

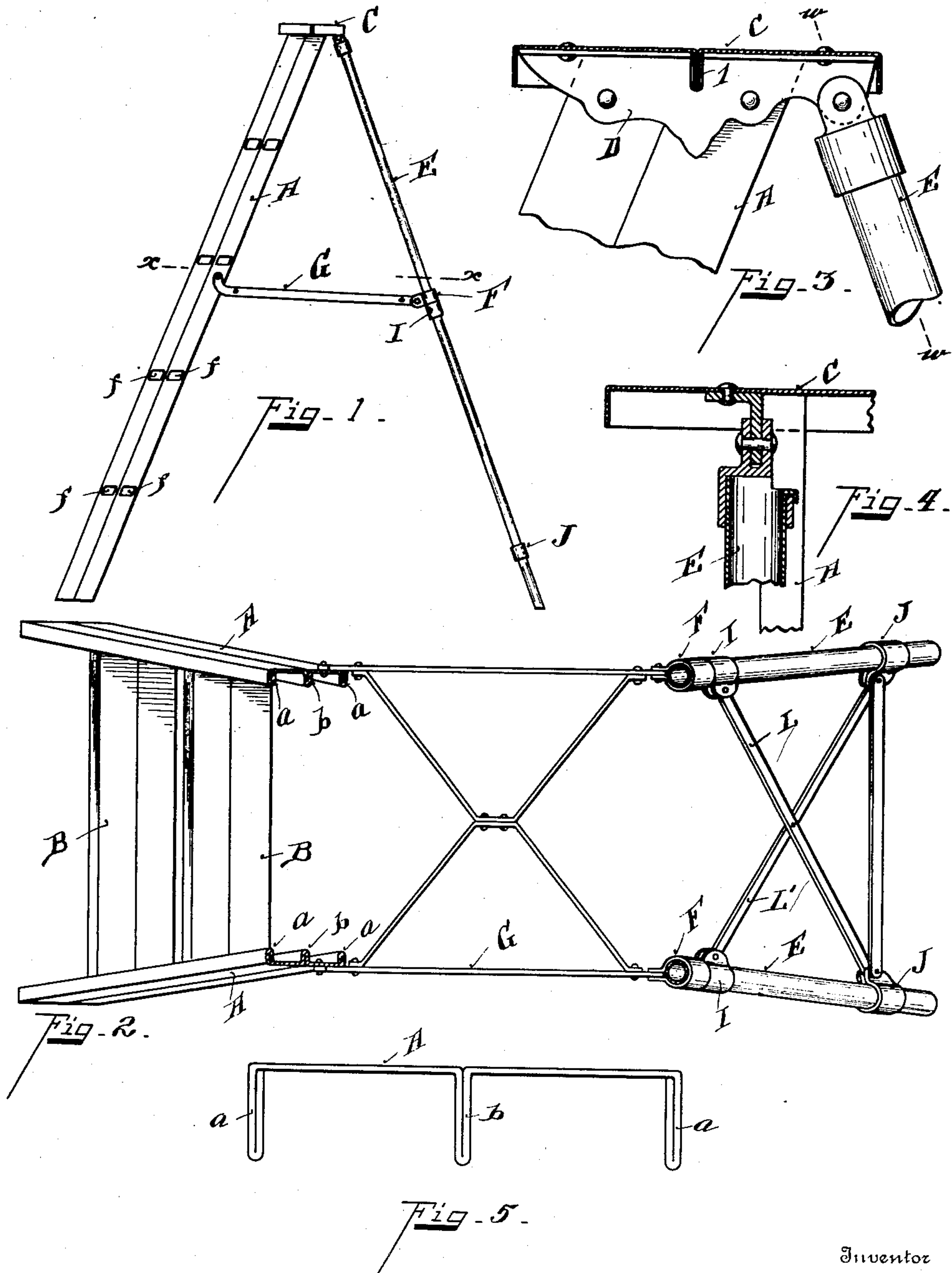
No. 891,736.

J. R. RUPE.
LADDER.

PATENTED JUNE 23, 1908.

