Nov. 29, 1938. C. B. JOHNSON 2,138,171

ANTISLIP DEVICE

Filed June 13, 1936

FIG. 4

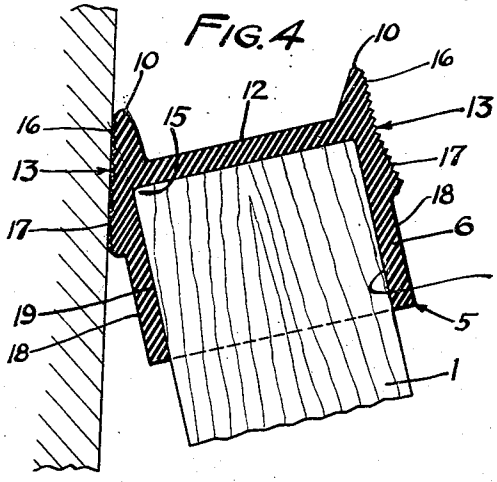
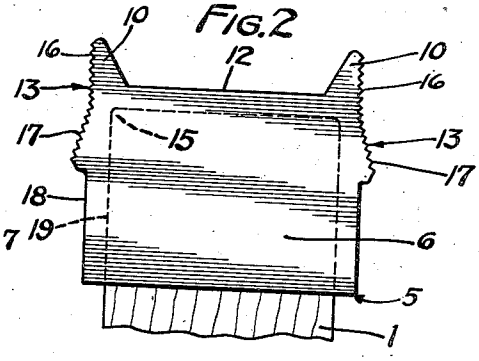


FIG. 2



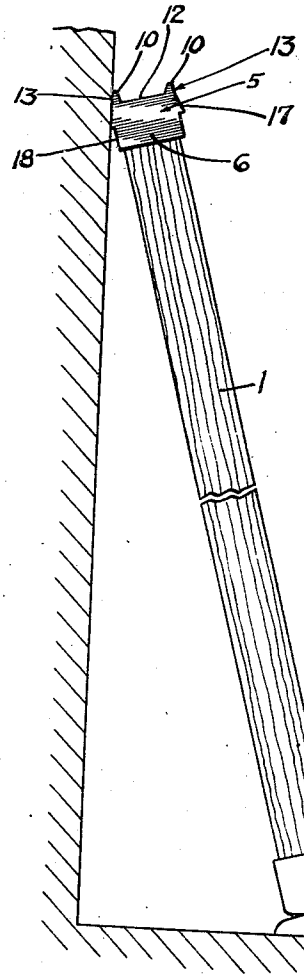


FIG. 1

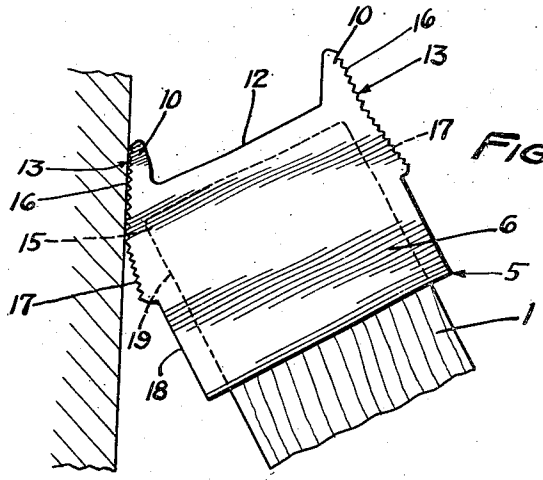


FIG. 5

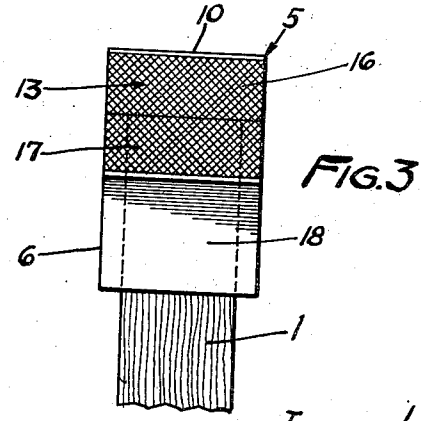


FIG. 3

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ANTISLIP DEVICE

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Application June 13, 1936, Serial No. 85,114

5 Claims. (Cl. 228—62)

This invention relates generally to anti-slip devices, and particularly to a device for preventing lateral slip of the upper ends of the stiles of a ladder when in mounting position against a wall or other support.

An object of the invention is to provide a device having an anti-slip surface area engageable with the wall and adapted to have its area of contact automatically changed or increased, or adjusted conformably to the increase in force of contact incident to the mounting of the ladder by the user, whereby the area of contact and the application of force is made greater, or is changed, as the user approaches the top of the ladder.

Features of the invention include an anti-slip extension rising above the body and bendable as a result of engagement with the wall to conform to inequalities in the wall or other surface, to facilitate and unfailingly obtain the greatest degree of anti-slip action under the varying conditions of use; the use of two such bendable extensions arranged to be alternately engageable with the wall as a result of reversal of the ladder; the use (independently or in combination with the aforesaid extension) of an outwardly facing concave surface engaging with the wall, which surface is adapted to be pressed to coplanar relation with the wall as a result of increased weight applied to the ladder as the user mounts it; and all details of construction along with the broader ideas of means inherent in the disclosure.

