

(No Model.)

W. M. DOLLAR.
LADDER.

No. 445,980.

Patented Feb. 10, 1891.

Fig. 1.

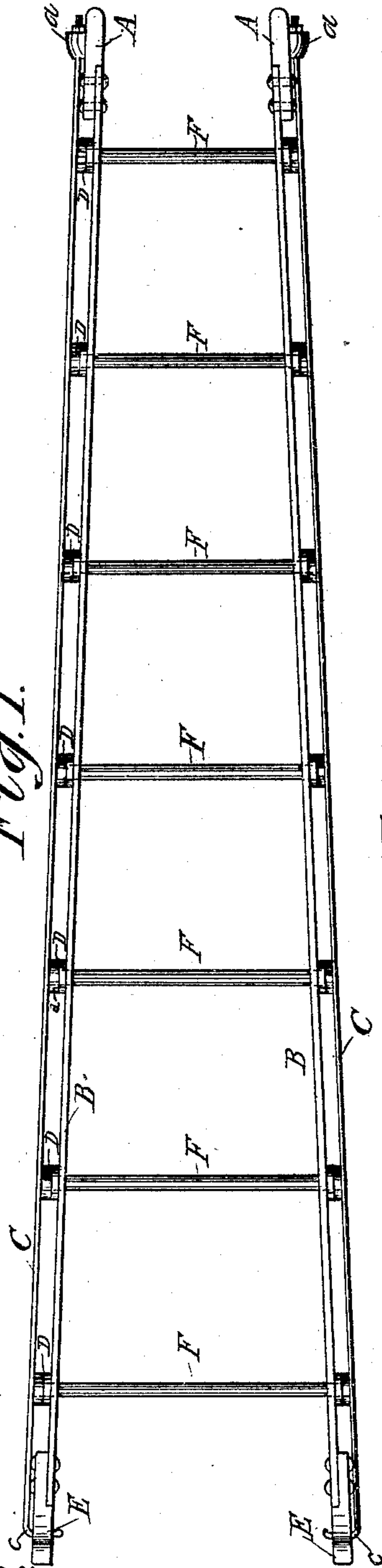


Fig. 2.

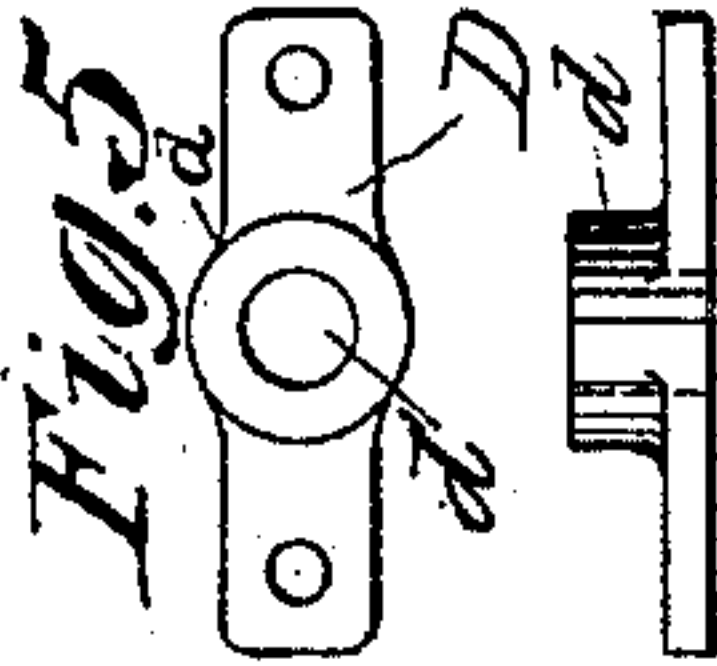
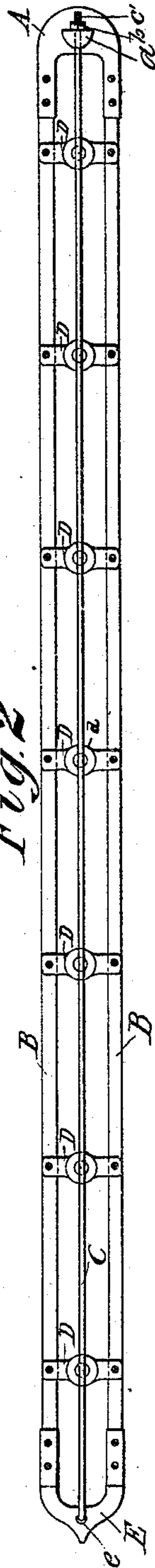


Fig. 4.

