Dec. 23, 1952 H. G. MAHONEY 2,622,783

LADDER

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Fig.1

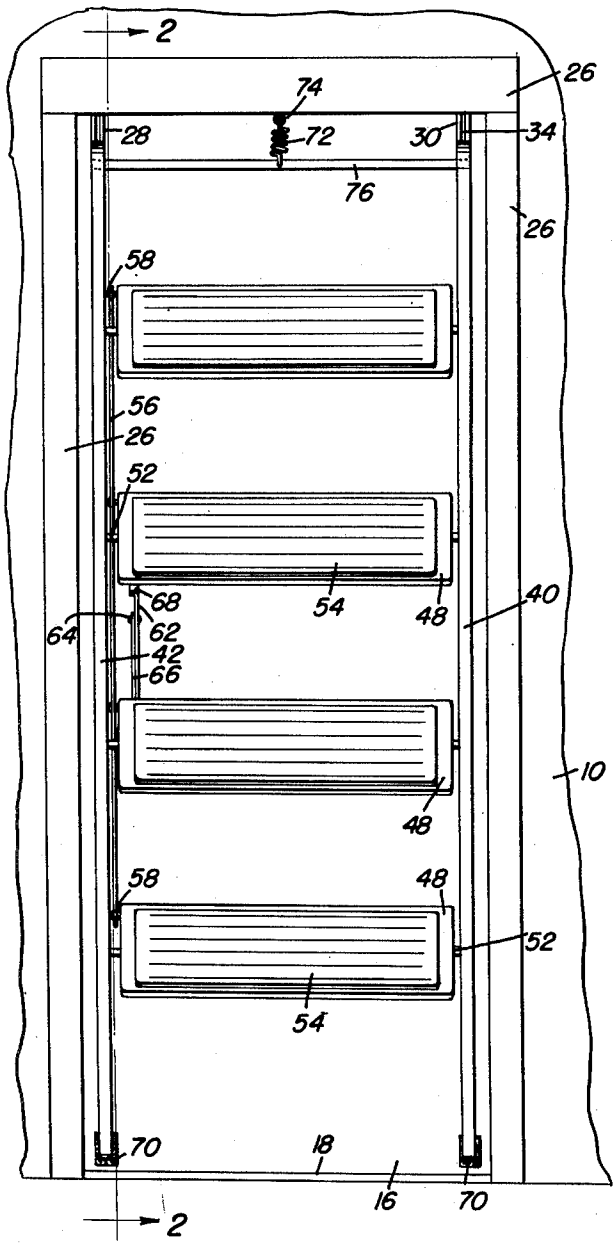
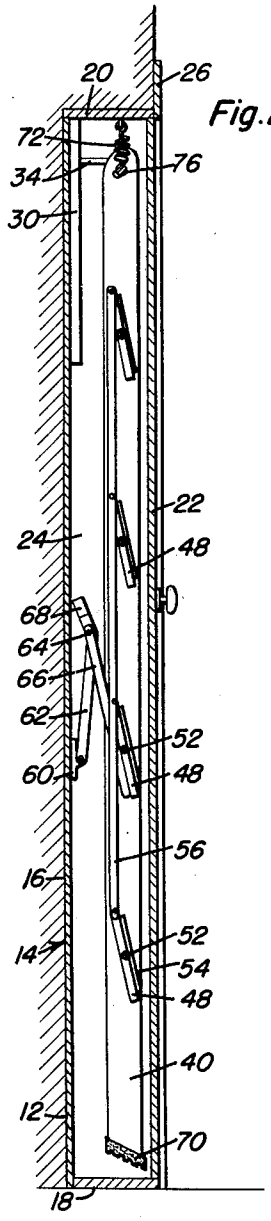


Fig.2



Henry G. Mahoney
INVENTOR.

