June 27, 1939. F. WHITE 2,163,970

LADDER FOOT

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Fig. 1

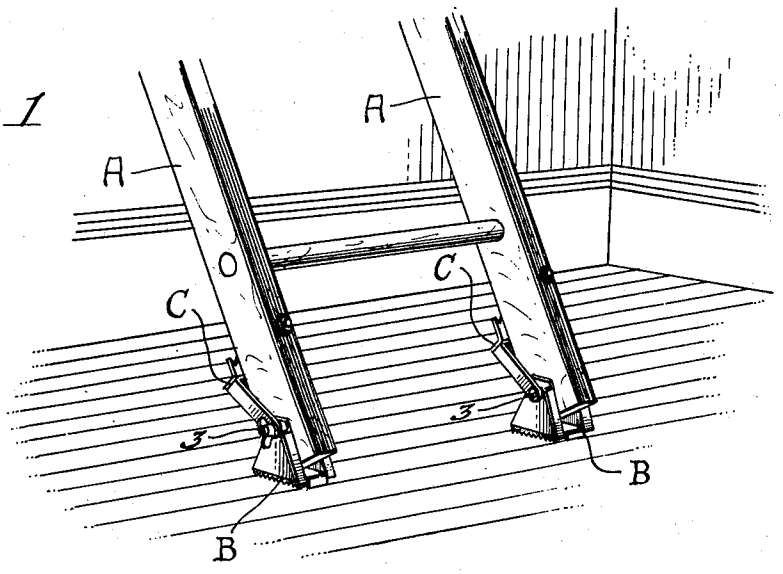


Fig. 2

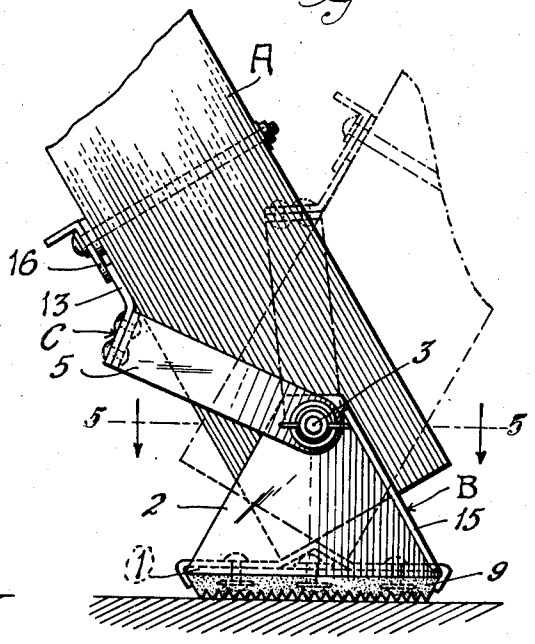
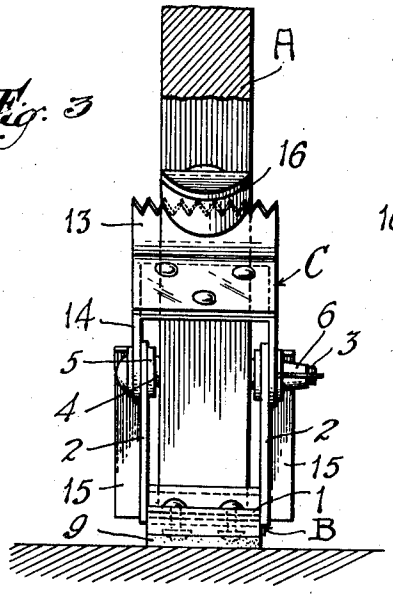


Fig. 3



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Fig. 4.

