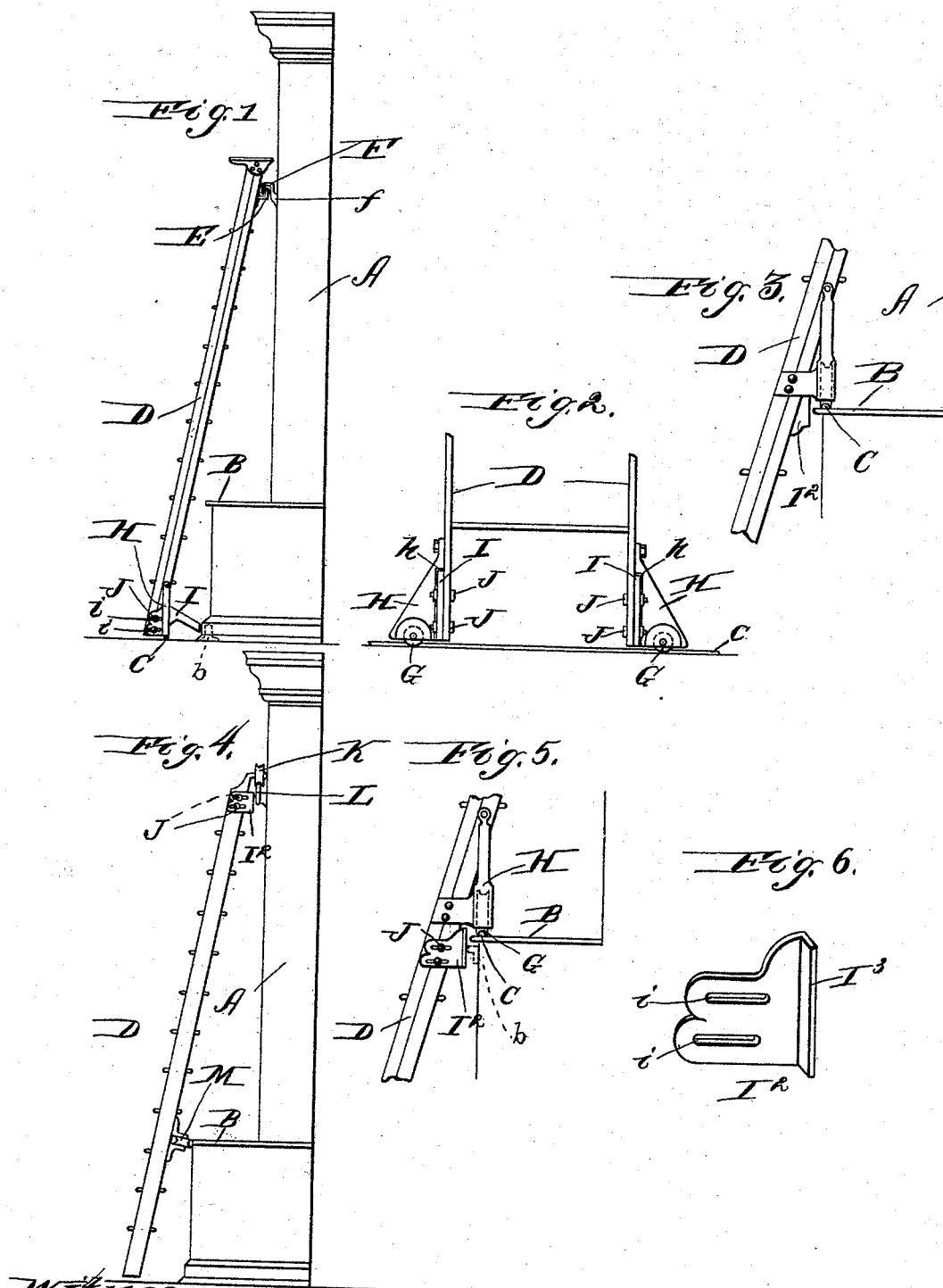


(No Model.)

E. M. MURRAY.
LADDER.

No. 499,028.

Patented June 6, 1893.



Witnesses:
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UNITED STATES PATENT OFFICE.

EDWARD M. MURRAY, OF CHICAGO, ILLINOIS.

LADDER.

SPECIFICATION forming part of Letters Patent No. 499,028, dated June 6, 1893.

Application filed November 9, 1892. Serial No. 451,421. (No model.)

To all whom it may concern:

Be it known that I, EDWARD M. MURRAY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Ladders, of which the following is a full, clear, and exact specification.