BY Thomas A. O'Brien and Harvey B. Jackson
Attorneys

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Fig.3

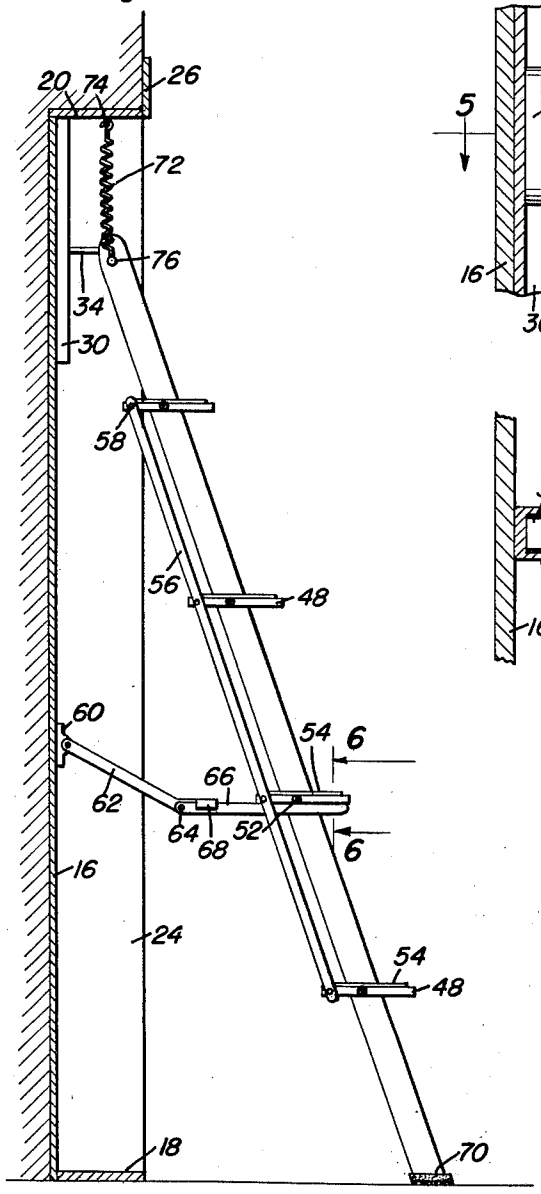


Fig.4

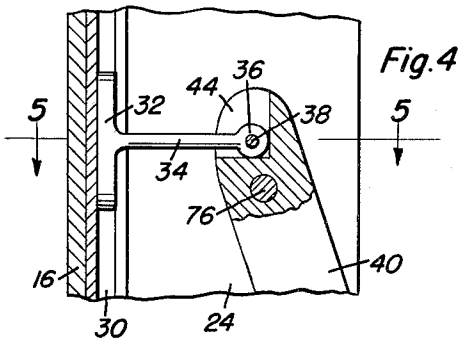


Fig.5

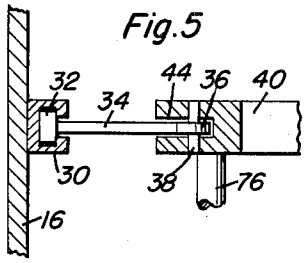
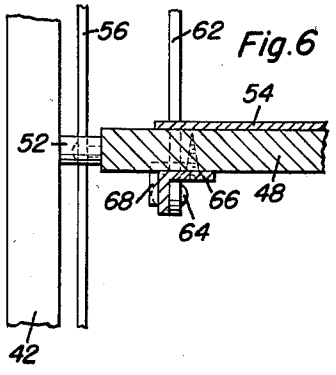


Fig.6



Henry G. Mahoney
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

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UNITED STATES PATENT OFFICE

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LADDER

Henry G. Mahoney, Little Rock, Ark.

Application December 13, 1950, Serial No. 200,526

1 Claim. (Cl. 228—45)

1

This invention relates to improvements in building fixtures.

An object of this invention is to provide a convenient means for reaching over-head shelves, thereby making it possible to utilize space in a dwelling which would otherwise be lost or accessible only at the inconvenience of the user.

Ancillary objects and features of importance will become apparent in following the description of the illustrated form of the invention.

In the drawings:

Figure 1 is a front view of the device showing it recessed in a wall, the door for the assembly being removed;

Figure 2 is a vertical sectional view taken on the line 2—2 of Figure 1, the door being illustrated in this figure;

Figure 3 is a vertical sectional view of the assembly in Figure 1, the ladder being shown in the extended position;

Figure 4 is an enlarged fragmentary sectional detail of construction showing the means of attaching the ladder rails in place;

Figure 5 is a transverse sectional view taken substantially on the line 5—5 of Figure 4 and in the direction of the arrows; and,

Figure 6 is an enlarged fragmentary sectional view taken on the line 6—6 of Figure 3 and in the direction of the arrows.

Various space in a dwelling is not normally used for any purpose because of its inaccessibility. An example is the space above a standard refrigerator in a kitchen of a house.

I have provided a ladder assembly which is adapted to be recessed in a wall 10 whereby it will not use any space which would ordinarily be used in other capacities. The ladder is adapted to be located adjacent to the normally unused space referred to above and any other normally unused space not necessarily in a dwelling, but in offices, stores, and other places.

