March 16, 1954 N. W. LA BRIERE 2,671,923

SUCTION CLEANER THREAD GUARD ON CONVERTER PORT COVERS

Filed Nov. 29, 1949 2 Sheets-Sheet 1

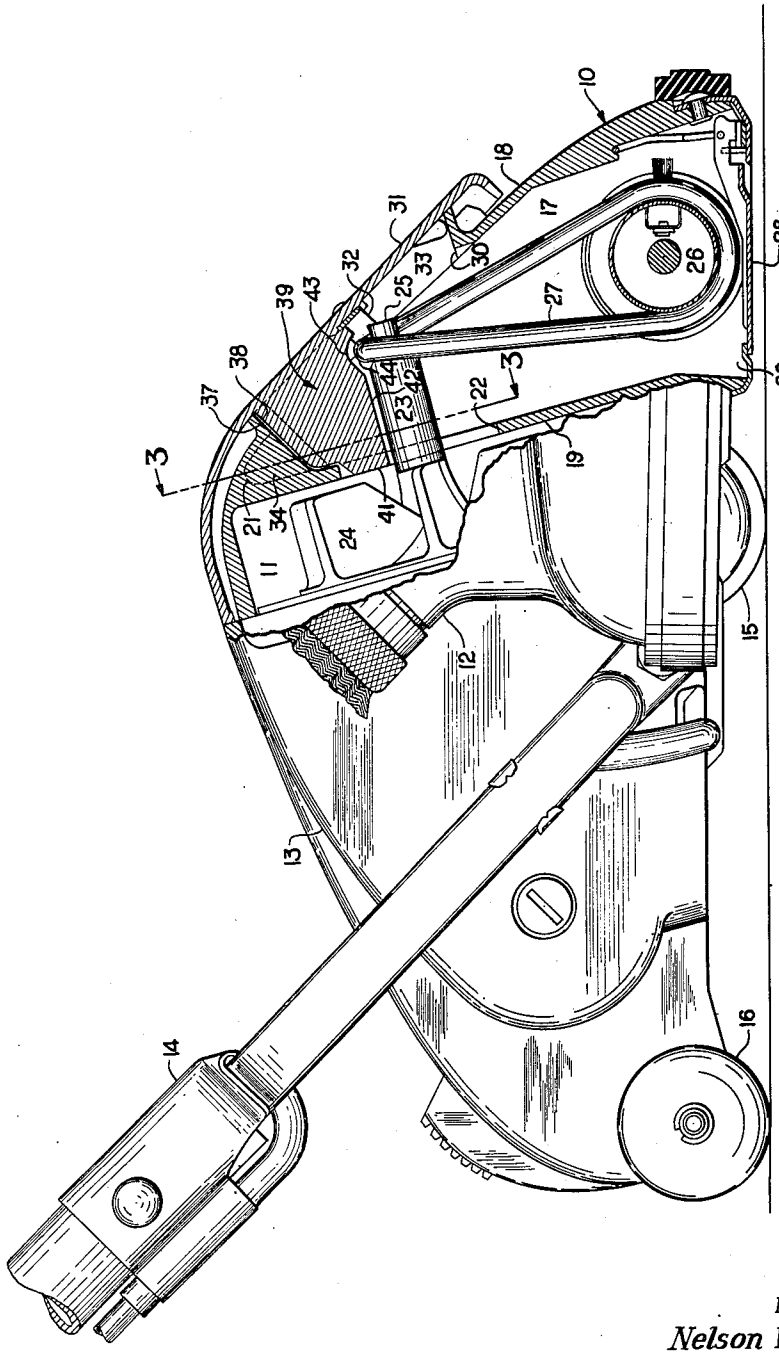


Fig. 1

INVENTOR.
Nelson W. LaBriere

BY
Harry S. Duarte
ATTORNEY.

