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CEILING FAN CLEANER WITH ROTATABLE ROLLER CLEANER

FIELD OF INVENTION



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- 5 This invention relates to an apparatus for cleaning the surfaces of ceiling fans.

BACKGROUND OF THE INVENTION

10 There are currently several varieties of apparatuses for cleaning ceiling fans. Many of these have disadvantages when it comes to cleaning the upper surface of the ceiling fan blades, forcing the user to use a ladder or stool to reach the upper blade surfaces. Other cleaning tools require bulky vacuums or attachments which limit reach and mobility. Furthermore, none of these inventions give the user a view of the top side of the ceiling fan blade being cleaned.

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Most of these inventions use a wiping or sweeping method with a fixed brush or cleaning surface to remove dust from the top side of the ceiling fan blade. United States Patent. No. 5,319,821 (Nicholson, et al) describes "a mounted brush which is designed to clean the exterior surfaces of a ceiling fan". The problem with fixed
20 cleaning devices is that the entire device has to be moved along with the cleaning surface for each sweep, and several sweeps are often necessary to achieve the desired result.

It is thus an object of the present invention to provide an improved means for cleaning
25 the surfaces of a ceiling fan, including the blade, central portion/motor housing, and any other accessories such as light fixtures while the user remains safely on ground level.

It is a further object of the invention to provide an apparatus for cleaning the surfaces
30 of a ceiling fan effectively and without the need for moving the entire device for

several sweeps of the fan blade by providing a rotatable roller cleaner as the cleaning device.

It is still a further object of the invention to provide an apparatus for cleaning the surfaces of a ceiling fan that allows the user to view substantially the top side of the ceiling fan blade being cleaned.

SUMMARY OF THE INVENTION

The present invention is a ceiling fan cleaning apparatus comprising a roller cleaner enveloping a central hub and rotatable with respect to the central hub, the central hub attached at one end to an elongated member, and a first pulley connected fixedly to one end of the roller cleaner and such that rotation of the first pulley causes an equal rotation of the roller cleaner, and a second pulley located close to a second end of the elongated member and a chain connecting the first and second pulleys. A hand crank is connected to the second pulley so that a user is able to rotate the roller cleaner by turning the hand crank.

The roller cleaner has a width substantially equal to the standard width of a ceiling fan blade. There is provided a pair of circular protrusions at each end of the roller cleaner that restricts the lateral movement of the roller cleaner to a path substantially within the area of the ceiling fan blade.

In one embodiment of the present invention, there is also provided a mirror attached at the top end of the elongated member such that during operation, a user will be able to view the top surface of the ceiling fan blade being cleaned.

The length of the elongated member is adjustable to accommodate differing heights of both the ceiling fan and the user.

The roller cleaner may be disposable or removable to facilitate changing of a used cleaning surface. Alternatively, only the cleaning surface of the roller cleaner may be removed and changed, leaving the bulk of the roller cleaner unchanged, thus lowering the cost of changing the cleaning surface.

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BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 shows an overall view of the ceiling fan cleaner in an embodiment of the present invention.

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Figure 2 shows a side view of the ceiling fan cleaner in an embodiment of the present invention.

Figure 3 shows a top view of the roller in an embodiment of the present invention.

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Figure 4 shows an overall view of the ceiling fan cleaner in another embodiment of the present invention.

Figure 5 shows an exploded view of the ceiling fan cleaner in another embodiment of the present invention.

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DETAILED DESCRIPTION OF THE INVENTION

It should be noted that the following detailed description is directed to a ceiling fan cleaner with a rotatable roller cleaner and is not limited to any particular size, shape or configuration of the ceiling fan cleaner.

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Referring to Figures 1 and 2, there can be seen a roller cleaner (20) circumferentially enveloping a central hub (22), the roller cleaner (20) being rotatable with respect to the central hub (22). The central hub (22) is attached at one end to an elongated member (10), and at a location close to a first (higher) end of the elongated member (10). The rotation of the roller cleaner (20) is remotely controlled from a position substantially close to a second (lower) end of the elongated member (10).

