

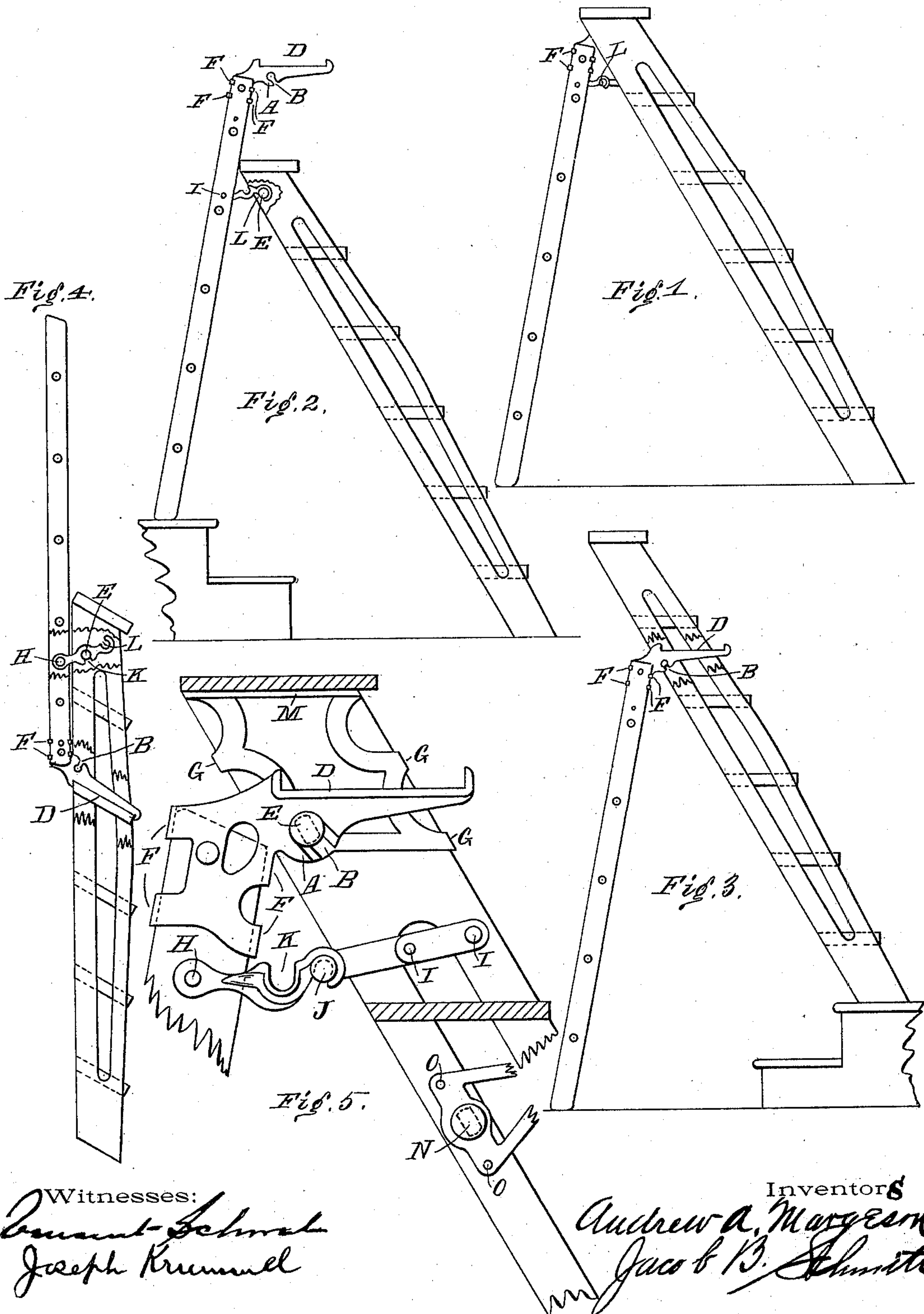
(No Model.)

2 Sheets—Sheet 1.

A. A. MARGESON & J. B. SCHMITT.  
STEP LADDER.

No. 598,677.

Patented Feb. 8, 1898.



