

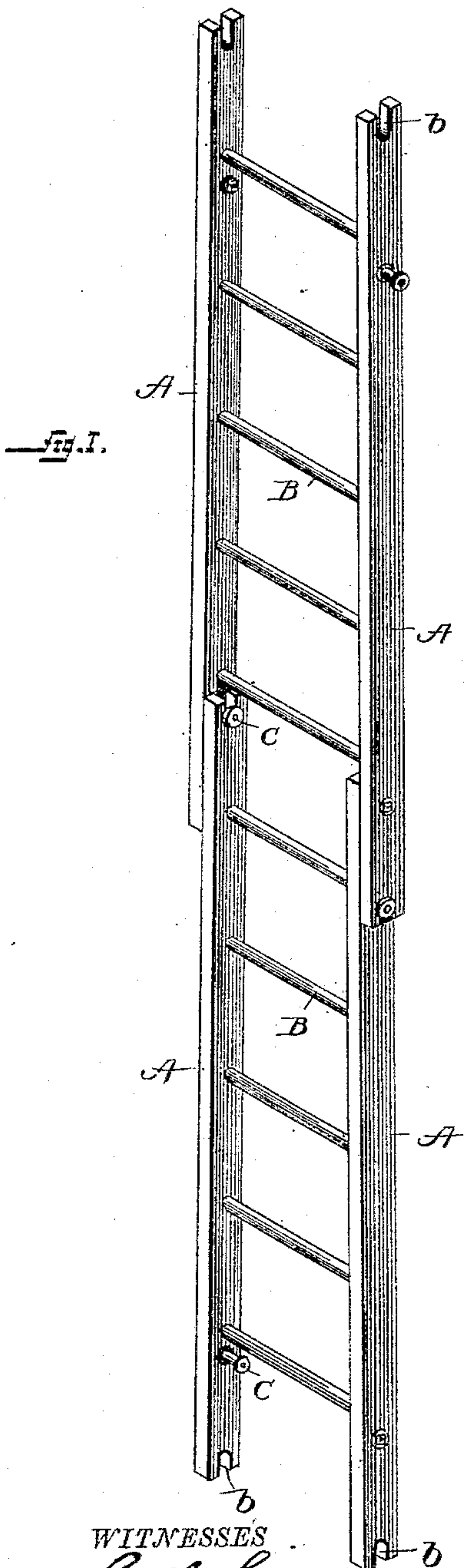
(No Model.)

