

(No Model.)

M. C. McCOLLUM.

STEP LADDER.

No. 283,004.

Patented Aug. 14, 1883.

Fig 1

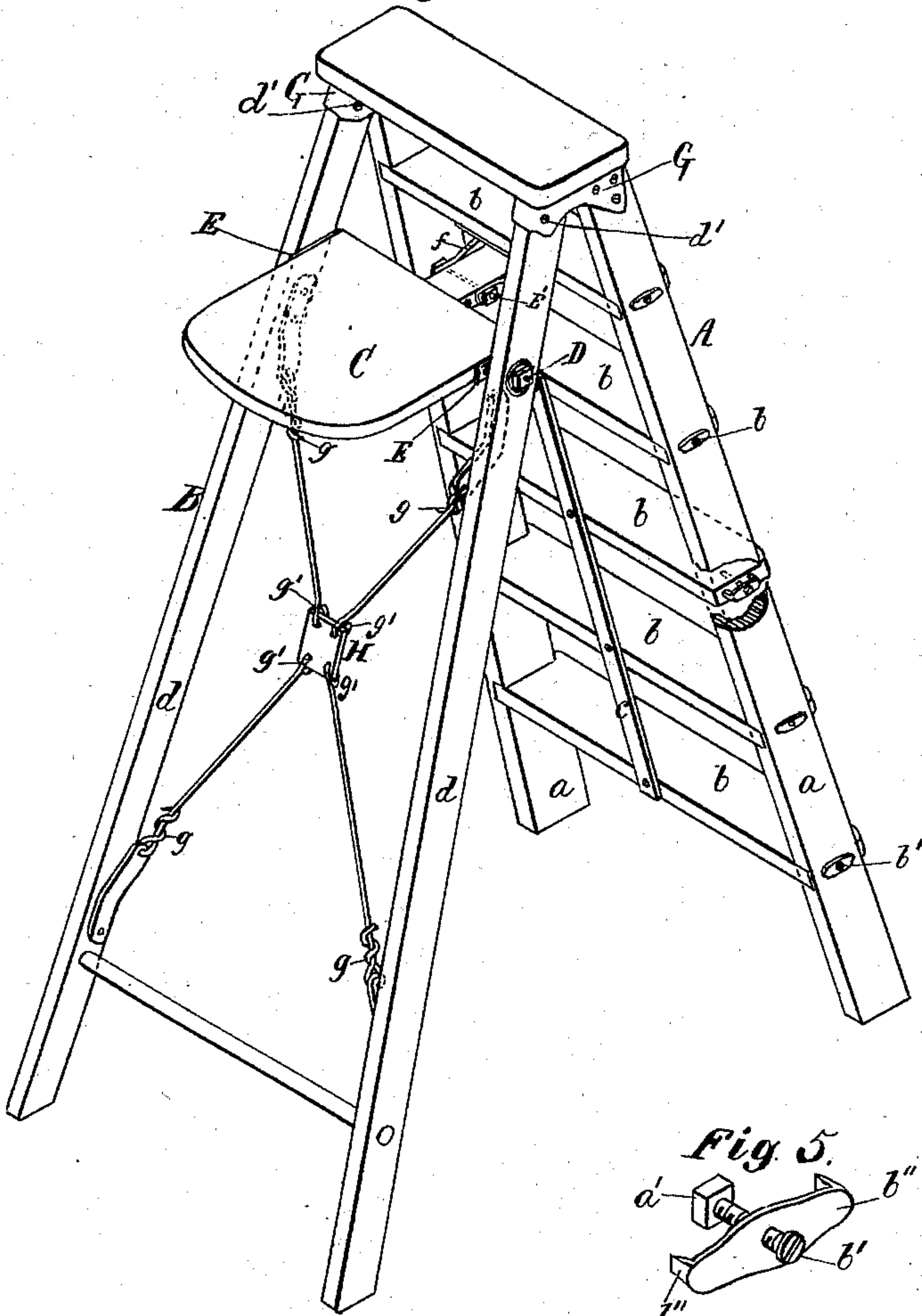


Fig. 2.

