May 17, 1966 E. R. SCOTT 3,251,107

VACUUM CLEANER CORD LOCKING DEVICE

Filed Sept. 17, 1964

Fig. 1.

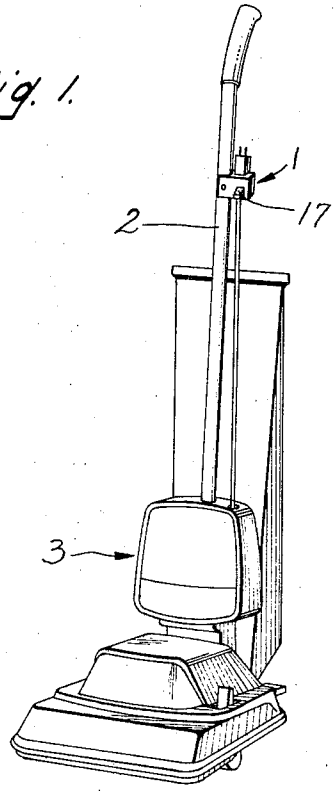


Fig. 2.

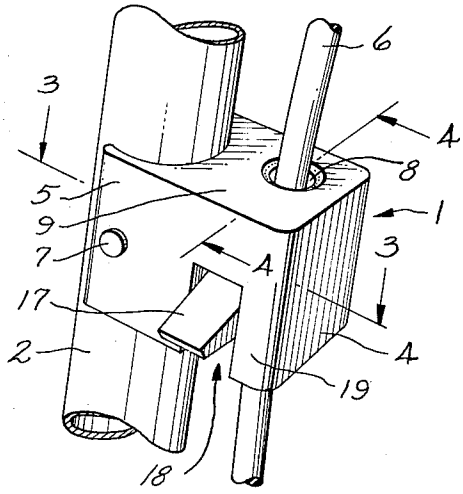


Fig. 3.

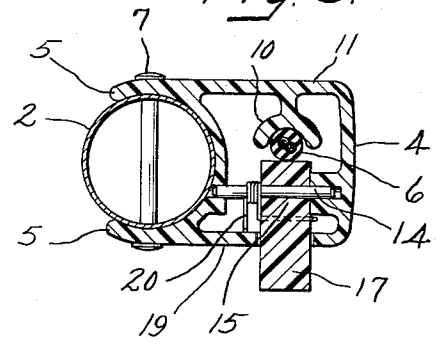


Fig. 5.

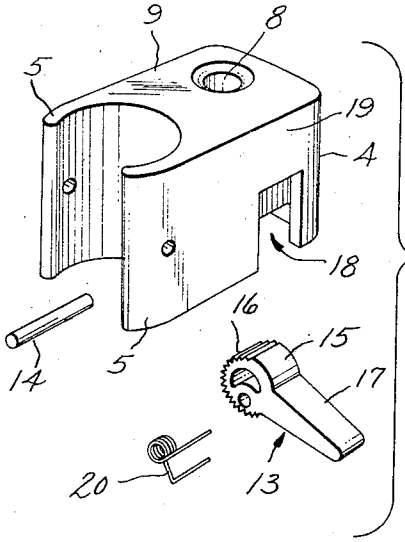
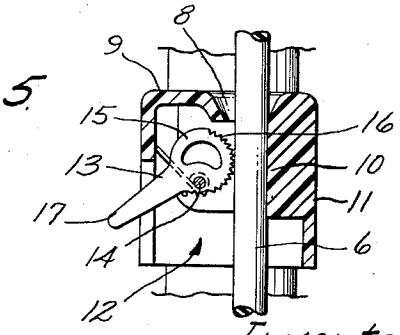


Fig. 4.



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VACUUM CLEANER CORD LOCKING DEVICE

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4 Claims. (Cl. 24—134)

My invention relates to upright floor appliances, and more particularly to a guiding and locking device for guiding cord from a cord retractor and for locking the withdrawn cord at the desired length.

It has become commonplace today for manufacturers of upright floor appliances, especially vacuum cleaners, to incorporate automatic cord retractors into their machines for the convenience of the user. Because these cord retracting devices exert a constant force upon the withdrawn cord, it is necessary that the appliance also have some means for holding or clamping the cord at the desired withdrawn length. A number of prior devices have incorporated the cord clamping means at the base of the upright handle near the retractor. However, locating the clamping means near the floor has the disadvantage that the cord is apt to become entangled in the feet of the user.