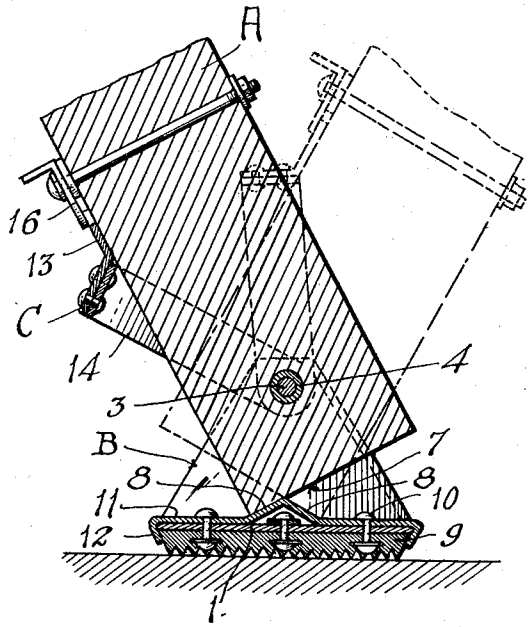


Fig. 5

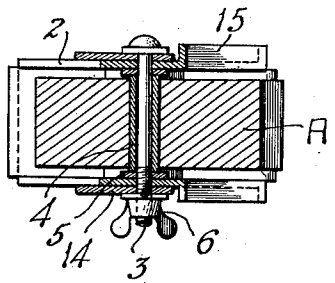


Fig. 8

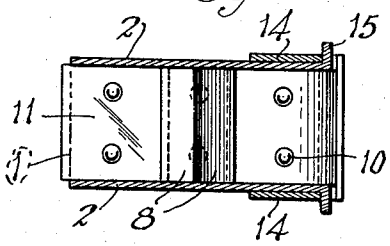


Fig. 6

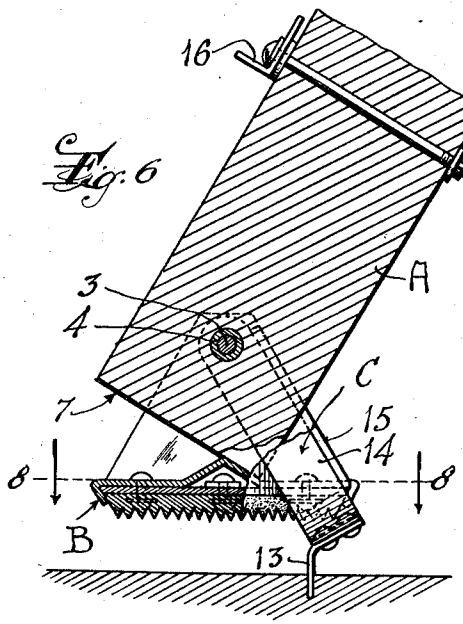
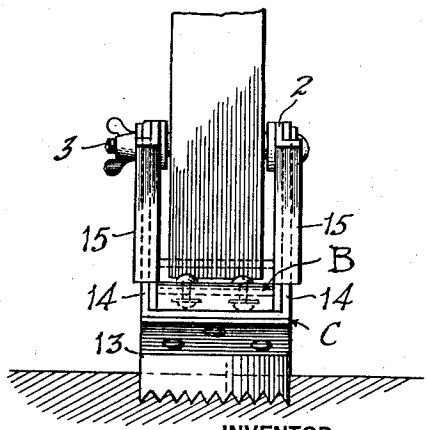


Fig. 7



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LADDER FOOT

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Application March 17, 1937, Serial No. 131,289

5 Claims. (Cl. 228—62)

This invention relates particularly to a foot for the stile of a ladder to prevent slipping of the lower end of a ladder on a smooth surface such as a polished, concrete or tile floor or on a slippery surface such as ice.

The invention contemplates a ladder foot which may be securely but removably attached to a ladder stile so as to be always in position for use and shall have a base portion to engage the ground pivotally mounted adjacent the lower end of the ladder stile to have a swinging movement in opposite directions across the end of the stile to support the ladder in inclined position, the swinging movement of the foot in both directions being limited by engagement of the base portion of the foot with the end of the ladder stile so that the ladder may be firmly supported by the foot with the ladder inclined in either of two directions.

One object of the invention is to provide a novel and improved combination of ladder stile and two ladder feet, one for use on smooth surfaces, such as polished or concrete floors, and the other for use on slippery surfaces such as ice, and wherein the first-mentioned foot shall serve as a stop to limit swinging movement of the second-mentioned foot with respect to the ladder stile to hold the ladder firmly in inclined position on a slippery surface.

