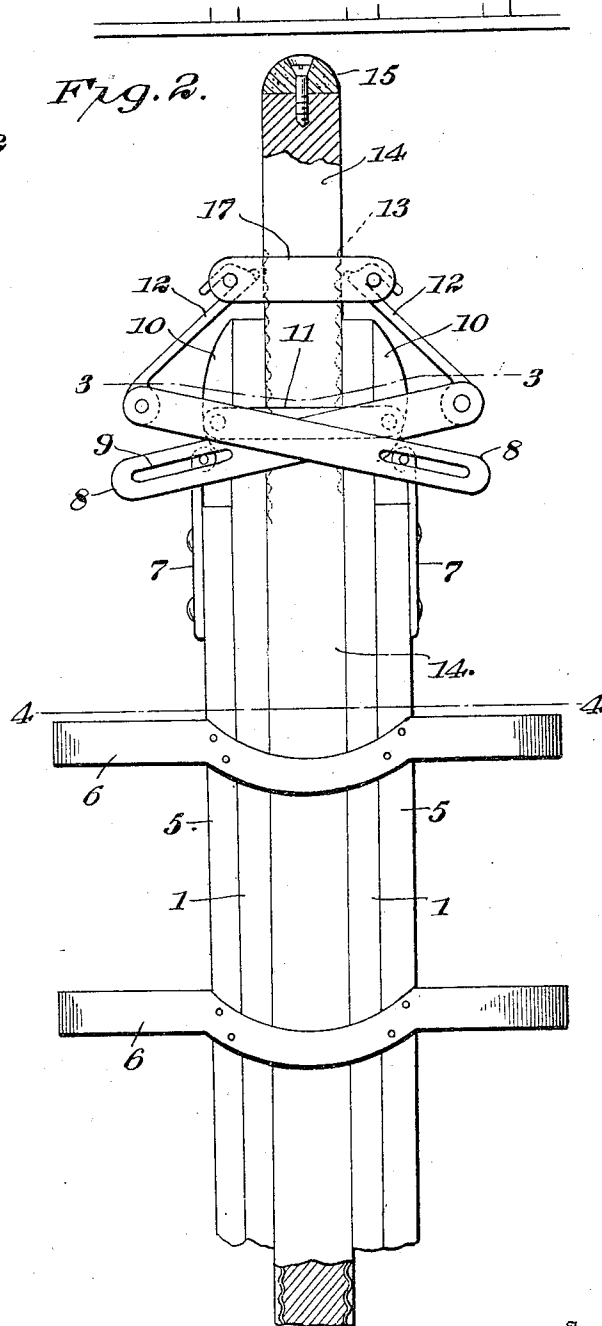
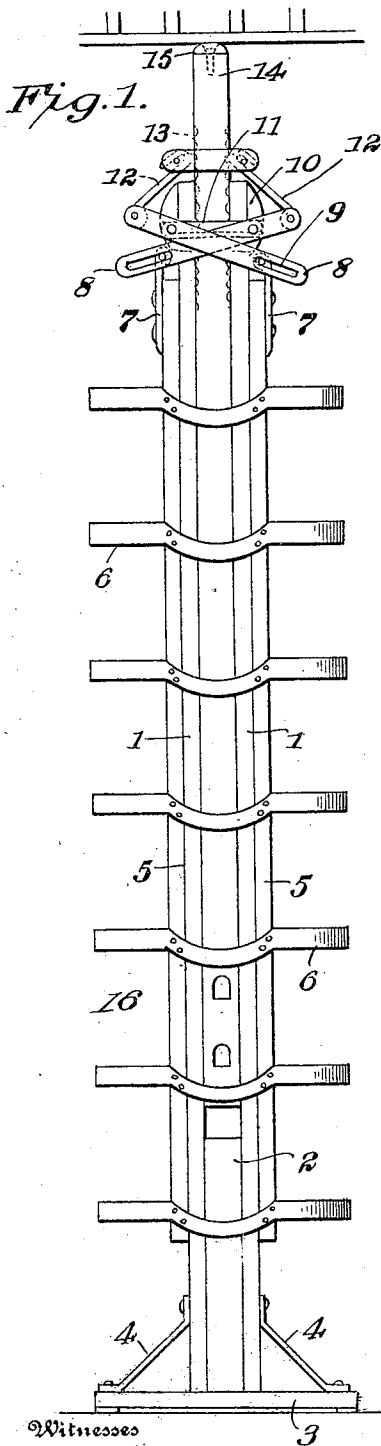


950,182.

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CEILING LADDER.
APPLICATION FILED JUNE 7, 1909.

Patented Feb. 22, 1910.
2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 3.

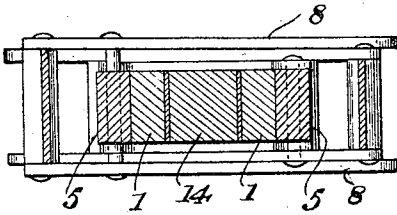


Fig. 4.

