

J. W. CALDWELL,
LADDER.

APPLICATION FILED APR. 29, 1908.

938,638.

Patented Nov. 2, 1909.
2 SHEETS—SHEET 1.

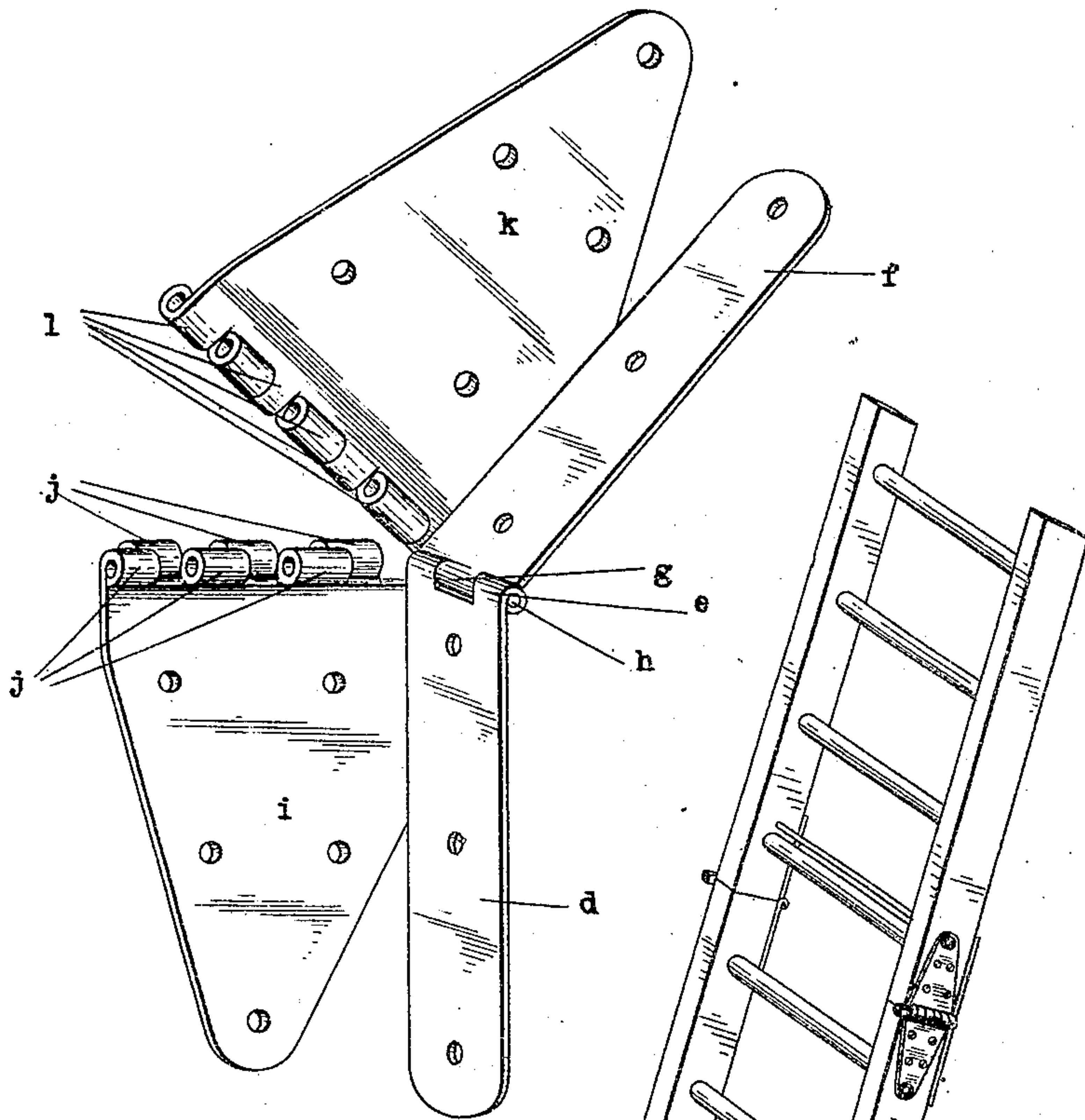


FIG. 4a.

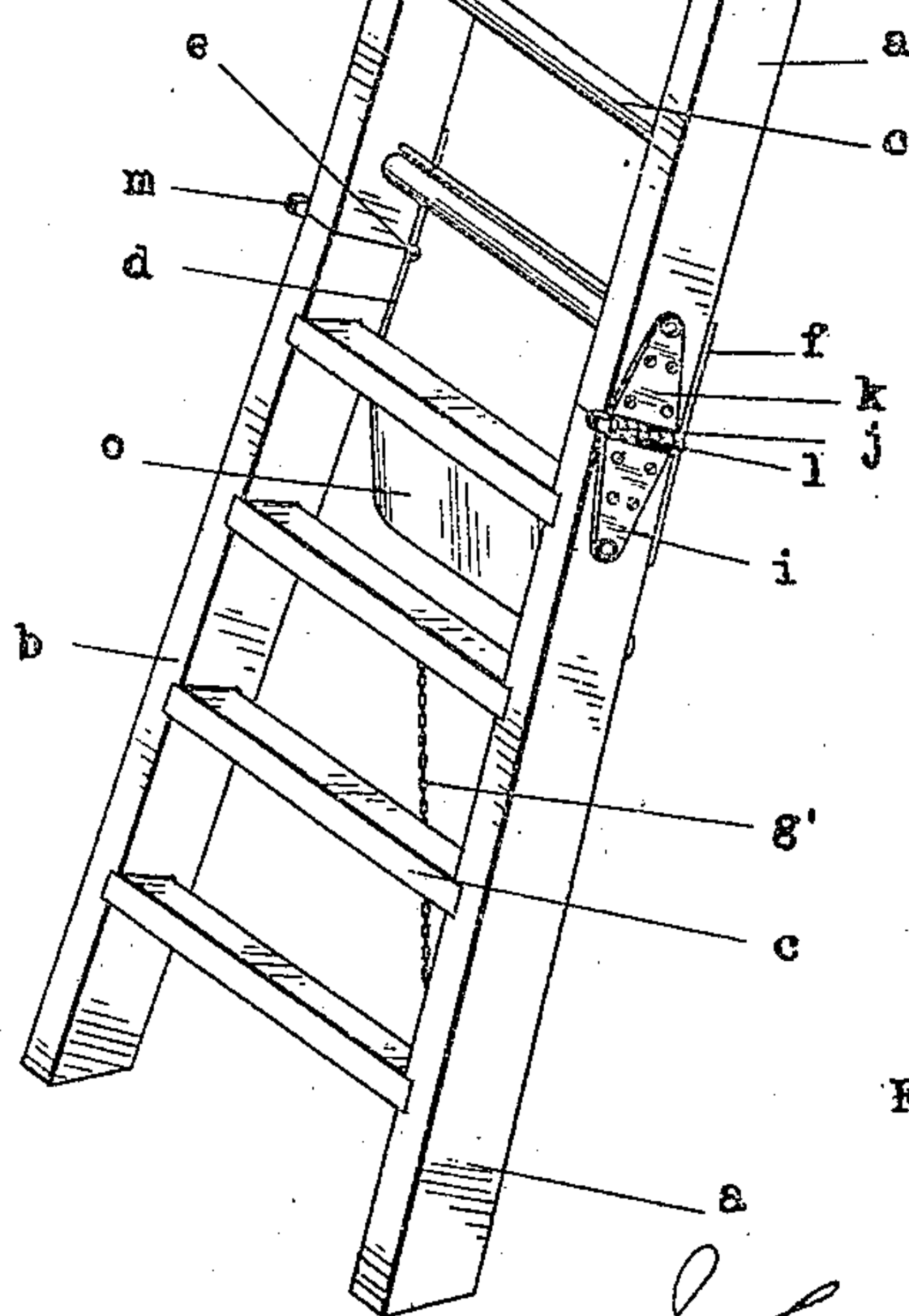


FIG. 1.

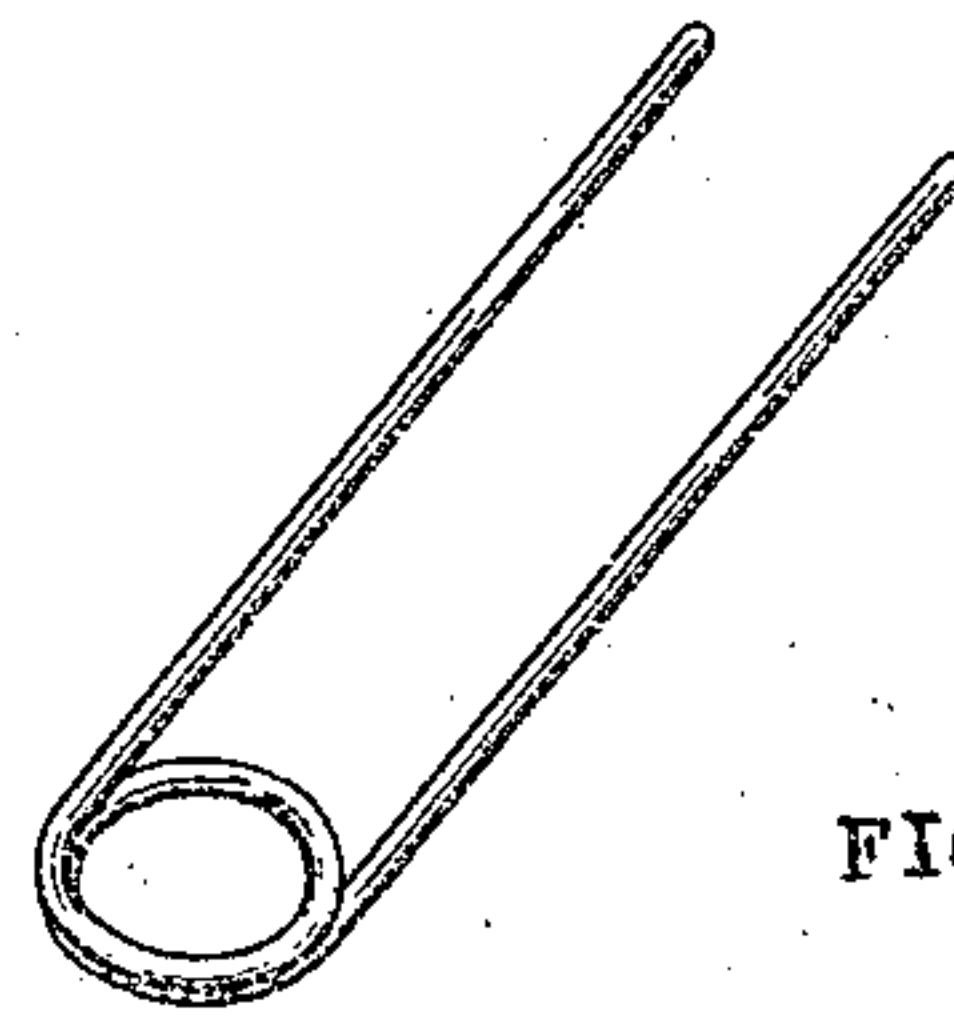


FIG. 5.

Witnesses.

H. L. Prindle.
Olive Bateman

Inventor.

John W. Caldwell
by Charles H. Rucker
his Attorney

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2 SHEETS—SHEET 2.

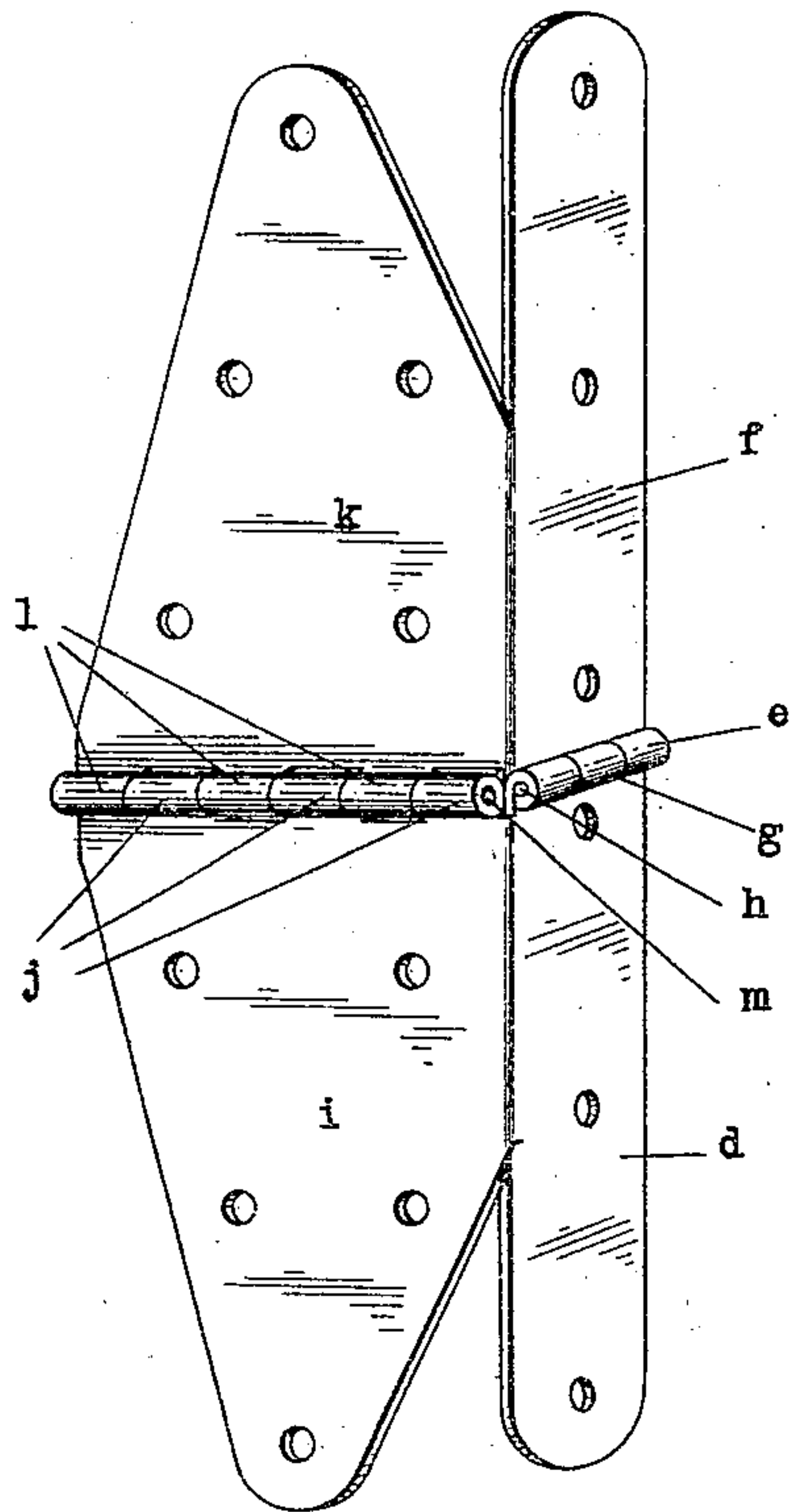


FIG. 3 .

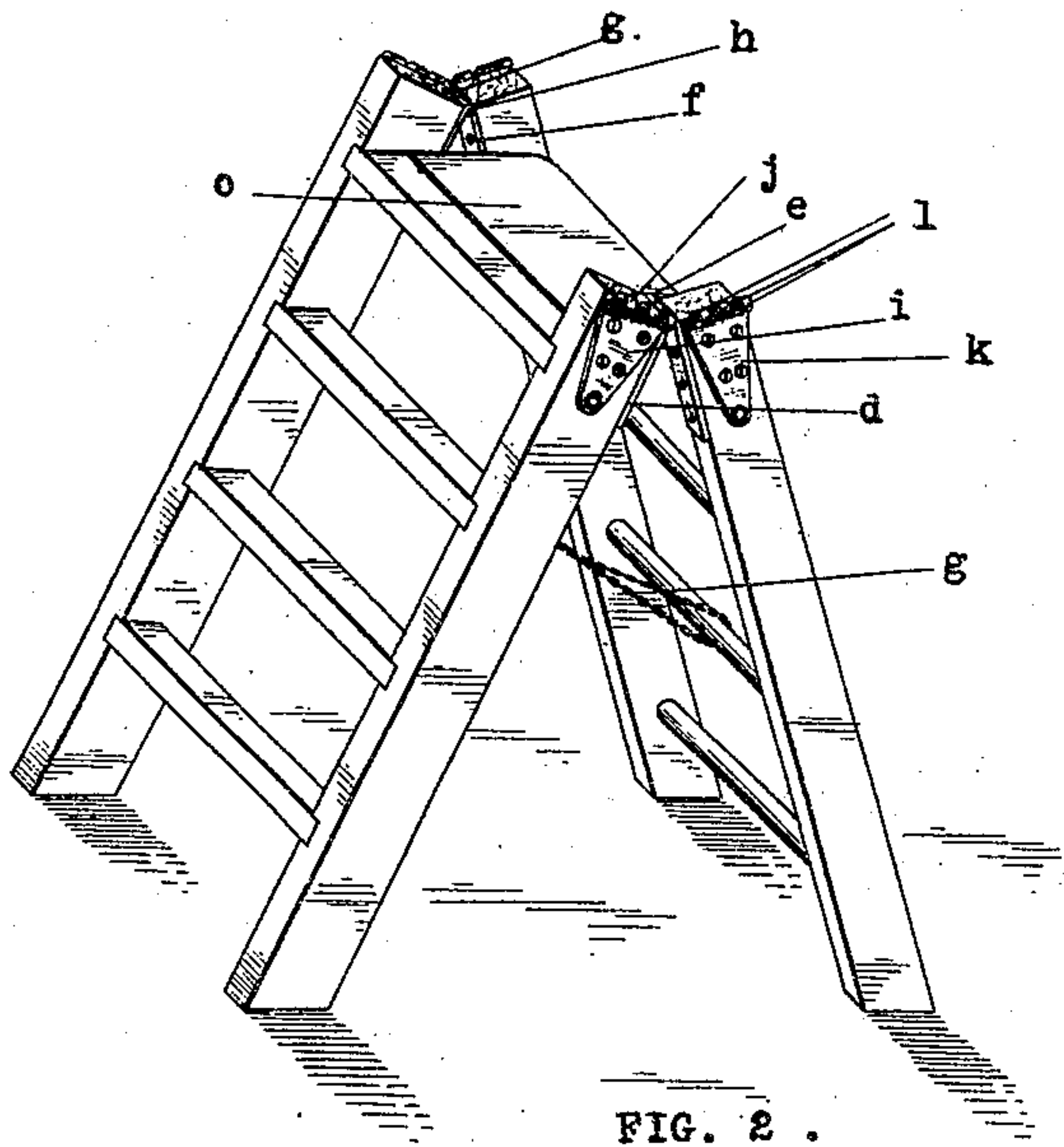


FIG. 2 .

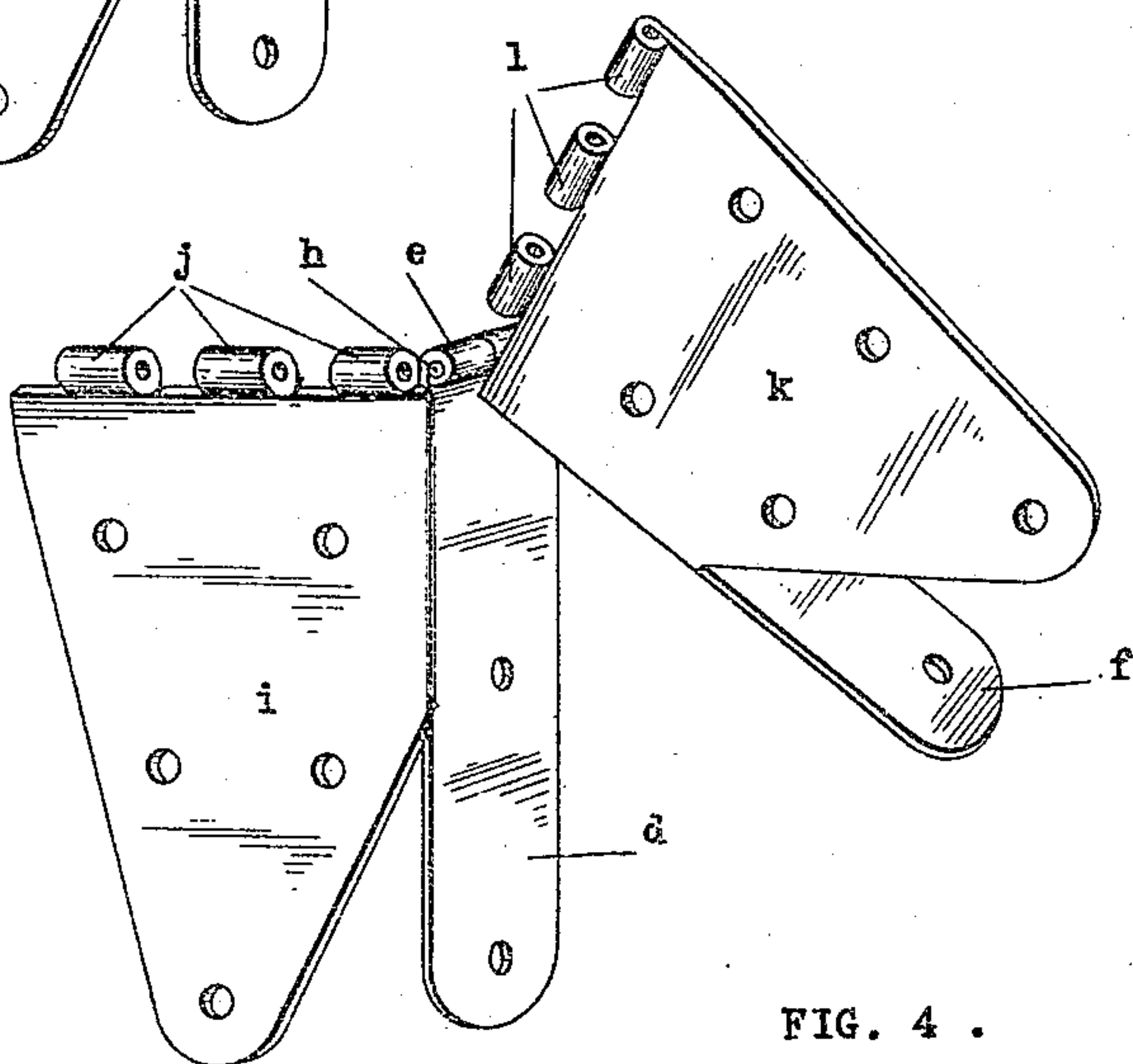


FIG. 4 .

Witnesses.
H. L. Trimble.
Olive Bateson

Inventor.
John W. Caldwell
by Charles W. McKee
attorney

UNITED STATES PATENT OFFICE.

JOHN WM. CALDWELL, OF TORONTO, ONTARIO, CANADA.

LADDER.

938,638.

Specification of Letters Patent.

Patented Nov. 2, 1909.

Application filed April 29, 1908. Serial No. 429,946.

To all whom it may concern:

Be it known that I, JOHN WILLIAM CALDWELL, a British subject, residing in the city of Toronto, in the county of York and Province of Ontario, Canada, have invented certain new and useful Improvements in Ladders; and I hereby declare that the following is a full, clear, and exact description of the same.

This invention relates to a ladder consisting of two or more sections in which the side bars of one section are hinged to the side bars of the adjacent section or sections, so that the sections can be moved into an extended position and securely coupled together or moved into a folded position and stayed by unlocking the coupling members but without disconnecting the hinge members, and it further relates to the peculiar construction of the means by which the ladder sections are hinged and coupled together said means consisting of multiple sets of hinge members provided with hinge knuckles and pins, and a corresponding number of sets of coupling members coacting with the hinge members and provided with coupling knuckles and pins, as hereinafter set forth and particularly pointed out in the claim.

For an understanding of the invention reference is to be had to the following description and to the accompanying drawings in which:

Figure 1, is a perspective view of the ladder consisting of three ladder sections connected together by hinge and coupling members showing the ladder sections in their extended position. Fig. 2, is a perspective view of the ladder shown in Fig. 1, with the ladder sections folded. Fig. 3, is an enlarged perspective view of one set of the combined hinge and coupling members with the parts in the position shown in Fig. 1. Fig. 4, is a similar view to Fig. 3, with the parts in the position shown in Fig. 2. Fig. 5, is a view of a modification of the construction shown in Fig. 4. Fig. 5, is a view of a staple which may be used as a substitute for the coupling pin shown in Figs. 3 and 4.

Like characters of reference refer to like parts throughout the specification and drawings.

The ladder may be described as consisting of two ladder sections *a a'*, each ladder section consisting of a pair of side bars *b* and

a set of steps *c*. Secured to the back of each side bar at the top of the ladder section *a* is a hinge member *d* having a hinge knuckle *e*, and secured to the back of each side bar at the adjacent end of the ladder section *a'* is a hinge member *f* having hinge knuckles *g*. The hinge knuckles *e* register with the hinge knuckles *g* and receive the hinge pins *h* by which the hinge members connect the sections *a a'* together. Secured to the side faces of the side bars *b* near the top of the ladder section *a*, are coupling members *i* having coupling knuckles *j*, and secured to the side faces of the side bars near the adjacent end of the ladder section *a'* are coupling members *k* having coupling knuckles *l* which register in the spaces between the coupling knuckles *j* and receive the coupling pins *m*.

The adjacent ends of the ladder sections are jointed to butt closely together when in the position shown in Fig. 1, and when they are in that position the knuckles *j* and *l* register with each other and receive the coupling pins *m*, which lock them together and securely hold the ladder sections in their extended position. To move the ladder sections from the position shown in Fig. 1, to that shown in Fig. 2, it is only necessary to withdraw the coupling pins *m* from the coupling knuckles *j* and *l* and when that is done the ladder section *a'* can be turned upon the hinge pins *h* and folded into the position shown in Fig. 2, and stayed by a chain *g'* or other device of a like character.

As shown in the drawings the coupling members *i* and *k* are secured to the outer surfaces of the side bars but these coupling members may as conveniently be connected to the inner surfaces in some styles of ladders without affecting the operation of the parts. The ladder shown in the accompanying drawings consists only of three ladder sections but it may consist of two or more than two ladder sections, and the words multiple sections, used in the claim will therefore be construed to mean two or more than two ladder sections. To increase the holding power of the coupling members each coupling member is preferably provided with two sets of coupling knuckles. The coupling knuckles of one coupling member register with the coupling knuckles of the other coupling member and are locked together by coupling pins, or by the staple as shown

in Fig. 5, which may be used in lieu of the pins. When the ladder is of comparatively considerable length it is preferable to use the coupling members with the double set of
5 coupling knuckles and fasten them together by a double set of coupling pins or staples.

The knuckles l describe a circle, the center of which is the center of the hinge pin h , and in order that the knuckles l and j may fit
10 tightly together they are each formed with curved faces the curvatures of which are described from the center of the hinge pin h .

Hinged to the top step c of the section a' is a platform o which can hang in an inclined position when the sections are extended and which can be raised into a substantially horizontal position when the sections are folded, the platform, when in this last mentioned position, resting upon the top
15 step of the section a' by which it is supported, as the ladder sections move between the positions shown in Figs. 1 and 4.

Having thus fully described my invention

what I claim as new and desire to secure by Letters Patent is:—

A ladder comprising several ladder sections, two hinge members secured to the side bars of each ladder section, on the same side thereof, hinge pins connecting the hinge members together so that the ladder sections
25 can be moved into an extended, or into a folded, position, two hinge like coupling members, for each ladder section angularly disposed to the hinge members and connected to the side bars on the sides adjoining
30 those to which the hinge members are secured, and a removable means fastening together the coupling members of the adjacent ladder sections when the latter are in an extended position.

Toronto, April 14th, 1908.

JOHN WM. CALDWELL.

Signed in the presence of—

C. H. RICHES,

H. L. TRIMBLE.