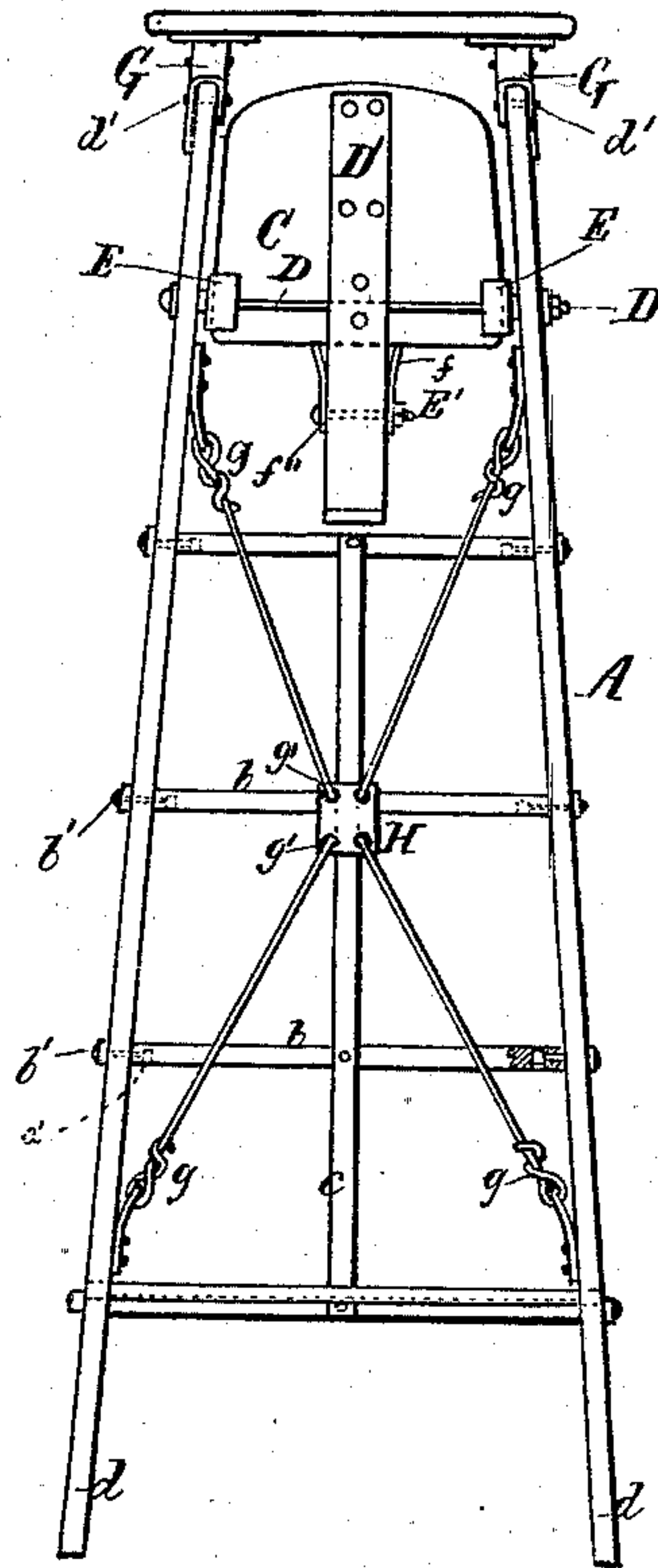


Fig 5.

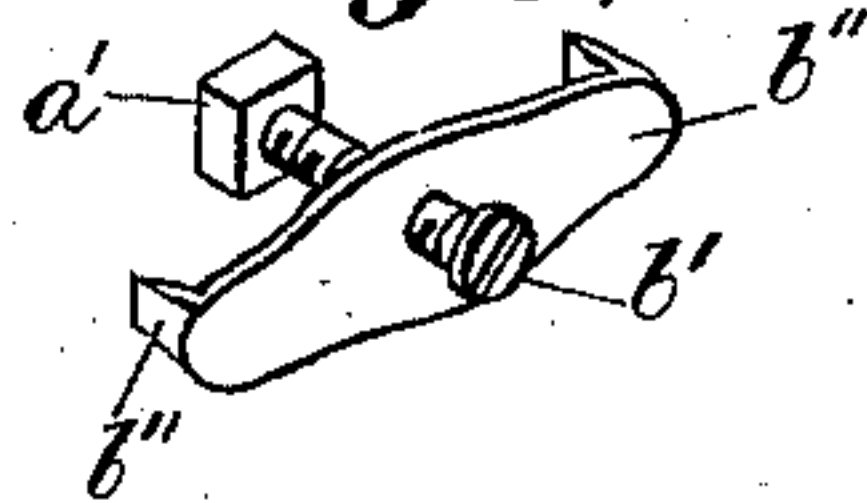


Fig. 3.

