

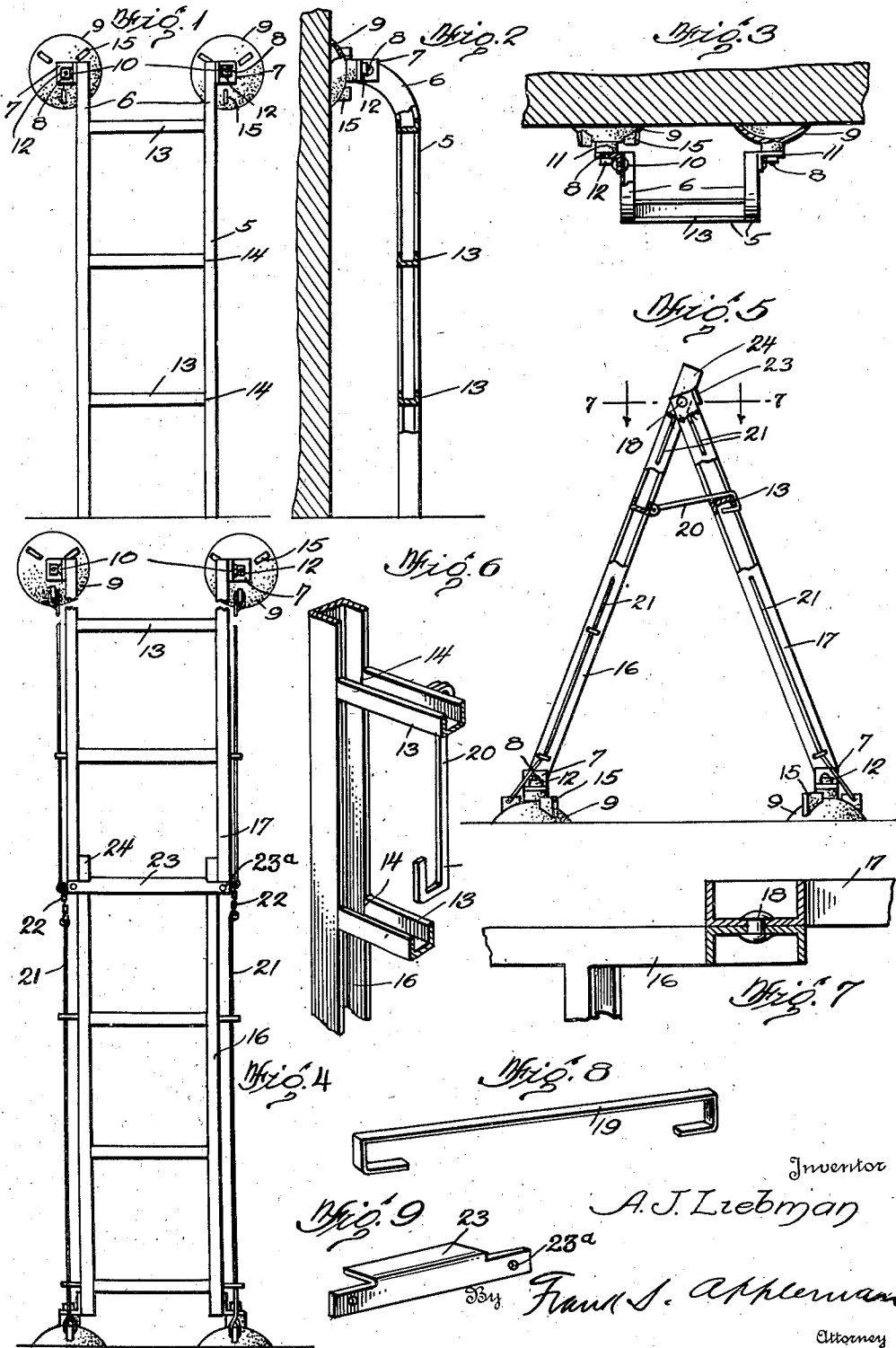
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LADDER

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LADDER

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1 Claim. (Cl. 228—56)

This invention relates to ladders such as are particularly adapted for use where they lean against finished surfaces such as the exterior of an automobile or interior woodwork which is highly finished and which surfaces ordinary ladders would mar or scratch.

It is an object of the invention to provide a ladder having anchorages at its upper ends which will engage the outer surfaces of an automobile or the walls of a room, whereby the ladder is yieldably supported at its upper end, and the said yieldable elements or devices being preferably in the nature of vacuum cups which will anchor the upper end of the ladder in a manner to prevent its accidental displacement or dislodgment from the position in which it is set.

It is a further object of the inventor that the ladders may be made in different lengths according to the intended use thereof. The ladder has been found serviceable for reaching the tops of automobiles as when the automobile is being washed or finished, and in making the tops of automobiles accessible for placing or removing luggage from the tops of automobiles or luggage carriers which are becoming popular with tourists and others who utilize this means of transporting luggage or commodities instead of loading the interior of the automobile with such luggage or commodities.

It is furthermore an object of the invention to provide a ladder having vacuum cups, the said cups having novel means for breaking the vacuum or seal of the cups so that the ladder may be expeditiously manipulated and moved from place to place.

It is a further object of the invention to produce a ladder having the above indicated characteristics which will be efficient and satisfactory in use, as well as comparatively inexpensive to manufacture.

A still further object of the invention is to produce a ladder for household use which may be converted into a step ladder or an extensible ladder.

