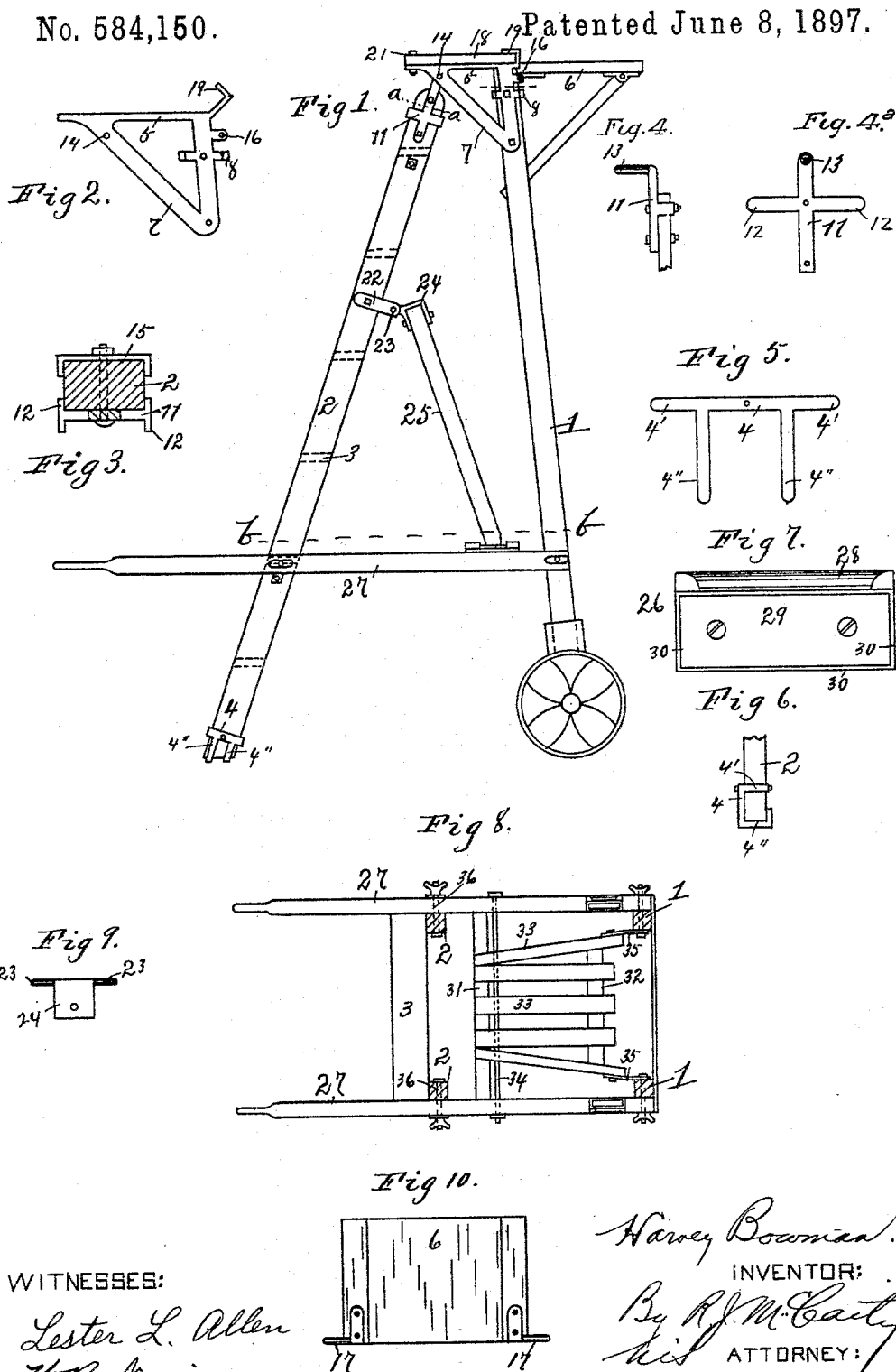


(No Model.)

H. BOWMAN.
PORTABLE STEP LADDER.

No. 584,150.

Patented June 8, 1897.



WITNESSES:

Lester L. Allen
H. B. Newin

Harvey Bowman.
INVENTOR:
By R. J. McCarty,
ATTORNEY:

UNITED STATES PATENT OFFICE.

HARVEY BOWMAN, OF FORGY, OHIO.

PORTABLE STEP-LADDER.

SPECIFICATION forming part of Letters Patent No. 584,150, dated June 8, 1897.

Application filed October 26, 1896. Serial No. 610,025. (No model.)

To all whom it may concern:

Be it known that I, HARVEY BOWMAN, a citizen of the United States, residing at Forgy, in the county of Clark 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.

This invention relates to improvements in portable step-ladders, as hereinafter more fully described.

The object of the invention is to further improve and cheapen the step-ladder shown and described in my pending application for Letters Patent, filed August 27, 1896, Serial No. 604,059, and thereby considerably reduce the cost of construction.

