

(No Model.)

N. ENGQUIST.  
FOLDING STEP LADDER.

No. 420,720.

Patented Feb. 4, 1890.

FIG. 2.

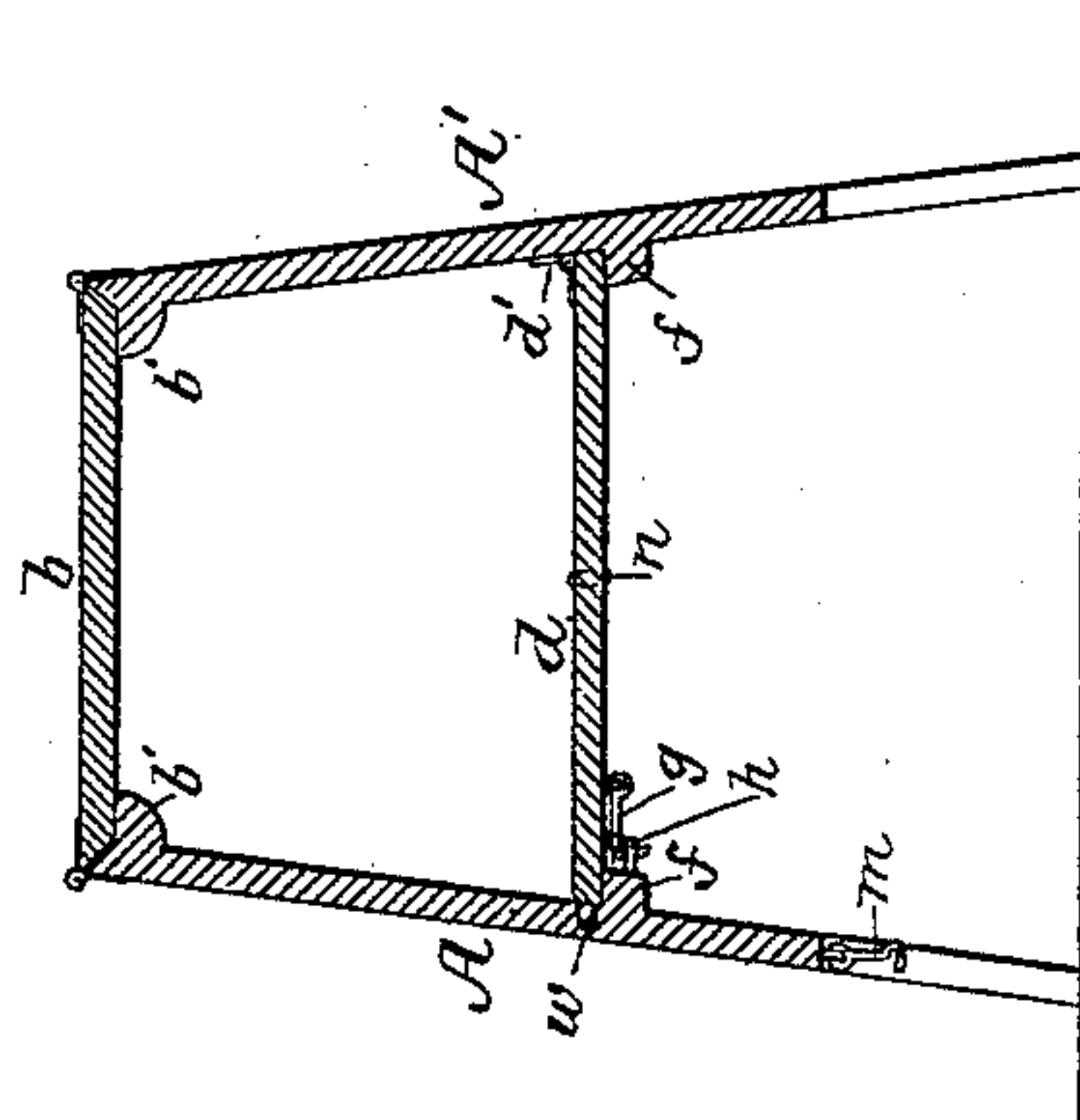


FIG. 3.

