(No Model.)

3 Sheets—Sheet 1.

M. CROISSANT, Dec'd.

P. CROISSANT, Executrix.

TROLLEY SUPPORT FOR LADDERS.

No. 526,438. Patented Sept. 25, 1894.

Fig. 1.

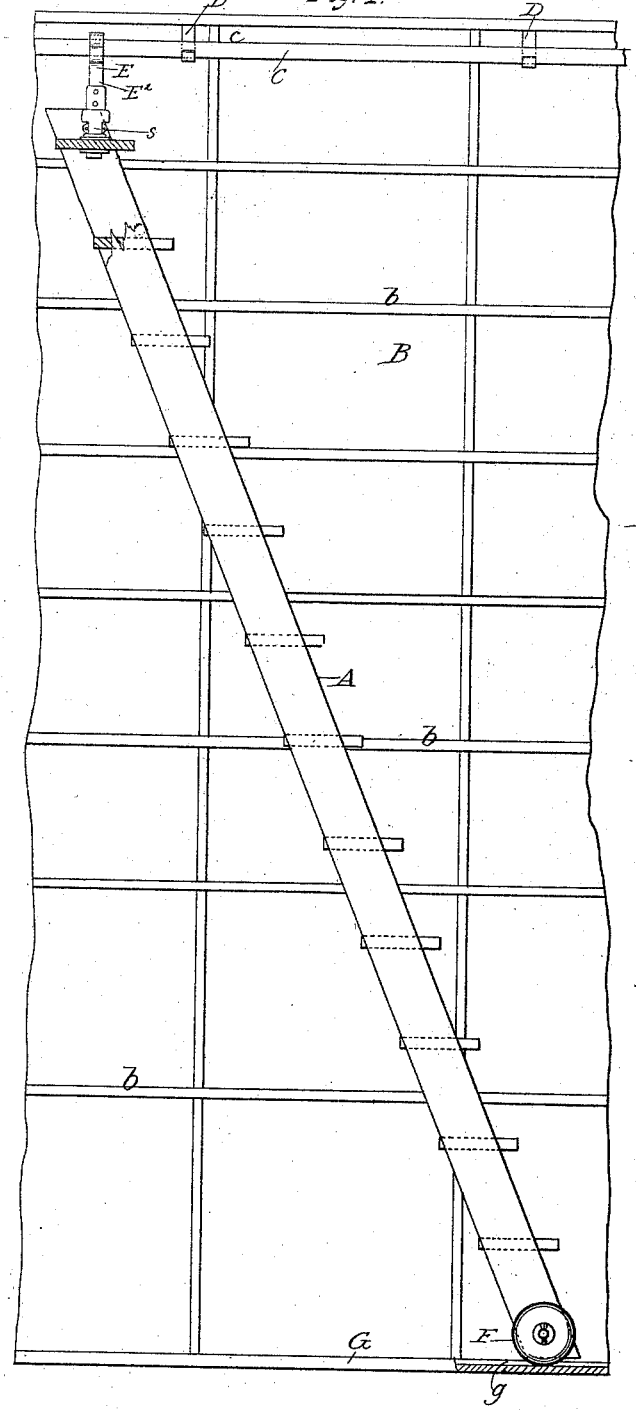
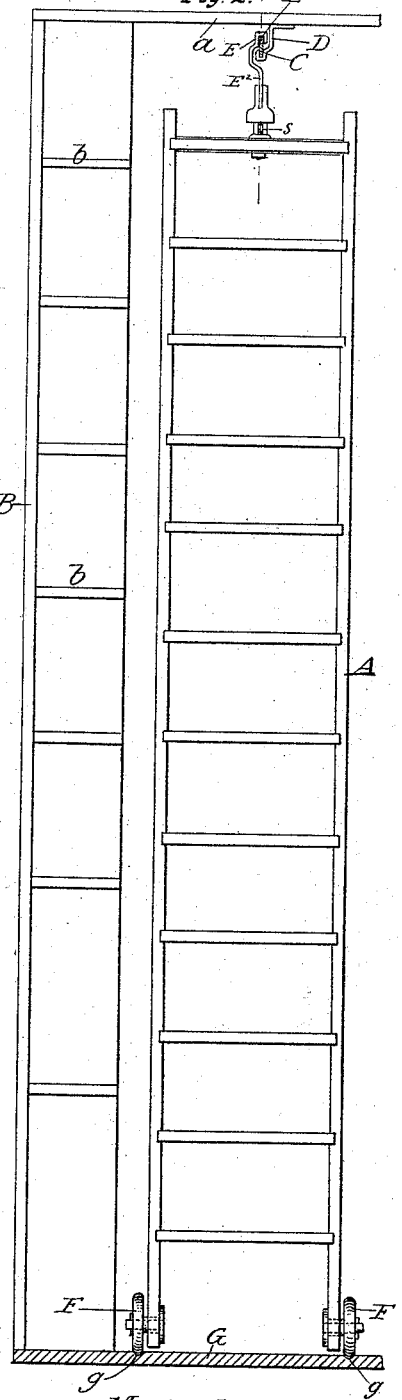