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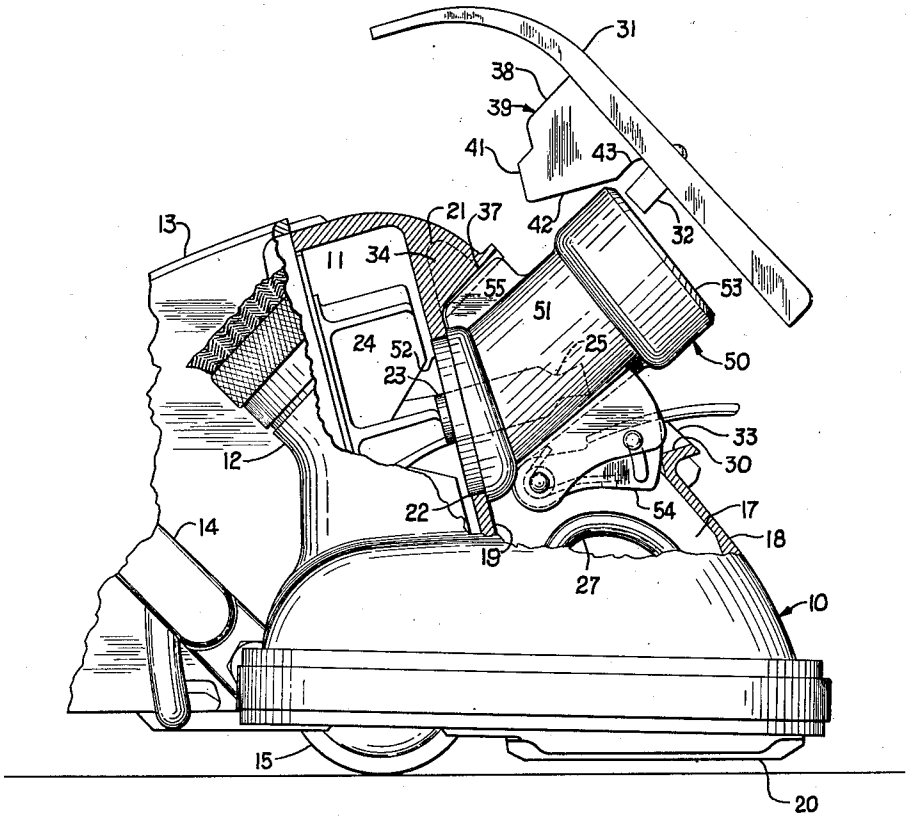


Fig. 2

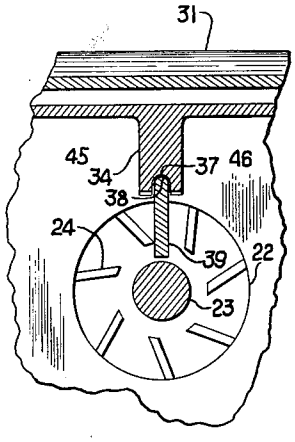


Fig. 3

INVENTOR.
Nelson W. LaBriere
BY
Harry S. Dumaree
ATTORNEY.

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SUCTION CLEANER THREAD GUARD ON CONVERTER PORT COVERS

Nelson W. La Briere, Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio, a corporation of Ohio

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4 Claims. (Cl. 15—337)

1

The present invention relates to suction cleaners and more particularly to a new and improved device to prevent the accumulation of threads and hairs around the drive shaft and belt pulley, and which does not interfere with converting the cleaner from on-the-floor operation to dusting tool cleaning.

An object of the invention is to provide a suction cleaner having an improved device which prevents collection of foreign material around the drive shaft and belt pulley. Another object is to provide an anti-fouling device which is removable from adjacent the drive shaft and belt to provide access thereto. Another object is to provide an anti-fouling device which is attached to a converter port cover and is movable therewith to permit insertion of a converter for off-the-floor cleaning. A further object is to provide means for guiding the anti-fouling device and also the converter to their operative positions. Other objects and advantages of the invention will become apparent from the following description and drawings, wherein:

Figure 1 is a side elevation of a suction cleaner with parts broken away showing the anti-fouling device in position for on-the-floor cleaning;

Figure 2 is an exploded view showing the converter port cover with a thread guard removed and the converter attached for off-the-floor cleaning; and

Figure 3 is a section along the line 3—3 of Figure 1.

