

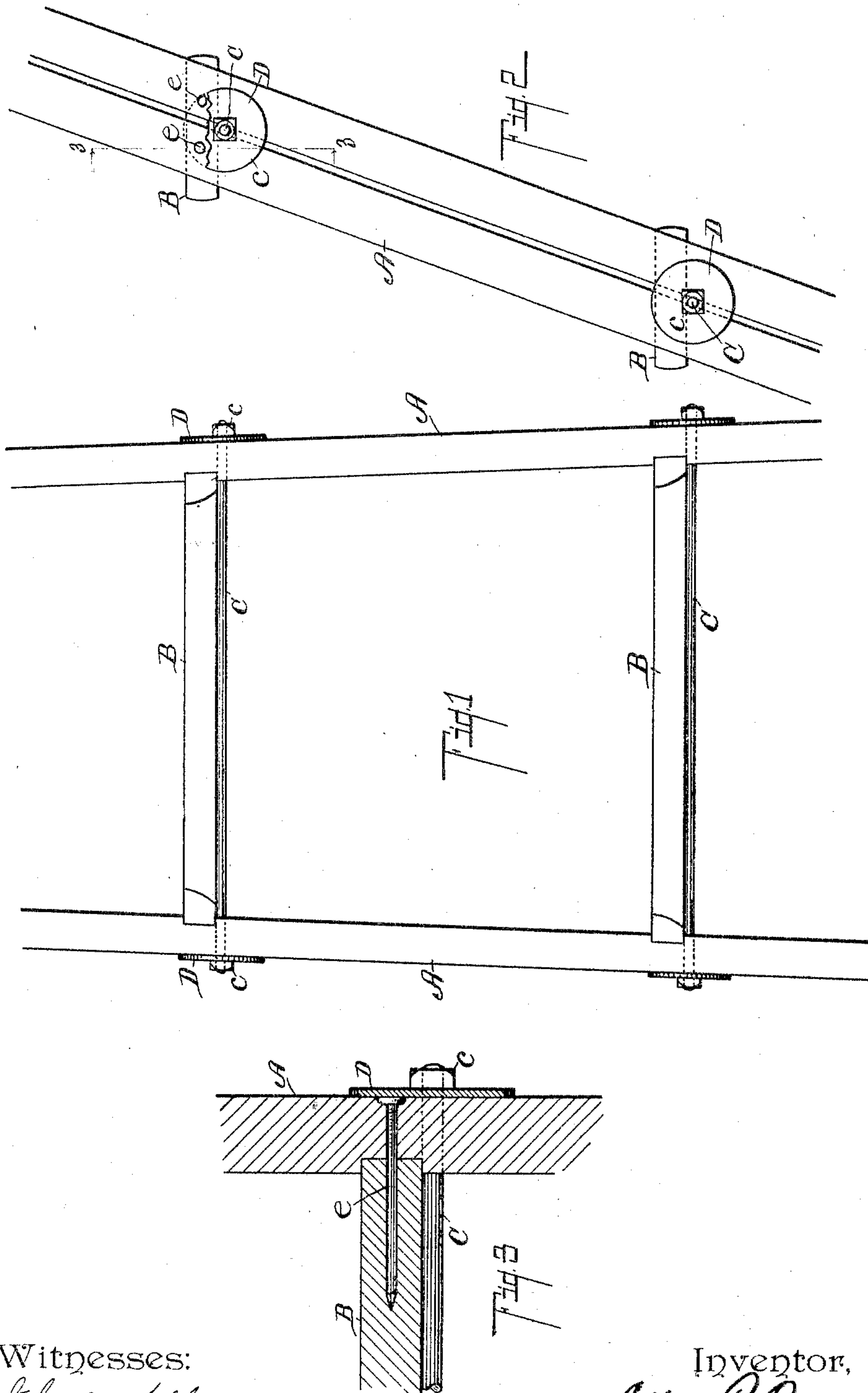
No. 777,068.

PATENTED DEC. 13, 1904.

A. P. BOYER.  
STEP LADDER.

APPLICATION FILED DEC. 24, 1903.

NO MODEL.



Witnesses:

*Ethel A. Teller*  
*Otto A. Carl*

Inventor,

*Allen P. Boyer*  
By *Fred L. Chappell*  
Att'y.

# UNITED STATES PATENT OFFICE.

ALLEN P. BOYER, OF GOSHEN, INDIANA.

## STEP-LADDER.

SPECIFICATION forming part of Letters Patent No. 777,068, dated December 13, 1904.

Application filed December 24, 1903. Serial No. 186,459. (No model.)

*To all whom it may concern:*

Be it known that I, ALLEN P. BOYER, a citizen of the United States, residing at the city of Goshen, in the county of Elkhart, State of Indiana, have invented certain new and useful Improvements in Step-Ladders, of which the following is a specification.

This invention relates to improvements in step-ladders and the like.

The object of this invention is to provide an improved step-ladder, which although comparatively light in weight and simple in structure is very strong and rigid and durable in use.

Further objects and objects relating to structural details will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claims.

A structure embodying the features of my invention is clearly illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a detail front elevation view of a structure embodying the features of my invention. Fig. 2 is a detail side elevation view looking from the right of Fig. 1. Fig. 3 is a detail sectional view taken on a line corresponding to line 3-3 of Fig. 2 looking in the direction of the little arrows at the ends of the section-line.

In the drawings similar letters of reference refer to similar parts throughout the several views.

Referring to the lettered parts of the drawings, the risers A are mortised to receive the ends of the steps B. Nails *e* are driven through the risers from the outside into the ends of the steps. A truss-rod C is arranged under each step and is passed through the risers. On the outer ends of the rods C are washer-like plates D of sufficient size to cover the heads of the nails *e*. These plates are clamped against the risers by suitable nuts *c*, there preferably being a nut at each end of the rod.

The rods C serve as trusses for the steps B and clamp the risers toward each other upon the ends of the steps. The washer-like plates D prevent the loosening of the nails *e* from age and use of the ladder. The washer-plates D being clamped tight against the risers also assist in preventing the racking movement of the ladder, which once begun very soon destroys or weakens a ladder.

Screws may be used, if desired, instead of the nails *e*. However, I prefer the nails, as they are more quickly inserted and are entirely satisfactory when used in connection with the plates D. The plates D are, however, of very great advantage when used in connection with screws, as the screws also loosen with the use and age of the ladder.

My improved ladder is very economical to produce. It is also comparatively light in weight and is very rigid, strong, and durable. When thus constructed, comparatively light material may be used and the ladder will still possess these qualities.

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

1. In a step-ladder, the combination of risers suitably mortised; steps inserted in said mortises; nails driven through said risers from the outside into said steps; truss-rods arranged beneath said steps; and washer-like plates on said truss-rods arranged to cover the heads of said nails, clamped against said risers, for the purpose specified.

2. In a step-ladder, the combination of risers; steps; nails driven through said risers into said steps; truss-rods arranged beneath said steps; and washer-like plates on said truss-rods arranged to cover the heads of said nails, clamped against said risers, for the purpose specified.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

ALLEN P. BOYER.

Witnesses:

S. C. HUBBELL,  
D. W. NEIDIG.