Fig. 2.



Witnesses.
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(No Model.) 3 Sheets—Sheet 2.

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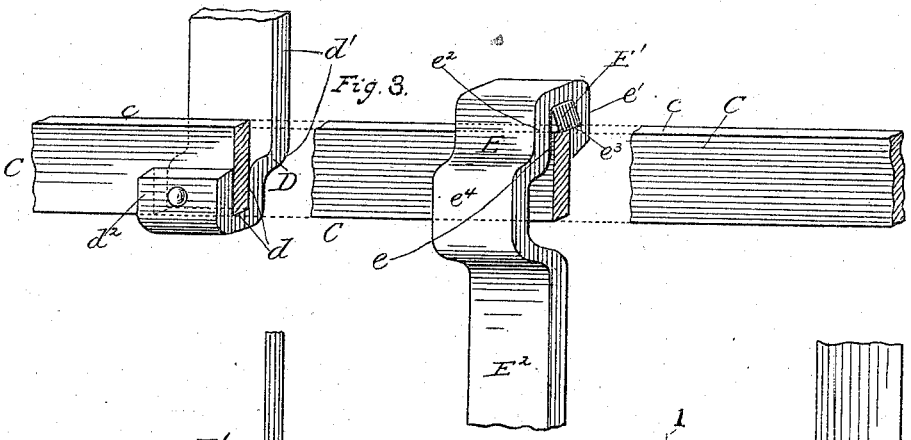

