L. W. RENTFROW.

JOINTED LADDER.

APPLICATION FILED AUG. 26, 1908.

925,598.

Patented June 22, 1909.

2 SHEETS—SHEET 1.

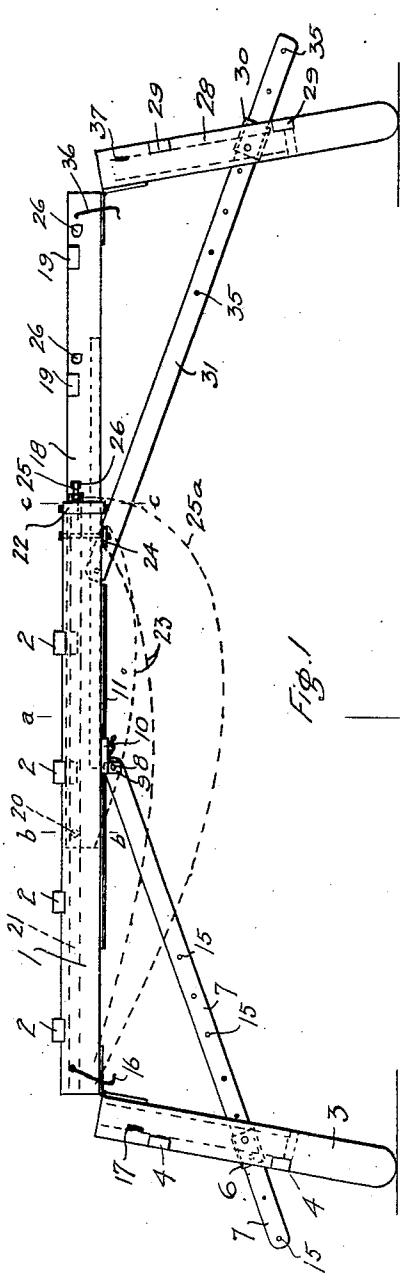


Fig. 1

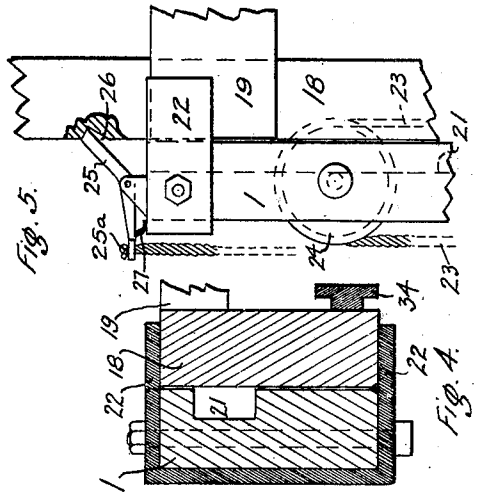


Fig. 5.

Fig. 4.

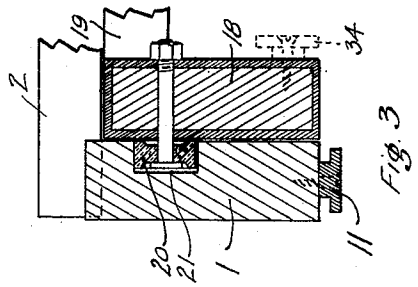


Fig. 3

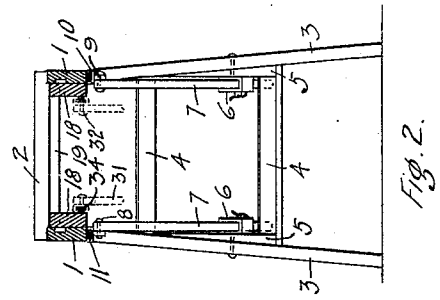


Fig. 2.

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2 SHEETS—SHEET 2.

