(No Model.)

G. A. MILBRADT.

ROLLING SHELF LADDER.

No. 470,499. Patented Mar. 8, 1892.

Fig. 2.

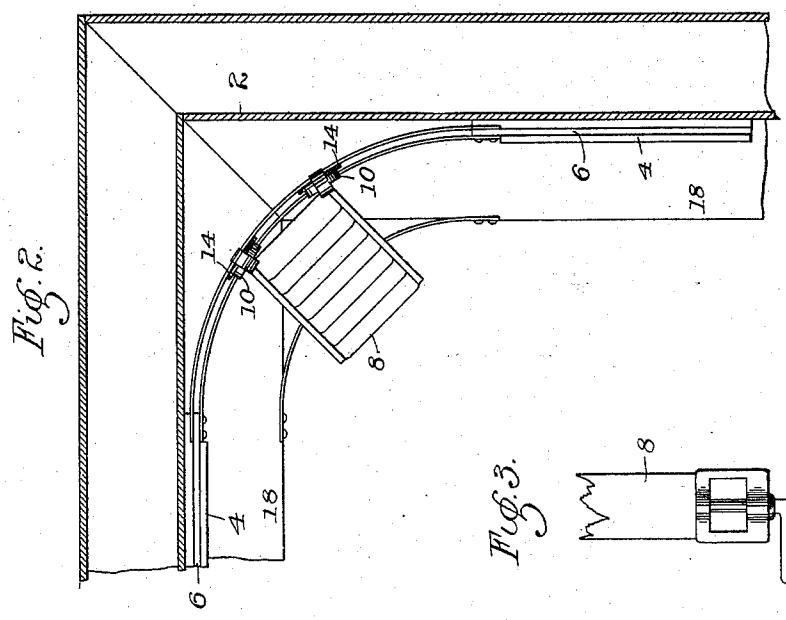
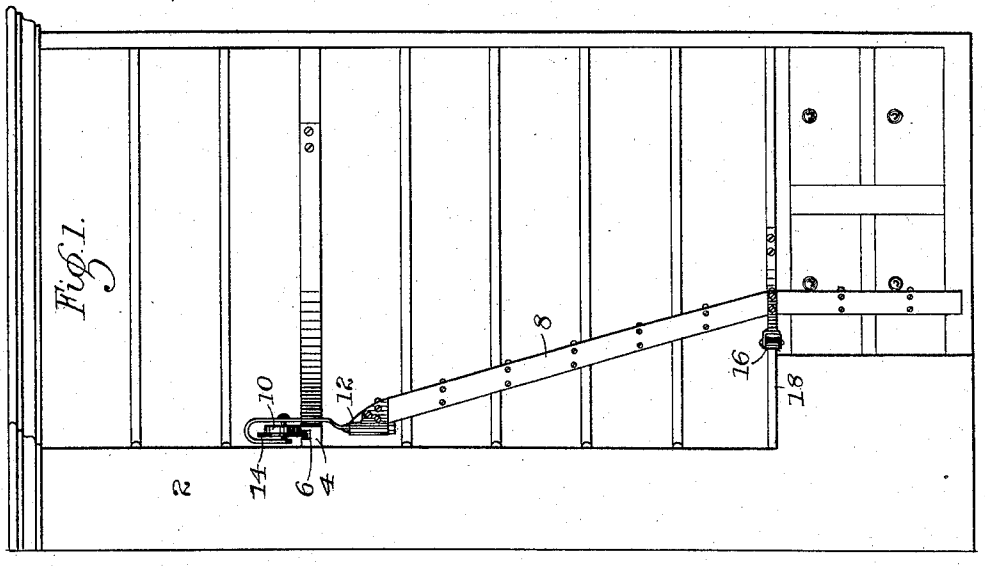


Fig. 3.

Fig. 1.



Witnesses.
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UNITED STATES PATENT OFFICE.

GUSTAVE A. MILBRADT, OF ST. PAUL, MINNESOTA.

ROLLING SHELF-LADDER.

SPECIFICATION forming part of Letters Patent No. 470,499, dated March 8, 1892.

Application filed April 20, 1891. Serial No. 389,581. (No model.)

To all whom it may concern:

Be it known that I, GUSTAVE A. MILBRADT, of St. Paul, Ramsey county, Minnesota, have invented certain Improvements in Rolling Shelf-Ladders, of which the following is a specification.

My invention relates to improvements in shelf-ladders such as are used in mercantile establishments for the purpose of furnishing convenient means for gaining access to elevated shelves at any desired point, the ladders being supported and adapted to roll along suitable tracks wherever needed for use, its object being to provide an improved type of ladder which can not only be operated along a straight track or wall, but also as readily moved around corners or angles, its wheels being so connected to the ladder that they will freely adapt themselves to any curves or irregularites in the track and run freely thereon without binding or cutting the flanges of the wheels or the sides of the track, this connection being an independent swivel for each wheel, whereby the wheels are thus made independently and automatically adjustable to the track.

To this end my invention consists in providing a suitable curved track or guide, preferably of wood, around the angle, and supporting the ladder upon pivoted or swiveled track-wheels provided with a broad tread to run upon the wooden track without undue wear and with a flange to enter a groove in the track, which serves as a guide.

My invention further consists in the construction and combination hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a side elevation of my improved ladder, shown in position on a curved track in an inner corner of shelving. Fig. 2 is a plan view of the curved track, showing the position of the ladder-wheels thereon; and Fig. 3 is a detail of a modified construction for bottom support for the ladder.

In the drawings, 2 represents the vertical shelving arranged in the ordinary manner, along the face and near the top of which is arranged a track 4, preferably of wood, with a flat top or surface, and a longitudinal groove 6.

8 is the ladder of the ordinary form, provided at its top with the flanged wheels 10, having the swivel connection 12, respectively, with the side bars of the ladder, the flange 14 of the wheels being adapted to run in the groove 6. The ladder is provided near its bottom with casters or rolls 16, adapted to bear against the base 18 of the shelving, or where there is no convenient support of that kind for the wheels I provide the casters 20 at the bottom of the side bars, adapted to bear upon the floor.

In Fig. 2 is shown a plan view of the curved track arranged in an inner angle and the position of the ladder and its wheels in passing around the same. The independent swivel connection for each of the carrying-wheels is also of great advantage in use upon an ordinary straight track, in that any slight turn or inequality in the track offers no obstruction to the wheel, since it freely turns to adjust itself to the same without the position of the ladder with reference to the shelving being changed, whereas with the carrying-wheels rigidly connected to the side bars of the ladder it is practically difficult to provide a perfectly-true track or to have the wheels in exact alignment at all times with each other, and consequently there is more or less friction and binding between the wheel-flanges and the track, which objections are obviated by my improved construction.

The advantage in having a hard-wood track for the wheels is that it is less expensive, and the wheels run thereon smoothly and almost noiselessly, which are important advantages.

I claim—

1. The combination, with the shelving 2, of the horizontally-curved track 4 arranged thereon, the ladder 8, the flanged carrying-wheels 10, connected by the swivels 12, respectively, with the side bars of the ladder and running upon said track, and the casters carried by and supporting the lower ends of said side bars, substantially as and for the purposes set forth.

2. The combination, with the shelving hav-

ing a suitable base, of the horizontal track arranged thereon, the ladder, the flanged carrying-wheels therefor running on said track and each having independent swivel connection with a side bar of the ladder, and supporting-casters carried by said ladder near its bottom, substantially as described.

In testimony whereof I have hereunto set my hand this 15th day of April, 1891.

GUSTAVE A. MILBRADT.

In presence of—
T. D. MERWIN,
A. MAE WELCH.