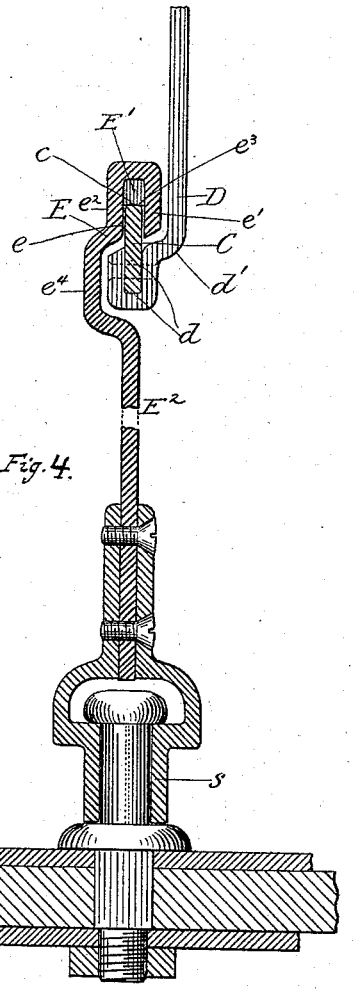

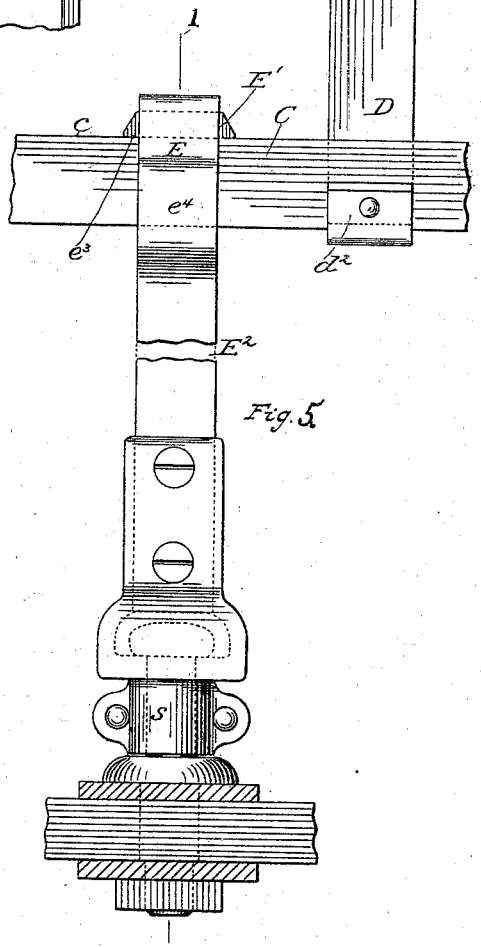

Witnesses.
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(No Model.) 3 Sheets—Sheet 3.

M. CROISSANT, Dec'd.

P. CROISSANT, Executrix.

TROLLEY SUPPORT FOR LADDERS.

No. 526,438. Patented Sept. 25, 1894.

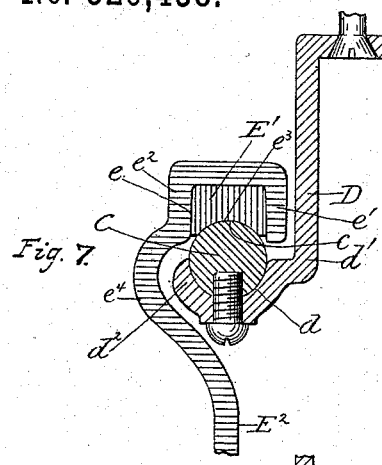

Fig. 7.

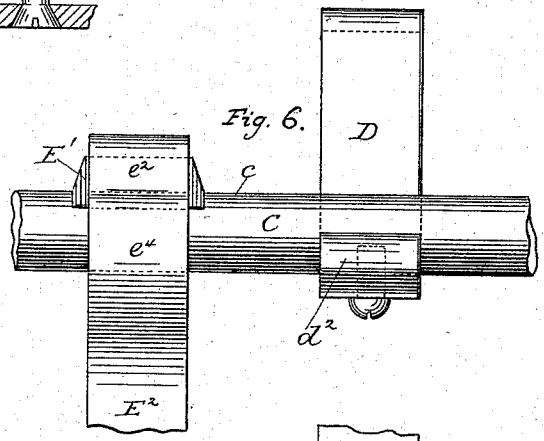

Fig. 6.

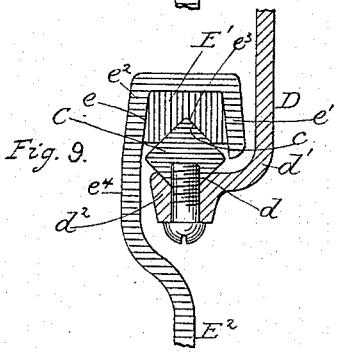

Fig. 9.

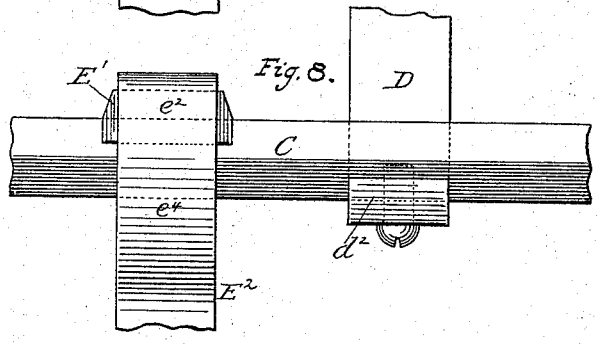

Fig. 8.

