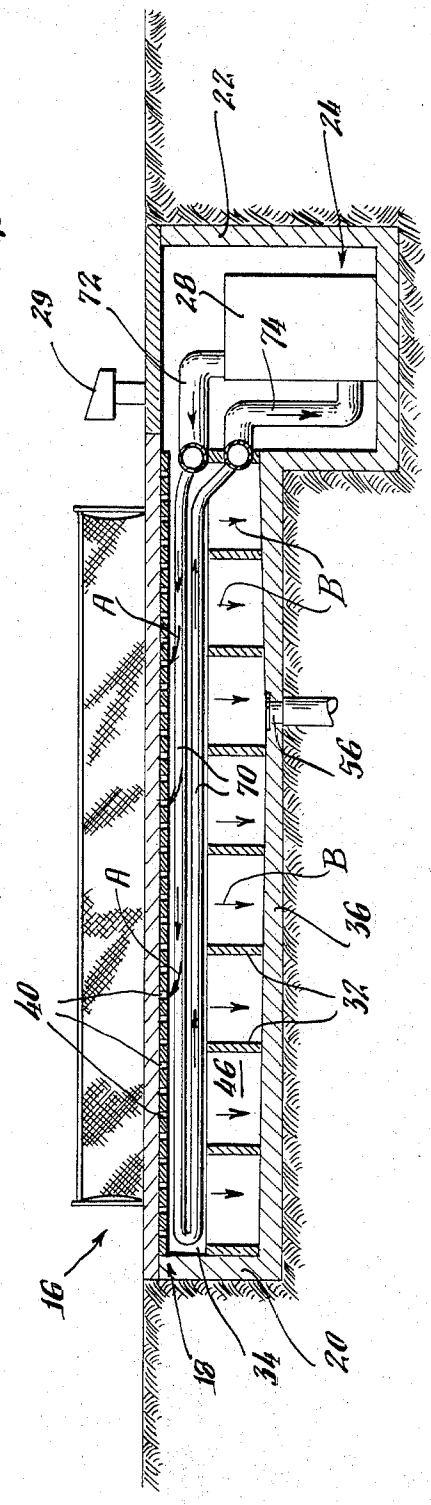

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Fig. 8.


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SYSTEM FOR REMOVING SNOW AND ICE FROM AND FOR SUBSEQUENTLY DRYING AN ATHLETIC PLAYING SURFACE

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to a self snow and ice removing and drying athletic playing surface for year-long use as an outdoor tennis court, basketball court or the like.

Outdoor athletic playing surfaces are used by countless numbers of people who seek to engage in vigorous physical activity in the open air. They are used extensively in municipal parks, on school playgrounds, and at athletic clubs. The increased public interest in physical fitness in general, and in such sports as tennis in particular, has greatly increased use of outdoor athletic facilities. Such outdoor athletic playing surfaces thus are of central importance in the recreational scheme of present public life.

However, outdoor athletic playing surfaces are frequently unusable for a portion of the year because they are often covered by snow. Additionally, they usually take a relatively long period of time to dry after a heavy rain. The ever increasing demand to extend the usable time of athletic playing surfaces makes it desirable to provide a means whereby the surfaces can be quickly freed of snow and subsequently dried of melted snow or rain.

2. Description of the Prior Art

A variety of systems have been previously used for heating and drying athletic playing surfaces and other outdoor surfaces having other uses. Such systems are disclosed in U.S. Pat. Nos. 795,772 to Janney; 1,868,745 to Greimann; 2,505,622 to McKee; 2,634,659 to Jordanoff; 2,918,052 to Budenholzer et al.; 3,069,522 to Jamison; 3,568,924 to Chenault; 3,573,427 to Minsk; and 3,683,152 to Laing. Typical systems designed for this purpose employ a network of air ducts or the like embedded in the surface base composition below the playing surface. Heat is transferred from hot air or other hot gases pumped through the ducts to the surface in order to melt fallen snow.

Other systems pass electric current through the surface composition to warm it and thereby melt fallen snow.

Still other systems attempt to prevent accumulation of snow by, for example, blowing it away before it can collect or by impregnating the surface with a chemical compound to prevent freezing.