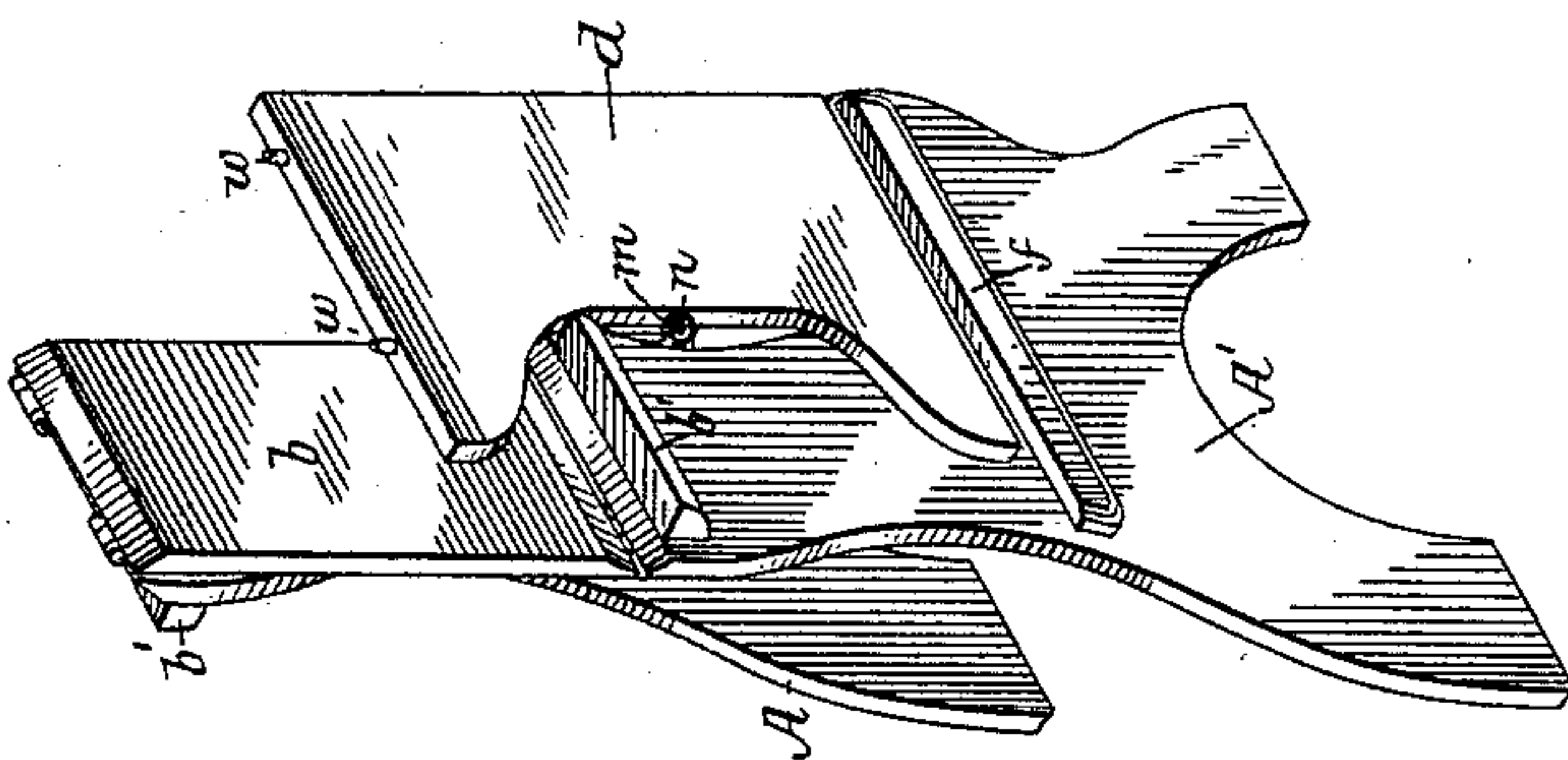


FIG. 4.