My invention relates more particularly to that class of ladders known as "store service ladders," and which is designed as an improvement on a device of this character shown and described in my United States Letters Patent, No. 442,531, issued December 9, 1890. With ladders of this kind, which are of course mounted upon wheels or rollers on a track, it is found that no matter whether the track be located along the floor or along the edge of the base shelf of the shelving so as to support the ladder from its lower portion, or whether the wheels or rollers and the track be situated at the top of the ladder so as to sustain or support it from above, it invariably happens that if the ladder strike even a slight obstruction on or in the vicinity of the track, or is given a slight side pull or push in shifting, it is derailed and entails considerable annoyance and difficulty to the user—it being of course understood that the tracks, especially when arranged on the floor or base shelf, are necessarily of but slight vertical extent.

The primary object of my invention therefore, is to limit the movement of the ladder transversely of the track, whereby, when the obstruction or force tending to derail the ladder is removed, the ladder will resume its original or normal position on the track.

With this end in view my invention consists in certain features of novelty in the construction, combination and arrangement of parts by which the said object and certain other objects hereinafter described are attained, which features are fully described with reference to the accompanying drawings, and more particularly pointed out in the claims.

In the said drawings, Figure 1 is a side elevation of the ladder supported on a track arranged along the floor and provided with my improvements, showing its relation to the shelving. Fig. 2 is a front view of the lower end of the ladder drawn to an enlarged scale. Fig. 3 is a side elevation of a portion of the ladder showing the arrangement of my im-

provements on that form of ladder which is supported upon the base shelf of the shelving. Fig. 4 is a view similar to Fig. 1, showing the arrangement of my improvements on that form of ladder which is supported or suspended from its upper end. Fig. 5 is a view similar to Fig. 3, but of a modification hereinafter described, and Fig. 6 is an enlarged detail perspective view of the adjustable stop shown in Fig. 5.

Like signs of reference indicate like parts throughout the several views.

Referring now more particularly to Figs. 1 and 2 of the drawings, A represents the shelving provided with the usual base shelf B, and C represents the supporting track arranged along the floor a suitable distance from the base shelf, as usual.

The ladder D, at or near its upper end, may be provided with suitable hooks E which are adapted to engage with a track or rail F arranged along the face of the shelving, and thus prevent inward or outward movement of the upper end of the ladder. This rail F may be of any suitable construction such as shown in my Letters Patent aforesaid, but it preferably consists of an inverted channel iron into which the hooks E project from below and which is provided along its rear side with suitable arms *f* for its attachment to the shelving.

The lower end of the ladder is supported upon the track C by means of grooved rollers or wheels G which are mounted in housings or brackets H secured to the sides of the ladder as usual.

Secured to each side of the lower end of the ladder is an inwardly projecting arm or stop I, whose inner end is arranged in close proximity to but without touching the base of the shelving, as shown in Fig. 1, so that in case the ladder should strike an obstruction tending to derail it, the arm or stop I, on the side of the ladder which is thrown inward, will come against the base of the shelving, and thus arrest the inward movement of the ladder before its supporting wheels have had an opportunity to entirely clear the track; and hence, when the obstruction or force tending to derail the ladder is removed, the wheels will resume their normal position upon the track,—it being understood, that as the lad-

der is inclined toward the shelving, its movement, when it encounters an obstruction, is invariably in the direction of its inclination. These stops I may be secured to the sides of the ladder in any suitable or convenient manner, but inasmuch as it is necessary that the ends of the stops should be in very close proximity to the base of the shelving, and yet without touching it, it is important that they should be capable of adjustment to and from the shelving in order that the construction may be applicable to ladders arranged at various distances from the shelving. To this end I provide the arms or stops I with longitudinal slots *i* through which, and the sides of the ladder, bolts J pass, whereby the stops are adjustably secured in place. The arms or stops I may be arranged between the brackets H and the sides of the ladder, as shown in Fig. 2, the inner sides of the brackets H being cut away or provided with upright openings *h*, for the passage of the stops.

In the form shown in Fig. 3, in which the track C is arranged along the edge of the base shelf of the shelving as usual, the stops which are shown at I², are simply secured to the inner edges of the ladder between the ladder and the outer edge of the base shelf, the inner edges of the stops I² being elongated, and arranged in a substantially vertical direction so as to insure their striking against the edge of the shelf B in case the ladder meets an obstruction tending to derail it. It is desirable, however, for the same reasons as pointed out with reference to the form of stop shown in Fig. 1, that the stops I² be capable of adjustment on the ladder to and from the base shelf. When the non-adjustable form shown in Fig. 3 is employed, it may be a simple block of wood or other suitable material properly secured to the ladder, but if the stop is to be made adjustable it is more conveniently constructed in the form shown in Figs. 5 and 6, which consists of a plate provided with longitudinal slots *i* for the passage of the bolts J, and having its engaging edge provided with an angular bend I³ which constitutes a broad bearing surface, and thus avoids marring the edge of the base shelf where it is struck or engaged by the stops.

