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AUTOMATIC APPARATUS FOR COVERING FIELDS, IN PARTICULAR SPORTS PITCHES.

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Description

Technical Field

The present invention relates to an automatic apparatus for covering fields, particularly sports pitches.

Background Art

As known, in the case of inclement weather, it becomes necessary in order to guarantee good continuation of sporting events, to effect preventative covering of the terrain on which the athletes must perform.

That requirement is greatly felt in the practice of (football) soccer, in that when the pitch becomes soaked with water, the athletic capacity of the players is altered and, due to the studs which protrude from the sole of the particular type of footwear, the grassed covering incurs onerous damage which takes a long time to repair.

In order to overcome the above mentioned problems, use has been made of large-size sheets made of plastic material which are laid as a single body, in the event of precipitation, over the entire pitch, and are then removed at the start of the game.

These sheets however have given rise to various inconveniences which render their use problematical, among which inconveniences is the low resistance of the materials used due to the various folding and unfolding thereof, and above all, the difficulty in manoeuvring due essentially to the large dimensions and inherent weight, which compulsorily necessitates a large number of personnel and, in the case of removal, procedures must be effected long before the start of the game in order to allow sufficient working time to carry out the long operations.

This latter negative factor partly renders the use of such sheets as being of no avail due to the exposure of the terrain to the inclement weather during the working time.

US-A-4,399,954 discloses an apparatus for covering fields with large sections of artificial turf, with the turf being wound on a roll. The known apparatus provides for winding/unwinding means, including a motor which activates the two drive rollers and supporting the unwound roll and a winch. However, folding and unfolding of the turf roll entails serious problems due to the large dimension of the turf involved and its inherent weight.

The aim of the present invention is to overcome the above-mentioned problems by providing an automatic apparatus for covering fields, in particular sports pitches, which is easy to use, rapid in function, and which does not require the presence of a large number of personnel.

Within the above aim, a scope of the invention is

to provide an automatic apparatus for covering fields, in particular sports pitches, which permits the arrangement of a large space, visible even from as great distance, on which can be placed messages such as publicity.

This aim and object, as well as other objects which will, become apparent hereinafter are achieved by an apparatus for covering fields, in particular sports pitches, as defined in the accompanying claims.

Further features and advantages of the invention will become apparent from the following description of a preferred but not exclusive embodiment of apparatus for covering fields, in particular sports pitches, illustrated in the following illustrative, non-limitative drawing figures wherein:

Figure 1 is a schematic longitudinal sectional view of a football (soccer) pitch, with means for winding and/or unwinding strips arranged at opposite sides thereof;

Figure 2 is a schematic view of a portion of a strip which is partially cut-away to show the interior thereof;

Figure 3 illustrates a second possible embodiment of the means for winding and/or unwinding the strips;

Figure 4 is a schematic view of a sports pitch in the phase of partial covering.

WAYS OF CARRYING OUT THE INVENTION

With particular reference to the drawing figures, the reference numeral 1 designates the automatic apparatus for covering fields 2, in particular sports pitches, and comprises a sheet 3 constituted by a plurality of modular strips 4, each equipped with thermal heating devices essentially constituted by short circuit inductive resistances defining interconnected members 5, made of metal net having a mesh which can be electrified and being inserted "sandwich-like" between two sheets of elastic-plastic material constituting each of the strips 4.

The strips are activatable and slideable with respect to each other through winding and/or unwinding means 6, concealably housed in respective pits 7, parallel to the sides of the pitch 2.

Said means 6 comprise, at a first side of said pitch, a plurality of pulleys 8 located at each of the strips 4 and being motorized in rotation by a plurality of synchronously activatable motors-motor reducers 9 provided with clutch devices, not illustrated in the drawing figures, for disengagement purposes. On the pulleys 8 are wound cables 10 or the like which can be coupled at their free end 4a of each strip 4.

At the side opposite to the first side of the pitch 2, said means 6 are constituted by a series of drums 11 keyed to parallel, horizontal shafts 12, which are rotatably motorized with respective members 13.

The drums 11 are placed in contact engagement

with underlying pairs of rollers 14 having axes parallel to the axes of the drums, on which are wound the strips 4 and which are preferably keyed to two parallel horizontal shafts arranged, when viewed in plan, in a staggered manner.