Prior art systems of the type generally discussed above are not entirely satisfactory. Those which utilize extensive air duct systems embedded in the playing surface base may be extremely expensive. Additionally, those systems which employ heat exchange units of some kind and thereby conduct heat through the surface base to the playing surface may be inadequate to transfer sufficient heat to the surface in order to quickly melt fallen snow.

Draining and subsequently drying the playing surface may prove difficult with certain systems presently known. Typically, an outdoor athletic field is constructed so that its surface is not level but rather is canted slightly to one side or is crowned being higher at its center than at its periphery. Thus, when snow is melted on such a surface, the snow must drain to the surface periphery. This drainage process can thus be very time consuming and inefficient.

SUMMARY OF THE INVENTION

In the preferred embodiment of the present invention to be described below in detail, the system for automatically removing snow and ice from and for drying an athletic playing surface, suitable for use as a tennis court, basketball court or the like, includes an air impervious foundation which forms the bottom and side wall boundaries of a plenum chamber. A supporting structure is mounted within or on the foundation and comprises an open frame work for supporting beams. Hot gases may flow up through the structure and water may flow down through the structure. A subsurface platform including a series of elongated members such as boards or planks mounted side by side on the supporting structure carries a water permeable web which defines the playing surface. The boards which form the platform are mounted or constructed in such a manner that hot gases can flow up and water can flow down through the platform. For example, the boards may be mounted in spaced relation so that hot gases and water can flow between them. Alternatively, a plurality of holes may be disposed in the boards so that hot gases and water can flow through the platform.

The foundation is covered by the sursurface platform and a resilient web to completely enclose the plenum chamber under the playing surface. In the preferred embodiment, a burner or furnace is associated with the plenum chamber to generate hot gases, namely, the products of combustion, under pressure greater than atmospheric pressure in the chamber. These products of combustion are forced up through the supporting structure, the platform, and the resilient web to melt accumulated snow. As this snow melts it may drain directly through the web, the platform, and the supporting structure into the plenum chamber to finally be disposed of through a suitable drain means. After the snow has melted, the continued up-flow of hot gases dries the playing surface.

This system for automatically removing snow and ice from and for drying an athletic playing surface efficiently and effectively melts snow which may accumulate by directly heating the surface without employing complex heat exchange units embedded in the subsurface base. Further, melted snow and rain are drained directly through the surface rather than flowing to drainage areas at the surface periphery. Finally, the surface is quickly dried immediately after snow is melted and has been drained. All three operations are accomplished with the same system. These advantages and aspects of this self snow removing and drying outdoor athletic surface will be described in greater detail below.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the system for removing snow and ice from and for drying an outdoor athletic playing surface of the present invention, shown used as a tennis court.

FIG. 2 is a cross-sectional view of this system taken through plane 2—2 in FIG. 1 showing diagramatically the heating, draining, and drying mechanism.

FIG. 3 is an enlarged cross-sectional view of a portion of the subsurface platform, the water permeable web,

and a melting layer of snow also showing diagrammatically the heating, draining, and drying mechanism.

FIG. 4 is an enlarged cross-sectional view of a portion of another subsurface platform construction, the resilient, water permeable web, and a melting layer of snow again showing diagrammatically the heating, draining, and drying mechanism.

FIG. 5 is a top plan view of this system partially broken away to show the supporting structure, the furnace and the means for distributing the hot gases.

FIG. 6 is a side view of this system, taken through discontinuous plane 6—6 in FIG. 5, illustrated in cross section also showing the furnace, the supporting structure, and the gas distribution system.

FIG. 7 is an enlarged perspective view of the platform and the web illustrating one platform configuration which facilitates water drainage and surface drying.

FIG. 8 is a cross-sectional view, similar to that shown in FIG. 2, of an alternative embodiment of the present invention.

FIG. 9 is a partial top plan view of the embodiment shown in FIG. 8.

Corresponding reference numerals indicate corresponding structural elements and corresponding characteristics features in each of the respective drawings.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 of the drawings is presented to illustrate the system for removing snow and ice from and for drying an outdoor athletic playing surface of the present invention as it might be used for a tennis court. This outdoor playing surface system by be adapted with equal advantage for use as a basketball court, a handball court, or as a court or field for any other popular outdoor sport in which participants want to engage.