2 Sheets—Sheet 1.

E. D. NORTON.  
SECTIONAL LADDER.

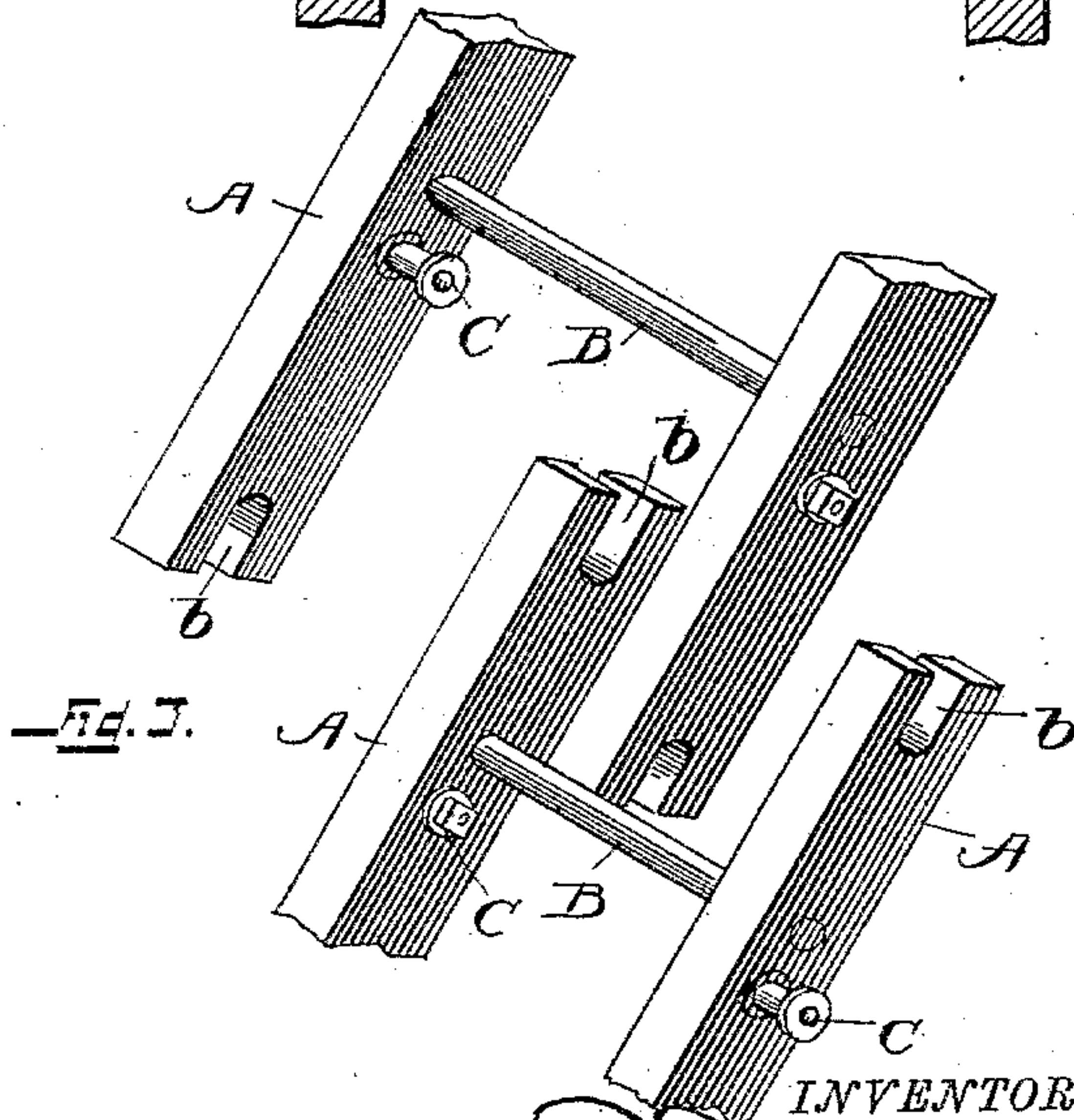