Another object is to provide such a combination of two ladder feet whereby the second-mentioned ladder foot may be conveniently swung and held in inoperative and out-of-the-way position along the side of the ladder stile when the foot is not in use, and the first-mentioned ladder foot shall be permanently in position to serve as a stop for the second mentioned ladder foot, and whereby either of the feet may be used without interference by the other.

Other objects are to provide a ladder foot of the character described which shall embody novel and improved, simple and inexpensive features of construction and which shall be reliable and durable in operation, and to obtain other advantages and results as will be brought out by the following description when considered in conjunction with the drawings in which

Figure 1 is a fragmentary perspective view of the lower end of a ladder having ladder feet embodying my invention applied thereto.

Figure 2 is an enlarged side elevation of the latter feet and one of the ladder stiles.

Figure 3 is a front elevation of the ladder feet and ladder stile shown in Figure 2.

Figure 4 is a vertical longitudinal sectional view through the ladder feet and ladder stile, showing the foot for use with smooth surfaces in operation.

Figure 5 is a horizontal sectional view on the line 5—5 of Figure 2.

Figure 6 is a view similar to Figure 4 showing in operation the foot for use with icy surfaces.

Figure 7 is a front elevation of the construction shown in Figure 6, and

Figure 8 is a horizontal sectional view on the line 8—8 of Figure 6.

Specifically describing the invention, the reference characters A designate the two stiles of a ladder at the lower end of each of which is mounted a foot B for use with smooth surfaces such as polished, concrete and tile floors, and a foot C particularly designed for use with slippery surfaces such as ice.

The feet B are identical in construction, each including a body, preferably of metal, approximately U-shaped in cross section, and having a base portion 1 and opposed parallel arms 2 at the longitudinal sides of the base portion adapted to straddle the lower end of the stile A. The foot B is pivotally connected to the stile of the ladder adjacent the lower end thereof by a pivot bolt 3 which passes through openings in the arms 2 and an opening in the stile A. The bolt is disposed approximately midway of the length of the base portion 1 and midway of the width of the stile A. Preferably the bolt passes through a bushing 4 in the ladder stile the ends of which project beyond the sides of the stile for holding the arms 2 out of frictional contact with the sides of the stile. As shown, a washer 5 is interposed between each end of the bushing and the corresponding arm 2, and the bolt has a nut 6 to permit removal of the foot from the ladder.

The foot is so mounted on the ladder that the base portion 1 may swing in opposite directions, i. e. from front to rear of the stile, across the end of the stile, and swinging movement of the foot is limited in both directions by engagement of the end of the stile with the base portion as shown in Figures 2 and 4. As shown, the lower end of the stile is flat as indicated at 7 and the inner side of the base portion 1 of the foot has oppositely inclined surfaces 8 to engage the flat end 7 upon relative swinging of the stile and foot in opposite directions, respectively. The surfaces 8 are disposed closely adjacent and at opposite sides of the center of the length of the base portion 1, or at opposite sides of an axial plane of the bolt 3 that is perpendicular to the plane of said base portion.

In use, the base portion engages the ground or floor as shown in Figures 1, 2 and 4, and the ladder may be inclined in either direction, as shown by solid and dot and dash lines in Figure 4, with the inclined surfaces 8 on the base portion of the foot firmly engaging the flat end 7 of the stile, whereby a firm support for the ladder is provided. Due to the location of the surfaces 8 on the base portion 1 and the relation of the base portion to the end of the stile, any possibility of the foot tipping or tilting endwise is practically prevented, so that a safe and stable support of the ladder is ensured.

Preferably, the outer side or bottom of the base portion will be provided with a friction producing surface; for example a grooved rubber pad 9 may be secured to the base portion by suitable fastening means such as rivets 10. Also, preferably, the inclined surfaces 8 are provided in a separate plate 11 secured to the base portion by the fastening elements 10 and having end flanges 12 overlying the ends of the base portion and the pad 9. However, the surfaces 8 might be formed directly in the base portion 1 of the foot without the use of the plate 11.

