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VACUUM CLEANER CORD REEL MOUNTING

Filed Sept. 14, 1954

2 Sheets-Sheet 1

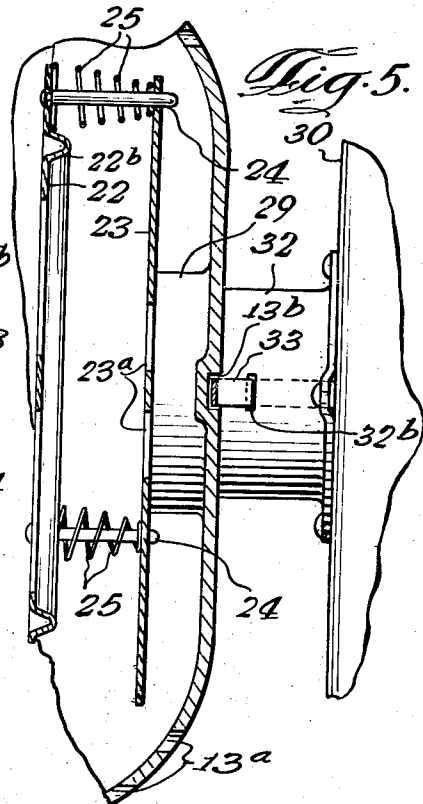
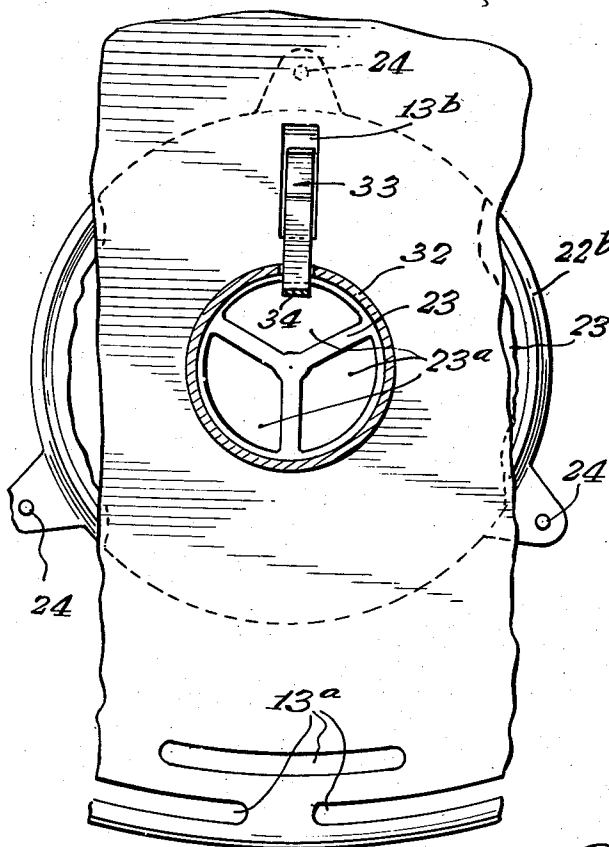
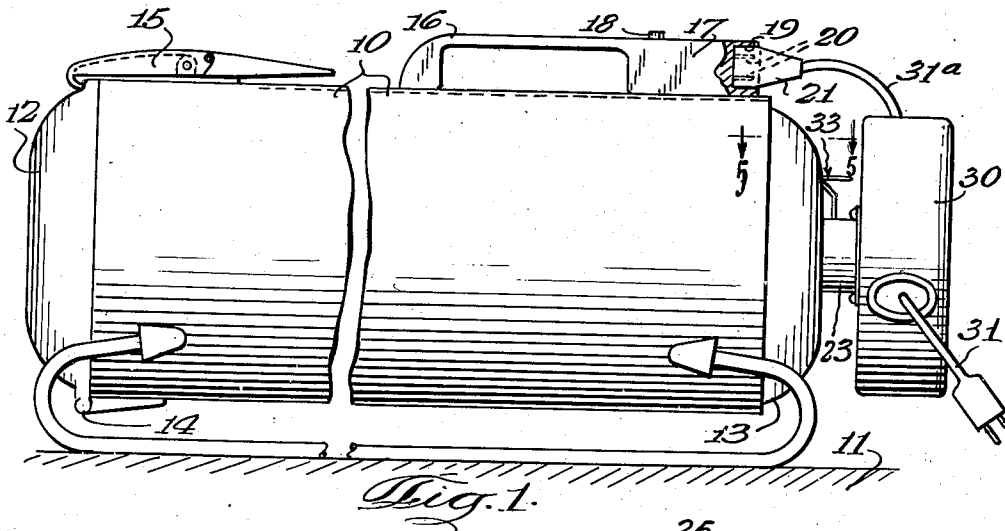


Fig. 4.