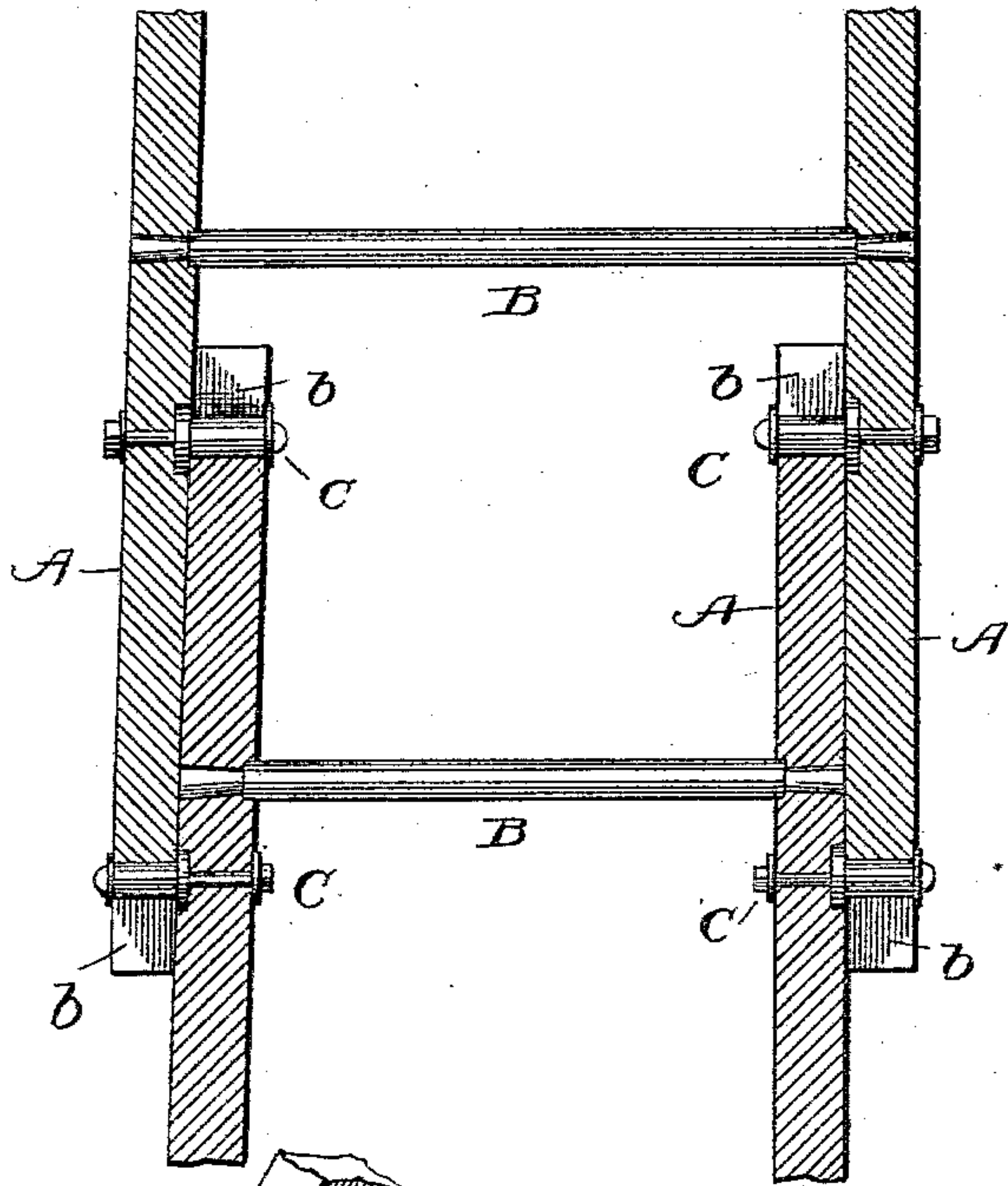
No. 359,685.

