

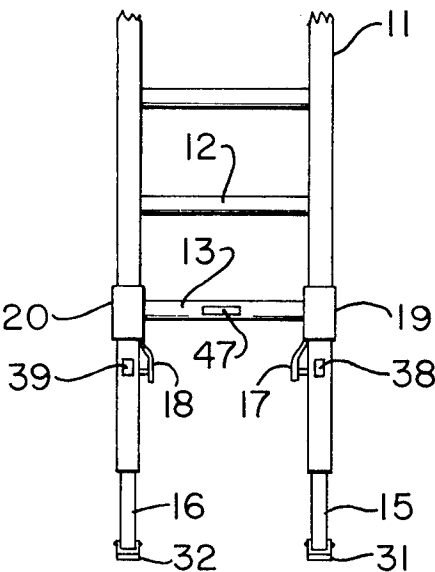
[54] **LADDER LEVELER** 1,157,739 10/1915 Tyler..... 182/204
3,291,258 12/1966 Twilley 182/211
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[22] Filed: **Sept. 4, 1973** *Primary Examiner*—Reinaldo P. Machado
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[52] U.S. Cl. **182/204**
[51] Int. Cl. **E06c 7/44**
[58] Field of Search 182/203, 204, 205, 200,
182/207, 178, 209

[56] **References Cited**
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99,799 2/1870 Wells 182/178

[57] **ABSTRACT**
An integral part of a ladder which permits the ladder to be leveled to accommodate variations in terrain safely by preventing the legs from moving once the ladder is ascended.

2 Claims, 4 Drawing Figures



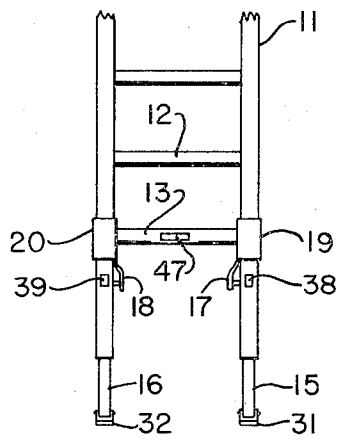


FIG. 1

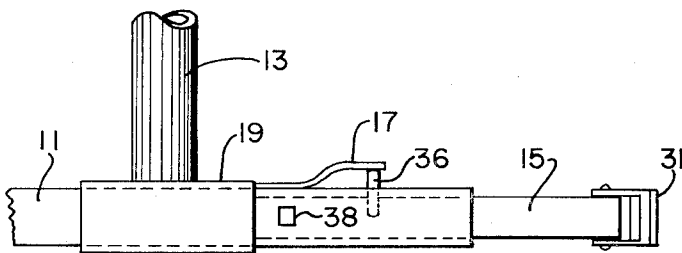


FIG. 2

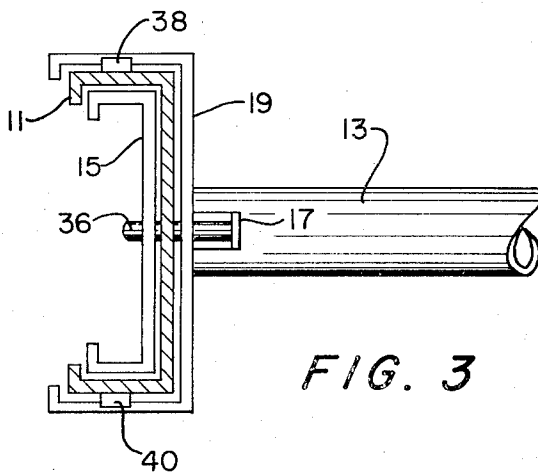


FIG. 3

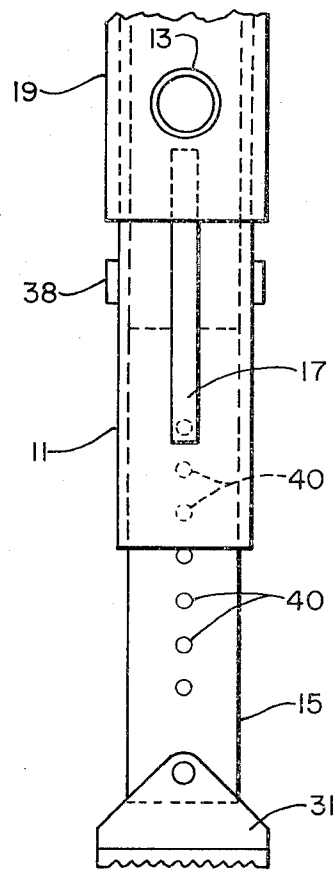


FIG. 4

LADDER LEVELER

This invention relates to ladder levelers and more particularly to a ladder leveler which is an integral part of the ladder.

Quite obviously ladders are used on unequal ground, that is the ground has swells and stairs where one might be required to place a ladder, accordingly if some arrangement were made on the ladder to enable the ladder to be leveled such that it was in a normal position with reference to the vertical while bearing evenly on the ground a much more secure and safer ladder arrangement would be obtained.

Prior art devices most often were attachments that were applied to many given ladders. However these attachments have proved to be unsafe in that they were flimsy and were secured to the ladder in a rather haphazard manner. The present invention is seen as an integral part of the ladder and therefore has as much strength and safety as any other part of the ladder.

Moreover in the prior art the ladder levelers could not be handled by an individual without placing the ladder on the ground and then pulling the legs to the approximate distance and then tightening each leg up. With the present invention the leg locking mechanism is first opened and then the legs are leveled by the person holding the ladder. They are then locked in place and the ladder placed against the building. The manipulation of legs is easily obtained from the ground by one user of the ladder. The user can also determine from an observation of the lower rung whether the ladder is level or not without reference to the position that the ladder takes on the ground or with reference to the building the ladder will be used against.

