

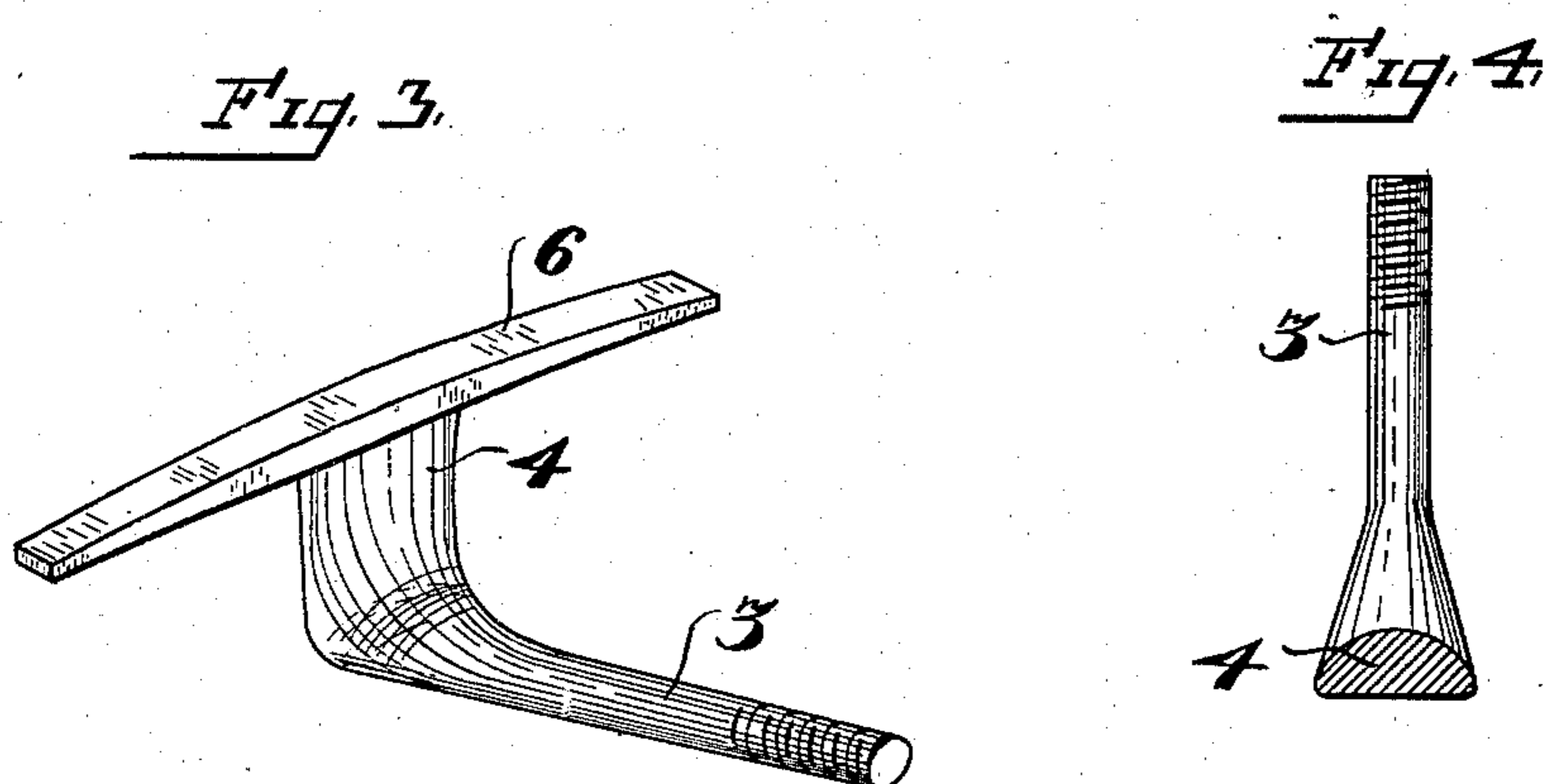