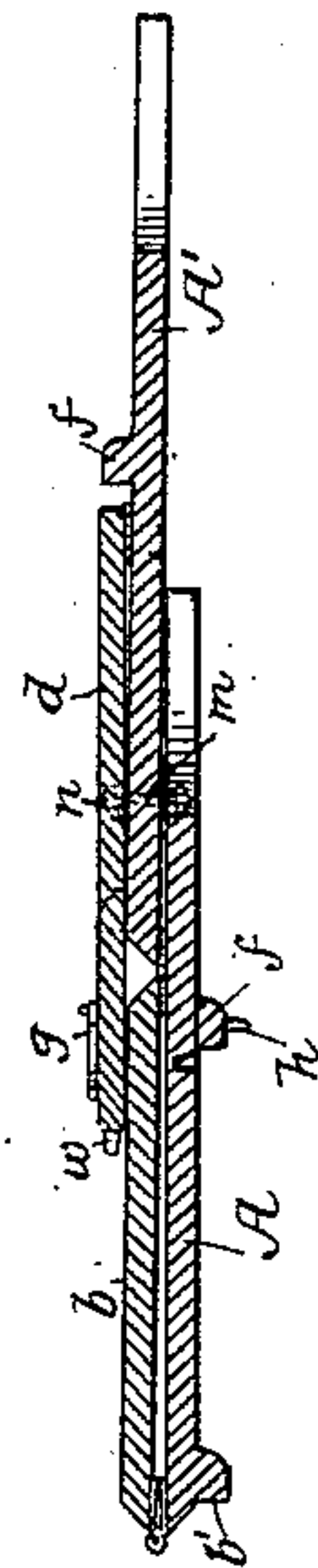
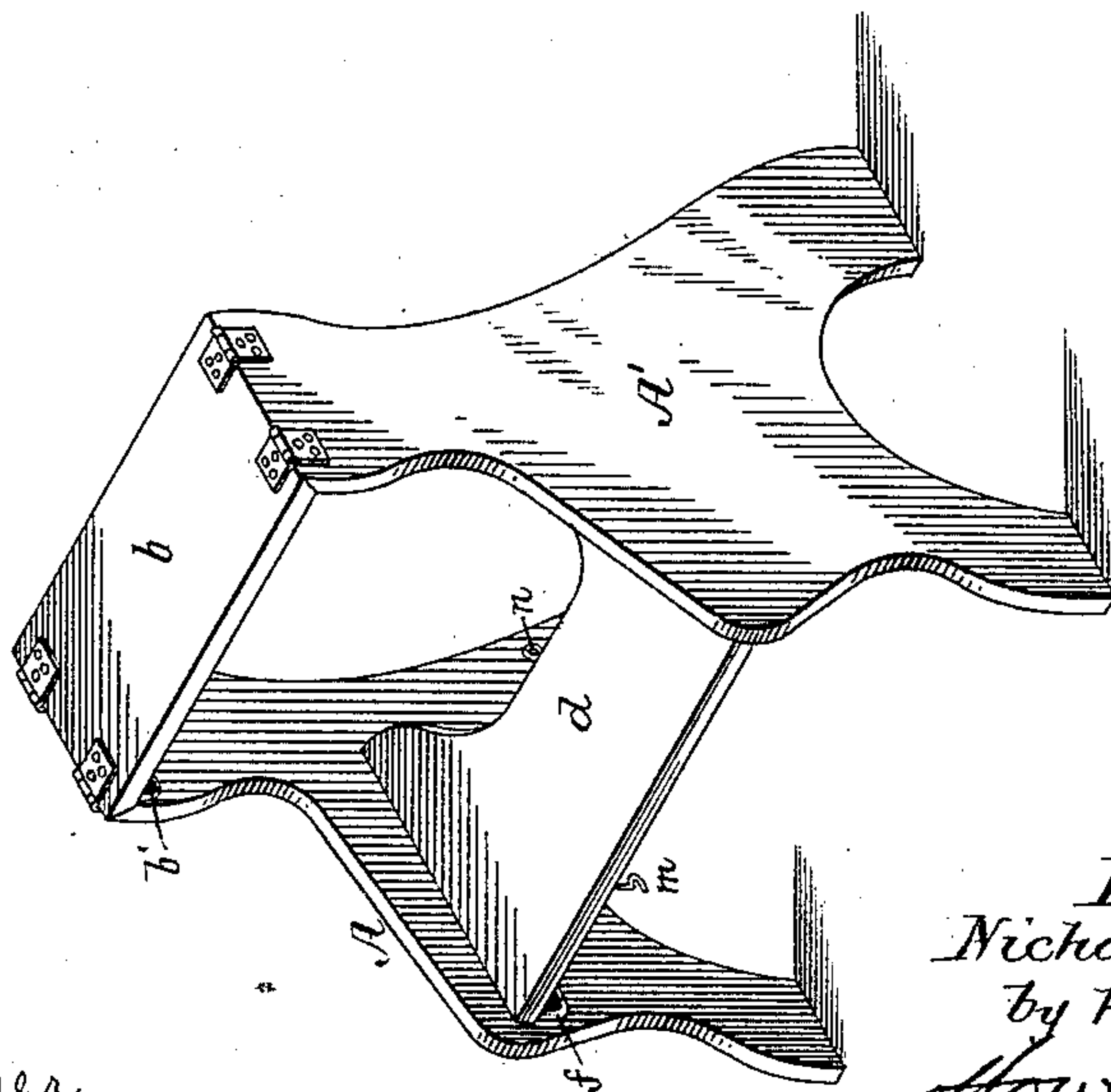


