

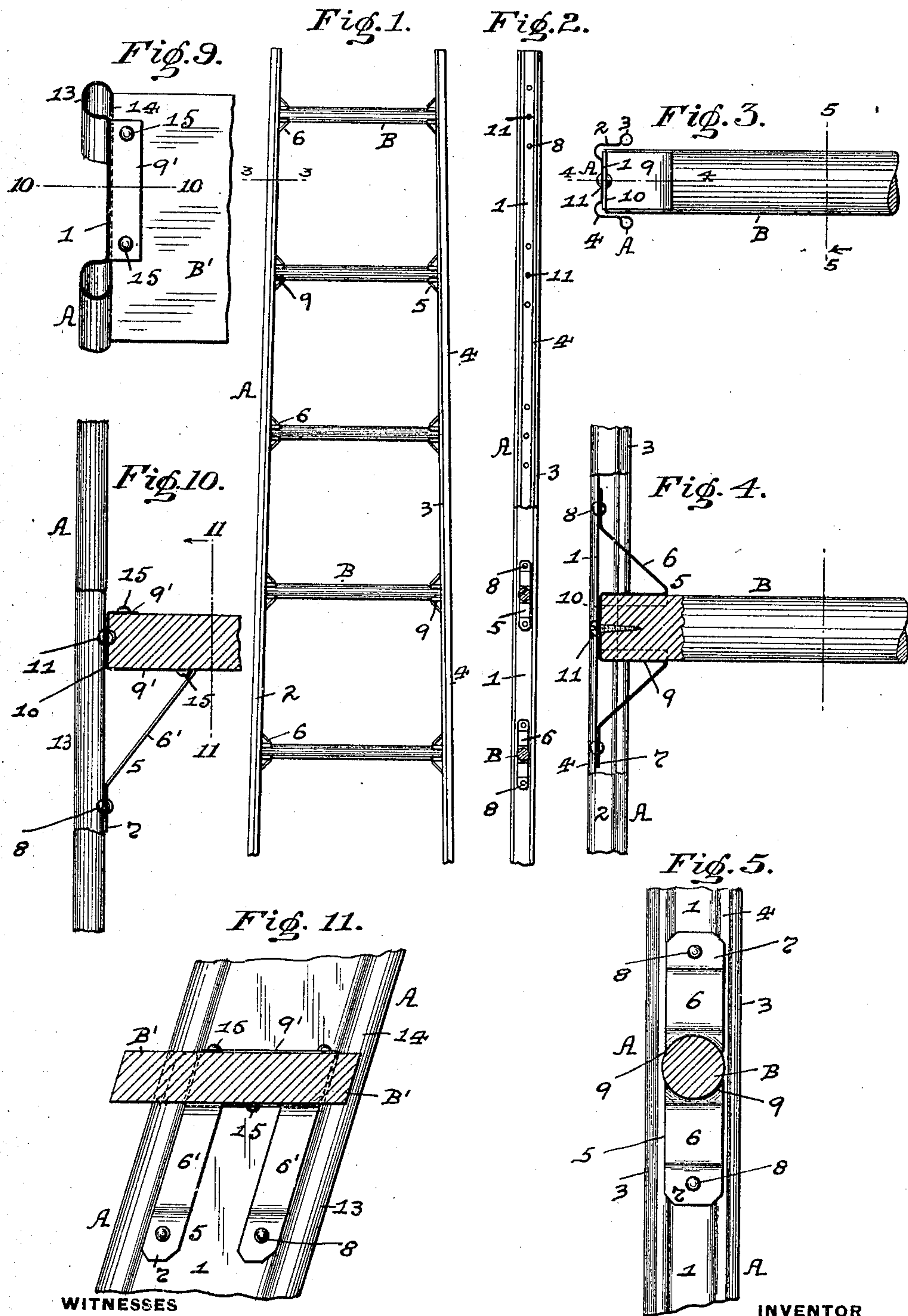
No. 872,165.

