(No Model.)

2 Sheets—Sheet 1.

W. J. THURWANGER.

SLIDING LADDER.

No. 514,790. Patented Feb. 13, 1894.

Fig: 2.

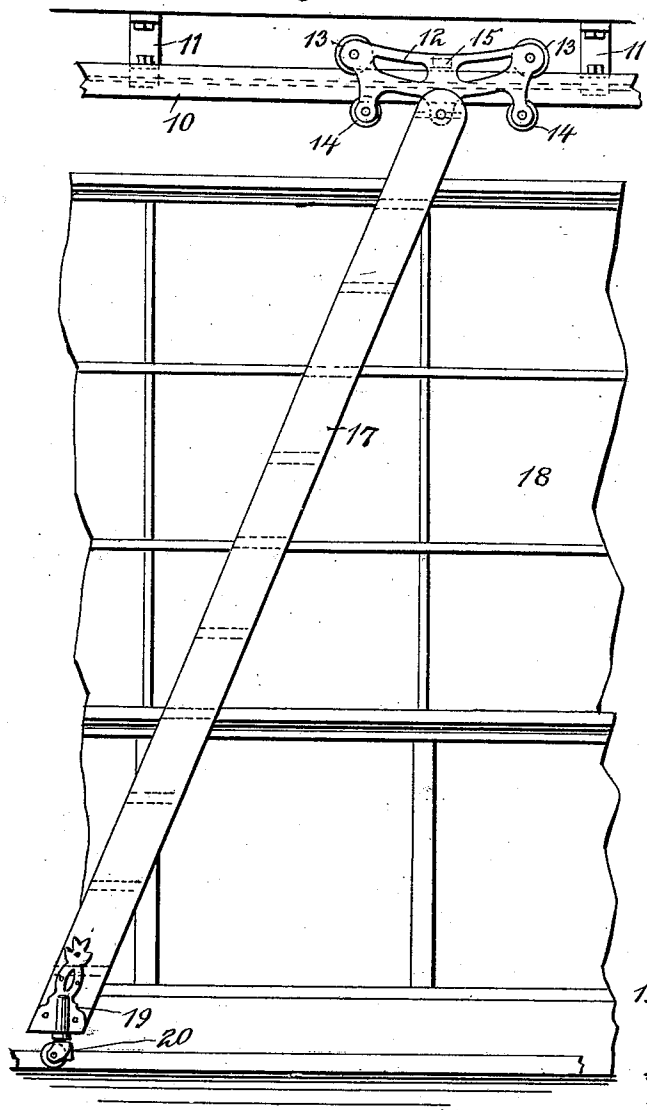
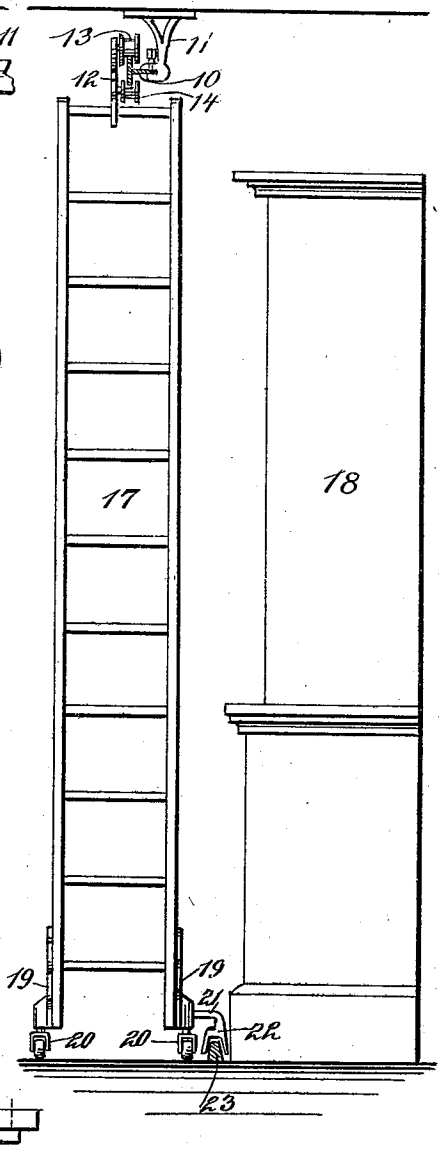


Fig: 1.



