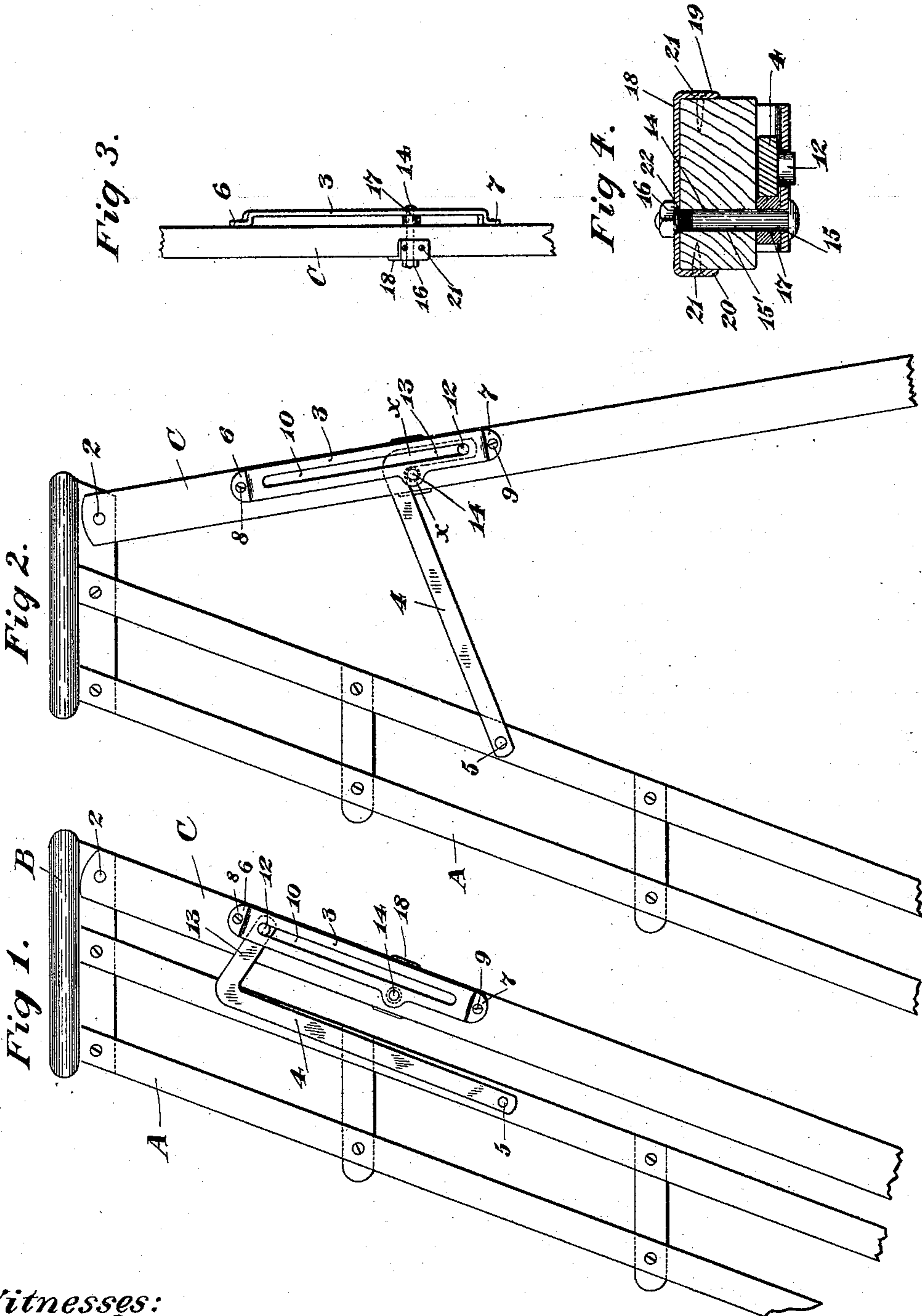


(No Model.)

W. O. SEAMAN.
STEP LADDER.

No. 604,482.

Patented May 24, 1898.



Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM O. SEAMAN, OF SPRINGFIELD, MASSACHUSETTS.

STEP-LADDER.

SPECIFICATION forming part of Letters Patent No. 604,482, dated May 24, 1898.

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To all whom it may concern:

Be it known that I, WILLIAM O. SEAMAN, a citizen of the United States, residing in Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Step-Ladders, of which the following is a specification.

This invention relates to step-ladders, the object being to provide an improved and stable device of this character that can be manufactured at a low cost.

My improved ladder involves a step or main portion and a support or prop connected therewith, which parts may be of ordinary construction, a slotted plate secured to one of said parts, and a brace or stay-rod jointed to the other part and having a pin at or near its free end sliding in the slot in said plate, the brace or rod serving to hold the support or prop in its open or extended position when the ladder is in use.

In the present case I prefer to provide, in combination with a ladder constructed substantially as set forth, a brace or stay-rod jointed to one of the members of the ladder and having a lateral extension or bend and preferably near its free end adapted to be hooked over a projection or stud on the other member of the ladder, and in connection with these parts suitable guiding means for the brace are employed, and said guiding means may be constructed as aforesaid, and the projection over which the lateral extension or bend on the brace is hooked takes up the stress or strain exerted when the ladder is in use, thereby relieving the guiding means.

