

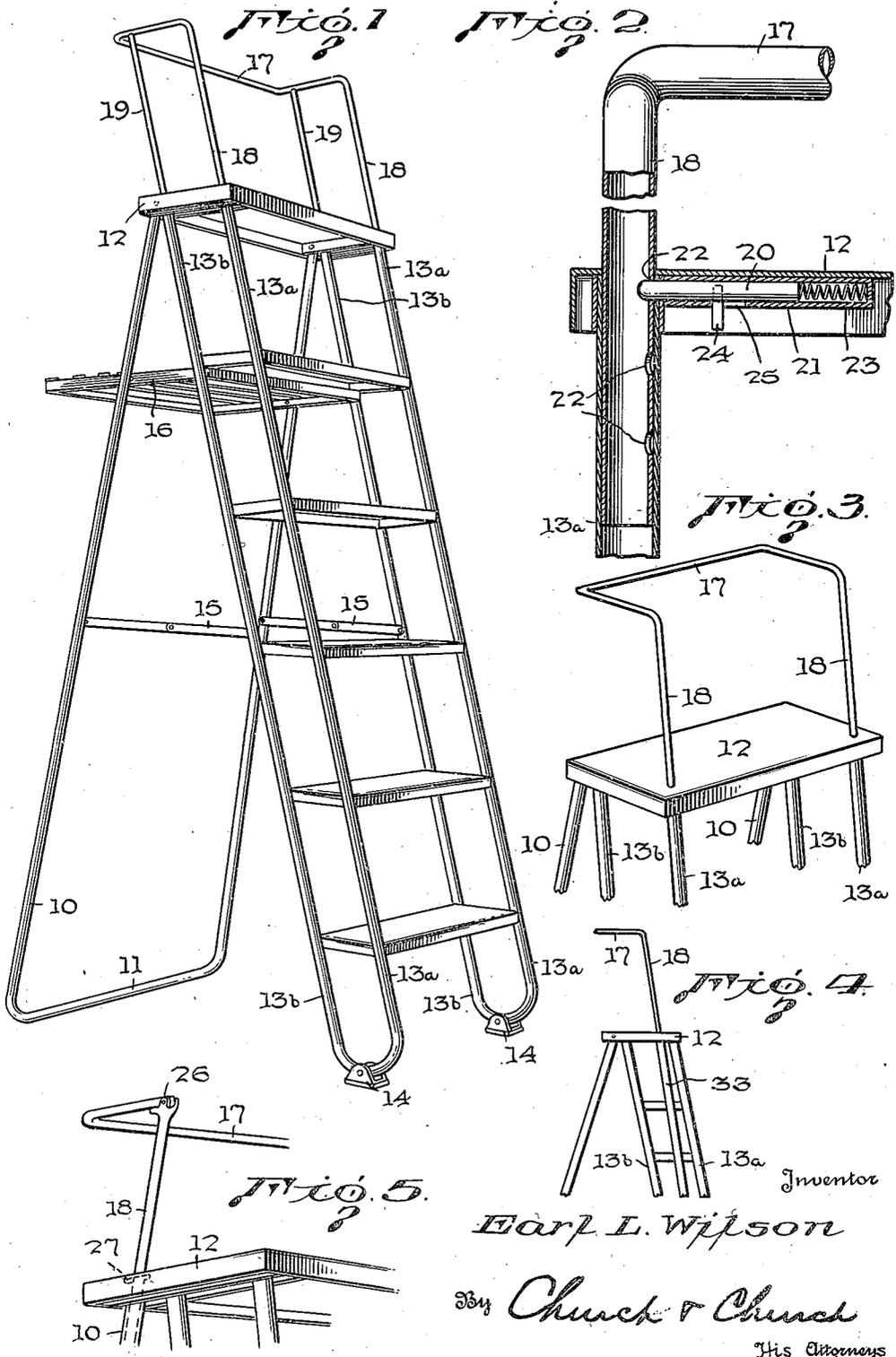
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LADDER

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LADDER

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This invention relates to improvements in ladders and particularly to step ladders.

The primary object of the invention is to provide a safety rail or guard rail whereby a person standing on the top support or step of the ladder will have the benefit of a guard rail to protect him from accidentally falling.

Another object of the invention is to provide a step ladder with a guard rail positioned above the top step of the ladder and adjustable vertically with respect to that step whereby the guard rail may be collapsed in the sense that it may lie flat against the top step of the ladder when not in use or may be raised above the top step to any desired height to provide support for an individual desiring to stand on the top step.

Another object of the invention is to provide an integral one-piece guard rail vertically adjustable in the standards of the ladder between which the steps of the ladder are mounted.

Still another object of the invention is to provide a step ladder having an extensible guard rail positioned above the top step of the ladder, the guard rail, in this instance, being of a two-piece construction wherein the rail proper is pivotally mounted to swing forwardly and rearwardly with respect to the top step whereby it may either be turned to a position projecting rearwardly beyond the top step or it may be turned forwardly to a position where it will lie flat against the top step when the extensions on which it is pivoted are telescoped or collapsed within the standards of the step ladder.

With there and other objects in view, the invention consists in certain details of construction and combinations and arrangements of parts, all as will hereinafter be more fully described and the novel features thereof particularly pointed out in the appended claims.

In the accompanying drawing—

Figure 1 is a perspective view of a step ladder embodying the present improvements illustrating the guard rail extended above the top step of the ladder;

Fig. 2 is a detail sectional view taken transversely of the ladder in a plane intersecting one of the standards in which the guard rail is supported to illustrate one form of means for supporting the guard rail in elevated position;

Fig. 3 is a detail perspective view illustrating the top step of the step ladder and a modified form of guard rail;

Fig. 4 is a detail side elevation of the upper portion of a step ladder showing a modified arrangement for supporting the guard rail; and

Fig. 5 is a perspective of the top step of a step ladder illustrating a still further modification of the guard rail.

