April 14, 1936. B. P. SMITH ET AL 2,037,668

CABLE RELEASING DEVICE

Filed Aug. 15, 1935

Fig. 2.

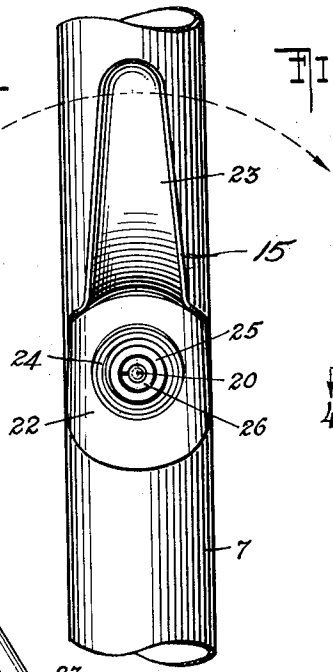
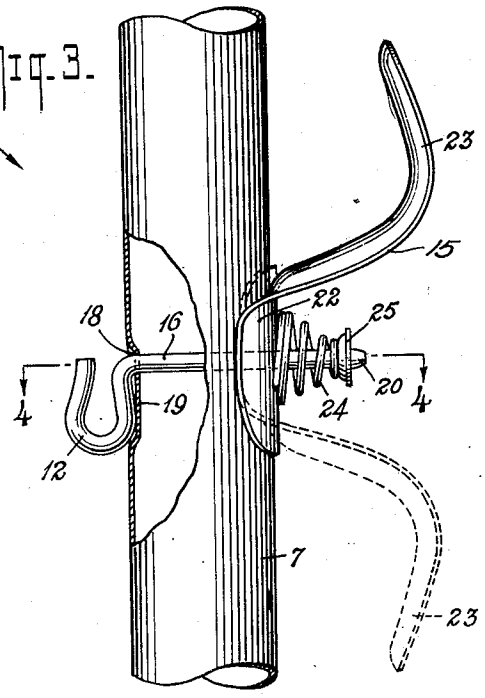


Fig. 3.



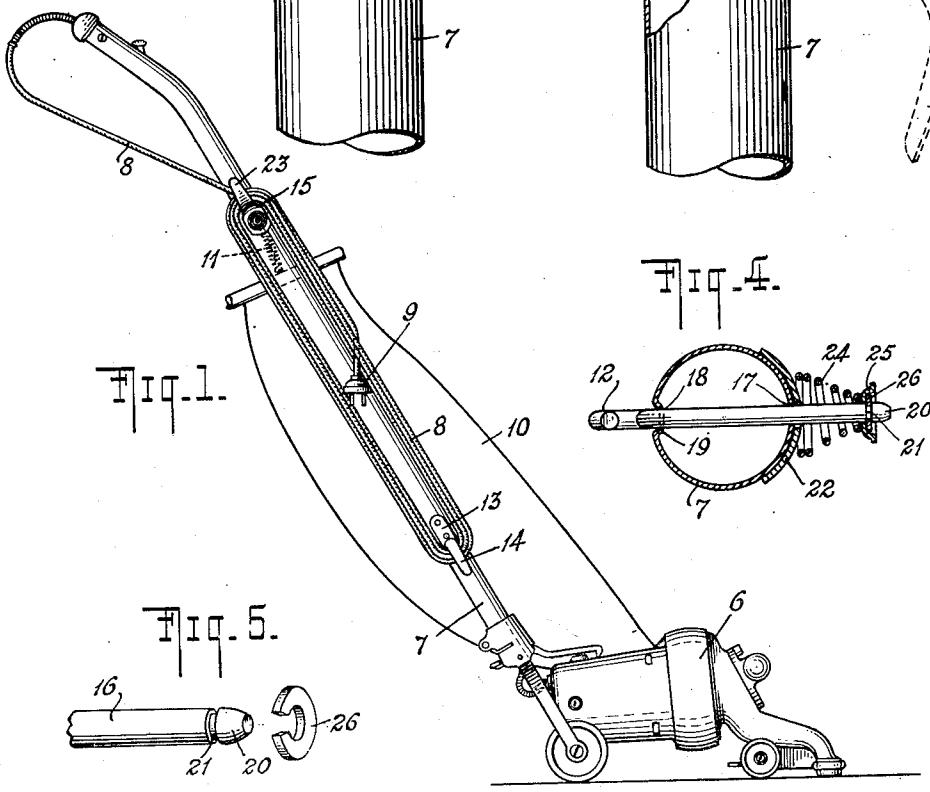


Fig. 1.