FIG. 1.



Witnesses:  
Alex. Barkoff  
R. Schleicher.

Inventor:  
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by his Attorneys  
Howson & Howson



# UNITED STATES PATENT OFFICE.

NICHOLAS ENGQUIST, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF  
ONE-HALF TO LOUIS KOPF, OF SAME PLACE.

## FOLDING STEP-LADDER.

SPECIFICATION forming part of Letters Patent No. 420,720, dated February 4, 1890.

Application filed December 17, 1889. Serial No. 334,054. (No model.)

*To all whom it may concern:*

Be it known that I, NICHOLAS ENGQUIST, a subject of the King of Sweden, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Folding-Ladders, of which the following is a specification.

The object of my invention is to so construct a step-ladder that the structure will be rigidly braced and the steps firmly supported when the ladder is set up for use, the parts, however, being readily folded into flat shape for compact disposal when it is desired to store or transport the structure. This object I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of a folding step-ladder constructed in accordance with my invention, showing the ladder set up for use. Fig. 2 is a longitudinal section of the same. Fig. 3 is a perspective view showing the parts folded, and Fig. 4 is a longitudinal section showing the parts in the latter position.

The ladder comprises opposite side frames A A', upper step *b*, and lower step *d*, the upper step being hinged at one edge to the top of one of the side frames, and at the opposite edge to the top of the other side frame, so that when the side frames are folded down said upper step will be supported thereby, the joint between the opposite edges of the said upper step and the upper edges of the side frames of the ladder being beveled, as shown in Fig. 2, and said side frames being provided on their inner sides with cleats *b'*, as also shown in Fig. 2, so that pressure upon the upper step is borne by the beveled joint and the cleats and the hinges are relieved from strain. The lower step *d* is hung to one of the side frames of the ladder by hinges *d'*, and when turned down is supported upon cleats *f* on the side frames, as shown in Fig. 2, and in order to retain the parts in the position shown in said figure a hook *g*, hung to the under side of the step *d*, engages with an eye *h* on the side frame A, or any other suitable form of catch may be employed for the purpose.

When the parts are folded, as shown in Figs. 3 and 4, the catch is released, the lower step *d* is folded up vertically against the side frame, to which it is hung, the upper

step *b* is extended, so as to form a vertical continuation of said side frame, and the other side frame is folded downward alongside of the step, the parts being retained in this position by the engagement of a hook *m*, hung to one of the side frames, and an eye *n*, carried by the upturned lower step *d*, as shown in Fig. 4. When folded into this shape, the structure can be stood up against the wall in an out-of-the-way place, or can be readily packed in small compass for transportation. The outer edge of the lower step is preferably provided with dowel-pins *w* for entering recesses in the side frame A, so as to insure the proper locking of the parts in setting up the structure.

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

1. The combination, in a folding step-ladder, of the opposite side frames, the upper step hinged at its opposite edges to the upper edges of said side frames, the lower step hinged to one of the side frames and having a support upon the opposite side frame, and a retaining-catch for confining said lower step to the side frame when the ladder is set up, substantially as specified.

2. The combination of the opposite side frames, the upper step hinged at its opposite edges to the upper edges of the said side frames, and the lower step hinged to one of said side frames and having a catch for connection with the other side frame, and cleats upon said opposite side frames for supporting the steps when the ladder is set up, substantially as specified.

3. The combination of the opposite side frames, the upper step hinged at its opposite edges to the upper edges of said side frames, the lower step hinged to one side frame and having a catch whereby it is connected to the other side frame when the ladder is set up, and a second catch for connecting it to said side frame when the parts are folded, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

NICHOLAS ENGQUIST.

Witnesses:

JOSEPH H. KLEIN,  
HENRY HOUSM.