As illustrated in Fig. 1, the step ladder comprises collapsible front and rear members. The rear member preferably consists of a U-shaped one-piece member, the crossbar 11 of said member being adapted to rest on the floor or other surface and the upper ends of the side portions 10 of the said U-shaped member being pivotally secured to the top step 12 of the ladder. As this pivotal connection of the rear member may take any desired form and constitutes no part of the present invention it is neither shown nor described herein in detail. The front member consists of side standards on which the steps of the ladder are mounted. These standards are preferably formed of one-piece U-shaped members whose side portions constitute the standards 13^a, 13^b, and whose cross-members carry anti-slip elements 14 adapted to rest on the floor or other surface. The upper ends of these U-shaped side standards are rigidly attached to the top step 12. The front and rear members of the ladder are connected to each other by collapsible braces 15 each formed of two pivotally connected sections each pivotally attached to said members. A rack 16 may also be provided near the top of the ladder and, in accordance with the usual practice, this rack is also pivotally secured to the front and rear members to permit collapsing thereof.

Preferably the front and rear members are all made of aluminum of hollow or tubular formation, extruded aluminum tubing being considered probably the most desirable form of material for use in fabricating these members. In order to provide additional means of support whereby a person standing on the top step of the ladder may better maintain his balance, the present ladder is provided with a guard rail which is slidably associated with the tubular standards at opposite sides of the step ladder. In the preferred form of the invention the guard rail proper, indicated at 17, is of U-shape formation and is provided at its ends with integral depending extensions 18 which are telescopically associated with the front standards 13^a of the front member. In addition, the guard rail is also provided with rear vertical extensions 19 which are likewise telescopically associated with the rear standards 13^b of the front member. Preferably the extensions 18, 19, of the guard rail telescope within the standards 13^a, 13^b, and said guard rail may either be raised any desirable distance above the top step 12 of the ladder, depending upon

the length of extensions 18, 19, or it may be collapsed or depressed to lie substantially flat against the upper surface of said top step as would be the case when the ladder is not in use. If desired the frictional engagement between the extensions 18, 19, and the standards 13^a, 13^b, may be such as to retain the guard rail in any of its elevated positions. On the other hand, more positive locking means may be provided for this purpose as shown in Fig. 2 wherein a locking pin 20 slidable in a tubular housing 21 secured to the undersurface of top step 12 is adapted to engage one of a series of apertures 22 in one of the extensions 18, 19. Locking pin 20 is yieldingly urged into engagement with the guard rail extension by a spring 23 and said pin is preferably provided with a lateral extension 24 projecting through a slot 25 in housing 21 in order to facilitate retraction of the locking pin 20 when it is desired to collapse or depress the guard rail. While only one such locking pin is illustrated it will be appreciated that additional locking pins may be provided for one or more of the standards 13^a, 13^b.

In the modification illustrated in Fig. 3 the guard rail is an integral one-piece affair, consisting of the three-sided U-shaped guard rail proper 17 with the integral depending extensions 18 at the forward ends of the sides of the guard rail. In this instance, the extensions 18 preferably telescope within the forward tubular standards 13^a of the ladder as illustrated in Figs. 1 and 2 and may occupy any desired elevated position above the top step 12 or may be depressed flat against that step.

In the modification illustrated in Fig. 4 the depending extensions 18 of the guard rail are telescopically received in supplemental tubular standards 33 which may be attached in any suitable manner to the ends of the steps of the ladder at a point intermediate the tubular front and rear standards 13^a and 13^b.

Still another modified form of guard rail is illustrated in Fig. 5. In this instance, the U-shaped guard rail 17 is pivotally secured to the upper ends of depending extensions 18 by pivot pins 26 and said extensions 18 are telescopically received in the tubular side portions 10 of the rear supporting member of the ladder. When the ladder is in use and the guard rail elevated, the

guard rail proper is swung rearwardly on the pivot pins 26 so as to project rearwardly of the top step 12, as shown in Fig. 5, whereby the rail will not interfere with an individual standing on the top step but will, at the same time, be properly positioned to aid a person in maintaining his balance while standing on the top step. When the rail is to be depressed and the ladder collapsed for storing away the guard rail may then be swung forwardly on its pivot pins 26 so that it will then overlie or be positioned flat against the top step 12 of the ladder. It should be added that in a construction such as this, that is where the extensions 18 of the guard rail are slidable in the tubular uprights 10 of the rear supporting member of the ladder, the top step 12 is formed with slots shown in dotted lines at 27 to permit of the rocking motion which is imparted to the extensions 18 when the rear supporting member of the ladder is swung toward and from the front supporting member for opening and collapsing the ladder.

What I claim is:

1. In a step ladder having front and rear members, said rear member comprising hollow aluminum standards, vertically spaced steps mounted on the front member, guard rail supports slidably received in the upper extremities of the hollow standards of the rear member and projecting above said standards, a guard rail pivotally attached to said supports above the top step of the ladder, said rail being movable on its pivotal centers from a position rearwardly of its supports to a position forwardly of said supports to rest on the top step, and means for holding said supports against vertical movement in said rear standards.

2. In a step ladder having front and rear members, said rear member comprising hollow aluminum standards, vertically spaced steps mounted on the front member, guard rail supports telescopically associated with the hollow standards of the rear member and projecting above the upper step of the ladder, and a U-shaped guard rail having its ends pivotally attached to the supports above said upper step and swingable on said supports forwardly and rearwardly of the ladder, the cross-bar of said rail overlying said upper step when swung forwardly.

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