Witnesses.
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by Alex. Seekirk
Attorney.

UNITED STATES PATENT OFFICE.

MARTIN CROISSANT, OF ALBANY, NEW YORK; PHILOPPINA CROISSANT EXECUTRIX OF SAID MARTIN CROISSANT, DECEASED.

TROLLEY-SUPPORT FOR LADDERS.

SPECIFICATION forming part of Letters Patent No. 526,438, dated September 25, 1894.

Application filed May 4, 1892. Serial No. 431,762. (No model.)

To all whom it may concern:

Be it known that I, MARTIN CROISSANT, a citizen of the United States, residing at Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Ladders for Store-Service, of which the following is a specification.

My invention relates to improvements in ladders for use in stores or rooms provided with shelves, and it consists in the combinations of devices and elements hereinafter particularly described and specifically set forth in the claims.

The object of my invention is to provide a ladder, having carrying wheels supporting its lower end, with an improved form of carriage rail, or track, and a sliding carriage in which is provided a piece which is stationary in relation to said carriage and is calculated to be freely moved by sliding in contact with the upper surface of the said carriage track, or rail, without abrading the same, and thereby obviate the use of wheels and effect a suspension of the ladder from a single point on the carriage rail, or track, and rendering the said carriage noiseless in its movement and capable of being easily moved in either direction by an operator while standing on the ladder or on the floor. I attain this object by the means illustrated in the accompanying drawings forming a part of this specification, in which—

Figure 1, is a side elevation of a ladder embodying the improvements in this invention and illustrating the same in front of a case of shelves. Fig. 2 is a front view of the same when in front of the case of shelves. Fig. 3, is a perspective view, on an enlarged scale, of the carriage track or rail and the carriage itself. Fig. 4 is a section taken at dotted line, in Fig. 2, through a bracket, the carriage-rail, carriage, hanger from the said carriage, swivel and a step of a ladder. Fig. 5, is a face side view of the same. Fig. 6, is a front view of a modified form of bracket, rail and carriage. Fig. 7, is a sectional view of the same. Fig. 8, is a front view of another modification of form of the same parts, and Fig. 9, is a sectional view of the same.

The same letters of reference refer to similar parts throughout the several views.

A, Figs. 1, and 2 is a step ladder and B is a case of shelves *b b* in front of which the said step ladder is arranged with its lower end supported from the floor by carrying wheels, and its upper end suspended from the carriage rail or track C, by means of the carriage E embodying my improvements.

The carriage rail or track C consists of a plain bar of metal, preferably steel, and has its upper side edge or portion *c* made with a smooth dressed or polished surface. This bar of steel may be of flat bar form as shown in Figs. 3, 4 and 5, or with a round form as shown in Figs. 6 and 7, or with a square or diamond form as shown in Figs. 8 and 9, and in all cases whatever may be the form of the said rail or track C, its upper side portion *c* is to be smooth dressed or polished as above stated. This rail or track is supported by suitable brackets D D, secured at intervals with a fixed piece in the room, or from its ceiling, or with the upper end portion of the case of shelves, as may be convenient or preferred. The lower end of each of said brackets D is provided with a rail seat *d*, made in the form of a groove or recess having correspondence with the form of the lower side portion of the said carriage rail or track C, so as to serve as a substantial seat within which said track or rail may rest without liability of shifting. This seat *d* has connection with the body of the bracket by the offsetting portion *d'*, which latter is extended horizontally to hold the said carriage rail off to a suitable distance from the body of said bracket as to allow the carriage E to be freely moved on said rail from one end to the other. This carriage rail or track may be secured from moving longitudinally, by means of rivets, as indicated by dotted lines in Fig. 4, or by suitable screws as illustrated by full lines in Figs. 7, and 9.

