

(No Model.)

C. FRIZELL.
LADDER.

No. 297,251.

Patented Apr. 22, 1884.

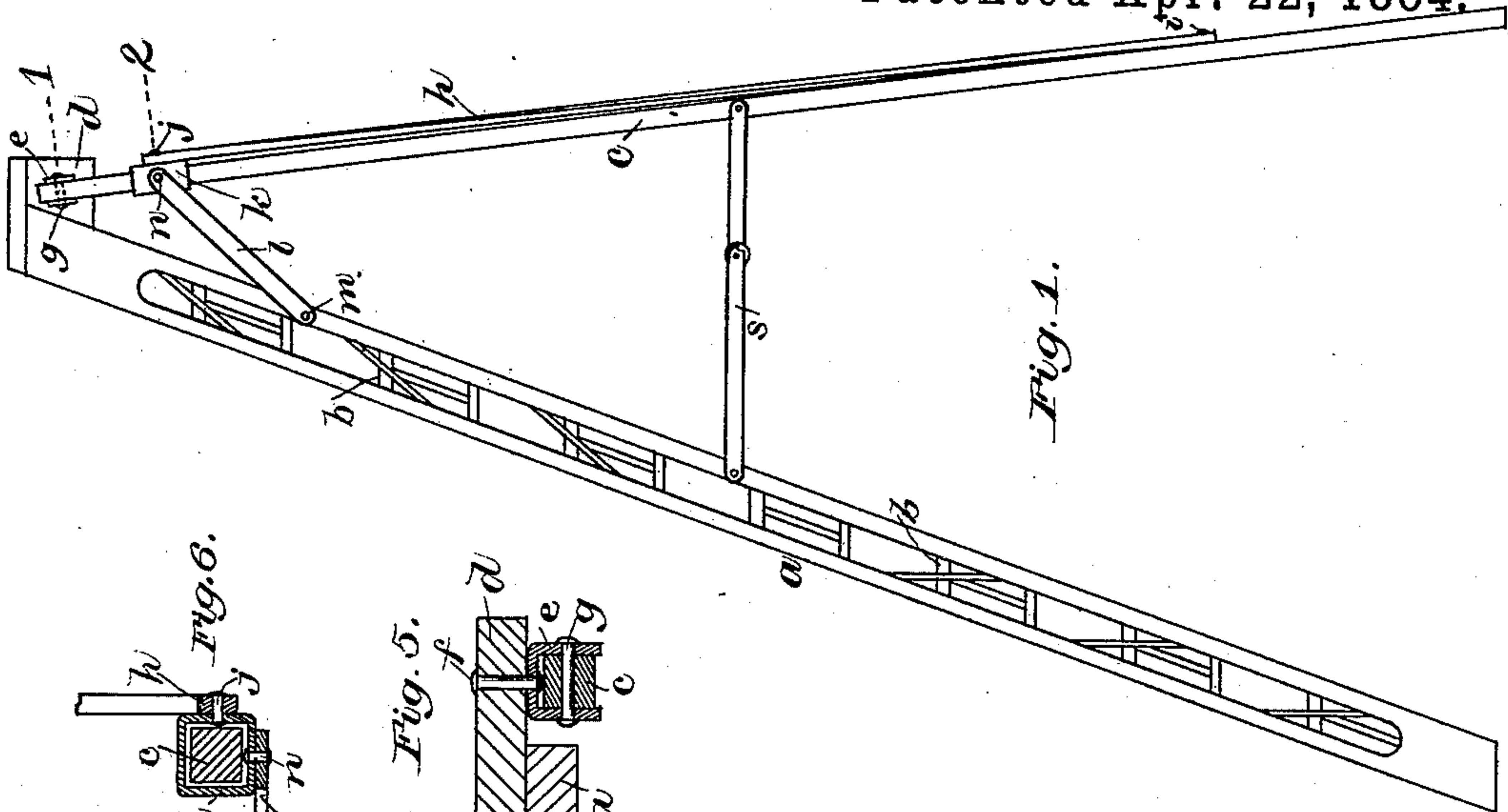


Fig. 1.