Fig. 4.

Fig. 5.

WITNESS

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CABLE RELEASING DEVICE

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11 Claims. (Cl. 242—85)

The invention relates to a device for releasing a cable wound by successive loops upon two hooks projecting from a handle of an apparatus mounted upon an ambulant frame, such, for instance, as a vacuum cleaner. The source of operating current to such apparatus is usually supplied by means of a cable or cord, one end of which is connected to the switch mechanism of the apparatus and the other end of which is adapted to be connected by means of a connecting plug carried thereby to an electrical outlet. Such cable, when the apparatus is not in use, is usually wound upon the handle of the ambulant frame by means of a pair of hooks secured upon the handle, one of such hooks being secured to the lower portion of the handle so as to have its free end, bent outwardly from the handle, extend downwardly, the other hook being secured to the handle near its upper end with its bent free end extending outwardly and directed upwardly. The cord or cable is then wound about the hooks by overlapping loops and retained in position upon the handle of the apparatus by said hooks. In releasing such cable, it has been necessary to unwind successive portions thereof by the tedious operation of unwinding the successive loops necessitating the bending of the operator so as to disengage successively the ends of the loops from the upper and lower hooks.

While it has been proposed to reduce the tediousness of this operation by providing one of the supporting hooks, usually the upper, of a construction which permits such hook to be brought into a position in which it will release the successive loops of the cable with a single manipulation of the hook, for instance, by having the same hinged upon the handle at or near its point of securement thereon, such a releasing device is characterized by certain disadvantages, for instance, in cost of manufacture, cost of application to the handle, and the complicated nature of its operation, including the necessity of returning it to its original position after the release of the cable.

In accordance with our invention, we provide a cable releasing device extremely simple in construction, cost of manufacture, application to the handle, and characterized by the utmost simplicity in its operation, requiring no mechanical knowledge or aptitude on the part of the operator of the apparatus, usually a housewife or house worker.

In accordance with our invention, we provide a cable releasing device which constitutes a hook for supporting the wound loops of the cable and necessitating no more than the grasping of the extending portion of the hook and its rotation to a position in which the extending free end of the hook is pointed downwardly, thereby effecting the automatic releasing of the wound loops of the cable from the hook.

A particular embodiment of our invention is illustrated in the accompanying drawing, in which is shown the application of our novel cable releasing mechanism to a vacuum cleaner handle, and in which Fig. 1 is a side view of a vacuum cleaner, having an ambulant frame and a handle, embodying our invention; Fig. 2 is an enlarged detail of a portion of the handle to which our novel cable releasing device has been applied; Fig. 3 is a side view of such portion of the handle showing the reversible hook and its method of mounting upon the handle with a portion of the latter broken away to illustrate the mounting structure; Fig. 4 is a section on the line 4—4 of Fig. 3; and Fig. 5 is a detail of the portion of the shaft upon which the hook is rotatably mounted showing the split washer by means of which a spring retaining cup is secured to the shaft.

Referring more particularly to the drawing, in which similar reference characters identify similar parts in the several views, 6 designates generally the vacuum cleaner apparatus mounted upon an ambulant frame from which extends upwardly the tubular handle 7 to the upper end of which is secured in the usual manner one end of the cable 8, the other end of such cable being provided with the usual connecting plug 9 adapted to be inserted into an electrical outlet for supplying current to the electric motor of the vacuum cleaner. The usual dust bag 10 is supported upon the handle by means of spring 11 secured upon a hook 12 extending from the handle 7. Near the lower end of tubular handle 7 and secured thereon is a hook member 13 riveted in the usual manner to such handle and having its hook portion 14 extending downwardly.

