Jan. 17, 1933. E. BUTZER 1,894,343

SUCTION CLEANER

Filed Aug. 15, 1931

Fig. 1.

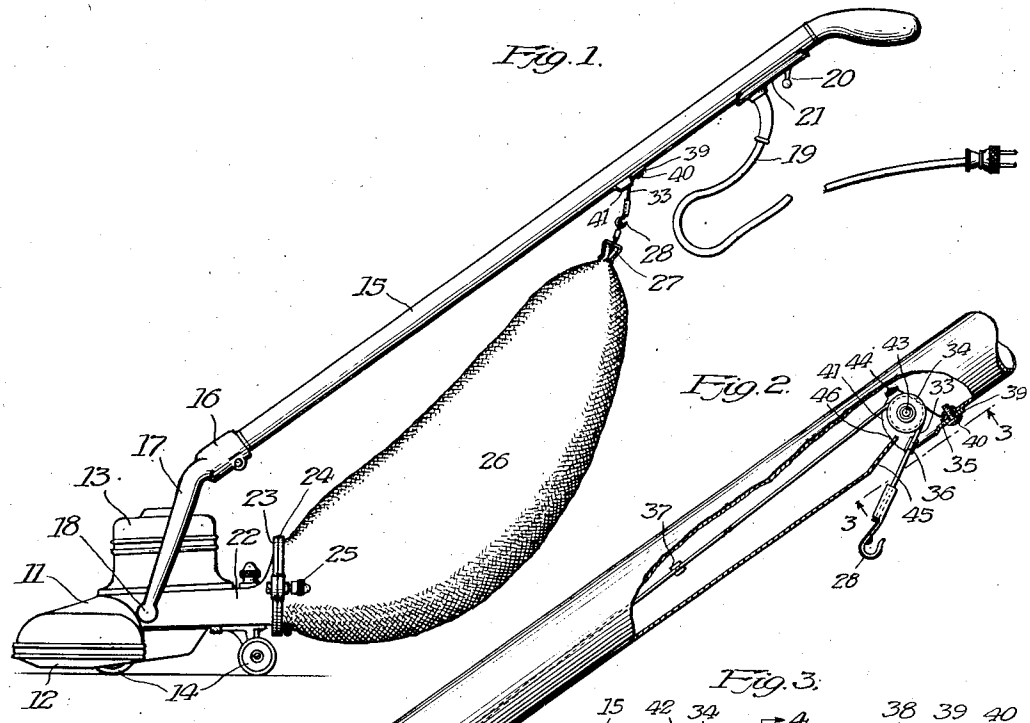


Fig. 2.

Fig. 3.

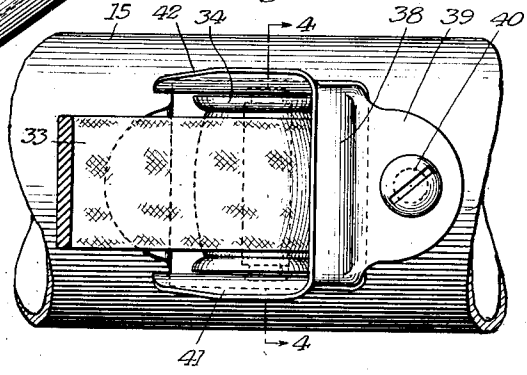
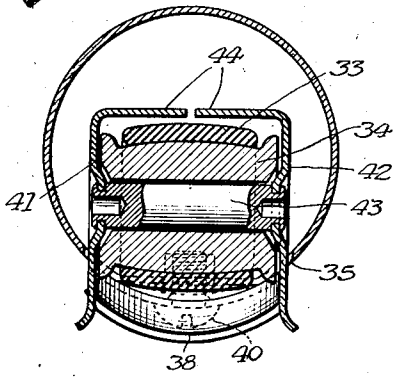


Fig. 4.



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Patented Jan. 17, 1933 1,894,343

UNITED STATES PATENT OFFICE

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SUCTION CLEANER

Application filed August 15, 1931. Serial No. 557,322.

This invention relates to suction cleaners and more particularly to means for resiliently supporting the upper end of the bag normally used with suction cleaners of the portable type. Suction cleaners are usually provided with a dust bag of cloth or similar material, detachably connected to the outlet of the body of the cleaner, and supported at its upper end by attachment to a handle which is pivotally connected to the body of the cleaner and by which the cleaner may be directed over the surface to be cleaned. Since the point of attachment of the lower end of the bag to the body of the cleaner is at a point separated from the pivotal connection between the handle and the body of the cleaner the movement of the handle toward its upper position tends to stretch the bag so that it is necessary to provide a resilient, or otherwise yielding, connection between the upper end of the bag and the handle of the cleaner.

One of the objects of the invention is to provide a support for the upper end of the bag which is durable and efficient, and which can be economically manufactured and installed. A further object of the invention is to provide such a supporting means which will have a minimum of protruding parts, and the movement of which will be limited in each direction. A still further object is to provide such a resilient supporting means which will maintain substantially uniform tension in all positions regardless of the amount of the extension of such supporting means. Further objects of the invention and novel features of the construction will be apparent from the following specification, when considered together with the acompanying drawing, in which:

Fig. 1 is a view in side elevation of a suction cleaner embodying the invention;

Fig. 2 is a fragmentary view, on an enlarged scale, of the handle and supporting means shown in Fig. 1, parts being broken away to show the structure more clearly;

Fig. 3 is a fragmentary bottom plan view on a much enlarged scale of one detail of construction shown in Figs. 1 and 3; and