E is the carriage, consisting of a piece made with any suitable form so as to comprise the recess *e* and the depending side portions *e' e²* which latter are extended downwardly below the upper edge or portion *c* of said carriage rail or track and terminate relatively at a

point a little above the upper portion of the rail seat d in bracket D, so as to allow said carriage to freely pass the same. This carriage is connected with the suspension-strap E^2 by the offsetting portion e^4, which is shown to be integral with one of the depending side portions as e^2 of said carriage and also with said suspension strap, and is calculated to clear the side portion d^2 of the rail seat d of the bracket when the carriage is moved longitudinally on its rail or track C. This carriage E is provided with a rail bearing piece E′ made of a suitable non-corroding substance and securely held in recess e of said carriage and between the side portions e' e^2. This rail bearing piece E′ may be in substance an alloy, such as gun or valve metal, or Babbitt metal or other alloy which may freely slide on the smooth or polished surface of the carriage rail or track C without abrading the surfaces of either the said rail or the said rail bearing; yet I prefer to make this rail-bearing piece E′ of a hard close grained or compressed wood, which is well saturated with tallow or other substance of lubricating character that will prevent heat or dryness of the atmosphere, or water or moisture from affecting the shape or dimensions of said piece, and at the same time give to its surface, seating on the said carriage rail or track, a condition of lubrication which will allow said carriage to freely slide, with but little resistance from friction, on the polished surface of its track when the carriage is carrying the ladder and a person thereon.

S is a swivel secured by its upper end to the strap E^2, depending from the carriage E, and by its lower part secured to the upper step of the ladder A, as illustrated in Figs. 1, 2, 4 and 5. This swivel may be of any suitable form of construction which will allow the ladder to be turned in either direction so that its foot end may be to the left or to the right of the carriage E as may be advantageous for an operator when getting on or off the same.

The lower and supporting wheels F, are mounted on suitable spindles secured to the lower ends of the side pieces of said ladder, and are guided by suitable ways g g preferably in the form of grooves provided in parallel lines in the floor.

By my above described improvements, the carriage, from which the upper end portion of the ladder is suspended, is provided with a track or rail of suitable stiffness and cheap in form of its construction, and provided with a polished hard upper surface by which the carriage is made capable of sliding freely and noiselessly on said surface without abrasion of the parts in sliding contact, and also obviating the use of lubricants applied outwardly from time to time to the surfaces of either the rail or the rail bearing piece, forming a part of the said carriage E, and liable to drop on persons below. Further, the above described track or rail C and carriage E permit the ladder to be readily removed from suspension from said rail by simply raising the ladder, endwise, to a short distance for freeing the said carriage from a holding with said rail or track, and may be as readily replaced without liability of the former becoming dismounted from the latter when the ladder is being operated, while the lower end of the ladder may be readily turned to the right or left as occasion may require for mounting.

The essential parts of this invention may be advantageously employed for suspending and carrying sliding doors, without necessitating any material change of the parts described and by simply omitting the use of the swivel.

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

1. The combination with the rail or track C, constructed as described, brackets D provided with rail seat d, and offset d', carriage E provided with recess e, offset e^4 and depending strap E^2, and the rail bearing piece E′ securely held in the said recess of said carriage, all substantially as and for the purposes set forth.

2. The combination with step ladder A, having its lower end mounted on carrying wheels, rail or track C having its upper side portion smooth dressed or polished and suitably supported relatively in front of shelves, of the rail bearing piece E′ of hard or compressed wood saturated with tallow or lubricating substance described, and bearing on the said smooth or polished side of said track or rail, carriage E provided with recess e receiving and holding said rail bearing piece and a swivel connecting the said ladder with said carriage, substantially as and for the purposes set forth.

3. The combination with the carriage rail or track C constructed as described brackets D D, provided with rail seat d and offset d', of the ladder A, having its lower end mounted on carrying wheels F, carriage E constructed as described, rail bearing piece E′ of a non-corroding substance secured in the recess provided in the lower side of said carriage and a swivel between said carriage and the upper end of said ladder, substantially as and for the purposes set forth.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

MARTIN CROISSANT.

Witnesses:

WM. BOMER,

ALEX. SELKIRK.