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COMBINED SHOE AND SPIKE ATTACHMENT FOR LADDERS

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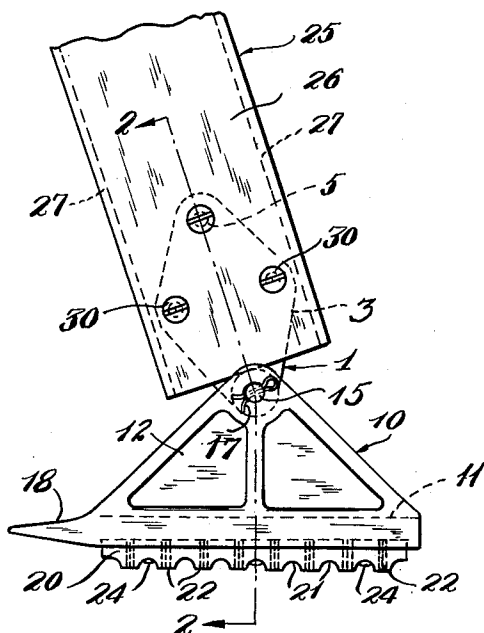


FIG. 1

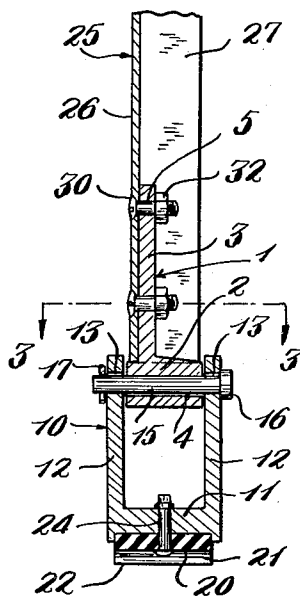


FIG. 2

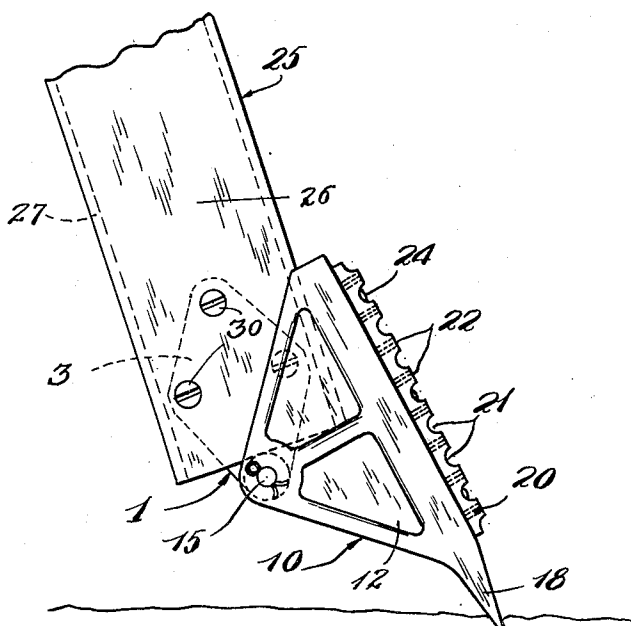


FIG. 4

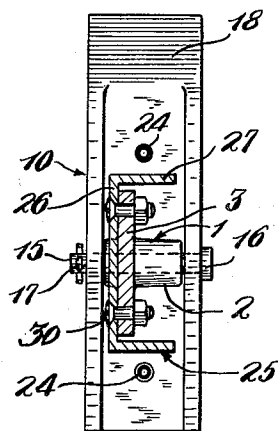


FIG. 3

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COMBINED SHOE AND SPIKE ATTACHMENT FOR LADDERS

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2 Claims. (Cl. 228—61)

This invention relates, generally, to that class of devices known as anti-slipping attachments for ladders, and it has to do more particularly with an improved combined shoe and spike device of this class.