The wall 10 is provided with a recess 12 in which a case 14 is disposed. This case includes a back panel 16, a bottom 18, a top panel 20 and an open front which is adapted to be closed by means of a standard door 22 hingedly connected to one of the sides 24. Trim, as at 26, may be used as found desirable.

There is a pair of horizontally spaced vertical rails 28 and 30, the rails being secured to the back panel 16 and being provided with passages opening forwardly thereof. These passages are adapted to accommodate elements 32 constituting shoes capable of sliding vertically in the rails. Each shoe has an arm 34 fixed to it and there

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is an eye 36 at the outer end of the arm. Pins 38 are passed through the eyes and also through aligned apertures in the upper ends of the ladder sides or rails 40 and 42. The upper end of each rail is provided with a notch (Figure 4) 44 so that the rails may be pivotally moved about the pins 38, which are aligned with each other, as an axis, thereby causing the rails and the treads 48 thereon to swing inwardly or outwardly of the recess 14.

Any number of treads may be used depending upon the height of the ladder. Each tread is connected to both rails by means of a pair of aligned spindles or a single spindle 52 extending entirely through or entirely below the tread and fastened thereto by standard means. As a safety feature the treads are provided with mats 54, the mats being preferably of a resilient material, for example rubber.

A connecting link 56 is attached by means of pivot pins 58 to each of the treads, the pivot pins 58 being located on one side of each tread and near the rear edge thereof. Accordingly, upon pivotal movement of one tread between the rails 40 and 42 each of the treads moves an equal amount.

There is a brace assembly operatively connected with one of the treads 48 and the back panel 16 of the casing is disposed in the wall recess. This assembly serves two purposes. The first function of the assembly is to hold the ladder rails 40 and 42 in the extended position as disclosed in Figure 3 and the second is to hold the steps against pivotal movement while the ladder rails are in such position to allow persons to climb upon their treads.

As noted in Figure 3, there is a bearing block 60 fixed by standard means to the back panel 16 and a link 62 is pivoted at one end thereto. The link 62 is pivoted by means of the pin 64 to an arm 66, preferably of angle iron construction, the pivot pin 64 passing through an aperture spaced slightly from the end of the link 62 opposite from that end which is pivoted to the bearing block 60. A stop 68, in the form of an angle, is fixed to the link 62 and adapted to contact the upper surface of the arm 66 when the ladder rails are pulled outwardly from the recess in the wall. Inasmuch as the tread 48 having the arm 66 fixed to it, cannot rotate because the upper surface of the arm is engaged by the stop 68. This tread cannot rotate about its spindle 52, nor can any of the others because of the presence of the connecting link 56.

In order to insure that the ladder will not slip,

antislip devices, for example rubber pads **70**, are fixed to the lower ends of the ladder rails **40** and **42** and are adapted to contact the floor near the wall recess. There is a means provided in connection with the ladder to facilitate the return of the ladder after it has been used. This means consists of a spring **72** which is attached by means of an eye **74** or other standard equipment to the upper panel **20** and also to a spacer **76** which is secured to the rails near the upper ends thereof. In operation the door **22** (Figure 2) is opened and the rails pulled outwardly from their position of rest. While the rails are being pulled outwardly the spring **72** opposes the movement thereof yieldingly inasmuch as due to the presence of the link **62** with its arm **66**, the rails must move downwardly as well as outwardly. During the downward movement of the rails, they are guides by the elements **32** which are operable in the tracks **28** and **30**.

However, at the same time that the rails **40** and **42** are being pulled outwardly the treads **43** are moved in unison inasmuch as the arm **66** and link **62** must pivot until such time that the stop **68** contacts the upper edge of the arm **66**. Then, the treads are substantially horizontal and in usable position.

Having described the invention, what is claimed as new is:

In a ladder construction, a back panel and an upper panel, a pair of forwardly opening vertically disposed rails secured to said back panel at the upper end thereof, said rails being parallel to each other, a pair of ladder sides, said ladder sides having upper ends with notches therein which face the front part of said vertical rails, arms pivoted to said ladder sides and located in said notches, said arms having elements fixed thereto which are located in said rails and which are covered on three sides and part of a fourth side by said rails, means connected to said ladder sides and said upper panel for opposing the movement of said ladder sides in one direction, and means connected to said ladder and said back panel for limiting the extent of displacement of the ladder from said back panel.

HENRY G. MAHONEY.

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