Dec. 28, 1943. G. E. LOFGREN 2,337,561

HANDLE

Filed June 21, 1941

Fig. 1.

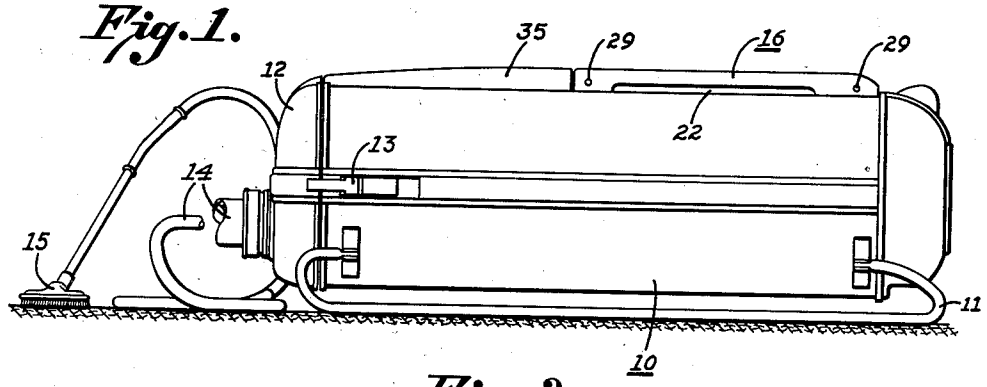


Fig. 2.

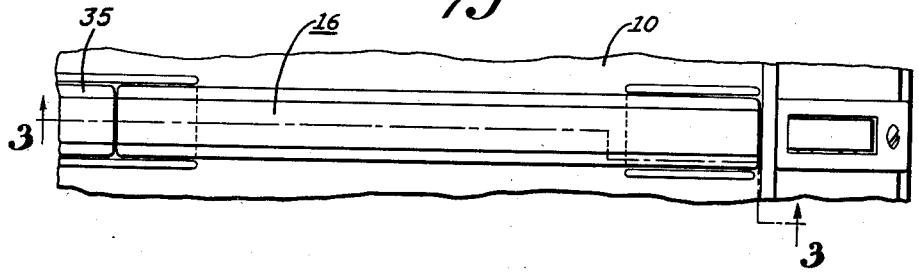


Fig. 3.

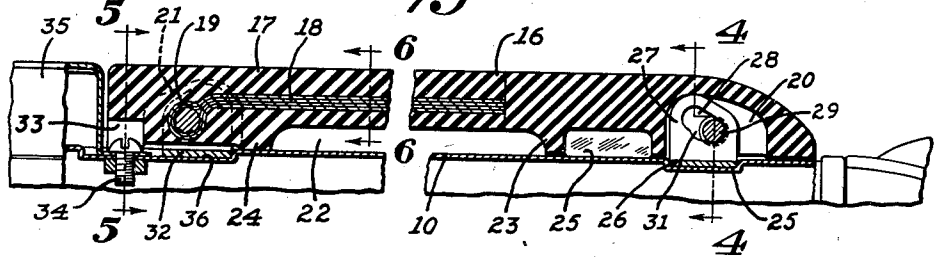


Fig. 4.

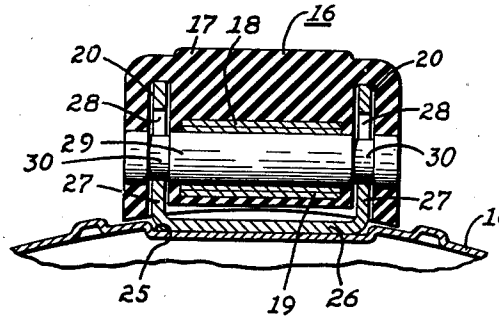


Fig. 5.

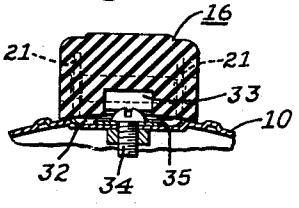
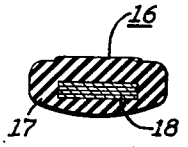


Fig. 6.



