

[54] **MOUNTING OF WHEELS ON SKI
POLES**
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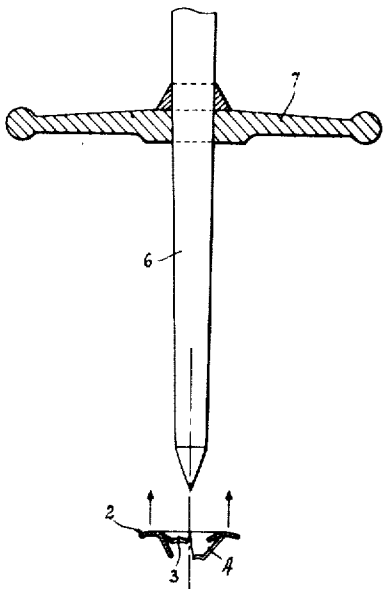
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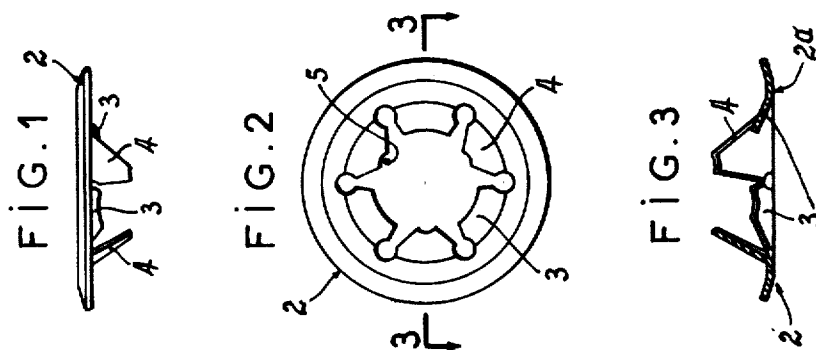
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[57] **ABSTRACT**
A Shakeproof washer formed in a stop ring, by pressing or punching, from a single metal stop ring so as to provide two concentric series of lugs, the lugs of one series being shorter than those of the other series and directed according to the generatrices of a cone less sharp than the cone of the longer lugs, said lugs extending radially inwards so as to engage the pole surface along two concentric but axially spaced circles for constantly retaining the wheel of the pole in an optimum position in which the bearing face of the washer engages the wheel perpendicularly to the pole axis.