Witnesses:  
*August Schmitt*  
*Joseph Krummell*

Inventors  
*Andrew A. Margeson*  
*Jacob B. Schmitt*

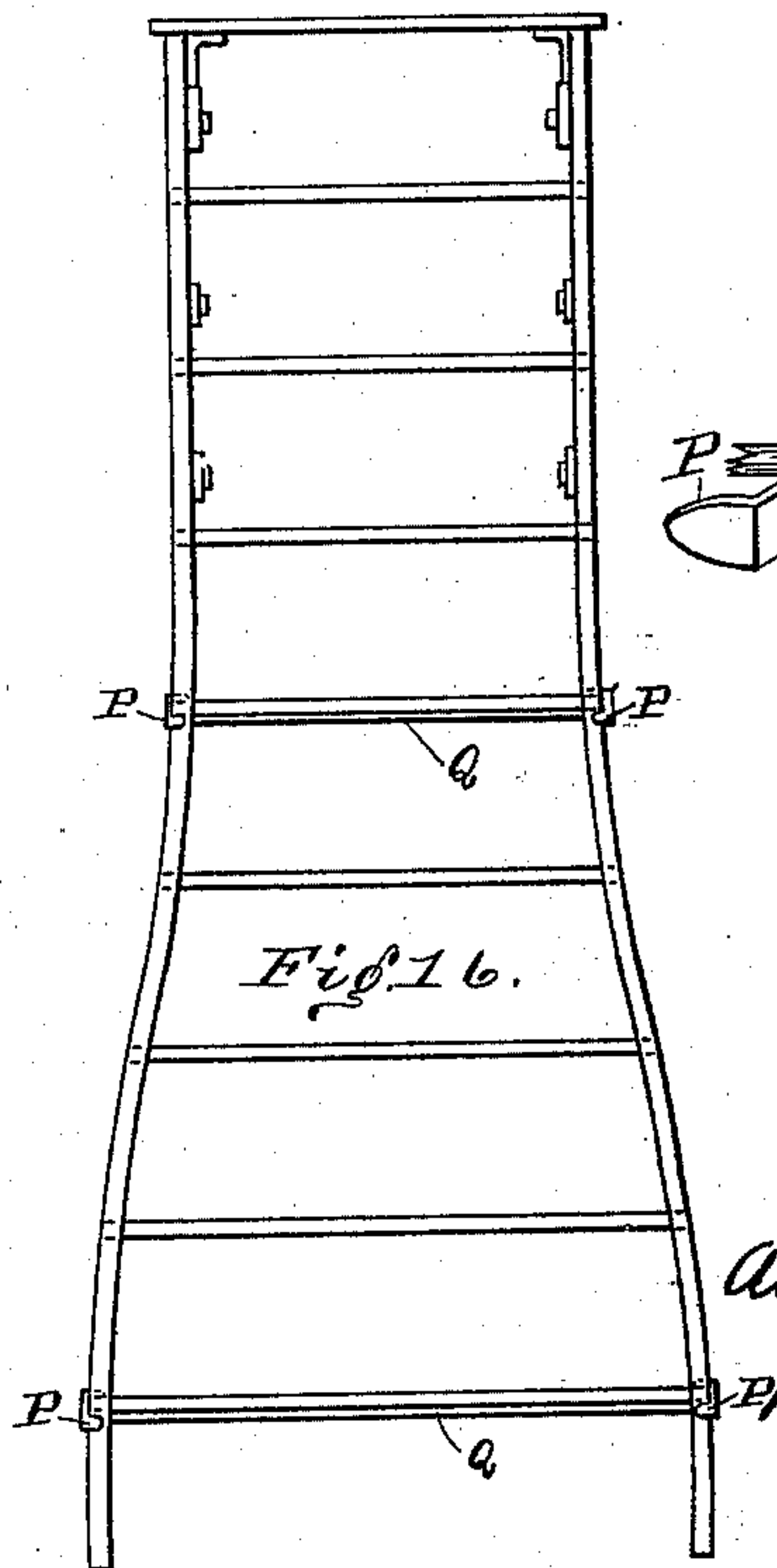
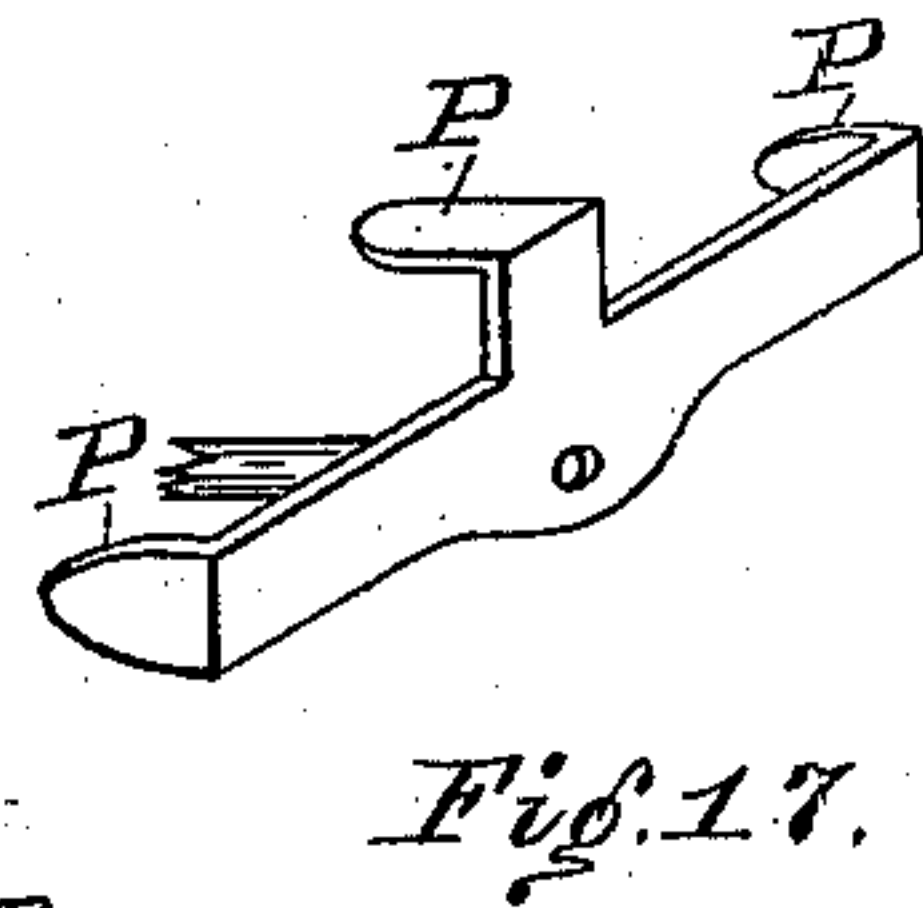
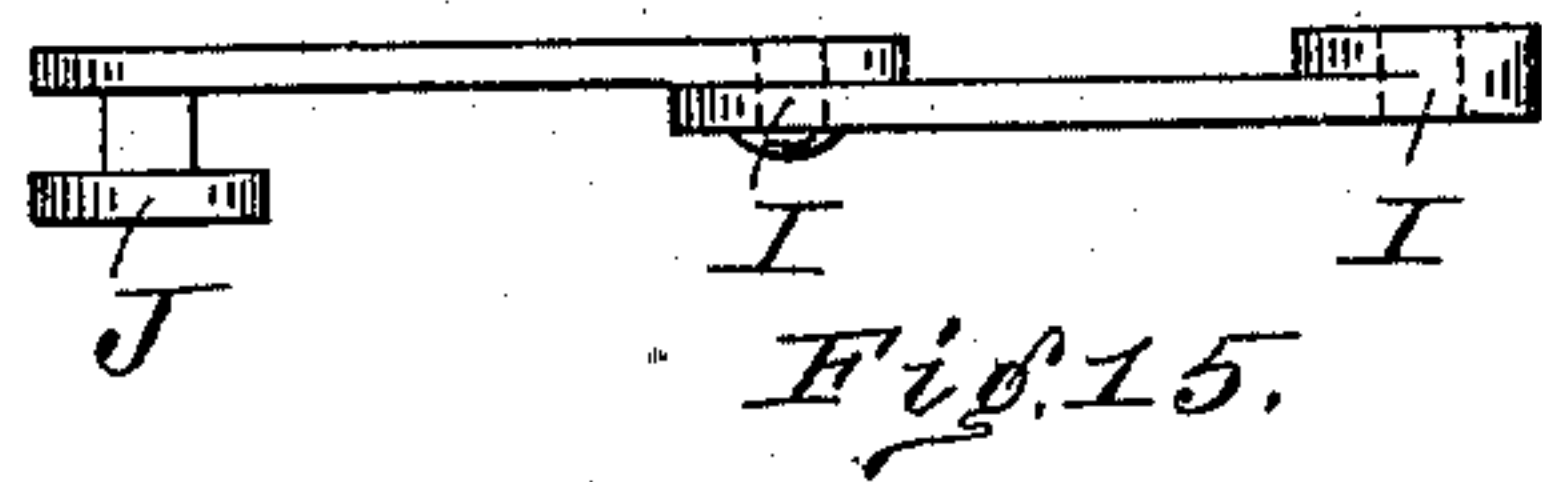
