Nov. 12, 1935. P. W. ORTELL 2,021,017

LADDER

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Fig. 1.

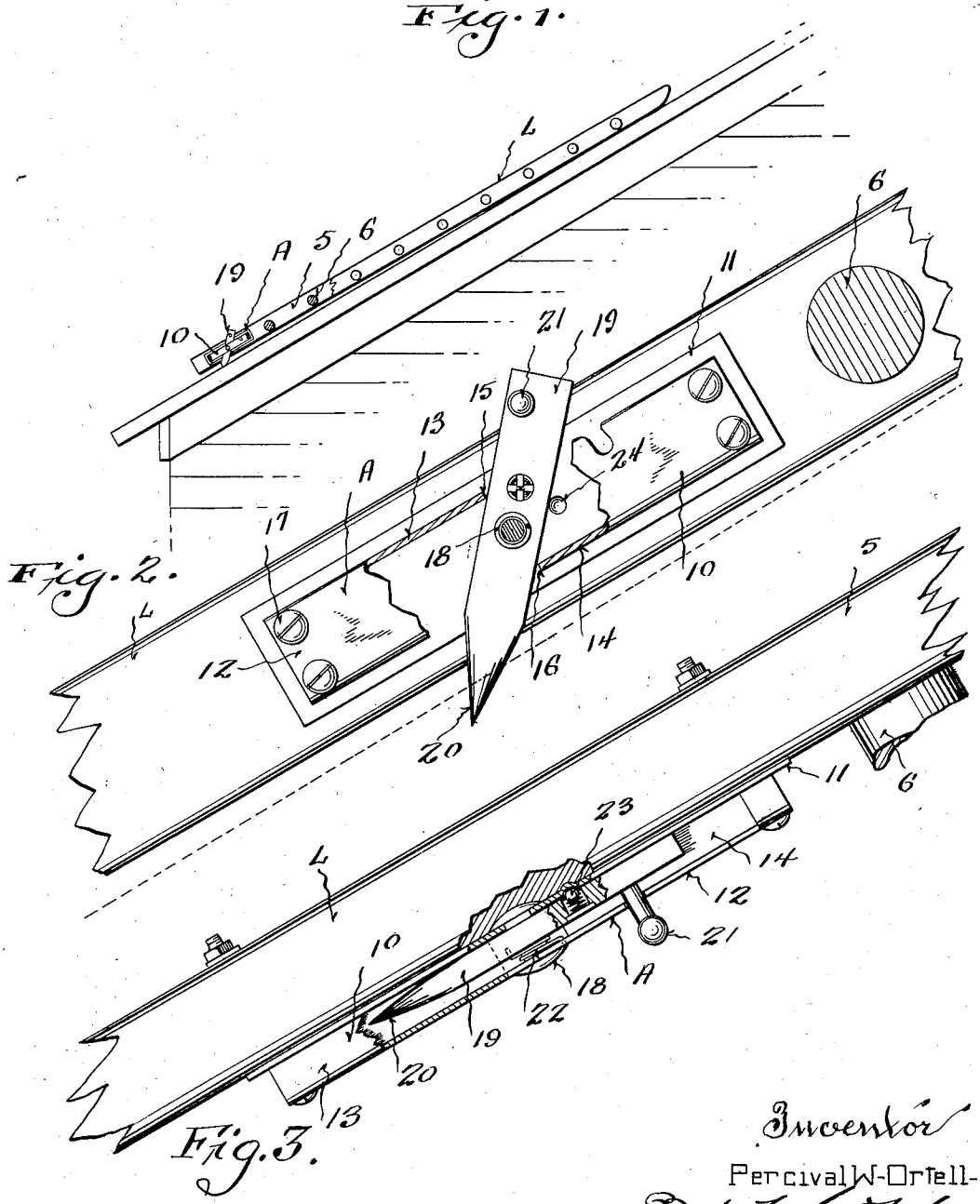


Fig. 2.

Fig. 3.

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LADDER

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3 Claims. (Cl. 228—60)

This invention appertains to ladders of the type particularly adapted for use on slanting surfaces, such as roofs, the invention being especially adaptable for use in connection with fire ladders.

Where it is necessary to use fire ladders on pitched roofs, it is customary to provide such ladders with hooks on their upper ends for engaging over the roof gable. However, on large roofs, the usual ladders will not reach the gable, and if an attempt is made to utilize a longer ladder, the great length thereof prohibits the effective manipulation thereof to position the hooks over the gable. Therefore, one of the salient objects of my invention is to provide a safety attachment for fire ladders, which will effectively anchor the ladder in place on slanting surfaces, without the employance of the usual gable hooks.

Another important object of my invention is to provide a roof-anchoring device for fire ladders, which can form a permanent part of the ladder, and which is so arranged that the same can be instantly brought into or out of play as occasion demands.

A further object of my invention is the provision of spurs carried by the side rails of the ladder adapted to be moved beyond the lower longitudinal faces of the rails of the ladder for effectively engaging the roof to positively prevent slipping of the ladder on the roof.

A further object of my invention is the provision of spurs, pivotally carried by the inner faces of the rails of a ladder normally lying parallel with the rails, and out of operative position, and adapted to be swung at an angle to the rails and below the longitudinal faces of the rails into an operative roof-engaging position, the spurs being mounted in such a manner that the greater the downward stress on the ladder the greater the penetration of the spurs into the roof.

