

M. M. Knowles.

Extension Ladder.

Nº 81,279.

Patented Aug. 18, 1868.

Fig. 1.

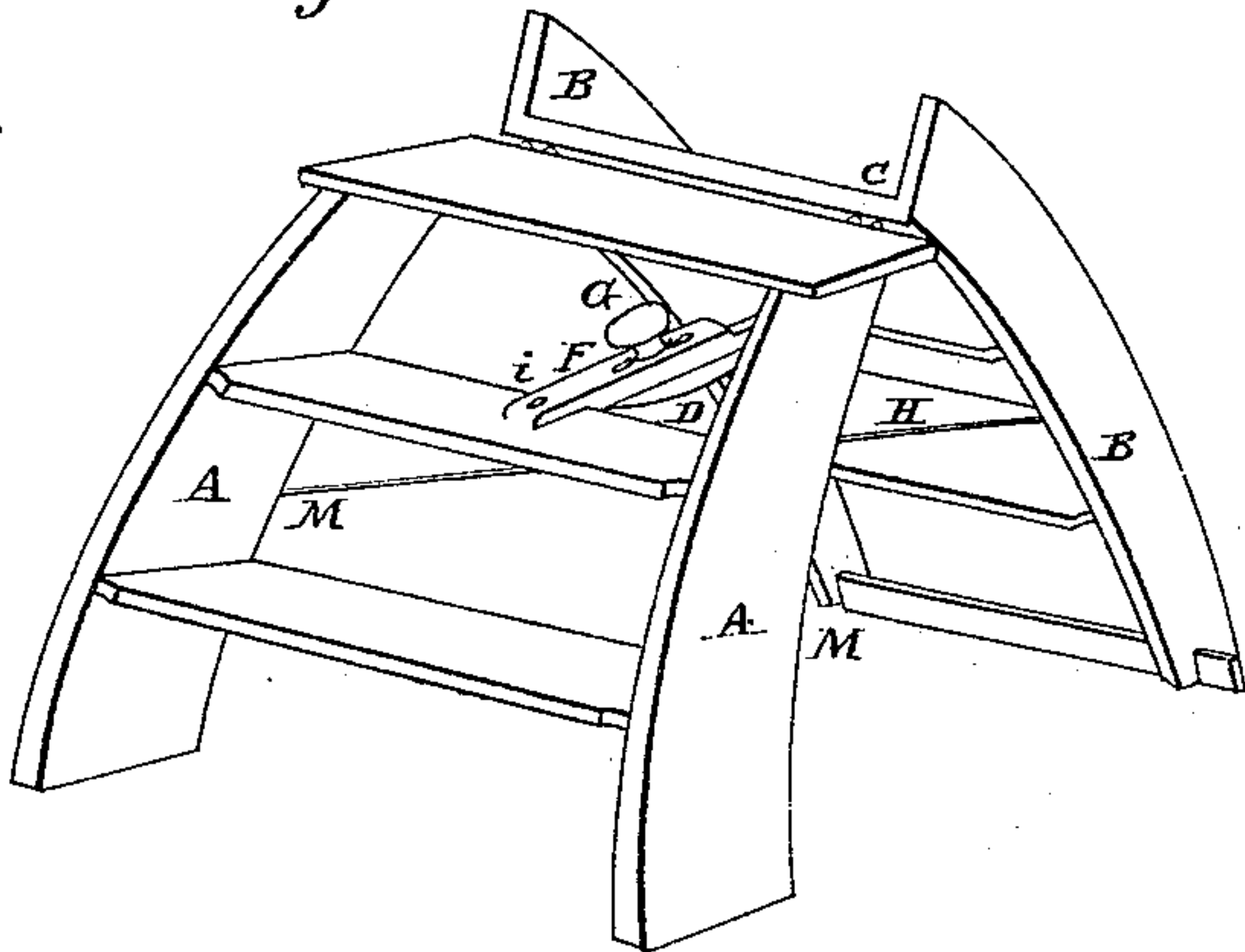


Fig. 2.

