

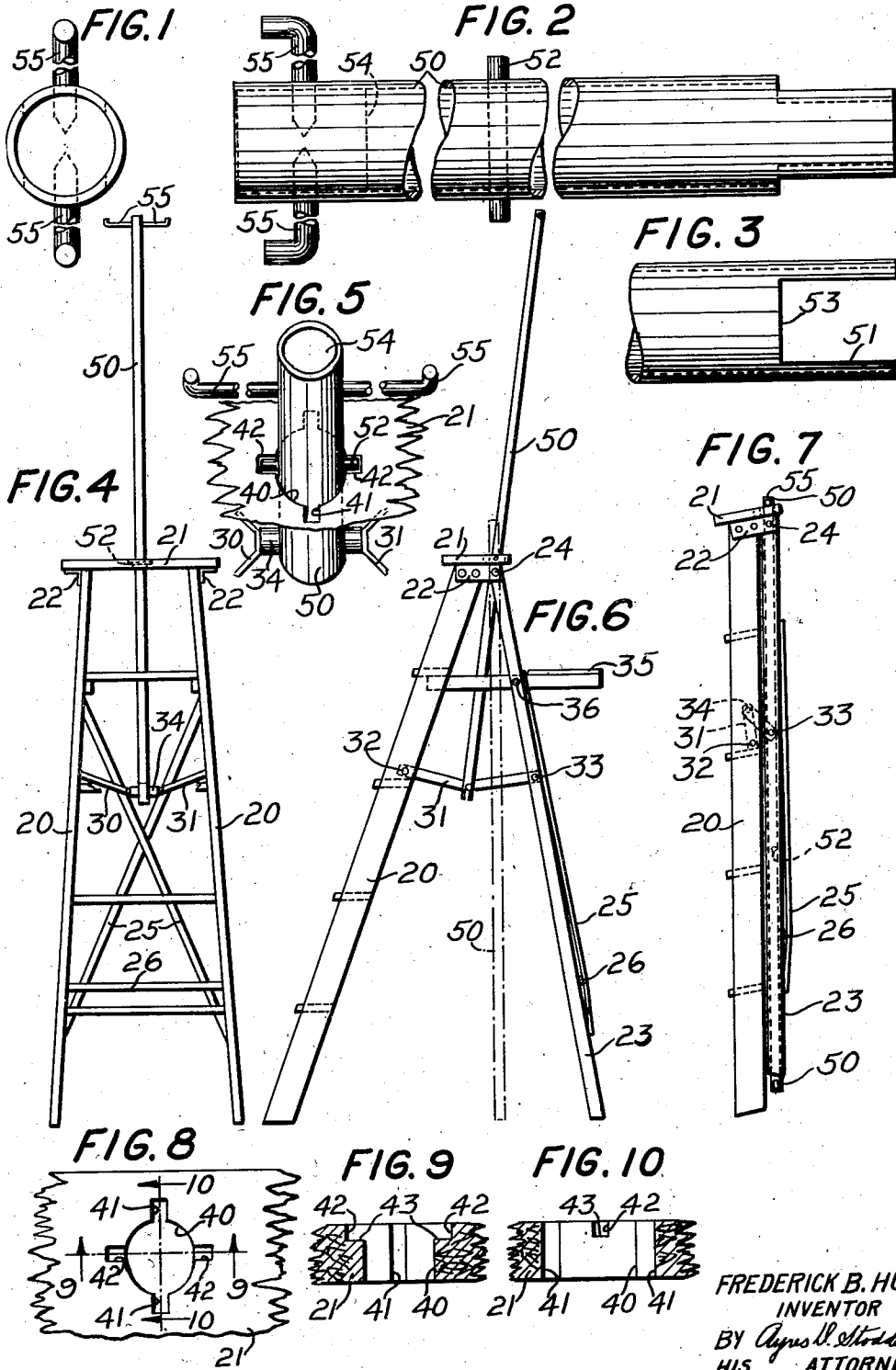
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STEPLADDER

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STEPLADDER

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My invention relates to improvements in step ladders and particularly to the folding type of step ladder. However I do not wish to limit my invention to the folding step ladder as it is susceptible of embodiment in connection with non-folding step ladders. Nor do I wish to limit my invention to any particular height of ladder, notwithstanding the drawing illustrating my invention shows a five foot step ladder.

When climbing the ordinary step ladder, as one nears the top, it is necessary to bend over and hold on to the top step to maintain one's balance before continuing on to the extreme top or even to the next to the top step.

Even after having steadied oneself by such bending over and holding to the top step, one often gets dizzy as he or she straightens up to an erect position to perform whatever task is before them.

Very often persons have fallen from step ladders due to their unsteadiness when nearing or reaching the top of the ladder.

Then too, some persons become scared when they near or reach the top of the ladder perhaps due to the fact that the ladder might wobble because of looseness in the joints of the ladder legs.

