Feb. 12, 1924. 1,483,148

A. WINKLER

SAFETY DEVICE FOR LADDERS

Filed Nov. 6, 1922

Fig. 1.

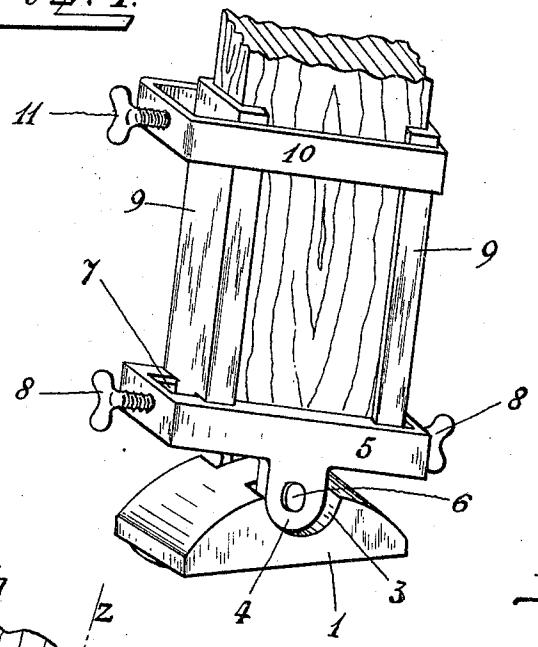


Fig. 2.

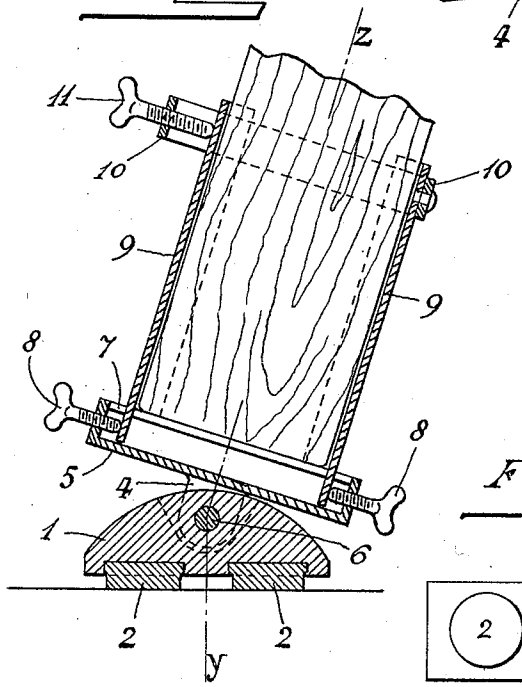


Fig. 3.

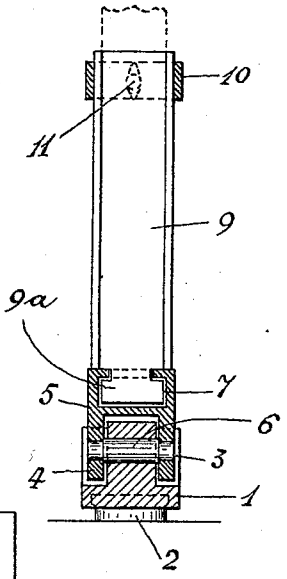
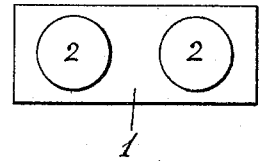


Fig. 4.



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Patented Feb. 12, 1924. 1,483,148

UNITED STATES PATENT OFFICE.

AUGUST WINKLER, OF ZURICH, SWITZERLAND.

SAFETY DEVICE FOR LADDERS.

Application filed November 6, 1922. Serial No. 599,417.

To all whom it may concern:

Be it known that I, AUGUST WINKLER, a citizen of the Republic of Switzerland, residing at Zurich, in the Canton of Zurich, Switzerland, have invented certain new and useful Improvements in Safety Devices for Ladders, of which the following is a specification.