3 Claims, 5 Drawing Figures

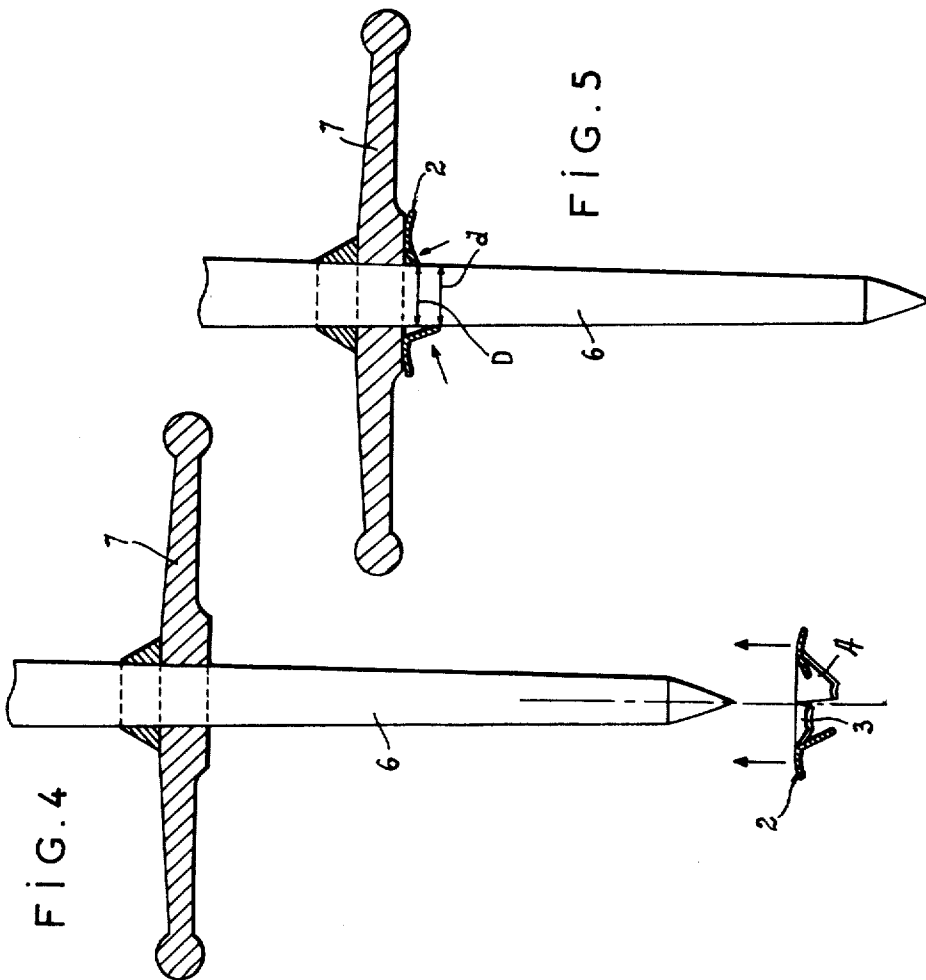




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MOUNTING OF WHEELS ON SKI POLES

This invention relates to means for securing the rings or wheels near the bottom of ski poles or sticks.

It is well known to all skiers that it is an essential requirement of ski poles to have the wheels secured thereto very firmly and reliably by the fastening device, and that this device must constantly hold the wheel in a plane perpendicular to the ski pole. To this end and according to a well-known principle, metal spring washers of the Shakeproof type have been used, also for the purpose of permitting a rapid, if not instantaneous, fitting, without resorting to costly and complicated tool equipment. Now a known inconvenience of Shakeproof washers, of which the anchoring means are constantly located in a common plane, is that after a certain service period and under the influence of recurrent shocks the washer becomes inclined and eventually, as a consequence of repeated stresses applied to different points of its circumference, it tends to slip and even cause either a loss of the wheel or simply a permanent inclination thereof, instead of holding this wheel in the desired position.

A different known device consisted in embedding or incorporating the metal Shakeproof washer in an annular stop member of metal or plastic material; however, this arrangement did not provide the desired strength and efficiency.

Now it is the essential object of the present invention to provide a mounting for the wheels of ski poles which avoids the inconveniences set forth hereinabove while combining all the advantageous features of known systems.

This device consists of a single metal washer of the Shakeproof type comprising a washer-shaped portion, obtained by pressing and punching, formed integrally with two concentric series of radial lugs inclined in relation to a diametral plane of the washer and having their free ends converging towards the longitudinal axis of the stop ring, said lugs being adapted, by bearing at the level of two concentric and axially spaced circles against the bottom portion of the pole, to prevent on the one hand said stop ring from slipping towards the lower end of the pole, that is, in the direction opposed to the direction of engagement of said ring on the pole, and on the other hand said stop ring from moving away from an optimum position in which its bearing face contacting the wheel "hub" is perpendicular to the longitudinal axis of the pole.

Under these conditions it is clear that this device comprising only one metal member is extremely economical to manufacture and constitutes an efficient means for fastening the wheel to the pole.

According to a preferred form of embodiment of this invention the stop ring comprises a series of three short lugs directed according to the generatrices of a relatively sharp cone, and another series of three longer lugs directed according to the generatrices of a cone coaxial with, but sharper than, the first cone.

In order to afford a clearer understanding of this invention reference will now be made to the accompanying drawings illustrating diagrammatically by way of example two typical forms of embodiment of this stop ring. In the drawings:

FIGS. 1, 2 and 3 are a side elevational view, an axial view and a cross-section view taken along the line 3—3 of FIG. 2, respectively, showing a first form of embodiment of this stop ring consisting essentially of a Shakeproof washer; and

FIGS. 4 and 5 are part-sectional, part-elevational views, respectively, showing more particularly the engagement of the stop ring with the bottom end of the ski pole.