FIG. 2 generally illustrates the mechanism by which the outdoor playing surface system of the present invention is heated to melt fallen snow, drained, and finally dried of excess moisture.

FIGS. 3 and 4 are enlarged illustrations of two different embodiments of the present invention which show in detail the mechanism for heating, draining and drying the outdoor playing surface.

Referring now to FIG. 1, two tennis players, 10 and 12 are shown using outdoor tennis court 14 outlined on an athletic playing surface 16 constructed in accordance with the present invention. This playing surface 16 is built coincident with ground level and may be surrounded by a fence (not shown) or other boundary to confine balls. However, the surface may be built above ground level or below ground level, as will be explained in detail below.

The athletic playing surface includes a water permeable platform 18, constructed above an air impervious foundation 20 which is recessed into the ground in the same way as is a standard foundation for a house or other structure. This foundation 20 defines a plenum chamber described in greater detail below. Furthermore, the foundation may be constructed of concrete, cinder blocks, or other sufficiently rigid materials. In areas where hard clay or other suitable soil exists, the rigid foundation may be omitted and a soil foundation substituted.

Adjacent the foundation 20 is a vault 22 which houses means for generating hot gases. This hot gas generating means is shown in detail in FIG. 5 as a furnace 24 having a burner 26 and a combustion chamber 28. This furnace is adapted to generate products of combustion and force them directly into the plenum chamber. A control panel 29 may be positioned near the court so players may operate the furnance.

A supporting structure 30 is mounted within the plenum chamber defined by the foundation 20 for carrying the water permeable platform 18 at ground level. This supporting structure 30 is constructed so that hot gases may pass up through it at substantially all points underlying the platform 18. The supporting structure 30 may be of any suitable design which permits this upflow of hot gases, but is illustrated here as an open network of beams. This network includes a first series of beams 32, each of which extends the length of the foundation 20 and a second series of beams 34, each of which is mounted at a right angle to the first series and extends the width of the foundation 20. The first beam series is shown mounted on the foundation floor 36 but may be mounted on driven piles or other appropriate supports in installations where a rigid foundation floor is not provided. Hot gases can flow through the spaces between each beam 34 in the second series, over the tops of each beam 32 in the first series.

The water permeable platform 18 comprises a subsurface supporting platform 38 constructed from a series of elongated members shown in the form of planks 40. These planks 40, mounted side by side at right angles to and carried on the second series of beam 34 in the supporting structure 30, may be laterally spaced from one another, as shown in FIG. 3, to permit hot gases to flow up between them and water to drain down between them. The upflow of gas is indicated by arrows A. and the down-drain of water is indicated by arrows B. The spaced feature of the plank mounting permits the subsurface platform to be drained. The spaces between adjacent planks 40 should be sufficiently large to permit free upflow and downdrain of hot gases and water respectively, but yet should be sufficiently small to prevent inefficient heat loss through the inefficient escape of hot gases and to provide substantially uniform, continuous support for the athletic playing surface.

The supporting structure of beams 32 and 34, and the planks 40 may be made from any suitable outdoor construction material such as aluminum, plastic, or creosote treated wood.

An alternative arrangement for making the subsurface platform 38 suitable for permitting upflow and down-drain of hot gases and water is illustrated in FIG. 4. In this arrangement the planks 40 are mounted in abutting side-by-side relation but are provided with multiple holes 42 which provide the desired feature. Again upflow of hot gases is indicated by arrows A and down-drain of water by arrows B.

These holes 42 should also be sufficiently large to provide for free upflow and down-drain of hot gases and water but yet should be sufficiently small to prevent inefficient heat loss through inefficient escape of hot gases and to provide substantially uniform, continuous support for the athletic playing surface.

The water permeable platform 18 further comprises a water permeable, resilient web 44 which overlays the planks 40 which form the subsurface platform 38 to form the final athletic surface upon which the tennis court outline 14 is disposed. This web 44 may be made

of any suitable commercial material which permits the upflow of hot gases and the downdrain of water therethrough. The web **44** should not be moisture absorbant, that is the material from which it is made should be hydrophobic. Also this web **44** is desirably made of a resilient material to provide a playing surface which is comfortable for participants using it. For example, the web may comprise non-woven, needlepunched or other random polymeric fiber web, a plastic or plastic foam sheet and should be sufficiently resilient to permit participants to use the court without developing "shin-splints," and affliction usually associated with athletic play on hard surfaces.