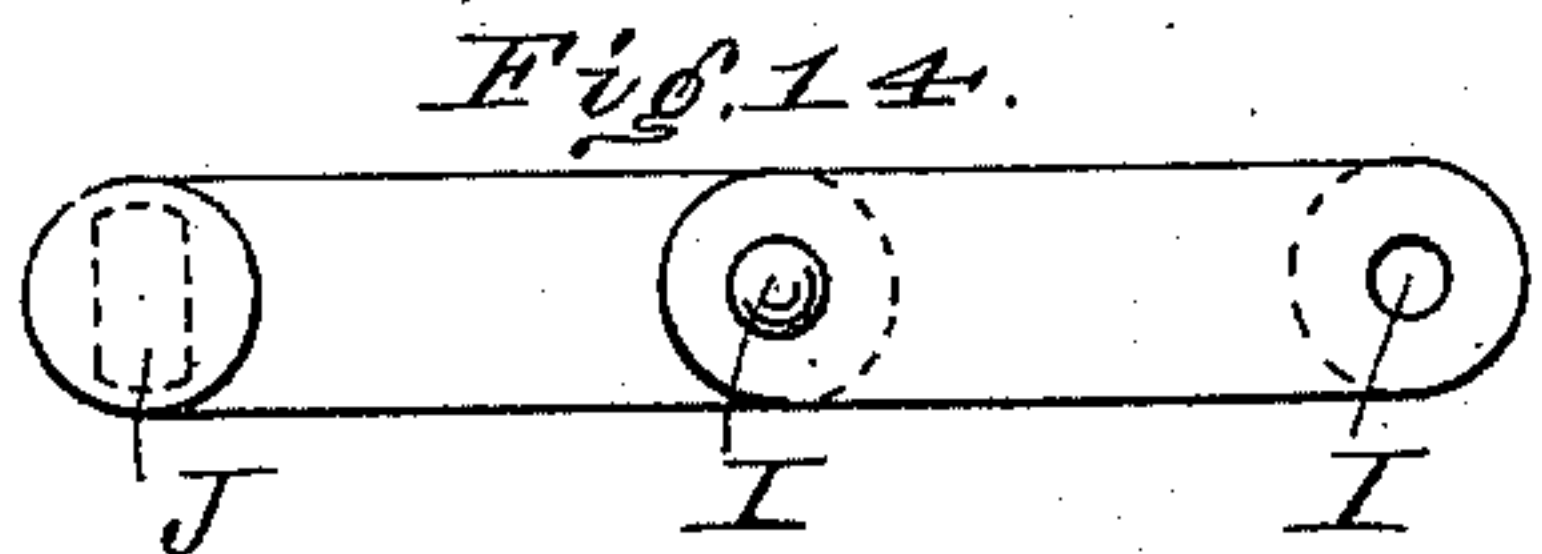
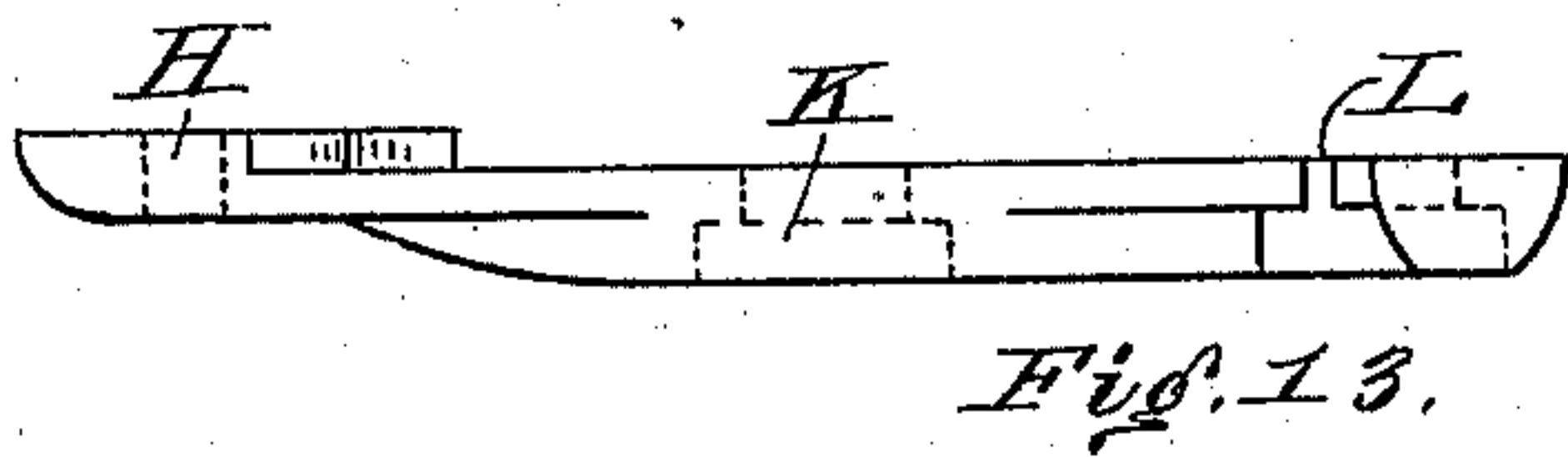
