

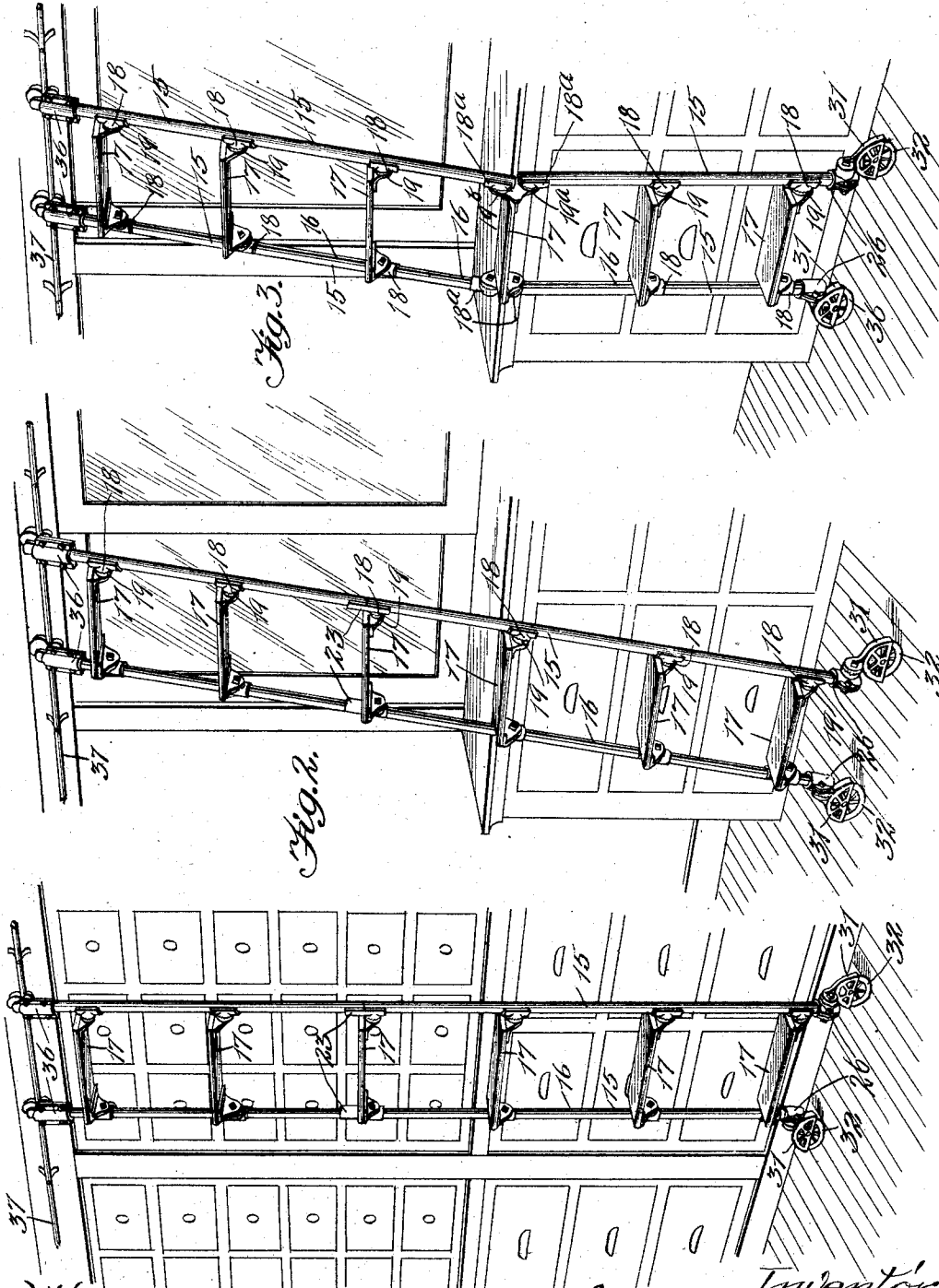
T. C. PROUTY.
LADDER.