In the drawings accompanying and forming part of this specification, Figures 1 and 2 are side elevations of my improved ladder, showing the support or prop in its folded and open positions, respectively. Fig. 3 is a detail of the guiding means for the brace; and Fig. 4 is a transverse sectional plan view on an enlarged scale, the section being taken in the line *x x*, Fig. 2.

Similar characters designate like parts in all the figures of the drawings.

My present improvements may be attached to various kinds of step-ladders, and I have shown the same applied to a step-ladder of ordinary construction and involving a step

portion A, a platform B, secured to the upper end thereof, and a support or prop C, hinged or pivoted, as at 2, to the platform B.

My improved ladder includes, preferably, a slotted guide-plate secured to one of the members of said ladder, and a brace jointed to the other member of said ladder and having a pin sliding in the slot in the guide-plate.

The guide-plate is preferably attached to the swinging support C, it being designated by 3, while the cooperating brace is designated by 4 and is pivoted, as at 5, to the step portion A.

The guide-plate 3 is bent inwardly at its opposite ends, as at 6 and 7, and the holding-screws 8 and 9 pass through such bent portions to maintain the plate in place, and said plate has the longitudinal guide-slot 10, in which the pin 12 at one end of the brace or stay-rod 4 slides. The free end of the brace 4 is situated between the guide-plate 3 and the prop or support C, a sufficient distance being left between these last two parts to permit the free movement of the brace.

In Fig. 1 the prop or support C is represented in its folded position and the guide-pin 12 against the upper wall of the guide-slot 10.

To unfold the ladder for use, it is simply necessary to grasp and swing the prop or support C outward, this operation sliding the pin 12 downward until it reaches the lower end of the guide-slot 10, where further movement of the prop is stopped by the guide-plate, which latter also serves to limit the opposite movement of the prop, as represented in Fig. 1, where, it will be observed, a space intervenes between the two portions of the ladder, so that the hand cannot be injured between the step portion and its prop in folding said ladder.

To shut the ladder, the operation just described is reversed.

To minimize the strain applied to the guiding means when the ladder is in use, the brace or stay-rod is provided, preferably, with a lateral extension or bend, as 13, adapted to be hooked over the projection or stud 14 upon the support or prop C, the projection being intended to receive the strain or stress which would otherwise be applied to the guiding means when the ladder is opened and the hook

and projection serving to hold the two sections of the ladder spread apart.

When the prop C is swung outward, the brace 4 is moved simultaneously downward, so that the lateral extension or bend 13 may be guided over and in contact with the projection 14 on the prop to lock the latter.

The projection 14 (see Fig. 4) consists, preferably, of a bolt extending through registering openings 15 and 15', formed in the guide-plate and prop, respectively, and held in place by the nut 16, in threaded engagement with the inner end of said bolt.

As the flexure of the guide-plate 3 between its points of attachment to the support C would interfere with the free movement of the brace 4, I provide means to prevent such flexure or bending, which latter would happen if the prop or support C should warp, the means consisting, preferably, of a stop or block of a width conforming substantially to the space between the guide-plate and the prop. This stop or block device consists in the present case of a washer or ring 17, located between the prop and guide-plate, respectively, and encircling the outer end of the bolt, so as to resist inward movement of the guide-plate.

To add to the strength of the ladder at the point where a great strain is applied, I provide a reinforcing-plate 18, fitting against the inside of the prop and having at its opposite ends the flanges 19 and 20, fitting over said prop, said plate being secured in place by screws, as 21, and having an opening 22, through which the threaded end of the bolt 14 is passed and serving to offset the weakness in the prop by forming the bolt-hole 15' therein.

Having described my invention, I claim—

1. The combination, in a ladder, of a step portion; a support therefor; a slotted plate secured to the support; a stud on said support; and a brace hinged to the step portion

and having a pin adapted to slide in the slot in said plate and provided with a lateral extension or bend adapted to be hooked over said stud.

2. The combination, in a ladder, of a step portion; a support therefor; a stud or projection on one of the parts; a brace on the other part, having a bend or lateral extension adapted to be hooked over said projection; a plate on the ladder, having a longitudinal slot adapted to receive a pin on the brace.

3. The combination, in a ladder, of a step portion; a support therefor; a stud or projection on said support; a brace pivoted to the step portion and having a bend or lateral extension adapted to be hooked over said projection and also having a pin; and a guide-plate secured to the support and slotted to receive said pin.

4. The combination, in a ladder, of a step portion; a support for the step portion; a slotted plate fixed to the support; a bolt on the support; a stop carried by the bolt between the guide-plate and the support; and a brace connected to the step portion and having a hook adapted to engage the bolt and also having a pin adapted to slide in the slot of said plate.

5. The combination, in a ladder, of a step portion; a support therefor; a slotted plate secured to the support; a bolt passing through the plate and support, respectively, and held in place by a nut; a reinforcing-plate fitting against the support; and a brace hinged to the step portion and having a bend or lateral extension at its opposite end adapted to be hooked over said bolt and provided with a pin adapted to slide into the slot in said plate.

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