No. 629,589. Patented July 25, 1899.

J. OWEN.

STEP LADDER.

(Application filed Nov. 11, 1898.)

(No Model.)

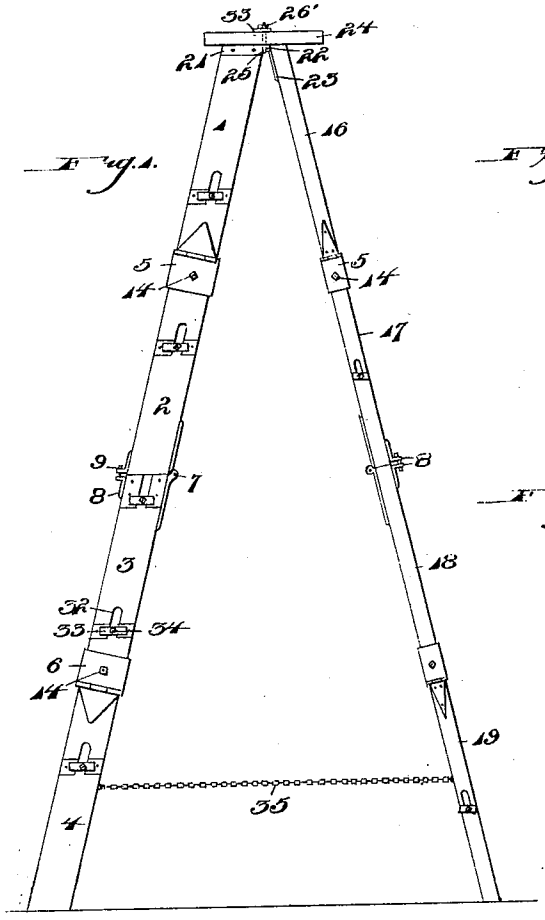


Fig. 1.

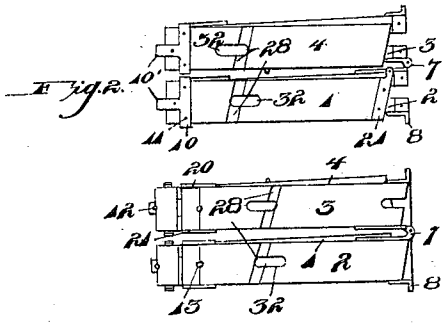


Fig. 2.

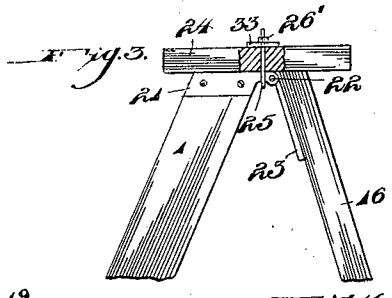


Fig. 3.

Fig. 4.

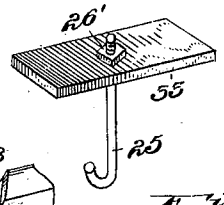


Fig. 5.

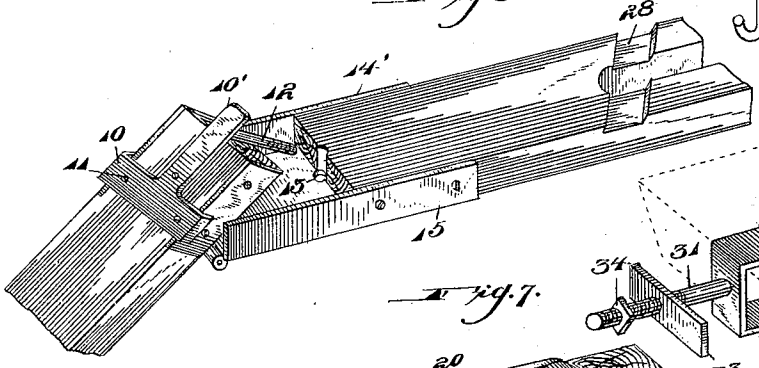


Fig. 6.

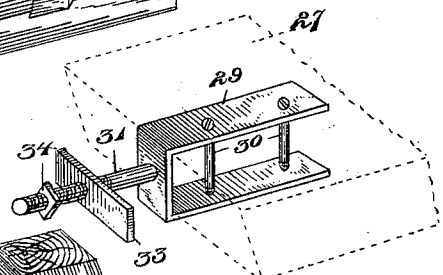
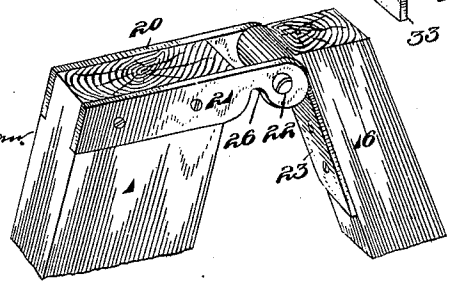


Fig. 7.



WITNESSES

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STEP-LADDER.

SPECIFICATION forming part of Letters Patent No. 629,589, dated July 25, 1899.

Application filed November 11, 1898. Serial No. 696,121. (No model.)

