Aug. 21, 1945. T. MALMQVIST 2,383,267

NONSKIDDING DEVICE

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FIG. 1.

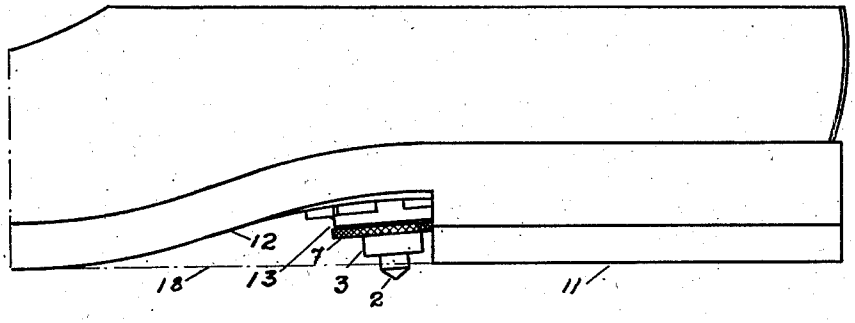


FIG. 2.

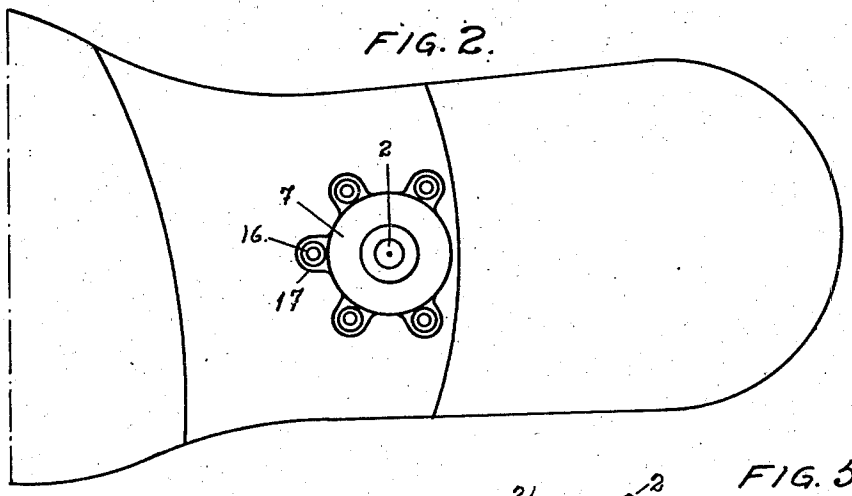


FIG. 5.

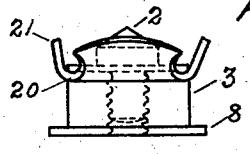


FIG. 3.

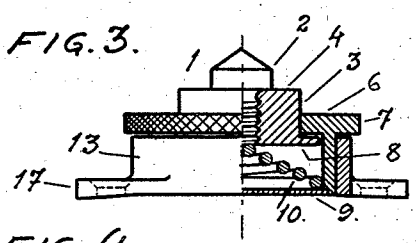


FIG. 6.

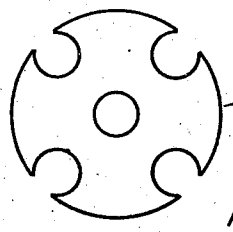
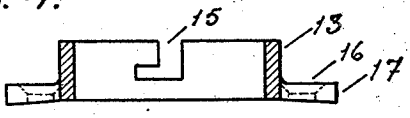


FIG. 4.



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FIG. 7.

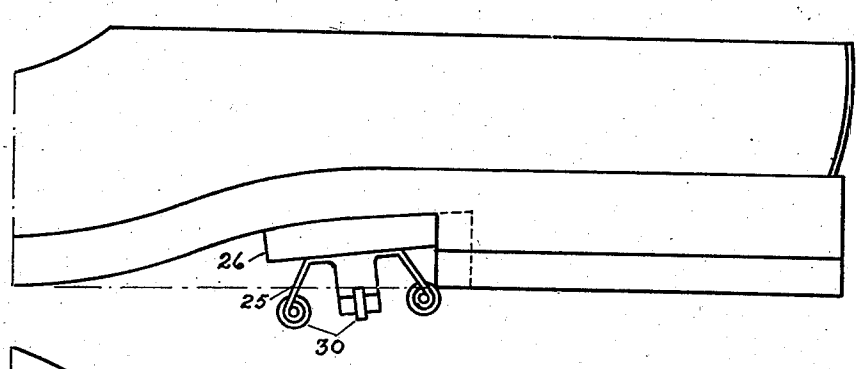


FIG. 8.

