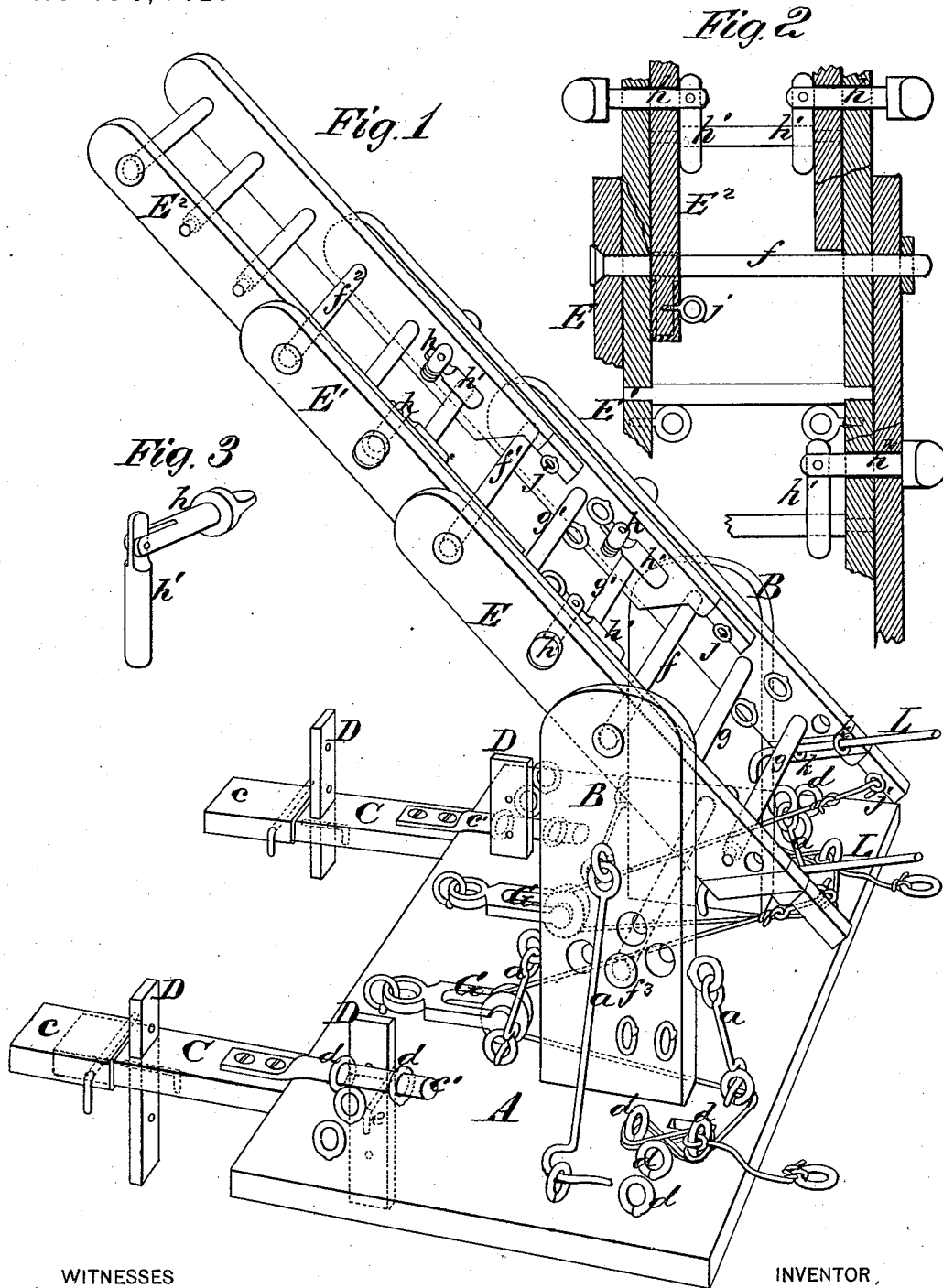


R. GILCHRIEST.
Extension Ladder.

No. 164,442.

Patented June 15, 1875.



WITNESSES

Villette Anderson.
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UNITED STATES PATENT OFFICE.