According to my invention, a right hand device and a left hand device constitute a pair, and with each device attached to the lower end of the corresponding side rail of a ladder, the ladder will be securely held against accidental shifting movement when erected against a wall or other object and placed upon a floor, or upon the ground, or upon a concrete, cement or other hard surface, each device being adjustable between two positions to provide in one instance a friction shoe, and in the other a spike, according to the character of the surface whereon it is to bear.

Objects of the invention are to provide a simple and relatively inexpensive device of the above described character that is highly efficient; that is very durable in service, and that is composed of a minimum number of parts that are capable of being easily and quickly assembled, and wherein one part is so shaped that, in the assembling of a pair of devices, one may be made right hand and the other left hand by merely reversing the arrangement of said part in the respective devices.

Another object of the invention is to provide a device of the above mentioned character including a mounting member that is convenient of attachment to the side rail of either a metal or wooden ladder, and a second or supporting member in the form of a friction shoe having a spike at one end and that is loosely pivoted to the first mentioned member and is so balanced that it automatically assumes a position for frictional engagement with a supporting surface when the ladder is being erected—which position is correct in the case of a hard surface—or that, by an appropriate movement of the ladder, may be swung so as to point the spike downward when the ladder is being placed upon the ground.

The foregoing objects and advantages, with others that will appear as this description proceeds, are attained in the construction illustrated in the accompanying drawing in which like parts are designated by like reference characters in the different views, and wherein

Fig. 1 is a fragmentary side elevational view of a side rail of a metal ladder to which the device of my invention is attached, the supporting member or shoe being in the position it occupies when the ladder is placed upon a floor or other relatively hard supporting surface;

Fig. 2 is a substantially central vertical section taken on the line 2—2 of Fig. 1;

Fig. 3 is a horizontal section on the line 3—3 of Fig. 2; and

Fig. 4 is a view, similar to Fig. 1, showing the device adjusted to present the spike to the ground.

The mounting member of the device is designated, generally, by the reference numeral 1, and it comprises a hub 2 and an attaching plate 3. The hub is provided with a longitudinal bore 4, and the attaching plate is disposed

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in a plane substantially normal to the axis of the bore and is located between the ends of the hub and considerably nearer one end than the other. The attaching plate 3 is shown as generally diamond shaped and is provided adjacent each of its corners remote from the hub with a hole 5.

10 denotes, generally, the supporting member of the device, which is in the form of a shoe having a relatively long narrow rectangular base 11 from the lateral edges of which rise side plates 12, shown as triangular in shape. The side plates are spaced apart a distance slightly greater than the length of the hub 2 and are provided with apertures 13. In the assembling of the device, the hub is disposed between the upper ends of the side plates with its bore 4 in alignment with the apertures 13 and a pin 15, having a head 16, is extended through the apertures and bore to pivotally connect the members of the device together. The bore of the hub and/or the apertures of the side plates are enough greater in diameter than the pin 15 to insure free swinging movement of the supporting member 10 with respect to the mounting member 1. When the parts are in assembled condition, the end of the pin remote from the head 16 extends some distance beyond the adjacent side plate 12, where it is provided with a transverse hole through which a suitable fastening device 17, such as a cotter pin, is projected.

One end of the base 11 is extended a considerable distance beyond the adjacent ends of the side plates 12 and is chamfered to provide a chisel-like spike 18.

20 designates a friction pad of rubber or similar material. This pad, in plan, is of about the same shape and proportions as the underside of the base 11 but is somewhat smaller in area, and its top portion snugly fits into a shallow recess of the base. The bottom portion of the pad is separated by grooves 21 into a plurality of ribs 22, desirably reinforced with fabric, and through aligned holes in the base and pad that register with certain of said grooves are extended fastening means or rivets 24 for securing the pad to the supporting member.

Whether the device is right hand or left hand, so to speak, for use on the corresponding side rail of a ladder, is determined by the arrangement of the mounting member 1 with respect to the supporting member 10. The device illustrated in the drawing is left hand, and to produce a right hand device, the mounting member is reversed so that the mounting plate 3 will be nearer the opposite side plate of the supporting member or shoe.