Objects, features and advantages of the invention will be set forth in the description of the drawing forming a part of this application, and in said drawing

Figure 1 is a side elevation showing one stile of a ladder provided at its top with a device constructed in accordance with the principles of this invention;

Figure 2 is an enlarged view of the top portion of Figure 1;

Figure 3 is a view at right angles to Figure 2 showing the normal face of the outwardly concave anti-slip surface;

Figure 4 is a sectional view with the device positioned as in Figure 1, and showing how the area of contact is increased by pressure; and

Figure 5 is an enlarged view similar to Figure 1 but illustrating how the anti-slip surface can be caused to become reversely angularly related when the angle of the stile with the wall is greater than in Figure 1.

In the drawing, numeral 1 indicates one stile of a ladder having the usual rungs or steps (not shown). Numeral 2 generally indicates an anti-slip device arranged at the bottom of the stile. Numeral 5 generally indicates my device applied to the upper end of the stile and it will, of course, be understood that each stile is preferably provided with one of these devices, although in some instances a single device will be sufficient. My device is, in this instance, composed of a single piece of anti-slip material such as rubber. Its body portion is indicated at 6 and this body has means by which the device is operatively secured to the stile, which means herein has the form of a socket 7 for receiving the upper end of the stile.

The body has two anti-slip extensions each of which is designated by the numeral 10. These extensions rise above the top 12 of the body 6 and are bendable, as best shown in Figures 4 and 5, as the result of increased pressure automatically resultant from mounting of the ladder. Broadly, an anti-slip surface 13 is provided along with means by which its area of contact can be automatically changed, so that this area and the application of force pressing it against the wall is increased as the user mounts the ladder. Thus the area and application of force is greatest when the user has reached the top of the ladder. It will be understood that there is no intention to entirely limit the invention to the use of two elements 10, because the claimed function can be performed by a single element.

Element 10 provides part of an outwardly faced concave surface, the middle of which is opposite the inner upper corner 15 of the stile where the greatest force is applied. The force is applied centrally of the surface. The surface 13 can be flattened to coplanar relation, as in Figure 4, or can be made to assume the reversely angularly related position shown in Figure 5. The surface may be roughened as at 16 and it is noted that surface portion 17 forms an angle with the side 18 of the body and with the wall-facing side 19 of the stile.

Three features of the invention are believed to be broadly new. One is the scheme of providing an anti-slip surface which can conform to inequalities of the wall surface, another is the bendable portion which extends above the body, and another is the provision of a wall-engaging surface without the use of the projection 10 or its equivalent in which the surface is normally concave toward the wall but is adapted to be pressed to the coplanar relation of Figures 1 and 4 by the application of weight to the ladder. In this way the area and force of contact is increased as the user approaches the top of the ladder and moreover, this can occur whatever

the angle of the ladder to the wall may be, and whatever the character of the inequalities ordinarily met with, are.

An important feature of the invention is the provision of a flexible or rockable or adjustable anti-slip element which projects above the stile of the ladder, when in use. The device is adapted to prevent marring of paint or of metal work or of woodwork, and provides sufficient surface area to distribute the applied pressure or force over a large area which is particularly advantageous in cases where the upper end of the ladder is engaged with a plate glass window. This distribution of pressure force lessens the likelihood of breakage of the window. The anti-slip portion of the device is so arranged as to be interposed between the upper corner of the ladder and the surface with which it is engaged.

I claim as my invention:

1. A device for preventing lateral slip of the upper end of the stile of a ladder when in mounting position against a wall, composed of a single piece of material having a body having means by which the device is operatively secured to the stile, said body having two flexible anti-slip extensions rising above the body when the device is in use and alternately engageable with the wall as a result of reversal of the ladder.

2. A device for preventing lateral slip of the upper ends of the stiles of a ladder, which is in mounting position against a wall, having a body having a socket by which the device is operatively secured, said body having an extension rising above the body, and the end of the stile, said extension being capable of changing its angular relation to the body conformably and proportional to the degree of application of force incident to application of weight as the user mounts the ladder, said extension and the body having contiguous wall engaging surface areas, which are normally angularly related, but which may become coplanar or reversely angularly related when the aforesaid force is applied, whereby the anti-slip area and force of contact are automatically increased as the mounter approaches the top of the ladder, and whereby the area of contact and the application of force is greatest when the user has reached the upper limit.

3. A device for preventing lateral slip of the upper end of a stile of a ladder when in mounting position against a wall, said device comprising a single piece of rubber-like material having means for securing it to the upper end of the stile and provided with a normally outwardly faced concave anti-slip surface adapted to engage the wall, said surface being bendable whereby it will automatically change its shape to increase its area of contact with the wall, as the user mounts the ladder.

4. A device for preventing lateral slip of the upper end of a stile of a ladder when in mounting position against a wall comprising, a body by which the device is attached and composed of a single piece of rubber-like material having an anti-slip surface engageable with the wall and adapted to automatically change its shape to increase its area of contact as the user mounts the ladder, said surface including a portion which extends well above the body and which can swing through a substantial angle.

5. A device for preventing the upper end of a ladder from slipping when placed against a wall, said device comprising a body secured to the upper end of the stile of the ladder and having a lower anti-slip surface adapted to engage the wall, an extension on said body having a surface disposed above said anti-slip surface and arranged at an angle with respect thereto, said upper surface extending well above the top of said body whereby it may flex through a substantial angle with respect to said lower surface, thereby to increase the effective area of contact between said device and the wall.

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