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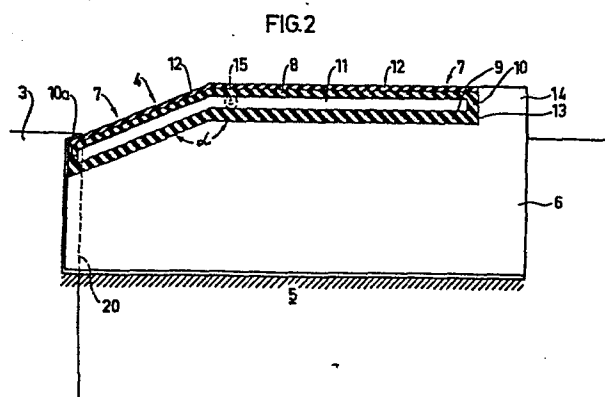
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54 Overstep recording device.

57 A device for use in connection with sports and athletics exercise for recording overstep in relation to a predetermined reference line, which may be a start line or a take-off line for measuring the length of a jump or throw. The device comprises a step cushion (7), which is located in direct connection to said reference line (20) and extends along said line, and which airtight encloses a cavity (11) of a definite volume provided with air of a predetermined pressure, and which is capable upon being loaded on its upper surface to instantaneously reduce the volume of said cavity (11) for obtaining a pressure increase, and a pressure indicator (17) is connected to said cavity (11) which in response to such pressure increase initiates a signal member (18) to emit an optic and/or acoustic signal.



Overstep recording device

This invention relates to a device for recording oversteps in connection with the exercise of sports in the form of, for example, long jump, hop-step-and jump, javelin throwing and the like.

At long jump and hop-step-and jump, for example, a so-called overstep bank is used for the control of oversteps. Said bank consists of a marking board located in direct connection to the take-off board and provided with a flat, smooth strand of plasteline, model clay or similar easily pliable material. The plasteline strand, with a total width of about 2 dm, extends at an angle of 30° upward from the edge of the take-off board which is the leading edge in the jump direction and is then in parallel with the upper surface of the take-off board. The plasteline strand can be laid on a hard, not removable support or on a removable so-called plasteline board.

When a jumper steps over, the overstep is recorded in the form of a mark in the smoothly formed plasteline surface. When the overstep is substantial, there is no problem for the officials to decide that overstep has occurred. When, however, the overstep is minute, it can in many cases be very difficult for the officials to decide whether or not overstep has occurred. It is, therefore, necessary at competitions to have several officials for making the decision whether overstep has occurred or not.

When an overstep has occurred, the plasteline strand must be restored to its smooth original state. This requires time and, therefore, competitions in long jump and hop-step-and hop require relatively long time to perform, which implies for the spectators many and long uninteresting breaks. When several loose plast-

eline boards are available, they can be shifted, and a plasteline strand deformed by overstep can be restored during the next jump and then be exchanged against the next plasteline strand deformed by overstep.

This known technique of marking and recording oversteps also involves the disadvantage, that the spectators at the same time as the jump is carried out cannot decide whether the jump is okay or not, but must wait for the judgment by the officials. This disadvantage also contributes to the fact that, for example, long jump and hop-step-and hop competitions are not so attractive and engaging for the spectators.

The present invention, therefore, has the object to provide a device for overstep recording, which does not show the aforesaid disadvantages, but renders it possible, even for the spectators, to safely and directly record whether overstep has occurred or not, and which does not require any restoring work after an overstep, but rather permits a stream of jumps.

This object is achieved in that the device according to the present invention has been given the characterizing features defined in the attached claims.

The invention is described in greater detail in the following with reference to the accompanying drawings, in which Fig. 1 is a schematic horizontal view of a long jump grounds equipped with the device according to the invention, and Fig. 2 is on an enlarged scale a section substantially along the line II-II in Fig. 1.

In Fig. 1, the numeral 1 designates a run path for long jump, and 2 designates a jumping pit. In the run path, 1, at the intended distance from the jump pit 2, a take-off board 3 is located. An overstep ramp 4 according to the present invention is provided in the jumping direction directly after the take-off board 3.

The overstep ramp 4 comprises a carrier 6 of rigid, i.e. non-resilient or inflexible material, for example wood, which is detachably attached on a rigid support 5 (Fig. 2), and a step cushion 7, which is rigidly connected to the angularly designed upper surface of the carrier. According to the present international regulations said angle α is 150° , i.e. the portion of the step cushion as well as of the carrier located closest to the take-off board 3 extends upward from the take-off board 3 at an angle of 30° in relation to the horizontal plane and then is in parallel with said plane.