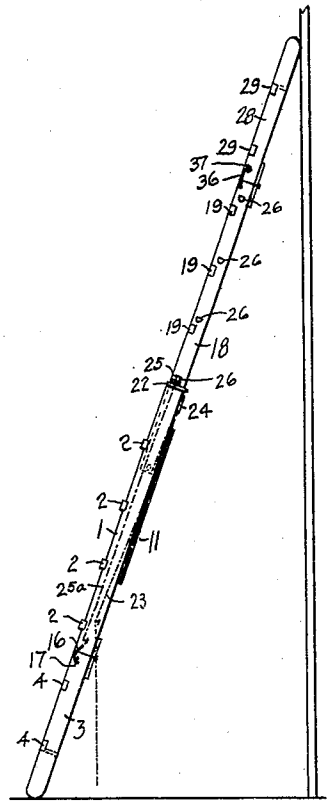


Fig. 6

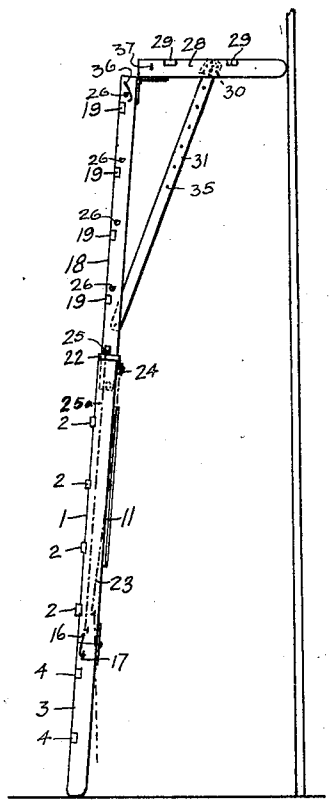


Fig. 7

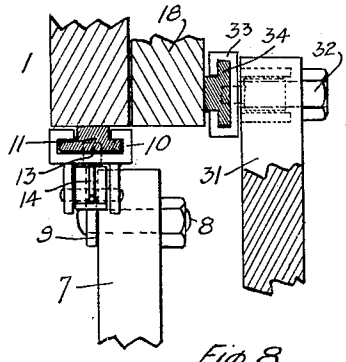


Fig. 8.

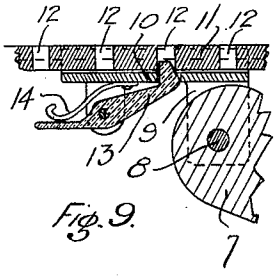


Fig. 9.

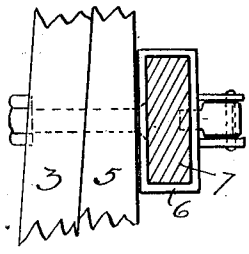


Fig. 10.

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LEWIS W. RENTFROW, OF TACOMA, WASHINGTON.

JOINTED LADDER.

No. 925,598. Specification of Letters Patent. Patented June 22, 1909.

Application filed August 26, 1908. Serial No. 450,386.

To all whom it may concern:

Be it known that I, LEWIS W. RENTFROW, a citizen of the United States of America, residing at Tacoma, in the county of Pierce and State of Washington, have invented certain new and useful Improvements in Jointed Ladders, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to ladders and especially to ladders designed for use under a number of varying circumstances, and has for its objects to provide a light weight ladder which can be folded up into small space for transportation; or used as an ordinary straight extension ladder; or folded to provide a platform of adjustable height for use in interiors by lathers, plasterers, paper hangers or other decorators; or folded so as to form a scaffold of adjustable height so that if two such ladders are provided a plank may be placed between them for use by exterior decorators, carpenters and others. I attain these objects by the devices illustrated in the accompanying drawing in which—

Figure 1 is a side view of my improved ladder when folded for use by interior decorators; Fig. 2 is a vertical cross-section thereof on the line *a*—*a* in Fig. 1; Fig. 3 is a vertical cross-section of one pair of side bars of the ladder on the line *b*—*b* in Fig. 1; Fig. 4 is a similar view on the line *c*—*c* in Fig. 1; Fig. 5 is a front view of a portion of one side of the ladder at the upper end of the outer or main side bar; Fig. 6 is a side view of the ladder used as an ordinary extension ladder; Fig. 7 is a similar view when used as an extension scaffold for exterior decorators; Fig. 8 is a vertical cross-section of the lower portion of one pair of side bars showing the brace-bars secured thereto; Fig. 9 is a longitudinal section of one of the castings which secure the brace-bars to the main side bars; and Fig. 10 is a front view of one of the sleeves which secure the brace-bars to the legs.

Similar numerals of reference refer to similar parts throughout the several views.

This ladder consists of two sections, one slidable within the other, each section being divided into two parts hinged together, and braced when they are set at an angle with each other, and forming the leg and body portions of the sections. The outer or main or lower section consists of the two side bars 1, joined together at suitable intervals by the steps or rungs 2. These rungs 2 are let down into the bars 1 a very short distance and are each securely fastened to both of the bars 1. The leg pieces 3 are hinged to the bars 1 and are slightly flared so as to give greater steadiness to the ladder and are jointed at suitable intervals by the rungs 4 which are let into the legs 3 until their outer surfaces are flush. The legs are provided with vertical pieces 5, inward of the flared pieces 3, to which are pivoted the sleeves 6 through which the brace-bars 7 pass.