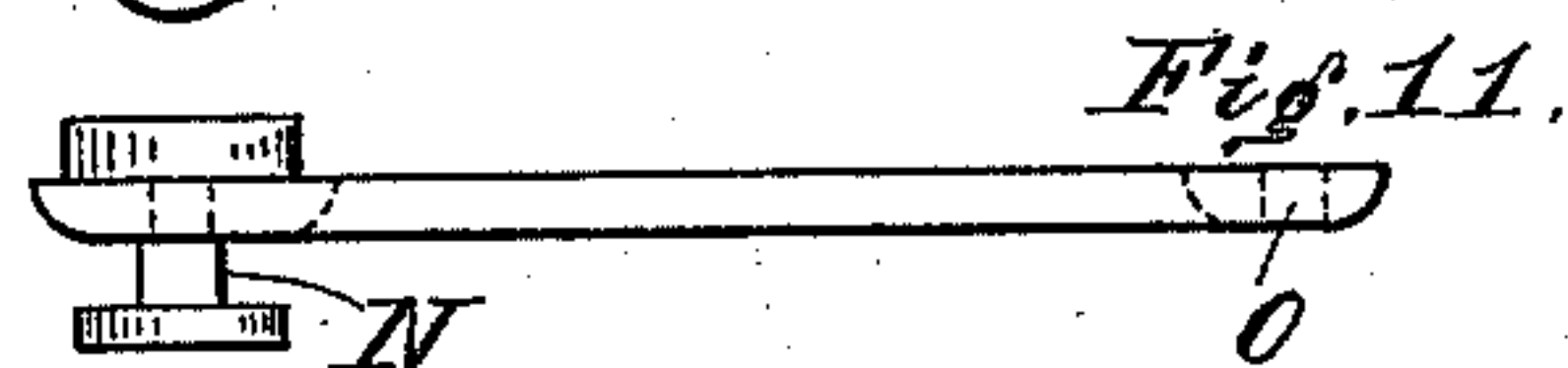
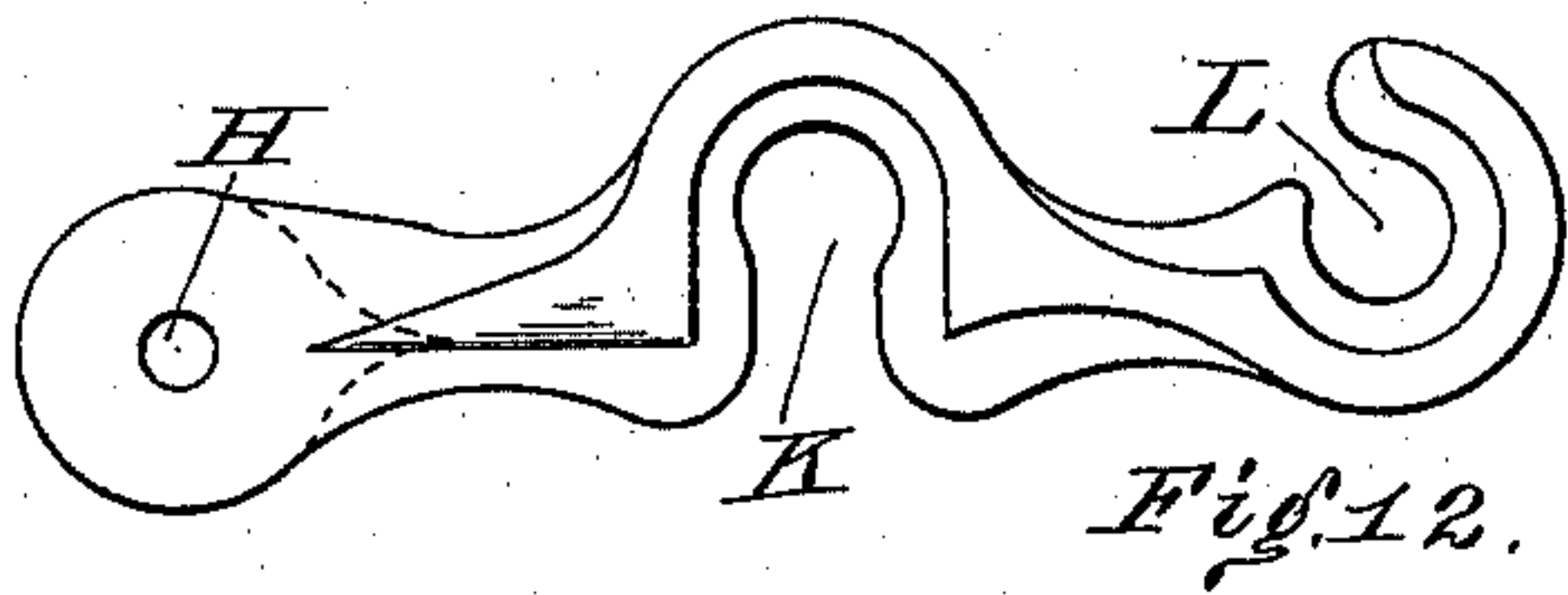
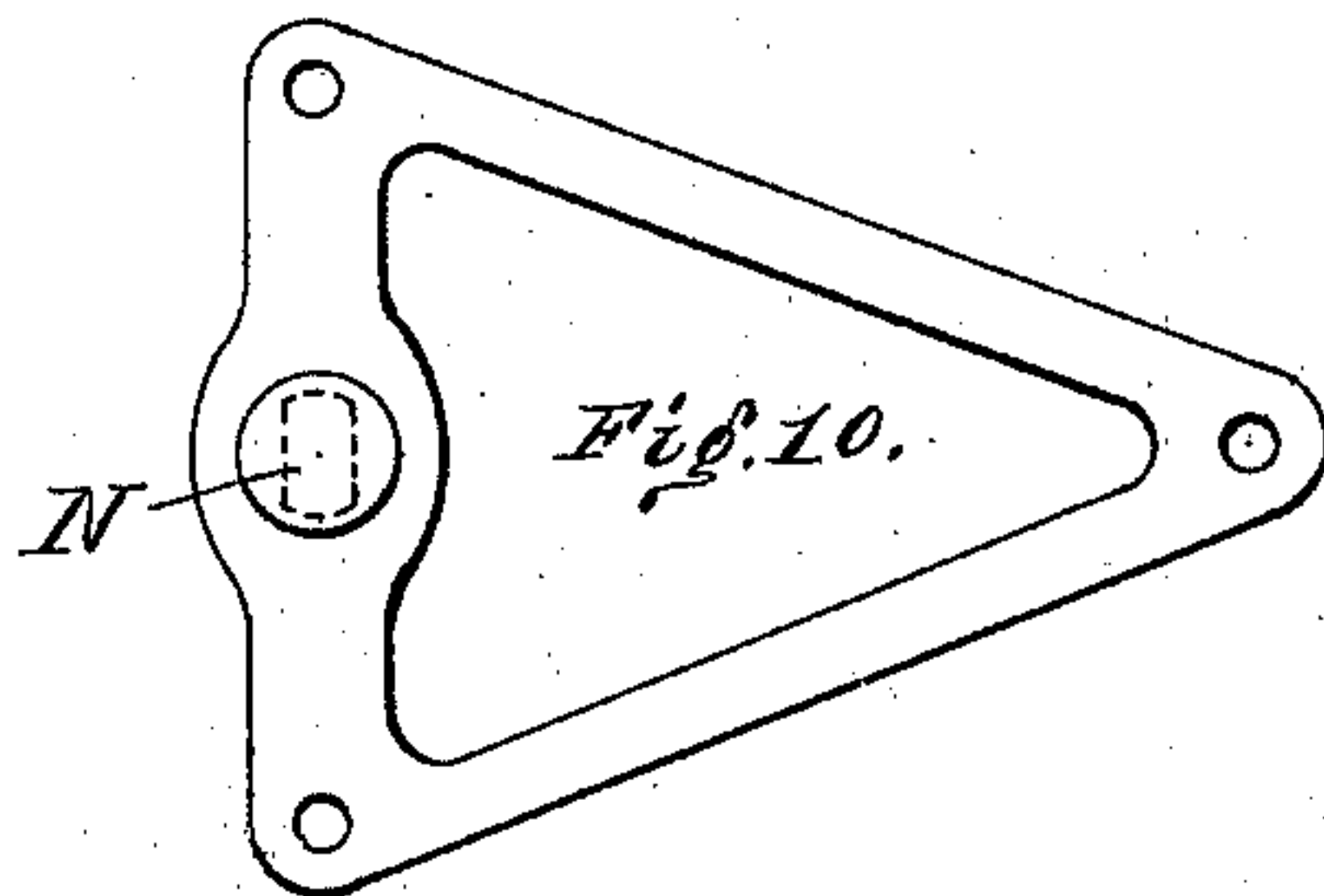