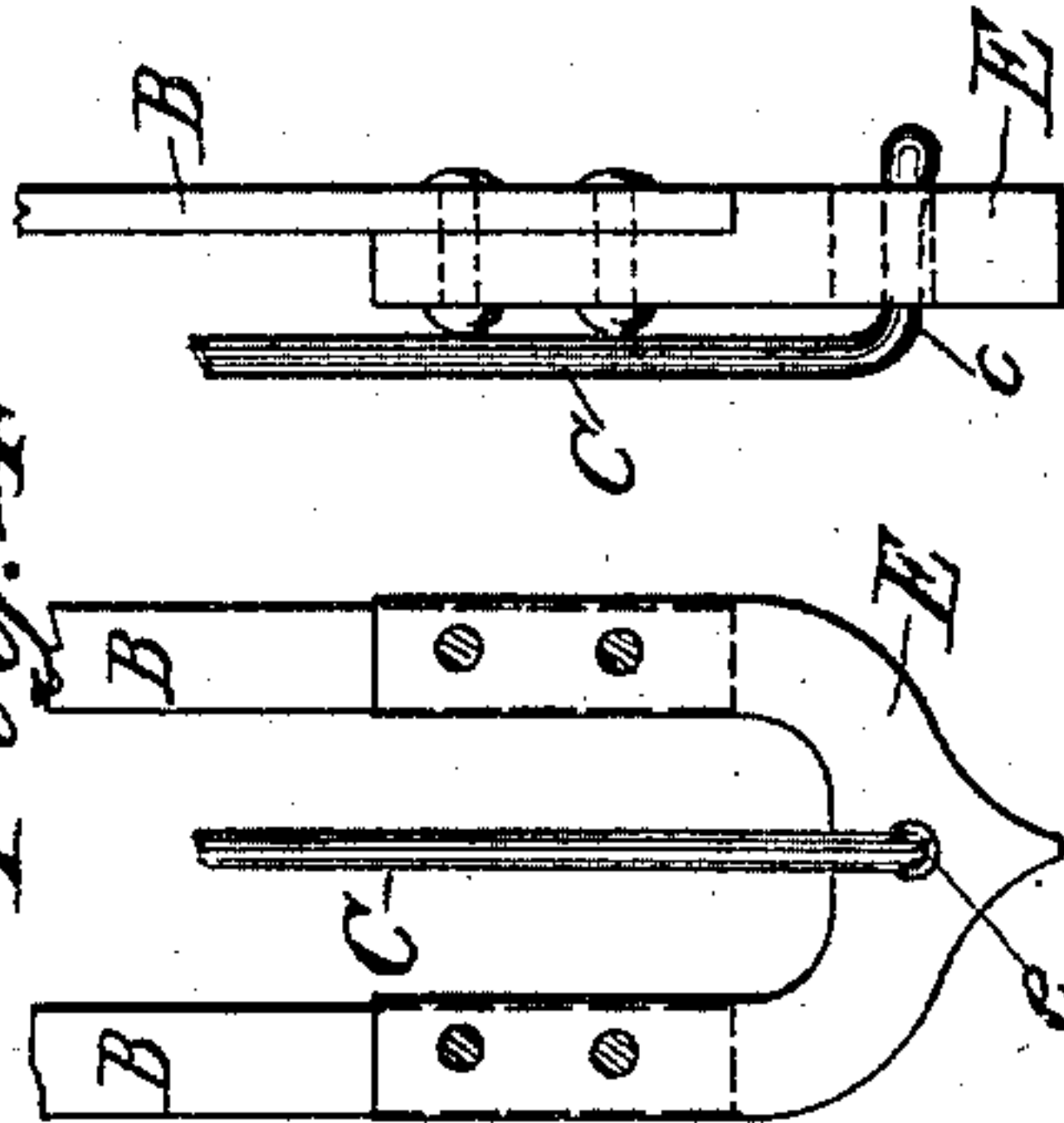