PATENTED NOV. 26, 1907.

H. ADLER.
LADDER.

APPLICATION FILED SEPT. 24, 1906.

2 SHEETS—SHEET 1.



WITNESSES
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2 SHEETS—SHEET 2.

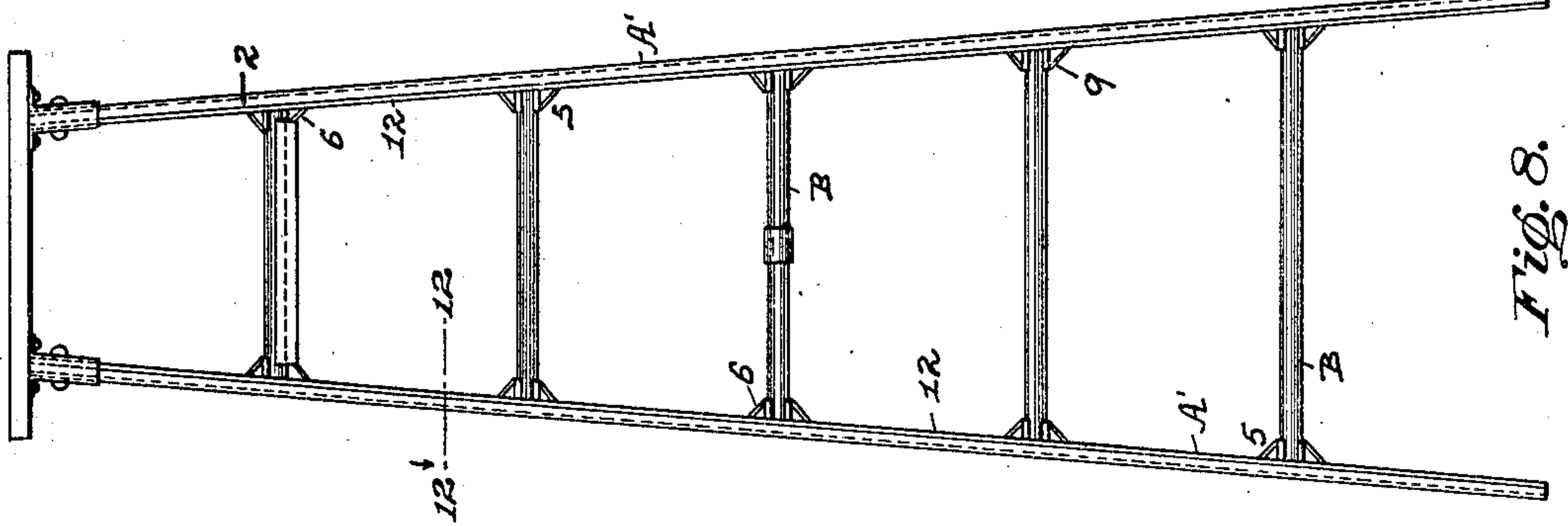


Fig. 8.