Patented Mar. 22, 1887.



WITNESSES  
*H. M. Schooley,*  
*Wm J. Little,*

Fig. 2.



INVENTOR  
*E. D. Norton,*  
by *J. R. Little,*  
his Attorney.

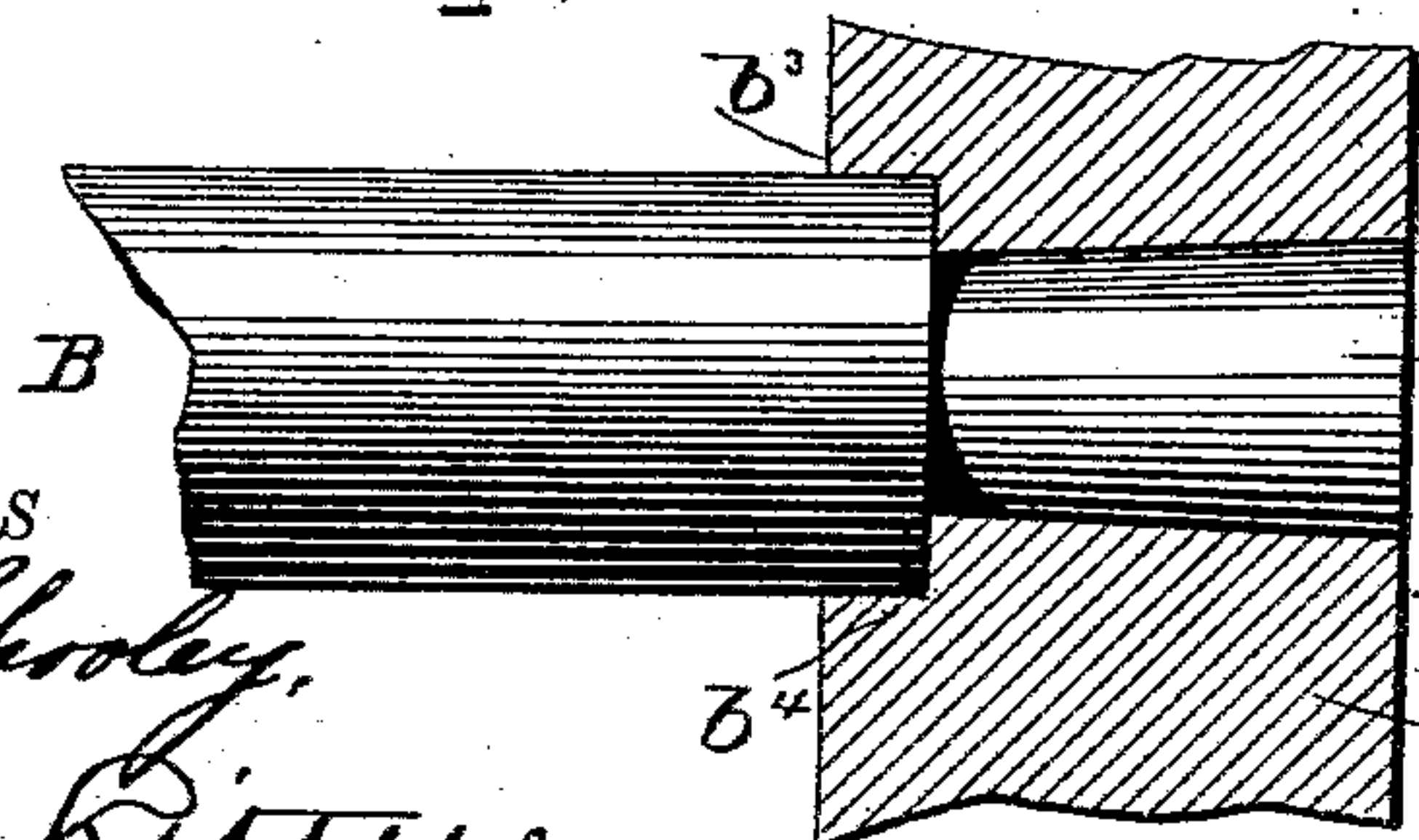
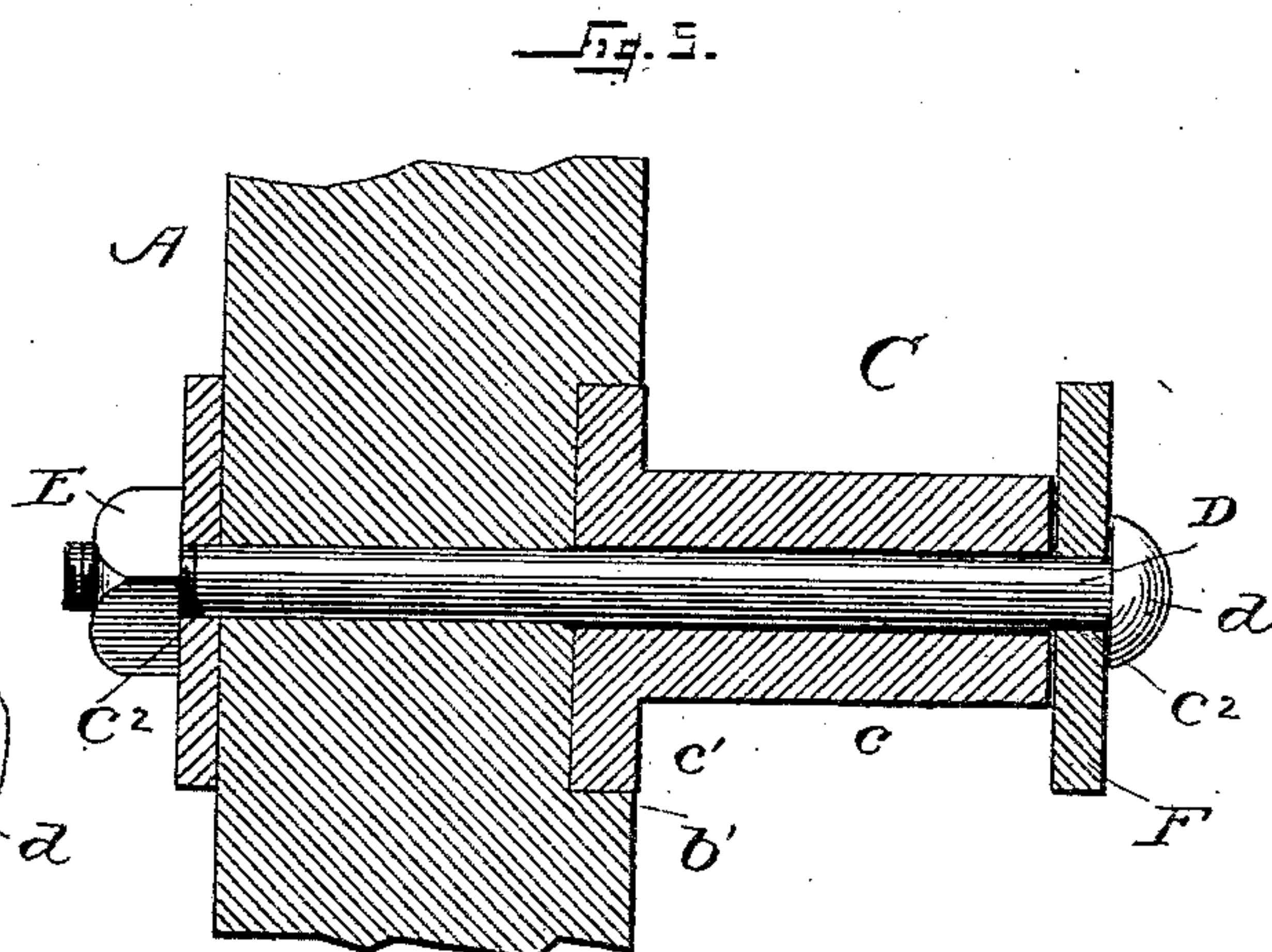
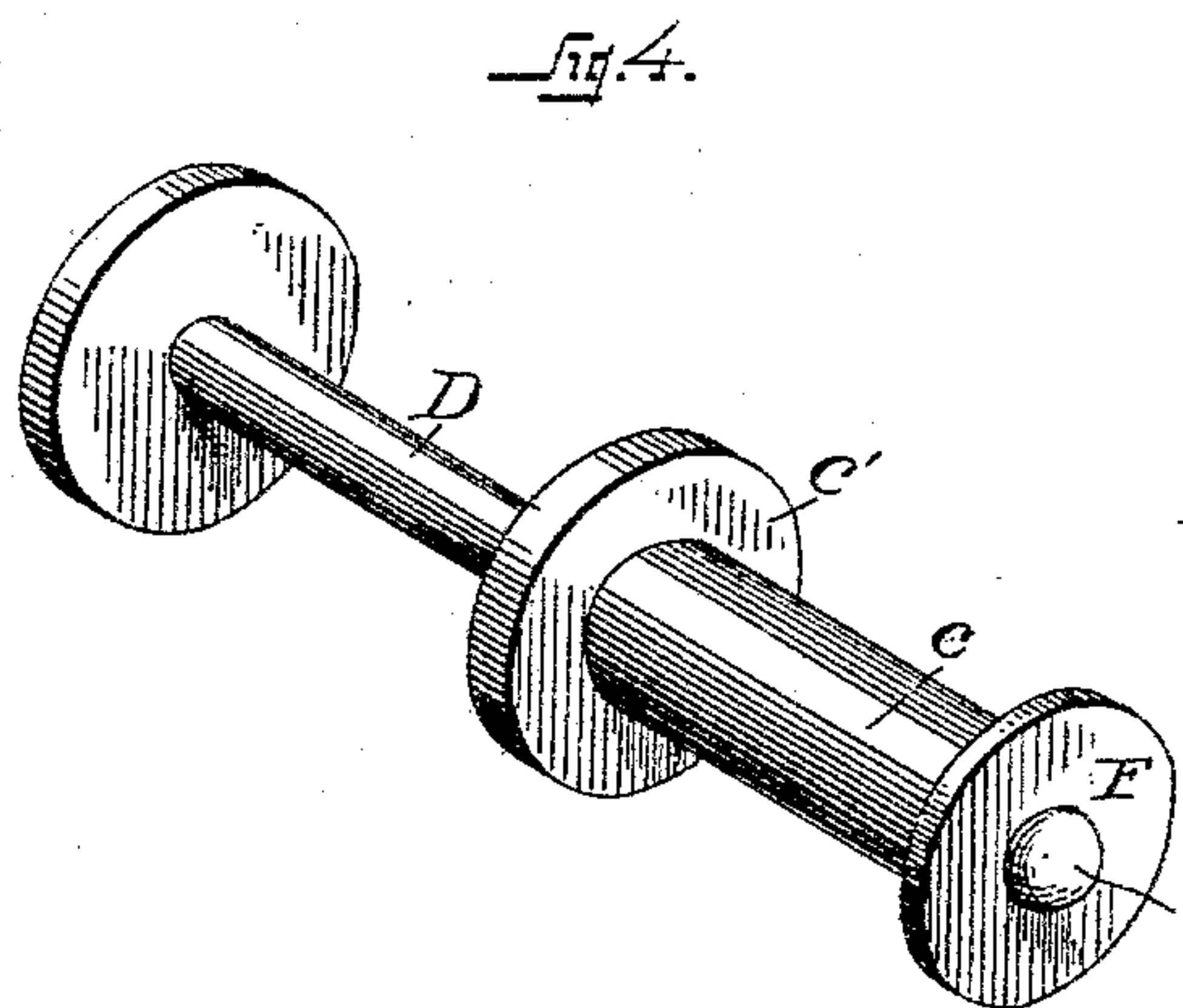