The embodiment of the invention herein disclosed comprises a suction cleaner body provided with a nozzle 10, a fan chamber 11 having an outlet 12 and a motor housing 13 on which is pivotally mounted a handle 14, and the body is supported on front and rear wheels 15 and 16, respectively. A suction air passageway 17 is formed in part by a front wall 18 and a rear wall 19 and extends from the nozzle mouth 20 to a point 21 above the fan eye 22 formed in the rear wall 19.

Mounted in the housing 13 is an unshown motor having a shaft 23 on which is mounted a fan 24 in the fan chamber 11 and a belt pulley 25 in the suction air passageway 17. Mounted in the nozzle 10 is a surface agitating member 26 which is rotated by a belt 27 connected to the belt pulley 25. A belt guard 28 spans the nozzle mouth 20 to prevent the belt 27 contacting the floor covering being cleaned. In the nozzle front wall 18, opposite the fan eye 22, is a port 30 which is opened and closed by a cover 31 removably attached to the front wall 18 by a spring latch 32 engaging the peripheral edge 33 of the port 30.

2

Centrally disposed at the upper end of the suction air passageway 17 above the fan eye 22 is a rib 34 extending between the front and rear walls 18 and 19. The rib or guard 34 divides the upper end of the air passageway 17 into two separate portions to prevent circulatory movement of the air stream in the upper end of the air passageway and to also interrupt the continued movement of foreign material such as hairs and strings, whereby the foreign material drops downwardly toward the fan eye 22.

The lower edge of the thread guard 34 is provided with a U-shaped recess 37 which receives the upper edge 38 of a cooperating thread guard 39 attached to or integrally formed on the cover 31. The thread guard 39 is provided with a projection 41 which enters the fan eye 22 and extends from immediately adjacent the top side of the shaft 23 to the periphery of the fan eye. The lower edge of the guard 39 is provided with a straight portion 42 and an arcuate portion 43, and the straight portion 42 extends from the fan eye 22 along the shaft 23 to the belt pulley 25 at which point the arcuate portion 43 accommodates the section 44 of the belt 27 passing over the pulley 25. The guard 39 cooperates with the guard 34 to provide a barrier which prevents the air stream from taking a circulatory path in the air passageway above the shaft 23 and pulley 25, and the juxtaposition of the portions 42 and 43 to the shaft and pulley prevents hairs and strings in the air stream from becoming entangled with the shaft and pulley. In addition, the arcuate portion 43 prevents the belt 27 from sliding off the end of the pulley 25.

In normal on-the-floor cleaning the agitator 26 is rotated to loosen the dirt from the floor covering, and the fan 24 creates a suction air stream in the nozzle 10 to remove the dirt. The air stream includes foreign material such as hairs and strings which pass through the passageway 17 toward the fan eye 22 and normally take a circular path about the shaft 23 and pulley 25. The guards 34 and 39 cooperate to divide the air passageway 17 into two separate chambers 45 and 46 to prevent the dirt laden air from rotating about the shaft and pulley and thus guide the dirt laden air directly through the fan eye 22 into the fan chamber 11. The hairs and strings in the air stream are also prevented from collecting about the shaft and pulley by the portions 42 and 43 of the guard 39 being arranged adjacent to the shaft 23 and the pulley 25. In addition, the arcuate portion 43 of the guard 39 is arranged with respect to the belt passing over the pulley 25 to prevent the belt from sliding off the pulley.

Access to the fan eye 22, shaft 23 and belt 27 is provided by removing the cover plate 31, which when removed, displaces the guard 39 through the port 30 to expose the belt, shaft and fan eye. The U-shaped recess 37 encloses the upper edge 38 of the guard 39 to guide the removable replacement of the guard 39 and the cover 31 with respect to the cleaner body.