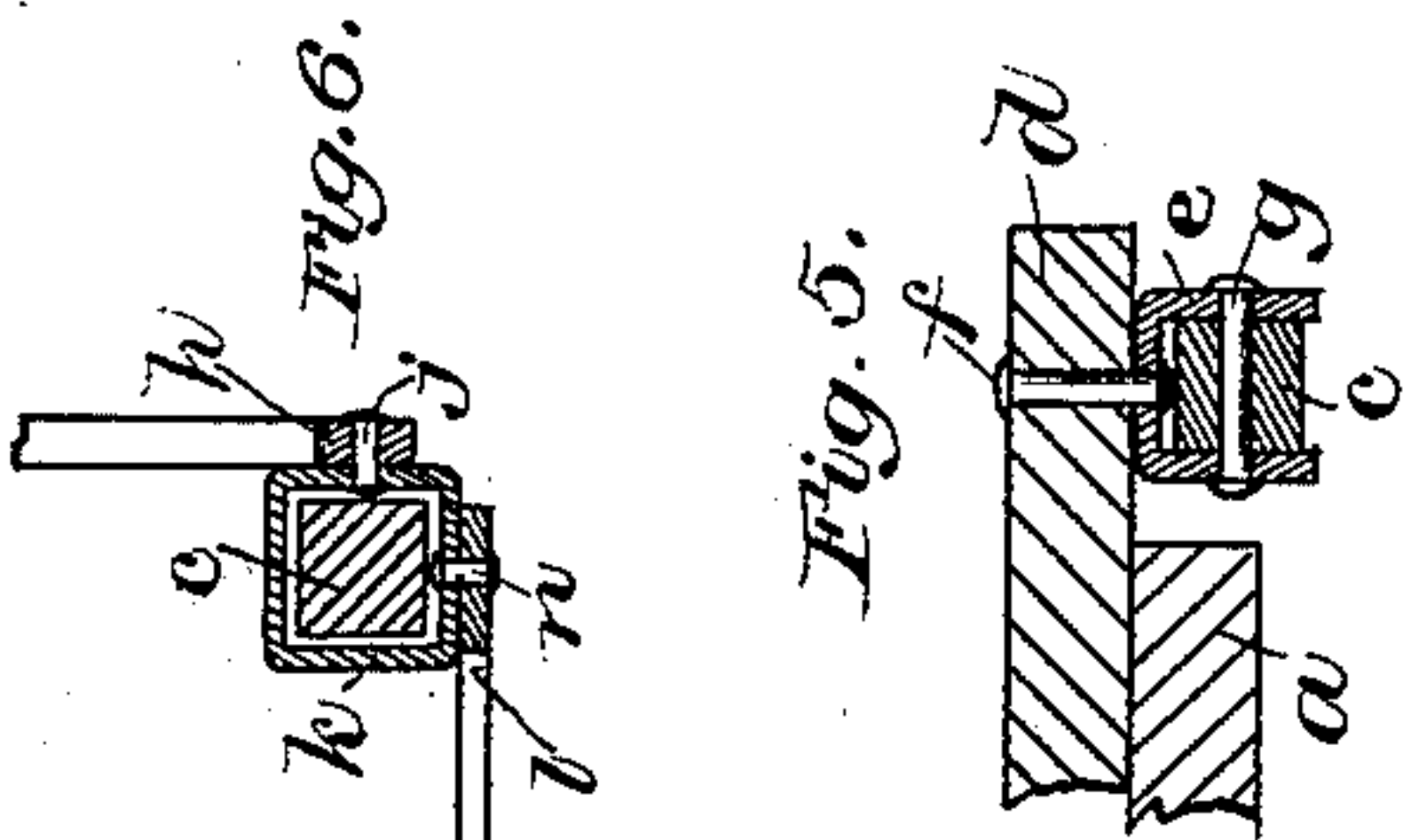


Fig. 5.

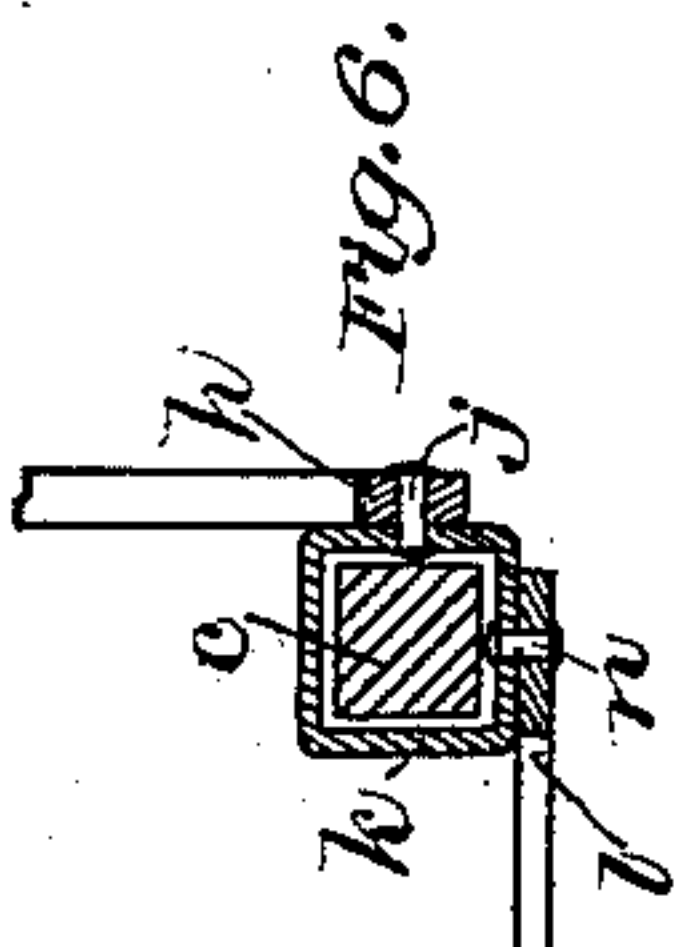


Fig. 6.

Fig. 2.

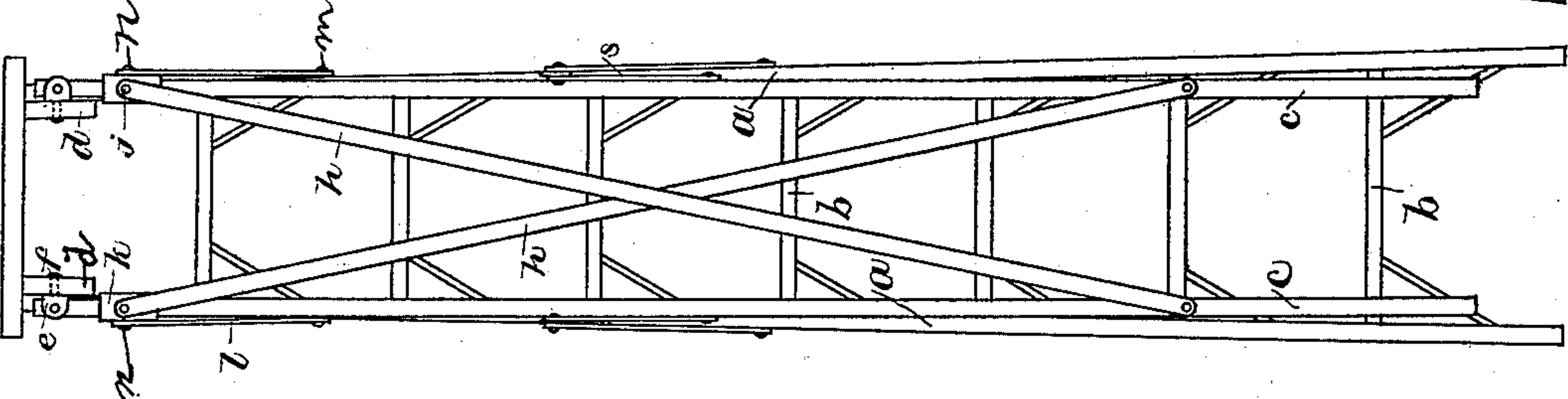
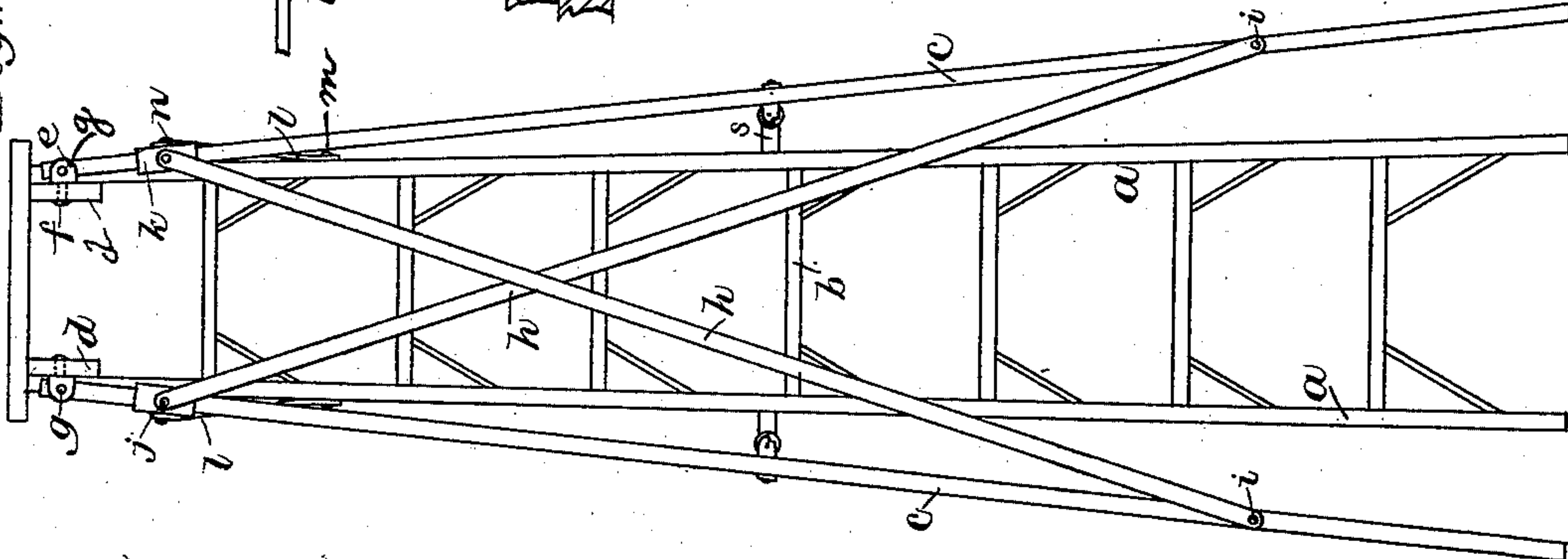


Fig. 3.

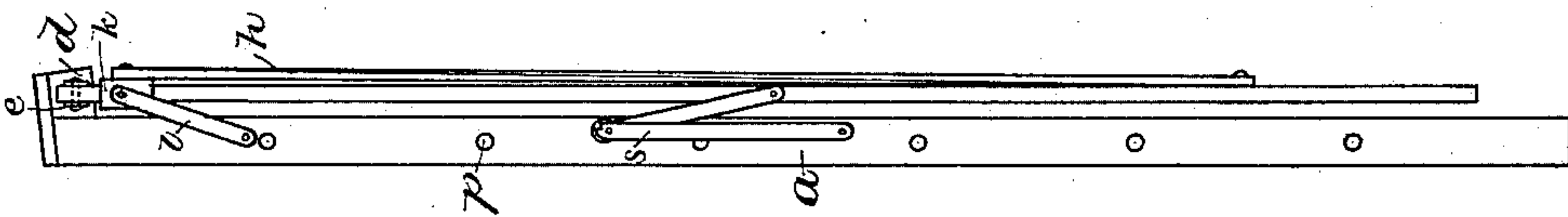


Fig. 4.

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LADDER.

SPECIFICATION forming part of Letters Patent No. 297,251, dated April 22, 1884.

Application filed February 16, 1884. (No model.)

To all whom it may concern:

Be it known that I, CHARLES FRIZELL, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Ladders, which will, in connection with the accompanying drawings, be hereinafter fully described, and specifically defined in the appended claims.

