(No Model.)

R. D. HETRICK, W. T. WILSON & E. ROWE.

LADDER.

No. 502,967. Patented Aug. 8, 1893.

Fig 1

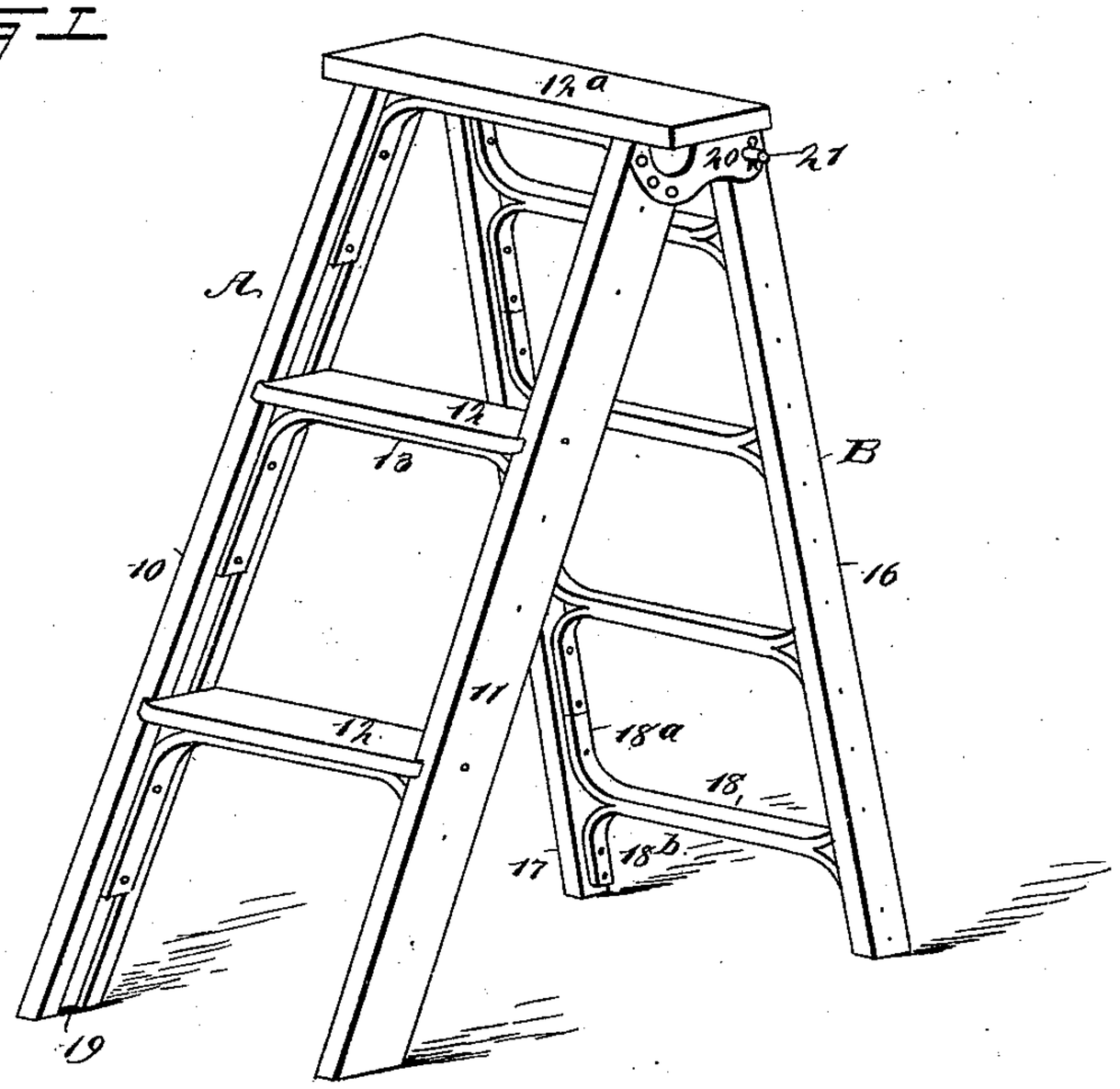

Fig 2

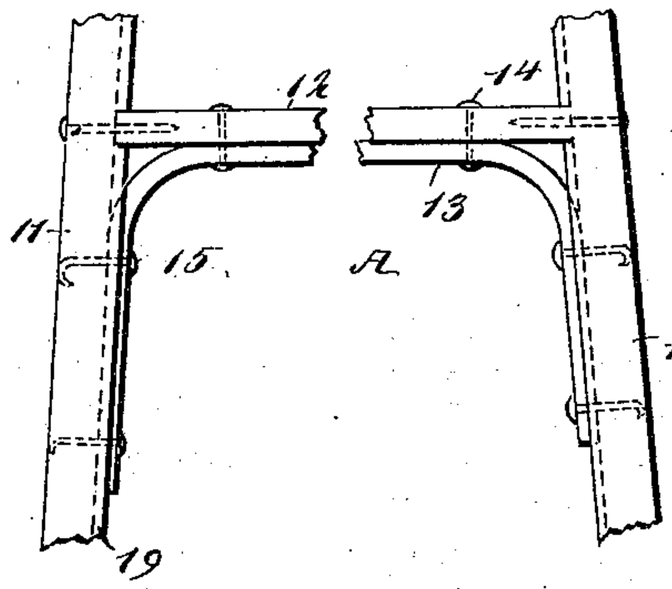

Fig 3

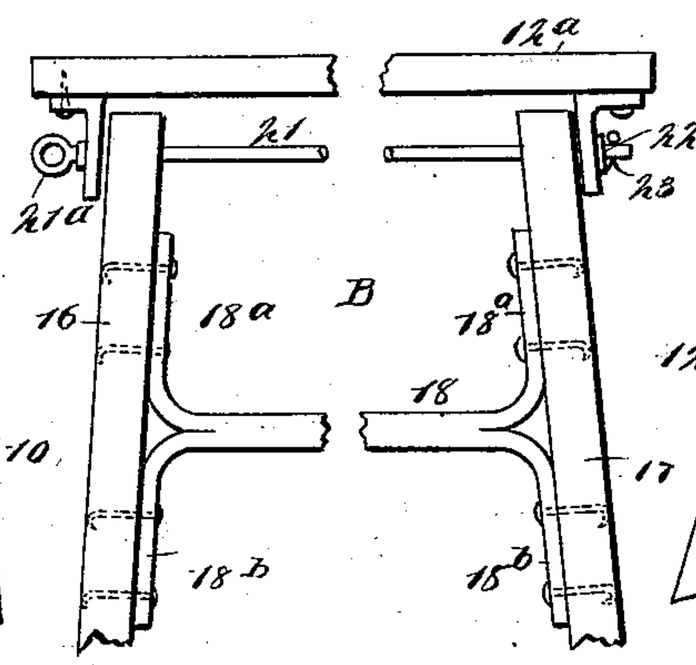

Fig 4

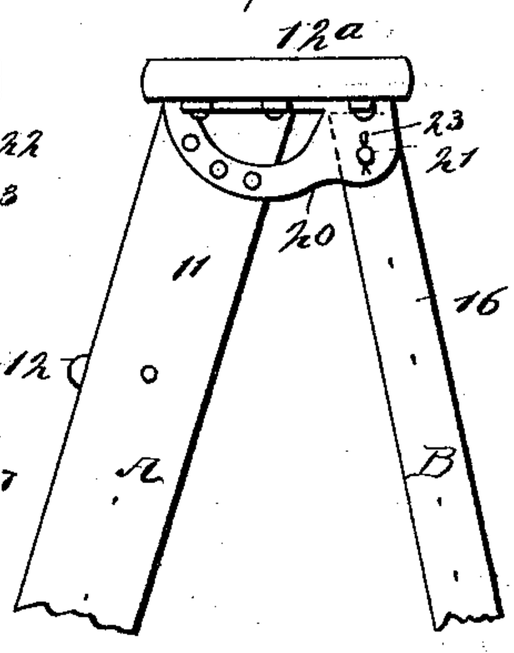

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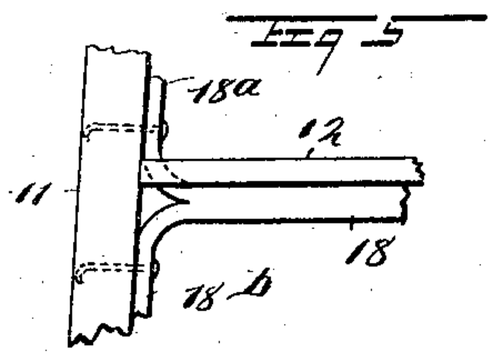
Fig 5



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LADDER.

SPECIFICATION forming part of Letters Patent No. 502,967, dated August 8, 1893.

Application filed April 12, 1893. Serial No. 470,027. (No model.)

To all whom it may concern:

Be it known that we, RUSSELL DICK HETRICK, WILLIAM T. WILSON, and EDWARD ROWE, of Indiana, in the county of Indiana and State of Pennsylvania, have invented a new and useful Improvement in Ladders, of which the following is a full, clear, and exact description.

Our invention relates to an improvement in ladders, and especially to an improvement in the construction of step ladders, and it has for its object to provide a step ladder which will be exceedingly strong yet very light, and also to provide each of the steps with a continuous brace, the brace extending from side to side of the ladder, and also engaging with the step.

Another object of the invention is to use in conjunction with the step ladder a back support, said support being provided with rungs whereby the step ladder may be used by two persons without one interfering with the other.

A further feature of the invention is to so construct the rear support of the step ladder that the rungs and braces therefor will be integrally made, and the braces of one rung meet and support practically the next rung.

It is another feature of the invention to so connect the back support with the step ladder that the two parts may be quickly and easily separated, and thereby provide two ladders each of which is capable of being used as such, and whereby further if desired the two parts may be quickly united to form an ordinary step ladder.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth and pointed out in the claims.