The use of the invention can be deduced from the preceding description. When it is desired to use the sports ground 2, which may be for instance a football (soccer) pitch, each strip 4 is wound on its respective drum 11, located in a concealed manner in a corresponding pit 7 provided with a protective cover 15, so as not to constitute a danger for players who run out of the area of play.

At the end of the game, or during the interval between play, if the ground needs to be protected from inclement weather, one or more operators manually hook the cables 10 to the ends 4a of the strips 4, and successively actuate the motors-motor reducers 9 which rotatively drive the pulleys 8, either directly if the pulleys are keyed to the vertical drive shafts of the motors, or through transmissions 16, in the instance that these are supported on horizontally rotatable shafts.

The cables 10 are thus wound onto the pulleys 8 and entrain, preferably in the transverse direction of the pitch 2, all of the strips 4 until they constitute the sheet 3 covering the entire pitch 2. During that phase, it is advantageous to be able to arrange on the visible surface of the sheet 3, publicity messages, which will thus be displayed before a multitude of spectators, as well as any television filming equipment which may be present.

When it is desired to re-commence use of the pitch 2 by the players, operators unhook the cables 10 from the ends 4a of the strips 4, which are wound onto the drums 11 and maintained on the drums in a correct position, without any undesired folding due to the friction caused by the inherent weight of the strips resting on the ground and by contact engagement with the two rollers 14 which, according to one aspect of the invention, can be motorized to activate the drums 11 whilst, according to another aspect of the invention, the drums themselves are provided with activation motors-motor reducers 17 and the pairs of rollers 14 are idly, rotatably supported.

Throughout the time when the sheet 3 is laid on the pitch 2, an energy source can be connected via the terminals 18 to the net members 5, to cause heating of the mesh of the net and consequent heating of the surface of the pitch 2 which, when soaked, will tend to dry rapidly.

It should be noted that the particular staggered arrangement of the drums 11 allows the strips 4 to be arranged in reciprocal contact engagement to eliminate gaps defined between the housings of the motors 13.

Thus, the invention achieves the proposed aim and objects.

The invention described herein is susceptible to numerous modifications and adaptations, all falling within the purview of the instant inventive concept. Thus, for example, the layers of material constituting each strip could, for summer use, be perforated to allow rapid evaporation of humidity.

Furthermore, all of the details may be substituted by other technically equivalent elements.

In practice, any materials and dimensions may be used without departing from the protective scope of the following claims.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included just for the sole purpose of increasing intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the scope of each element identified by way of example by such reference signs.

Claims

1. Apparatus for covering fields, in particular sports pitches, comprising a cover sheet (3) having slightly greater dimensions than the field (2) to be covered and winding and/or unwinding means (6) concealably insertable into pits (7) formed externally with respect to the field (2), proximate to opposite sides thereof, CHARACTERIZED IN THAT said cover sheet (3) consists of a plurality of modular strips (4) each being activated by said winding and/or unwinding means (6), each modular strip (4) being slideable parallel with respect to its adjacent strips, each said modular strip (4) being constituted by two sheets of elastic-plastic material, thermal heating devices (5) being provided to each said modular strip (4), said thermal heating devices (5) comprising short circuit inductive resistances (5) defining net members having connected therebetween a mesh which can be electrified and inserted between said two sheets of elastic-plastic material, wherein the visible side of said cover sheet (3) is adapted for the application of publicity messages.

2. Apparatus for covering fields according to claim 1 characterized in that said winding and/or unwinding means (6) for said modular strips (4) comprise, at a first side of the field (2), a plurality of pulleys (8) located at each said modular strip (4) and being rotatively activated by motor means (9) located in respective pits (7), said motor means (9) being adapted for winding cables (10) or the like, connectable to each said modular strip (4), said winding and/or unwinding means (6) further comprising at a side opposite to said first side a series of drums (11) located in respective further pits (7), said drums (11) being adapted for winding the modular strips (4) and being keyed to parallel and horizontal shafts (12), rotatively motorized with relative members (13) and

placed in contact with pairs of rollers (14) located beneath and parallel to said drums (11).

3. Apparatus for covering fields according to claim 2, characterized in that said motor means (9) for motorizing the pulleys (8) comprise a plurality of motor-motor reducers (9), synchronously activatable and provided with clutch disengagement means.

4. Apparatus for covering fields according to one or more of the preceding claims, characterized in that said drums (11) are arranged, when viewed in plan, mutually parallel and alternately staggered with terminal sections arranged in pairs in parallel vertical planes.