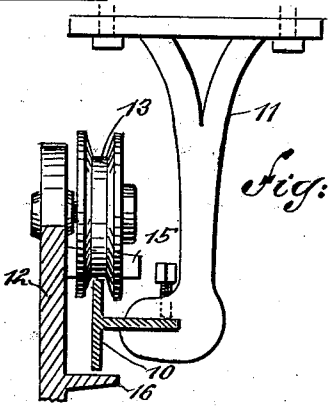


Fig: 3.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 4.

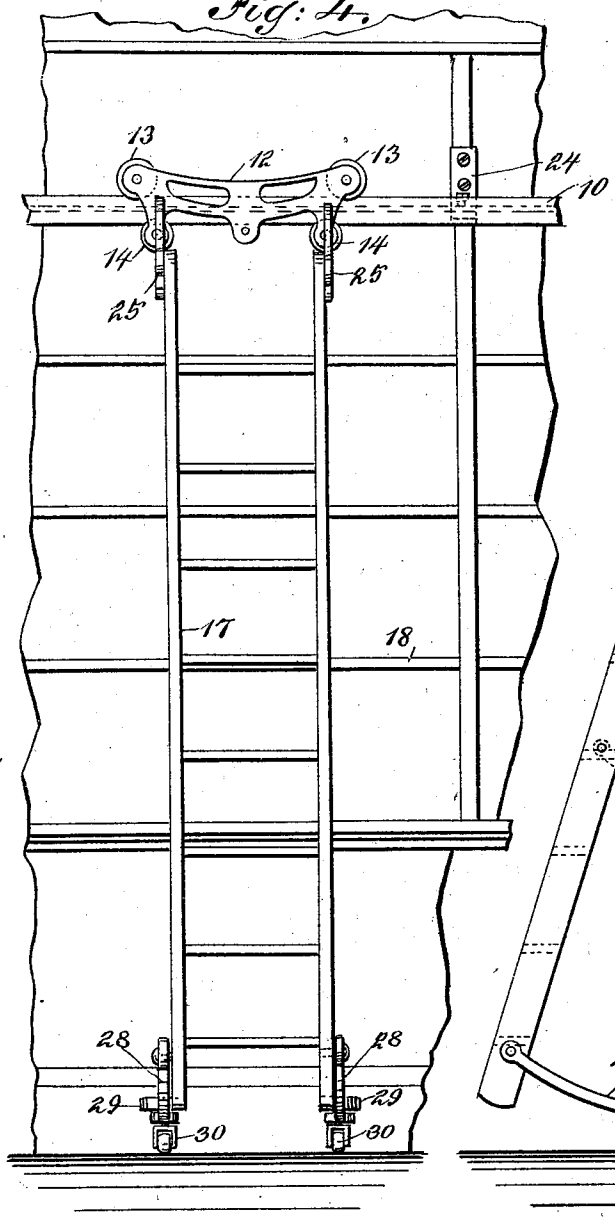
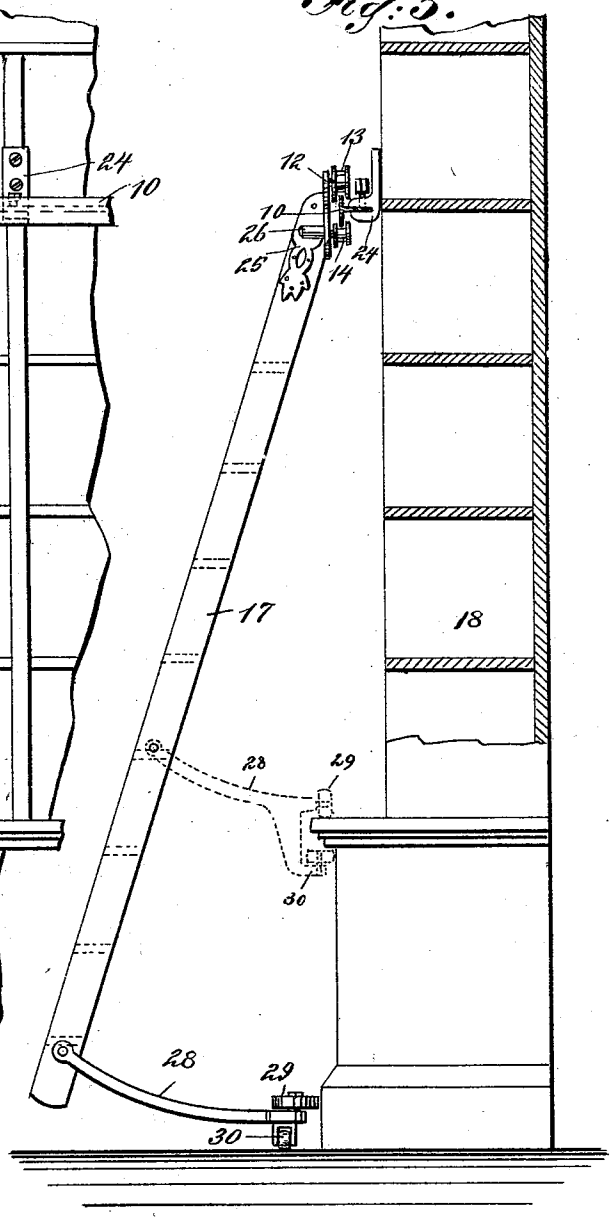