A still further object of my invention is to provide a safety attachment for fire ladders of the above character, which will be durable and efficient in use, one that will be simple and easy to manufacture, and one which can be placed upon the market and incorporated with conventional fire ladders at a low cost.

With these and other objects in view, the invention consists in the novel construction, arrangement, and formation of parts, as will be hereinafter more specifically described, claimed, and illustrated in the accompanying drawing, in which drawing:

Figure 1 is a side elevation of a ladder constructed in accordance with my invention, showing the same in use on a slanting roof, one of the side rails of the ladder being shown broken away to illustrate one of the devices carried by the inner face of the other rail.

Figure 2 is an enlarged fragmentary longitudinal section through a ladder, showing one of the devices applied thereto, parts of the device being shown broken away and in section to illustrate structural details.

Figure 3 is an enlarged fragmentary top plan of a fire ladder with one of the devices applied to the inner face of one rail thereof, parts of the device being shown broken away and in section to illustrate the structural details.

Referring to the drawing in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter A generally indicates my improved safety attachment applied to the inner faces of the side rails 5 of a ladder L. The ladder L can be of any preferred construction, and includes the usual rungs 6 connected with the side rails 5. My improved attachment A includes like devices secured to the inner faces of the rails 5, and as these devices are identical in construction only one will be described in detail.

As clearly shown in the drawing, the safety device includes a housing 10 embodying a face plate 11. Rigidly connected with the face plate 11, in spaced parallel relation thereto, is an outer side wall 12. This side wall 12 carries top and bottom walls 13 and 14, which abut against the outer face of the face plate 11. It is to be noted at this point that the top and bottom walls 13 and 14 of the housing are cut away, as at 15 and 16, on opposite sides of the transverse center thereof. Suitable fastening bolts 17 extend through the plates 12 and 11, and through the side rails 5 of the ladder L, and serve as means for connecting the parts of the housing together, and the housing to the ladder. Rockably mounted on a transversely extending shaft 18 is the safety spur 19. The shaft 18 is disposed between the inner ends of the top and bottom walls 13 and 14, and the terminals of the shaft are anchored in the plates 11 and 12.

The safety spur 19 is preferably formed from a block of hardened metal, such as steel, and one end of the same is sharpened to provide a penetrating point 20. The opposite end of the spur can be provided with a manipulating handle 21 to facilitate the turning of the spur on the shaft 18 into and out of its operative position, as will be later set forth.

An expansion coil spring 22 is placed about the

shaft 18 between the spur 19 and the wall or plate 12, and this spring normally functions to urge the spur into frictional contact with the face plate 11. If desired, the ends of the spring can be anchored respectively to the spur and to the plate 12, so that the spring will also function to swing the spur on its shaft and into the housing in parallel relation with the rails of the ladder.

The normal inoperative position of the spur is within the housing parallel with the rails, and when it is desired to use the spurs the handle 21 can be grasped and the spur can be swung on the shaft 18 so that the pointed end 20 thereof will protrude below the lower longitudinal faces of the rails, and at an angle to the rails and housing.

A friction lock can be provided for holding the spur either in its operative or inoperative position, and this friction lock may include a spring-pressed ball 23, and the face plate 11 is provided at spaced points with depressions or pockets 24 for receiving the ball.

In use of my improved safety attachment, when the ladder is used on a slanting roof, the spurs are swung to the angular position shown in Figure 2 of the drawing, and the same are forced into the roof. This will effectively hold the ladder in place and prevent slipping thereof. When the downward thrust is exerted on the ladder, this thrust will tend to swing the spur on the rock shaft, and the same will be brought into binding contact with the inner ends of the top and bottom walls 13 and 14, and thus the spur is held firmly in its operative position.

When it is desired to remove the ladder, it is lifted up so as to bring the spurs out of the roof, and the spur can then be swung back into the casing.

Changes in details may be made without departing from the spirit or scope of my invention, but what I claim as new is:—

1. An attachment for holding ladders on inclined surfaces comprising a casing having the top and bottom walls cut away on opposite sides of the transverse center of the casing, a spur rockably mounted intermediate its ends in said casing at the transverse center thereof, the spur normally lying within the casing and parallel therewith and adapted to move through the top and bottom walls at an angle to the casing with the sharpened end thereof projecting beyond the lower face of the casing.

2. An attachment for holding ladders on inclined surfaces comprising a casing having the top and bottom walls cut away on opposite sides of the transverse center of the casing, a spur rockably mounted intermediate its ends in said casing at the transverse center thereof, the spur normally lying within the casing and parallel therewith and adapted to move through the top and bottom walls at an angle to the casing with the sharpened end thereof projecting beyond the lower face of the casing, and means for releasably holding the spur against accidental movement.

3. An attachment for holding ladders on slanting surfaces comprising a casing having its top and bottom walls open on the opposite sides of the transverse center of the casing, a shaft carried by the casing at the transverse center thereof, a spur having its lower end sharpened and rockably mounted on the shaft intermediate its ends, the spur being movable through the top and bottom walls at an angle to the casing with the sharpened end projecting below the casing and the opposite sides of the spur in engagement with the inner edges of the top and bottom walls, spring means normally urging the spur into frictional contact with one wall of the casing, and means releasably holding the spur in adjusted position.

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