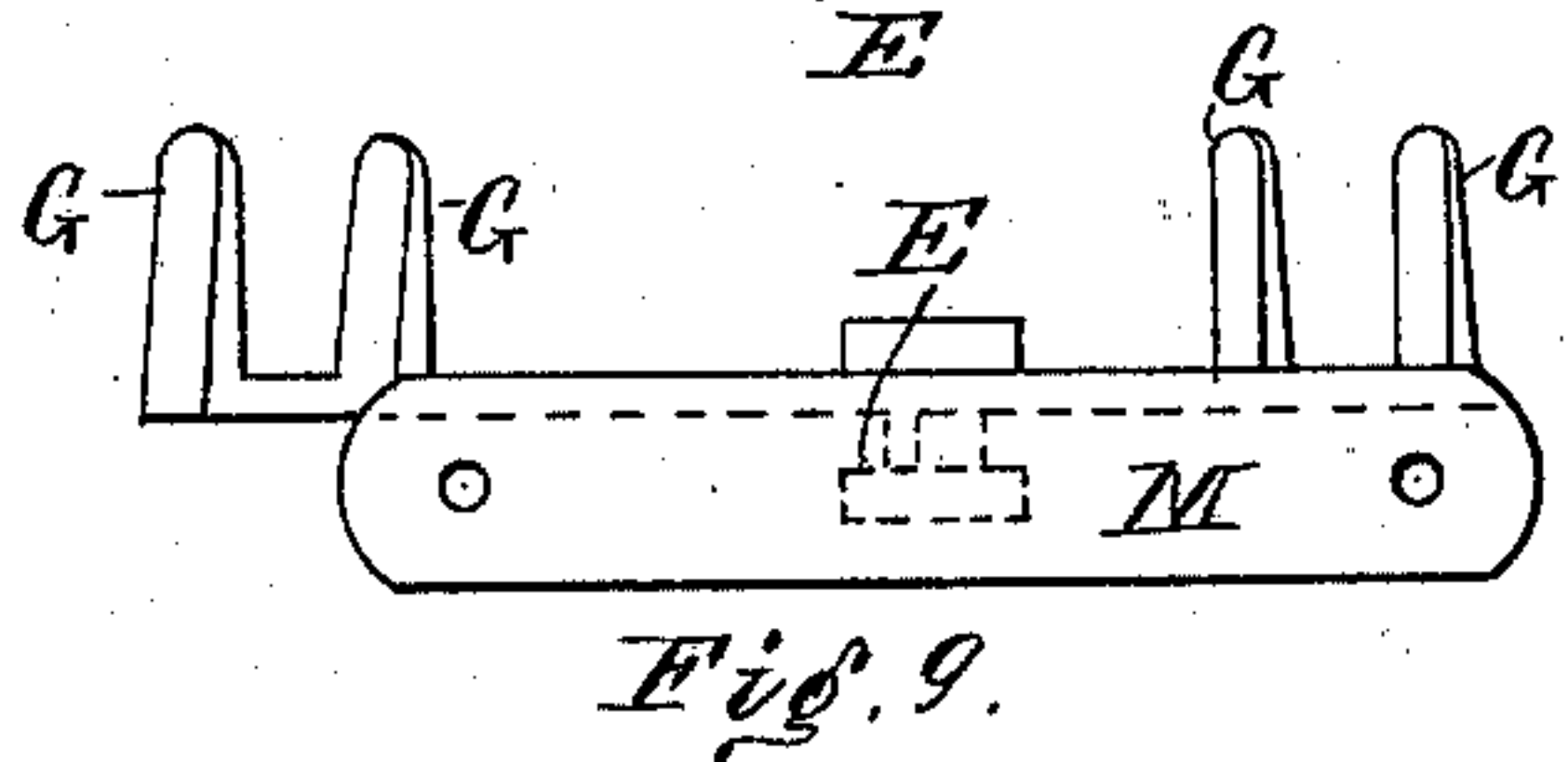
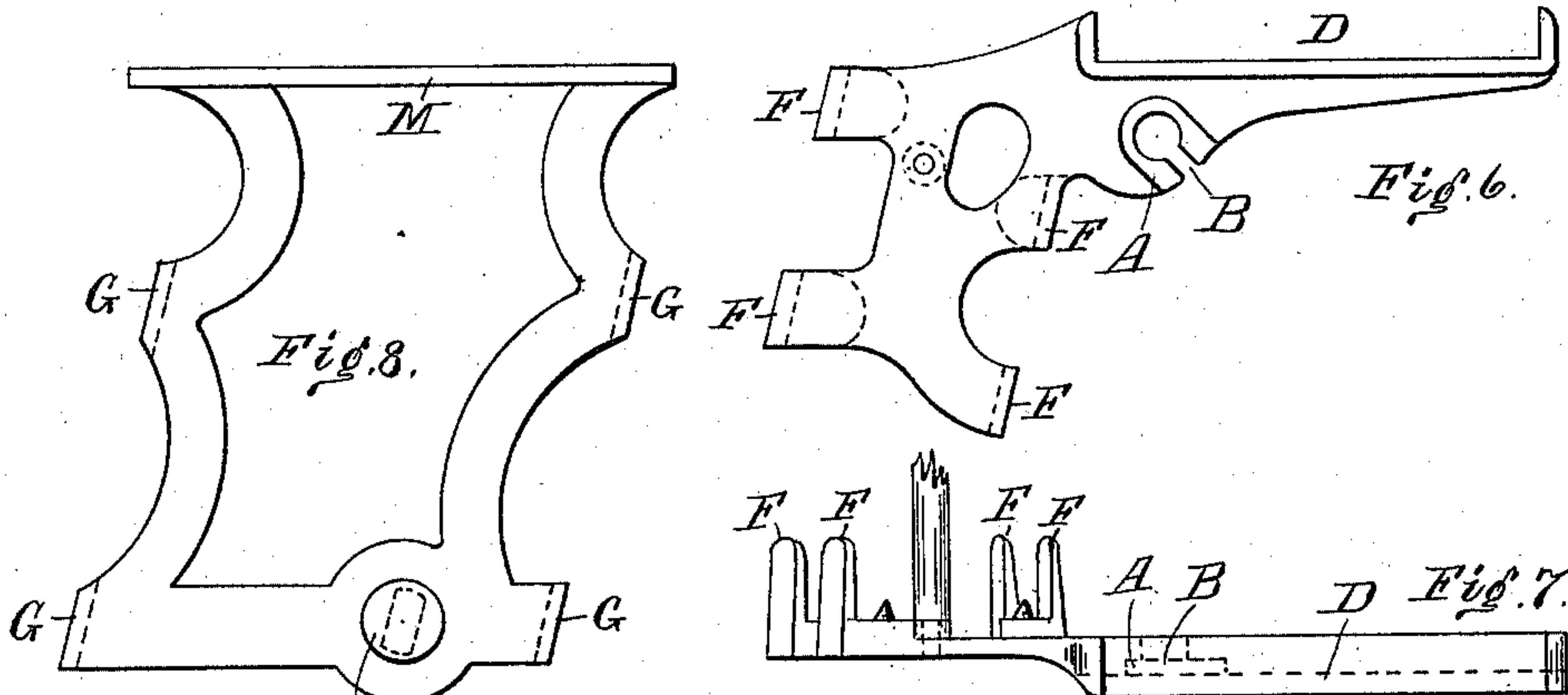
(No Model.)