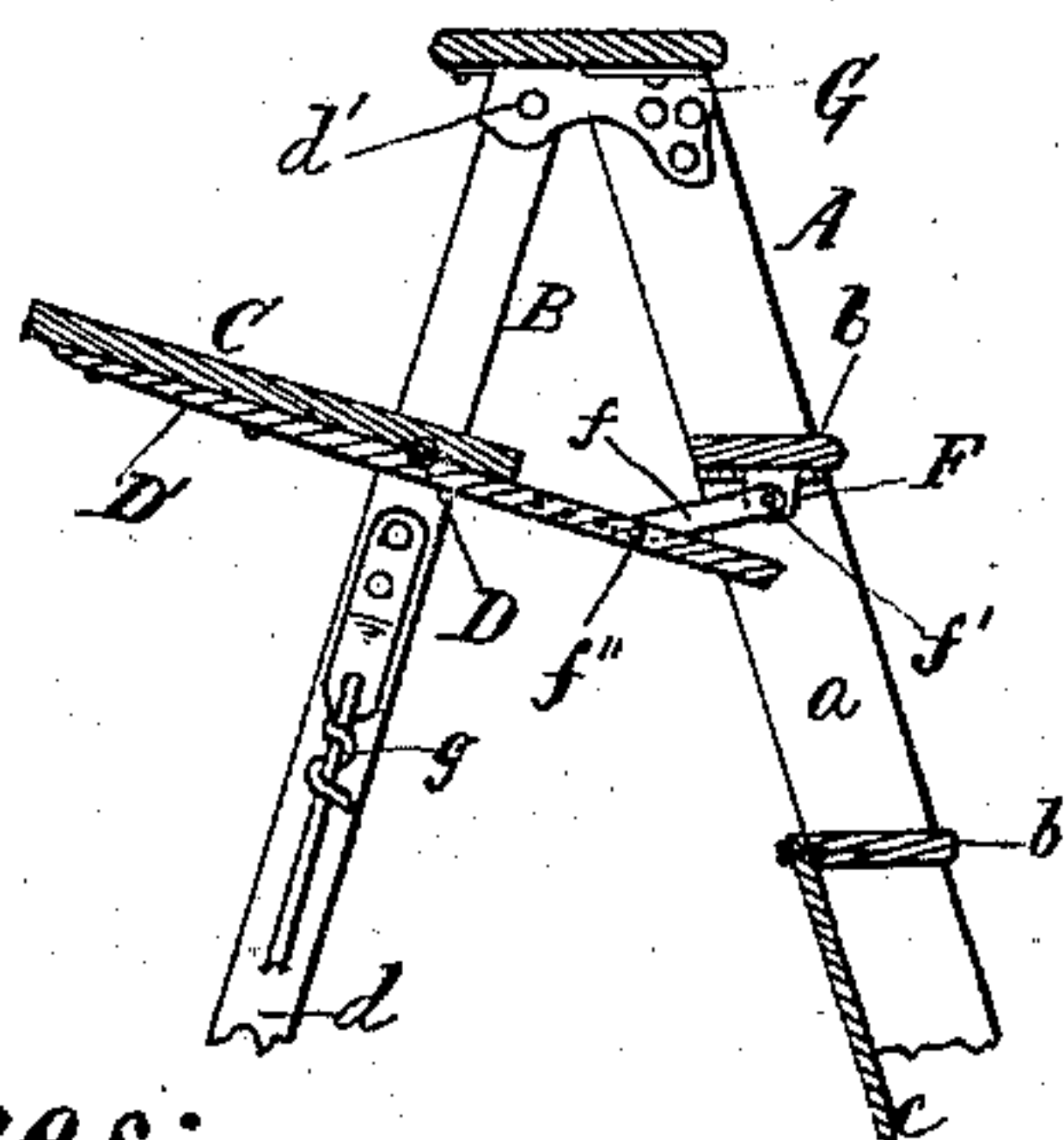
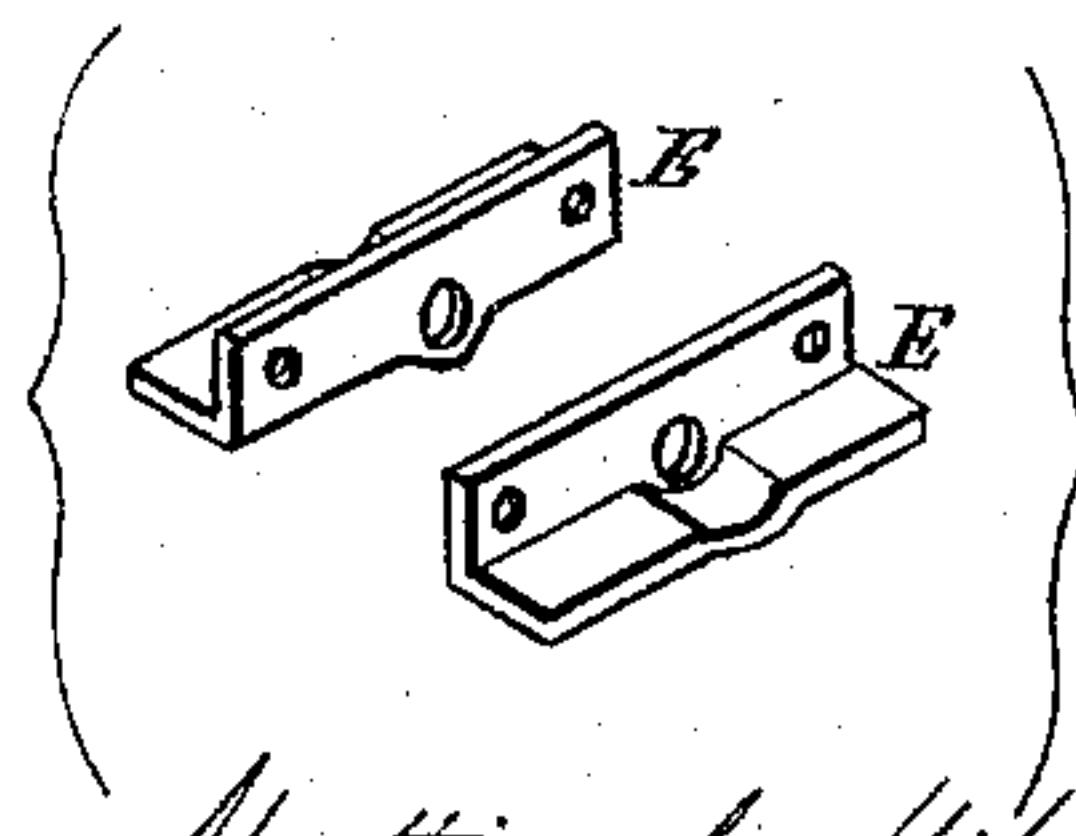