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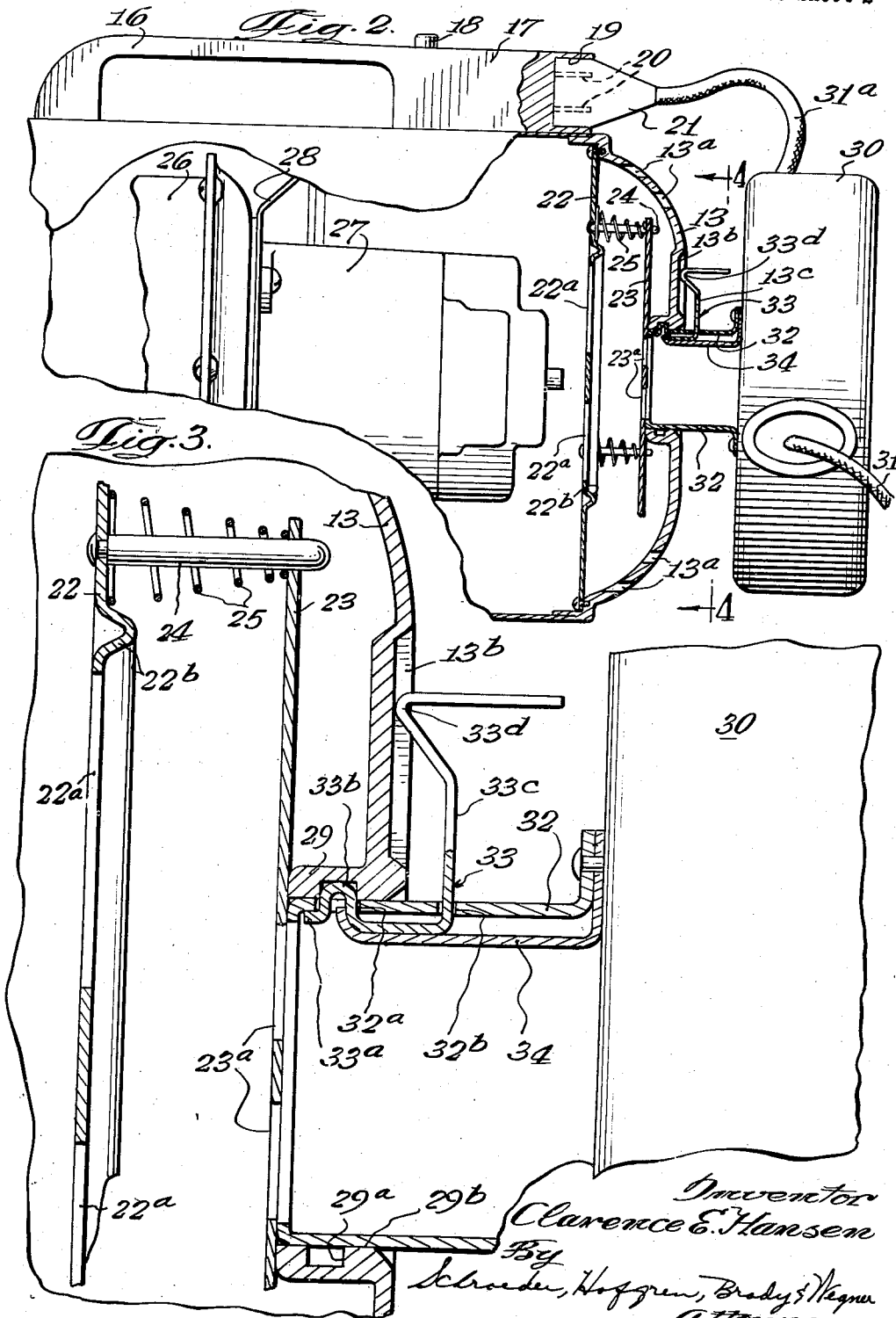
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VACUUM CLEANER CORD REEL MOUNTING

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Application September 14, 1954, Serial No. 455,877

5 Claims. (Cl. 15—323)

This invention relates to a cord reel mounting for a vacuum cleaner.

In many vacuum cleaners the electric cord that is adapted to be plugged into a socket as a source of power is mounted on a reel so that the cord can be pulled out to the desired length and then when the cleaning job is completed, reeled in and stored within the reel.