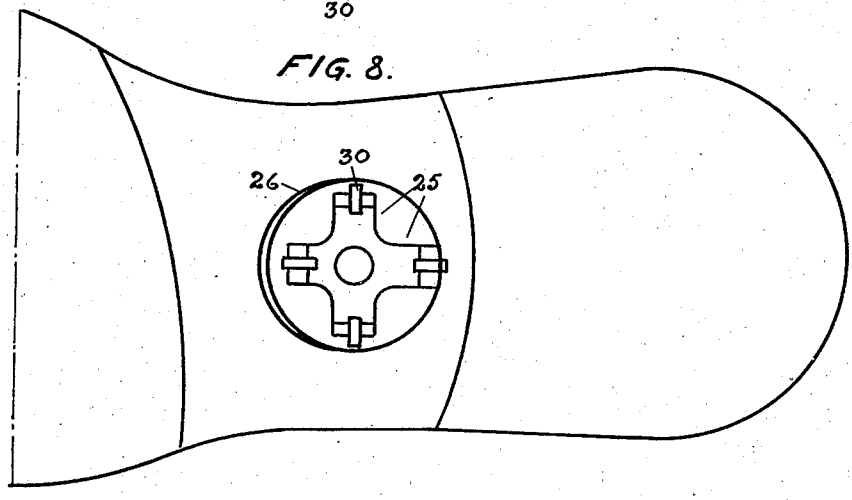


FIG. 9.

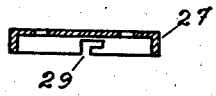


FIG. 11.

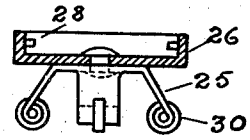
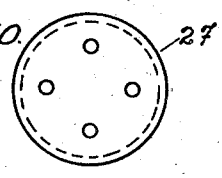


FIG. 10.



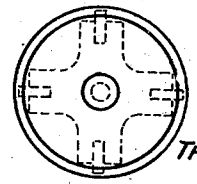


FIG. 12.

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UNITED STATES PATENT OFFICE

2,383,267

NONSKIDDING DEVICE

Thure Malmqvist, Stockholm, Sweden

Application September 9, 1943, Serial No. 501,697
In Sweden October 2, 1942

11 Claims. (Cl. 36—66)

The present invention relates to a non-skidding device for shoes, characterized chiefly in that it consists of a mounting which may be attached to the shoe beneath the shank, preferably immediately in front of the heel, as well as of a spike fastened to the mounting and resiliently yieldable in the direction in which it is pressed in, said spike being preferably adapted to be removably fastened to the mounting. The new non-skidding device has the special advantage that it does not impede the walk, not even on glassy ice or other hard foundation.

The invention will be more fully described in the following with reference to the accompanying drawings. In the drawings

Figures 1 and 2 show a first embodiment of the non-skidding device fastened to the shoe, in side elevation, and as seen from below, respectively.

Figure 3 shows the same non-skidding device on a larger scale, partly in side elevation, partly in axial section.

Figure 4 shows, likewise on a larger scale, an axial section of the mounting fastened to the shoe.

Figure 5 shows on the same scale a portion of the spike with an addition spike crown interposed between the spike point and the spike holder.

Figure 6 shows a blank from which the spike crown may be made by bending the edge flaps.

Figures 7 and 8 show a second embodiment of the non-skidding device fastened to the shoe, partly in side elevation, partly as seen from below.

Figures 9 and 10 show the mounting fastened to the shoe, partly in axial section, partly in plan view, while

Figures 11 and 12 show the spike holder with the spike crown, partly in axial section, partly in plan view.

In Figures 1–4, 1 designates the spike consisting of the spike point or spike crown 2 made of steel as well as the spike point holder 3 into the plane end surface 4 of which the spike point is screwed. The spike point holder 3, which suitably has the form of a circular cylinder, projects through a corresponding hole in the bottom 6 of a circular box 7, which is provided with a knurled outer edge to assist in removal of the box from its mounting. At its inner end the spike point holder 3 is rigidly connected to a circular disc or flange 8 slidably mounted in the box 7. A conical spring 10 placed between said disc 8 and the cover 9 of the box tends to keep the spike 1 in its wholly extended position, the disc 8 then bearing against the bottom 6 of the box.

