

July 18, 1933.

E. L. SEILER

1,918,293

RUNGLESS LADDER

Filed March 2, 1931

Fig. 1

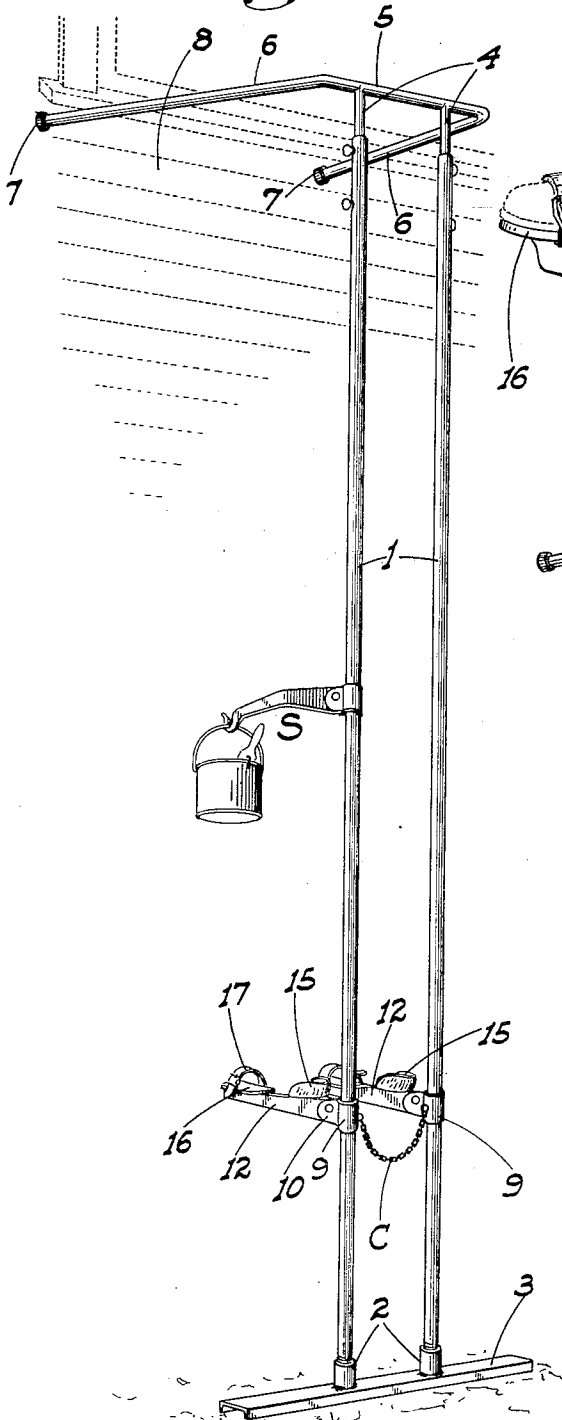


Fig. 2

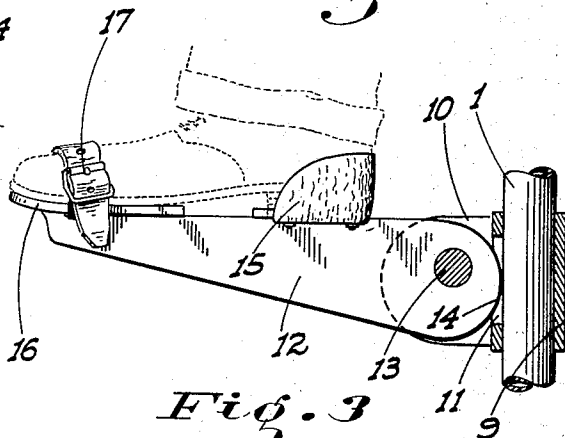


Fig. 3

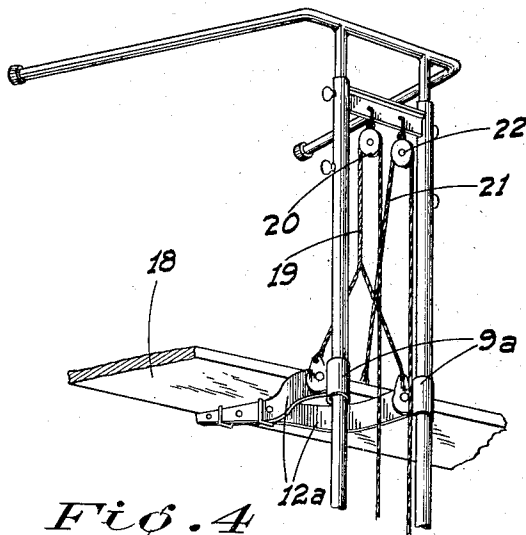
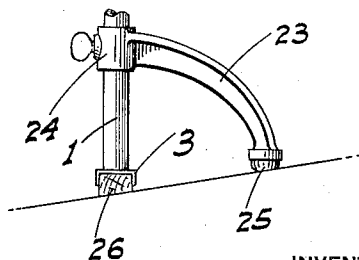


Fig. 4



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RUNGLESS LADDER

Application filed March 2, 1931. Serial No. 519,305.

