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54 Foot securing device, particularly for ski boots.

57 The foot securing device for ski boots comprises a pocket-size container (1), adapted for housing batteries (2), a motor (4) and a minicompressor (6). The motor (4) is connected to the batteries (2) via an actuation switch (3) and arranged to drive, through a kinematic transmission (7, 8, 9, 10), the minicompressor (6). The minicompressor (6) has a delivery duct (13) which is releasably connectable to a valve for inflating an air chamber in a ski boot. A port (12) is provided in the container (1) for permitting an ingress of air to the minicompressor (6).

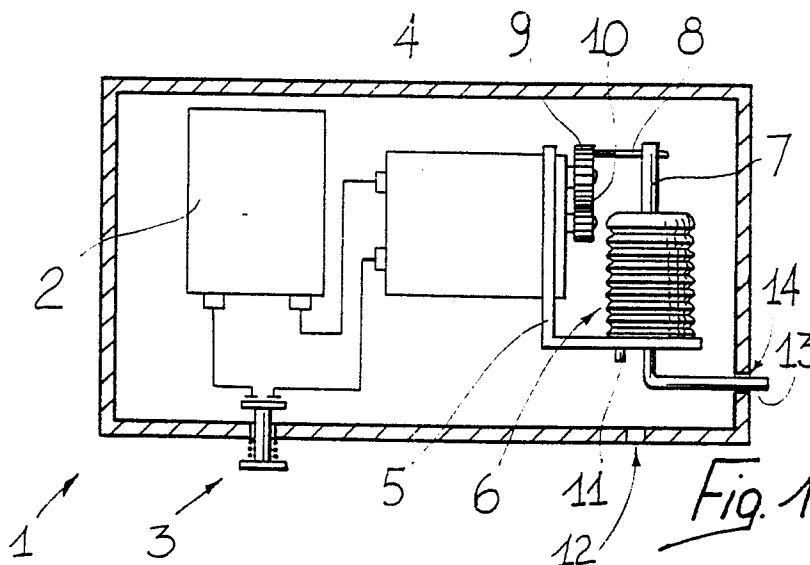


Fig. 1

FOOT SECURING DEVICE, PARTICULARLY FOR SKI BOOTS

The present invention relates to a foot securing device, particularly for ski boots.

Many devices are currently known which are adapted to allow the securing of the foot within a ski boot, and among them are those which are an air chamber.

The chamber is usually arranged inside the boot and subsequently inflated so as to progressively reduce the space between said boot and the foot of the skier.

In the European patent application, No. 86112047.5, submitted by the same Applicant and included herein by reference, a device is illustrated which has the peculiarity of comprising electropneumatic means associated with the boot.

Such means are connectable to an electric power supply source and controllably operated to feed pressurized fluid to an air chamber contained within the boot.

Such known devices, however, are not free from disadvantages, since they have such dimensions as to render them bulky and therefore difficult to accommodate within the boot unless its aesthetical features are substantially altered.

Another disadvantage resides in the fact that a device must necessarily be associated with each of the boots, thus increasing the overall cost thereof.

Moreover, if such devices were to undergo maintenance, the skier would be unable to continue skiing in the meantime.

Furthermore, the association of such devices with the boot increases its weight.

The main aim of the present invention is therefore to eliminate the disadvantages described above in known types, by providing a device which allows to achieve, by inflating an air chamber, the securing of the skier's foot, and reduced dimensions and weight of the boot.

Within the scope of the above described aim, an important object is to provide a device which allows the skier to perform a quick and comfortable inflation of the air chamber.

Another important object is to achieve a device which allows optimum maintenance, at the same time allowing the skier to use the boot.

Another object is to provide a device which can be used in any atmospheric condition, such as low temperatures and a high percentage of relative humidity.

A not least object of the present invention is to provide a device which associates with the preceding characteristics that of having a modest cost and a high degree of reliability.

The aim and the objects described above, as well as others which will become apparent hereinafter, are achieved by a foot securing device, particularly for ski boots, characterized in that it comprises a container, adapted for housing electric devices which feed, by external control, a minicompressor, said boot comprising, in its interior, at least one air chamber, adapted for securing the foot and being connected to at least one externally accessible valve, to said valve there being removably connectable at least one delivery duct of said minicompressor which leads out of said container.

Further characteristics and advantages of the invention will become apparent from the detailed description of a particular embodiment, illustrated in the accompanying drawings, wherein:

Fig. 1 is a view, in partial cross section, of the container; and

Fig. 2 is instead a schematic illustration of the use of said container together with the air chamber arranged inside the boot.