To all whom it may concern:

Be it known that I, JOHN OWEN, a citizen of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Step-Ladders, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to certain new and useful improvements in step-ladders.

My invention particularly relates to that class of knockdown step-ladders which can be readily taken apart after use and folded together in such a manner that the same will form a small and compact bundle.

A further object of my invention is to provide a ladder of this character with supporting-braces, which when not in use can be folded, thereby forming a small and compact bundle, as well as the supporting-standards for the braces.

My invention finally consists in the novel combination and arrangement of parts hereinafter more fully described, and particularly pointed out in the claims hereunto appended.

In describing the invention in detail reference is had to the accompanying drawings, forming a part of this specification, wherein like numerals of reference indicate corresponding parts throughout the several views thereof, and in which—

Figure 1 is a side view of my improved step-ladder when set up. Fig. 2 is a side view of the supporting-braces of the ladder when folded. Fig. 3 is a side view of the upper part of the stile and support therefor, the top step being partly in section, showing the securing means. Fig. 4 is a perspective view of the top step and the fastening means for securing the stile thereto. Fig. 5 is a perspective view of a portion of one of the braces which form the stile, showing the hinge connection by which it can be folded upon itself and also the securing means for rigidly securing the sections together when set up. Fig. 6 is a perspective view of the fastening means for the steps, one of the steps being shown in dotted lines. Fig. 7 is a perspective view of the upper portion of one of the braces, showing the hinge connection.

In constructing my improved ladder I provide the braces or stile of the ladder of four or more sections 1 2 3 4, the sections 1 and 2 being hinged together by means of the hinge 5, secured to the side thereof near the top, as well as the sections 3 and 4, which are hinged together in the same manner as at 6. Sections 2 and 3 are hinged together on their inner edges by means of the hinge 7 and are adapted to fold in the manner as shown in Fig. 2. The sections 2 and 3 are fastened together when set up by means of the eyes 8, which are connected to their edges, having the eyebolt 9 operating therethrough. Sections 1 and 2 and 3 and 4 are secured together when set up by means of the brace-irons 10, which are fastened to their inner sides, as at 11, and have screw-threaded rods 12, which are formed integral with the underneath faces of the extensions 10′ of the brace-irons 10. This screw-threaded rod is adapted to operate through the aperture 13, formed in the hinge, and a portion of the adjacent section is secured in position by means of the nut 14, which is mounted on the screw-threaded portion thereof. The sides of the hinges 5 and 6 are adapted to be bent at right angles, as at 14′ 15, and form supports for the upper ends of the sections, as shown in Fig. 5.

The rear supporting-standards for the stile are formed of sections 16 17 18 19, which are fastened together in the same manner as sections 1 2 3 4, the same reference-numerals being applied thereto to designate the parts.

The section 1 of the brace or support for the stile has secured to its upper end a pair of supporting-irons 20 and 21, one on each side thereof, each having an eye formed in its free end to receive a pivot-pin 22 for connecting thereto a half-hinge 23, which is fastened to the upper end of the section 16 of the supporting-standard.

The top step 24 of the ladder is secured to the sections 1 and 16 by means of the hook 25, which is adapted to engage the iron 21 with its hook end in the recess 26, formed in said iron. The hook 25 operates through the aperture formed in the top step and is held in position by means of the nut 26 operating on the upper end thereof.

The steps 27, as well as the supporting-braces for the standards, (not shown,) are adapted to be inserted in the inclined cut-away

portions 28, which are formed on the inner faces of the braces and supporting-standards. These steps and braces are readily secured in position by means of the clip 29, which is fastened to each side of the step or brace by means of the screws 30. The outer end of the clip 29 has formed integral therewith a rod 31, which operates through the elongated slot 32, formed in the section, as shown, and this rod 31 has mounted thereon an oblong washer 33 and a securing-nut 34.

35 indicates a chain to prevent the ladder from spreading and is secured to the inner edge of the sections 4 and 19.

It is thought that the setting up of my improved ladder can be readily understood from the foregoing description, taken in connection with the accompanying drawings.

It will be noted that various changes may be made in the details of construction without departing from the general spirit of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a step-ladder, the combination of the stiles composed of a series of sections suitably hinged together, means carried by said sections for locking the same in the extended position, combined with a series of steps, means connected to each of said steps except the uppermost for rigidly securing the same to the stiles, and a pair of hooks secured to the uppermost step for fastening the same to the stiles, substantially as described.

2. In a step-ladder, the stiles composed of a series of sections suitably hinged together and having inclined cut-away portions and slots formed therein, a series of steps adapted to be mounted in said cut-away portions, and means carried by said steps operating through the elongated slots for securing the steps rigidly in position substantially as shown and described.

3. In a step-ladder, the stiles composed of a series of sections suitably hinged together, and each having an inclined cut-away portion and an elongated slot formed therein, a series of braces adapted to be mounted in said cut-away portions, and means carried by said braces and operating through the elongated slots for rigidly securing the said braces in position, substantially as shown and described.

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

JOHN OWEN.

Witnesses:
JOHN NOLAND,
E. W. ARTHUR.