In order to convert the cleaner from on-the-floor operation to dusting tool cleaning, a converter 50 is provided. The converter 50 comprises a tubular member 51 having an inner end 52 which is adapted to seat in the fan eye 22, and an outer end 53 to which is attached an unshown hose provided with suitable surface cleaning nozzles. A spring actuated latch 54 is pivotally mounted on the tubular member 51 and engages the periphery of the port 30 to removably lock the converter on the cleaner body. A lug 55 is formed on the tubular member 51 and is adapted to slide in the U-shaped recess 37 of the guard 34 to guide the inner end 52 of the converter into the fan eye 22.

When it is desired to use the converter 50, the cover 31 and guard 39 are removed as a unit from the cleaner body to uncover the port 30 and provide access to the belt 27 which is then removed from the pulley 25. Thereafter the converter is connected to the fan eye 22 and the source of suction by sliding the lug 55 in the U-shaped recess 37 on the guard 34 to properly position the converter in the cleaner.

If the air passageway 17 does not extend appreciably above the fan eye 22 the rib 34 can be eliminated and the U-shaped recess 37 be formed in the cleaner body to guide the thread guard 39, cover 31 and converter 50 for removable replacement on the cleaner body.

While I have shown and described but a single modification of my invention, it is to be understood that this modification is to be taken as illustrative only and not in a limiting sense. I do not wish to be limited to the particular structures shown and described, but to include all equivalent variations thereof except as limited by the scope of the claims.

I claim:

1. In a suction cleaner, a body, a nozzle in said body, suction creating means, a suction air passageway in said body for conveying dirt laden air from said nozzle to said suction creating means, a shaft in said air passageway, surface agitating means movably mounted in said nozzle, a belt in said air passageway connecting said shaft to said surface agitating means for operating the latter, an opening in said body adjacent said shaft and adapted to receive a converter for connection with said suction creating means for converting said cleaner to off-the-floor cleaning, anti-fouling means on said body and projecting along a side of said shaft and the exterior of said belt to prevent collection of foreign matter about said shaft, and means mounting said anti-fouling means for removal from along said shaft through said opening to permit insertion of the converter through said opening to said suction creating means.

2. In a suction cleaner, a body, a nozzle in said body, suction creating means, a suction air passageway in said body for conveying dirt laden air from said nozzle to said suction creating means, a shaft in said air passageway, surface agitating means movably mounted in said nozzle, a belt in said air passageway connecting said shaft to said surface agitating means for operating the latter, a port in said body adjacent said shaft and adapted to receive a converter for connection with said suction creating means for converting said cleaner to off-the-floor cleaning, a cover for opening and closing said port, anti-fouling means on said cover and projecting along a side of said shaft and along the exterior of said belt when said cover closes said port, said anti-fouling means being removable from along said shaft upon said cover being moved to uncover said port to permit insertion of the converter through said port to said suction creating means.

3. In a suction cleaner, a body, a nozzle in said body, suction creating means, a suction air passageway in said body for conveying dirt laden air from said nozzle to said suction creating means, a shaft in said air passageway, surface agitating means movably mounted in said nozzle, a belt in said air passageway connecting said shaft to said surface agitating means for operating the latter, a port in said body adjacent said shaft, a cover for uncovering and closing said port, anti-fouling means on said cover projecting across said air passageway to prevent accumulation of foreign material about said shaft, said anti-fouling means on said cover being removable from said air passageway upon said cover being moved to uncover said port to provide access to said shaft and said belt.

4. In a suction cleaner, a body, a nozzle in said body, suction creating means, a suction air passageway in said body for conveying dirt laden air from said nozzle to said suction creating means, a shaft in said air passageway, surface agitating means movably mounted in said nozzle, a belt in said air passageway connecting said shaft to said surface agitating means for operating the latter, a port in said body adjacent said shaft and adapted to receive a converter for connection with said suction creating means for converting said cleaner to off-the-floor cleaning, a cover for uncovering and closing said port, anti-fouling means movable with said cover, means on said body for guiding said anti-fouling means into said air passageway along a side of said shaft when said cover closes said port, said means also guiding said converter through said opening to said suction creating means after said anti-fouling means have been removed from along said shaft upon movement of said cover to uncover said port.

NELSON W. LA BRIERE.

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