This invention relates to ladders, and particularly to one adapted to be supported by a wall and such as may be used in connection with wall painting or other operations, window washing, or for use in connection with any other vertical surface of an equivalent nature.

The principal object of my invention is to provide a ladder structure so arranged that the user or occupant is disposed between the ladder and the wall, thus placing him entirely in the clear of any obstructions or parts of the ladder which in the ordinary form interfere considerably with convenient and effective operation.

A further but equally important object is to provide vertically adjustable supports for the feet of the user, so arranged that he may stand naturally and with greater comfort than is possible with the ordinary rungs, and which are so mounted that he may move up or down any desired degree by a simple foot movement without dismounting from the ladder or using his hands.

The user may, therefore, vary his position or level on the ladder by inches or feet at a time, as may be desired, and he is not limited to an exact change of level as is the case with the ordinary rung type of ladder.

A pair of my improved ladders may also be used to support a scaffold board which is then disposed between the ladder and the wall, and which can be vertically adjusted within any desired close limits, the same as the foot supports of the individual user.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawing similar characters of reference indicate corresponding parts in the several views:

Fig. 1 is a perspective view of the ladder as in position for operation in connection with a wall.

Fig. 2 is an enlarged fragmentary side view

of an adjustable foot supporting element of the ladder.

Fig. 3 is a fragmentary perspective view showing a ladder used for scaffold purposes.

Fig. 4 is a fragmentary side view of the lower end of the ladder showing an auxiliary ground engaging support.

Referring now more particularly to the characters of reference on the drawing, the ladder comprises a pair of parallel standards 1, preferably of circular section and hollow, so as not to be unduly heavy. These standards may be made in various lengths, depending upon the length desired for the ladder as a whole. At the lower ends the standards are removably screwed into sockets 2, secured to and suitably spaced apart on a flat base support 3. The spacing of the standards is about equal to the normal spacing of the feet of a man when standing in a natural position, or between nine and twelve inches.

Stems 4 are adjustably slidable in the upper ends of the standards, which stems are rigidly connected to and support a horizontal bar 5. This bar at its ends is formed with horizontal and diverging arms 6, the outer ends of which carry pads 7 adapted for engagement with the wall 8, which is to be worked on. The length of the arms is such that the standards when set parallel to the wall, are disposed a sufficient distance away from the wall to enable the user to be between the standards and the wall and still have ample room for the convenient performing of operations on the wall. The adjustable positioning of the wall engaging arm unit enables the same to avoid contact with window sills or other projections when being set up.

The foot supporting means for the user of the ladder is arranged as follows:

Independently slidable on the separate standards are sleeves 9, from each of which a pair of spaced ears 10 project laterally, the sleeve having a longitudinal slot 11 between the ears. Projecting from between the ears of each sleeve is a normally horizontal arm 12 set on edge and pivotally supported from the ears by a pin 13. The inner end of the arm projects through the slot 11 and is of circular form but eccentric relative to the

pin, so as to form a cam 14. The setting of this cam relative to the pin is such that when the arm is horizontal and a downward pressure is exerted on the same, the cam bears
 5 tightly against the standard and prevents further downward movement of the arm, while also causing the sleeve to be tightly clamped against the standard. Upward
 10 turning of the arm on its pin, however, clears the cam from the standard and releases the sleeve so that it is then free to slide.

Fixed on each arm is a foot support preferably comprising a heel engaging element 15 and a sole engaging plate 16. The latter
 15 plate has an adjustable strap 17 or the like to engage the shoe of the user adjacent the toe so as to hold the shoe closely associated with the support. In operation the user
 20 places his feet on the supports and straps his shoes in position, then standing between the standards and the wall and facing the latter. This places his weight inwardly of the standards so that there is no tendency for the same
 25 to move outwardly as will be evident, and there is also nothing between the user and the wall to interfere with his operations.