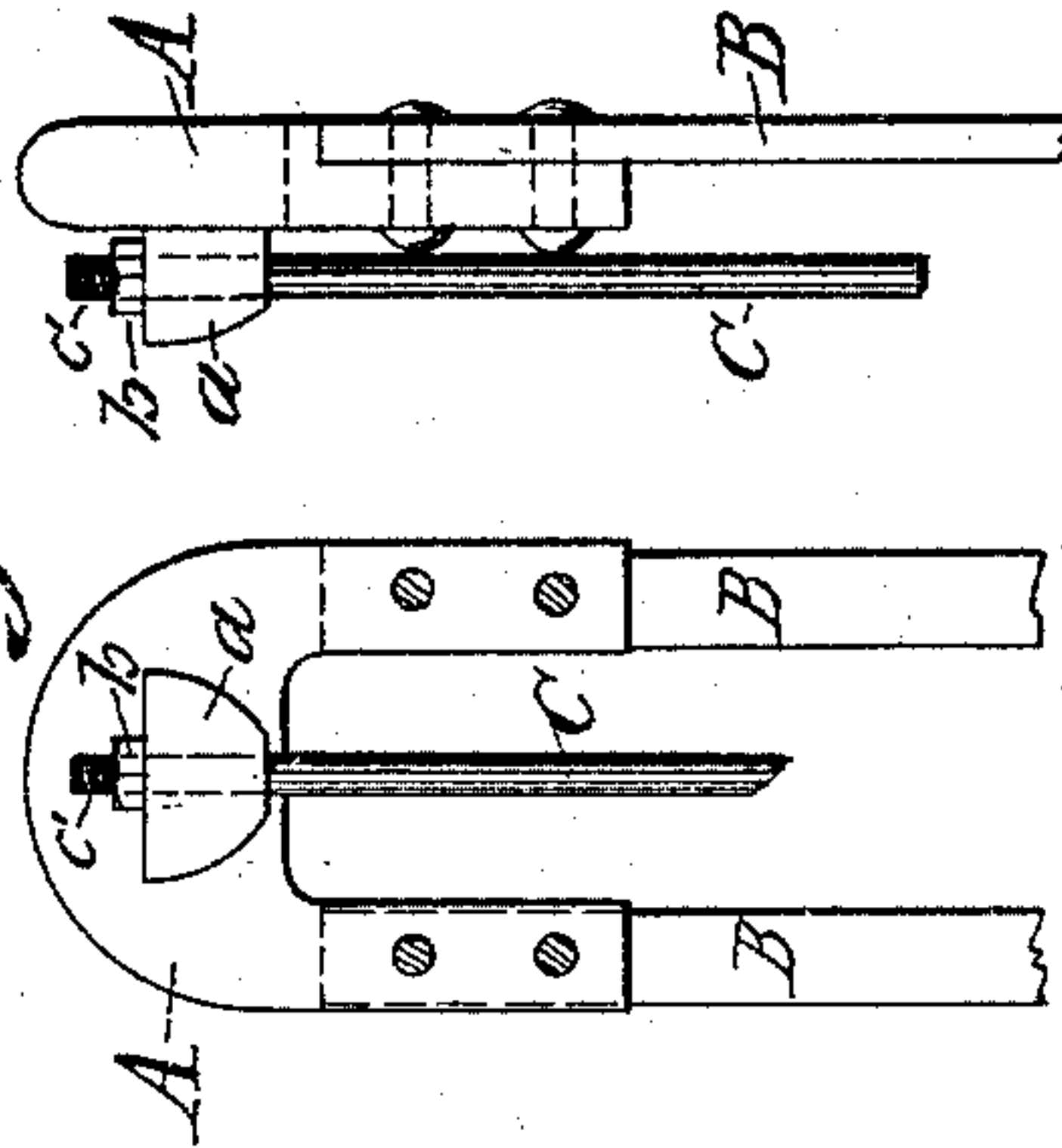