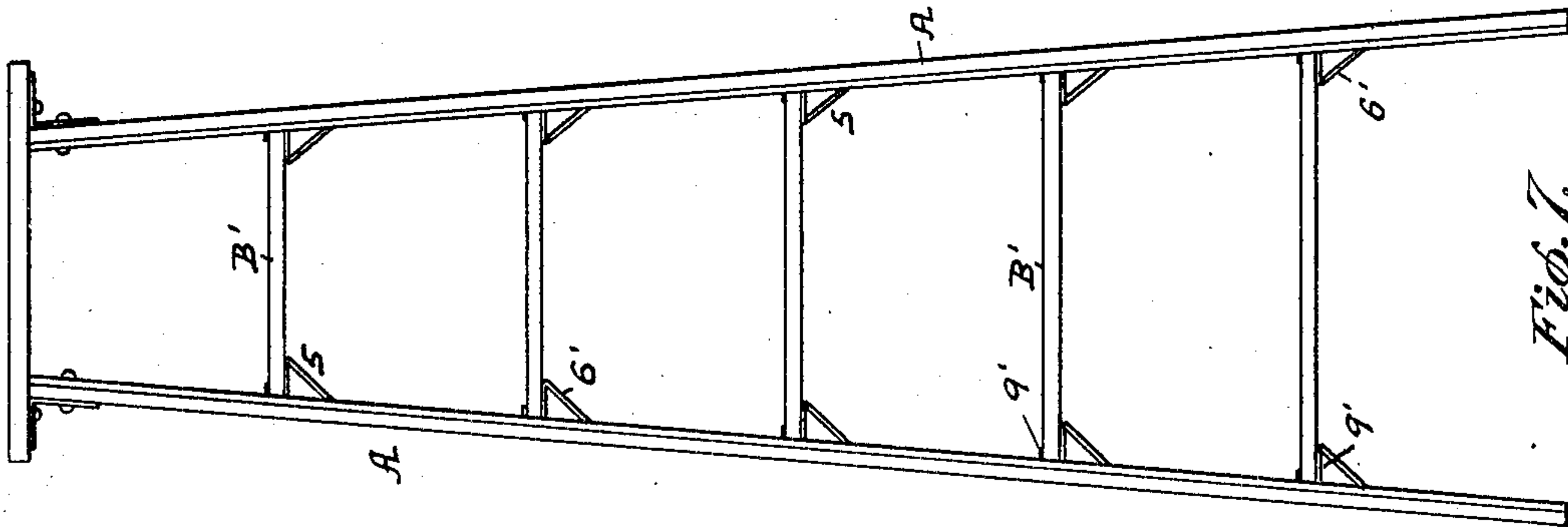


Fig. 7.