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UNITED STATES PATENT OFFICE

2,337,561

HANDLE

Gustaf Einar Lofgren, Riverside, Conn., assignor to Electrolux Corporation, Dover, Del., a corporation of Delaware

Application June 21, 1941, Serial No. 399,156

2 Claims. (Cl. 16—115)

My invention relates to improvements in handles, and more particularly to handles of the type employed for carrying articles, such as for instance a vacuum cleaner.

It is desirable that a handle for this purpose be so constructed that, when not in use, it will lie close to the surface of the device in which it is attached, but when grasped it will arch or bend upwardly in order to provide ample room for the hand between the surface and the handle. In order to accomplish this result, the handle itself is usually made of resilient material and at least one end of the handle is movably attached to the article so that when the handle is grasped it will bow upwardly as aforesaid. In order to prevent the central portion of the handle from sagging when not in use under its own weight, it has been proposed to pre-tension the material of the handle so as to overcome this tendency. However, it has been found to be a practical impossibility to consistently pre-tension the material the required amount. If it is pre-tensioned too much, it bows upwardly, whereas if the pre-tensioning is not sufficient, the central part of the handle will sag. Moreover, even if the material is originally pre-tensioned the proper amount, repeated flexing of the material during use is apt to disturb the pre-tensioning.

One of the objects of my invention is to provide means for supporting the central portion of the handle against sagging without requiring any pre-tension.

Another object of my invention is to so arrange the slidable connection between the handle and the vacuum cleaner in such a manner that, when the ends of the handle are moved towards each other under the influence of a lifting force applied to the handle, the ends move away from the surface of the cleaner, as well as towards each other. This not only increases the space underneath the handle, but also provides a clearance for the ends of the handle, which ends are depressed when the central part is bowed upwardly.

Further objects and advantages of my invention will be apparent from the following description, considered in connection with the accompanying drawing, which forms a part of this specification and of which:

Fig. 1 is a side view of a handle structure in accordance with my invention applied to a vacuum cleaner;

Fig. 2 is a top view, on an enlarged scale, of the handle shown in Fig. 1;

Fig. 3 is a cross-sectional view taken on the line 3—3 of Fig. 2;

Fig. 4 is a cross-sectional view on an enlarged scale taken on the line 4—4 of Fig. 3;

Fig. 5 is a cross-sectional view taken on the line 5—5 of Fig. 3; and

Fig. 6 is a cross-sectional view taken on the line 6—6 of Fig. 1.

Referring to the drawing, reference character 10 designates generally the casing of a vacuum cleaner unit which is intended to be supported on a horizontal surface by means of a pair of runners 11. Casing 10 is preferably made of sheet metal, as may be seen from Figs. 3 to 5 and has a generally cylindrical shape. A closure member 12 is removably secured to one end of the casing by means of suitable latches 13 and is formed with an inlet opening to which may be connected a hose or the like 14 leading to a suction nozzle 15.

For convenience in carrying the vacuum cleaner, the casing 10 is provided with a handle, designated generally by reference character 16, which is secured to the upper surface of the casing. Due to the fact that an electric motor is located near the right-hand end of the casing, as viewed in Fig. 1, the center of gravity of the cleaner is closer to this end than it is to the other, and the handle is so positioned on the casing that its center is on or close to the vertical line passing through the center of gravity.

As appears more clearly from Figs. 2 through 6, the handle 16 includes a rubber member 17 which is moulded around a plurality of strips 18 of fabric which are formed with loops 19 at either end. In the manufacture of the handle, a strip of fabric is looped around a pair of spaced mandrels. The adjacent layers of the strip are secured together by means of adhesive at all points, except at the loops. While the fabric strips are thus held in position, the rubber is moulded around them, and the mandrels are then removed. Heretofore, it has been necessary to internally strain the strips during the moulding so that the handle as a whole will be pre-tensioned so as to prevent the central portion thereof from sagging. However, in accordance with the present invention, such pre-tension is not necessary.

The configuration of the mould for forming the handle is such as to provide a pair of slots 20 near each side of the handle at one end thereof, and a similar pair of slots 21 at the other end. The central portion of the handle is relatively thin in a vertical direction, so as to pro-

vide a space 22 between the handle and the casing 10. The right-hand end of this space, as viewed in Fig. 3, is bounded by means of a projection 23, while the other end is bounded by a projection 24. A recess 25 is formed in the handle between the projection 23 and the portion of the handle within which are formed the slots 20. The purpose of this recess is chiefly to save material, and as far as the present invention is concerned, it is not of importance.