Fig. 5.



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WILLIAM J. THURWANGER, OF PHILADELPHIA, PENNSYLVANIA.

SLIDING LADDER.

SPECIFICATION forming part of Letters Patent No. 514,790, dated February 13, 1894.

Application filed August 31, 1893. Serial No. 484,487. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. THURWANGER, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and Improved Sliding Ladder, of which the following is a full, clear, and exact description.

My invention relates to improvements in sliding ladders such as are used to push back and forth opposite a row of shelves, or across a room for any purpose, and the object of my invention is to produce a simple ladder and supports for it, which are constructed in such a manner that the ladder will be held very steadily and its foot prevented from swinging laterally, also to construct the ladder and its supports in such a way that they may be easily applied to a ceiling or to the shelving of a room, and further to construct the upper ladder support in such a way that the ladder will not fall even though its supporting pulleys break.

To these ends, my invention consists of certain features of construction and combinations of parts, which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a front elevation of a ladder and its supports, the lower track being shown in section, and the ladder being suspended from the ceiling of a room. Fig. 2 is a side elevation of the same. Fig. 3 is an enlarged cross section of the upper ladder bracket, the track, and the hanger for the track. Fig. 4 is a front elevation of a modified form of the ladder which is adapted to be connected with the shelves of a room; and Fig. 5 is a side elevation of the same.

As shown in Figs. 1 and 3, the upper track 10 of the ladder, which is a common T-track, is supported in hangers 11 which are firmly secured to the ceiling, and the upper end of the ladder is carried by an elongated bracket 12, which has on its upper side and at the ends, grooved pulleys 13 which run on the vertical web of the track, while on the lower corners of the bracket are similar pulleys 14 which fit against the under side of the track.

The bracket 12 has near the center and on its back side, a lug 15 which projects above the track 10, so that in case one of the pulleys 13 breaks, the bracket will be prevented from falling to any great extent. A similar lug 16 is arranged beneath the track to serve as a guide and prevent any possible jumping of the bracket.