As shown in FIG. **2,** the resilient, water permeable hydrophobic web **44** and subsurface platform **38** enclose the open cavity defined by the foundation **20** to form a plenum chamber **46.** The furnace **24** is disposed in the vault **22** associated with this plenum chamber **46** to generate hot gases, namely, the products of combustion, under pressure greater than atmospheric pressure in the plenum chamber **46.** As shown in FIG. **5,** a blower **48** is provided to force these hot gases under pressure into the plenum chamber **46.** A distribution system may with advantage be provided to uniformly distribute hot gases to all points in the chamber **46.** Such a system, shown in FIGS. **5** and **6,** includes a duct network comprising a longitudinal main duct **50** and laterally directed nozzles **52** positioned between each pair of laterally disposed beams **34.** These nozzles **52** direct hot gases between the beams **34** over the tops of the longitudinally directed beams **32** shown in FIGS. **1** and **5** by arrows A. Means for generating hot gases such as hot air, other than a furnace, may be employed. For example, electrical or radiant heaters may be used.

Any other system appropriate for distributing hot gases to all points in the plenum chamber may alternatively be used. For example, the products of combustion produced by the furnace may be confined and circulated in a sealed duct network mounted within the plenum chamber as shown in FIG. **8.** These closed ducts **70** are fed by the blower **48** from an intake manifold **72** connected to the furnace **24.** The ducts **70** exhaust into an outlet manifold **74** which then returns the now cooled gases to the furnace for reheating. The closed ducts, heated by these products of combustion, then radiantly or conductively heat the air confined within the plenum chamber. As the temperature and pressure of this confined air rises, it is forced up through the porous playing surface to serve the snow removing and surface drying function. The air confined in the chamber can thus be heated and forced up through the playing surface.

Referring now to FIGS. **2** through **6** the mechanism for self snow removing and drying the athletic playing surface of the preferred embodiment of the present invention is illustrated. This mechanism operates as follows: Products of combustion - hot gases - are generated by the furnace **24** under pressure greater than atmospheric pressure. These hot gases are pumped under pressure by the blower **48** through the main distribution duct **50** and out each of the laterally directed nozzles **52.** The hot gases are laterally forced through the plenum chamber **46** under the subsurface platform **38.** The pressurized hot gases are then forced up through the water permeable subsurface platform **38** and the resilient, water permeable, hydrophobic web **44** where they warm accumulated snow and ice indicated at **54** in FIGS. **3** and **4.** These hot gases should, of course, be at temperatures higher than the melting point of water, that is sufficiently high to quickly melt accumulated snow and ice. Circulation and upflow of hot gases are indicated by arrows A.

As the temperature of the snow **54** begins to rise above the melting point of water, the snow **54** begins to melt. As it becomes liquid water, it immediately begins to drain down through the web **44** and subsurface platform **38,** as indicated by arrows B, into the plenum chamber **46.** The foundation floor **36** may advantageously have an inverted conical shape which thereby collects the water and funnels it into the ground through a drain **56** and through similar liquid seals at the periphery of the foundation **20.** The drain should be fitted with means such as a conventional trap **59,** to prevent the escape of air therethrough while permitting water drainage.

The upflow of hot gases through the resilient, water permeable platform **38** and web **44** continues after all snow is melted from the surface in order to dry the surface of excess moisture. The system may be used equally to dry the court after rain even though no snow was present to be melted.

The furnace may be provided with an automatic control device **57** associated with the control panel **29** which monitors the playing surface, to turn the furnace on when a predetermined amount of snow or rain has fallen on that surface, and to turn the furnace off when the snow has been melted and the surface is dry.

As illustrated in FIG. **7,** the upwardly-facing support surface **58** of the planks **40** forming the subsurface platform **38** may be provided with a series of lateral grooves **60.** These grooves reduce the area of contact between the planks **40** and the resilient web **44** and thus facilitate the distribution of hot gases directly to the web. Additionally, the grooves function to collect down-draining water and thereby facilitate the drainage process. The reduced web-platform contact area also speeds surface drying.