With the foregoing and other objects in view, the invention consists in the details of construction, and in the arrangement and combination of parts to be hereinafter more fully set forth and claimed.

In describing the invention in detail, reference will be had to the accompanying drawing forming part of this application, wherein like characters denote corresponding parts in the several views, and in which—

Fig. 1 illustrates a view in elevation of a ladder embodying the invention;

Fig. 2 illustrates a sectional view thereof;

Fig. 3 illustrates a view of a fragment of the ladder at the top thereof, partly in section;

Fig. 4 illustrates a view in elevation of an extensible ladder;

Fig. 5 illustrates a view in side elevation, partly in section when used as a step ladder;

Fig. 6 illustrates an enlarged detail view of a fragment of the ladder in perspective;

Fig. 7 illustrates an enlarged detail view on the line 7—7 of Fig. 6;

Fig. 8 illustrates a detailed view of a means for holding the ladder sections in position to be used as a step ladder; and Fig. 9 illustrates a perspective view of a fragment of the ladder.

In the drawing, 5 denotes a ladder which is preferably of metal, having a goose-neck construction 6 at its upper end, the standards of the ladder having at their upper ends brackets 7 which constitute anchorages for the shanks of bolts 8 carried by the suction or vacuum cups 9, to be hereinafter referred to as "vacuum cups." The anchorages comprise angle brackets, one portion of which is bolted or otherwise secured to the standard by members 10 extending through the angular portion of the bracket and transversely through the standard at its upper end. The other angular portion of the bracket is apertured, as at 11, to receive the threaded portion of the bolt, and the said bolt is secured to the bracket by suitable means, such as a nut 12. The parts for anchoring the vacuum cups are duplicated at the upper end of each of the standards and when the said vacuum cups are applied to a plane surface, they hold the ladder against movement or displacement and serve to support the ladder, so that the surfaces contacted by the vacuum cups are not marred or otherwise damaged.

The rungs 13 of the ladder are preferably channel iron construction and the standards are likewise preferably formed of channel iron as a lighter gauge metal can be used and yet rigidity is afforded for the ladder as a whole.

The ends 14 of the rungs are preferably secured to the standards by spot welding, although mechanical means may obviously be employed for effecting the connection. However, the construction by the welding processes has been found efficient and is less expensive than where mechanical parts have to be manipulated to effect the connections.

The standard has a loose connection permit-

ting the bracket to oscillate with respect to the standard, so that the vacuum cups may be adjusted to be parallel or approximately parallel with the surfaces which they are to engage while supporting the ladder.

In order to facilitate the breaking of the seal or vacuum, the outer surface of each cup is provided with rubber lugs 15, any one of which may be grasped and pulled to lift the edge of the cup to admit air. It has been found that three such lugs will suffice for ordinary purposes and present one of the lugs at a convenient location for manipulation.

For domestic or household use, the ladder is shown as comprising two sections 16 and 17 approximately of equal length pivoted together by means of pin 18, and the outer ends of the standards are each provided with a vacuum cup. When the sections are placed at angles to each other, the vacuum cups may rest on the floor or base and thus be retained in position so that the ladder may act as a step ladder, but where the surfaces are such that the vacuum cups will not operate, a brace 20 is provided, attached to one of the sections and spanning the space between the sections engage a rung of the opposite ladder section or, in some instances, sections of the ladder may be held from spreading, through the employment of a link 19 having ends which embrace rungs of the opposite ladder sections.

When the ladder is to be used as an extension ladder, one section is projected practically in line with the other section, and the vacuum cups on the outer ends will be employed in much the same manner as they are employed in the form illustrated in Figure 1.

Where the vacuum cups rest on the floor or base and the seals are to be broken, provision has been made for supplying a wire or other connection 21 which is attached to one of the lugs of each cup and by pulling on this connection, the seal is broken. As illustrated also, provision is made for breaking the seal of all of the cups simultaneously by a pull exerted on the chain or ele-

ment 22 to which wires or connections are attached, so that by a pull on the member 22 the seals of all the cups are broken simultaneously and by this arrangement, the manipulation and movement of the ladder is facilitated.

The goose-neck or curve imparted to the standard permits the ladder to be used on automobiles so that the main portion of the ladder extends beyond the fenders or other projecting portions of an automobile, and when used in a room, the construction permits the ladder to clear a radiator or other objects near the wall.

While the ladder has been described particularly with reference to its construction from iron or any metal, it is obvious that a wooden ladder having the characteristics of the vacuum cups, etc. may be produced.

A combined brace and step 23 is secured to the lower ends of the standards 17 of the upper section, and the upper ends 24 of the standards of the lower section engage the brace to limit the movement of the sections in one direction.

As illustrated, the step shown in Fig. 9 has apertures 23^a to receive suitable fastenings, or the step could be welded to the standard 17.

I claim:

A ladder comprising channeled standards having side flanges extending inwardly and channeled rungs having flanges whose ends are secured to the inner edges of the flanges of the standards whereby spaces are formed between the ends of the rungs and the said standards for the escape of water during the washing operation, vacuum cups suitably mounted at the top of said standards and effective to retain the ladder in place against a surface to which the cups will adhere, lugs on the outer surface of the cups manipulatable to lift an edge of the cup from contact with said surface to break the vacuum, vacuum cups at the lower ends of the said standards, and means for attaching the vacuum cups to the said standards externally of the said standards.

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