It has been previously proposed, in order to secure ladders and maintain them in position, when placed against a wall or other structure, to provide feet for the ladder-posts or uprights. In one known kind of antislipping foot for ladders provision is made of a shoe having a socket pivoted thereto and adapted to receive the ladder-post. These known antislipping feet have, however, the drawback either that the ladder-post is secured in the socket by means of an unsafe screw only, or that the socket is not capable of receiving ladder-posts of different sizes. In another known antislipping foot the ladder-shoe, though designed to receive ladder-posts of various dimensions, the posts are directly secured to or in the shoes or a part rigidly attached thereto by means of thumb screws, which, every time the ladder is placed in a different slanting position, have to be loosened and adjusted again.

It is the object of my invention to avoid all these drawbacks and to permit of an easy, varied and safe application of the improved safety device to ladders with uprights of various sizes.

In the accompanying drawings embodying one desirable form of my invention:

Fig. 1 shows a perspective view of the shoe as applied to one of the uprights of a ladder;

Fig. 2 shows a sectional elevation of the same device;

Fig. 3 represents a section through line Y—Z in Fig. 2 the upright being shown in dotted lines, and

Fig. 4 is a plan view of the shoe as seen from below.

Referring to these drawings, each of the ladder-shoes comprises a base-part 1, the lower face thereof being provided with two or more cylindrical recesses to receive rubber discs 2. The upper portion of this base-part is curved and also recessed at the sides, as at 3, in order to receive the integral fork-shaped members 4 of a top part 5 acting in the manner of a supporting member which is pivoted to and mounted centrally of the base-part by means of the said members 4 and a bolt 6. Screwed into the ends of the top-part or supporting member and extending into a longitudinally disposed slot 7 thereof are thumb-screws 8, the form of the slot 7 being clearly shown in Figs. 2 and 3. This slot serves for the reception of two U-shaped clamping plates 9 which, when the shoe is applied to the upright of a ladder, are made to grip and partly embrace the bottom end of the upright, Fig. 1. The clamping plates are thus capable of a sliding movement in the slot 7 and, when in the position illustrated in the drawings, prevented from accidental detachment by the shouldered-off lower end 9^a fitting into the correspondingly formed slot. By means of the thumb-screws 8 the lower ends of the clamping plates 9 may be tightly pressed against the upright of the ladder, while the upper end of each of the said clamping plates is brought to bear against and made to firmly grip the upright by the aid of a metal hoop 10 and a thumb-screw 11.

If it is desired to fit a ladder with the shoes described, it is merely necessary to slip the uprights of the ladder between the clamping plates 9 and thereafter to tighten the three thumb-screws 8 and 11.

The supporting member 5 and the clamping plates may be designed and adapted to receive the uprights of ladders of various sizes, the main feature of my invention, however, consisting therein, that the pressure or strain on the ladder in any of its positions is always taken up by the centrally disposed bolt 6 and evenly transmitted to the base-part. The friction of the rubber discs 2 with the ground, as the data hereinafter mentioned will show, is sufficient to take up the horizontal component forces on the uprights. Tests have shown that the angle, at which a ladder fitted with such shoes may safely be placed relative to the horizontal, is the following: for linoleum or oil-cloth 30°, for smooth stone stairs 40°, for polished tile floors 41°, for polished inlaid floors 44°, for dry and smooth tiles 47°, and for wet tiles 51°.

It will be easily understood, firstly, that the metal hoop 10 with thumb-screw 11 may be replaced by a simple leather-strap and buckle, and secondly, that the clamping plates 9 may altogether be dispensed with,

in which latter case the top-part or supporting member would be constructed in the form of a housing adapted to receive the bottom end of the upright of the ladder.

Having now fully described my invention what I claim and desire to secure by Letters Patent is:—

In the herein-described safety device for ladders, the combination, with a shoe having recesses in its flat bottom, and rubber discs in said recesses, of a supporting member pivoted to and mounted centrally of the shoe and having the form of a rectangular frame provided with a longitudinally disposed slot, two U-shaped clamping plates engaging the slot and made slidable therein and adapted to partially embrace the bottom end of the upright of the ladder, and means to adjust the clamping plates within the said slot and cause them to tightly grip variously sized ladder uprights.

AUG. WINKLER.