2 Sheets—Sheet 2.

A. A. MARGESON & J. B. SCHMITT.  
STEP LADDER.

No. 598,677.

Patented Feb. 8, 1898.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

ANDREW A. MARGESON AND JACOB B. SCHMITT, OF CINCINNATI, OHIO.

## STEP-LADDER.

SPECIFICATION forming part of Letters Patent No. 598,677, dated February 8, 1898.

Application filed July 31, 1895. Serial No. 557,788. (No model.)

*To all whom it may concern:*

Be it known that we, ANDREW A. MARGESON and JACOB B. SCHMITT, citizens of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented an Improvement in Step-Ladders, of which the following is a specification.

Our invention relates to a step-ladder.

The object of our invention is, first, to combine the two parts of a step-ladder so that the sections may be separated and joined together to form an extension-ladder with substantial uniting parts adapted to be reversed to lock the parts in either position.

Another object of our invention is to unite the rear section to the front section by a detachable hinge and reconnect the same to a secondary pivot below the upper pivot-hinge to adjust the step-ladder to be used on stairs or uneven ground.

Other features of our invention relate to the hinging and hooking devices, which are fully set forth in the description of the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side elevation of our improvement used as an ordinary step-ladder. Fig. 2 is a side elevation showing the position of the parts when the rear section is adjusted to a shortened position. Fig. 3 is a side elevation when the parts are adjusted for the stile-section to rest on an elevation. Fig. 4 is a side elevation showing the position of the parts when used as an extension-ladder. Fig. 5 is an elevation of the inside of the stile and rear section, showing the bracket and hook attachment. Fig. 6 is a side view of the bracket and hinge brace. Fig. 7 is a top plan view of Fig. 6. Fig. 8 is a side elevation of the main bracket. Fig. 9 is a top plan view of the same. Fig. 10 is a plan view of the stile-brace. Fig. 11 is an edge view of the same. Fig. 12 is a plan view of the reversible hook. Fig. 13 is a top plan view of the same. Fig. 14 is a side view of a jointed link. Fig. 15 is an edge view of the same. Fig. 16 is an elevation of the rear section. Fig. 17 is a perspective view of a cross-brace.