5. Apparatus for covering fields according to one or more of the preceding claims, characterized in that said pulleys (8) have vertical rotation axes.

6. Apparatus for covering fields according to one or more of the preceding claims, characterized in that said pulleys (8) have parallel horizontal rotation axes connected to said motor means (9) through transmission means.

7. Apparatus for covering fields according to one or more of the preceding claims, characterized in that said drums (11) are driven and said pairs of rollers (14) are idle.

8. Apparatus for covering fields according to one or more of the preceding claims, characterized in that said drums (11) are idle and said pairs of rollers (14) are driven.

Patentansprüche

1. Vorrichtung zum Abdecken von Feldern, insbesondere von Sportplätzen, mit einer Abdeckfläche (3) mit etwas größeren Abmessungen als das abzudeckende Feld (2) und mit Aufwickel- und Abwickelmitteln (6), die verdeckt in Schächte (7) einführbar sind, welche außerhalb des Feldes (2) benachbart zu gegenüberliegenden Seiten desselben ausgebildet sind, dadurch gekennzeichnet, daß die Abdeckfläche (3) eine Mehrzahl von modularen Streifen (4) aufweist, die jeweils durch die Aufwickel- und/oder Abwickelmittel (6) betätigt werden, wobei jeder modulare Streifen (4) parallel in bezug auf die benachbarten Streifen verschiebbar ist und wobei jeder modulare Streifen (4) von zwei Schichten aus elastisch-plastischem Material gebildet ist, wobei Thermoheizrichtungen (5) für jeden modularen Streifen (4) vorgesehen sind, wobei die Thermoheizrichtungen (5) Kurzschaltinduktivwiderstände (5) aufweisen, die Netzglieder definieren, welche zwischen sich ein Netz verbunden haben, das elektrifiziert und zwischen die beiden Schichten aus elastisch-plastischem Material eingeführt werden kann, wobei die sichtbare Seite der Abdeckfläche (3) für die Anzeige öffentlicher Mitteilungen ausgebildet ist.

2. Vorrichtung zum Abdecken von Feldern nach

Anspruch 1, dadurch gekennzeichnet, daß die Aufwickel- und Abwickelmittel (6) für die modularen Streifen (4) auf einer ersten Seite des Feldes (2) eine Mehrzahl von Riemenscheiben (8) aufweisen, die an jedem modularen Streifen (4) angeordnet sind und drehbar durch Motormittel (9) betätigt werden, welche in entsprechenden Schächten (7) angeordnet sind, wobei die Motormittel (9) für Wickelkabel (10) oder dgl. ausgerüstet sind, welche mit jedem modularen Streifen (4) verbindbar sind, wobei die Aufwickel- und/oder Abwickelmittel (6) außerdem an einer zur ersten Seite entgegengesetzten Seite eine Reihe von Trommeln (11) aufweisen, die in entsprechenden weiteren Schächten (7) angeordnet sind, wobei die Trommeln (11) zum Aufwickeln der modularen Streifen ausgerüstet sind und auf parallelen und horizontalen Wellen (12) festgeklemmt sind, die drehbar mit Relativelementen (13) angetrieben und in Kontakt mit Paaren von Rollen (14) angeordnet sind, die unterhalb und parallel zu den Trommeln (11) angeordnet sind.

3. Vorrichtung zum Abdecken von Feldern nach Anspruch 2, dadurch gekennzeichnet, daß die Motormittel (9) zum Antreiben der Riemenscheiben (8) eine Mehrzahl von Motor-Motor-Untersetzungsgetriebenen (9) aufweisen, die synchron betätigbar und mit Entkopplungsmitteln versehen sind.

4. Vorrichtung zum Abdecken von Feldern nach einem oder mehreren der vorangehenden Ansprüche, dadurch gekennzeichnet, daß die Trommeln (11) in der Ebene betrachtet beiderseits parallel angeordnet und abwechselnd versetzt mit Endbereichen angeordnet sind, die paarweise in parallelen vertikalen Ebenen angeordnet sind.

5. Vorrichtung zum Abdecken von Feldern nach einem oder mehreren der vorangehenden Ansprüche, dadurch gekennzeichnet, daß die Riemenscheiben (8) vertikale Drehachsen aufweisen.