ROBERT GILCHRIEST, OF LOUISVILLE, KENTUCKY.

IMPROVEMENT IN EXTENSION-LADDERS.

Specification forming part of Letters Patent No. **164,442**, dated June 15, 1875; application filed March 13, 1875.

To all whom it may concern:

Be it known that I, ROBERT GILCHRIEST, of Louisville, in the county of Jefferson and State of Kentucky, have invented a new and valuable Improvement in Extension-Ladders; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a perspective view of my ladder, and Fig. 2 is a sectional view of the same. Fig. 3 is a detail view.

This invention has relation to ladders which are especially designed for the use of firemen to enable them to attain high altitudes; and the nature of my invention consists mainly in the employment of ladders of different widths, so that their ends can be lapped one within the other in putting the sections together, in combination with removable pivot-bolts for each section, and with means for raising and lowering the sections conveniently, and for rigidly uniting them when erected in proper position.

In the annexed drawings, A designates the base or foundation for the extension-ladder, and B B are two standards, which are tensioned into the base A, and sustained by means of hooked rods, to which swivels may be applied, if desired. The rods *a* hook into eyes on the base A and firmly hold the standards B B. C C designate extensions for the base A, which are flat bars of any suitable length, having tubes *c* on their ends to receive other bars for elongating the auxiliary extensions. On the opposite ends of bars C are rods *c'*, which enter eyes *d d* on the base A, and thus firmly unite the bars thereto. These bars may be applied to the ends or sides of the base A, or to both the ends and sides thereof, and through these bars slots are made to receive supporting-legs D. The legs D have a number of holes through them for receiving pins *e*, by means of which the base A can be leveled on uneven ground. I also employ legs and pins for the base A itself for the same purpose as I have named for the legs and pins above described. The first or lowest and

widest ladder E is pivoted at the middle of its length to a bolt, *f*, applied near the upper ends of the standards B B, so that this ladder can be inclined as may be desired. Below the pivot-bolt *f* are the rounds *g* of the first ladder, and at the upper end of this ladder is a pivot-bolt, *f*¹, which passes through the second ladder E¹ at the middle of the length thereof, and on which this ladder can be vibrated. The rounds *g'* of the second ladder, which are below the bolt *f*¹, together with this bolt, complete the number of rounds for the first ladder above the bolt *f*, this latter bolt serving as one of the rounds. The upper end of the second ladder E¹ has a bolt, *f*², through it, which passes through the third ladder E² at the middle of its length, and forms a pivot for this third ladder. The pivot-bolt *f*² and the rounds between it and bolt *f*¹ complete the number of rounds for the second ladder. In this way any desired number of ladders may be connected together. The lower ends of each one of the ladders are formed so that they will bear against the pivot-bolt of the next ladder, and when the ladders are so adjusted they will be in the same plane, as shown in Fig. 1, in which position the ladders are rigidly held by means of finger-bolts *h*, to which jointed pieces *h'* are applied for safely holding them in their places. To the inner sides of the uprights of all the ladders, and at the lower ends thereof, I secure eyes *j*, and a short distance above these eyes are eyes *k*, which latter receive levers L, for the purpose of aiding the firemen in adjusting the ladders. G G are pulleys, which are attached to the bed A behind the ladder, and around which ropes or chains are passed, which are hooked to the eyes *j* of the lower ladder, and used to raise the ladder and hold it at any desired inclination. The second and third ladders can also be adjusted by means of the ropes and pulleys.

When the ladder E is upright its lower end bears against a horizontal bar, *f*³, secured to the standards B B, and it is fixed by means of the finger-bolts *h* precisely as the upper ladders are fixed.

What I claim as new, and desire to secure by Letters Patent, is—

1. Two or more ladders, E E¹, pivoted to—

gether and applied one within the other, the pivot-bolts serving as stepping-rounds and bearings, in combination with finger bolts *h*, having pieces *h'* pivoted to them, substantially as described.

2. Pulleys G G, with their ropes combined with eyes *j*, and ladders which are pivoted to standards B, and which are also pivoted together, substantially as described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

ROBERT GILCHRIEST.

Witnesses:

JAMES REEDY,
THOMAS SHEA.