Various modifications may be made in the illustrated design while still employing the basic functional features of the illustrated embodiments of the present invention. For example, the furnace is shown mounted in a separate vault at the side of the court. This permits the foundation and consequently the plenum chamber to be of shallow construction as shown in FIGS. **2** and **6.** Such shallow construction reduces the required excavation and hence reduces the cost. Additionally, this design provides easy acess to the furnace without disturbing the playing surface. However, the foundation may be made deeper and the furnace may be mounted directly in the plenum chamber thus formed.

The illustrated embodiment has its foundation recessed into the ground. However, the foundation may be built above ground. In such a case, soil fill may advantageously be built up around the foundation's outer walls to provide added insulation to contain heat radiated by the hot gases.

The self snow removing and drying athletic playing surface system of the present invention provides several beneficial features. First, it heats the athletic playing surface so constructed directly with hot gases which are introduced into a subsurface plenum chamber and then forced up through the playing surface. Therefore, a minimum of heat is lost to the surroundings. Heat need not be conducted through the mass of a subsur-

face base to the playing surface. Second, the water permeable nature of the subsurface platform and web eliminates the need to cant the athletic court from a level attitude. Since the water drains straight downward, drainage is hastened.

Additionally, the construction is relatively simple. Thus costs are reduced.

Although a specific embodiment of the present invention has been disclosed in detail herein, it is to be understood that this is only for purposes of illustration.

I claim:

1. A system for removing snow and ice from and for subsequently drying an outdoor athletic playing surface, said system being suitable for year long use such as an outdoor tennis court, basketball court or the like, and comprising:

a foundation which defines a plenum chamber,

a supporting structure associated with said foundation, said supporting structure being sufficiently porous to permit hot gases to flow up therethrough and water to flow down therethrough,

a water permeable platform means mounted on and supported by said supporting structure, said platform means being sufficiently porous to permit hot gases to flow up therethrough and to permit water to flow down therethrough, said platform means having an upwardly-facing surface which defines said playing surface, said platform means further enclosing said plenum chamber, and

means associated with said plenum chamber for generating hot gases under pressure greater than atmospheric pressure whereby,

hot gases are introduced in said plenum chamber and forced, under pressure greater than atmospheric pressure, up through said supporting structure and said platform means to melt snow and ice on said playing surface, whereby said melted snow or ice is drained down through said platform means and said supporting structure into said plenum chamber, and whereby said playing surface is dried by additional hot gases forced upward through said platform means.

2. The system for removing snow and ice from said for subsequently drying an outdoor athletic playing surface such as a tennis court, basketball court, or the like as claimed in claim **1** wherein said water permeable platform means comprises:

a subsurface platform including a series of elongated members mounted side-by-side in spaced relation on said supporting structure, the spaces between said elongated members being sufficiently large to permit hot gases to flow up therethrough and to permit the flow of water down therethrough yet, being sufficiently small to prevent inefficient heat loss through inefficient loss of the hot gases and sufficiently small to provide substantially uniform continuous support for said playing surface, and

a water permeable hydrophobic web, carried on top of said subsurface platform, and being sufficiently porous to permit the flow of hot gases up therethrough and to permit the flow of water down therethrough, said web forming a continuous, resilient playing surface.

3. The system for removing snow and ice from and for subsequently drying an outdoor athletic playing surface such as a basketball court, tennis court, or the like as claimed in claim **2** wherein each of said elongated members which form said subsurface platform has an upwardly facing support surface for carrying said water permeable web; and wherein each of said members is provided with a series of grooves on said support surface to reduce the area of contact between said web and said supporting surface to aid distribution of the hot gases to the web, to collect water to thereby facilitate water drainage from said playing surface, and to facilitate drying of said playing surface.