Many persons have been injured from falling off the ordinary step ladder due to the above reasons, and also due to the fact that they do not have a feeling of confidence in themselves nor do they have a feeling of safety when nearing or reaching the top of the ladder as there is nothing above the top step to provide any means of safety, or by which they might steady themselves.

To eliminate the above mentioned hazards and disadvantages appertaining to the use of the ordinary step ladder when climbing to the top or near the top thereof I have invented an improved step ladder having a novel and very useful safety means, simple and compact in its construction, yet very effective in its function.

Therefore, it is an object of my invention to produce an improved step ladder provided with a safety device whereby one climbing the ladder may steady oneself, thus eliminating the danger factors of fear, lack of confidence in high places, dizziness, etc.

It is another object of my invention to produce an improved step ladder provided with a safety device of simple construction, easy to adjust into effective position and compact when adjusted into its ineffective or storage position, whereby the improved ladder does not occupy any more room

than the ordinary ladder of the same size which does not have the safety device.

Another object of my invention is to produce an improved step ladder provided with safety means adjustable from an ineffective position into an effective position and constructed to be held rigid while in its effective position, and be confined within the ladder legs while it is in its ineffective position.

A further object of my invention is to produce an improved step ladder provided with a safety device comprising a rod having locating and locking pins thereon cooperating with the top step of the ladder to insure proper adjustment and rigidity of the safety device when in its effective position.

A still further object of my invention is to produce an improved safety step ladder provided with an adjustable safety device having means to support said device when the latter is in its ineffective or storage position and which means may be used as hooks upon which to hang cloths or other working implements after said device has been adjusted into its effective position.

A further and more specific object of my invention is to produce a safety step ladder having a rod with locating and locking means thereon cooperating with a shouldered aperture in the top step of the ladder and engaging the handle of the ladder spreading means whereby said rod is guided and locked in its effective position.

With these and other incidental objects in view my invention includes certain novel features of construction and combinations of parts, the essential elements of which are set forth in appended claims, and a preferred form of embodiment which is hereinafter described with reference to the drawing which accompanies and forms part of this specification.

Of said drawing:

Fig. 1 is a top view of the safety means disassembled from the ladder.

Fig. 2 is a side view of the same.

Fig. 3 is another view of the lower portion of the same showing the slot for cooperation with the handle of the ladder spreading bars.

Fig. 4 shows a front view of the ladder and safety means in effective position, one of the ladder steps being broken away to show the spreading bars and how the safety rod engages the same.

Fig. 5 is a top plan view of a portion of the top step, ladder spreading bars and the safety means in its effective position.

Fig. 6 shows a side view of my improved step

ladder in its open position, the safety device being in its effective position.

Fig. 7 shows a side view of the ladder closed for storage, with the safety means confined therein in its ineffective position.

Fig. 8 is a fragmentary view of the top step showing the aperture and locating shoulders for the safety means.

Fig. 9 is a section on line 9—9 of Fig. 8 looking in the direction of the arrows.

Fig. 10 is a section on line 10—10 of Fig. 8 looking in the direction of the arrows.

Detailed description

Figs. 4, 6 and 7 show a step ladder, the front legs 20 of which have secured to the top thereof a top step 21 by means of angle plates 22. Rear legs 23 (only one of which is shown) are pivoted to the plates 22 at 24 and are braced by cross bars 25 and a horizontal bar 26.

Spreading bars 30 and 31 (Figs. 4, 5 and 6) are pivoted to the front legs 20 at 32 and to the rear legs 23 at 33 in the usual manner and have a handle 34 connecting them for manipulation when opening and closing the ladder. The usual shelf 35 (Fig. 6) is pivoted at 36 to the rear legs 23.

As stated above my invention includes a step ladder with safety means for the person climbing the ladder and to provide for this the top step 21 of the ladder has an aperture 40 (Figs. 4 to 10) and a pair of clearance slots 41 cut all the way through the step 21. A pair of locking notches 42 are cut only part way through the step 21 to form locating shoulders 43 for a purpose to be hereinafter described.

My invention also includes a rod 50 preferably made of a tubing so as to be light in weight yet very rigid for safety. However I wish it to be understood that I am not limited to the use of a tubing, as other material may be used without departing from the spirit of my invention, which other material provides the same factors of safety in rigidity and which is not too heavy to become cumbersome.

The rod 50 has a slot 51 in its lower end to facilitate engagement of this end of the rod with the handle 34 of the spreading bars 30 and 31. In case the spreading bars 30 and 31 are of a different type at the center junction, that is, where they are joined by the handle 34, then the slot 51 is to be cut to fit whatever type of spreading bars are used in the ladder.

A heavy pin 52 is tightly fitted in the rod 50 to extend through both sides thereof and is located so that when said pin 52 is resting on the shoulders 43, there is a small clearance between the edge 53 of the slot 51 and the top of the handle 34.