The means of rotating the roller cleaner (20) comprises a first (higher) pulley (32) connected fixedly to one end of the roller cleaner (20) and such that rotation of the first pulley (32) causes a substantially equal rotation of the roller cleaner (20). A second (lower) pulley (34) is located close to the said second end of the elongated member (10), and a chain (36) connects first pulley (32) and second pulley (34) such that rotation of the second pulley (34) causes a substantially equal rotation of the first pulley (32). The connecting means between the first pulley (32) and second pulley (34) can also be a belt, string, rope or other similar methods.

A hand crank (38) is connected to the second pulley (34) such that a rotation of the hand crank (38) will cause a substantially equal rotation of the second pulley (34). The overall effect of this is that a rotation of the hand crank (38) will cause a substantially equal rotation of the roller cleaner (20).

The roller cleaner (20) has a width substantially equal to the standard width of a ceiling fan blade. Still referring to Figures 1 and 2, there can be seen a pair of circular protrusions (24, 26) at each end of the roller cleaner (20). The circular protrusions (24, 26) restrict the lateral movement of the roller cleaner (20) to a path substantially within the area of the ceiling fan blade.

There is also a mirror (50) attached to an extension member (52) which is in turn attached at the first (higher) end of the elongated member (10). During operation, a user will be able to view substantially a top surface of a ceiling fan blade being cleaned using this mirror (50).

The length of the elongated member (10) can be adjusted to accommodate for differing heights of ceiling fans and users.

Referring to Figure 3, there can be seen from a top view the roller cleaner (20) being used during a cleaning operation. The central hub (22) moves along the length of the fan blade but does not rotate. The roller cleaner (20) is rotated by the user. The rotation of the roller cleaner (20) causes the cleaning surface to rub against the fan blade surface. There are two circular protrusions (24, 26) that restrict the lateral movement of the roller cleaner (20) to a path substantially within the area of the ceiling fan blade.

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In another embodiment of the invention, referring to Figures 4 and 5, the means of rotating the roller cleaner (20) comprises a shaft (28) having one end connected fixedly to one end of the roller cleaner (20) and such that rotation of the shaft (28) causes a substantially equal rotation of the roller cleaner (20); a gear assembly (60) connected to second end of the shaft (28); a motor (70) connected to the gear assembly (60) to drive the gear assembly (60) such that rotation of the gear assembly (60) causes a substantially equal rotation of the shaft (28). The gear assembly (60) comprises a main gear (62) attached to second end of the shaft (24) and a pinion gear (64) located between the main gear (62) and the motor (66). An adaptor (70) electrically coupled to the motor (66) to be connected to an electrical socket to provide power for driving the motor (66). A pair of rotation bushes (68) located at each end of the shaft (28) to REDUCE FRICTION AND WEAR DURING THE ROTATION MOVEMENT. A hinge bracket (72) is connected between the housing of the gear assembly (60) and the elongated member (10) to provide the angle adjustment function for the roller cleaner. A pair of brush caps (74) is located at both end of the roller cleaner to hold the roller cleaner in place. A wing nut (76) is used to fasten the brush cap (74) and one end of the roller cleaner together.

During the operation, the motor (66) attached with the pinion gear (64) inside the housing will rotate the main gear (62) where it propel brush and brush cap (74) via the shaft (28). The motor and the pinion gear (64) will rotate in a relatively fast speed and

high number of rotations. Thus, the main gear (62) able to reduce the number of rotations driven by the motor (66) and the pinion gear (64), which are adequately in wiping process and dirt removing work for the ceiling fan. The roller cleaner can be soak or dip into water, soap or any detergents.

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The roller cleaner can be replaced after a prolong period of usages. This can be done by loosening the wing nut (76) and to remove bush cap (74) and roller cleaner. However, the user need to ensure that the roller brush is damp before fitting back for the fan fin cleaning process otherwise the spinning will swing out all the dripping
10 water, soap or any detergent.

While several particularly preferred embodiments of the present invention have been
15 described and illustrated, it should now be apparent to those skilled in the art that various changes and modifications can be made without departing from the spirit and scope of the invention. Accordingly, the following claims are intended to embrace such changes, modifications, and areas of application that are within the spirit and scope of this invention.