Fig. 4.



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Witnesses:

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UNITED STATES PATENT OFFICE.

MATTHEW C. McCOLLUM, OF ESPY, ASSIGNOR TO THE ATLAS MANUFACTURING COMPANY, OF DANVILLE, PENNSYLVANIA.

STEP-LADDER.

SPECIFICATION forming part of Letters Patent No. 283,004, dated August 14, 1883.

Application filed June 20, 1883. (No model.)

To all whom it may concern:

Be it known that I, MATTHEW C. McCOLLUM, a citizen of the United States of America, residing at Espy, in the county of Columbia and State of Pennsylvania, have invented certain new and useful Improvements in Step-Ladders, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention consists in so constructing step-ladders in combination with a shelf attached that the shelf will fold automatically into the ladder and the connecting devices shall not bite or lock with the side bars of the main ladder or supporting-frame, whether they have the same or different angles, and by various devices improving the durability and facilitating the spread of the ladder, with cheapness and simplicity of construction, all of which will more fully appear by inspecting the accompanying drawings.

Figure 1 is a perspective view of the ladder when in use, showing the locality of the shelf, the wire brace, step-support, and sockets, which join the main ladder and supporting-frame. Fig. 2 is a rear view of the ladder when closed, showing the shelf and its connecting devices, the step-nut, screw-bolt, and clasp, wire brace, and step-support. Figs. 3, 4, and 5 are detail views of the main-ladder-supporting frame, the shelf, and their various connecting and strengthening devices.

A, Fig. 1, is the main ladder, of which *a a* are the side bars, into which, in the ordinary manner, are framed the steps *b b*. To prevent the steps from working loose and slipping out of their places, which they are liable to do by long use, imperfectly-seasoned material, great strain upon them, or other like causes, a metallic nut, *a'*, is securely framed into the under side of each step, near the end, which may pass through the step, if necessary. Into this nut a screw-bolt, *b'*, is fitted, which passes through the bars *a a* along the line of the step. To serve as a washer and support to the bolt, which passes through it, and for the additional purpose of preventing the splitting of the bars *a a*, a metallic clasp, *b''*, furnished with nail-like claws, is firmly driven into the outside of the bars opposite each step. These de-

vices are shown by Figs. 2 and 5. To further strengthen the steps and overcome the liability of their working loose from their places, a wooden or metallic stay, C, Figs. 1 and 2, is firmly fastened to the back edge of each step, running from the lower step as high up as may be required. By these devices the durability and safety of the ladder are materially increased.

