

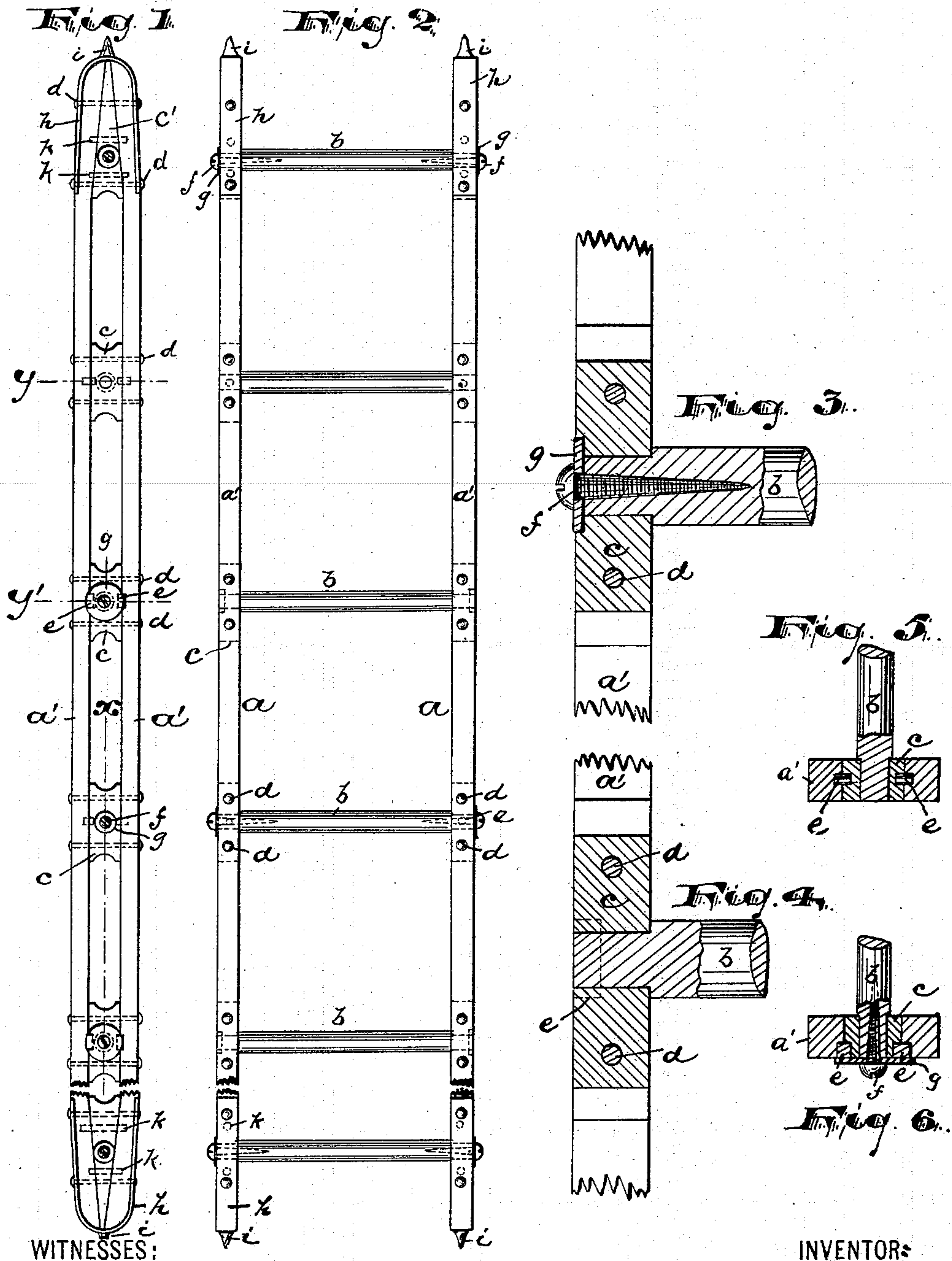
No. 615,512.

Patented Dec. 6, 1898.

J. A. WESTON.  
LADDER.

(Application filed Aug. 17, 1898.)

(No Model.)



WITNESSES:

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# UNITED STATES PATENT OFFICE.

JOHN A. WESTON, OF NEWARK, NEW JERSEY.

## LADDER.

SPECIFICATION forming part of Letters Patent No. 615,512, dated December 6, 1898.

Application filed August 17, 1898. Serial No. 688,757. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN A. WESTON, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Ladders; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to certain improvements in that class of ladders known in the market as "truss-ladders;" and the objects of the invention are to obtain greater lightness and at the same time increased strength and stiffness in ladders without materially increasing the cost of construction and to secure other advantages and results, some of which may be hereinafter referred to in connection with the description of the several parts.

The invention consists in the improved truss-ladder and in the arrangements and combinations of parts, all substantially as will be hereinafter set forth and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several views, Figure 1 is a side view of a portion of my improved ladder. Fig. 2 is a front view of the same. Figs. 3 and 4 are detail sections, on an enlarged scale, taken through line *x*, Fig. 1, and showing variations of construction; and Figs. 5 and 6 are detail views taken, respectively, through lines *y* and *y'*, Fig. 1, and showing further modifications of construction.

In said drawings, *a a* are the side rails of the ladder, each of which is in pairs of longitudinal sections *a' a'*, which may be straight and parallel or oppositely curved, so as to lie at or near the middle of the ladder farther apart from one another to increase the truss effect and add stiffness and greater strength to the ladder.