When the rod 50 is made of a tubing, a plug 54 is driven in the top thereof into which are driven or screwed, from opposite sides, pins 55 bent near their outer ends to function as hooks upon which may be hung cleaning cloths or other implements being used by the person on the ladder. These pins 55 rest on the top step 21 and act as supporting or suspending means for the rod 50 when the latter is in its ineffective position, as shown in Fig. 7.

Figs. 4 and 6 show my improved step ladder assembled and set up ready for use. To assemble the safety rod 50 it is slipped down through the aperture 40 and turned so that the pin 52 passes through the pair of slots 41, after which the rod is turned 90 degrees and the bottom of the same

is engaged with the handle 34 by means of the slot 51 whereupon the pin 52 enters the pair of notches 42 and rests on the shoulders 43 thus locating the rod 50 in its effective position, locking the same against any turning and retaining it in its proper angular elevation relative to the angular elevation of the ladder. The notches 42 and pin 52 prevent any turning of the rod 50 and the slot 51 engaging the handle 34 also assists in preventing any turning or twisting of the rod 50. Thus said rod 50 is positively located and locked against any turning or rotary movement when in its effective position relative to the main part of the ladder, thus providing a safety device for the person climbing the ladder.

Now, when a person climbs the ladder, after reaching the second step he or she can then grasp the rod 50 with one hand and steady himself or herself thus giving such person confidence and a feeling of safety as said person nears or reaches the top of the ladder by sliding the hand up the rod 50 while climbing up the ladder.

Thus it can be seen that one is not compelled to bend over and hold to the top step as he or she nears or reaches the top of the ladder, thus eliminating the chances of becoming dizzy when straightening up after reaching the top of the ladder, and also eliminating the danger of falling from the ladder.

The rod 50 can be very easily adjusted to its ineffective or storage position by the person standing on the ground. All that is necessary is to grasp the rod 50 near the bottom, raise the same to disengage it from the handle 34 of the spreading bars 30 and 31, which raising also raises the pin 52 out of the notches 42 and above the top of the step 21. With the rod 50 thus raised the person turns the rod 90 degrees and lowers the same, the pin 52 then passing through the pair of clearance slots 41, until the rod 50 reaches the ground or floor. The rod 50 is now in the position shown by dot and dash lines in Fig. 6.

Now when the ladder is closed in the usual manner by moving the spreading bars 30 and 31 from the position shown in Fig. 6 to that shown in Fig. 7, the rear legs 23 are raised from the ground or floor and assume the position shown in Fig. 7 and the rod 50 slides down through the aperture 40 until the pins 55 rest on the top step 21 thus suspending the rod 50 from the step 21.

Thus, as can be seen in Fig. 7 the safety rod 50, except for that very small portion above the pins 55, is confined entirely within the folded ladder. Therefore my improved step ladder does not occupy any more space than the ordinary ladder of the same size, when it is folded up for storage.

While the form of device herein shown and described is admirably adapted to fulfill the objects primarily stated, it is to be understood that my invention is not limited to the one form of embodiment shown, as other forms may be used, all coming within the scope of the claims which follow.

What I claim is:

1. In a device of the class described, the combination of a folding step ladder, the top step of which has a shouldered aperture; spreading means to retain the ladder in its open position; a member extending through said aperture above and below the top of the ladder, said member having a slot at its lower end cooperating with said spreading means to retain said member in proper angular elevation relative to the angular

elevation of the ladder and to assist in preventing said member from being turned; and means projecting from opposite sides of said member and cooperating with said shouldered aperture for retaining said member in its extended position and for preventing any twisting of the member when in such position.

2. In a device of the class described, the combination of a folding step ladder, the top step of which has an aperture including a pair of slots on opposite sides thereof and a pair of notches forming oppositely opposed shoulders; spreading means adapted to retain the ladder in open position; a safety member adapted to be adjusted into an effective position when the ladder is open and into an ineffective position when the ladder is closed; means on said member adapted to pass through said pair of slots as the member is adjusted into its effective position and to cooperate with said shoulders when in its effective position; means adapted to be used as hooks to support cloths or other implements when said member is in its effective position, and to act as a suspending means for said member when the ladder is in its ineffective position; and means connecting the spreading means for guiding the lower end of said member when the ladder is in its effective position.

5 3. In a device of the class described, the combination of a folding step ladder, the top step of which has an aperture and oppositely opposed shoulders adjacent said aperture; a safety member projecting through said aperture and having an effective position when the ladder is open and an ineffective position when the ladder is closed; a pin carried by said member and adapted to cooperate with said shoulders to positively locate said member in its effective position and to lock the same against rotary movement when the ladder is open; and ladder spreading means adapted to cooperate with said member to guide the same when the ladder is held open by said spreading means.

10 4. In a device of the class described, the combination of a step ladder; recesses forming shoulders in the top step of the ladder; a member extending above the top step of the ladder; means projecting from said member and cooperating with said shoulders for maintaining said member in its extended position; and ladder spreading means adapted to cooperate with said member to guide the same when the ladder is held open by said spreading means.

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