APPLICATION FILED DEC. 20, 1907.

Patented Dec. 22, 1908.

4 SHEETS—SHEET 1

907,401.



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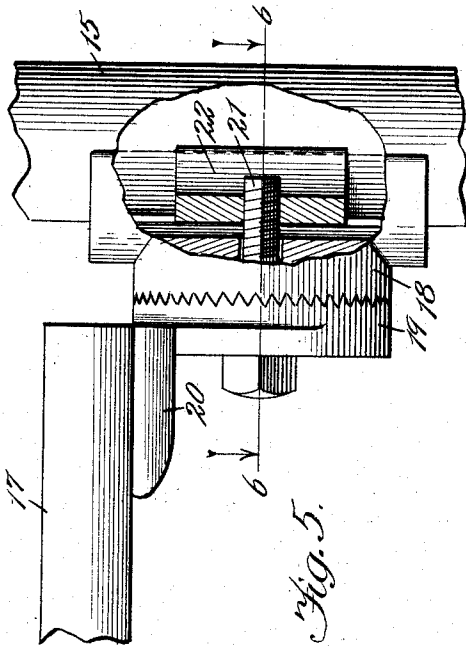


Fig. 5.

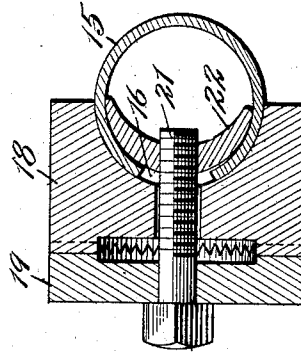


Fig. 6.

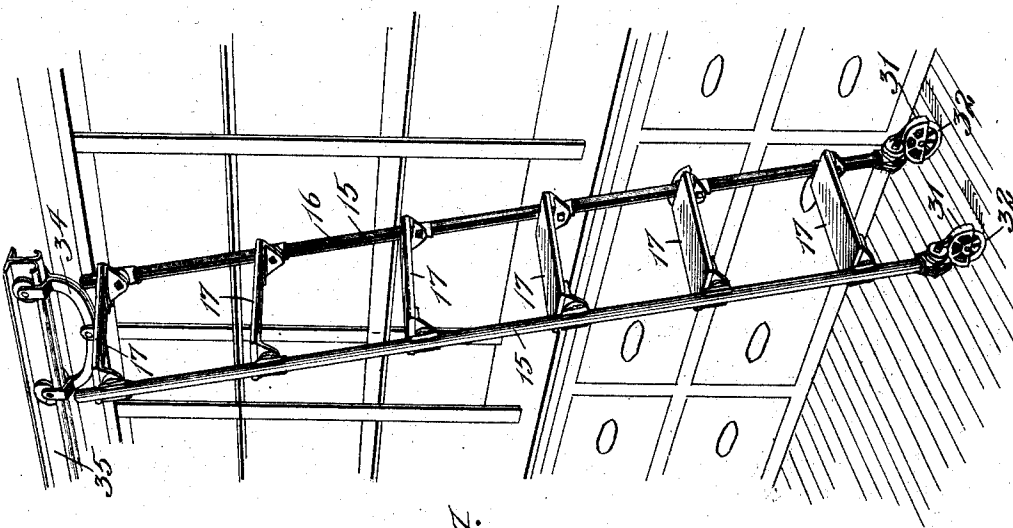


Fig. 7.