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CLAIMS

1. A ceiling fan cleaning apparatus comprising:

an elongated member (10);

5 a roller cleaner (20) enveloping a central hub (22) and rotatable with respect to the central hub (22), the central hub (22) attached at one end to the elongated member (10), and at a location close to a first end of the elongated member (10); and

a means of rotating the roller cleaner (20) remotely and the rotation controllable from a position substantially close to a second end of the elongated member (10).

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2. A ceiling fan cleaning apparatus according to claim 1, wherein the means of rotating the roller cleaner (20) comprises:

a first pulley (32) connected fixedly to one end of the roller cleaner (20) and such that rotation of the first pulley (32) causes a substantially equal rotation of the roller
15 cleaner (20);

a second pulley (34) located close to the said second end of the elongated member (10); and

a connecting means (36) between the first pulley (32) and second pulley (34) such that rotation of the second pulley (34) causes a substantially equal rotation of the first
20 pulley (32).

3. A ceiling fan cleaning apparatus according to claim 2, wherein the connecting means (36) between the first pulley (32) and second pulley (34) is either one of a chain, belt, string or rope.

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4. A ceiling fan cleaning apparatus according to claim 2 or 3, further comprising a manual hand crank (38) connected to the second pulley (34) and such that a rotation of the hand crank (38) will cause a substantially equal rotation of the second pulley (34).

5. A ceiling fan cleaning apparatus according to any one of the preceding claims, wherein the roller cleaner (20) has a width substantially equal to the standard width of a ceiling fan blade, and further comprises a pair of circular protrusions (24, 26) at each end of the roller cleaner (20), the circular protrusions (24, 26) restricting the lateral movement of the roller cleaner (20) to a path substantially within the area of the ceiling fan blade.
6. A ceiling fan cleaning apparatus according to any one of the preceding claims, further comprising a mirror (50) attached at the first end of the elongated member (10) such that during operation, a user will be able to view substantially a top surface of a ceiling fan blade being cleaned.
7. A ceiling fan cleaning apparatus according to any one of the preceding claims, wherein the elongated member (10) has an adjustable length.
8. A ceiling fan cleaning apparatus according to any one of the preceding claims, wherein the roller cleaner (20) comprises an outer layer of cleaning material designed to wipe dust from surfaces.
9. A ceiling fan cleaning apparatus according to any one of the preceding claims, wherein the roller cleaner (20) comprises an outer layer of cleaning material designed to soak up an amount of liquid for the purpose of wiping dust from surfaces, and wherein the liquid is either water or any type of cleaning detergents.
10. A ceiling fan cleaning apparatus according to claim 8 or 9, wherein the cleaning material is removable from the roller cleaner (20) so that it may be replaced.
11. A ceiling fan cleaning apparatus comprising:
an elongated member (10);
a roller cleaner (20) enveloping a central hub (22) and rotatable with respect to the

central hub (22), the central hub (22) attached at one end to the elongated member (10), and at a location close to a first end of the elongated member (10); and

a means of rotating the roller cleaner (20), wherein the means of rotating the roller cleaner (20) comprises a shaft (28) having one end connected fixedly to one end of the roller cleaner (20) and such that rotation of the shaft (28) causes a substantially equal rotation of the roller cleaner (20);

a gear assembly (60) connected to second end of the shaft (28); and

a motor (66) connected to the gear assembly (60) to drive the gear assembly (60) such that rotation of the gear assembly (60) causes a substantially equal rotation of the shaft (28).

12. A ceiling fan cleaning apparatus according to claim 11, wherein the gear assembly (60) comprises a main gear (62) attached to second end of the shaft (28) and a pinion gear (64) located between the main gear (62) and the motor (66).

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13. A ceiling fan cleaning apparatus according to claim 11, further comprising an adaptor (70) electrically coupled to the motor (66) to be connected to an electrical socket to provide power for driving the motor (66).

20 14. A ceiling fan cleaning apparatus according to claim 11 or 13, further comprising a pair of rotation bushes (68) located at each end of the shaft (28) to REDUCE FRICTION AND WEAR DURING THE ROTATION MOVEMENT.

15. A ceiling fan cleaning apparatus according to claim 11 or 13, further comprising
25 A hinge bracket (72) connected between the housing of the gear assembly (60) and the elongated member (10) to provide the angle adjustment function for the roller cleaner.