The rounds, rungs, or steps *b b* extend from rail to rail, being inserted at their extremities in perforations of certain round-supporting

blocks *c c*, arranged in series in the opening between the rail-sections. Said blocks *c* perform the double function of providing end bearings for the rounds or steps *b* and of holding the longitudinal rail-sections *a'* rigidly apart in proper relative position with respect to one another to secure the desired truss effect. These said blocks *c* fit in between said longitudinal sections and are preferably glued to the inner sides thereof. Said blocks are transversely bored or perforated and are firmly held in place by bolts, rivets, or screws *d d*, which pass through said blocks and rail-sections on opposite sides of the rungs *b*, above and below the same, as shown in outline in Fig. 1, to fasten said parts together. Said blocks are oblong in shape and present at their opposite longitudinal edges long bearings to the side sections, and so, when riveted or bolted as described, the bolts passing directly through both the block and two sections and their heads lying against the outer sides of the sections, the parts are held together with great firmness, and inasmuch as the blocks are of considerable length and are bolted near their opposite ends the tendency to distortion and straining the parts out of proper relation is greatly reduced. This tendency to distortion when weight is applied to the ladder is further reduced by breaking the longitudinal joints by inserted blocks, which I have termed "spline-blocks," which snugly fit into recesses formed in both the rail-sections and blocks *c* at coinciding points. Said spline-blocks *e e* greatly add to the strength and rigidity and render it unnecessary to tightly fit the bolts in their perforations, and should the glue loosen or be dispensed with the spline-blocks fitting both rail and block prevent a distortion. The grain of the spline-blocks *e*, which are preferably of wood, runs parallel with that of the blocks *c* and rail-sections *a'*, and thus said spline-blocks resist pressure or compression most effectively and hold the parts in rigid relation, so that the ladder, on being mounted, is firm and of little elasticity or springiness.

The spline-blocks *e e* may be disposed between the sides of the rails, as in Fig. 5, and thus be prevented from dropping out should they become loose, or they may be disposed



at one side, as in Fig. 6; but I prefer to inclose said spline-blocks, for the reason indicated.

The rounds, rungs, or steps may be inserted at their ends into the blocks *c* in any ordinary manner; but they are preferably held firmly in place by screws *f* and end washers *g*, the washers lying at the ends of the rounds and overlying the outer sides of the rails, as clearly shown in Fig. 3, to lock said rounds into said rails or the blocks *c* thereof. Said washers may be made of sufficient size to overlie the spline-blocks *e e* when said blocks are arranged at one side of the rail and hold the same against dropping out through shrinkage, as shown in Fig. 6.

At the opposite ends of the ladder the rail-sections *a' a'* may be held together in any suitable manner. I prefer the construction shown in Fig. 1, in which the blocks *c'* at the ends of the series are made wedge-shaped and the rail-sections are brought together at their ends to reduce the width of the rails. Metallic straps *h* are bent around the ends of the rails and are bolted in place by the bolts which hold the rail-sections and intermediate blocks *c* in place. At the bends in the U-shaped straps *h* the same are provided with lugs or spurs *i*, adapted to prevent the ladder from slipping. The said wedge-shaped blocks *c'* at the ends of the ladder may be held in place by the spline-blocks before described; but I prefer to give them the desired firmness by means of dowels *k*, which extend through the said blocks *c'* and at their opposite ends enter the rail-sections.

It will be evident that the dowels *k* could be used at any point on the ladder instead of the spline-blocks *e*, if so desired. It is also obvious that in the arrangement of parts shown in Fig. 6 the spline-blocks *e e* could be made of metal and cast integral with the washer *g*.

Having thus described my invention, what I claim as new is—

1. The improved truss-ladder, comprising rails *a, a*, each in longitudinal sections *a', a'*, a series of perforated blocks *c, c*, interposed at regular intervals between said rail-sections, rounds or rungs inserted at their extremities in the perforations of said blocks, and bolts or rivets extending from the outside of one section through the block, and through the other section, above and below the round or rung, and holding said sections and block together, substantially as set forth.

2. The improved truss-ladder, comprising rails *a, a*, each in longitudinal sections, centrally-perforated oblong blocks arranged longitudinally between said sections, bolts each passing directly through both the said blocks and said sections and headed on the outsides of said sections, and rounds or rungs having their end bearings on said blocks, substantially as set forth.

3. The improved truss-ladder, comprising longitudinal side rails open longitudinally with blocks *c, c*, fastened therein, bolts or rivets extending through said blocks and rails and fastening the same together, and rounds or rungs held in said blocks, by screws *f*, and washers *g*, said washers lying at the ends of the rounds and overlying the outer sides of said blocks, substantially as set forth.

4. The improved truss-ladder, comprising longitudinal side rails open longitudinally with blocks *c, c*, fastened between, rounds or rungs arranged in said blocks, bolts extending through the blocks and rails above and below said rounds, and spline-blocks fitted closely in said blocks and rails and breaking the joints therebetween, substantially as set forth.

5. The improved ladder, comprising side rails in longitudinal sections disposed apart from one another, a series of blocks holding said sections apart and supporting the rounds or rungs, the end blocks of the series being wedge-shaped, rounds arranged in said blocks and U-shaped straps and bolts or rivets fastening the sections and wedge-shaped blocks firmly together, substantially as set forth.

6. The combination with the sectional side rails and intermediate blocks centrally perforated, of rungs or rounds arranged in the perforations, rivets or bolts above and below said rungs or rounds and holding the rail-sections and blocks firmly together, and spline-blocks arranged at the sides of said rounds at the joints between the blocks and sections and breaking the joints therebetween, the said spline-blocks being between the inner and outer sides of said sections, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 4th day of August, 1898.

JOHN A. WESTON.

Witnesses:

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