4. The system for removing snow and ice from and for subsequently drying an outdoor athletic playing surface such as a tennis court, basketball court or the like as claimed in claim **1** wherein said water permeable platform means comprises:

a subsurface platform including a series of elongated members mounted side-by-side on said supporting structure, each of said elongated members having a plurality of holes disposed therein to provide fluid communication between said plenum chamber and said playing surface, said holes being of sufficient number and size to permit hot gases to flow up therethrough and to permit the flow of water down therethrough while preventing inefficient heat loss through inefficient loss of hot gases and while providing substantially uniform, continuous support for said playing surface, and

a water permeable hydrophobic web, carried on top of said subsurface platform and being sufficiently porous to permit the flow of hot gases up therethrough and to permit the flow of water down therethrough, said web forming a continuous resilient playing surface.

5. The system for removing snow and ice from and for subsequently drying an outdoor athletic playing surface such as a tennis court, basketball court or the like as claimed in claim **4** wherein each of said elongated members which form said subsurface platform has an upwardly-facing support surface for carrying said resilient, water permeable web; and wherein each of said members is provided with a series of grooves on said support surface to reduce the area of contact between said web and said supporting surface to aid distribution of the hot gases to the resilient web, to collect water to thereby facilitate water drainage from said playing surface, and to facilitate drying for said playing surface.

6. The system for removing snow and ice from and for subsequently drying an outdoor athletic playing surface such as a tennis court, basketball court or the like as claimed in claim **1** further comprising:

means for distributing the hot gases generated by said generating means uniformly throughout said plenum chamber to uniformly force the hot gases up through said supporting structure and said platform means.

7. The system for removing snow and ice from and for subsequently drying an outdoor athletic playing surface such as a tennis court, basketball court, or the like as claimed in claim **1** further comprising:

automatic control means for monitoring the amount of snow falling on said playing surface, for starting said hot gas generating means when a predetermined quantity of snow or rain has fallen on said surface and for stopping said hot gas generating means when the snow has been melted and the playing surface is dry.

8. A system for removing snow and ice from and for subsequently drying a surface for use as an outdoor playing court and including:

a horizontal playing platform comprising a porous surface having openings therein large enough to permit hot gases to flow upwardly therethrough and to permit water to pass downwardly therethrough, but small enough to prevent use of said surface for athletic play;

means for supporting said platform,

an enclosed, hot gas retaining chamber positioned below said platform and substantially coextensive therewith said platform defining the upper surface of said chamber; and

a source of heated gases associated with said chamber and capable of supplying heated gases at greater than atmospheric pressure whereby hot gases are generated in said chamber and are forced up through said platform to melt snow and ice on said surface, whereby said melted snow is drained down through said platform into said chamber, and whereby said surface is dried by additional hot gases forced upward through said platform.

9. The system for removing snow and ice from and for subsequently drying a surface for use as an outdoor playing court as claimed in claim 8 wherein said system further includes:

an open duct network, mounted in said chamber, for distributing heated gases originating from said heated gas source throughout said chamber.

10. The system for removing snow and ice from and for subsequently drying a surface for use as an outdoor playing court as claimed in claim 8 wherein said system further includes:

a closed duct network, mounted in said chamber, in which heated gases are confined and circulated to radiantly heat the air confined within said chamber, said heated air being forced up through said platform to melt snow and ice on said surface and to subsequently dry said surface.

11. In a system for removing snow and ice from and for subsequently drying an outdoor surface wherein said system comprises:

a foundation which defines a plenum chamber,

a supporting structure associated with said foundation for supporting said surface, the improvement in said system including,

a water permeable platform means mounted on and supported by said supporting structure, and forming said surface, said platform means being sufficiently porous to permit hot gases to flow up therethrough and to permit water to flow down therethrough, said platform means having an upwardly-facing surface which defines said surface, said platform means further enclosing said plenum chamber, and

means associated with said plenum chamber for generating hot gases under pressure greater than atmospheric pressure for forcing hot gases up through said water permeable platform means, and for subsequently draining water down through said platform means to remove snow and ice from and to subsequently dry said surface.

* * * * *

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,818,892 Dated June 25, 1974

Inventor(s) HENRY VON KOHORN

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 3, line 34 "by" should read --may--.

Column 5, line 12 "and" should read --an--.

Column 9, line 8 insert --not-- between "enough" and "to".

Signed and sealed this 8th day of October 1974.

(SEAL)
Attest:

McCOY M. GIBSON JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents

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