The ladder 17 is of the common kind, and its upper rung or step is securely fastened to the central portion of the bracket, and the ladder as illustrated is arranged to slide opposite a row of shelves 18. The ladder is provided at the bottom with strap brackets 19, which are secured to the side pieces of the ladder, and these are provided with the usual casters 20, which run upon the floor. To prevent any swaying of the ladder laterally, it is provided at its lower end and preferably on the side next the shelves, with a bent guide arm 21, the lower end of which terminates in a fork 22, and this runs on a track 23 which is secured to the floor and extends in front of the shelves, and it will be seen that this fork and arm hold the ladder in a substantially rigid position, so that it can only move forward and backward on the tracks 10 and 23.

The ladder may be supported from the shelves sometimes more conveniently than it can from the ceiling, and in such cases the forms of supports illustrated in Figs. 4 and 5 are supplied. In these figures, the track 10 is like that already described, but is supported by means of brackets 24 which are secured to the uprights of the shelves. The bracket 12 is also like that shown in Figs. 1 to 3, and is provided with pulleys 12 and 14 to run on the track. The bracket has however, on its lower corners depending straps 25, which are secured to the side pieces of the ladder 17, and the ladder in this case fronts the shelves. The upper ends of the straps 25 merge into sockets 26, which hold the journals of the pulleys 14, but the pulleys may be journaled in any other convenient way.

The ladder is provided at the bottom with curved guide arms 28, which are pivoted to the side pieces of the ladder, and these arms extend toward the shelves and have pivoted on their free ends and upper sides, guide pulleys or wheels 29, which abut with the base of

the shelves and turn on a vertical axis, while at the free ends of the arms 28, and on the under side are casters 30 which run upon the floor, and the casters and guide wheels enable the ladder to run easily and also serve to steady it. This construction enables the foot of the ladder to be moved outward and inward laterally, the movement being of course limited by the manner in which the pulleys 13 and 14 are mounted on the track 10.

If desired, the arm 28 may be attached higher up on the ladder, as shown by dotted lines in Fig. 5, and the guide wheels made to run on the upper portion of the shelf base. This arrangement permits the arms 28 to be dropped into a position substantially parallel with the ladder so that the ladder may lie flat against the shelves when it is not in use.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a sliding ladder, the combination with a track for supporting the upper end of the ladder, of a bracket provided with pulleys fitting upon the upper and lower edges of the track and with a central lug projecting laterally above the track, and a ladder secured to said bracket, substantially as described.

2. In a sliding ladder, the combination with a track, of a bracket provided with pulleys fitting upon the upper and lower edges of the track, and with lugs projecting laterally above and beneath the track, and a ladder secured to the bracket, substantially as described.

3. A sliding ladder, comprising a supporting track for the upper end of the ladder, a bracket having pulleys fitting the upper and lower edges of the track, lugs projecting laterally from the bracket between the pulleys and extending above and beneath the track, a ladder suspended from the track, and casters to support the lower end of the ladder, substantially as specified.

4. A sliding ladder, comprising a track for the upper end of the ladder, an elongated bracket having pulleys at its opposite ends which fit the upper and lower edges of the tracks, lugs projecting laterally from the bracket above and below the track, a ladder suspended from the bracket, and casters at the foot of the ladder, substantially as specified.

5. In a sliding ladder, the combination with a ladder having its upper end supported on a movable bracket, of casters for supporting the lower end of the ladder, and an arm on the lower end of the ladder for guiding and holding the said lower end of the ladder a predetermined distance from the shelves or other object, as the ladder is moved along in front of the same substantially as described.

6. The combination, with the sliding ladder, of a track arranged near the foot of the ladder, and an arm secured to the ladder and provided with a forked end to slide on the track, substantially as specified.

WILLIAM J. THURWANGER.

Witnesses:
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H. R. RUST.