In the accompanying drawings, Figure 1 is a side elevation of a ladder made in accordance with my invention. Fig. 2 is an enlarged view of one of the upper side brackets. Fig. 3 is an enlarged section on the line *a a* of Fig. 1. Figs. 4 and 4^a are edge and side views, respectively, of the coupling for the upper ends of the step-frame. Fig. 5 is an enlarged side view of a casting for the protection of the lower end of the step-frame. Fig. 6 is a side view of the lower end of one of the posts of the step-frame. Fig. 7 is an enlarged plan view of one of the plates for securing the lower ends of the inclined braces. Fig. 8 is a section on the line *b b* of Fig. 1. Fig. 9 is an elevation of one of the couplings for the upper ends of the inclined braces. Fig. 10 is a view of the under side of the upper shelf.

1 and 2 designate the front and rear posts, to the former of which the steps 3 are attached. All the metallic castings hereinafter described are preferably made of malleable iron. 4 designates clips having extended portions 4', that are secured to and surround the lower ends of the posts 2, and which also have extensions 4'', that project under and around the ends of said posts. These clips serve to protect the wood and prevent it from split-

ting. Of Figs. 5 and 6 the former illustrates the clip before attached and the latter shows the clip in position.

5 designates a bracket, of which there is one on each side of the ladder. There are combined in these brackets means for pivotally supporting the upper shelf 6, means for bracing the upper end of the ladder, and for pivotally connecting the upper ends of the step-posts 2 and for the attachment of the top board 18. As shown in Fig. 2, these brackets are of a triangular form. The inclined part 7 serves as a brace between the front and rear parts of the ladder.

8 is a clip constructed therewith that embraces the sides of the posts 1 and prevents the wood from splitting. The said brackets are attached to the posts 1 and have a pivotal or hinge connection with the step-frame, as follows:

11 is a clip secured to the upper ends of the posts 2 and having portions 12, that inclose the sides of said posts. The portions 12 project in opposite directions in order that the brackets may be placed on either side.

13 is a pivot-pin that projects outwardly from the upper end of each of the clips 11 and is adapted to enter an eye 14 in the bracket.

15 is a clip embracing the inner side of the posts 2 and held in position by one of the bolts that secures the brackets 11.

16 designates an eye projecting from the front of each of the brackets 7 to receive the pivot-pins 17, that are secured to the top shelf 6. It will thus be seen that the upper ends of the step-posts 2 and the connection of the top shelf are effected without the use of bolts or nuts and that the connections are easily made.

19 is another integral clip projecting from said bracket, which is bent to inclose and secure the top board 18, as shown in Fig. 1. Fig. 2 shows the position of the clip before it is bent to clamp said top. The said top 18 is also secured to the brackets 7 by means of bolts 21. The means for supporting the upper shelf 6 in a horizontal position are the same as shown and described in the pending application hereinbefore referred to.

22 designates a plate, of which there is one attached to each side of each of the posts 2

and each of which has an eye to receive a pivot 23, that projects from opposite sides of the clips 24. Of these latter clips there is one attached to the upper end of each of the inclined braces 25.

26 designates a plate, of which there is one secured to the upper side of each of the handle-bars 27. These plates have a rounded portion 28, over which the lower ends of the braces 25 are slid until said ends enter the recessed portion 29 of said plates. The ends of the handle-bars are prevented from moving out of these recessed portions by the upwardly-projecting rim or flange 30. The lower shelf consists of cross-pieces 31 and 32, to which slats 33 are secured. The cross-piece 31 is rigidly attached to the handle-bars 27.

34 is a tie-rod passing through the handle-bars and the slats 33 and rigidly binds them together.

35 designates metallic plates secured to the outer slats and to the front posts 1 by the same bolts that secure handle-bars to said posts. This construction produces a permanent hinge connection, which permits of the handle-bars and the lower shelf being swung to a vertical or nearly vertical position by detaching said handle-bars from the rear posts 2. This is accomplished by removing the bolts

36. These bolts are the only ones in the entire construction that have to be loosened or removed in order to fold the ladder. The attachment of the rear posts 2 to the handle-bars is the same as described in my pending application hereinbefore referred to.

Having fully described my invention, I claim—

1. In a ladder, the combination with the posts 1 and 2, of a bracket having a triangular form which is rigidly attached to the posts 1, clips attached to the upper ends of the posts 2 and having a pivotal connection with the said brackets, pivot-plates 22 secured to each side of the posts 2, inclined braces, a bracket attached to the upper end of each of said inclined braces and provided with pins that project into openings in said plates 22, handle-bars, plates on said handle-bars having a rounded portion and a recess into which the lower ends of said braces may be moved and secured, as herein shown and described.

2. In a ladder, the combination with the posts 1 and 2, the latter provided with steps, of triangular brackets attached to the posts 1, and to which the posts 2 have pivotal attachment, an upper shelf having a pivotal attachment with said bracket, handle-bars having a pivotal attachment with the posts 1, and a rigid but detachable connection with the posts 2, and a shelf having a pivotal attachment with the posts 1, and a rigid connection with the handle-bars, as herein shown and described.

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

HARVEY BOWMAN.

Witnesses:

A. J. FIORINI,
R. J. MCCARTY.