With reference to the above described figures, the foot securing device consists of an expediently pocket-size container 1, preferably in the shape of a parallelepipedon and containing, in its interior, a power source, consisting, for example, of a pack of accumulators or batteries 2 which can be electrically connected, by means of a switch 3, which is accessible from the outside of the container 1, to an electric motor 4.

The motor 4 is associated, by means of a support element such as a bracket 5, with a minicompressor 6, the membrane whereof is operated by means of a connecting rod 7, connected by means of a bar 8 to a first toothed wheel 9, said bar 8 being connected eccentrically with respect to the first wheel 9 which is expediently idly mounted on a shaft and moved by a second toothed wheel 10, keyed to the drive shaft or output shaft of the motor 4, and engaging said first toothed wheel in mesh engagement relationship.

The minicompressor 6 is provided with an aspiration valve 11, and in one of the walls of the container 1 there is provided at least one first port or hole 12 for permitting an ingress of air.

The minicompressor 6 is furthermore connected to a delivery duct 13, which leads, through a suitably arranged second hole 14, out of said pocket-size container 1.

The end of said duct 13 is removably associable with a valve 15 which is accessible from the exterior of a ski boot 16 and which is in turn connected, by means of a duct 17, to at least one inflatable air chamber 18 contained inside said boot.

Said air chamber can be arranged at the foot instep region, at the heel region or in any case in a more appropriate region to achieve the correct securing of the foot within the boot.

The operation of the device is thus as follows: once a user has put the boots on, the user need simply extract the container 1 from his pocket or other convenient storage place, and then insert the end of the delivery duct 13 into the valve 15.

Subsequently, it is sufficient to operate the switch 3 to cause the motor 4 to operate the minicompressor 6 and therefore achieve the desired and required value of pressure within the air chamber 18.

This step will naturally have to be repeated for the other boot in the same manner.

Thus, once the air bags are inflated, the user need only replace the container in his pocket or in a bag or in any case in another place possibly protected against bad weather.

Naturally, the air chamber 18 is associated with at least one other valve 20 having a button or other valve-actuation means 21 adapted for causing the discharge of the air previously introduced into said chamber.

It has thus been observed that the invention achieves the intended aim and objects: in fact, by having an expediently pocket-size container, the double advantage is achieved of having a single means for the inflation of the air bag in both boots, and of avoiding the need to provide a seat adapted for accommodating the minicompressor, batteries valves, etc. on the boot.

Obviously, the use of a single container, minicompressor, motor, etc. allows the reduction of overall costs, and the fact of being pocket-size allows one to store the minicompressor away from any adverse affects due to the atmospheric conditions of use and furthermore allows simple maintenance, as well as easy replacement, in case of breakdown.

Advantageously, the pocket-size container 1 is provided with a removable cover 19 for inspecting the devices contained therein.

Naturally, the materials and the dimensions of the individual components of the device may be any according to the specific requirements.

Claims

1. Foot securing device, particularly for ski boots, characterized in that it comprises a container, adapted for housing electric devices which feed, by means of an external control, a minicompressor, said boot comprising, in its interior, at least one air chamber, adapted for securing the foot and being connected to at least one externally

accessible valve, to said valve there being removably connectable at least one delivery duct of said minicompressor which leads out of said pocket-size container.

2. Device according to claim 1, characterized in that said container has a preferably parallelepipedal shape, is provided with a removable cover, and internally contains a power supply source consisting of a pack of accumulators.

3. Device according to claims 1 and 2, characterized in that said power source is electrically connected, with the interposition of at least one externally operable switch to an electric motor.

4. Device according to claims 1 and 3, characterized in that said electric motor is associated with at least one bracket, with which is associated a minicompressor, the membrane whereof is operated by means of a connecting rod articulated to a bar rigidly associated and eccentrically arranged with respect to a first toothed wheel, said first toothed wheel being moved by means of a second toothed wheel, keyed to the output shaft of said electric motor.

5. Device according to the preceding claims, characterized in that said minicompressor is provided with at least one aspiration valve and at least one delivery duct, said at least one delivery duct leading out of said container.

6. Device according to the preceding claims, characterized in that said boot is provided with at least one externally operable valve, whereto said delivery duct of said minicompressor, leading out of said pocket-size container, is removably connectable.

7. Device according to claims 1 and 6, characterized in that said valve associated with said boot is connected to at least one air chamber contained inside said boot.

8. Device according to the preceding claims, characterized in that said container is provided with at least one hole adapted for permitting a flow of air into its interior.

9. Device according to the preceding claims, characterized in that said air chamber is associated with at least one other valve having a button for the discharge of the air previously introduced into said air bag.

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