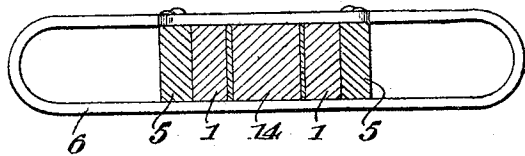


Fig. 5.

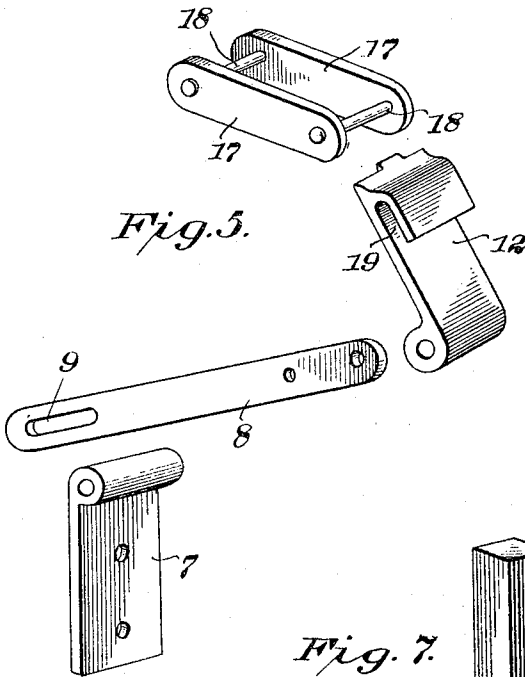


Fig. 6.

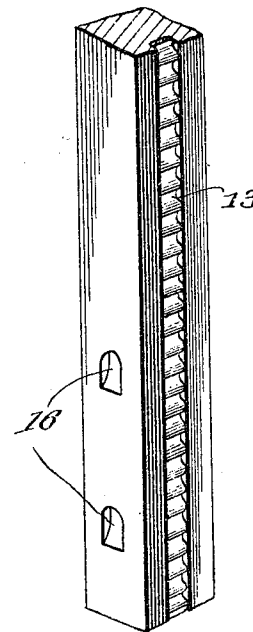
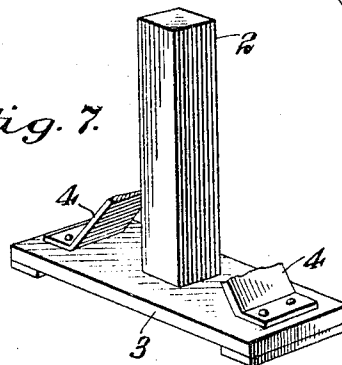


Fig. 7.



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UNITED STATES PATENT OFFICE.

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CEILING-LADDER.

950,182.

Specification of Letters Patent.

Patented Feb. 22, 1910.

Application filed June 7, 1909. Serial No. 500,580.

To all whom it may concern:

Be it known that I, ANGUS R. MERCER, citizen of the United States, residing at Traverse City, in the county of Grand Traverse and State of Michigan, have invented certain new and useful Improvements in Ceiling-Ladders, of which the following is a specification.

This invention comprehends certain new and useful improvements in ladders of the extensible type, and relates particularly to a ladder of this character which I have termed a ceiling ladder, the device being intended to be extended until it engages the ceiling so as to support the ladder rigidly between the ceiling and floor or other foundation.

The primary object of my invention is an extensible ladder which will be light, compact, capable of being quickly set up and easily operated, and adjustable to any height ceiling, the ladder being designed for the use of electricians or light trimmers, oilers or millwrights in factories and mills, for painters, window washers, or in fact in any place where it is necessary to reach a ceiling or overhead structure.

With this and other objects in view as will more fully appear as the description proceeds, my invention consists in certain constructions and arrangements of the parts that I shall hereinafter fully describe and claim.

For a full understanding of the invention, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a side elevation of an extension ladder constructed in accordance with my invention; Fig. 2 is a similar view of the upper end thereof on an enlarged scale, parts being broken away; Fig. 3 is a transverse sectional view on the line 3—3 of Fig. 2; Fig. 4 is a similar view on the line 4—4 of Fig. 2; Fig. 5 illustrates in detail perspective several of the actuating parts hereinafter specifically described; Fig. 6 is a perspective view of a portion of the extension pole, and Fig. 7 is a detail perspective view of the foot piece and filler block at the lower end of the supporting frame-work.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The main body portion of my ceiling

ladder comprises standards 1 that are spaced from each other as shown and that may be of any desired size "as to width, thickness and length," wooden beams being preferably employed. These standards 1 are preferably provided at their lower ends with a spacer and filler block 2 to which they are fastened to impart rigidity to the structure, and the said standards rest upon a foot piece 3 strengthened by diagonal braces 4 secured to the standards near the lower ends thereof.