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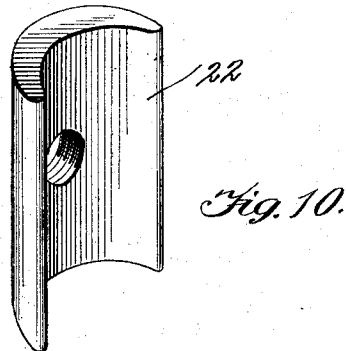
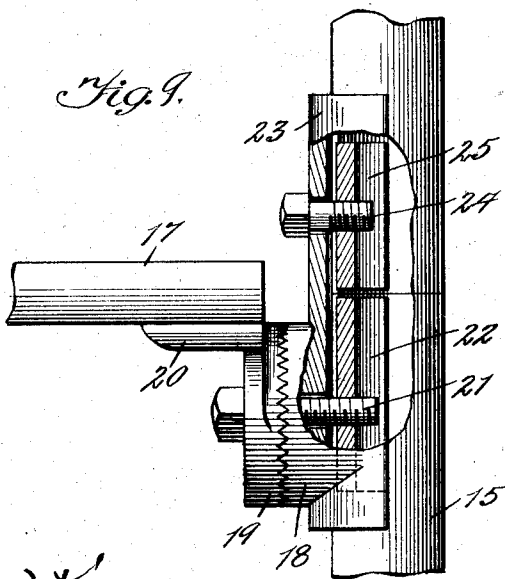
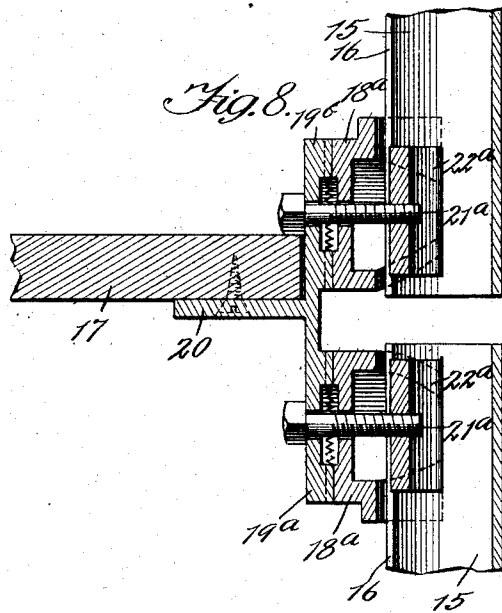
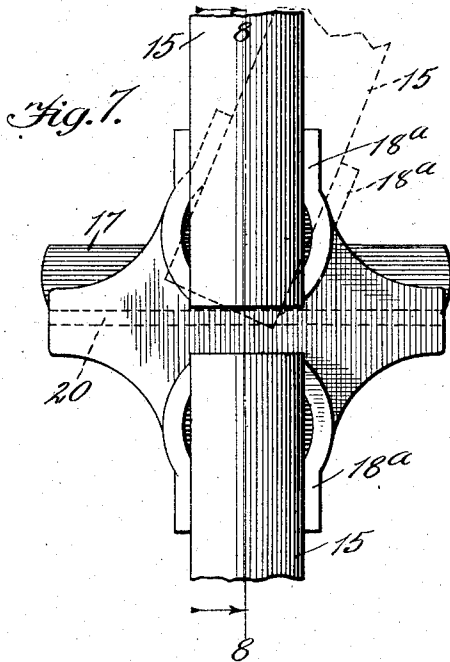
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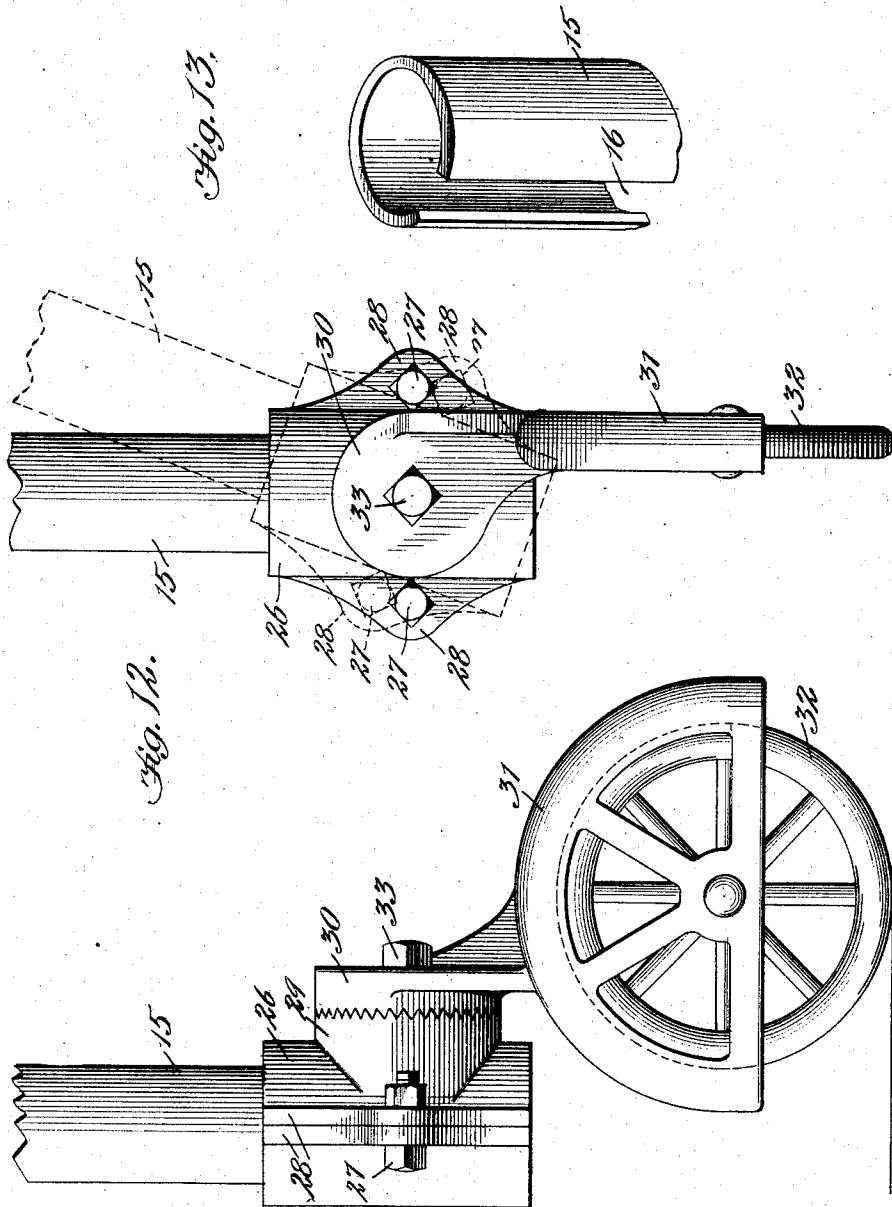
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LADDER.
APPLICATION FILED DEC. 20, 1907.