When wishing to climb up it is only necessary for the user to support his weight on
 30 one foot, tilt the other arm 12 upwardly by raising the corresponding foot at the toe, and then raising the arm and its sleeve as a unit by raising the leg until the support assumes the desired new position. The weight is then
 35 taken by the raised support and the other one is similarly manipulated to bring it to the new level. A chain C or the like connects the two sleeves so as to limit their relative
 40 movement, and prevents one being raised or lowered to such an extent that the foot on the other support is cramped and cannot be properly manipulated to control the movement of said other support.

In descending the same operations are carried out, but each support as released from
 45 clamping engagement with the standard is of course lowered instead of being raised.

Due to the use of the flat foot supporting elements and to the fact that the supporting
 50 units may be turned laterally on the standards to accommodate themselves to the natural position of the feet of the user, fatigue and discomfort to the feet are minimized. This is because, as previously stated, the user
 55 stands naturally and there is no cramping or unnatural straining of the feet as is the case when they are engaged for any length of time with narrow rungs.

Another vertically adjustable supporting
 60 unit S to support a paint bucket, tool receptacle, or the like is preferably used with one of the standards above the foot supports, which unit is of course raised or lowered by hand as may be necessary with a change of
 65 the position of the operator.

When the structure is to be used for scaffold purposes, the separate feet supports are replaced by a double support comprising
 70 sleeves 9a and arms 12a, which converge to extend along side each other at their outer ends, so as to form a unitary support for the scaffold plank 18, which is secured thereto in any suitable manner.

It is of course to be understood that in this
 75 connection a pair of ladder units are used, suitably spaced apart along the wall proportionate to the length of the board being supported and so that said board will have two points of support. The raising or lowering
 80 of the board is effected by ropes, there being two such ropes for each ladder unit. One of the ropes 19 is connected to the sleeves 9a and extends upwardly and over a direction
 85 changing pulley 20, mounted in connection with the standards at their upper ends, and then downwardly to a point where it may be manipulated from the ground.

The other rope 21 is connected to the board
 90 itself and also extends thence over a direction changing pulley 22, mounted adjacent the pulley 20, and then passes toward the ground.

A pull on the rope 21 tilts the board up so
 95 that the clamping engagement of the cam with the standards is released, and a pulling or slacking of the rope 19 then raises or lowers the board and the supporting members as a unit.

It may sometimes be necessary to rest the
 100 base 3 on a surface which slopes transversely and away from the wall, or it may be desired to set the standards at a slope toward the wall. In such cases I may prevent possible
 105 outward slipping of the base by providing an additional ground engaging element, such element comprising a downwardly curved
 110 arm 23, one for each standard, and having a sleeve 24 on its upper end adjustably slidable on the standard and adapted to be
 115 clamped in any position. The outer end of this arm carries a foot 25 to engage the ground, the arm being positioned so that this foot is disposed between the standard and the wall.

Also, if desired, the flat engagement of the
 120 base with a sloping surface may be maintained by means of a block 26 of wood or the like, seated in the base and cut on its lower face with a bevel corresponding to the relative
 125 slope of the surface on which it rests.

From the foregoing description it will be
 130 readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations
 135 from such detail may be resorted to as do not form a departure from the spirit of the in-

vention, as defined by the appended claims.

Having thus described my invention what I claim as new and useful and desire to secure by Letters Patent is:

5 1. A rungless ladder comprising a vertical standard unit to be supported by the ground, means mounted on the upper end of the unit and projecting horizontally from said unit toward and adapted to engage a wall and of a
10 length to hold the upper end of the unit outwardly of the wall a distance greater than the thickness of a human being, transversely spaced foot supporting devices adjustably and separately mounted on the unit, and foot
15 engaging means on said devices arranged so that the feet of the occupant will point away from the standard unit or toward the wall, whereby said occupant will be disposed in facing relation to the wall between the stand-
20 ard unit and wall.

2. A structure as in claim 1, with a flexible member connecting the foot supporting devices and arranged to limit the vertical movement therebetween.

25 3. A rungless ladder comprising a vertical standard unit to be supported by the ground,

a wall engaging device mounted on the unit to hold the same from tilting movement in the direction of a wall, said device comprising horizontal arms to project from the unit to the wall, the length and spacing of said
70 arms being greater than the thickness and width respectively of a human being, and means to engage the feet of an occupant adjustably mounted on the standard unit, and projecting from said unit in the same direc-
75 tion as the arms.

4. A rungless ladder comprising a vertical standard unit supported by the ground, means for holding the unit in spaced rela-
80 tion to a wall a distance greater than the thickness of a human being and so that the unit is prevented from tilting toward the wall, occupant supporting means disposed intermediate the wall and standard unit
85 whereby the occupant will be disposed in a corresponding position in facing relation to the wall, and means mounting said supporting means on the standard unit for vertical
90 adjustment.

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