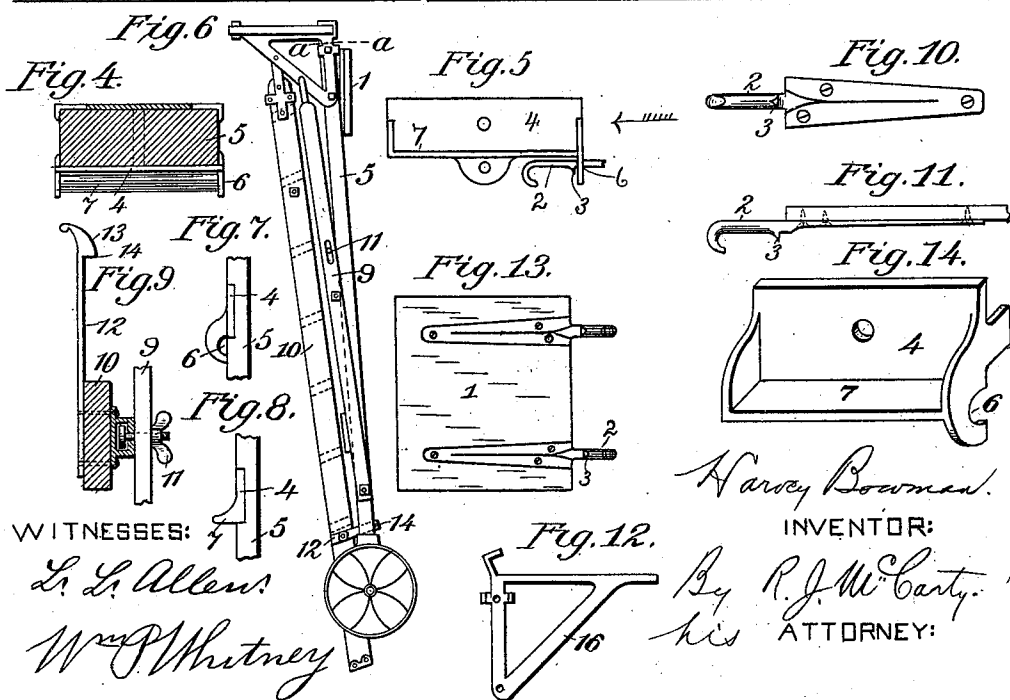
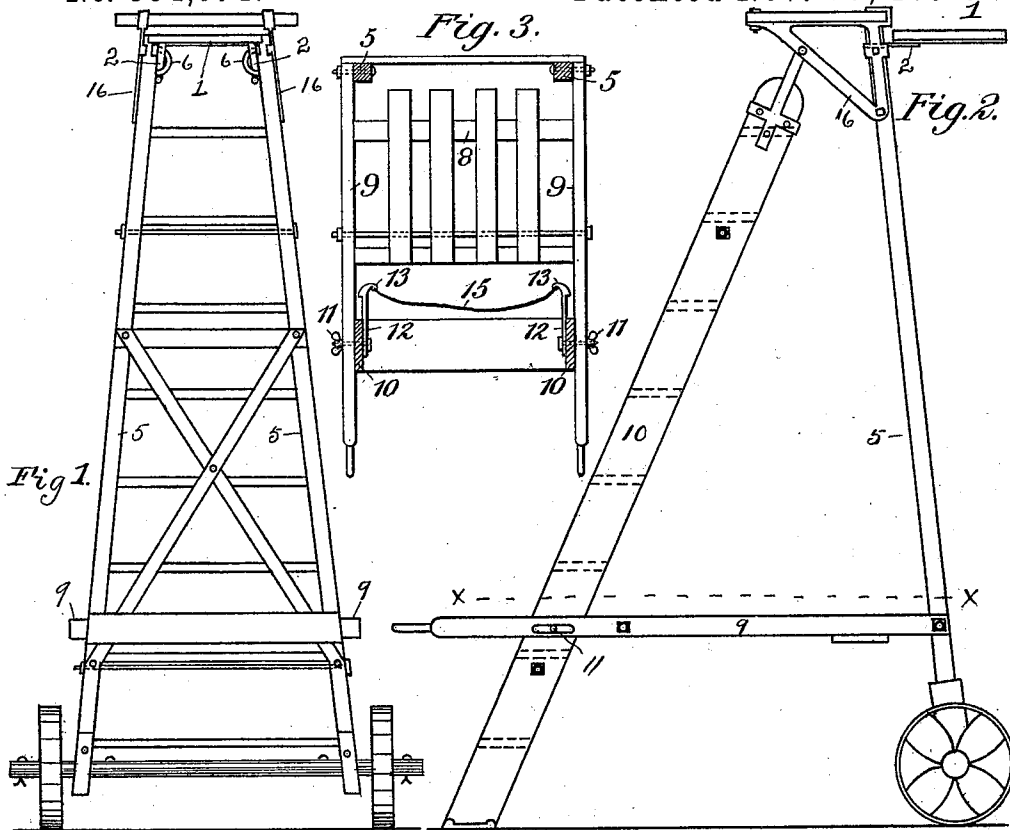


(No Model.)

H. BOWMAN.
PORTABLE STEP LADDER.

No. 594,674.

Patented Nov. 30, 1897.



WITNESSES:
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UNITED STATES PATENT OFFICE.

HARVEY BOWMAN, OF DAYTON, OHIO.

PORTABLE STEP-LADDER.