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4 SHEETS—SHEET 4.



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Fig. 11.
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UNITED STATES PATENT OFFICE.

THEODORE C. PROUTY, OF AURORA, ILLINOIS, ASSIGNOR TO WILCOX MANUFACTURING COMPANY, OF AURORA, ILLINOIS, A CORPORATION OF ILLINOIS.

LADDER.

No. 907,401.

Specification of Letters Patent.

Patented Dec. 22, 1908.

Application filed December 20, 1907. Serial No. 407,395.

To all whom it may concern:

Be it known that I, THEODORE C. PROUTY, a citizen of the United States, residing at Aurora, county of Kane, State of Illinois, have invented certain new and useful Improvements in Ladders, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to improvements in ladders and particularly to ladders designed for use in stores where the ladders are movably mounted in proximity to shelving and are adapted to be moved toward different parts of such shelving. Owing to the different heights to which such shelving extends in different stores or shops, and the varying character of such shelving, as well as the different styles or ways of arranging the ladders with reference to the shelving, it is to a large extent commercially impracticable to carry ladders for this purpose in stock, and consequently they are generally made up on special orders so that they may be made to conform in all details respecting length, degree of inclination, distance between steps, character of support for the upper end, etc., to the particular situation where the ladder is to be placed as well as to conform to the ideas of the proposed purchaser of the ladder, as to such matters or some of them.

It is the object of my invention to provide an improved construction of ladder, the various parts of which can be kept in stock and easily and quickly assembled so as to form a light, strong and durable ladder that shall conform to the particular requirements for any situation. I attain this object by the means shown in the drawings and hereinafter specifically described.

That which I believe to be new will be pointed out in the claims.

In the drawings:—Figures 1, 2, 3 and 4 are perspective views of ladders arranged in different ways with respect to store shelving and each embodying my improvements. Fig. 5 is a detail, partly in section, illustrating the adjustable means employed for securing a step of the ladder in place. Fig. 6 is a horizontal section taken at line 6—6 of Fig. 5. Fig. 7 is a detail illustrating a portion of one of the side bars of the ladder made of two pieces and the adjustable means employed for securing to both of said pieces one of the steps of the ladder. In dotted lines is shown the position of the upper piece of the

side bar when the two pieces are arranged to stand at an angle to each other when the ladder is to be arranged as in Fig. 3. Fig. 8 is a vertical section taken at line 8—8 of Fig. 7. Fig. 9 is a detail, partly in section, of the construction employed to adjustably secure a step to both parts of a side bar, when such side bar is made in two parts and such two parts are arranged in line with each other, as in the ladders shown in Figs. 1 and 2. Fig. 10 is a detail, being a perspective view of one of the clamping blocks located within the hollow side bar. Fig. 11 is a detail showing in side elevation one of the wheels at the foot of the ladder and the adjustable means for securing the same in place. Fig. 12 is another view of the same parts that are shown in Fig. 11 and illustrating in dotted lines the position of the wheel-clamping devices when the lower end of the ladder is inclined; and Fig. 13 is a detail, being a perspective view of a portion of one of the side bars of the ladder.

Referring to the several figures of the drawings, in which corresponding parts are indicated by like reference characters, 15 indicates the two side bars of a ladder, which, as shown, are each formed from one or more pieces of tubing slotted, as at 16, from end to end.

17 indicates the steps of the ladder.

Where the ladder is a straight one from end to end as in Figs. 1, 2 and 4, the side bars are each preferably formed from a single piece of material, as in Fig. 4, although they may each be of two pieces as in Figs. 1 and 2, and each step of the ladder will, when each side bar is in a single piece, be secured in place by a set of devices such as shown in Fig. 5. Indeed, the devices of said Fig. 5 may and preferably will be employed in all instances except at a joint in a side bar. Where a joint occurs, the two members of the side bar are to be secured together and the step at the same time secured in place by either the devices shown in Figs. 7 and 8 or Fig. 9, the devices of Figs. 7 and 8 being more especially designed for use in connection with a ladder having the two parts of each of its side bars at an angle to each other as in Fig. 3, although it may be used in connecting together a two-part side bar such as shown in the ladders of Figs. 1, 2 and 4, while the step-securing devices shown in Fig. 9 are only intended for use over a joint between two aligned pieces of a side bar and could not be

employed where such pieces have to stand at an angle to each other.