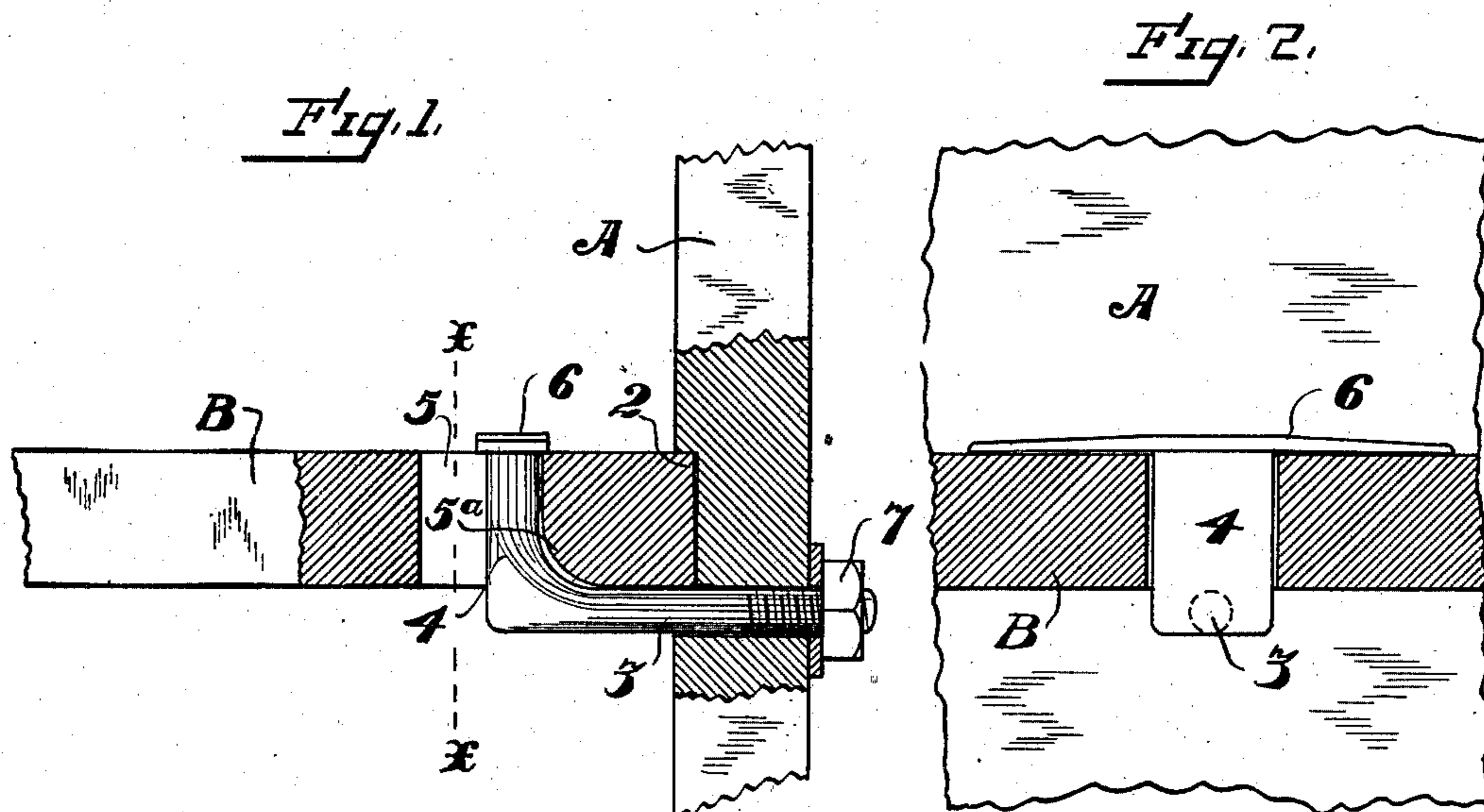
No. 741,872.