APPLICATION FILED MAY 24, 1905.

2 SHEETS—SHEET 1.



Inventor

Witnesses

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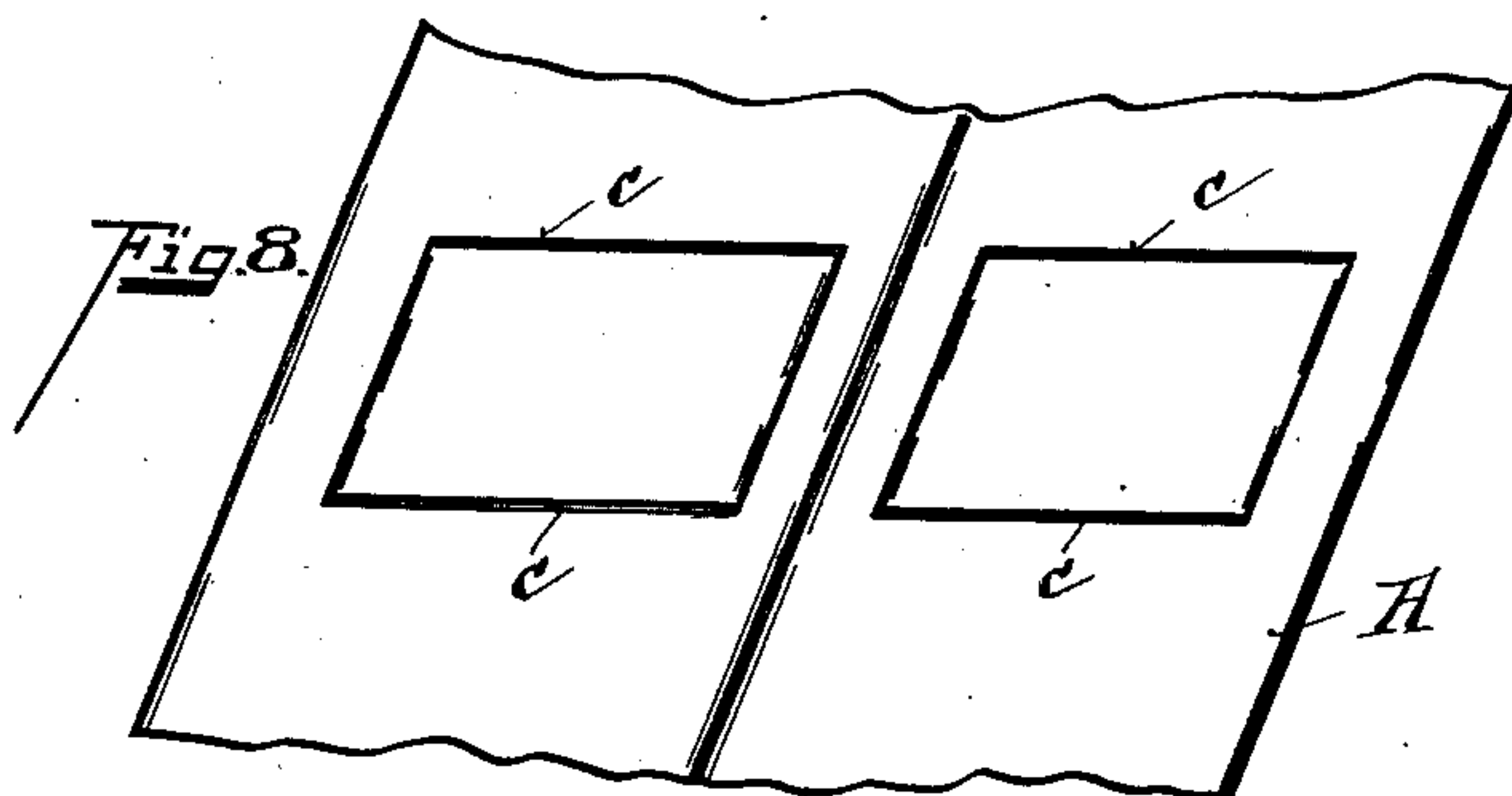