Beneath the shank immediately in front of the heel 11 there is fixed to the sole 12 a cup-shaped mounting 13 into which the box 7 with its appertaining parts is adapted to be introduced and, by turning, fixed with the help of two diametrically extending pins, not shown, said pins passing into axially and tangentially running slots 15 in the mounting in the same manner as in a bayonet catch. For keeping the box 7 in place in the mounting 13 there is provided a flat spring, not shown, said spring normally extending into one of the grooves 15 with a ball-shaped projection. The mounting 13 is fixed to the sole 12 with the help of screws passing through holes 16 in a number of fastening lugs 17 distributed round the periphery of the mounting.

As appears from Figure 1, in which reference character 18 designates the plane of the ground, only the spike point 2 proper is generally pressed into the base, because the depth into which the spike is pressed is limited by the plane end surface 4 of the spike point holder 3. If the walker should happen to step on a foundation into which the spike point cannot penetrate, the spike is drawn in, at the same time compressing the spring 10 and, possibly, the soft portions of the instep, so that the walker does not experience any discomfort. Indoors it is possible to put the non-skidding device out of function by removing the box 7 from the mounting 13.

As appears from Figures 5 and 6, an additional spike crown 20 in the form of a resilient intermediate steel washer may, if desired, be placed between the spike point 2 and the spike point holder 3, said spike crown being provided with a number of downwardly bent flaps 21 acting as teeth. An additional spike of this kind works very efficiently especially in snow.

In the embodiment according to Figures 7–12 the yieldable spike consists of four flat springs 25 bent obliquely downward from a central portion, said springs being securely riveted to a sleeve-shaped spike holder 26. The latter is intended to be pushed over a mounting 29 fixed by means of screws to the shoe beneath the shank immediately in front of the heel, and is adapted to be kept in place on the mounting with the help of two inwardly projecting pins 28 which pass into grooves 29 in the mounting in the same manner as in a bayonet catch. At their ends the flat springs 25 are provided with steel rollers 30.

Obviously the invention is not limited to the

embodiments shown, but may be modified in several ways without departing from the spirit of the invention.

I claim:

1. A non-skidding device for shoes, consisting of a mounting adapted to be attached to the shoe beneath the shank immediately in front of the heel, and a spike removably fastened to the mounting by means of bayonet catches and resiliently yieldable in the direction in which it is pressed in.

2. A non-skidding device according to claim 1 in which the spike consists of a number of circularly arranged, obliquely downward-bent flat springs.

3. A non-skidding device according to claim 1, in which the spike consists of a number of circularly arranged, obliquely downward-bent flat springs which are provided with rollers at their ends.

4. A non-skidding device for shoes which comprises a cup-shaped mounting adapted to be secured to the shank of a shoe, a cylindrical box removably mounted in said cup-shaped mounting having a closed end flush with the shank of said shoe and a lower end with an opening therein, a spike slidably mounted in the opening of said box, a compression spring mounted between said closed end and said spike and tending to force said spike downwardly into the ground, said spike having a length such that it normally projects slightly below the plane of the ground, the device being so constructed and arranged that the said spike is retracted when the wearer of the shoe steps upon a hard surface.

5. The device of claim 4 wherein said spike is provided with a flange slidable in said cylindrical box and serving to limit the downward movement of said spike.

6. The device of claim 4 wherein said spike is in two parts, one part being the spike point, the other being a spike point holder which is slidable in said cylindrical box, said spike point being removable from said holder.

7. The device of claim 4 wherein said cylindrical box is secured in said cup-shaped mounting by means of bayonet catches.

8. The device of claim 4 in combination with a resilient washer provided with a plurality of downwardly bent spikes around its periphery and means for mounting said washer at the pointed end of said spike.

9. The device of claim 4 wherein said cylindrical box is provided with an outer knurled edge to assist in removal of said box from said mounting.

10. A non-skidding device for shoes which comprises a cup-shaped mounting adapted to be secured to the shank of a shoe, a spike slidably mounted in said mounting and removable therefrom by means of bayonet catches, a compression spring tending to press said spike downwardly into the plane of the ground and means for limiting the downward motion of said spike.

11. A non-skidding device for shoes which comprises a mounting adapted to be permanently secured to the underside of the instep of a shoe, a guide member removably secured in said mounting and having a lower end with an opening therein, a spike guided for axial movement in the opening of said guide member, spring means tending to force said spike out through said opening, and means for limiting the axial movement of said spike.

THURE MALMQVIST.