

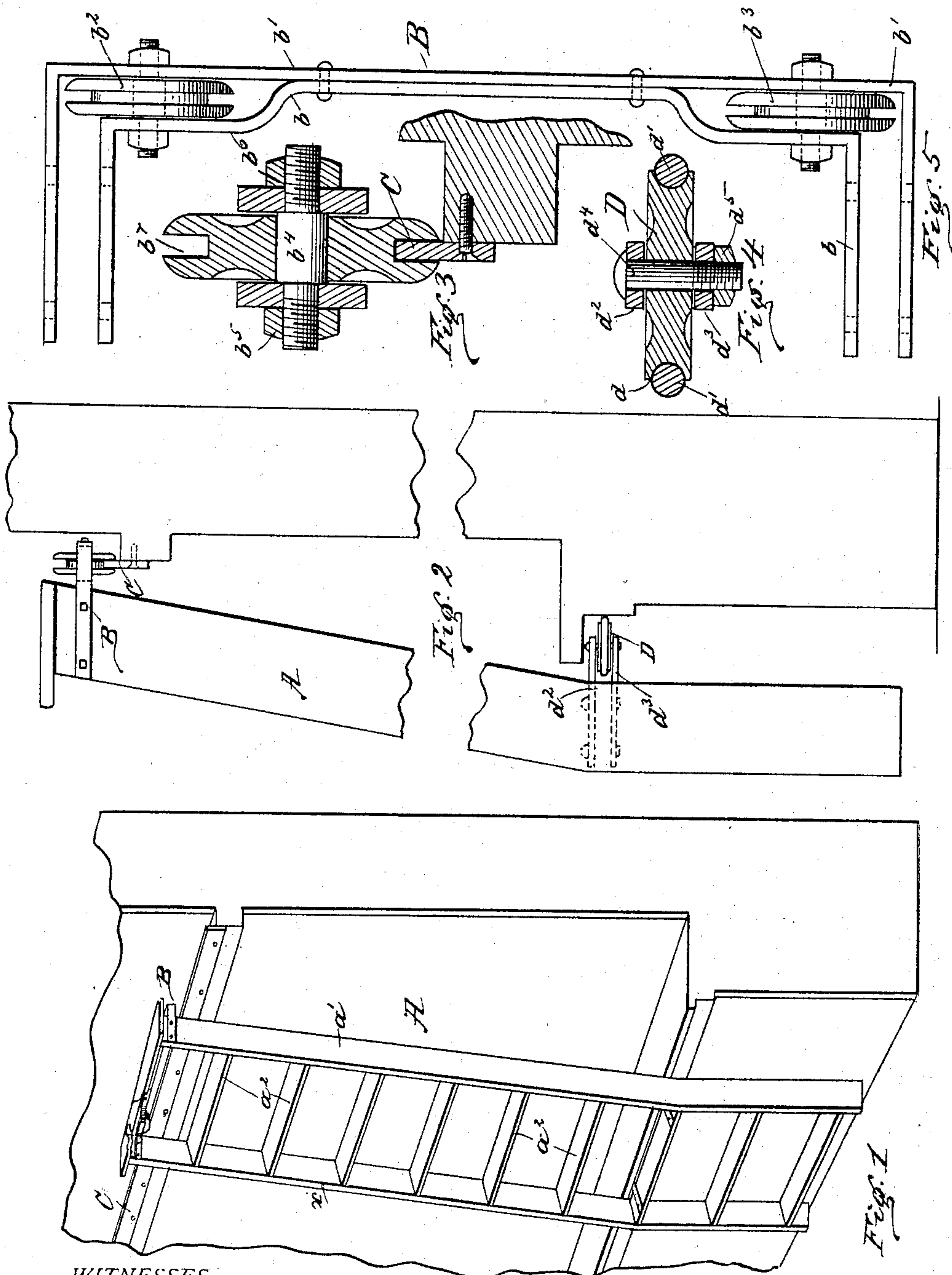
No. 610.234.

Patented Sept. 6, 1898.

W. E. HEFFNER.  
STORE SERVICE LADDER.

(Application filed Oct. 8, 1897.)

(No Model.)



WITNESSES

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# UNITED STATES PATENT OFFICE.

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OF SAME PLACE.

## STORE-SERVICE LADDER.

SPECIFICATION forming part of Letters Patent No. 610,234, dated September 6, 1898.

Application filed October 8, 1897. Serial No. 654,490. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM E. HEFFNER, a citizen of the United States, and a resident of the city of Canton, county of Stark, State of Ohio, have invented a new and useful Improvement in Store-Service Ladders, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to improvements in store-service ladders; and it consists of certain features of construction and combination of parts by which a more simple truck or carrier for the trolley-wheels is provided, which at the same time performs the function of bracing and holding firmly the side bars of the ladder, as will be hereinafter more fully described and claimed.