Fig. 5.



Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM M. DOLLAR, OF HEUVELTON, NEW YORK.

LADDER.

SPECIFICATION forming part of Letters Patent No. 445,980, dated February 10, 1891:

Application filed June 18, 1890. Serial No. 355,828. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM M. DOLLAR, a citizen of the United States, residing at Heuvelton, in the county of St. Lawrence and State of New York, have invented certain new and useful Improvements in Ladders; and I do hereby 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.

My invention relates to the construction of ladders for general use; and the object sought to be accomplished is to produce a simple and cheap arrangement which will at the same time possess exceeding strength and durability.

With these ends in view my invention consists in certain peculiarities of construction and combinations of parts more fully described hereinafter, and pointed out in the claims.

Referring to the accompanying drawings, making part of this specification, Figure 1 is a front elevation of my complete device, Fig. 2 a side view, and Figs. 3, 4, and 5 detail views.

The sides of the ladder are formed of trusses, each consisting of a pair of long flat rods or strips B, of steel or iron, connected at their upper and lower ends by the arches or spreaders A and E, formed of malleable cast metal.

The rods B are riveted to the under sides of the spreaders A and E, and are also connected by the cross-pieces or bridges D, riveted across between said rods at suitable intervals throughout their entire length and constituting supports for the rounds F. The bridges D are of cast malleable metal and are made with raised centers *d*, through which extend perforations *d'*, and the rounds F are arranged to be introduced through said perforations, their ends coming flush with those of the raised centers. A perforation *e* is made through the center of the lower arch or spreader E, and in this perforation is introduced the hooked end *c* of a truss-rod C, which is thence carried over the raised centers *d* of the cross-pieces or supports D, and thus across the ends of the rounds. Its upper end runs through a lug *a*, projecting from

the center of the upper arch or spreader A, and beyond this lug is formed with a threaded portion *c'*, which is fitted by a suitable nut *b*, which is screwed up tight against the lug *a*, thus drawing the truss-rod taut against the ends of the rounds to hold the latter in proper position. One of these truss-rods is arranged on each side of the ladder, and they will thus act to securely and rigidly hold the rounds in place, and the strain brought to bear upon the latter is equally distributed throughout the parts, they being secured in the centers of the bridges connecting the main side strips B.

Thus a strong and durable construction is effected with a small amount of material and number of parts, and hence the important advantages of cheapness in manufacture and simplicity of construction are gained, and also the article is rendered light enough to be readily portable from place to place as required.

I have shown the device as an ordinary ladder; but it is evident that the same construction might be also applied to step-ladders, sectional ladders, and like structures; and it is also evident that my arrangement might be varied in many slight details which might suggest themselves to a mechanical mind, and hence I do not wish to limit myself to the precise construction herein shown, but consider myself entitled to all such slight variations as come within the spirit and scope of my invention.

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

1. In a ladder, the combination of long side pieces, spreaders connecting their upper and lower ends, cross-pieces or bridges connecting them at intervals intermediate of said spreaders, rounds supported by said cross-pieces, and truss-rods connecting the spreaders and extending over the centers of the cross-pieces, substantially as and for the purpose set forth.

2. In a ladder, the combination of long side pieces, spreaders connecting their upper and lower ends, cross-pieces or bridges connecting them at intervals intermediate of said spreaders and provided with enlarged centers having perforations extending through them,

rounds engaging said perforations and thus supported by the cross-pieces, and truss-rods detachably connected at their opposite ends to the centers of the spreaders and extending
5 over the ends of the rounds, substantially as and for the purposes described.

3. In a ladder, the combination of long side pieces, spreaders connecting their upper and lower ends, cross-pieces or bridges connect-
10 ing them at intervals between said spreaders, rounds supported by said cross-pieces, truss-rods having hooked lower ends engag-

ing perforations in the lower spreaders, lugs projecting from the upper spreaders through which said truss-rods extend, and nuts on the
15 ends of the latter beyond said lugs, substantially as and for the purpose described.

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

WILLIAM M. DOLLAR.

Witnesses:

LESLIE WELLS,
ORIN D. CRANE.