In the form shown in Fig. 4, in which the ladder is suspended upon grooved wheels or rollers K from an over-head track L secured along the shelving, the adjustable stops may be of the form shown in Figs. 3 or 5, the only difference being that they are arranged at the upper end of the ladder in such a position as to strike against the track L when the ladder encounters any obstruction or force tending to push it inward off such track L. In this form, however, I prefer to provide the ladder near its lower end with supporting wheels M which are mounted in suitable brackets secured to the edges of the ladder and which have their bearing upon the corner of the base shelf or any suitable track arranged thereon.

It will, of course, be understood that in case the edge of the shelving should be of such a construction as to preclude its being utilized as a guard or rest for the stops I, a special rail such as shown in dotted lines at *b* may be secured to the floor or to the side of the shelving or other convenient part, parallel with the track C. It will also be seen that in each instance it is essential that the edge of the shelving or other fixed part of the store or building, utilized as a guard for the stops, must have a plain, straight or smooth surface presented to such stops; because otherwise the stops could not be arranged sufficiently close thereto to insure against derailment of the ladder without striking the projections or irregularities, whatever they might be, on the edge of the guard,—it being understood of course that the stops cannot be arranged at a great distance from the guard because it would then be necessary to employ a track of objectionable dimensions, and this would defeat the very purposes of my invention; and on the other hand, the stops should not be arranged normally in contact with the guard because of the friction that would result. To this end, the stops in Fig. 1 are so arranged as to strike the smooth or plain part of the base of the shelving; in the form shown in Figs. 3 and 5 they are arranged opposite the plain edge of the shelf B, and in Fig. 4 the brackets which support the track or rail are arranged wholly in the rear of the outer face of such rail, whereby the stops may be located in close propinquity thereto without striking such brackets.

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

1. In a store service ladder, the combination with the supporting track the ladder proper supported thereon, and a guard or rest arranged parallel with said track, and having a smooth, unobstructed edge of an arm or stop secured to the ladder and being arranged in close propinquity to but not touching the said edge of said guard or rest, substantially as set forth.

2. In a store service ladder, the combination with the supporting track and the ladder proper supported thereon, of adjustable arms or stops secured to the ladder and projecting into close propinquity to a fixed part of the store, or building, substantially as set forth.

3. In a store service ladder, the combination with the shelving, the supporting track and the ladder proper supported thereon, of slotted arms or stops arranged in close propinquity to the shelving, and set screws passing through said slots and adjustably securing said stops to the ladder, substantially as set forth.

4. In a store service ladder, the combination with the supporting track, the ladder proper supported thereon and a guard or rest arranged parallel with said track and having

a plain unobstructed edge, of stops having straight, vertical edges arranged in close proximity to, but not touching said edge of said guard or rest, substantially as set forth.

5 5. In a store service ladder, the combination with the track, for supporting the ladder against downward pressure of a guard or rest arranged parallel with and adjacent to said track and having a plain unobstructed edge,
10 the ladder proper leaning toward said guard and having means for supporting it against

downward pressure upon said track, and stops secured to the ladder in the vicinity of the said means for supporting it upon the track and being arranged to impinge the outer side of said guard or rest, whereby the said supporting means will be held against inward movement substantially as set forth.

EDWARD M. MURRAY.

Witnesses:

R. C. OMOHUNDRO,
F. A. HOPKINS.

Corrections in Letters Patent No. 499,028.

It is hereby certified that in Letters Patent No. 499,028, granted June 6, 1893, upon the application of Edward M. Murray, of Chicago, Illinois, for an improvement in "Ladders," errors appear in the printed specification requiring correction as follows: In line 110, page 2, the comma after the word "track" should be stricken out; line 111, same page, a comma should be inserted after the word "edge," and line 7, page 3, a comma should be inserted after the word "pressure;" and that the said Letters Patent should be read with these corrections therein to conform to the papers pertaining to the case in the Patent Office.

Signed, countersigned, and sealed this 20th day of June, A. D. 1893.

[SEAL.]

JNO. M. REYNOLDS,
Assistant Secretary of the Interior.

Countersigned:

JOHN S. SEYMOUR,
Commissioner of Patents.