More often, the cord clamping means is located on the upper region of the handle where it can be more easily operated by the user of the appliance. With cord clamping arrangements of this type, it has often been the practice to hide the portion of the cord between the cord retractor and the clamping means within the tubular handle. A number of appliances handling the cord in this manner have disposed the retractor in the main cleaner housing. Disposing the retractor in this way, however, has the disadvantage of enlarging the main housing and thus making it difficult for the user to guide the cleaner into narrow spaces and beneath overhanging obstacles. Also, at the upper end of the handle where the cord emerges from the handle, a complex and expensive clamping means is sometimes required. A number of cord clamping devices have utilized a push-button arrangement incorporated into the hand grip for the cleaner. However, these devices utilize arrangements of linkages and cams which excessively increase the cost of the clamping device.

Many prior art cord clamping devices embody as the clamping element a pivoted lever which is biased into very firm frictional engagement with the cord. The cord is held at the desired withdrawn length by the high pressure of the lever against the cord and by the friction between the cord and the lever. This type of arrangement, however, imposes limitations on the operation of the device. One limitation is the necessity of manually releasing the lever from engagement with the cord while withdrawing the cord from the retractor. Secondly, the excessive wear on the jacket of the cord by the lever causes the jacket to wrinkle and become jammed within the clamping device. And finally, in clamping devices of this type requiring a strong bias of the lever against the cord, if the biasing means should fail the device becomes totally inoperative.

It is an object of my invention to provide a cord guiding and locking device for use with an automatic cord retractor on an upright floor appliance which offers greater convenience to the user of the appliance than present devices, and which is very easy to operate.

It is another object of my invention to provide a cord guiding and locking device for use with an automatic cord retractor on an upright floor appliance which is highly efficient, yet very economical to produce.

Further objects and advantages of my invention will become apparent as the following description proceeds. The features of novelty which characterize my invention

will be pointed out with particularity in the claims annexed to and forming a part of the specification.

In carrying out the objects of my invention, in one form thereof, I provide a guiding and locking device comprising a one-piece hollow molded housing which is mounted upon the upper region of the tubular handle of an upright floor appliance. A trough-shaped anvil, integral with the housing, projects from one of the inner walls of the housing. The anvil is aligned between an open side of the housing and an aperture in the opposed side wall of the housing, a passageway thus being formed for guiding the cord through the housing. A spring-loaded, centrally pivoted locking lever has an outer portion projecting through the housing for access by the user, and an inner portion having an external, serrated camming surface disposed to swing longitudinally of and immediately adjacent the anvil. In operation, as the cord is withdrawn from the cord retractor, it passes over the anvil and through the opening in the housing, the cord being lightly biased against the anvil bottom by the camming surface on the inner portion of the locking lever. When the cord is released to the withdrawing force of the retractor, the cord frictionally engages the camming surface and causes the lever to rotate, thus locking the cord tightly against the anvil to stop the retraction of the cord. To release the cord, the user merely presses on the operating lever, thus swinging the camming surface free of the cord.

For a better understanding of my invention, reference may be made to the accompanying drawings in which:

FIG. 1 is a perspective view of an upright floor appliance, showing my cord guiding and locking device mounted on the upper region of the handle.

FIG. 2 is an enlarged perspective view of my cord guiding and locking device.

FIG. 3 is a sectional view taken on lines 3—3 of FIG. 2.

FIG. 4 is a sectional view taken on lines 4—4 of FIG. 2.

FIG. 5 is an exploded view of my cord guiding and locking device.

Referring to FIG. 1 of the drawing, it will be seen that my cord guiding and locking device **1** is mounted upon the upper region of the tubular handle **2** of an upright, floor-type vacuum cleaner. The cleaner is depicted as incorporating the automatic cord retractor **3** on the base of the handle **2**. The details of my device are shown in FIGS. 2–5. The device includes a hollow, one-piece molded housing **4**. The housing **4** has a pair of outstretched arms **5** defining a recess conforming to the external configuration of the handle **2**. The housing **4** is held in snug engagement upon the handle **2** by a rivet **6** which penetrates the handle **2** and both arms **5** of the housing **4** (see FIG. 3).