The device according to this invention consists essentially of a stop ring of the lugged washer type, which comprises on the one hand a series of relatively short inner lugs and on the other hand a series of relatively long inner lugs.

According to a preferred form of embodiment illustrated in FIGS. 1 to 3 the stop ring comprises an upper washer-like portion 2 formed with integral lugs 3 and 4, respectively. These lugs are disposed at the periphery of a circular hole or bore 5

permitting the passage of the lower portion 6, of cylindrical or frustoconical shape, of the ski pole.

As illustrated more in detail in FIGS. 1 and 3, the shorter lugs 3, here three in number although this number should not be construed as limiting the scope of the invention, are shorter than the lugs 4 also three in number and alternating with the former. Moreover, these two series of lugs are inclined with respect to the upper face 2a of washer 2, the short lugs 3 being more inclined than the long ones 4.

When the stop ring is fitted with the washer 2 ahead to the bottom end 6 of the ski pole for securing a wheel 7 in position, it slides freely on this bottom end until it engages the wheel 7. In this position, as illustrated in FIG. 5, the bearing face 2a of washer 2 engages the inner face of wheel 7 and the lugs 3 act as anchoring means, as in a common lugged washer, thus holding the wheel 7 in position and preventing any backward movement of the stop ring, i.e. any axial movement thereof in a direction opposed to its initial fitting direction.

Moreover, the longer lugs 4 by bearing against the lower end 6 of the ski pole, on a circumference of diameter d (FIG. 5) differing from the circumference of diameter D engaged by the shorter lugs 3, co-act with these lugs for stabilizing the stop ring, i.e. preventing the latter from tilting away from its optimum position in which its bearing face 2a extends at right angles to the longitudinal axis of the pole.

Under these conditions it is clear that this metal stop ring having the desired strength and stiffness will provide the necessary stopping and holding action for the wheel, by co-acting with the pole consisting as a rule of softer metal and notably of high-strength light alloy.

Advantageously, the outer edge of the washer 2 may be slightly flanged to constitute a convex cup. In fact, with this specific shape the washer is prevented from damaging the wheel and does not interfere with the maximum flexibility thereof as required during the skier's movements. Although the present invention has been described with reference to preferred embodiments, it is to be understood that modifications and variations may be resorted to without departing from the spirit and scope of the invention, as those skilled in the art will readily understand. Such modifications and variations are considered to be within the purview and scope of the invention and appended claims.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A device for securing wheels to ski poles, comprising a single metal stop ring having formed therein by punching a washer-like portion formed integrally with two concentric series of radial lugs all of which are inclined in relation to the diametral plane of the washer, said lugs being arranged in two series, one said series comprising a plurality of relatively short lugs directed throughout the length thereof at an acute angle to the axis of the stop ring along the generatrices of a first cone and the other of said series comprising a plurality of lugs longer than those of the first series and directed throughout the length thereof along the generatrices of a cone coaxial with but sharper than the first-mentioned cone, said lugs having their free ends all spaced apart and all converging in the same axial direction toward the axis of the stop ring whereby said lugs engage the surface of the bottom end of the ski pole about two concentric but axially spaced circles, the lugs of said first series preventing said stop ring from slipping toward the lower end of the pole in a direction opposed to the direction of engagement of said washer on said pole, the lugs of said second series preventing said ring from moving away from a position in which said diametral plane is perpendicular to the longitudinal axis of the pole.

2. Device as set forth in claim 1, wherein the lugs of one concentric series of lugs extend in the gaps left between the lugs of the other series.

3. Device as set forth in claim 1, wherein the washer of said stop ring is pressed to constitute a convex tapered cup of which the generatrices converge towards the wheel associated with the ski pole when the device is fitted to the pole.

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