The step cushion 7 comprises an upper elastic tight layer 8 of rubber or similar elastic material with high airtightness, i.e. a material which is not air-permeable, and a bottom layer 9 of the same material as in the upper tight layer 8 or of stiff airtight rubber or other comparable material which is not air permeable. These layers or parts 8,9, by overall wall portions 10 of the same material as in the tight layer or bottom layer, are designed in one single piece or connected to each other and form between themselves an air gap 11. The step cushion 7 is provided on its upper surface with a wear surface 12 of rubber coated with friction agent, which can form a separate layer rigidly connected to the tight layer 8 or constitute an integrated part of the tight layer 8, in order, especially at rainy weather, to prevent the jumper from slipping or sliding in some other way against the overstep ramp 4, even at substantial overstep.

The step cushion 7 preferably should be located so on its carrier 6, that it rests with its edge 13 remote from the take-off board 3 against a shoulder 14 formed on the carrier 6. The upper surface of said shoulder should be on the same level as the wear surface 12 of the step cushion or on a slightly lower level than the same.

According to the present invention, in one short side of the step cushion a stop valve 15, shown only schematically in the drawing, is located and connected to the air gap 11. Said valve is connected through an airtight line 16 (Fig. 1) to a pressure indicator 17, to which a signal member 18 is coupled which is connected to the mains or a battery. Upon sensing a pressure increase in the step cushion 7, said signal member 18 emits an optic and/or acoustic signal. In the drawings the signal member 18 is shown in the form of a signal lamp emitting an optic signal in the form of red light. The signal member, of course, can have any other suitable form, provided that the signal emitted thereby for marking overstep can be recorded and be seen and/or heard by the spectators. It is also possible to provide as an extra signal member a manometer or the like, which records the pressure at overstep, and which has a pointer remaining in the position of deflection, and which, thus, at least approximately can indicate the degree of overstep, i.e. whether the overstep is minute or substantial.

The pressure increase required for the pressure indicator 17 to cause the signal member 18 to emit a signal, arises as soon as a jumper contacts with the shoe the step cushion 7. The upper surface of said cushion thereby is subjected to a load, which presses together the air gap 11 in the step cushion 7, and thereby the air pressure in the air gap 11 increases. The increased air pressure in the air gap 11 of the step cushion is sensed by the pressure indicator 17, which in its turn causes the signal lamp 18 to light. The lamp by its red light shows directly to the jumper, the officials and the spectators, that the jump carried out last is not okay due to overstep.

The air gap 11 in the step cushion 7 has a predetermined pressure. In order to be able to control that this pressure does not change during a competition, a pressure gauge (not shown) is located in a suitable place between the cushion 7 and pressure indicator 17. Said latter preferably can be equipped with such a pressure gauge, and if the air pressure should change during the competition, it can be corrected either by supplying additional air, for example by means of a pump, or by tapping air via the stop valve 15 or by calibrating the pressure indicator.

The overstep ramp 4 comprised in the device according to the invention, as already mentioned, is removable and can abut directly to the edge side 20 of the take-off ramp which faces toward the jumping pit 2 and in Fig. 2 partially is marked by a dashed line. Said edge side also is the reference line, from which the length of the jump is measured. Said overstep ramp also may be recessed into the take-off board 3 a distance, which substantially corresponds to the thickness of the wall portion 10a (Fig. 2) of the step cushion.

The present invention is not restricted to what is set forth above and shown in the drawings, but can be altered and modified in many different ways within the scope of the invention idea defined in the attached claims. Overstep also is to be understood as false start at competitions with flying start or standing start, where the runners must not pass a reference line, i.e. a start line, before start signal is given. The overstep ramp according to the invention has been shown to be straight in the drawings, But it may also be arched so as to fit a shot putter and hammer throwing ring.