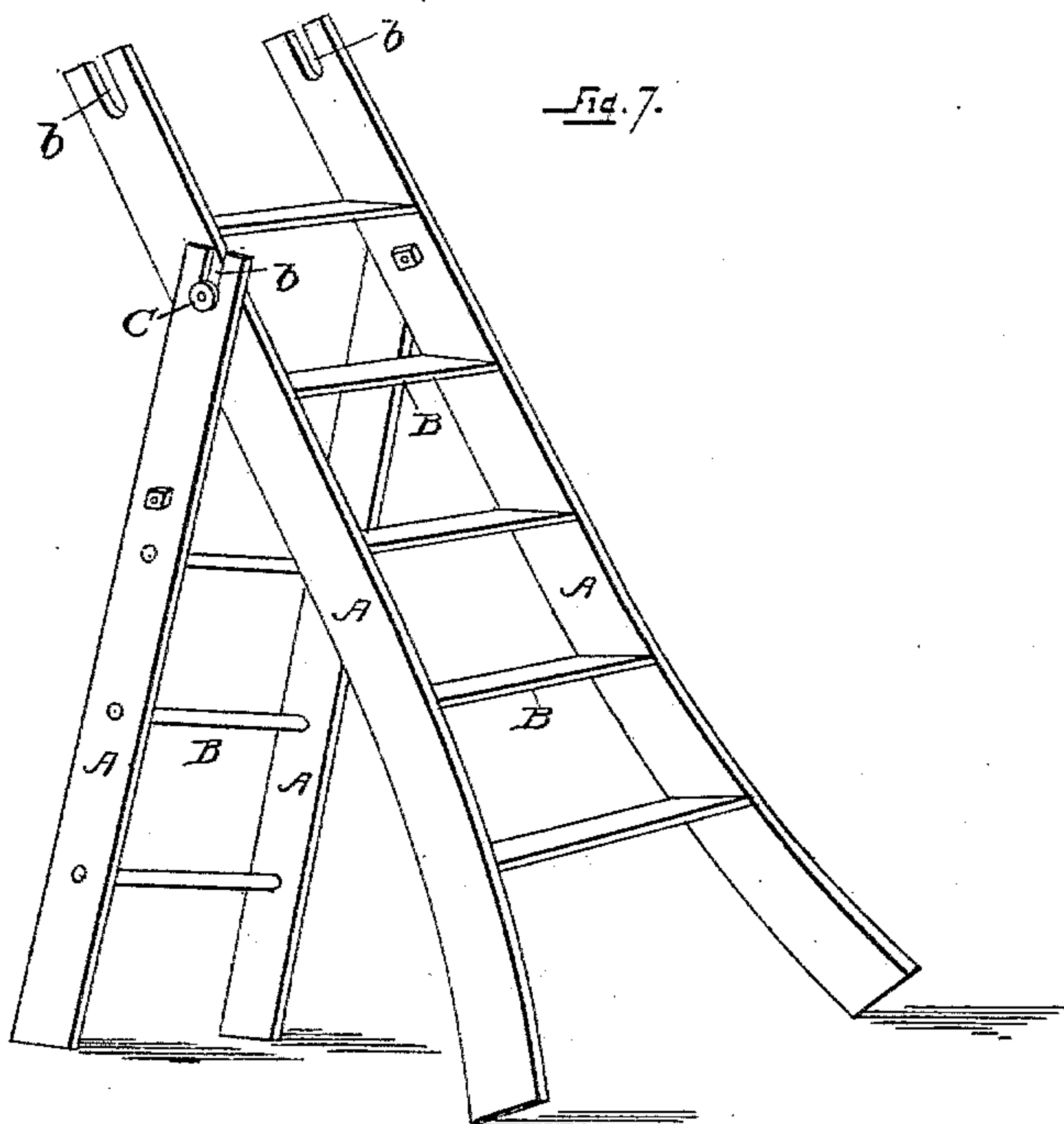
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*H. M. Schooley,*  
*Wm. J. Rittner,*