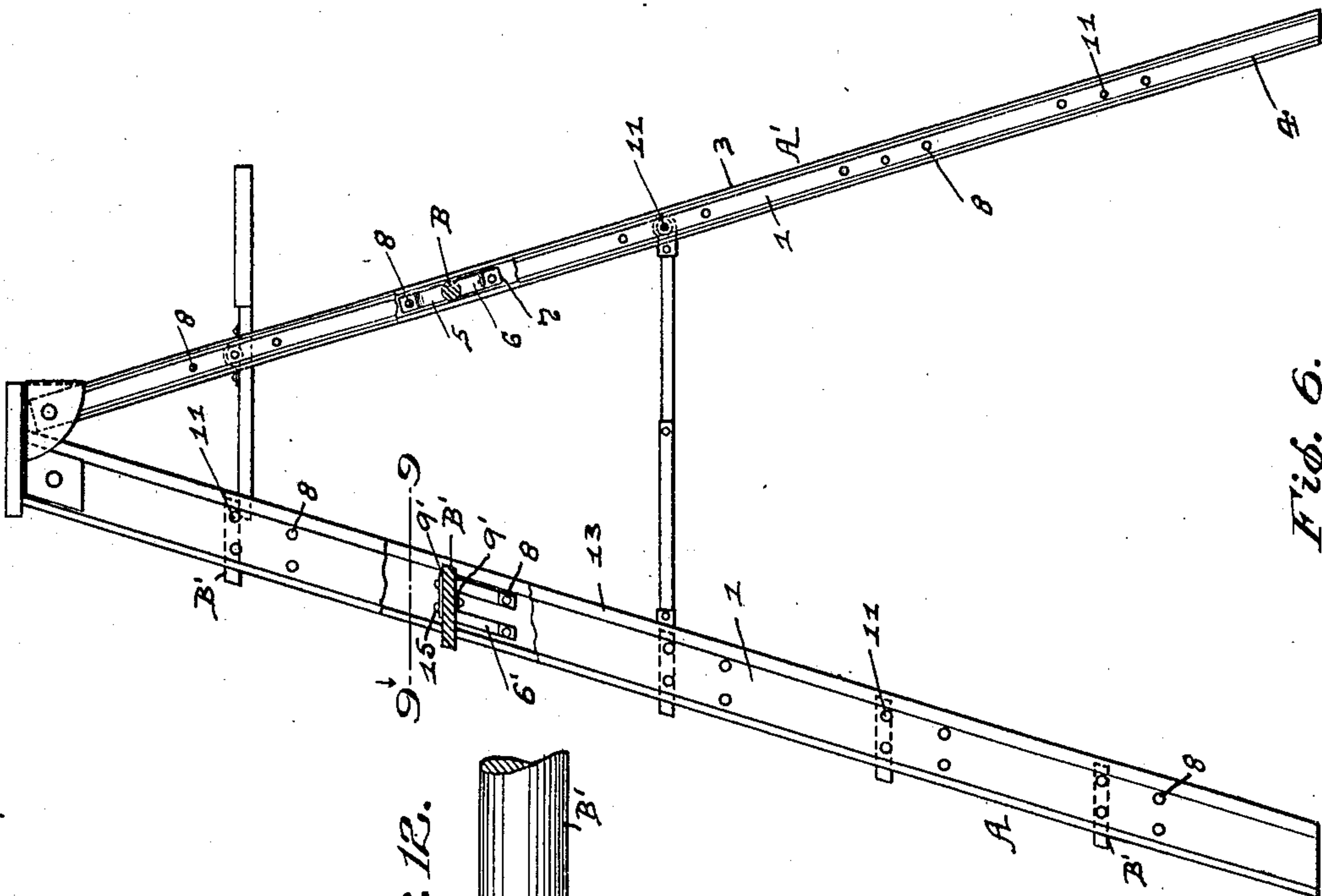


Fig. 6.