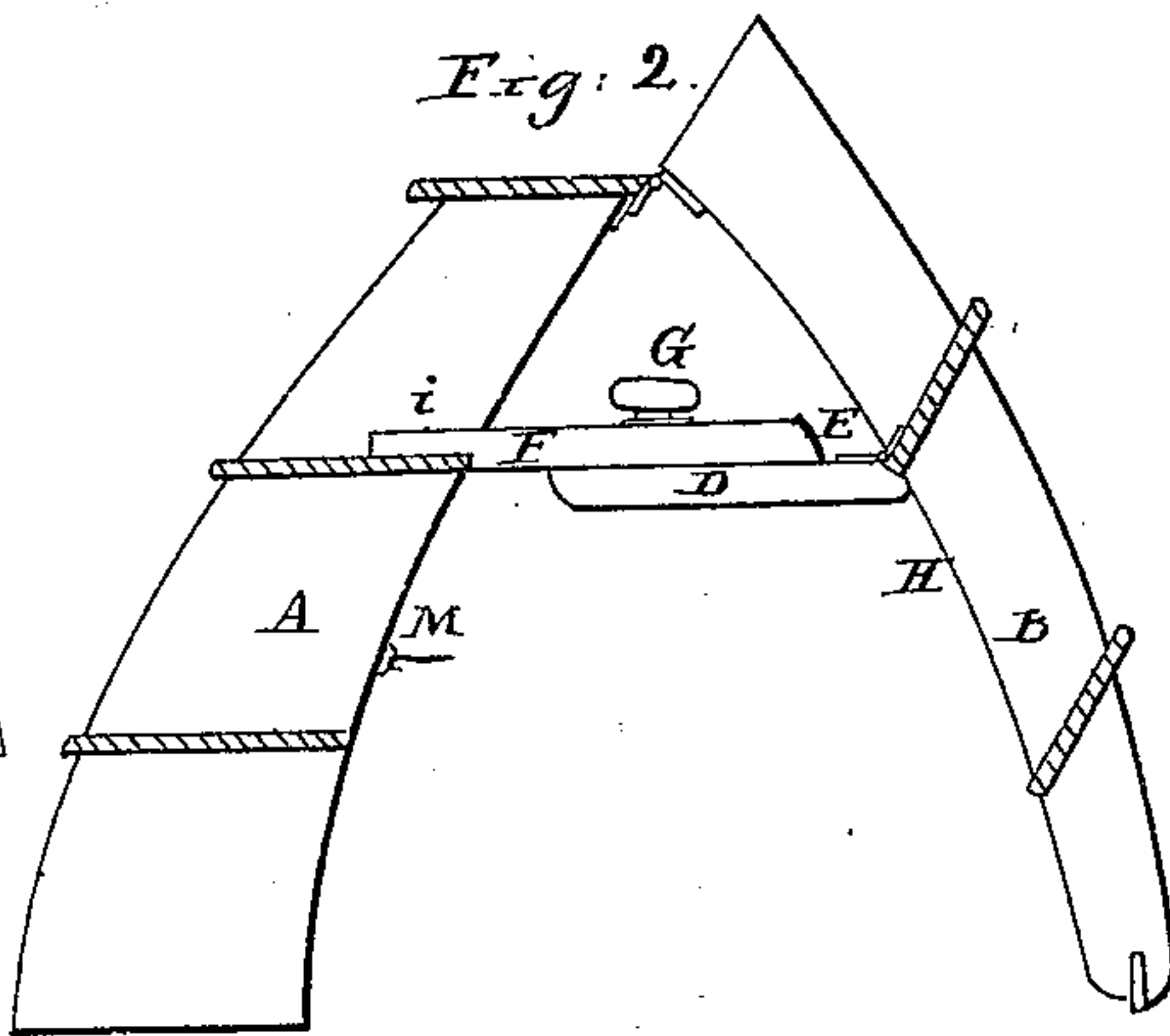


Fig. 5.