The upper end of each of the two brace-bars is pivoted by a bolt 8 to the lug 9 extending out from the casting 10 (Figs. 8 and 9) which slides on the track 11 secured to the bar 1. The track 11 is provided with a series of holes 12 therein and the casting 10 has a latch or pin 13 adapted to enter any one of said holes under the action of the spring 14, thus holding the casting in any desired position. A similar set of holes 15 is provided in the brace-bar 7 into which a similar spring actuated pin mounted on the pivoted sleeve 6 engages so that when the pins in the casting 10 and sleeve 6 are engaging holes in the track 11 and brace-bar 7 respectively, the side bars 1 and the leg-pieces 3 are rigidly secured together at the desired angle. When it is desired that the pieces 1 and 3 be secured in a straight line (as in Figs. 6 and 7) they are secured together near their upper edge by any suitable releasable clasp as is indicated by the hook 16 engaging the lug or pin 17.

The inner or extension section of the ladder consists of the two side bars 18, joined together at the same intervals as the main section by the rungs 19 which are let into the bars 18 so that their upper surfaces are flush. The section thus formed fits between the bars 1 and below the rungs 2. The two sections are slidably joined together by a pair of wheels 20 mounted on the outer side of the side-bars 18 near their ends and engaging in the grooves 21 formed in the inner sides of the side bars 1 and running from end to end therein (see Fig. 3); the second point of connection is provided by the metal guides 22 secured to the upper ends of the bars 1 and extending above and below the side bars 18 (Fig. 4). The two sections are thus freely slidable relatively to each other to form an extension ladder. Their relative motion is controlled by a rope 23 secured to the lower end of the side bar 18 and passing upward therefrom over the pulley 24 to any

convenient fastening device on the main side bar 1; and also by a dog 25 mounted on the upper end of the bar 1 and adapted to engage any one of the notches 26, formed in the side of the bar 18, under the action of the springs 27. The notches 26 are preferably spaced so that the spacing of the rungs 2 and 19 shall be continuous. The dog is withdrawn from the notch by pulling on a cord 25[a]. The leg of the extension section consists of the leg pieces 28 hinged to the pieces 18 and joined by rungs 29. The pieces 28 are flared similar to the pieces 3 and are also provided with vertical pieces to which are pivoted the sleeves 30 which are similar to the corresponding sleeves 6 above described. The brace-bars 31 are pivoted by the bolts 32 to the castings 33 which slide on the tracks 34. The tracks 34 are secured to the inner sides of the two bars 18, near the lower edge thereof, and are provided with holes similar to holes 12 in the tracks 11. The castings 33 have spring actuated pins (similar to the pins 13) adapted to engage in any one of the said holes in the tracks 34, to hold the said castings in any desired position. The brace bars 31 are provided with holes 35 with which the spring-actuated pins mounted on the sleeves 30 engage, so that the brace-bars 31 hold the bars 18 and 28 rigidly at any desired angle. When it is desired that the bars 18 and 28 form a straight line (as in Fig. 6) a hook 36 engages a pin or lug 37, thus fastening their upper or outer edges together.

It is evident from the above description and from the drawings that my improved ladder has a greater range of usefulness than has the ordinary ladder at present in use and that in each of its several positions it is adjustable in height. In order to illustrate the invention I have shortened the sliding sections of the ladder some two feet (on the scale that the drawings are made) and yet the ladder here illustrated will provide a platform varying in height from 15 to 30 inches and in length from 60 to 120 inches; or a scaffold varying in height from 90 to 140 inches; or a straight ladder varying in length from 114 to 164 inches; and when folded up will form a package whose outside dimensions would be about 12 inches by 16 inches, by 54 inches, a size easily stored or transported.

Having described my invention what I claim is:

In an adjustable ladder the combination with a section comprising a pair of side bars, suitably joined together by rungs extending above the level of said bars, and having longitudinal grooves in their inner faces; a pair of guides secured to the ends of said side bars and extending inward therefrom; a section comprising a pair of side bars spaced so as to lie between the side bars of the first section and joined together by rungs whose upper surface is level with that of the side bars so that said section may pass under the rungs of the first section; a pair of wheels secured to the outer sides of the inner ends of the side bars of the second section and positioned to enter and slide in said grooves in the inner sides of the side bars of the first section; leg pieces hinged to the lower edges of the outer ends of said side bars, and having rungs joining them in pairs; rails secured to each of the side bars in each section; and brace bars adjustably secured to each rail and to the leg pieces whereby the angle between each section and the leg piece hinged thereto is controlled.

In testimony whereof I affix my signature in presence of two witnesses.

LEWIS W. RENTFROW.

Witnesses:
B. W. COINER,
B. V. PIERCE.