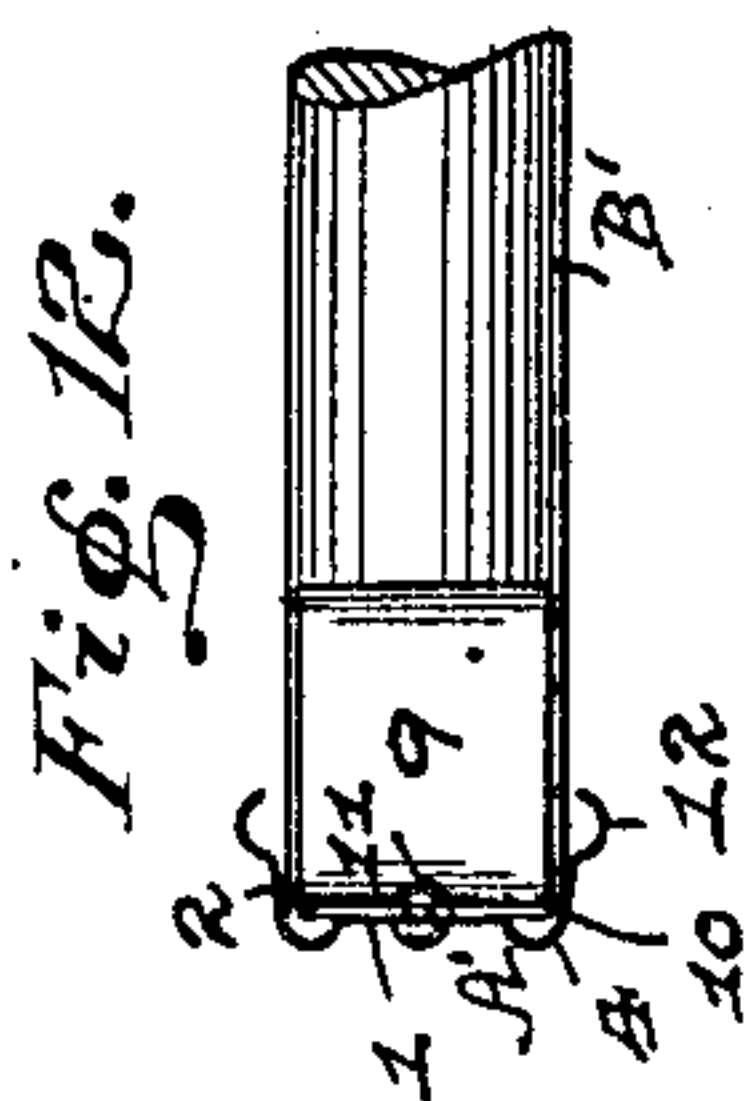


Fig. 12.

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UNITED STATES PATENT OFFICE.

HENRY ADLER, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO H. ADLER COMPANY, INC., OF PITTSBURG AND CARNEGIE, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

LADDER.

No. 872,165.

Specification of Letters Patent.

Patented Nov. 26, 1907.

Application filed September 24, 1906. Serial No. 335,861.

To all whom it may concern:

Be it known that I, HENRY ADLER, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Ladders; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to ladders and has special reference to such ladders in which the parts or some of the parts are formed of sheet metal.

The object of my invention is to provide a cheap, simple and efficient form of a ladder, and also one which will be extremely light, strong and durable, and can be easily handled and moved, as well as one which can be grasped without injury to the hands.

My invention consists, generally stated, in the novel arrangement, construction and combination of parts, as hereinafter more specifically set forth and described and particularly pointed out in the claims.

To enable others skilled in the art to which my invention appertains to construct and use my improved ladder, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a front elevation of a portion of a straightway ladder embodying my invention. Fig. 2 is a side elevation of the same and showing the same partly in section. Fig. 3 is an enlarged horizontal section through one of the standards of the ladder on the line 3—3 Fig. 1. Fig. 4 is a vertical section on the line 4—4 Fig. 3. Fig. 5 is a cross-section on the line 5—5 Fig. 3 looking in the direction of the arrow. Fig. 6 is a side elevation of a step ladder embodying my invention and showing some of the parts in section. Fig. 7 is a front elevation of the same. Fig. 8 is a rear elevation of such ladder. Fig. 9 is a horizontal section on the line 9—9 Fig. 6 looking in the direction of the arrow. Fig. 10 is a vertical section on the line 10—10 Fig. 9. Fig. 11 is a cross-section on the line 11—11 Fig. 10 and looking in the direction of the arrow. Fig. 12 is a horizontal section on the line 12—12 Fig. 8 looking in the direction of the arrow.

Like symbols of reference herein indicate like parts in each of the figures of the drawings.

As illustrated in the drawings, the ladder shown in Figs. 1 to 5, inclusive, is of the

straightway type and consists of the side standards or rails A and the treads, steps or rungs B. The side rails A are formed or stamped from a piece of thin sheet metal and of any desired or suitable length through suitable rolls or dies and comprise the medial or body portion 1 from each side edge of which are bent out the side flanges 2 which preferably extend out at substantially a right angle to said body portion 1 to form a channel shape and are provided with a rounded or tubular rib 3 at their ends. The ribs 3 aside from stiffening the side rails A and side flanges 2 thereof, also form rounded portions for being grasped by the hands when in moving and in handling the ladder. The rails A are also provided with the rounded or semi-circular ribs 4 which connect the body portion 1 of said rails with the flanges 2 and they extend outwardly from said body portion in order to provide for the further stiffening of said rails, and for the forming of rounded grasping portions at this point for the purpose above mentioned regarding the ribs 3.