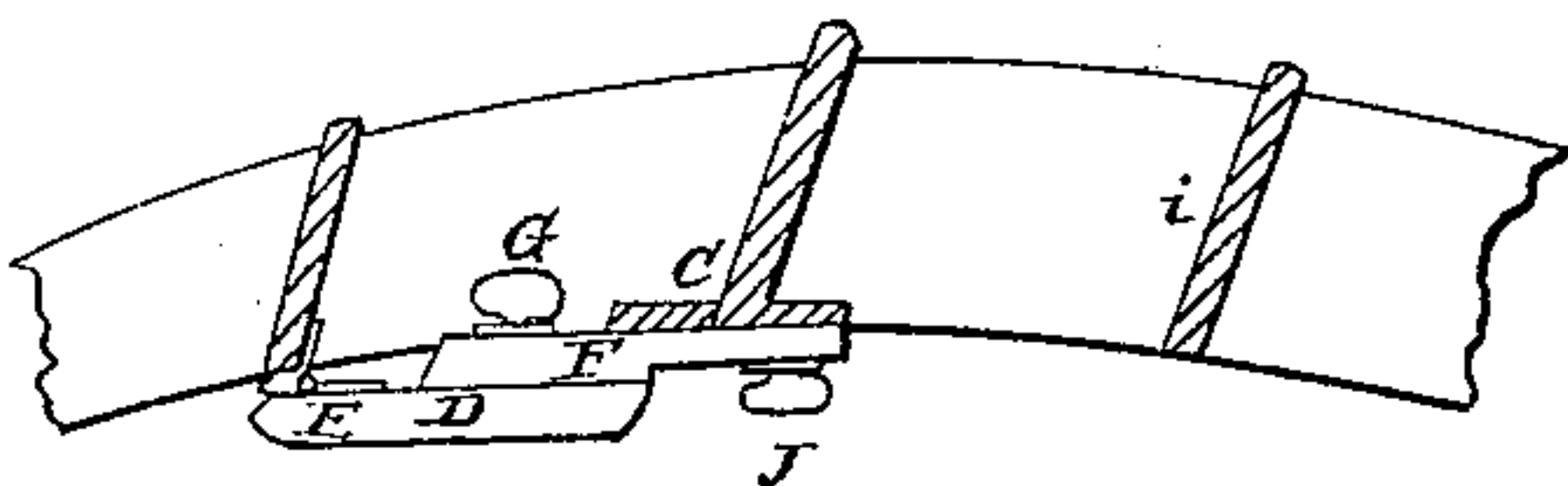


Fig. 6.

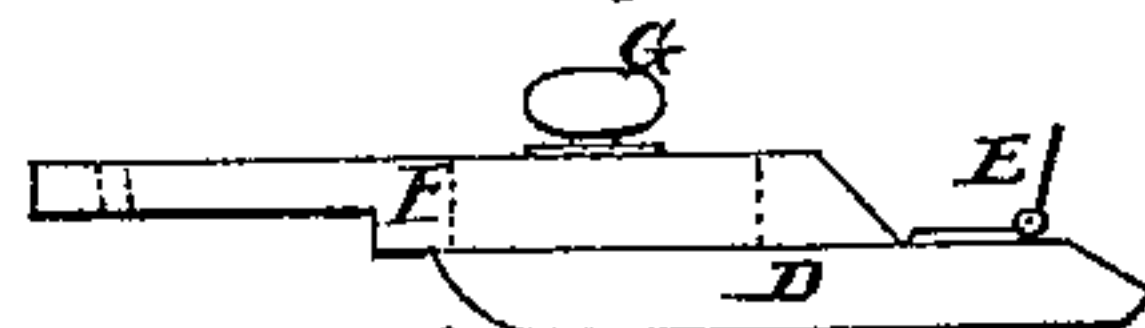


Fig. 7.



Fig. 3.