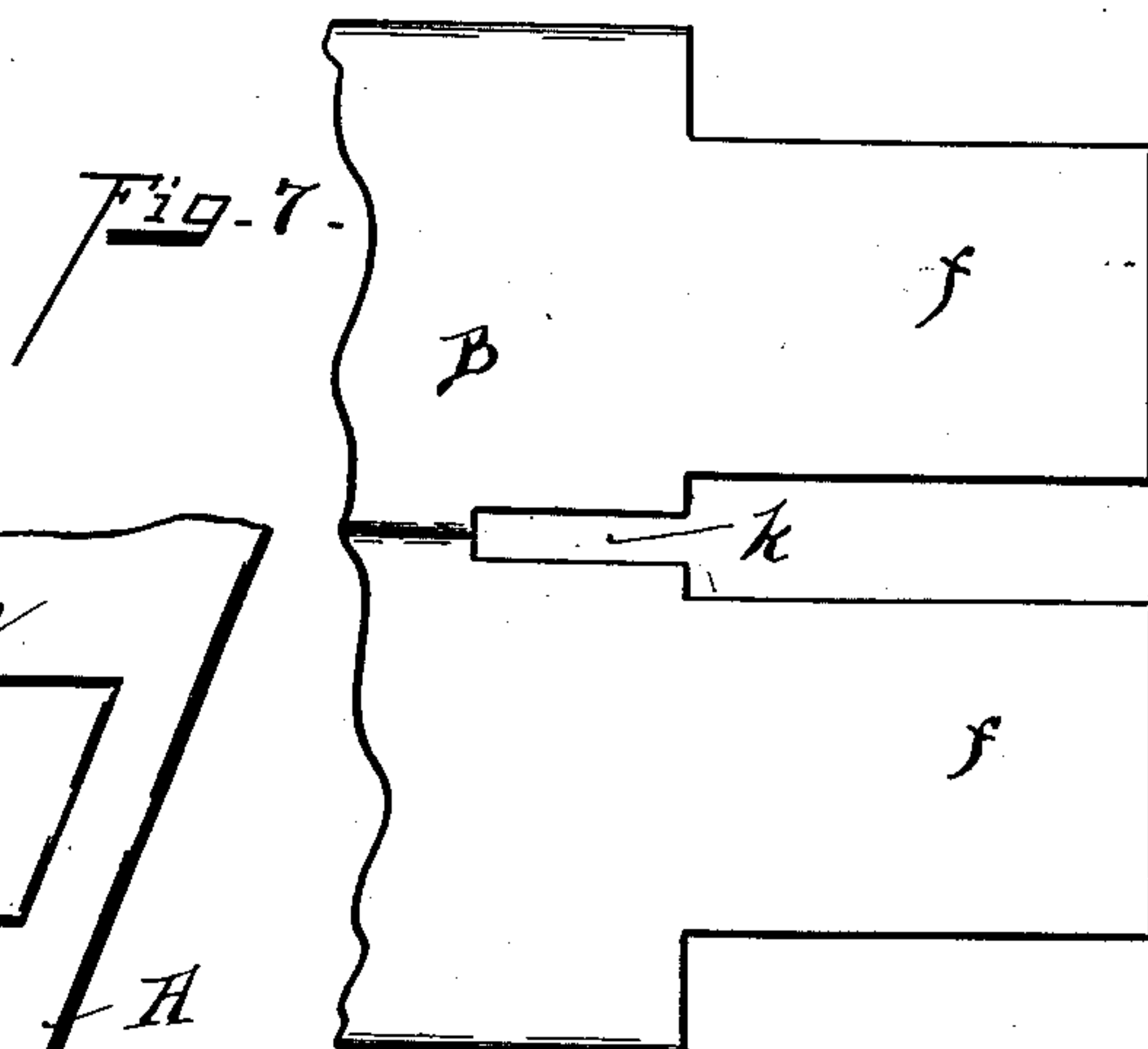
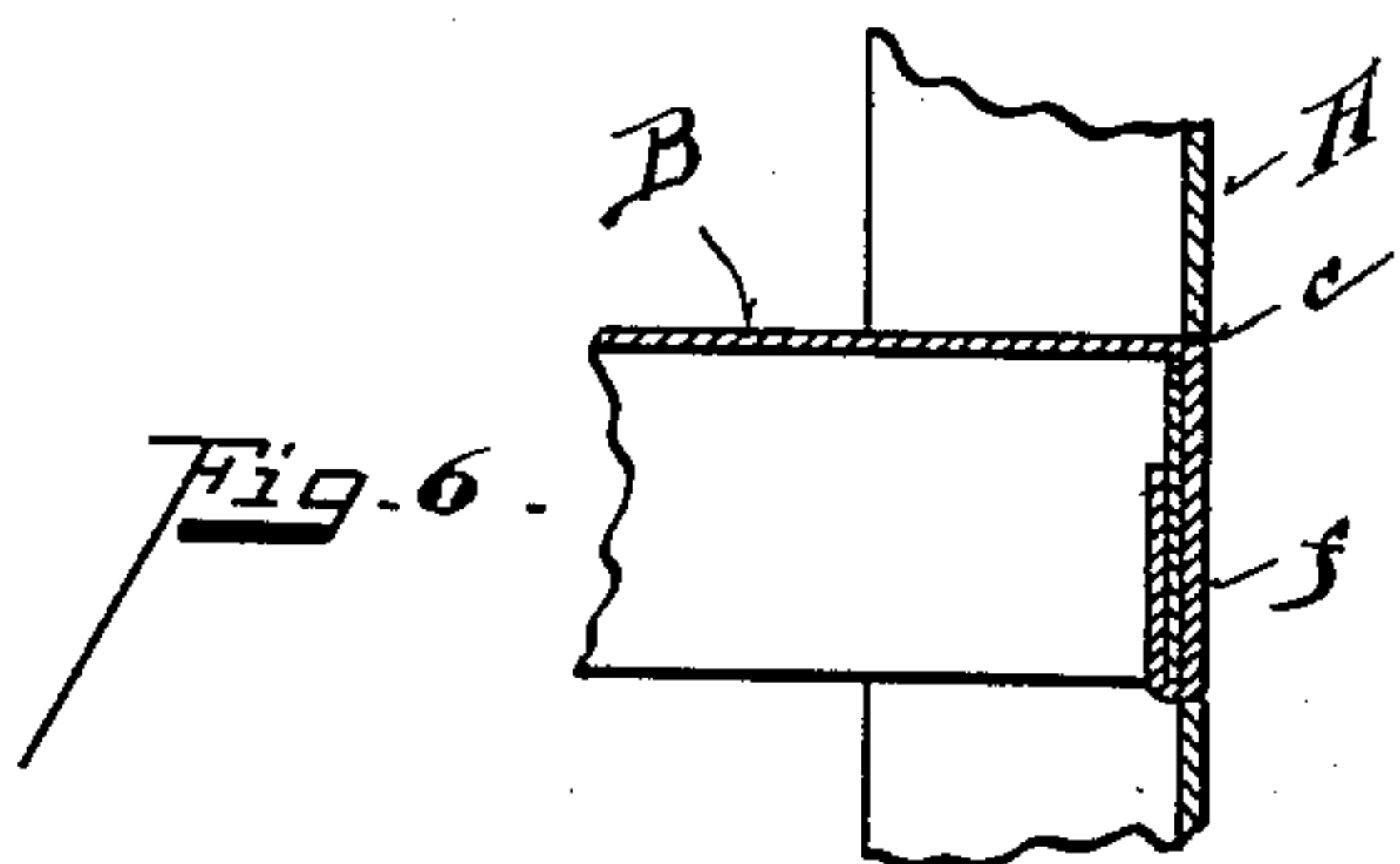
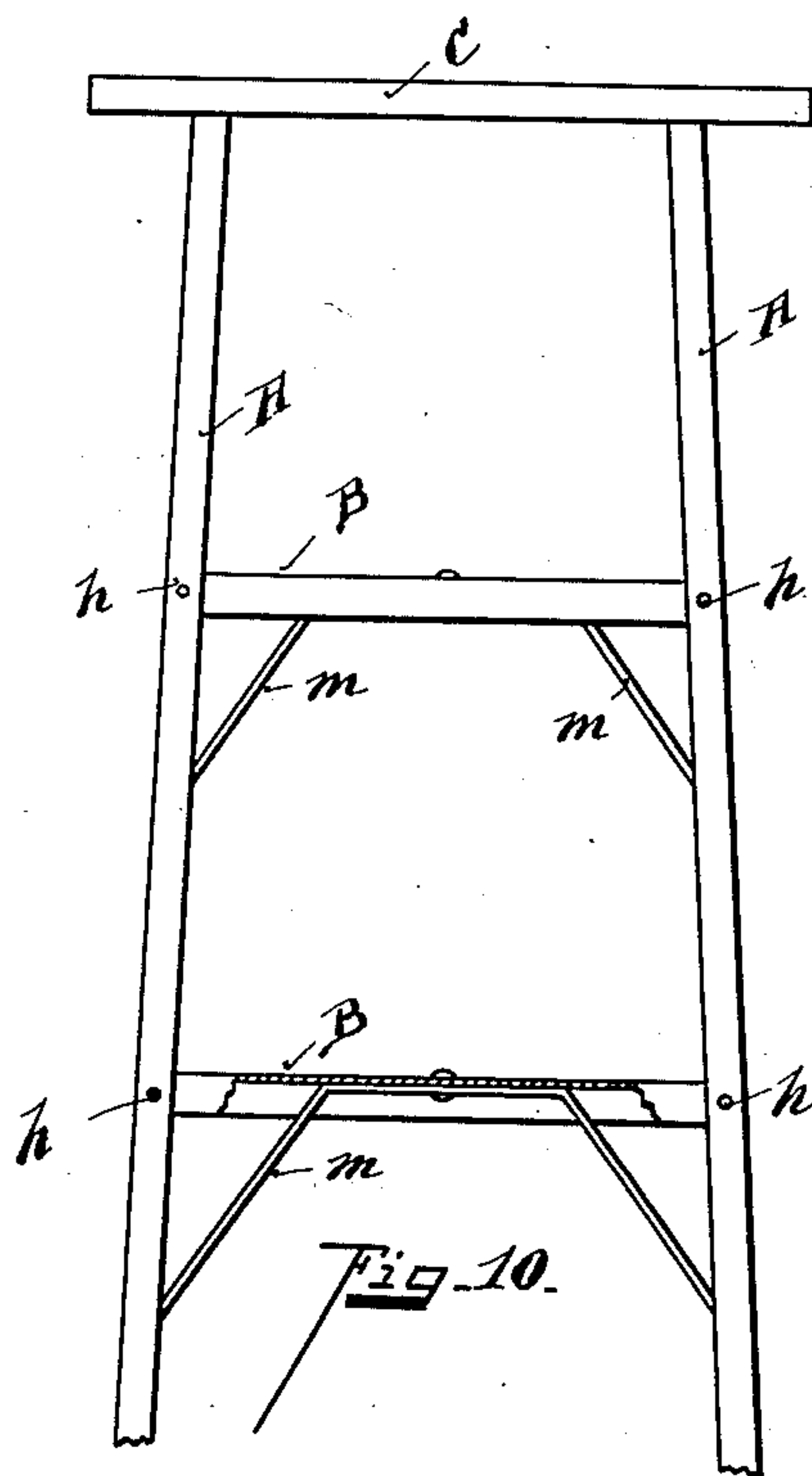
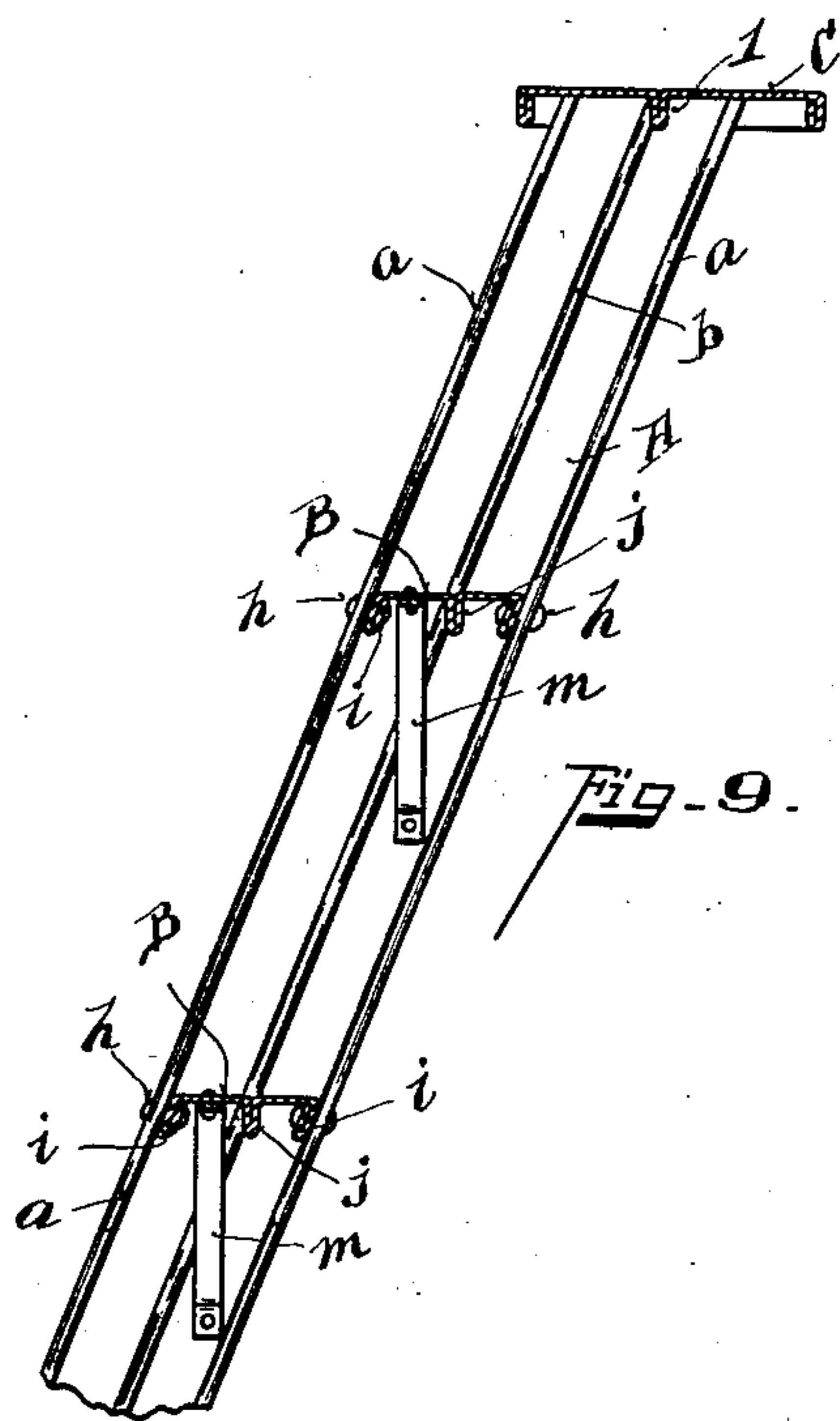
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2 SHEETS—SHEET 2.



