F. A. COPELAND.
Ladder.

No. 204,295. Patented May 28, 1878.

FIG. 1.

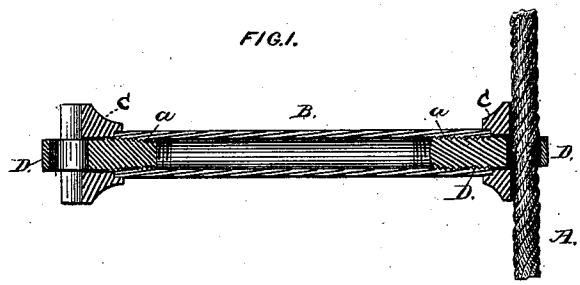



FIG. 2.

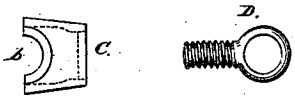
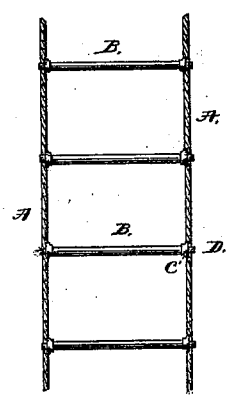



FIG. 3.




WITNESSES:
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# UNITED STATES PATENT OFFICE.

FREDERICK A. COPELAND, OF LA CROSSE, WISCONSIN.

## IMPROVEMENT IN LADDERS.

Specification forming part of Letters Patent No. **204,295**, dated May 28, 1878; application filed May 4, 1878.

*To all whom it may concern:*

Be it known that I, FREDERICK A. COPELAND, of the city and county of La Crosse, and State of Wisconsin, have invented a new and useful Improvement in Ladders; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention is an improvement in the class of ladders having rigid rounds, which are attached to the ropes or other side pieces by means of screw-clamps.

The improvement consists in the particular construction of the clamping device, as hereinafter described.

In the accompanying drawing, forming part of this specification, Figure 1 is a longitudinal section of one of the rounds of the ladder with a fragment of a rope passing through one of the eyes. Fig. 2 represents the eye and socket of the round detached. Fig. 3 represents a fragment of the ladder complete.

A indicates the ropes or parallel side pieces of the ladder. The rounds or rungs B are tubular, and provided internally at their respective ends with a right and left screw-thread, *a*. The ends of the rounds enter circular cavities or recesses in socket C, which have a groove, *b*, in their opposite sides to receive the ropes A. The ropes pass through the eyes of bolts D, which screw into the ends of the rounds B, as shown.

By this construction and arrangement of parts, it is obvious that to form a ladder the ropes A are passed through the eyes of bolts D, whose shanks are then inserted through sockets C, and the rounds B screwed on two opposite bolts simultaneously until the ropes are clamped tightly in the grooves of the sockets by reason of the pressure between the latter and the outer side of the bolt-eyes.

The chief advantage of the invention over others of its kind consists in the fact that in the clamping operation the ends of the rounds do not come in contact with the ropes, and hence the fibers of the latter are not cut or otherwise injured, but are clamped between smooth non-rotating surfaces.

What I claim is—

As the improvement herein described, the tubular round B having an internal screw-thread at each end, the socket C having a groove, *b*, in one side and a circular recess in the other, and the bolts having eyes to receive the ropes A and their threaded shanks entering the rounds, all combined as shown and described.

FREDERICK A. COPELAND.

Witnesses:
JOHN B. WEBB,
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