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

Figure 1 is a perspective view of the ladder constructed in accordance with our invention. Fig. 2 is a detail view illustrating the manner in which the step of the step ladder is supported by a continuous brace. Fig. 3 is a partial rear elevation, illustrating the manner in which the front and back sections of the ladder are connected. Fig. 4 is a partial side elevation, showing the connecting medium between two ladder sections; and Fig. 5 is a detail view illustrating a modified form of the step support and brace.

The ladder is made in two sections, a front section A and a rear or supporting section B. The front section comprises two side pieces 10 and 11, in which side pieces the ends of steps 12, are inserted, the steps being nailed, screwed, or equivalently secured to the sides. The steps are located at predetermined intervals apart, and the top step 12^a, is much wider than the others, extending over the rear edge of the side pieces and likewise beyond their outer side faces. Each step of the front section is preferably supported by a continuous brace 13. The brace is made of bent wood, hickory being ordinarily used; and each brace is bent essentially to a U or yoke shape, the body of a brace extending beneath the central portion of a step in engagement with the step, while the members of the brace extend downward one in engagement with the inner face of each side 10 and 11. The body of the brace is connected with the steps by means of rivets 14, screws, or like fastening devices, as shown in Fig. 2, while preferably the downwardly-extending members of the brace are secured to the sides of the front section of the step ladder by means of nails 15, the ends of the nails, when used, being clinched, as is likewise shown in Fig. 2; but any equivalent of a clinched nail may be used instead. It will thus be observed that each step is supported by a continuous brace; that is, it is continuous inasmuch as it extends unbroken from side to side of the step ladder section engaging with a step; but if in practice it is found desirable the braces may be made in two sections, but such construction would add to the cost of the ladder and would likewise require more time in fitting the parts together.

The rear or supporting section B of the ladder comprises also two side pieces 16 and 17. These side pieces are connected by a series of rungs 18. The rungs are preferably made with flat upper faces, and are also ordinarily constructed of hickory. At the end

of each rung the wood is split, forming two members 18^a and 18^b, which are carried in opposite directions, one upward and the other downward, and the vertical members 18^a and 18^b of each rung are secured to the sides 16 and 17 by nails, screws, rivets, or like fastening devices, and the lower member 18^b of one rung meets the upper member 18^a of the rung beneath it. Thus it will be observed that one rung serves to support the other, and the rungs instead of weakening the sides, as is ordinarily the case, tend to greatly strengthen them.

In the drawings, the front braces are shown as introduced into channels 19, made in the sides of the two sections. Where the grooves or channels are employed to receive the braces, they act also as braces and serve to stiffen the ladder; but we desire it to be understood that the channels or grooves may be omitted, and the attachment be made directly to the face of the sides of the sections.

It may here be remarked that instead of employing the U-braces for supporting and strengthening the steps of the step ladder, the steps may be supported by the rungs 18, shown in connection with the supporting section of the ladder; this application is shown in Fig. 5, and when such a rung is used as a brace, the rung proper will engage with the under face of the step, and one of the members of the rung will be passed through suitable recesses made in the step. It will thus be observed that both the front and rear sections may be used as ladders, and therefore two persons can work without inconvenience from the one step ladder.

The connection between the two sections is so made that they may be readily separated and either section may be used independently. To that end a bracket 20, preferably of angular construction, is firmly attached to the under projecting portion of the top step and the outer face of the sides of the front or step ladder section A. The bracket extends rearwardly the width of the top step, and its rearwardly projecting portion is provided with an aperture to receive a rod 21, said rod being passed through the apertures in the bracket and likewise through openings made in the upper ends of the sides of the supporting section B. One end of the rod is preferably provided with a head 21^a, while the other end, is adapted for example to receive a washer 22 and a cotter pin 23; but it will be understood that the apertured wall of the opening receiving the rod in one of the brackets may be tapped with a thread, and that portion of the rod passing through the said opening will be threaded; but for convenience the construction shown in the drawings is preferred.

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

1. In a step ladder, the combination with the sides and step of the U shaped brace, the bow of said brace being secured to the under face of the step and the members secured to the opposite side pieces of the ladder, substantially as shown and described.

2. In a ladder, the combination with the sides and the steps thereof, of an essentially U-shaped brace of bent wood, the body of the brace engaging with the under face of a step and its members with opposite faces of the sides of the ladder, and fastening devices securing the braces to the sides and the steps of the ladder, as and for the purpose specified.

3. In a step ladder, the combination, with the sides thereof and the step, of a continuous brace constructed of bent wood, secured to the sides of the ladder and to the under surface of the step, substantially in the manner herein set forth.

4. In a step ladder, the combination with the sides and the steps thereof, of continuous braces of bent wood, said braces engaging with the under faces of the steps and the sides of the ladder, and nails passed through the braces into the sides of the ladder, the pointed ends of the nails being clinched, substantially as shown and described.

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