Referring now particularly to the construction of step-securing means shown in detail in Figs. 5 and 6, and which is shown as employed in connection with all the steps of the ladders shown in Figs. 1, 2, 3 and 4, except the third step from the top in the ladders of Figs. 1 and 2 and the fourth step from the top in the ladder of Fig. 3,—18 and 19 indicate two members of a clamp, one face of each being toothed or serrated to prevent turning of the members relatively to each other. The member 19 is provided with a horizontal flange 20 upon which one end of a step 17 is adapted to rest and to which it can be secured in any suitable manner. The clamp member 18 has its outer face suitably curved to conform to the curvature of one of the side bars 16. The side bar is so positioned as to present its slot 16 opposite the central portion of the curved face of the clamp member 18. 21 indicates a bolt passing loosely through the centers of the two clamp members and through the slot 16. Its inner end threads into an opening in a curved block 22 that is located within and fits against the inner face of the side bar 15. It will be evident that by loosening the bolt 21 so as to permit the serrated faces of the clamp members to be serrated from each other the step 17 can be rocked or turned on its pivot bolt 21 so as to bring it to a horizontal position regardless of the degree of inclination to which the ladder as a whole may be placed, and when properly adjusted can be locked in that position by tightening the bolt so as to again cause the members 18 and 19 to interlock, and draw the block 22 firmly to the side bar. The loosening of the bolts also permits the steps to be adjusted as desired to bring them closer to or farther from each other.

When a side bar of a ladder is made up of a plurality of pieces and the ladder is to be a straight one from end to end, I employ a step-supporting construction that also secures the two pieces of the side bar rigidly together. As stated, the construction employed in Figs. 7 and 8 may be thus employed although I prefer to employ the construction shown in Fig. 9 which is particularly designed for such use. Referring to said Fig. 9, the same construction is there shown as in Figs. 5 and 6 with the addition of an upward extension of the clamp member 18 in the form of a curved plate that projects beyond the joint in the side bar, through which upward extension passes a short bolt that screws into a second block like the block 22. The extension in the form of a curved plate referred to is indicated by 23, the short bolt by 24 and the additional block by 25. The construction and operation of the remaining parts in said Fig. 9 being the

same as in Figs. 5 and 6, such parts are numbered the same. The ladders shown in Figs. 1 and 2 have each of their side bars formed of two pieces and at the third step from the top of each of those ladders is shown the construction detailed in said Fig. 9.

In Figs. 7 and 8 are shown the construction and arrangement of devices that, in addition to the function of supporting an end of one of the steps, is especially designed for rigidly securing together the adjoining ends of two pieces of a side bar when such two pieces are to be arranged at an angle to each other, as in the ladder represented in Fig. 3 where the upper portion of the ladder is inclined while the lower portion is vertical. In said Figs. 7 and 8, instead of the clamping member 19 already described, I employ a double clamp member,—that is, it has two separate serrated parts that are formed integral with each other and which are indicated by 19^a and 19^b respectively,—with which double clamp member is formed, as in the other clamp constructions described, a step supporting bracket 20. This double clamp member 19^a—19^b is so formed as to have its two toothed or serrated faces at opposite sides of the joint in the side bar, as clearly shown in Fig. 8. Opposite each toothed or serrated face is located a clamp member 18^a that corresponds in function and operation with the clamp member 18 that was described in connection with the construction shown in Figs. 5 and 6. The tightening bolts and the blocks into which they are screwed are indicated by 21^a and 22^a, respectively. By loosening either or both of the bolts 21^a either or both of the separate pieces that go to make up the complete side bar can be turned to stand at the angle desired and then locked in place by tightening up the loosened bolt or bolts.

Ladders designed for store service and which are movably connected in place in front of shelving are ordinarily provided with small wheels to run upon, and such wheels should be so affixed to the ladder as to run true and in a direct line. It is evident that the wheels cannot be placed alike on all ladders, but must be affixed with due regard to whether the ladder is vertical or inclined, and, if inclined, according to the degree of inclination, and must be differently secured in place on a ladder arranged as in Fig. 4 from what they would be if the ladder were turned around to present the rear edges of its steps toward the shelving as in Figs. 1, 2 and 3. I have provided means for so securing such wheels, the same means being employed in all arrangements of the ladder. Referring to Figs. 11 and 12 where such wheel-attaching means are best shown, 26 indicates a two-part sleeve one of such sleeves being adapted to fit over the lower end of each side bar 15 to which it is firmly