In the prior art devices the locking mechanism was not positive that is the legs or levelers could slip once the ladder were placed in position and the user were somewhere up it resulting in a very hazardous condition. With the present invention the ladder leveler is a positive acting mechanism wherein the leveler can not change position once the user ascends the ladder.

Therefore an object of the present invention is to provide an integral leveler arrangement for a ladder.

Another object of the present invention is to provide a positive locking ladder leveler.

Another object of the present invention is to provide a ladder leveler which can be manipulated with the ladder held by the user and the levelers manipulated with his feet or by pressing them against the ground.

Another object of the present invention is to provide a ladder leveler which locks firmly in place when the user ascends the ladder.

Other objects, advantages and features of the present invention will be better understood from the following specifications especially when read in conjunction with the attached figures of which:

FIG. 1 is a direct view of the present invention.

FIG. 2 is a side view of a signal leg of the leveler.

FIG. 3 is a top view of the ladder leveler through the bottom section.

FIG. 4 is a side view of the ladder leveler.

Referring now to FIG. 1 we see a ladder 11 with rungs 12 and 13. We also note that the legs of the ladder have two leveling links 15 and 16. The levelers have feet 31 and 32 respectively.

It will be noted in the lowest rung 13 that it has a level spirit 47 which is visible to the user such that he can determine when he is holding the ladder that it is in a hori-

zontal position such that the ladder will be erect if the two feet are placed squarely on the ground. We note also that lower rung is connected to two slidable section 20 and 19 which slide up and down the rails of the ladder slightly. We note stops 39 and 38 prevent the rung from going any great distance beyond that point. We also note two spring mechanisms 17 and 18 which will be explained later as locking the leveler in place.

Referring now to FIG. 2 we again see the ladder 11 on its side with the sliding rail mechanism 19 and the rung 13 connected thereto, this lower rung can slide down until it hits stop 38 and can not go any further. The rail then slides up over the spring mechanism 17 and a pin 36 is forced into the ladder when this rail is pressed down and pin 36 goes through the ladder and is caused to engage the leveler 15 which we will show further. A foot 31 is shown also on this particular ladder.

Referring now to FIG. 3 we see the underside of the ladder from a bottom view with a section just below where pin 36 enters the ladder. We note that the various U-shapes of the ladder, ladder lever, and lower rung channel interfit. Referring now to 11 we see that the ladder has a U-shaped channel 19 which supports the lower rung 13 and is therefore able to slide up and down on the ladder leg. Stop 38 and 40 prevent this from going beyond a certain point. Inside of the leg of the ladder 11 is another U-shaped piece which interfits neatly and it is the leveler proper. We note that the rail 13 pushes down on the spring mechanism 17 causing the pin 36 to pass through the ladder hole into a variety of holes in the leveler which we will speak of further. Referring now to FIG. 4 we see a side view of the single leg of the ladder leveler. Here now the rail 19 and its rung 13 can slide up and down and cause spring 17 to push its pin 36 through the hole in the ladder. We also note holes 40 in the leveler 15. There are several holes. The leveler therefore can be locked in several different positions. Which will accommodate a variety of unlevel soil.

The user of such a ladder would follow the following procedure. He would hold the ladder upright holding on to rung 12 and rails 11 at his shoulder. He would lift rung 13 up to its highest position. This would permit the spring releases 17 and 18 to disengage the leveler 15 and 16 he would then urge the levelers to mate with the ground while he maintained the ladder 13 erect by observing the level spirit 47. The top end of spring 17 is welded to rail 11. When the levelers engage the ground and the ladder were held erect he would then slide rung 13 downward until the pins were forced into the appropriate openings in the leveler he would then place the ladder against the building. When he stepped on the first rail it would further urge the rails 19 and 20 down forcing the spring locking mechanism 17 and 18 more tightly into place. Therefore he could not ascend the ladder without first locking the legs permanently in position.

It is seen then that the pins passing through the holes in the ladder provide positive locking mechanism such that the rails can not move or slip while the user is on the ladder. Moreover one can not ascend the ladder without forcing the lower rail to hold these pins into a very tight fitting arrangement whereby the ladder would be rigidly leveled before they climbed the ladder to any great distance. Moreover with the level spirit the ladder can be leveled without reference to a building.

3

And therefore only one user is necessary in operating this leveler.

Aluminum ladders are very popular because they are very light and accordingly with this ladder leveler the U shape of the various aluminum channel ladders together with a channel piece for the leveler and the locking rail provide the ultimate in strength. A pin which can be approximately 1/2 inch in diameter will lock the pin such that it can stand thousands of pounds of force without yielding. It is seen then that all of the components are of the common aluminum variety or magnesium for their light weight and they are welded as the case need be. However, the locking pin and the spring mechanism 17 for obvious reasons of strength and for their bias spring qualities must be of the appropriate metal preferably spring steel.

Although I have described my invention with reference to specific apparatus those skilled in the art may make many substitutions and variations without departing from its true scope and spirit, I therefore wish only to be limited by the appended claims.

I claim:

1. An automatic locking ladder leveler in combina-

4

tion with a ladder comprising,
a metal ladder having U-shaped legs,
leveler legs for mating with said U-shaped legs which slide in and out of said U-shaped legs independently,
locking means for each leg for locking said leveler legs at selected positions independently of one another,
a movable first rung having means slidably mating with the outside of said U-shaped legs and contacting said locking means for automatically locking said locking mechanism of each leg in response to ladder use,
said movable rail locking said locking means when pressed down by a user's body weight when first ascending said ladder whereby the leveling legs are locked in use preventing automatically the accidental movement of the ladder.
2. A ladder leveler according to claim 1 which further includes a level in said movable rung to indicate whether the ladder is level.

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