Claims

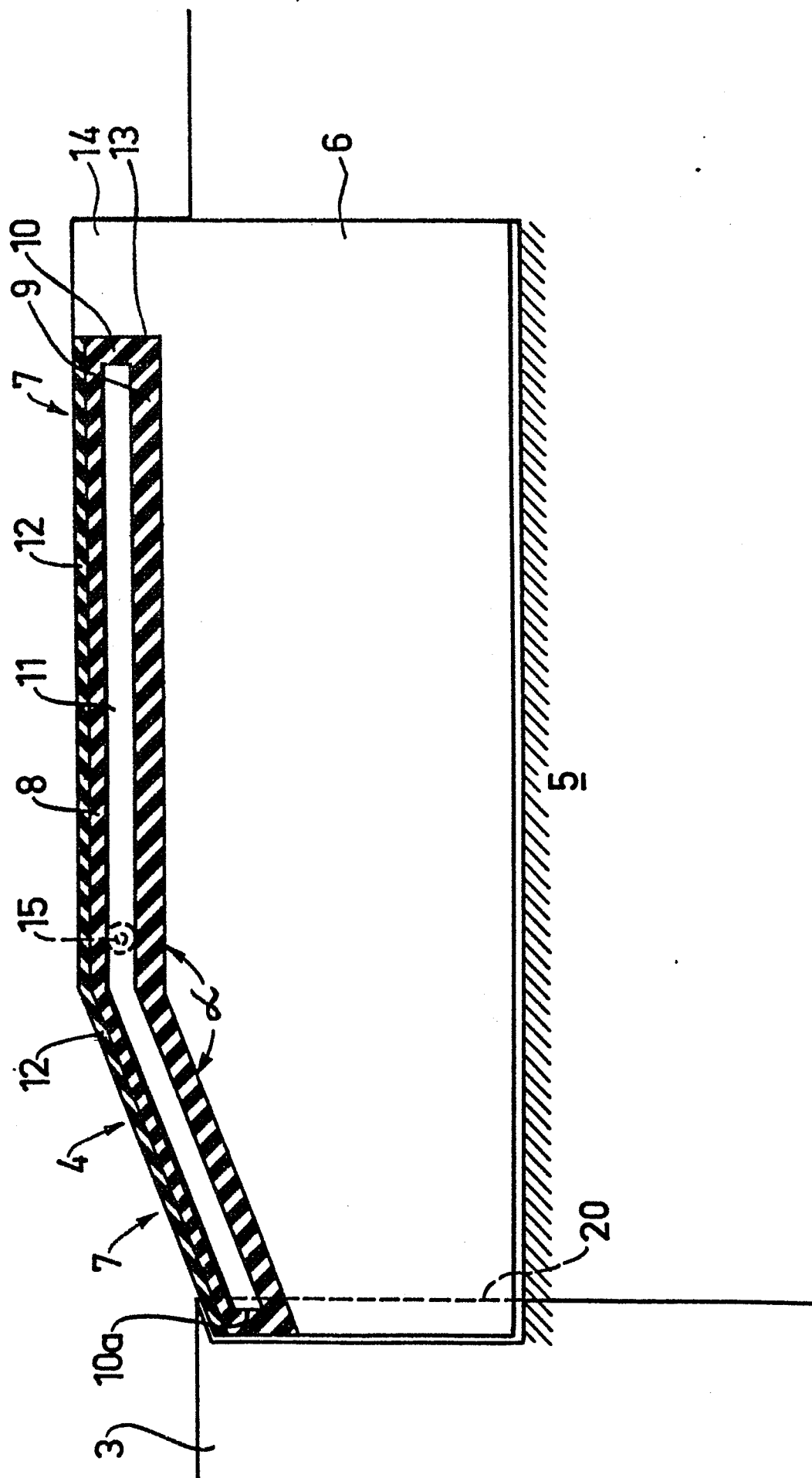
1. A device for recording overstep in relation to a predetermined reference line, characterized in that in direct connection to said reference line (20) and extending along said line a step cushion (7) is located, which includes airtight a cavity (11) of a definite volume, which is provided with air of a predetermined pressure, and which is capable upon being loaded on its upper surface to instantaneously reduce the volume of said cavity (11) for obtaining a pressure increase, a pressure indicator (17) connected to said cavity (11), which in response to such pressure increase initiates a signal member (18) to emit an optic and/or acoustic signal.
2. A device as defined in claim 1, characterized in that said step cushion (7) is located on a carrier of rigid material.
3. A device as defined in claim 1 or 2, characterized in that the step cushion (7) is provided on its upper surface with a friction increasing agent.
4. A device as defined in any one of the preceding claims, characterized in that the air cavity of the step cushion is located between an upper elastic tight layer (8) of airtight rubber and a bottom layer (9) of airtight rubber, which layers by overall wall portions (10) of the same material as in the tight or bottom layer are connected to each other.
5. A device as defined in any one of the preceding claims, characterized in that the signal member is a sound or light transmitter (18) connected to the mains or a battery.

6. A device as defined in any one of the preceding claims, characterized in that the pressure indicator (17) is connected to the step cushion (7) via a stop valve (15).

The diagram shows a mechanical assembly with the following components and features:

- 1**: A large rectangular block on the left side.
- 2**: A large rectangular block on the right side.
- 3**: A bracket indicating a section of the assembly.
- 4**: A bracket indicating a section of the assembly.
- 15**: A small rectangular component.
- 16**: A small rectangular component.
- 17**: A circular component with a sun-like symbol.
- 18**: A small rectangular component.
- II**: Two labels with arrows pointing to specific points on the assembly.
- III**: A label with an arrow pointing to a specific point on the assembly.
- IV**: A label with an arrow pointing to a specific point on the assembly.

FIG. 2





DOCUMENTS CONSIDERED TO BE RELEVANT			EP 83850152.6
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)
A	FR - A1 - 2 299 047 (GONZALEZ) * Totality *	1,5	A 63 B 5/00 A 63 B 71/06
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A	DE - A - 1 578 536 (BURKARD) * Totality *	1,5	
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A	DE - A1 - 2 852 337 (MICHELIN) * Page 8, lines 16-20 *	1	

			TECHNICAL FIELDS SEARCHED (Int. Cl. 3)
			A 63 B 5/00 A 63 B 69/00 A 63 B 71/00 A 63 K 1/00 A 63 K 3/00 H 01 H 35/00
The present search report has been drawn up for all claims			
Place of search VIENNA		Date of completion of the search 22-07-1983	Examiner SCHÖNWÄLDER
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			