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

As shown in Fig. 1, a suction cleaner body 11, provided with a nozzle 12, and carrying a motor indicated generally at 13, is mounted upon wheels 14, and a tubular handle 15, is rigidly secured to the socket 16 of a bail 17, which is pivotally connected at 18 to the body 11, so that the cleaner as a whole may be directed over the surface to be cleaned. A conducting cable 19, by which current is supplied to the motor 13, and an electric switch 20, are preferably mounted upon a plate 21 which closes an opening near the upper end of the tubular handle 15, it being understood that wires for connecting such parts to the motor are provided within the tubular handle. The outlet 22 of the cleaner casing is formed with a wide flat circular flange 23 to which a bag ring 24, attached to the bag, is detachably secured by nuts 25 or similar means. The dust filtering bag 26 is preferably formed with an open top, closed by a spring clamp 27 or other suitable means, such clamp 27, or other member, being adapted to be engaged by a hook 28.

In order to provide a long spring so that the tension of the spring may be substantially uniform regardless of the extension thereof, the long tension spring 29 is located within the hollow handle 15 and provided with an eye 30 at its lower end which is engaged over a tongue 31, struck up from the metal of the handle and bent down at its lower end to form a loop as shown in Fig. 2. The upper end of the spring 29 is formed with an eye 32 which is engaged by a tape 33, the end of which is bent back upon itself and secured by a rivet or similar means. The tape 33 extends upwardly within the tubular handle 15, and about a pulley 34, which is secured in an opening 35 in the tubular handle, the hook 28 being secured to the upper end of the tape 33 outside of the handle in any suitable manner. Rivets 36 and 37 are provided upon the tape 33, to limit the movement of the tape in either direction.

The pulley 34 is preferably supported in a one-piece metal stamping 38 having a body portion or tab 39 secured upon the outside

of the tubular handle 15 by screw 40, or similar means, and parallel lateral portions 41 and 42 which extend into the tubular handle 15, and between which the pulley 34 is rotatably mounted upon pintle 43. The side portions 41 and 42 are preferably formed with inwardly bent tabs 44, under which the tape 33 is engaged so that they will act as an abutment to engage rivets 36 and 37 and limit the movement of the tape. At the lower edge of the opening 35 the metal of the tubular handle 15 is preferably bent in slightly as shown at 45, and engaged within notches 46 formed in the lower edges of the lateral portions 41 and 42, thereby assuring that the pulley and its support will be rigidly held in place.

With the construction shown it will be apparent that when the handle 15 is raised to vertical position a tension which is substantially uniform will be maintained upon the bag 26, the tape 33 rolling upon the pulley 34 as the tension spring 29 is elongated. It is apparent that with this construction a tension spring of considerable length may be utilized, and that the only parts of the supporting means protruding from the handle are the tape 33 and the hook 28, so that the construction presents a neat appearance.

It will be understood that other means of supporting the pulley 34 may be used and that other changes may be made in the sizes of parts and the details of construction without departing from the spirit of the invention which is defined by the following claims:

What is claimed is:—

1. In a suction cleaner, the combination of a body having an outlet, a dust bag connected to said outlet, a hollow handle pivotally engaging said body and having an opening therein, and means for supporting the upper end of said leg comprising a spring within and secured at one end with respect to said hollow handle and a flexible member connected with the other end of said spring and passing through the opening in said handle, said member having means at its free end for connection with said bag.

2. In a suction cleaner, the combination of a body having an outlet, a dust bag connected to said outlet, a hollow handle pivotally engaging said body and having an opening therein, and means for yieldably supporting the upper end of said bag comprising a tension spring within and secured at one end with respect to said hollow handle, a pulley mounted adjacent the opening in said handle, and a flexible member connected at one end to the other end of said spring and passing over said pulley and having means adjacent its other end for connection with said bag.

3. In a suction cleaner, the combination of a body having an outlet, a dust bag connected to said outlet, a handle pivotally engaging said body and means for yieldably supporting the upper end of said bag from the upper end of said handle, comprising a tension spring connected at one end to said handle, a pulley mounted on said handle, and a flexible member connected at one end to the other end of said spring and passing over said pulley and having means at its other end for connection with said bag.

4. In a suction cleaner, the combination of a body having an outlet, a dust bag connected to said outlet, a hollow handle pivotally engaging said body and having an opening in its wall, and means for yieldably supporting the upper end of said bag, comprising a spring within and secured at one end with respect to said hollow handle, a pulley, a flexible member connected at one end to said spring and passing over said pulley, said member having means at its other end for connection with said bag, and a pulley mounting secured to the outside of said handle and having a pulley-carrying portion projecting inwardly through the opening in the wall of said handle.

5. In a suction cleaner, the combination of a body having an outlet, a dust bag connected to said outlet, a hollow handle pivotally engaging said body and having an opening therein, and means for yieldably supporting the upper end of said bag, comprising a spring within and secured at one end with respect to said hollow handle, a pulley, a flexible member connected to said spring and passing over said pulley, said member having means at its free end for connection with said bag, and a mounting for said pulley secured in said opening, said mounting and said handle at the edge of said opening having interengaging portions.

Signed at Basel in the county of Basel City and State of Switzerland this 27th day of July, A. D., 1931.

EUGENE BUTZER.

CERTIFICATE OF CORRECTION.

Patent No. 1,894,343. January 17, 1933.

EUGENE BUTZER.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, line 42, claim 1, for "leg" read "bag"; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 28th day of February, A. D. 1933.

(Seal)

M. J. Moore,
Acting Commissioner of Patents.