The casing 10 is formed with depressions 25 and 36. Suitably secured within the depression 25, as by welding, is a U-shaped bracket 26 having upwardly extending legs 27. Each leg is formed with an inclined slot 28. Legs 27 are received within the slots 20 of the handle member and a pin 29 extends through the opening formed in the handle during manufacture upon removal of the mandrel. Pin 29 is formed with an annular groove 30 near each end and the width of the slots 28 in the legs 27 are substantially equal to the diameter of the bottoms of these grooves. The slots 28 are formed with enlarged portions 31 sufficient to give a width to the slot at this point equal to the maximum diameter of the pin 29. Thus, the pin may be inserted through the slots 28 when the parts are assembled, but when the pin is at either end of the slot 28, which are the only two positions at which it comes to rest during use, the engagement of the shoulders bounding the annular grooves 30 with the edges of the slots 28 prevent longitudinal displacement of the pin.

A similar bracket 32 is secured within the recess 36 and, inasmuch as the structure at this end of the handle is the same as that just explained, a repetition of the description thereof is not necessary. However, the left-hand end of the handle 16, as viewed in Fig. 3, is formed with a recess 33 in order to accommodate the head of a screw 34 which serves to retain in place one end of a channel member 35. The contour of this channel is substantially the same as that of the handle and is provided chiefly for the sake of appearance.

Due to the fact that the legs 27 are received within the slots 20 and 21 in the end portions of the handle, instead of being disposed beyond the outer surfaces of these portions, the legs are concealed from view without requiring ornamental side plates or the like extending up from the surface of the casing 10.

When it is desired to lift the cleaner, the fingers of one hand are inserted into the space 22 between the handle 16 and the casing 10. Upon the application of a slight upwardly directed force the resilient nature of the handle permits it to be arched upwardly, thus increasing the vertical dimension of the space 22 so that the knuckles do not rub against the top of the casing. This arching is made possible without requiring the handle to stretch by virtue of the fact that the pins 29 may slide towards each other in the slots 28. In addition, due to the upward inclination of the slots, the increase in the vertical dimension of space 22 is even more pronounced.

When the central portion of the handle is arched upwardly, the end portions beyond the pins 29 are depressed, but due to the fact that the inclined slots 28 permit the pins 29 to move upwardly and away from the surface of the casing 10, sufficient clearance is provided between the casing and the ends of the handle so that the latter may be depressed without subjecting the material of the handle to bending.

When the handle is not being used to carry the cleaner, the resiliency of the rubber 17 causes the handle to straighten out and to return the pins 29 to the lower ends of the slots 28. However, any tendency of the central portion of the handle to sag under its own weight is prevented by means of the projections 23 and 24 which contact the upper surface of the casing 10 so as to support the handle in a substantially straight line.

While I have described one more or less specific embodiment of my invention, it is to be understood that this has been done for the purpose of illustration only, and that the scope of the invention is not to be limited thereto, but is to be determined by the appended claims.

What I claim is:

1. In a carrying handle for an article, a pair of spaced brackets to be secured to the surface of the article, each of said brackets including spaced legs extending substantially perpendicularly to said surface, a pin carried by the arms of each bracket, and an elongated hand-grasp member having thickened end portions and a relatively thin central portion, said pins passing through apertures formed in said end portions, and said end portions being wider than the space between said legs and being formed with slots for receiving said legs and concealing the latter from view.

2. In a carrying handle for a vacuum cleaner or the like a pair of spaced brackets to be secured to the surface of the cleaner, a flexible elongated handle disposed longitudinally between said brackets, means for securing one end portion of the handle to each bracket, said securing means at one end of the handle being of a lost motion character to permit that end portion of the handle to move longitudinally relative to its securing bracket in order to permit the handle to lie in a substantially horizontal position or have its central portion bowed slightly upward when the handle is grasped, said handle having a reduced central portion with relatively larger end portions extending for a substantial distance from the extremities thereof toward the longitudinal center of the handle greater than the distance from the brackets to the nearest extremities of the handle and with a relatively large surface area on the inner side of said end portions in intimate relation with the surface of the cleaner, whereby contact of such portions of large area against the surface of the cleaner substantially reduces the span of the unsupported part of the handle for maintaining the same in substantially horizontal position when not in use.

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