No. 732,295. PATENTED JUNE 30, 1903.

G. L. GUSTAFSON.

FOLDING LADDER.

APPLICATION FILED JULY 12, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

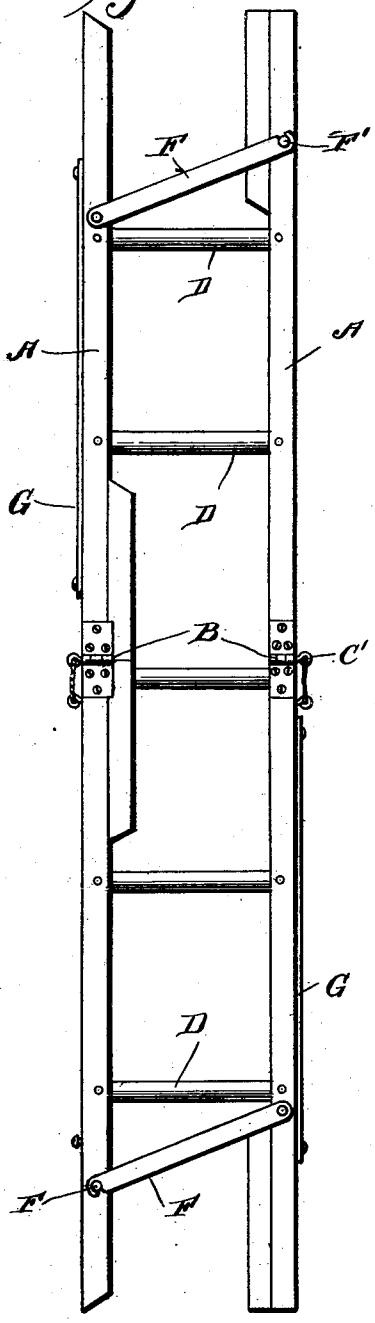


Fig. 2.

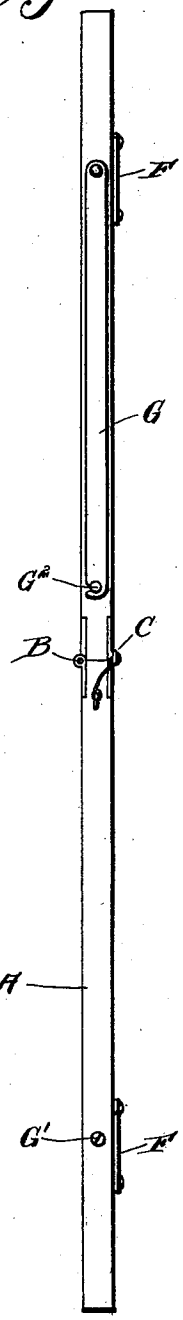
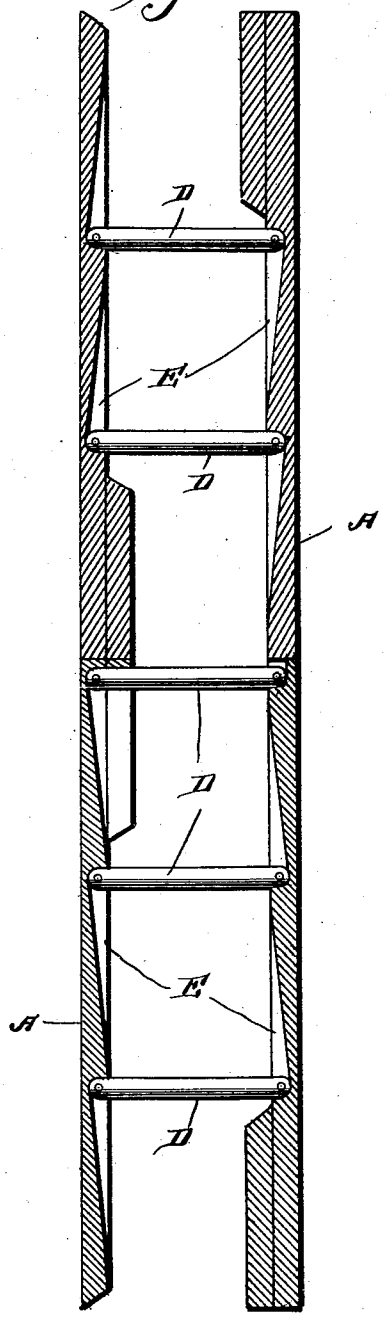


Fig. 3.