In order that the cord **7** may be smoothly withdrawn from the retractor **3**, and the position of the cord within the housing controlled, a passageway for the cord **7** is formed through the housing **4**. The passageway comprises:

(a) An aperture **8** through side wall **9** of the housing **4** (see FIG. 2).

(b) A trough-shaped anvil **10** formed integrally with the housing **4** and projecting from the inner surface of side wall **11** of the housing **4**, and

(c) An open side **12** of the housing **4**.

The anvil **10** is formed in a trough shape so as to give the cord **7** a laterally stable support throughout a substantial portion of the width of the housing **4**. The anvil **10** also offers a firm foundation against which the cord **7** can be locked.

For the purpose of performing this locking operation, a locking lever **13** is provided. The lever **13** is pivotally

mounted on the housing 4 by a pin 14, and has an inner portion 15 disposed so as to swing longitudinally of and immediately adjacent the anvil 10. The inner portion 15 of the lever 13 has an external camming surface 16 formed thereon, the camming surface 16 being serrated to increase its coefficient of friction.

An outer portion 17 of the locking lever 13 projects through an opening 18 in side wall 19 of the housing 4, serving as an operator readily accessible to the user of the cleaner.

In order that the camming surface 16 on the inner portion 15 of the locking lever 13 will be biased into constant engagement with the cord 7 during withdrawal of the cord 7, a torsion spring 20 is provided. The spring 20 is mounted upon pin 14 coaxially with the locking lever 13, exerting a clockwise (in FIG. 4) torque upon the locking lever 13.

The operation, with reference to FIG. 4, is as follows: as the cord 7 is withdrawn from the retractor 3 and through the guiding and locking device 1, friction between the cord 12 and the serrated camming surface 16 of the locking lever 13 induces rotation of the lever 13 in the counterclockwise direction. However, upon release of the cord 7 when the desired length has been withdrawn, the retractive force of the retractor 3 immediately produces a reversal in the direction of motion of the cord 7. The frictional engagement of the cord 7 with the camming surface 16 then causes the camming lever 13 to rotate in the clockwise direction. As the lever continues to rotate, it will, due to the action of the camming surface 16, exert an ever greater force upon the cord 7 until the cord 7 becomes securely locked between the anvil 10 and the camming surface 16. To release the cord 7, the user need merely depress the outer portion 17 of the locking lever 13, thus rotating the lever 13 in the counterclockwise direction and swinging the camming surface 16 free of the cord 7.

My invention is not limited to the particular details of the construction of the embodiment illustrated and I contemplate that various and other modifications and applications will occur to those skilled in the art. It is therefore my intention that the appended claims shall cover such modifications and applications as do not depart from the true spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. For an upright electric floor appliance having a tubular handle and a cord retractor, a cord guiding and locking device comprising:

(a) a one-piece, hollow molded housing mounted on said handle, said housing having relatively thin walls and an open side,

(b) said housing having an aperture in the side wall thereof opposite said open side,

(c) an anvil projecting inwardly from a wall of said anvil being integrally formed with and connected to said housing by a relatively thin web, said anvil having an arcuate clamping surface wider than said web, and said housing, said anvil being aligned between said open side and said aperture,

(d) said aperture, said anvil and said open side forming a passageway for guiding the cord from the retractor and through said housing,

(e) said housing having an opening in the side wall thereof facing said anvil,

(f) a locking lever pivotally mounted on said housing, said locking lever comprising:

(1) an inner portion having an external camming surface thereon, and

(2) an outer portion projecting through said opening in said side wall facing said anvil for access by the user,

(g) means biasing said lever against the cord during withdrawal of the cord,

(h) whereby, upon release of the cord to the retractive force of the cord retractor, the cord frictionally engages said camming surface and retractive movement of the cord causes said lever to rotate until the cord is securely locked between said camming surface and said anvil.

2. The device as defined in claim 1 wherein said camming surface is serrated to increase the coefficient of friction of said surface.

3. The device as defined in claim 1 wherein said housing has a cylindrical recess conforming to the external configuration of the appliance handle for mounting the device in mating engagement with the handle.

4. The device as defined in claim 1 wherein said locking lever is mounted upon a pin disposed in said housing, and wherein said biasing means is a torsion spring mounted on said pin coaxially with said lever and in engagement with said lever and said housing.

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