B, Fig. 1, is the supporting-frame, with side bars, *d d*, which sustain the shelf C. It is pivoted to the top of the main ladder *d' d'* by means of the metallic sockets G G. The supporting-frame and main ladder may have the same or different angles without the connecting devices of any of the parts biting or locking with the side bars. By this condition, when a long ladder is required, its stability is maintained; its liability to being upset when heavily burdened is prevented by the spread of the foot of the supporting-frame without increasing the cumbersomeness of the main ladder. This being the case, especially in long ladders, the difference in length of the upper and lower steps, and in general, the length of the steps, may be comparatively short without increasing the liability of danger.

C, Figs. 1 and 3, is a wooden shelf, located near the top of the ladder, and of sufficient size to afford standing-room for a person, basket, or bucket. This shelf is mainly supported by the supporting-frame, by a frame constructed of an iron rod, D, Fig. 2, of such diameter as to give the required strength, the ends of which pass through the bars *d d*, and are secured on the outside by nuts, but leaving the shelf free to revolve, and a wooden bar, D', of any required dimensions, with parallel sides, upon which the shelf is centrally riveted. The inner end of the bar extends under one of the steps or other support framed into the bars of the main ladder, and, when the shelf is burdened, such step or support is the resisting-force. The rod D, on which the shelf revolves, passes between the shelf and the bar D' at right angles to the latter, and is further held to the shelf by two metallic clasps, E E, Figs. 2 and 4, hollowed beneath and pierced through their sides, fitted and riveted to the under surface and edge of

the shelf. The location of these clasps is important, to secure strength and to prevent all loss of motion.

F, Fig. 3, is a metallic shoe, of such dimensions as strength may require, centrally fastened to the under side of one of the steps or other support framed into the side bars for the special purpose, with two metallic arms, f f , of which the inner ends are pivoted to lugs $f' f'$ on the top of the shoe, and the outer ends are held to each side of the bar D' at $f'' f''$ by a movable bolt and nut, (shown at $E' E'$), the bar D' being pierced with two or more holes at convenient distances apart, whereby the spread of the main ladder and supporting-frame is regulated. When the ladder is open, the center of the shoe and of the bar D' are in a direct line.

G G, Figs. 1 and 3, are two metallic sockets, provided with flanges, whereby the side bars of the main ladder are fastened to the under surface of the upper step, and the upper ends of the supporting-frame are pivoted equally to the upper step and to the main ladder. (Shown at $d' d'$.) Should it be desired to give the supporting-frame and main ladder different angles, a slight variation from a straight line in the sides of the sockets will effect this purpose without impairing the stability of the ladder. The sockets on the side of the supporting-frame being solid, the upper ends of the frame are secured from splitting.

G', Figs. 1 and 2, is a metallic brace constructed of wire or rods, of such strength as use may require, in four pieces of equal length, of which the upper and lower ends, $g g$, are fastened to the inside of the supporting-frame bars at or near their extremities, and the inner ends, $g' g'$, to a central plate, H, Fig. 1, by the flexibility of the wire by hooks or other sufficient device. As this brace is designed to strengthen the supporting-frame, the particular points of attachment to it may be determined by the occasion. The method of attachment to the bars may be such as to aid in preventing them from splitting by using plates or clasps and riveting them on.

When the ladder is to be closed, the joint f'' is slightly depressed and the shelf automatically folds into it. When the ladder is opened, the shelf in like manner falls down to position.

Whether it be desired that the main ladder and the supporting-frame when folded correspond or close the one upon the other, or the foot of the frame have a wider spread than that of the main ladder, my method of attaching the connecting devices effectually avoids friction and locking any of these connecting devices with the main ladder and supporting-frame, and in case of breaking, repairing, or changing the parts, this may be readily done by persons unskilled in fitting nicely-related mechanism.

This application is designed as an improvement upon Patent No. 235,165, issued to the present applicant December 7, 1880.

I claim—

1. The main ladder A, having nut a' , the screw-bolt b' , clasp b'' , stay c , and the supporting-frame B, having brace H, as described, and the shelf C, having bar D' , and moving automatically, and the arms $f f$, pivoted at f' and f'' by the movable bolt E' , and the shoe F, all combined and arranged as and for the purpose specified.

2. A step-ladder having nut a' , screw-bolt b' , clasp b'' , stay c , and a folding shelf, C, and the bar D' , in combination with arms $f f$, attached to the middle of the step b , for the purpose of preventing the arms $f f$ from locking against the side bars, $a a$, of the main ladder, as and for the purpose specified.

3. The supporting-frame B, having brace H, as described, and a shelf folding automatically, having bar D' , attached by arms $f f$ on the movable bolt E' and the shoe F to the main ladder, all combined as and for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

MATTHEW C. McCOLLUM.

Witnesses:

PAUL E. WIRT,
JOHN N. MILNES.