clamped by bolts 27 passing through lugs or ears 28 cast with the sleeve sections, on which bolts are screwed nuts as shown. On one of these sleeve sections is formed a projection 29 the outer face of which is annular in shape and provided with teeth or serrations with which engages a correspondingly shaped head 30 having a toothed or corrugated face. Integral with this head is formed a suitable wheel-support which in the form of construction shown takes the shape of a hood 31 in which is journaled the axle of a supporting wheel 32. The wheel-support 30—31 is held in proper position by a bolt 33 passing through the head 30 and being screwed into the projection 29. It is evident that by loosening the bolts 27 the sleeve 26 can be rotated on the side bar 15 to any position desired and that by loosening the bolt 33 the wheel-support can be turned to bring the wheel in a vertical position, regardless of any inclination that the said side bar may have. These adjustments will be retained of course by tightening up the bolts.

Ladders embodying my improvements may be retained in place in any of the usual ways and by any desired form of fixture. In Fig. 4 is shown an ordinary double hanger 34 the wheels of which run in a well known form of metal track 35, while in Figs. 1, 2 and 3, the upper end of each side bar is equipped with roller devices 36 that bear upon a comparatively light guide-rod 37.

By my invention a dealer is enabled to promptly fill orders for ladders for stores or shops, regardless of the size or style of ladder desired or required, for it will be evident from the foregoing description that the various pieces or parts necessary to be employed in the construction can be so varied in relation to one another as to provide ladders adapted to many different situations. The only alteration in the articles as supplied by the manufacturer that will be necessary will be the shortening at times of some of the side bars by cutting them, and devices for such cutting are ordinarily in the possession of dealers in such articles as these ladders.

I do not herein claim broadly a ladder having its side bars formed of slotted tubes into the slots of which the step-supporting means extend, as such invention, in its broadest aspect, is claimed in my pending application, Serial No. 438,627, filed June 15, 1908.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a ladder, the combination with a side bar comprising two pieces and means for connecting said pieces end to end, said connecting means having a rotatably-adjustable member for permitting said two side bar pieces to be arranged at an angle to each other.

2. In a ladder, the combination with a side

bar composed of two pieces and means for connecting said pieces end to end, said connecting means comprising a clamp-member fitting against each piece of the side bar, another clamp-member extending across the joint between the two pieces of the side bar and against the outer faces of said first-mentioned clamp-members and adapted to engage therewith, and bolts passing through said clamp-members into the two pieces of the side bar.

3. In a ladder, the combination with a hollow side bar composed of two pieces and means for connecting said pieces end to end, said connecting means comprising a clamp-member fitting against each piece of the side bar, another clamp-member extending across the joint between the two pieces of the side bar and against the outer faces of said first-mentioned clamp-members and adapted to engage therewith, a block in each piece of the side bar, and bolts passing through said clamp-members and side bar pieces and engaging said blocks.

4. In a ladder, the combination with a side bar composed of two pieces and means for connecting one end of a step with both pieces of the side bar, said connecting means having an adjustable member for permitting the separate pieces of the side bar to be arranged at an angle to each other.

5. In a ladder, the combination with a side bar composed of two pieces and means for connecting one end of a step with both pieces of said bar, said connecting means having a rotatably-adjustable member for permitting the separate pieces of the side bar to be arranged at an angle to each other.

6. In a ladder, the combination with a hollow side bar and a step, of a block in said side bar, a rotatably-adjustable clamping member, means for supporting one end of said step on said clamping member, and a bolt passing through said clamping member, side bar and block.

7. In a ladder, the combination with a hollow side bar and a step, of a block in said side bar, a two-part clamping device one member of which fits against the hollow side bar and the other member of which is provided with means for supporting one end of said step, and a bolt passing through said clamping device, said bar and block.

8. In a ladder, the combination with a substantially cylindrical side bar, of a clamp surrounding the same and adapted to be rotatably adjusted thereon, means for securing the said clamp to the side bar, a wheel-support adjustably connected with the clamp, and a wheel carried by said wheel-support.

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