At a point remote from the lower hook 13 and from the upper end of the handle is mounted the upper cable supporting hook 15. In accordance with our invention a shaft 16 extends through the tubular handle 7, through aperture 17 at one side thereof and through aperture 18 at the other side thereof, the end of the shaft 16 extending beyond the aperture 18 being formed into the hook 12 for supporting the dust bag 10 by means of a ring at the upper end of the spring 11.

The surface of the tubular handle 7 imme-

diately adjacent and below the aperture 18 is indented as shown at 19 so as to provide a seat for the hook 12 and thereby prevent rotation of said hook and of the shaft 16 when the cable releasing device is operated as hereinafter described.

The end of the shaft 16 extending through and beyond the aperture 17 on the other side of the tubular handle 7 is provided with a tapered head 20 and a groove 21. The hook member 15, shown in enlarged detail in Figs. 2 and 3, comprises a body portion 22 of substantially the same configuration and curvature as the surface of the tubular handle 7, the hook member 23 extending from such body portion. A compression spring 24 is positioned over the shaft 16 so as to have the widest convolutions thereof bear against the outside surface of the body portion 22 of the hook element, the other end of the spring, constituting the convolution of smallest diameter, bearing against a cup 25 secured upon the shaft 16 by means of the split washer 26 which, after the cup 25 has been placed over the shaft, is clamped upon the shaft adjacent the tapered end 20 and within the groove 21, the washer being seated within the groove and compressed therein for securement within the groove.

The operation of our novel cable releasing device is as follows:

When the cable 8 has been wound in the usual manner so as to secure the ends of the successive loops thereof between the hooks 13 and 15 and it is desired to release such cable, the hook portion 23 is grasped and the entire hook is rotated about the shaft 16 from a position illustrated in full lines in Fig. 3 to its position illustrated in dotted lines in such figure; i. e. by turning the hook in an arc of approximately 180 degrees. This is accomplished by compressing the convolutions of the spring 24, the operation being effective to bring the wider convolutions of the spring over the narrower convolutions thereof, and without any rotation of the shaft 16, which is maintained in its original position by reason of the indenture in the side of the tubular handle 7, in which indenture the dust bag hook 12 is retained. When the hook portion 23 has been brought to the dotted position in Fig. 3, the ends of the loops of the cable will be released from the upper hook, as will be apparent from a mere inspection of the drawing. The hook 15 by means of its element 23, may be rotated in either direction as shown by the arrows in Fig. 2.

Our novel structure as hereinabove described is characterized by simplicity in construction and facility in operation, the novel means for mounting the spring 24 and the securement thereof upon the shaft 16 being effective to prevent rotation of such spring to any degree which will interfere with the effective operation of the cable releasing device. Our novel structure also prevents the rotation of the hook 12 upon which the dust bag 10 is supported by reason of its securement in positive locked position by the indentation 19 in the tubular handle 7. The provision of the cup 25 and the particular mode of its securement upon the end of the shaft 16 constitutes an important feature of our invention as they prevent the working loose of the structural elements of our device upon repeated use as would occur if an ordinary nut were secured upon threads upon the end of the shaft to retain the spring in position.

While we have described a particular embodiment of our invention as applied to the tubular handle of a vacuum cleaner apparatus, it is obvious that the structure is equally applicable to any elongated support or handle mechanism of other types of apparatus upon which a long cable or cord is adapted to be secured by successive loops.

We claim:

1. A cable releasing device for electrically operated apparatus having an ambulant frame, a handle therefor and a cable, comprising a shaft passing through said handle, and a support for the successive loops into which the cable is adapted to be wound, constituted of a hook adapted to be brought from its supporting position in which the hook element thereof extends upwardly to a position in which said hook portion is directed downwardly, by the turning of said hook portion in an arc of approximately 180° in planes perpendicular to the said shaft and parallel to the axis of the handle.

2. A cable releasing device for apparatus actuated by an electric motor and having an ambulant frame, a handle therefor, a cable to supply a source of current for said motor, comprising a hook acting as a support for the upper ends of the convolutions of said cable when wound into loops, a shaft passing through said handle and upon which said hook is pivoted to permit the rotation of said hook about said shaft in planes perpendicular to said shaft and parallel to the axis of the handle from a position in which the hook element thereof extends upwardly to a position in which said hook element extends downwardly, and a spring mounted on said shaft.