PATENTED OCT. 20, 1903.

J. A. ASHLEY.  
STEP LADDER.

APPLICATION FILED JUNE 23, 1903.

NO MODEL.



Witnesses,

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Inventor,  
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# UNITED STATES PATENT OFFICE.

JAY A. ASHLEY, OF YUBA CITY, CALIFORNIA.

## STEP-LADDER.

SPECIFICATION forming part of Letters Patent No. 741,872, dated October 20, 1903.

Application filed June 23, 1903. Serial No. 162,752. (No model.)

*To all whom it may concern:*

Be it known that I, JAY A. ASHLEY, a citizen of the United States, residing at Yuba City, county of Sutter, State of California, have invented an Improvement in Step-Ladders; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in step-ladders.

It consists in a means for securing the transverse steps in the side bars and in details of construction, which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a view showing a portion of the step-ladder and my attachment. Fig. 2 is a section on line *xx*, Fig. 1. Fig. 3 is a view of the securing bolt or device. Fig. 4 is a section through shank of same.

A is the side of the step-ladder, and this has transverse channels made at intervals to receive the ends of the steps B. These steps have holes made through them, as shown at 5, the holes being enlarged in a curve, as shown at 5<sup>a</sup>, on the bottom and on the side adjacent to the end of the step which is adapted to engage the channel 2. The means for securing the steps to the side consist of bolts 3, screw-threaded at the outer end to receive nuts 7. This portion 3 of each bolt passes through a hole made in the side A and just beneath the step, as shown. The inner ends of the bolts are diverged, being made considerably wider than the portion which passes through the side and are turned up at right angles. This upturned portion is made segmental in shape, with the curved portion presented toward the side of the ladder when in place. The side of the hole 5 is also curved in the form of a segment, against which this segmental portion fits, and between the part 4 and 3 the bolt is also curved, so as to approximately fit the curve 5<sup>a</sup> of the hole through which the part 4 passes. The upper end of the part 4 has formed upon it a transverse bar or head 6, of considerable length and preferably so made that the ends of the bar are slightly lower than the center portion, with which the part 4 is connected.

The whole device may be made as a malleable iron or steel casting or in other ways; but it forms a single rigid bolt, so that when the parts of the ladder are put together with

these bolts they form a sufficiently rigid connection to prevent any side or twisting movement.

In order to assemble the ladder, the threaded end of the bolt is first pushed through the opening 5, and by reason of the curve at 5<sup>a</sup> it may be readily turned as it passes through, so that the portion 4 of the bolt extends vertically through the hole and part 3 extends along below the step. This portion 3 can then be passed through the hole in the ladder side, and the nut 7, being screwed upon it will draw the step firmly into the groove or channel 2 in the side.

The end of the step is slightly beveled, so that the tendency is to lock it more firmly into the groove.

By reason of the transverse head 6, slightly curved downward at the ends, these ends press upon the top of the step, and this counteracts any tendency of the step to tilt from side to side when weight is put upon it. The wide semicylindrical portion 4 of the bolt being drawn against the corresponding curve of the hole 5 adds to the strength of the connection and makes a very rigid firm structure.

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

1. A step-ladder having sides and transverse steps, holes made in the transverse steps with a curved concaved side contiguous to the end which engages the ladder side, a bolt having a segmental vertical portion adapted to fit said opening, a transverse head and a shank at right angles with the vertical portion adapted to pass through the side of the ladder and a nut by which said end is secured.

2. A bolt for securing the parts of step-ladders together consisting of a threaded cylindrical portion adapted to pass through the side of the ladder, a vertical portion to pass through the step, said portion being made segmental in cross-section and wider than the cylindrical portion and a transverse head having depressed ends.

In witness whereof I have hereunto set my hand.

JAY A. ASHLEY.

Witnesses:

M. E. SANBORN,  
L. J. COPE.