INVENTOR

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his Attorney.



# UNITED STATES PATENT OFFICE.

EDWIN D. NORTON, OF YORKSHIRE CENTRE, NEW YORK.

## SECTIONAL LADDER.

SPECIFICATION forming part of Letters Patent No. 359,685, dated March 22, 1887.

Application filed January 15, 1887. Serial No. 224,461. (No model.)

*To all whom it may concern:*

Be it known that I, EDWIN D. NORTON, a citizen of the United States, residing at Yorkshire Centre, in the county of Cattaraugus and State of New York, have invented certain new and useful Improvements in Sectional Ladders; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to sectional ladders; and its object is to provide a simple and improved ladder of this class which will possess superior merit in point of durability, ease of adjustment, and general efficiency.

In the drawings, Figure 1 is a perspective view of the ladder embodying my improvements. Fig. 2 is a longitudinal section taken through the interlocking ends of the sections. Fig. 3 is a detail perspective view showing these ends separated. Fig. 4 is a detail perspective view illustrating the supporting-pins. Fig. 5 is a detail sectional view taken through one of the pins. Fig. 6 is a detail sectional view illustrating the method of letting the ends of the rounds into the side rails. Fig. 7 is a perspective view illustrating a modification.

Corresponding parts in all the figures are denoted by the same letters of reference.

Referring to the drawings, A designates the side rails of the ladder, which are connected by the rungs or rounds B. The rails of each section spread or diverge toward their lower ends, so that they are adapted to fit outside the top ends of the rails of the adjoining section, and each rail is provided with a recess or slot, *b*, in each end, these slots being adapted to receive the supporting-pins when the sections of the ladder are interlocked.

The supporting-pins are disposed near the lower ends of the rails (preferably just under the lowermost round) and project inwardly. These pins C comprise a cylindrical portion, *c*, and an end flange, *c'*, projecting therefrom, this flange being let into a corresponding circular recess, *b'*, in the face of the side rail. The pins are secured in position by means of a bolt, D, passing through a longitudinal perforation, *c''*, in the pin, and through the side

rail, the bolt being provided with a head, *d*, and being secured by means of a nut, E, as shown. Between the head of the bolt and the end of the pin is seated a washer, F, forming a projecting flange, and the recessed or slotted ends of the rails are received upon the cylindrical portion of the pins, and between the flange *c'* and projecting edge of the washer F when the sections are interlocked. The washer F, it will be observed, also serves to hold the side rails firmly in position and prevent lateral movement upon the pins.