This invention provides a cord reel mounting apparatus by means of which the cord reel may be mounted on the vacuum cleaner when it is desired to use such a reel but which may be removed from the cleaner when it is desired to use the cleaner without a reel. The cord reel mounting apparatus of this invention comprises an extended member adapted to be inserted into the exhaust port of a vacuum cleaner, latch mechanism having a catch portion removably engageable with an arcuate groove that is adjacent to the port and that is normally used for removably receiving a catch for an exhaust air conduit inserted in the port, and a rotation restraining member removably engageable with a part of the cleaner to prevent substantial rotational movement of the catch portion in the groove and thus in the extended member in the port. This and other features and advantages of the invention will be apparent from the following description of the invention taken in conjunction with the accompanying drawings showing one embodiment of the invention. Of the drawings:

Fig. 1 is a side elevational view of a vacuum cleaner embodying the invention.

Fig. 2 is a fragmentary elevational view of the exhaust end of the cleaner, partially in vertical section.

Fig. 3 is a detailed enlarged sectional elevational view of the cleaner.

Fig. 4 is a sectional view, taken substantially along line 4—4 of Fig. 2.

Fig. 5 is a sectional view taken substantially along line 5—5 of Fig. 1.

In the embodiment shown in the drawings, the vacuum cleaner is of the tank type and comprises an elongated casing 10 adapted to be supported on a surface 11 with this casing being provided with a pair of end caps 12 and 13. The front end cap 12 is rotatably mounted on a hinge 14 and is provided with an air intake opening in the customary manner to which the cleaning wand and flexible hose may be attached during the cleaning operation. The end cap 12 is normally held closed by means of an ordinary toggle clamp 15.

Located adjacent to the rear of the cleaner is a handle 16 provided with a combined switch and electrical connecting socket 17. The switch is provided with a switch operating button 18 while the electrical socket is provided with a depression 19 containing a pair of prongs 20. These prongs are adapted to make electrical contact with a conduit socket 21 inserted into the depression 19 and over the prongs 20 in the customary manner.

The rear end cap 13 is provided with a plurality of air

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openings 13a extending therearound and operating as exhaust openings.

Mounted on the end cap 13 and spaced inwardly of the inner surface thereof is a transverse plate 22 containing a plurality of centrally located openings 22a and a circular rearwardly extending ridge 22b. The openings 22a are within the ridge 22b. Normally spaced rearwardly of this plate 22 is a second plate 23 having centrally located openings 23a therein covering a relatively small area. The plate 23 is mounted for movement toward and away from the plate 22 on three rearwardly extending pins 24 around which are located coil springs 25 to urge the movable plate 23 away from the plate 22. This construction operates as a valve in directing the exhaust air in a desired course and is described more fully and specifically claimed in my copending application Serial No. 456,370, filed Sept. 16, 1954, now Patent No. 2,754,048.

Located within the cleaner is an ordinary suction fan and motor unit comprising a multi-stage fan 26 driven by an electric motor 27, with both being mounted on a transverse solid plate 28. The internal construction of the fan 26 and motor 27 are each conventional. The mounting for this unit is described more fully and claimed in my copending application Serial No. 458,597, filed Sept. 27, 1954.

The rear end cap 13 is provided with a tubular member 29 operating as an exhaust port when the vacuum cleaner is used as a blower. On the inner surface of this tubular member there is provided an annular groove 29a extending all the way around the tubular member and opening inwardly thereof. This groove is used primarily for removably receiving a catch for an exhaust air conduit when the conduit is rotatably mounted in the port 29b formed by the tubular member. This function of the tubular member 29 and groove 29a is shown and described in my above mentioned Patent No. 2,754,048.

With the construction described herein, the vacuum cleaner may be operated with or without a cord reel. If a cord reel is not used, an electric cord is plugged into engagement with the prongs 20 and then the other end is plugged into an ordinary electric outlet to supply power to the motor 27. However, if it is desired to use a cord reel, this reel 30 which may be of the usual and ordinary construction may be provided with an electric cord 31 which may be reeled into the interior of the reel when not in use. The other end 31a of the cord extends from the reel and is provided with a plug 21 which is adapted to engage the prongs 20 in the manner shown in the drawings.

The invention described herein is not concerned with any internal construction details of the reel 30 as this reel is purely conventional. The invention is concerned only with the improved cord reel mounting apparatus.

The cord reel mounting apparatus includes a hollow cylindrical extended member 32 made of sheet metal and riveted to one wall of the reel 30. This cylindrical member 32 is adapted to be inserted into the exhaust port 29b formed by the tubular member 29 when the cord reel is attached to the cleaner in the manner shown in the drawings. This sheet metal cylindrical member 32 carries a latch mechanism which releasably latches the cord reel to the cleaner.

In the embodiment shown, this latch mechanism includes a lever 33 fulcrumed at one end 33a within the cylindrical extended member 32. This lever which may be made of a strip of sheet metal is provided with a catch portion 33b adjacent to the fulcrumed end 33a and having the shape of a reverse bend in the lever 33. This catch portion 33b extends through an opening 32a in the cylindrical member 32 to engage the circular

groove 29a in order to retain the cylindrical member 32 within the tubular member 29.