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G. L. GUSTAFSON.

FOLDING LADDER.

APPLICATION FILED JULY 12, 1902.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 4.

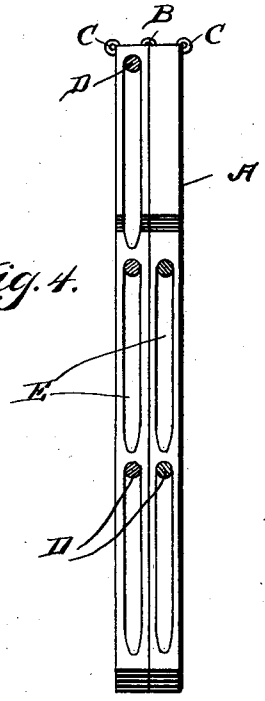


Fig. 5.

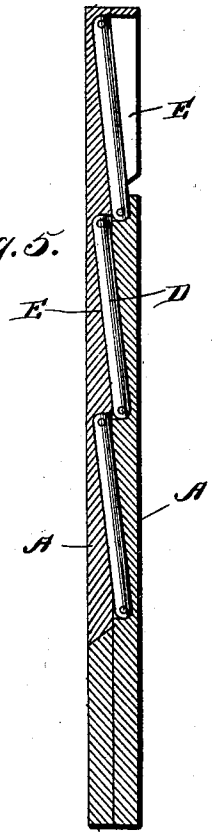
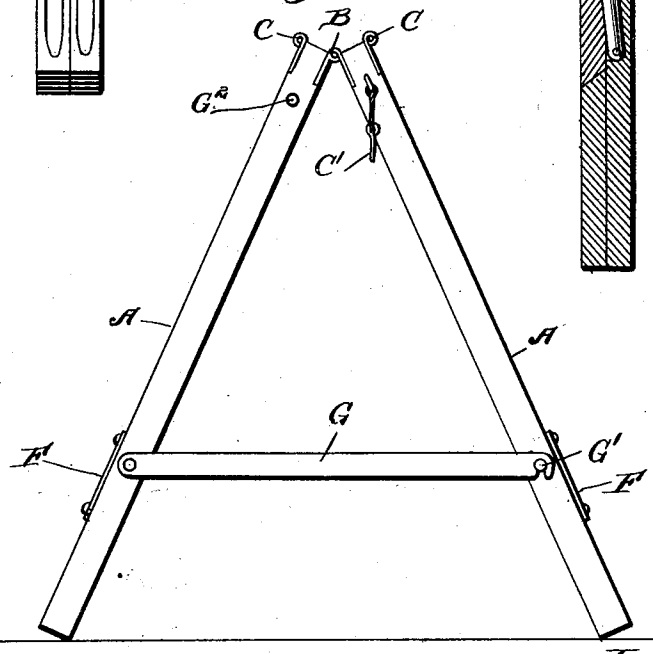


Fig. 6.



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No. 732,295. Patented June 30, 1903.

UNITED STATES PATENT OFFICE.

GIDEON L. GUSTAFSON, OF PHILADELPHIA, PENNSYLVANIA.

FOLDING LADDER.

SPECIFICATION forming part of Letters Patent No. 732,295, dated June 30, 1903.

Application filed July 12, 1902. Serial No. 115,320. (No model.)

To all whom it may concern:

Be it known that I, GIDEON L. GUSTAFSON, a citizen of the United States, residing at Philadelphia, county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Improvement in Folding Ladders, of which the following is a specification.

My invention relates to a new and useful improvement in folding ladders, and has for its object to provide a ladder which may be folded when not in use in a comparatively small compass, so that the same may be stored conveniently.

A further object of my invention is to so construct the ladder that it may be used either as a straight ladder or as a step-ladder.