SPECIFICATION forming part of Letters Patent No. 594,674, dated November 30, 1897.

Application filed November 16, 1896. Serial No. 612,214. (No model.)

To all whom it may concern:

Be it known that I, HARVEY BOWMAN, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Portable Step-Ladders; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in folding step-ladders.

The object of said invention is to further improve the ladder shown and described in my pending application, filed October 26, 1896, Serial No. 610,025, whereby the cost and simplicity of the ladder are reduced to a minimum.

Referring to the accompanying drawings, Figures 1 and 2 are front and side views, respectively. Fig. 3 is an enlarged section showing the lower basket-support or shelf on the line *xx* of Fig. 2. Fig. 4 is an enlarged section taken horizontally through the upper portion of one of the upright posts—for example, on the line *aa*—the upper shelf being removed, also the side bracket. Fig. 5 is an inner side view of one of the brackets for securing the upper shelf. Fig. 6 is a side elevation of the ladder in a folded condition. Fig. 7 is a detail view of one of the upper shelf-brackets, looking in the direction of the arrow, Fig. 5. Fig. 8 is a similar view looking at Fig. 5 from the opposite side. Fig. 9 is an enlarged section taken horizontally through one of the rear inclined posts just above one of the handle-bars. Fig. 10 is a view looking on the under side of one of the hook-bars that connect the upper shelf. Fig. 11 is a side view of the upper shelf. Fig. 12 is a side view of one of the brackets that unite the upper end of the ladder. Fig. 13 is a plan view of the upper shelf detached. Fig. 14 is a view in perspective of one of upper-shelf brackets.

The present improvements relate more particularly to means for attaching the upper

and lower shelves and to means for locking the ladder in a folded position.

1 designates an upper shelf, which has secured to its under side, near the ends, two bars that terminate in hooks 2 and each of which has a spur 3 projecting from its lower side.

4 designates a bracket, of which there is one secured to the upper inner side of each of the posts 5. Each of these brackets has an eye 6 in its outer end, or the end nearer the upper shelf, through which the hook 2 is passed.

7 is a ledge projecting at a right angle from the inner face of each of said brackets, below which the hooks lie and against which the said hooks bear to hold the shelf in a horizontal position, as shown in Fig. 2. When the hooks are thus passed through the eyes, the spurs 3 lie on the inside of the eyes and the shelf is prevented from shifting outwardly. To place the shelf in the position shown in Fig. 6, the said shelf is slightly elevated to disengage the spurs 3 and is then drawn out until the hooks come in contact with the eyes. The shelf is then lowered and suspended by said hooks engaging with the eyes.

The attachment of the lower shelf 8 is entirely with the handle-bars 9 in the present instance. This greatly reduces the number of parts and makes the lower portion of the ladder more rigid. The attachment of the front ends of the handle-bars with the posts 5 is of a permanent pivotal nature, while the attachment of said bars with the rear inclined posts 10 is detachable by means of bolts 11 and thumb-nuts to permit of said handle-bars and the lower shelf being raised to the folded position, as shown in Fig. 6. The bolts 11 are the only ones in the entire construction that require any attention in folding the ladder or placing it in an operative position.

The attachment of the posts 10 and handle-bars is accomplished by friction-binders, as shown in Fig. 9, substantially as in the application hereinbefore referred to.

12 designates two resilient bars attached to the inner sides of the step-posts 10. These springs have upon their free ends a curved casting 13, riveted thereto or otherwise attached. These pieces have each a shoulder

14, adapted to lock with the posts 5 when the ladder is folded. As the ladder is being closed to its folded position the rounded sides of the pieces 13 come against the posts 5, spreading the springs until the shoulders 14 lock with the front sides of the posts.

15 designates a chain or rope connecting the two springs 12. By drawing on this rope the springs are released from the posts and the ladder may then be opened.

The construction of the side brackets 16 is substantially the same as described in the application hereinbefore referred to, with the omission of the eyes for the attachment of the upper shelf.

Having described my invention, I claim—

1. In a portable step-ladder, the combination with triangular side brackets 16; posts 5 rigidly attached thereto, and step-posts 10 loosely connected thereto; of an upper shelf; rods terminating in hooks 2 and provided with spurs 3 attached to said shelf; brackets 4 attached to the inner sides of the posts 5, the said brackets having openings 6 and ledges 7 that are adapted to engage with said rods and hooks, whereby means are provided for supporting the upper shelf in either a raised or suspended position, as herein shown and described.

2. In a portable step-ladder, the combination with side brackets 16; the posts 5, and 10 attached thereto; of handle-bars 9 having attachment with said posts, and spring-bars 12 rigidly attached to the posts 10, the said spring-bars having engaging ends 13 that are adapted to interlock with the posts 5, when the ladder is folded, substantially as shown and described.

3. In a portable step-ladder, the combination with triangular brackets 16; posts 5 rigidly attached thereto, and posts 10 loosely connected thereto; of an upper shelf projected in the front of posts 5; rods terminating in hooks attached to said shelf; brackets 4 secured to the inner sides of said posts 5, said brackets having eyes formed therein and ledges projecting therefrom which are adapted to support the said shelf in either a raised or lowered position; handle-bars 9 attached to said posts 5 and 10, and a lower shelf located between said handle-bars, all arranged substantially as shown and described.

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

HARVEY BOWMAN.

Witnesses:

R. J. McCARTY,
L. L. ALLEN.