Inventor

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UNITED STATES PATENT OFFICE.

JUDSON R. RUPE, OF RICHMOND, INDIANA, ASSIGNOR TO CHANDELIER & ART BRASS WORKS,
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LADDER.

No. 891,736.

Specification of Letters Patent.

Patented June 23, 1908.

Application filed May 24, 1905. Serial No. 262,048.

To all whom it may concern:

Be it known that I, JUDSON R. RUPE, a citizen of the United States, residing at Richmond, in the county of Wayne and State of Indiana, have invented certain new and useful Improvements in Ladders, of which the following is a specification.

One of the objects of my invention is to provide a firm, strong and durable step-ladder, made of sheet metal.

Another object of my invention is to provide strong and rigid stiles.

Another object of my invention is to provide steps rigidly fitted and secured to the stiles.

Another object of my invention is to provide a brace or support which can be rigidly secured to the ladder proper.

Another object of my invention is to provide improved hinged brace legs hinged to the stile so that they can be readily folded and brought firmly into position and locked against folding movement.

Other features of the invention are more fully set forth in the description of the accompanying drawings, forming a part of this specification, in which:—

Figure 1 is a side elevation of the step ladder containing my improvement in position for use. Fig. 2 is an enlarged section on line *x, x*, Fig. 1. Fig. 3 is an enlarged central section of the upper portion of the ladder. Fig. 4 is a section on line *w, w*, Fig. 3. Fig. 5 is an enlarged end view of one of the stiles. Fig. 6 is an enlarged transverse section of the stile and step at the point *x* Fig. 1. Fig. 7 is an enlarged plan view of one end of the steps. Fig. 8 is an enlarged sectional plan view of that portion of the stile to which the steps are attached. Fig. 9 is an enlarged view of one of the stiles, showing the steps in section. Fig. 10 is a front elevation of Fig. 9.

A represents the stiles of the ladder, as shown, made of sheet metal.

a represents inwardly extending flanges on the front and rear edge of the stiles. They are formed integral and of two thicknesses of metal, as shown in Fig. 5, one limb of the flange being bent over on itself so as to form smooth edges and to strengthen and stiffen the stiles.

b represents an inwardly extending flange about midway between the front and rear flanges *a*.

The stiles are preferably made of a single sheet of metal, the central flanges *b* being of two thicknesses bent upon each other to further strengthen and stiffen the stiles.

B represents the steps below the platform step C, and they are preferably secured to the stiles in the following manner:—The stiles are provided with slots *c, c*, upon each side of the central flange *b*. The steps are provided with front, rear and central flanges *i, i, j*, projecting downwardly from the face of the step. They are made of the form shown in Fig. 7. A recess *k* is shown in Fig. 7 which embraces the central flange *b* of the stile. Central slots *e, e*, are provided for each end of the step in the stiles on each side of the central flange. The metal between the slots *c* is depressed and the tenons *f, f*, of the steps are projected through the upper slot *c*, then bent downward, passed through the lower slot, and the end turned up against the offset of the stile A, as shown in Fig. 6.

h, h, represent rivets or fastenings rigidly connecting the flanges *a* of the stile with the flanges *i* of the steps.

m, m, represents braces riveted to the steps at the top and to the sides of the stile to further strengthen and support the steps, as shown in Figs. 9 and 10, and these braces are preferably made of two-limbed form, as shown in Fig. 10.

C represents the platform or top step. It is provided with front, rear and central flanges projecting down in the same manner as those of the steps.

D represents brackets rigidly riveted to the stiles and platform step, connecting the two parts firmly together. Preferably, these brackets serve as the pivot supports for the hinged folding legs E.

The brace legs E of the step-ladder are shown of tubular form, by rolling a sheet metal in the usual form of making tubes. The tubular form is employed for two purposes, first because of lightness, and, second to serve as a slide-way for the brace eyes F.

G represents a brace pivoted to the stiles and the forward end is pivoted to the ears of the eyes F. By employing these eyes and pivoting the braces to them and to the stiles, the brace may be readily raised, the eyes sliding freely upon the tubular legs until they are drawn close against the rear edge of the stile.

I represents tubular eyes rigidly secured to the legs E.

J represents similar tubular eyes rigidly secured near the lower end of the legs.

5 L, L', represent cross braces firmly secured to the tubular eyes I, J. The upper eyes I are placed so that their top edges are at or below the horizontal line of the axes of the folding braces G, and serve as a stop to the
10 downward movement of said brace and to lock it in position against movement until the said brace G is lifted for folding.