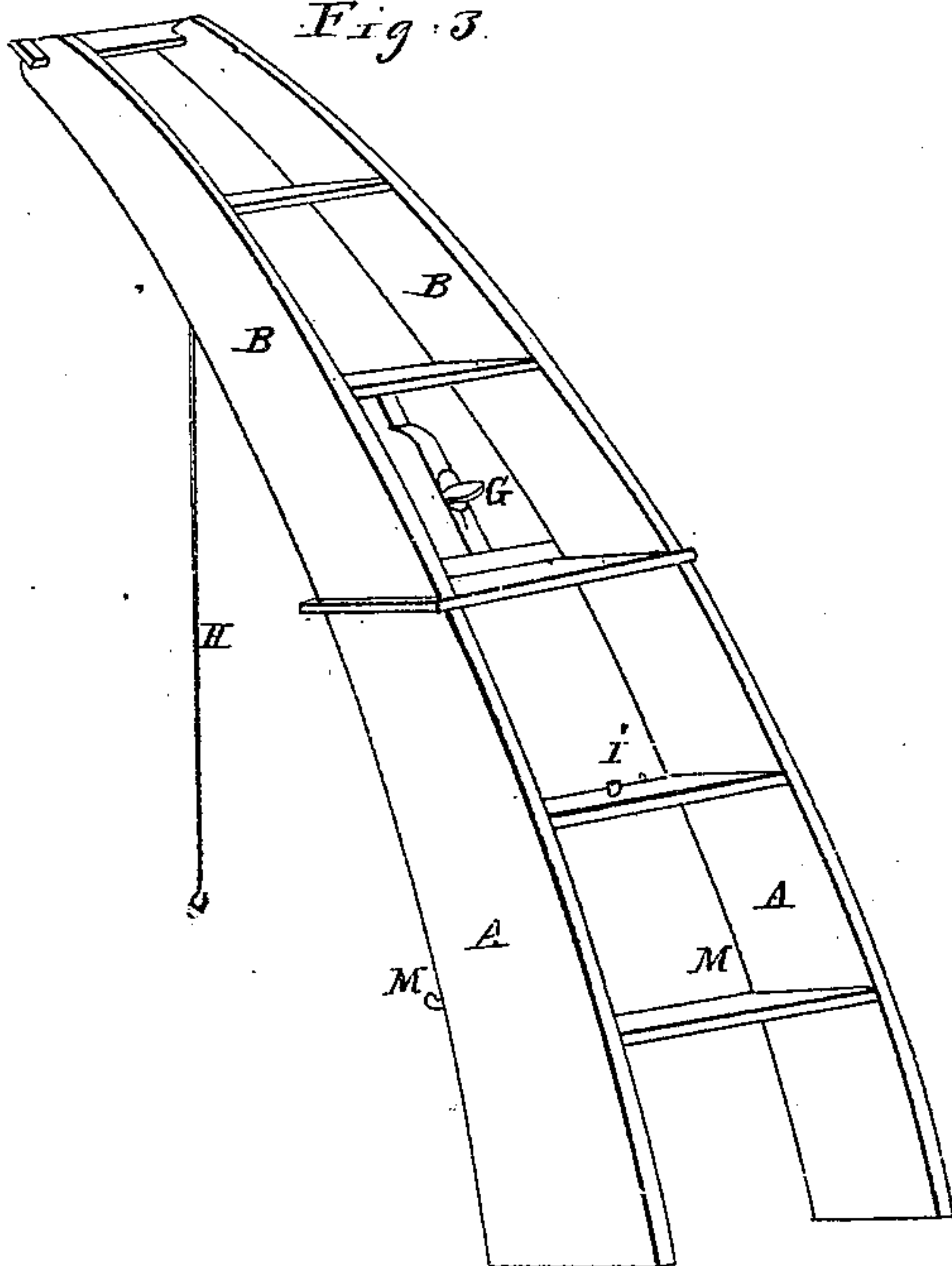
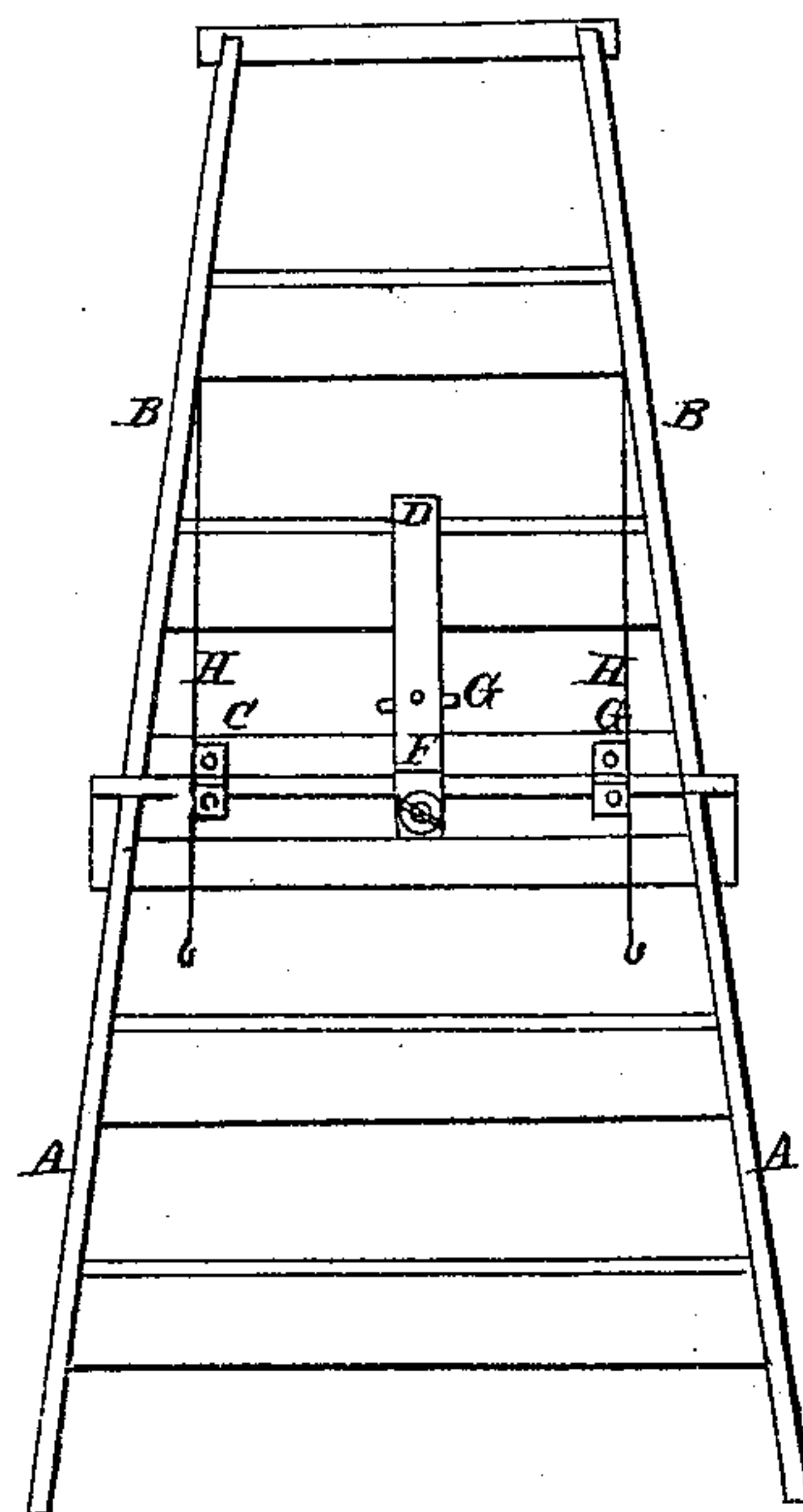