Embracing the standards 1 are a pair of longitudinally extending step supporting beams 5, the same being mounted for a sliding movement on the standards in a longitudinal direction so as to extend or retract the apparatus. The steps 6, which are carried by the beams 5 and which are of any desired number and spaced at any desired intervals apart, are preferably in the form of metallic bands, as best seen in Fig. 4, entirely encircling the two standards and the embracing beams and fastened in any desired way to the latter, preferably projecting in opposite directions beyond both of the beams.

Hangers 7 are fastened to the upper ends of the beams 5 and project upwardly a short distance above the upper ends of the beams, and two pairs of toggle levers 8 are provided at their lower ends with slots 9 receiving bolts which are secured to the upper ends of the hangers so as to provide for a limited adjustable movement in this connection between the hangers and toggle arms. The toggle arms 8 are fulcrumed, preferably near their upper ends on the side faces of blocks 10 that are secured in any desired way to the outer sides of the standards at the upper ends thereof. Preferably, the upper ends of said standards are held together in properly spaced relation by means of the binding links 11. The upper ends of the toggle arms 8 carry pivoted locking pawls 12 that extend upwardly and inwardly and that are designed to engage the racks 13 which are preferably in the form of metal strips set in and secured to the opposite faces of the extension pole 14, the said pole being mounted for longitudinal movement between the standards 1. The upper end of the pole 14 is preferably capped by rubber or the like, as indicated at 15, so as to avoid any marking of the ceiling or other part against which it is placed and the pole is provided near its

lower end with one or more hand holes or sockets 16. The pawls are kept in place by links 17 placed on opposite sides of the pole 14 above the upper ends of the standards 1 and secured together by rods or bolts 18 which are received in slots 19 formed in the relatively free ends of the pawls 12.

When the ladder is not in use, it is to be understood that the pole 14 rests at the lower limit of its movement upon the filler block 2. When it is desired to use the ladder, the operator places the foot 3 at the desired place on the floor with the standards in vertical position or substantially so, lifting lightly upon one of the steps 6, which action thereby holds the pawls 12 free from the racks 13. With the other hand he pushes the center pole 14 upwardly against the ceiling and then releases the step which causes the pawls 12 to tightly engage the rack 13 of the pole and exert an upward force on the latter. It is manifest that the operator can then mount the ladder with the assurance that his weight is holding the ladder to the ceiling, and with my apparatus with the longitudinal tension between the ceiling and floor, the greater the weight the tighter the tension, it being clear that the pawls 12, through the instrumentality of the toggle arms 8 and downward pressure on the step supporting beams 5, will cause the pawls to lock tighter in the racks 13 and exert a strong upward pressure on the center pole 14 and a consequent downward pressure on the foot piece 3 so as to securely hold the ladder between the ceiling and floor.

It is to be understood that my invention is not limited to the exact construction, arrangement and proportions of the parts herein shown and described, as various changes may be made in the details of construction without departing from the scope of the invention, as defined in the appended claims.

Having thus described the invention, what is claimed as new is:

1. An extensible ladder comprising a main body portion, step supporting beams slidably mounted with respect to said body portion, steps or rungs carried by said beams, an extension pole, toggle arms connected to said body portion and to the step supporting beams, and gripping devices carried by said toggle arms and arranged to engage said pole, whereby downward pressure on the steps will exert an upward tension on the pole.

2. An extensible ladder, comprising a body

portion, an extension pole slidably connected thereto, gripping devices arranged to engage the pole, steps or rungs, and an operating connection between said steps or rungs and said pole arranged to impart an upward pressure upon the pole upon a downward pressure on the steps.

3. An extensible ladder, comprising a body portion, an extension pole having a freely sliding connection with the body portion, step supporting beams slidably connected to the body portion, steps carried by said beams, hangers secured to the upper ends of said beams, toggle arms fulcrumed on said body portion and having an operative connection with said hangers, and pawls carried by the upper ends of said arms and arranged to grip the pole.

4. An extensible ladder, comprising a body portion consisting of spaced standards and a foot piece upon which said standards are mounted, step supporting means embracing said standards, steps carried by said beams, an extension pole slidably mounted between said standards, hangers secured to the upper ends of said beams, toggle arms fulcrumed on said standards and operatively connected to said hangers, and pawls carried by the upper ends of said arms and arranged to grip the pole.

5. An extension ladder, comprising a body portion, an extension pole having a freely slidable connection therewith, steps, beams carrying said steps, toggle arms fulcrumed on the body portion and operatively connected to said beams, pawls carried by said arms and arranged to grip said pole by and upon a downward pressure on the steps, the pawls being provided with slotted ends, links embracing said pole, and tie rods connecting said links together and accommodated in the slots at the ends of the pawls.

6. An extension ladder, comprising a body portion, steps supporting beams embracing said body portion, steps in the form of bands encircling said body portion and beams and connected to the latter, an extension pole mounted to slide in the body portion, grippers, and an operative connection between said grippers and said supporting beams arranged to exert an upward tension upon the pole by and upon a downward pressure upon the steps.

In testimony whereof I affix my signature in presence of two witnesses.

ANGUS R. MERCER. [L. s.]

Witnesses:

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