The pins C are formed of metal, malleable iron being preferred.

It will be understood that each section of the ladder is provided with two pins projecting inwardly at the lower ends of the rails, to receive the top ends of the adjoining section, and also with corresponding pins projecting outwardly at the top ends of the rails, to receive the lower ends of the rails of the adjoining section. By this arrangement the top ends of the rails of one section are received inside the lower ends of the rails of the adjoining section.

The side rails of my improved ladder are provided with the usual perforation, *b''*, and this perforation is enlarged at the inner face of the rail to form a circular recess, *b'''*, and a shoulder, *b''''*. These recesses are adapted to receive the full diameter of the end of the round, the end being provided with a reduced portion, *b'''''*, fitting in the perforation *b''*. By this construction greater strength and stability is secured, and the rounds are not apt to break at the junction of their reduced portion with the end, this joint being contained within the rail.

In the modification shown in Fig. 7 the lowermost section of the ladder is shown provided with a series of steps, G, in lieu of the rounds, and the next section is turned down to form a support for the step-section, such an arrangement being adapted for use as a step-ladder. The modification just described could be used for all purposes where a step-ladder is desired, and either the support or main section could be used, thus providing a double step-ladder.

I am aware that sectional step-ladders have heretofore been constructed in which the rails



have slotted ends adapted to be received by the ends of the rounds of the adjoining section, these ends being carried through the rails and projecting therefrom. This construction is open to particular objection, from the fact that these projecting ends are liable to become broken off, or become worn and decayed from frequent use, and cannot be replaced without inserting a new round. By my improved arrangement of flanged metallic pins these objections are entirely obviated and a greater degree of durability secured. The pins are not liable to become broken, and can be readily removed and replaced.

Having thus described my invention, I claim—

1. An improved sectional ladder comprising two or more sections, the rails of each section being provided with pins independently and removably secured to the rails upon their laterally-projecting portion, and adapted to receive the slotted end of the adjoining section, substantially as set forth.

2. An improved sectional ladder comprising two or more sections provided with bolts passing through the rails near their ends, and carrying pins projecting from the rails and adapted to receive the ends of the adjoining sections, substantially as set forth.

3. The combination, in a sectional ladder, with the rails having circular recesses in their faces, of a bolt passing through the rails, and a supporting-pin mounted upon the bolt and provided with a flanged end seated in said recesses, substantially as and for the purpose set forth.

4. The combination, in a sectional ladder, with the side rails, of a bolt passing through the same, a supporting-pin mounted upon the

projecting portion of the bolt, and a washer seated between the other ends of the pin and head of the bolt and forming a flange, substantially as and for the purpose set forth.

5. The combination, as an improvement in sectional ladders of the class described, with the side rails, of the headed bolts secured through the latter, the pin mounted upon the projecting portion of the bolts and provided with a cylindrical portion, and with a flange at the end adjoining the side rails, and a washer disposed between the outer end of the pins and the head of the bolt, substantially as and for the purpose set forth.

6. A sectional ladder comprising sections having side rails formed with recesses in their ends and connected by rounds, the rails being provided at their lower ends, under the lowermost round, with supporting-pins removably secured in position and projecting inwardly, and with corresponding pins secured at the top ends of the rails and projecting outwardly, substantially as and for the purpose set forth.

7. As an improvement in sectional ladders, the combination, with the side rails having the perforations and formed with an enlarged recess at their inner face, of the wooden rounds constructed in a single piece, with their main portion and tenoned ends integral, and having their full diameter set in said recess, and with the reduced end fitting in the perforation, substantially as and for the purpose set forth.

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

EDWIN D. NORTON. [L. S.]

Witnesses:

ELGENE W. READ,  
WELLIE WOODWORTH.