Figure 1 is a perspective view of a store-service ladder. Fig. 2 is a side view. Fig. 3 is a sectional view through the trolley-wheels. Fig. 4 is a sectional view of the lower wheel. Fig. 5 is a plan view of the upper trolley-wheel carrier and brace.

In the accompanying drawings similar letters of reference refer to similar parts.

A represents the ladder, which may be of any desired shape or form. I have shown it composed of two side bars  $a$  and  $a'$ , slightly bent inwardly at their lower ends and having attached thereto the steps  $a^2$ .

B represents the carrier frame and brace, which consists of an inner and an outer member  $b$  and  $b'$ , substantially U-shaped in form and bolted together in the center. The ends are bent at right angles to the main body and pass around and are attached to the upper ends of the side bars  $a$   $a'$  by means of bolts, which pass through both the outer member of the carrier-frame and the sides of the ladder and the inner member of the frame. The inner member of the frame  $b$ , at either end thereof, is bent so as to permit of the insertion of the trolley-wheels  $b^2$  and  $b^3$ , which are journaled between the inner and the outer members of the carrier-frame by means of a shaft  $b^4$ , screw-threaded upon its ends and adapted to be held in position between the

inner and outer members of the carrier-frame by locking-nuts  $b^5$  and  $b^6$ . The inner or bearing surface of the shaft  $b^4$  is larger than the screw-threaded portions which pass through the inner and outer members of the carrier-frame, and thus provides a large surface upon which the trolley-wheels run. The trolley-wheels  $b^2$  and  $b^3$  are provided with circumferential grooves  $b^7$ , adapted to conform in shape to the track C, which may be made of either wood or steel and is adapted to be attached to the shelving or casing. The lower wheels D (only one of which is shown) are intended to hold the ladder out from the casing and consist of two trolley-wheels, each having a circumferential groove  $d$ , in which there is secured a rubber tire  $d'$ , and the wheel is mounted between plates or bars  $d^2$  and  $d^3$ , one of which passes over the top of a step and the other under and are securely bolted to the step. Each trolley-wheel is journaled upon a headed shaft  $d^4$ , which passes through the supporting-bars  $d^2$  and  $d^3$ . The shaft  $d^4$  is screw-threaded at one end and is held in position by means of a retaining-nut  $d^5$ .

Heretofore in devices of this character the carrier-frame has consisted either of a single plate of iron attached to the under side of a step and carrying the trolley-wheels or of loops supporting the rod upon which were journaled the trolley-wheels, or the trolley-wheels were mounted upon brackets, and the upper end of the ladder, upon which all the strain of moving the ladder and supporting the weight necessarily falls, was not braced or otherwise supported against the strain. My device overcomes all these difficulties, and at the same time provides a simple, easily-constructed, easily-repaired, and cheap trolley-carrier and brace.

Having thus fully described my invention, what I desire to claim and secure by Letters Patent is—

1. In a store-service ladder, the combination with a ladder, of a carrier-frame consisting of an inner and an outer member securely bolted together, the ends thereof bent at right angles to the frame, and adapted to be bolted to the sides of the ladder, and trolley-wheels



journaled in the frame, substantially as described and for the purpose set forth.

2. A trolley carrier-frame for store-service ladders, consisting of two pieces of strap-iron substantially U-shaped, and bolted together, the free ends thereof adapted to be bolted to the inner and outer sides respectively of the ladder, and trolley-wheels journaled in the frame, substantially as described and for the purpose set forth.

3. The combination in a trolley-frame for store-service ladders, of two pieces of strap metal bolted together near their centers, and the ends thereof bent at right angles, the ends of the inner member adapted to pass between the sides of the ladder, the outer member to embrace the sides of the ladder, bolts passing through the inner and outer members and the sides of the ladder, and trolley-wheels

journaled in the frame, substantially as described and for the purpose set forth.

4. The combination in a store-service ladder, of a trolley-frame consisting of an inner and an outer member securely bolted to each other, the ends thereof bent at right angles and adapted to be bolted to the sides of the ladder, trolley-wheels journaled in the frame, and a rubber-tired trolley-wheel journaled in metallic straps or brackets adapted to be bolted to one of the steps of the ladder, substantially as described and for the purpose set forth.

In testimony whereof I have hereunto set my hand this 4th day of October, A. D. 1897.

WILLIAM E. HEFFNER.

Witnesses:

CHAS. R. MILLER,

CHAS. M. BALL.