This invention relates to that class of ladders which are self-sustaining by reason of their breadth of base when in position for use, and for that reason require no support at their upper end in order to maintain them in place when weighted by the person of the user; and the invention consists in a "back" hinged to the ladder at or near its upper end, and so constructed and arranged that when it is swung outward from the ladder its standards will automatically separate, thereby increasing the lateral base of the ladder, while the reverse movement of the back toward the ladder proper will automatically close in said standards to a width corresponding to that of the ladder proper, all as will, in connection with the accompanying drawings, be hereinafter fully described, and specifically defined in the appended claims.

In said drawings, Figure 1 shows in side elevation a step-ladder with my invention there-to applied and as in position for use. Fig. 2 is an elevation taken as from the right in Fig. 1. Fig. 3 is a view taken from the same standpoint as Fig. 2, but showing the ladder as folded or closed together. Fig. 4 is a view taken from the same standpoint as Fig. 1, but showing the ladder closed together, as in Fig. 3, and also showing the ladder as provided with rungs instead of steps, as in the other figures. Fig. 5 is a horizontal section taken as on line 1, Fig. 1, and showing the pivoting of the back standards to the ladder proper. Fig. 6 is a horizontal section taken on line 2, Fig. 1, and showing the method of pivoting the back braces and the actuating-rods to the sliding sleeves on the back standards.

In these views, *a a* represent the side standards of the front part or ladder proper. These standards may be of any kind or form, and may be provided with steps *b*, as shown in Figs. 1, 2, 3, or with rungs *p*, as shown in Fig. 4.

The standards *c c* of the back are respectively pivoted at their upper ends by pivots *g*,

in brackets *e*, which are pivoted at *f* in short rigid arms *d*, secured to standards *a*; and by thus pivotally connecting standards *c* with a pivoted bracket said standards may be swung outward or away from stands *a*, and may at the same time be moved laterally in relation thereto, as appears in Fig. 2.

The standards *c*, when the ladder is to be used, are swung outward by the user, and are retained by the usual jointed stay-rods, *s*; but to automatically move said standards laterally when they are so moved outward, I employ the following devices: A sleeve, *k*, is arranged on and to move freely up and down said standards, and to this sleeve the upper end of the stays or braces *h* are pivoted at *j*, their lower ends being pivoted to said standards at *i*, and a rod, *l*, is at its lower end pivoted to standard *a* at *m*, while its upper end is pivoted at *n* to said sleeve *k*.

It will be obvious that as standards *c* are swung out from standards *a*, and the obliquity of rods *l* relatively to the standards *a* is consequently increased, sleeve *k* will be drawn downward on standards *c*, and thereby the braces *h*, thereto respectively pivoted, will, by means of such movement, laterally move the standards *c*, causing them to assume the position shown in Fig. 2. The reverse movement of closing standards *c* against standards *a* will bring the respective parts into the positions shown in Figs. 3 and 4.

The principal advantages of my invention are these: When the back was, as heretofore, made of an unchanging width, it was requisite that the front be of the same width in order to protect the back when the two were folded together, and hence, in tall ladders especially, the great weight and required space for storage was highly objectionable; and, besides, the ladder, being "four-legged," did not sit steady and firm upon uneven ground; but with my expanding back the front can be made at both top and bottom as narrow as mere facility of ascent and descent thereon will admit, for a wide base to protect the frail back is not required, as the back is no wider than the front when folded; and by reason of the narrow base of the front and the great width of the back the ladder is practically "three-legged" when expanded for use, and hence stands steady and firm on uneven surfaces.

I am fully aware of United States Patent No. 70,933, issued November 19, 1867, to M. E. Abbott, for step-ladders, and I claim nothing that is therein shown or claimed, my invention having for its object an improvement in ladders that automatically and positively spreads apart in a lateral direction the lower ends of the back standards when they are swung outward from the front of the ladder, and which automatically and positively moves said back standards toward each other when they are closed toward said front, while no such automatic movement takes place in the ladder described in said patent.

I claim as my invention—

1. The combination, with the front and back of a ladder hinged together at the top and

adapted to be opened out and closed together, of mechanism constructed and arranged to automatically expand or spread the standards of the back in a lateral direction when opened out from the front, and to automatically contract or draw together said standards when the front and back are closed together, substantially as specified.

2. The combination, with front standards, *a a*, and back standards, *c c*, hinged together and provided with stay-rods *s*, of sleeves *k*, rods *l*, and braces *h*, all arranged to operate substantially as specified.

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Witnesses:

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