It is obvious that the stiles and steps may be used as a ladder without attaching the
15 folding legs, and as such, is a part of my invention.

A ladder having the stiles made of this form is very rigid and will support without perceptible tremor a much heavier weight
20 than the ladder will ordinarily be subjected to.

When used as a step-ladder and constructed as herein shown, it has a corresponding increase of strength and rigidity.

25 Having described my invention, I claim:—

1. In a ladder, sheet metal stiles, the intermediate portion of which is bent upon itself to form intermediate flanges extending lengthwise of the stiles and substantially
30 transverse to the cross-section thereof, sheet metal steps formed with like intermediate flanges, each stile being formed with two slits one above the other, each step having a tongue extended through both of said slits
35 and bent against the inner surface of the sheet metal of the stile between the said slits, substantially as described.

2. In a ladder, sheet metal stiles, the metal of each stile being bent upon itself to form
40 flanges on the inside of the stile extending lengthwise thereof and substantially transverse to the cross-section, there being a flange at each edge of the stile and an intermediate flange consisting of a double thickness of the
45 sheet bent out from the stile proper, sheet metal steps, the metal of each of which steps is bent upon itself to form on the under side of the step, flanges extending lengthwise of the step and substantially parallel with and
50 abutting the flanges of the stiles, the said steps being secured between the stiles, substantially as described.

3. In a ladder, sheet metal stiles, the terminal ends of the sheet being bent to form a
55 flange at each edge thereof extending lengthwise of the stile, an intermediate flange consisting of two thicknesses of the sheet formed by bending the metal upon itself, and sheet metal steps formed with flanges at each edge
60 of the step and a central flange formed by bending the metal upon itself, said steps provided with tongues at the ends thereof with a slot between them of such dimensions as to

allow the flanges of the steps to engage and abut the flanges of the stiles, substantially as
65 described.

4. In a ladder, sheet metal stiles, the terminal ends of the sheet being bent upon itself to form a flange at each edge thereof extending lengthwise of the stile, an intermediate
70 flange consisting of two thicknesses of the sheet formed by bending the metal upon itself, and sheet metal steps formed with flanges at each edge of the step by bending the terminal ends of the metal upon itself,
75 said steps provided with tongues at the ends thereof with a slot between them, adapted to engage over the central stile formed between the flanges and the tongues fastened to the stiles, substantially as described. 80

5. In a ladder, sheet metal stiles, the terminal ends of the sheet being bent upon itself to form a flange at each edge thereof extending lengthwise of the stile, an intermediate
85 flange consisting of two thicknesses of the sheet formed by bending the metal upon itself, and sheet metal steps having like flanges formed at each edge and centrally thereof and inclined parallel with the flanges of the stile, said steps having tongues at the
90 terminal ends adapted to be bent down and engage the face of the stiles and slotted at each end to engage over the central stile flange, the said tongues being fastened to the stiles, substantially as described. 95

6. In a ladder, sheet metal stiles, the terminal ends of the sheet being bent upon itself to form a flange at each edge thereof extending lengthwise of the stile, an intermediate
100 flange consisting of two thicknesses of the sheet formed by bending the metal upon itself, the face of said stiles being of a single thickness of the metal, and sheet metal steps having like flanges at each edge and centrally thereof and inclined parallel with the flanges
105 of the stile, said steps being slotted at each end with projecting tongues beyond the intermediate flange, which tongues are bent and fastened to the plane faces of the stiles between the central flange, substantially as
110 described.

7. A step ladder, formed of sheet metal stiles having inwardly projecting flanges, tubular legs pivoted to the stiles, a folding
115 brace pivoted at one end to the stiles, a member sliding on the legs, and a pivotal connection between the said member and the other end of the said brace, substantially as described.

In testimony whereof, I have hereunto set
120 my hand.

JUDSON R. RUPE.

Witnesses:

OLIVER B. KAISER,
LEO O'DONNELL.