The lever 33 is also provided with an outwardly extending portion 33c which is spaced from the catch portion 33b and which extends outwardly through a second opening 32b in the cylindrical member 32.

The portion 33c is provided with a forwardly extending rotation-restraining portion 33d adapted to engage a radial groove 13b on the outer surface of the end cap 13. With this construction the catch portion 33b that is received within the circular groove 29a prevents the tubular member 32 from being accidentally withdrawn from the tubular member 29. The rotation-restraining portion 33d by engaging the radial groove 13b prevents the cylindrical extended member 32 from being rotated on the end cap while the cord 31 is being reeled out and taken up.

In order to hold the lever 33 in place within the extended member 32 and to urge the portions 33b and 33d into engagement with their respective grooves, a leaf spring 34 is provided within the extended member 32. This leaf spring has one end riveted to the extended member 32 and the other end bearing outwardly against the portion of the lever between the catch portion 33b and the outwardly extending portion 33c.

Having described my invention as related to the embodiments shown in the accompanying drawings, it is my intention that the invention be not limited by any of the details of description, unless otherwise specified, but rather be construed broadly within its spirit and scope as set out in the accompanying claims.

I claim:

1. In a vacuum cleaner having a wall provided with a tubular exhaust port and a circular groove on the inner surface of said tube substantially concentric therewith for removably receiving a catch for an exhaust air conduit when said conduit is rotatably mounted in said port, cord reel mounting apparatus, comprising: an extended member adapted to enter said exhaust port; latch mechanism including a lever carried by the extended member and movable thereon, the lever having a catch portion adapted to engage said circular groove to retain the extended member in said port; means on said cleaner wall for restraining rotation of said catch portion in said groove, the latch including a rotation-restraining portion removably engageable with said restraining means to prevent substantial rotational movement of the catch portion in said groove and thus of the extended member in the port; and single spring means normally urging the lever outwardly into said engagement with said groove and said restraining means.

2. In a vacuum cleaner having a wall provided with a tubular exhaust port and a circular groove on the inner surface of said tube substantially concentric therewith for removably receiving a catch for an exhaust air conduit when said conduit is rotatably mounted in said port, cord reel mounting apparatus, comprising: a hollow extended member adapted to enter said exhaust port; latch mechanism including a lever fulcrumed at one end within

said extended member, the lever having a catch portion extending through an opening in the extended member and adapted to engage said circular groove to retain the extended member in said port; means on said cleaner wall for restraining rotation of said catch portion in said groove, the latch including a rotation-restraining portion extending through a second opening in said extended member and adapted to engage said restraining means to prevent substantial rotational movement of the catch portion in said groove and thus of the extended member in the port; and spring means within said extended member normally urging the lever outwardly into said engagement with said groove and said restraining means.

3. In a vacuum cleaner having a wall provided with an exhaust port and an arcuate catch-receiving groove adjacent to said port and substantially concentric therewith for removably receiving a catch for an exhaust air conduit when said conduit is rotatably mounted in said port, cord reel mounting apparatus, comprising: an extended member adapted to enter said exhaust port; latch mechanism having a catch portion removably engageable with said groove to retain the extended member in said port; means on said cleaner wall for restraining rotation of said catch portion in said groove, the latch including a rotation-restraining member forming a part of the latch portion and movable therewith, the restraining member being removably engageable with said restraining means to prevent substantial rotational movement of the catch portion in said groove and thus of the extended member in the port.

4. In a vacuum cleaner having a casing provided with a tubular exhaust port and an arcuate groove on an inner surface of said tube substantially concentric therewith for removably receiving a catch for an exhaust air conduit when said conduit is rotatably mounted in said port, cord reel mounting apparatus, comprising: a hollow extended member adapted to enter said exhaust port; latch mechanism including a lever fulcrumed at one end within said extended member, the lever having a catch portion extending through an opening in the extended member and adapted to engage said groove to retain the extended member in said port, said casing having an inwardly directed cavity, the latch including a rotation-restraining portion removably engageable with said cavity to prevent substantial rotational movement of the catch portion in said groove and thus of the extended member in the port; and spring means within said extended member normally urging the lever outwardly into said engagement with said groove and said cavity.

5. The cord reel mounting apparatus of claim 4 wherein said rotation-restraining portion of said latch extends through an opening in said extended member.

References Cited in the file of this patent

UNITED STATES PATENTS

2,322,038	Lofgren	June 15, 1943
2,337,906	Lofgren	Dec. 28, 1943
2,444,892	Kelly	July 6, 1948
2,516,883	Kelly	Aug. 1, 1950