Between the side rails A the ladder is provided with a wooden tread, step or rung B and said rung is of solid form and circular in cross-section, so that the ends thereof will fit within a supporting portion or clamp 5 for being connected to said rails, such clamp being formed from thin sheet metal and bent to shape in suitable rolls or dies. This clamp 5 as formed is provided with the angular bracing portions 6 bent out from each side of the same and has the flanges 7 bent out in a vertical line from their outer ends in order to be secured to the body 1 of the side rails A by means of the rivets 8. The inner ends of the bracing portions 6 connect with and are bent out from the rung supporting portions 9 on the clamp 5 which are bent on a rounded or curved line in order to fit on each side of and support the rung B within the same, and the outer ends of said portions 9 are bent from and connect with the end portion 10 on said clamp. This end portion 10 of the clamp 5 fits over and against the end of the rung B and a wood-screw 11 is adapted to pass through the body 1 of the side rail A and said portion 10 and take into said rung for the further supporting and securing of said rung within said clamp.

It will be obvious that the rounded wooden

step or rung B and clamp 5 may be used in the rear supporting standards or rails A' of a step ladder, as shown in Figs. 6, 8 and 12, and in such a case such rails can be formed from thin sheet metal to substantially the same shape as the rails A, although the ends of the side flanges 2 may be formed with the rounded bent-in portions or ribs 12 thereon, instead of the tubular ribs 3, for being grasped by the hands in moving or handling the ladder. These steps or rungs B and clamps 5 may be used to simply brace the rails A', or may extend throughout the length of said rails, as shown, in order to permit the rear portion of said step ladder to be used for ladder purposes, as is the front of the same. It will also be obvious that substantially such form of a clamp 5 can be used on the front of a step ladder for the supporting of the ordinary flat wooden rungs or steps B' on the side rails A, as shown in Figs. 6, 7, 9, 10 and 11, in which case the rails A can be made without being in channel form by having the ends of the body portion 1 thereof bent outward to form the tubular ribs 13, the ends of which are bent inward in order to form the straight portions 14 for coming in line with said body 1 and form a smooth inner surface. In this case the step supporting portions 9' are formed flat and are connected to the steps B' by the rivets 15, while the upper bracing portion 6 is done away with and the lower bracing portion is made into two parts, as at 6'.

Various other modifications and changes in the design and construction of my improved ladder may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

It will thus be obvious that by the employment of the rung support and fastening the rungs are greatly strengthened at their ends and will not weaken the rails when secured thereto, while at the same time the whole ladder structure will be very much stiffened thereby. The form of rails, rungs and supports used therefor will enable a light strong and durable form of ladder to be pro-

duced and one which can be made at a slight expense.

It will also be evident that the form of standards or rails used for the straightway ladder or for the front and rear of step ladders will permit the same to overcome all sharp and cutting edges so that a person using or handling the same in any manner will not cut, scratch or injure the hands in any way in grasping the same, while at the same time such rails will be greatly stiffened and strengthened by such a construction.

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

1. The combination with a rail, of a sheet metal rung seating bracket comprising a flanged end, a portion bent therefrom to form a brace and then back in the same vertical plane to form a seat and upwardly to cover the end of the rung, and a fastening passed through the rail and the bracket into the end of rung.

2. Ladder parts formed of sheet metal into channel shape providing lateral flat flanges and the edges of said flanges having rounded portions thereon, and a step or support fitting between said flanges.

3. Ladder parts formed of sheet metal into channel shape providing lateral flat flanges and the edges of said flanges having rounded rib portions thereon, and a step or support fitting between said flanges.

4. Ladder parts formed of sheet metal into channel shape providing lateral flat flanges and the edges of said flanges having rounded tubular portions thereon, and a step or support fitting between said flanges.

5. Ladder parts formed of sheet metal into channel shape providing lateral flat flanges and the edges of said flanges having rounded tubular rib portions thereon, and a step or support fitting between said flanges.

In testimony whereof, I the said HENRY ADLER have hereunto set my hand.

HENRY ADLER.

Witnesses:

J. N. COOKE,

WM. R. McCOMMON: