

No. 771,840.

PATENTED OCT. 11, 1904.

C. R. SHELDON.
STEP LADDER.

APPLICATION FILED FEB. 6, 1904.

NO MODEL.

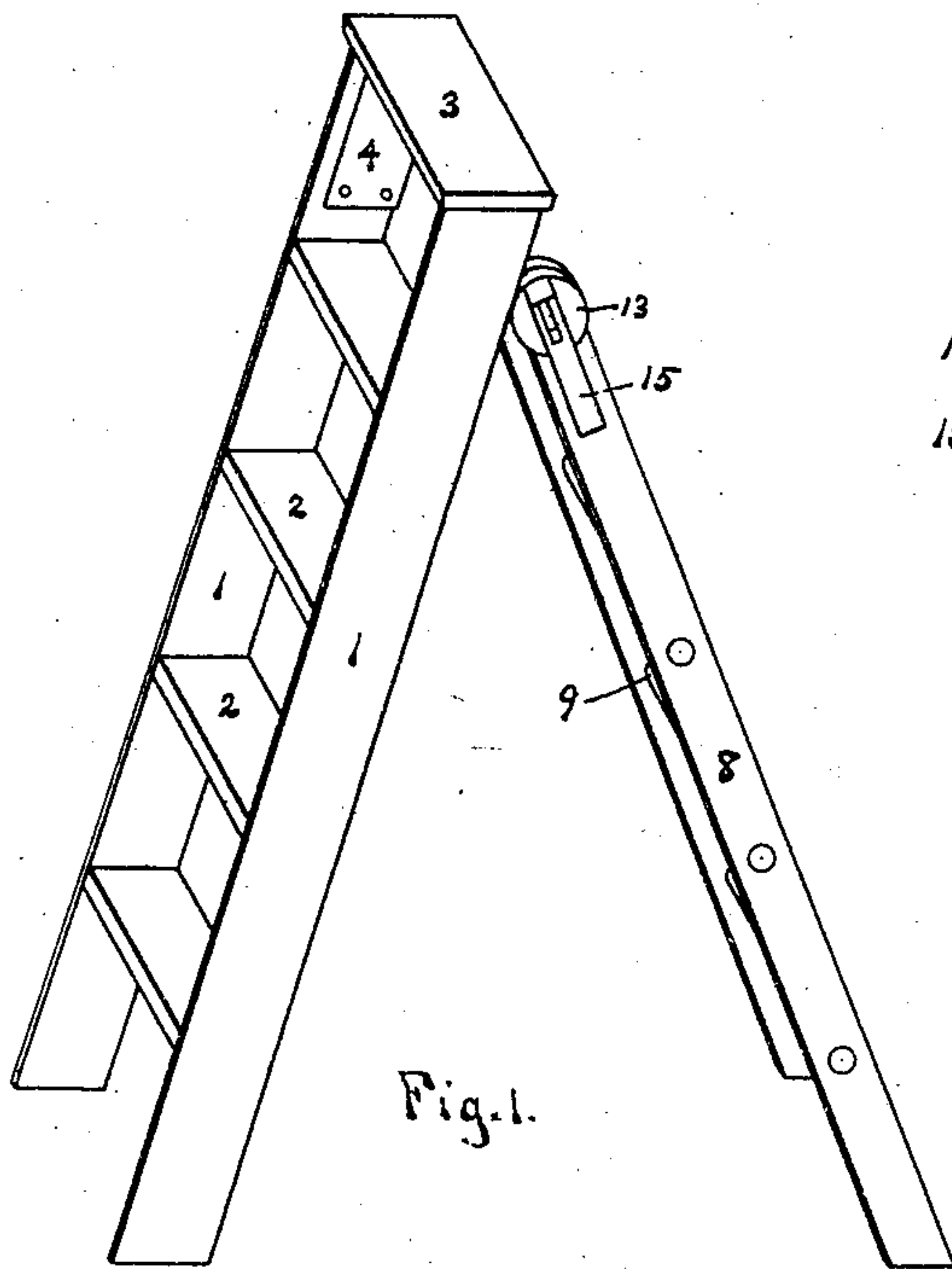


Fig. 1.

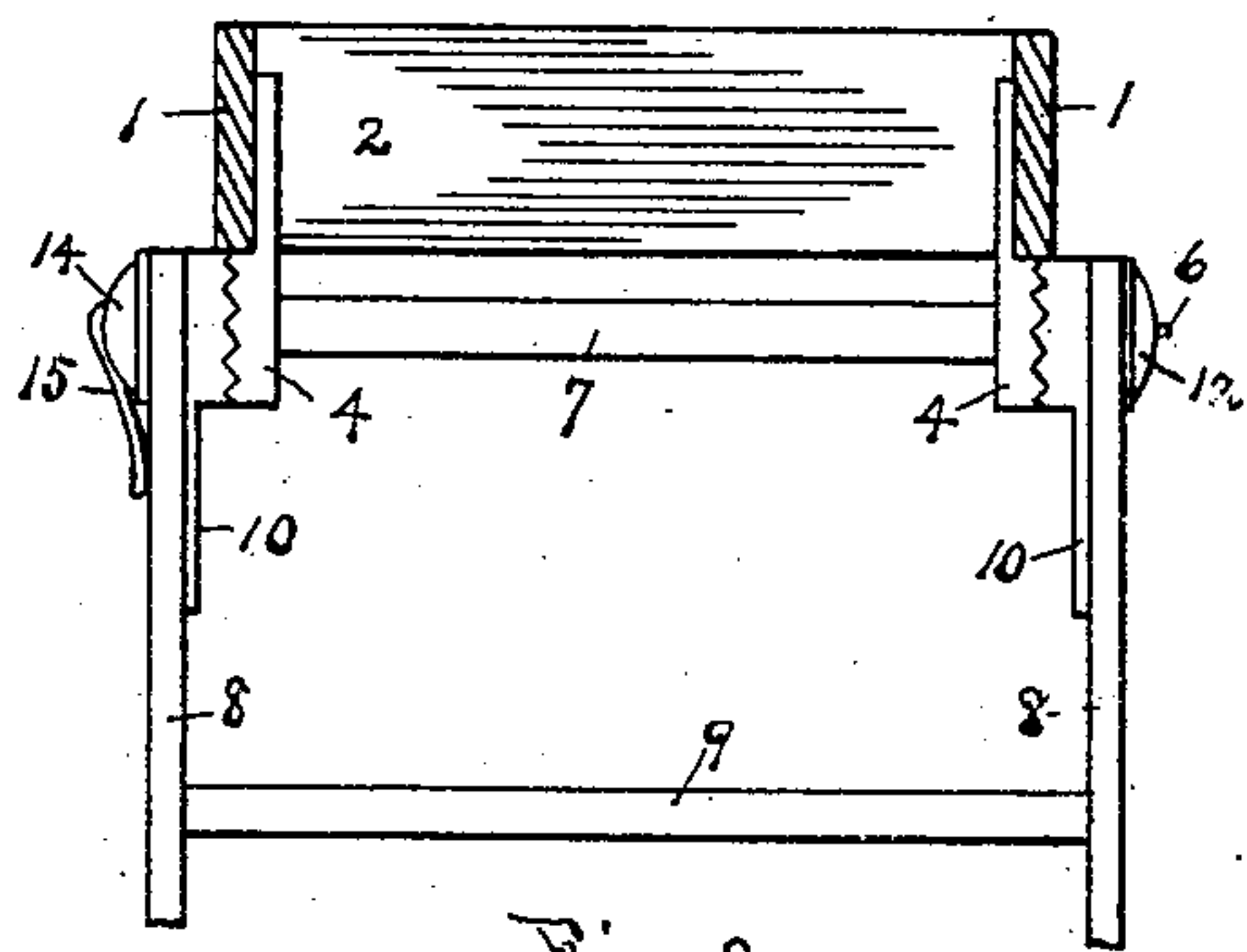


Fig. 3.

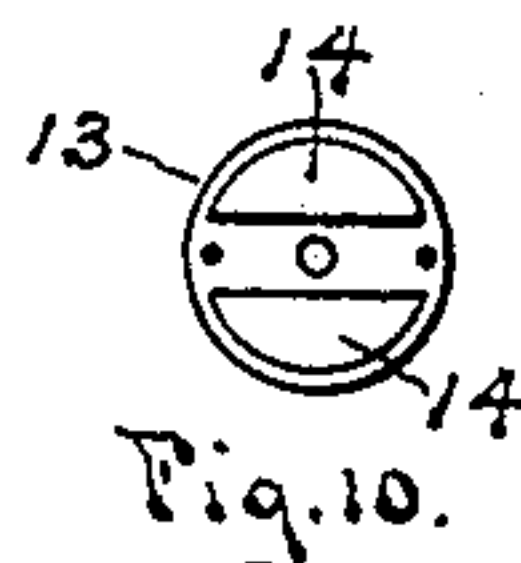


Fig. 10.

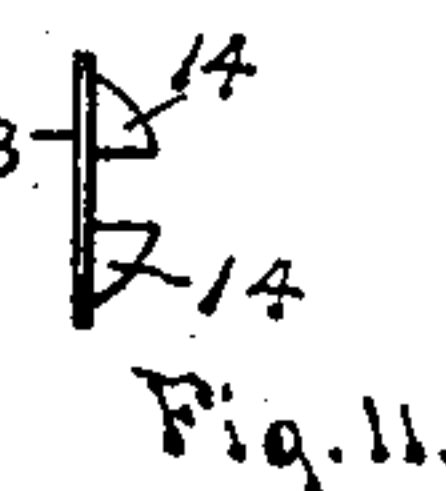


Fig. 11.

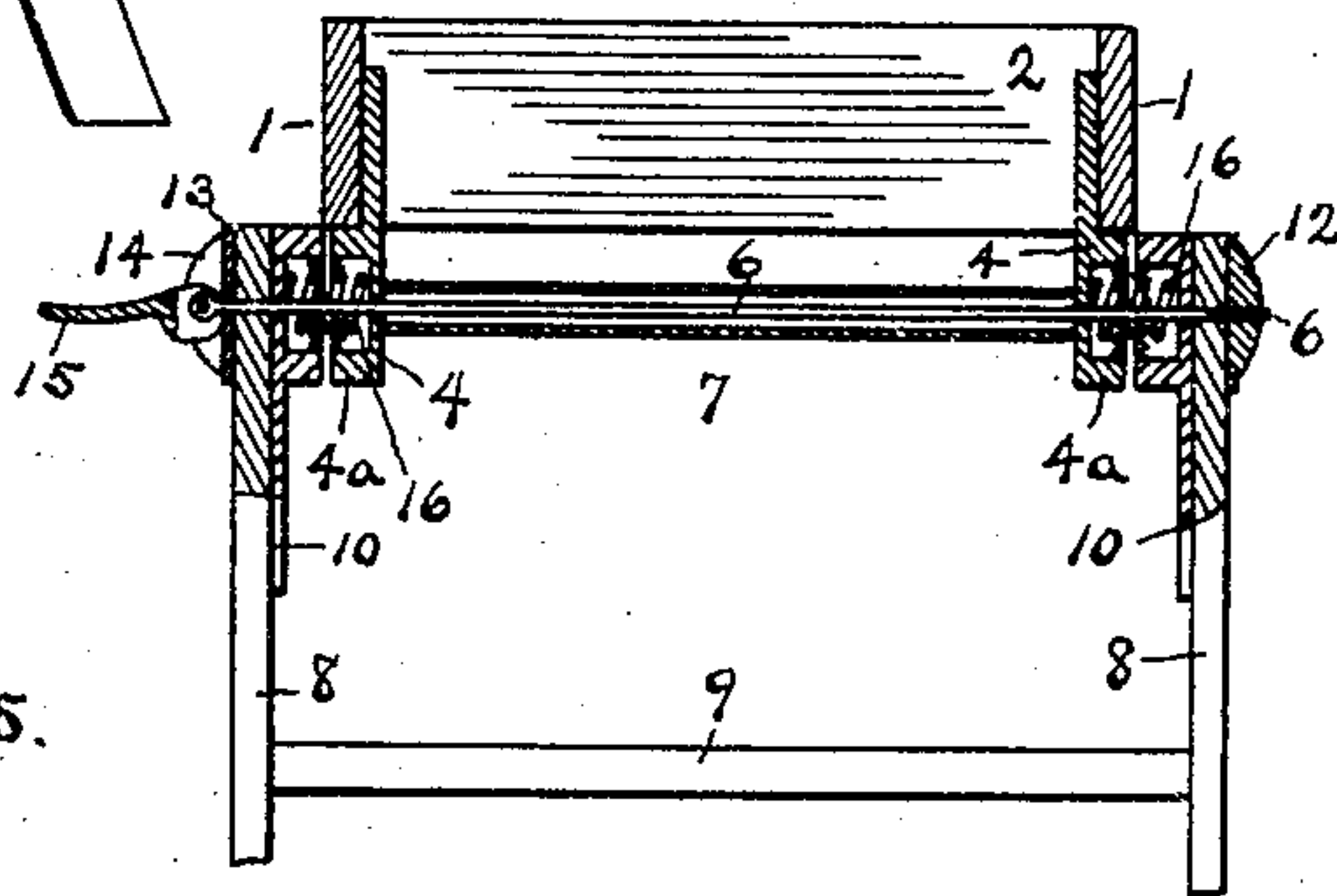


Fig. 4.

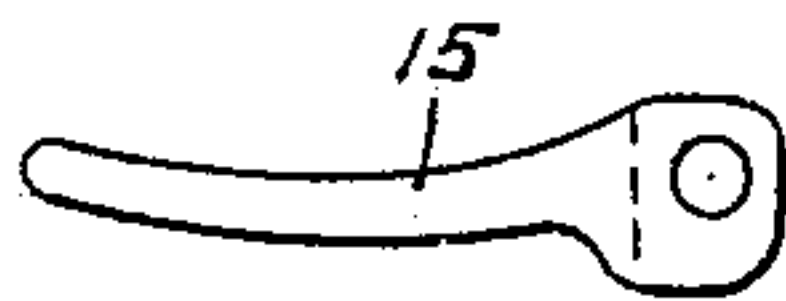


Fig. 2.



Fig. 5.

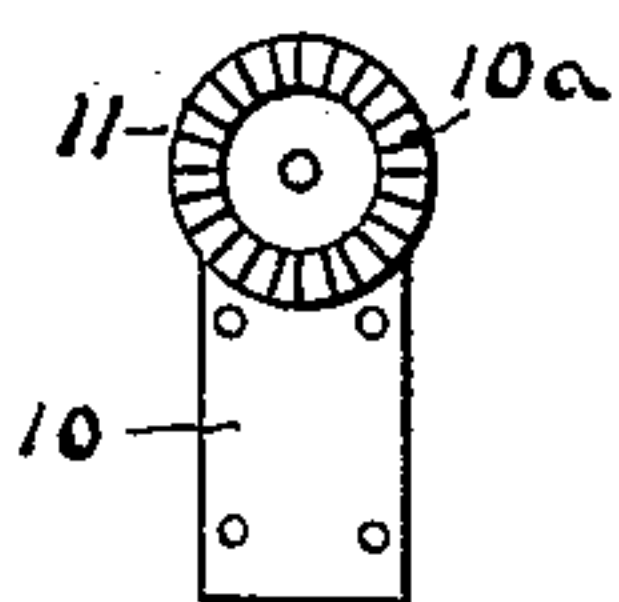


Fig. 6.

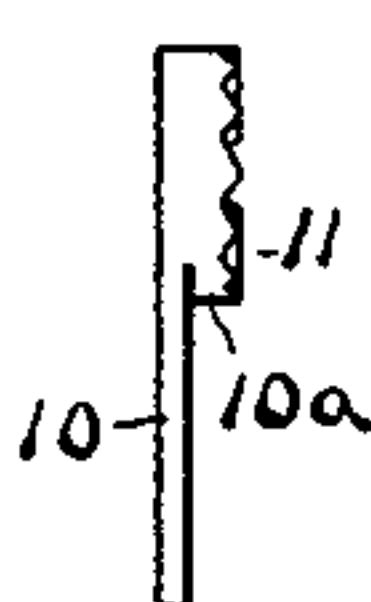


Fig. 7.

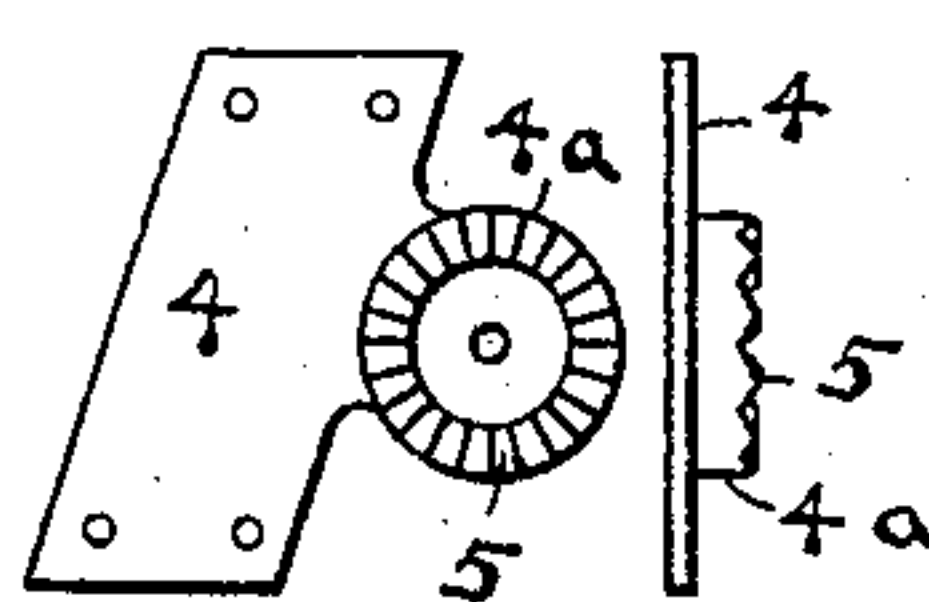


Fig. 8.



Fig. 9.

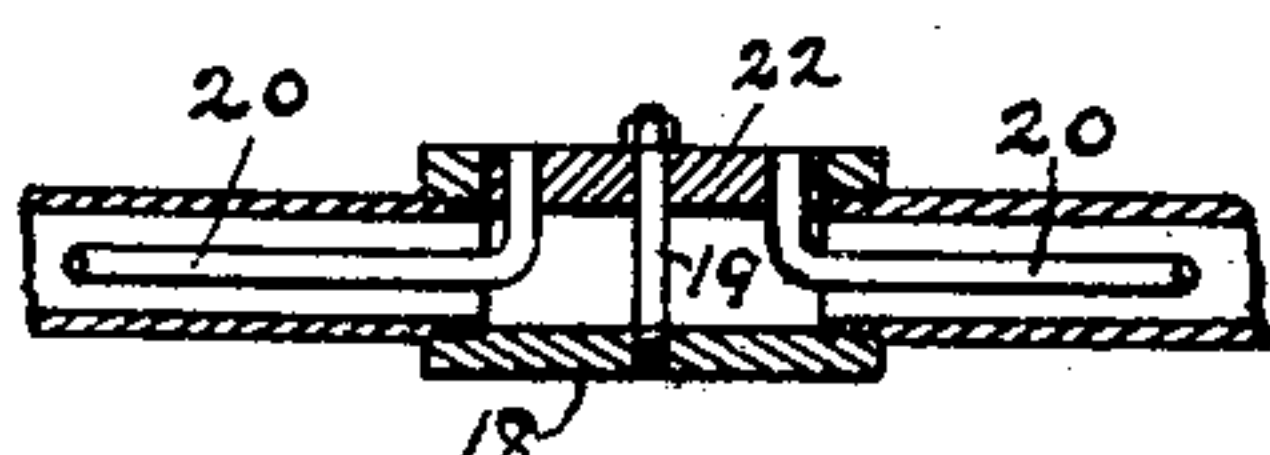


Fig. 13.

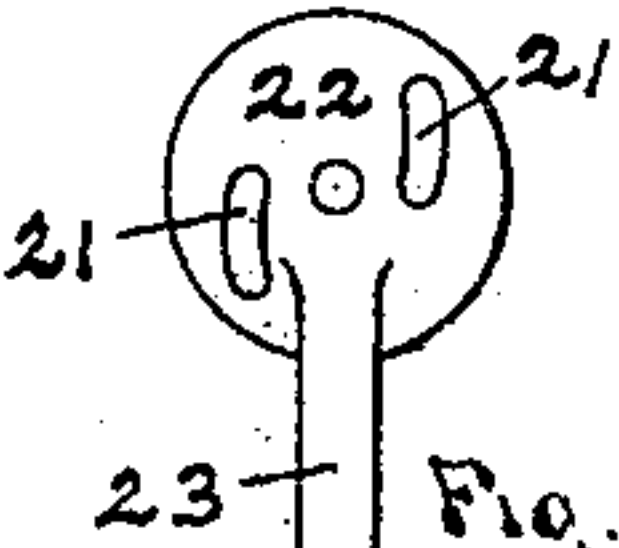


Fig. 14.

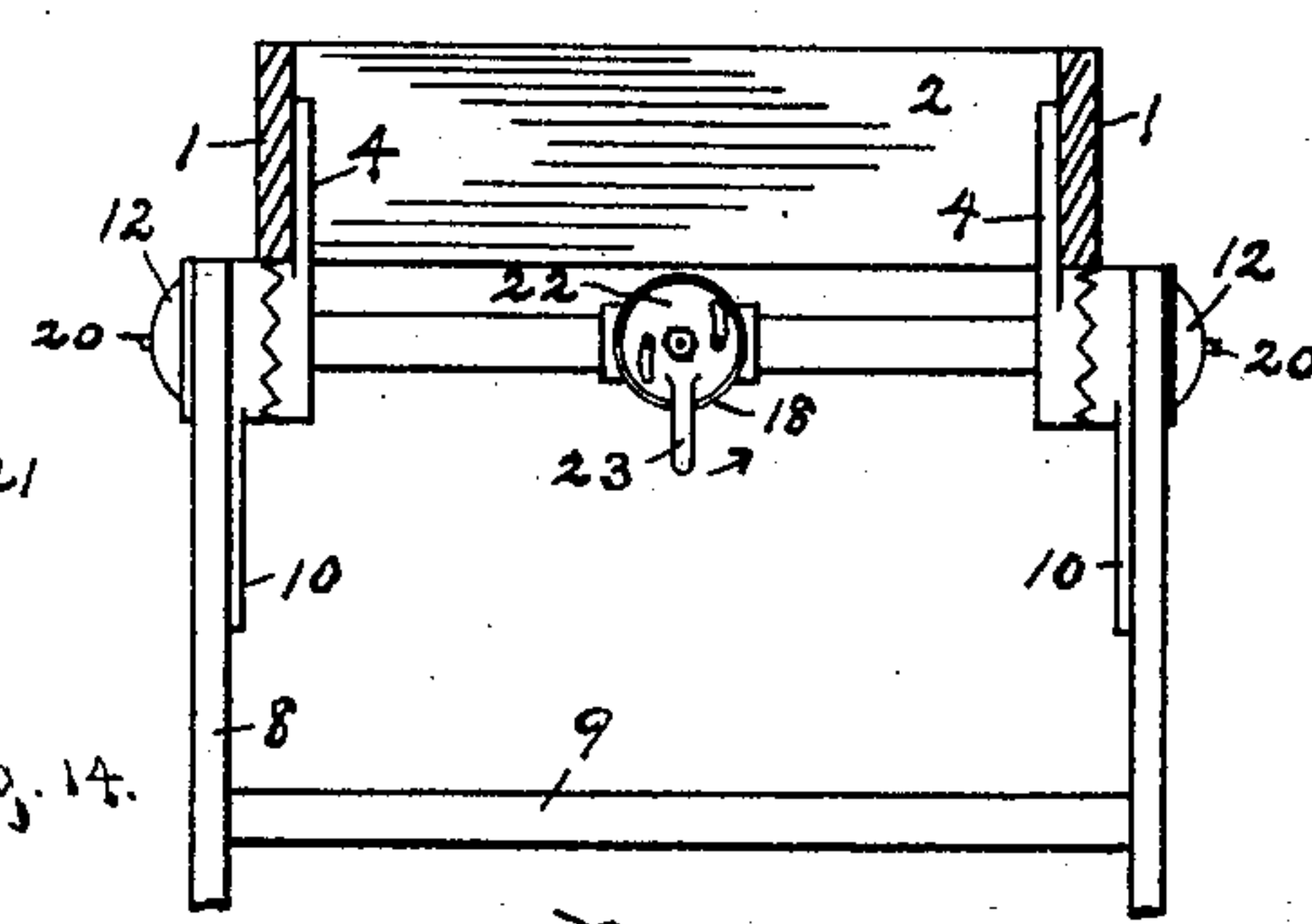


Fig. 12.

Witnesses.

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Inventor.

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UNITED STATES PATENT OFFICE.

CHARLES R. SHELDON, OF PORT HURON, MICHIGAN.

STEP-LADDER.

SPECIFICATION forming part of Letters Patent No. 771,840, dated October 11, 1904.

Application filed February 6, 1904. Serial No. 192,317. (No model.)

To all whom it may concern:

Be it known that I, CHARLES R. SHELDON, a citizen of the United States, and a resident of Port Huron, in the county of St. Clair and State of Michigan, have invented a new and Improved Step-Ladder, of which the following is a specification.

My invention relates to step-ladders composed of two parts hinged together; and the objects of my improvement are to provide a ladder in which the two parts may be firmly locked together in any desired position; to provide a ladder in which, while the parts are being moved to any position, there is no possibility of parts of the hinge engaging and preventing free movement, and to provide a ladder-hinge that may be readily locked and unlocked. I attain these objects by the construction illustrated in the accompanying drawings, in which—

Figure 1 is a general view of the ladder. Fig. 3 is a plan of the hinge in its locked position. Fig. 4 is a cross-section of the hinge in the unlocked position. Figs. 2 and 5 to 11, inclusive, are views of details. Fig. 12 is a view of another form of the hinge-locking means. Figs. 13 and 14 are details of the same.

Similar reference characters refer to like parts throughout the several views.

It is often desirable to have a step-ladder the stiles of which can be locked together at various angles, particularly for use on polished floors, where there is great danger of the stiles spreading. It is also often of great value if the rear stiles are provided with treads or rounds, so that these rear stiles can be folded out parallel to the front stiles, practically forming an extension-ladder, particularly when the parts can be locked in this position.

In the construction shown the front stiles 1 are provided with the usual treads 2 and top 3. To these stiles, near the upper ends, on the inner sides, are secured the plates 4, having circular flanges 4^a provided with projecting radial teeth 5. A rod 6 passes through these plates, through the center of the rings of teeth, and through the tube 7, which extends across between the two plates 4. The rear stiles 8 are provided with rounds or treads 9, and at their

upper ends, on the inner sides, are secured the plates 10, also provided with flanges 10^a, having projecting radial teeth 11. The rod 6 passes through these stiles and plates through the center of the rings of teeth. One end of the rod 6 is screw-threaded and is engaged by the threaded washer 12, which bears on the outer side of one of the stiles 8. To the outer side of the other rear stile is secured the washer or plate 13, which has an opening for the rod 6 and has two parallel lugs 14, between which fits loosely the handle 15, which is pivoted on the end of the rod 6. These lugs prevent the handle and rod from turning relative to the rear stiles and washers 12 and 13. This handle is cam-shaped at its pivot end and serves to lock the teeth of the plates together. In the space formed by the flanges 4^a and 10^a of the plates and surrounding the rod 6 are the springs 16, which serve to force the teeth apart entirely free from each other when the handle 15 is turned up. The elasticity of the rear stiles between the rod 6 and the upper round 9 is sufficient to permit the springs to force the plates apart sufficiently to entirely disengage the teeth. The lugs 14 on the sides of the handle prevent the handle from swinging, and thus unscrewing the rod 6 out of the washer 12. The friction between this washer 12 and the sides of the stile is sufficient to hold it in place. In case of wear or shrinkage, turning the washer 12 will quickly adjust the various parts.

The number and depth of the teeth on the plates may be varied as desired, and it will be seen that the stiles can be locked in any desired position, and by reason of the rigidity and strength of this lock the stiles will break before the plates will slip with reference to each other. The stiles can be locked at any angle to each other, ranging from naught to one hundred and eighty degrees.

Another form of my invention is shown in Figs. 12, 13, and 14. The plates 4 and 10 and the springs 16 are similar to those of the other form. The washer 13 is replaced by a second washer, 12. The pipe 7 is cut in two and the inner ends secured in a cup 18, having a central bolt 19. The rods 20 screw into the washers 12 at their outer ends and have

their inner ends bent to fit into cam-slots 21 of the cam 22, which is provided with a handle 23 and which is revoluble in the cup 18, being held in place by the bolt 19. Turning
5 the handle in the direction of the arrow, Fig. 12, will permit the springs to force the plates and teeth apart. Turning the handle back will lock the plates together.

Having now explained my invention, what
10 I claim, and desire to secure by Letters Patent, is—

1. In a step-ladder, the combination of the front stiles, plates secured to the same having circular flanges provided with radial teeth,
15 the rear stiles, plates secured to the same having flanges provided with radial teeth to engage the teeth upon the plates of the front stiles, a rod passing through the plates, a tube on the rod to hold the plates on the front
20 stiles in position, springs on the rod in the spaces between the plates to disengage the teeth, a screw-threaded washer on one end of the rod outside of one of the rear stiles, a plate having lugs, on the outer side of the
25 other rear stile, and a handle pivoted on the other end of said rod having an eccentric to force the teeth into locking engagement, said handle fitting between said lugs.

2. In a step-ladder, the combination of the
30 front stiles, a plate secured to each stile provided with radial teeth, the rear stiles, a plate secured to each rear stile provided with radial teeth and adapted to engage the corresponding plate on the front stile, a tube for
35 holding the inner plates from approaching

each other, means to force the teeth of adjoining plates into locking engagement comprising a rod passing through openings in the plates and the tube, disks on said rod on the outside of the rear stiles, one disk secured to
40 a rear stile and having lugs to prevent the rod from turning in the rear stiles, and an eccentric on one end of said rod and rotatable between said lugs, substantially as described.

3. In a step-ladder, the combination of the
45 front stiles, a plate secured to each stile having a flange provided with teeth, the rear stiles, a plate secured to each rear stile having a flange provided with teeth, a rod passing through openings in said plates, means on
50 said rod to force the teeth of each plate on the front stiles into engagement with the teeth of the corresponding plate of the rear stiles, and a spring between each pair of plates to force the plates apart and disengage
55 the teeth.

4. In a step-ladder, the combination of the front stiles, a plate secured to the same provided with teeth, the rear stiles, a plate secured to the same provided with teeth, means
60 to force said teeth into engagement with each other, and a spring between the plates to force said teeth out of engagement with each other.

In testimony whereof I have signed my name to this specification in the presence of two sub-
65 scribing witnesses.

CHAS. R. SHELDON.

In presence of—

ALEX MOORE,
SAM D. PEPPER.