The side stiles of the front section are of ordinary construction, with the step gained therein. The top step is connected to the

side stiles by means of a bracket, which is provided with lugs G to engage over the front and rear edges of the stiles, and the top of the bracket M is rigidly secured to the top step, thereby firmly uniting the parts. E represents a pivot formed integral with said bracket.

D represents a combined bracket-brace and hinge-arm. It is provided with a slotted journal-bearing B, which engages over the pivot E, as shown in Fig. 5, and is readily detachable for the purpose hereinafter to be explained.

K L represent a reversible hook hinged to the rear section of the ladder at H. When the ladder is used as a step-ladder, the hook L engages over the pivot J of the link-strap I, which keeps the step-ladder from spreading.

In Fig. 4 the parts are shown in position as an extension-ladder, the two sections being detached. The brace D engages over the second step, as there shown, and the hook K engages over a pin in the side of the front stile, thus locking the parts firmly together.

We have shown two different ways in which our ladder may be adjusted to uneven surfaces.

In Fig. 2 the rung-section is placed on the elevated surface and the top of the stile-section rests against the sides of the rung-section, the hook L engaging over the pin E to secure the adjustment. As a series of these pins and hooks may be employed the ladder may be adjusted to fit any degree of uneven surfaces.

In Fig. 3 the stile-section is placed on the elevated surface and is secured by the engagement of the slotted journal-bearing B, formed on the under side of brackets D, secured to the rung-section, with the pins attached to the sides of the stile-section. As a number of pins are employed various adjustments may be obtained.

The brackets D are rigidly attached to the top of the rung-section at the sides thereof. This bracket has an extension-arm which performs two functions. First, the upper face of the arm is recessed to receive and embrace the steps of the stile-section when the ladder is used as an extension-ladder, this adjustment being secured by the engagement of re-



versible hook K with pivot E on the stile-section; second, a slotted journal-bearing B is formed on the under side of said extension-arm which engages with pins on the stile-section, so the ladder can be used as a step-ladder for even and uneven surfaces, as shown in Figs. 3 and 5. This bracket and its extension-arm must be rigidly attached to the rung-section, as the strain when the ladder is used as an extension-ladder is entirely sustained by this extension-arm, as shown in Fig. 4, and the weight of the ladder and the load borne by the ladder are brought to bear upon this bracket. Also when used as a step-ladder the strain is sustained by the engagement of the pins on the stile-section with the slotted journal-bearings B.

It is desirable to use a ladder-section wider at the bottom than at the top, as shown in Fig. 16, so as to afford a firmer base, and when this form is used we preferably employ a brace-piece (shown in Fig. 17) which has three lugs, one on each end and one on the middle. This brace spans the middle portion of the ladder, running parallel with the rungs, and the end lugs embrace the outsides of the ladder, the middle lug embracing over the rung. These lugs are lettered P in the drawings. This brace materially strengthens the ladder and prevents it from spreading.

Having described our invention, what we claim is—

1. In a reversible, extensible separable ladder, the combination of a rung-section and a step-section detachably connected together, brackets D secured to the top of the rung-section upon each side, there being slotted bearings B formed in the under side of said brackets, reversible hooks K, L, pivoted to the sides of the rung-section, and pins secured to the sides of the step-section, substantially as specified.

2. The combination in a reversible, extensible separable ladder, of a rung-section and a step-section, brackets D rigidly secured to the rung-section at the top and sides thereof, said brackets having extension-arms the upper faces of which are recessed and adapted to receive and engage the steps of the step-section, there being slotted journal-bearings B in the under sides of said extension-arms, the reversible hooks K, L, pivoted to the sides of said rung-section and the pins attached to the sides of said step-section and adapted to

be engaged by either said bearings B or hooks K, L, substantially as specified.

3. A reversible, extensible, separable ladder composed of a rung-section and a step-section, brackets D rigidly secured to the top of said rung-section at the sides thereof, each bracket having an extended arm, there being slotted hinged bearings B formed on the under sides of said extensions, the top edges of said extensions having flanges forming a brace adapted to rest on and engage the steps of the opposite section when the sections are used as an extensible ladder, substantially as specified.

4. In a ladder comprising a rung-section and a step-section, brackets D rigidly secured to the top of the rung-section at the sides thereof, rigid extension-arms projecting from said brackets, the upper faces of said brackets being provided with recesses adapted to receive and embrace the steps of the step-section, there being slotted journal-bearings B formed on the under sides of said extension-arms substantially as specified.

5. In a convertible ladder, the combination of a step-section and a rung-section detachably connected together, brackets attached to the rung-section, there being slotted bearings B formed on the under sides of said brackets, pins secured to the sides of the step-section, adapted to be engaged by the slotted bearings B forming a hinge, when the ladder is used as a step-ladder, the top of said brackets D forming braces adapted to engage with the steps of the step-section when the rung-section is reversed and the ladder used as an extensible ladder, reversible hooks K, L, pivoted to the sides of the rung-section, pivots J connected to the step-section and adapted to be engaged by the hook portion L when the ladder is used as a step-ladder, the hook portion K adapted to engage with the pins E secured to the sides of the step-section, whereby the adjustment of the sections together is secured, when they are used as an extensible ladder, substantially as specified.

In testimony whereof we hereunto subscribe our names as joint inventors.

ANDREW A. MARGESON.  
JACOB B. SCHMITT.

Attest:

JOSEPH SCHULTZ,  
VINCENT SCHWAB.