Fig. 4.



Witnesses:
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UNITED STATES PATENT OFFICE.

M. M. KNOWLES, OF ELMIRA, NEW YORK.

IMPROVED EXTENSION-LADDER.

Specification forming part of Letters Patent No. 81,279, dated August 18, 1868.

To all whom it may concern:

Be it known that I, M. M. KNOWLES, of the city of Elmira, in the county of Chemung and State of New York, have invented a new and useful Improvement in Extension or Step-Ladders; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a perspective as a ladder. Fig. 2 is a section of the same. Fig. 3 is a perspective view of the same when extended. Fig. 4 is an inverted view of the same when extended. Fig. 5 is a section of ladder when extended. Fig. 6 is a plan of brace, and Fig. 7 is a side elevation of brace.

The nature of my invention consists in so constructing a ladder that it may be readily changed from a step-ladder to an extension-ladder, and secured firmly in either position, fitting it for a house or fruit ladder.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

I construct a ladder with steps at suitable distances, similar to those in general use, with curved tapering legs or sides A A B B to sustain itself. Brace F D, Figs. 1, 2, holds ladder firm and prevents it from closing, while cords H H prevent it from spreading, and are attached to extension B B, with hooks at the opposite ends. These cords are crossed and hooked into staples M, provided on legs A A. It can be extended so as to form a long and substantial ladder. This extension part B is hinged on the inside of legs A B with suitable hinges, C, Figs. 1, 2, 3, 6, 7, and when extended, as shown in Figs. 3, 4, it is held in position firmly by brace D F, Figs. 6, 7.

We will suppose the ladder to be extended,

being held firm by brace D F, Figs. 3, 4. It can then be moved from place to place without closing. It may be changed and used as a step-ladder by loosening thumb-screw J, Fig. 4, and relieving brace D F; then turning extension B B down on the back part of main steps A A, forming the legs of step-ladder. The brace D F being placed on pin I, Figs. 1, 3, holds it firm and prevents it giving one way, and the cords H H, hooked in their places, hold it the other, as described, and allow the step-ladder to be moved from place to place without closing.

The adjustable brace D F is so constructed as to answer two purposes—first, to hold the ladder firm when extended; secondly, to hold the legs in position and lock them at the same time, to form a self-supporting step-ladder. The adjustable brace D F is made in two parts—piece F, Figs. 6, 7, having a slot, K, in it, the other part, D, having a thumb-screw, G, and serves to hold the two pieces firm to each other when set the length required, thus allowing the brace to be lengthened or shortened, as required. One end of brace D is hinged to extension B with suitable hinges, E, as shown in Figs. 2, 5, 6, 7. The end of brace F has a hole in it that fits the pin I (shown in Figs. 1, 3) in the step of the main steps A A, thus making a firm brace when properly adjusted.

What I claim, and desire to secure by Letters Patent, is—

The combination of ladders A and B, adjustable brace D F, and pin J, all constructed and arranged substantially as described, as and for the purpose specified.

M. M. KNOWLES.

Witnesses:

CHARLES T. THRO,
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