3. A cable releasing device for an apparatus having an electric motor, a cable supplying current thereto, and a handle for said apparatus, comprising a shaft passing through said handle, a cable supporting hook pivotally mounted on said shaft with the hooked element thereof extending upwardly, a retaining member at the end of said shaft, and a spring positioned between said hook and said retaining member whereby the hook may be rotated about said shaft in planes perpendicular thereto and parallel to the axis of the handle to a position in which the successive loops of the cable are released from their support.

4. A cable releasing device for an apparatus having a handle, comprising a shaft extending through said handle, a cable support secured to said shaft for rotation thereabout in planes parallel to the axis of the handle and perpendicular to said shaft and having a body portion in contact with the surface of said handle, a hook element extending from said body portion, a retaining member mounted on the end of said shaft, and a spring upon said shaft positioned between the body portion of said hook member and the retaining member.

5. A cable releasing device for an apparatus having a tubular handle, comprising a shaft extending through said handle, a cable support pivoted upon said shaft and having a body portion conforming in curvature to the curvature of the tubular handle, a hook element extending from said body portion, a groove contiguous the end of said shaft, a retaining cup mounted on said shaft, a split washer for maintaining said retaining cup in position upon said shaft, and a spring upon said shaft positioned between the body portion of said hook member and the retaining cup.

6. A cable releasing device for an electric motor actuated apparatus having an ambulant frame

and a tubular handle, comprising a shaft extending through said tubular handle, one end of said shaft having a retaining cup, a cable supporting hook pivotally mounted upon said shaft, and a spring between said supporting hook and said retaining cup permitting rotation of said hook about said shaft from a position in which its supporting hook member extends upwardly to a position in which the same extends downwardly by the turning of said hook member in an arc of 180° in planes perpendicular to said shaft and parallel to the axis of the handle.

7. A cable releasing device for an electric motor actuated vacuum cleaner having an ambulant frame, a dust bag, and a tubular handle, comprising a shaft extending through said tubular handle, one end of said shaft being formed into a hook for supporting said dust bag, the other end of said shaft having a retaining cup, a cable supporting hook pivotally mounted upon said shaft, and a spring between said supporting hook and said retaining cup permitting the rotation of said hook about said shaft from a position in which its supporting hook member extends upwardly to a position in which the same extends downwardly.

8. A tubular handle for an electric vacuum cleaner provided with a cable releasing device and having a shaft passing through said handle, one end of such shaft being formed into a hook for supporting the dust bag of the vacuum cleaner, the surface of the handle which said hook contacts being depressed so as to prevent rotation of said shaft upon the rotation thereon of the cable releasing device secured upon said shaft near its opposite end.

9. A vacuum cleaner having an electric motor, a cable for supplying current to said motor, a tubular handle, and a device for releasing the cable when wound in successive loops and supported upon said handle, comprising a shaft passing through said tubular handle, a cable supporting hook having a body portion conforming in curvature to the curvature of the tubular handle at the point of contact of the former with the latter, a spring upon said shaft, and means for retaining said spring upon said shaft whereby the supporting hook may be rotated upon such shaft from a position in which it extends upwardly to a position in which it extends downwardly.

10. A vacuum cleaner having an electric motor, a cable for supplying current to said motor, a handle, and a device for releasing the cable when wound in successive loops and supported upon said handle, comprising a shaft passing through said handle, a cable supporting hook having a body portion in contact with the surface of the handle, a spring upon such shaft, and means for retaining said spring upon said shaft, whereby the supporting hook may be rotated upon such shaft from a position in which it extends upwardly to a position in which it extends downwardly by the turning of said hook member in an arc of 180° in planes perpendicular to said shaft and parallel to the axis of the handle.

11. A vacuum cleaner as claimed in claim 9, in which one end of the shaft is formed into a hook for supporting the dust bag, the surface of the tubular handle in contact with said hook being depressed so as to prevent rotation thereof upon actuation of the cable releasing device.

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