As above mentioned, the device is shown as attached to the side rail of a metal ladder. The side rail is designated, generally, by the reference numeral 25, and it is in the form of a channel member composed of a web 26 and side flanges 27. The attaching plate 3 is preferably engaged with the inner side of the web 26 and is shown as secured thereto by bolts 30, to the threaded ends of which are applied nuts 32, the bolts extending through the holes 5 of the attaching plate and through registering holes in the web 26. The attaching plate is spaced from the near end of the hub 2 far enough to provide clearance for the web 26 and the head of one of the screws 30 when the supporting member 10 is swung to the position shown in Fig. 4.

In attaching the device to a wooden ladder, the plate 3 is fastened to the outer side of the rail by means of screws or bolts. As will be obvious to one skilled in such matters, the end of the rail is shaped by cutting part of it away, and the attaching plate arranged at the required angle, to permit the supporting member 10 to swing between the approximate positions shown in Figs. 1 and 2.

When a ladder, equipped with a pair of my improved combined shoe and spike attachments, is erected alongside a wall or other object for placement upon a hard support-

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ing surface, such as a floor or cement driveway, it may be handled in the customary way. In other words, no attention need be given the position of the supporting members because they are so balanced as to automatically assume a position wherein the pads 20 are substantially parallel to the floor or other supporting surface as the ladder is being lowered thereover.

If the ladder, when erected, is to be placed upon the ground, its lower end is moved in such manner as to cause the supporting members to swing by momentum to a position in which the spikes 18 point generally downward, and the ladder is instantly lowered to force the spikes into the ground. When hold on the ladder is relaxed, the parts assume the position illustrated in Fig. 4.

By reason of my improved design and construction, which enables the principal elements of the device, to be die cast, manufacture of combined shoe and spike attachments is greatly expedited and cheapened.

Having thus described my invention, what I claim is:

1. A device of the class described for use with a metal ladder including side rails of channel formation; said device comprising a mounting member consisting of a hub of a length not less than the width of the side flanges of said rails and an attaching plate carried by the hub and disposed in a plane at substantially right angles to the axis thereof, said plate being spaced from one end of the hub a distance substantially no less than the thickness of the web of a side rail, means for securing the attaching plate to the web of a side rail on the inner side thereof so that the bottom edge of the web may rest on the hub, and a supporting member in the form of a friction shoe including a substantially rectangular base that is extended and chamfered at one end to provide a spike and side plates rising from the lateral edges of the base and spaced apart at their upper ends a distance slightly greater than the length of the hub so as to receive the hub between them, and pivot means for loosely connecting the side plates to the hub with the latter in either of two positions that are the

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reverse of each other whereby the device is adapted for attachment to either the right hand or the left hand side rail of a ladder and so that the supporting member is capable of free swinging movement with respect to the mounting member.

2. A device of the class described for use with a metal ladder including side rails of channel formation; said device comprising a mounting member consisting of a hub of a length not less than the width of the side flanges of said rails, the hub having a longitudinal bore, and an attaching plate integral with the hub and disposed in a plane at substantially right angles to the axis of said bore, said plate being spaced from one end of the hub a distance substantially no less than the thickness of the web of a side rail, means for securing the attaching plate to the web of a side rail on the inner side thereof so that the bottom edge of the web may rest on the hub, and a supporting member in the form of a friction shoe including a substantially rectangular base that is extended and chamfered at one end to provide a spike and side plates rising from the lateral edges of the base and spaced apart at their upper ends a distance slightly greater than the length of the hub so as to receive the hub between them, the side plates having apertures adjacent their upper ends in substantially axial alignment with the bore, and a pivot pin of lesser diameter than the bore extending through the bore and apertures for loosely connecting the supporting member to the mounting member in either of two reverse positions with respect thereto, whereby the device is adapted for attachment to either the right hand or the left hand side rail of a ladder.

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