6. Vorrichtung zum Abdecken von Feldern nach einem oder mehreren der vorangehenden Ansprüche, dadurch gekennzeichnet, daß die Riemenscheiben (8) parallele horizontale Drehachsen aufweisen, die mit den Motormitteln (9) durch Transmissionsmittel verbunden sind.

7. Vorrichtung zum Abdecken von Feldern nach einem oder mehreren der vorangehenden Ansprüche, dadurch gekennzeichnet, daß die Trommeln (11) angetrieben werden und daß die Paare von Rollen leerlaufen.

8. Vorrichtung zum Abdecken von Feldern nach einem oder mehreren der vorangehenden Ansprüche, dadurch gekennzeichnet, daß die Trommeln (11) leerlaufen und daß die Paare von Rollen (14) angetrieben werden.

Revendications

1. Appareil pour recouvrir des terrains, en particu-

lier de sport, comprenant une feuille de couverture (3) possédant des dimensions légèrement supérieures à celles du terrain (2) à recouvrir et des moyens d'enroulement et/ou de déroulement (6) insérable de façon cachée dans des trous (7) formés à l'extérieur du terrain (2), à proximité de ses côtés opposés, appareil caractérisé en ce que ladite feuille de couverture (3) est constituée de plusieurs bandes modulaires (4) actionnées chacune par lesdits moyens d'enroulement et/ou de déroulement (6), chaque bande modulaire (4) pouvant coulisser parallèlement à ses bandes adjacentes, chacune desdites bandes modulaires (4) étant constituées de deux feuilles de matière plastique élastique, de dispositifs de chauffage (5) prévus sur chacune desdites bandes modulaires (4), lesdits dispositifs de chauffage (5) comprenant des résistances inductives de court-circuit (5) définissant des pièces de filet dont une maille interconnectée peut être électrifiée et insérée entre lesdites deux feuilles de matière plastique élastique, le côté visible de ladite feuille de couverture (3) étant prévue pour l'application de messages publicitaires.

2. Appareil pour recouvrir des terrains selon la revendication 1, caractérisé en ce que lesdits moyens d'enroulement et/ou de déroulement (6) pour lesdites bandes modulaires (4) comprennent, sur un premier côté du terrain (2), plusieurs poulies (8) situées sur chacune desdites bandes modulaires (4) et étant entraînées en rotation par des moteurs (9) situés dans des trous respectifs (7), lesdits moteurs (9) étant prévus pour enrouler des câbles (10) ou similaires raccordables à chacune desdites bandes modulaires (4), lesdits moyens d'enroulement et/ou de déroulement (6) comprenant de plus, sur un côté opposé audit premier côté, une série de tambours (11) situés dans des trous supplémentaires respectifs (7), lesdits tambours (11) étant prévus pour enrouler les bandes modulaires (4) et étant clavetés sur des arbres horizontaux parallèles (12), entraînés en rotation avec des pièces attenantes (13) et placés en contact avec des paires de rouleaux (14) situés en dessous et parallèles audits tambours (11).

3. Appareil pour recouvrir des terrains selon la revendication 2, caractérisé en ce que lesdits moteurs (9) entraînant les poulies (8) comprennent plusieurs motoréducteurs (9) activables en synchronisme et munis de débrayages.

4. Appareil pour recouvrir des terrains selon l'une quelconque des revendications précédentes, caractérisé en ce que lesdits tambours (11) sont placés, en vue en plan, parallèles mutuellement et échelonnés alternativement, leurs extrémités étant rangées par paires dans des plans verticaux parallèles.

5. Appareil pour recouvrir des terrains selon l'une quelconque des revendications précédentes, caractérisé en ce que lesdites poulies (8) possèdent des axes de rotation verticaux.

6. Appareil pour recouvrir des terrains selon l'une

quelconque des revendications précédentes, caractérisé en ce que lesdites poulies (8) possèdent des axes de rotation horizontaux et parallèles, raccordées audits moteurs (9) via des transmissions.

7. Appareil pour recouvrir des terrains selon l'une quelconque des revendications précédentes, caractérisé en ce que lesdits tambours (11) sont entraînés et lesdites paires de rouleaux (14) sont montés fous.

8. Appareil pour recouvrir des terrains selon l'une quelconque des revendications précédentes, caractérisé en ce que lesdits tambours (11) sont montés fous et lesdites paires de rouleaux (14) sont entraînés.