With these ends in view this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claim.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, the construction and operation will now be described in detail, referring to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a front elevation of the ladder when used in a straight condition; Fig. 2, a side elevation of the same; Fig. 3, a vertical section through Fig. 1; Fig. 4, a vertical cross-section through the ladder when the same is folded; Fig. 5, a vertical longitudinal section through the ladder when the same is folded. Fig. 6 is a side elevation of the ladder when used as a step-ladder.

In the drawings, A represents the side rails of the ladder, and these side rails A are divided in the center and hinged together at the point B. The hinge B is upon one side of the side rails A, and upon the other side is a similar hinge C, each leaf of which is secured to a separate member of the divided side rails, and the pintle C′ of this hinge is removable, so that when the side rails are brought in a position where both of the divided side rails are in a straight line with one another the pintle C′ is passed through the holes through the knuckle of the hinge C, thus securing the side rails A in this straight position.

D represents the rungs of the ladder, each of which is pivoted at one end to one side rail and at the other end to the other side rail. Each of the side rails has cavities E formed in its inner face in which are pivoted the rungs D.

F represents hooked strap-braces which are pivoted at one end to one of the side rails A, and the other end is formed hook shape and adapted to hook over a pin F′, secured in the other side rail. These braces F are for the purpose of holding the ladder in its extended position.

When it is desired to fold the ladder in its most compact form, the braces F are unhooked from the pins F′. Then the pintles C′ are removed from the hinges C, and the side rails are bent upon the hinge B, so as to bring the two members of each side rail in contact with one another, thus shortening the height of the ladder just one-half. Then the side rails A of the ladder can be brought in close contact with one another on account of the rungs D being pivoted to each side rail. These rungs will fit within the cavities E formed in the side rails for that purpose. The ladder will then be folded in its most compact form, as shown in Figs. 4 and 5.

When it is desired to use the ladder as a step-ladder, the side rails are first forced away from one another, so as to bring the rungs at right angles thereto, and said side rails are then braced by means of the braces F, as before described, and then by spreading the two members of the side rails about thirty degrees, as shown in Fig. 6, the ladder can be made to stand alone, and a person may climb up the same from either side. For the purpose of bracing the ladder in this position I provide upon each side a brace G, which is pivoted at one end to one member of the pivoted side rail and at the other end is adapted to be hooked over a pin G′, secured in the other member of the divided side rail, and when the ladder is used as a straight ladder these braces G can be held by means of being hooked over the pin G^2 upon the same member of the divided side rail on which brace G is pivoted.

The advantage of my invention is that a ladder of this description may be conveniently

conveyed from place to place, being easily carried, or may be transported in a wagon without extending out behind or in front of the same, or said ladder of a limited length may be carried in a public conveyance without occasioning any inconvenience.

Another advantage of my invention is that these ladders may be used in small houses and be stored in the house in a closet or other convenient place when not in use, and therefore will not necessarily have to be left out of doors, as is the case with ordinary ladders, which in a comparatively short time will destroy the usefulness of the same.

These ladders may be made so that one can be joined upon the other, so as to make an extension-ladder of the same, as with ordinary ladders now in use—such as, for instance, having grooves formed in one end of the side rails and tongues formed upon the other end of the side rails—so that the ladders could be made any length desired by joining different sections together.

Of course I do not wish to be limited to the exact construction here shown, as slight modifications could be made without departing from the spirit of my invention.

Having thus fully described my invention, what I claim as new and useful is—

In a folding ladder, two side rails each composed of two members provided with cavities in their inner faces hinged together intermediately their length and provided with strap-hinges having removable pintles secured on the opposite sides of the side rails whereby the ladder rails may be locked in a straight line with one another, rungs pivoted at each end to the inner surface of the side rail and adapted to fit in the cavities in the rails when the ladder is folded, braces provided with an aperture in one end and having a hook-shaped projection on the opposite end, a pin secured in one of the side rails, the said hook-shaped end of the brace being adapted to fit over the pin and hold the side rails parallel to each other as and for the purpose described.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

GIDEON L. GUSTAFSON.

Witnesses:
H. B. HALLOCK,
L. W. MORRISON.