The second foot C is also preferably U-shaped and is provided on its base portion with a blade 13 for cutting into ice or like surfaces. The arms 14 of the foot C are pivotally connected to the ladder stile by the same pivot bolt 3 which connects the foot B to the stile and so that the base portion of the foot C may swing over the base portion of the foot B across the lower end of the stile. Swinging movement of the foot C in at least one direction is limited by flanges 15 on the arms of the foot B which are engaged by the arms of the foot C as shown in Figures 6, 7 and 8.

In use of the foot C, the foot is swung across the base portion of the foot A to cause the arms 14 to engage the flanges 15, and the blade 13 is placed on the supporting surface, for example ice, as shown in Figure 6. The ladder may be inclined so that swinging motion of both feet B and C is limited by engagement of the base portion 1 of the foot A with the end 7 of the stile, whereupon the ladder will be firmly supported.

For holding the foot C in an inoperative and out-of-the-way position, the foot may be swung to bring its base portion 1 against one side of the stile, and suitable means such as a turn-button 16 may be provided on said side of the stile to engage the blade 13 and hold the foot against the ladder.

While I have shown and described the two feet as embodying certain details of structure, it should be understood that this is primarily for illustrating the principles of the invention and that many modifications and changes may be made in the construction of the two feet without departing from the spirit or scope of the invention.

Having thus described my invention, what I claim is:

1. The combination with the stiles of a ladder, of a foot having a base portion underlying the end of each stile to engage the ground, and an arm pivotally connected to said stile above said end to permit said foot to have a swinging movement in opposite directions across the end of the stile limited in both directions by engagement of said base portion with the end of the stile, a second foot U-shaped and having a base portion in the form of a blade to engage the ground and its arms pivotally connected to said stile on the same pivot as the first foot so that said base portion of the second foot may swing over the base portion of the first foot, and means on the first foot for limiting swinging of the second foot in at least one direction.

2. The combination with the stiles of a ladder, of a foot having a base portion underlying the end of each stile to engage the ground, and an arm pivotally connected to said stile above said end to permit said foot to have a swinging movement in opposite directions across the end of the stile limited in both directions by engagement of said base portion with the end of the stile, a second foot U-shaped and having a base portion in the form of a blade to engage the ground and its arms pivotally connected to said stile on the same pivot as the first foot so that said base portion of the second foot may swing over the base portion of the first foot, said arm of the first foot having a flange to be engaged by one of the arms of said second foot to limit swinging of the second foot in at least one direction.

3. The combination with the stiles of a ladder, of a foot pivotally mounted adjacent the lower end of each stile and including a base portion having a swinging movement in opposite directions across the end of the stile limited in both directions by engagement of said base portion with the end of the stile, a second foot pivotally connected on each stile and having a base portion in the form of a blade to engage the ground and swing over the base portion of the first foot, means on the first foot for limiting swinging of the second foot in at least one direction, and releasable means for holding said second foot in inoperative position against one side of said stile.

4. The combination with the stiles of a ladder, of a foot having a base portion underlying the end of each stile to engage the ground, and an arm pivotally connected to said stile above said end to permit said foot to have a swinging movement in opposite directions across the end of the stile limited in both directions by engagement of said base portion with the end of the stile a second foot U-shaped and having a base portion in the form of a blade to engage the ground and its arms pivotally connected to said stile on the same pivot as the first foot so that said base portion of the first foot may swing over the base portion of the first foot, and means on the first foot for limiting swinging of the second foot in at least one direction, and means on one side of said stile to releasably engage said base portion of the second foot and hold said second foot in inoperative position above the first foot.

5. The combination with the stiles of a ladder, of a foot pivotally mounted adjacent the lower end of each stile and including a base portion having a swinging movement in opposite directions across the end of the stile limited in both directions by engagement of said base portion with the end of the stile, a second foot pivotally connected on each stile on the same pivot as the first foot and having a base portion to engage the ground and swing over the base portion of the first foot, and means on the first foot for limiting swinging of the second foot in at least one direction.

FRANK WHITE.