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MOTOR-DRIVEN BRUSH ASSEMBLY

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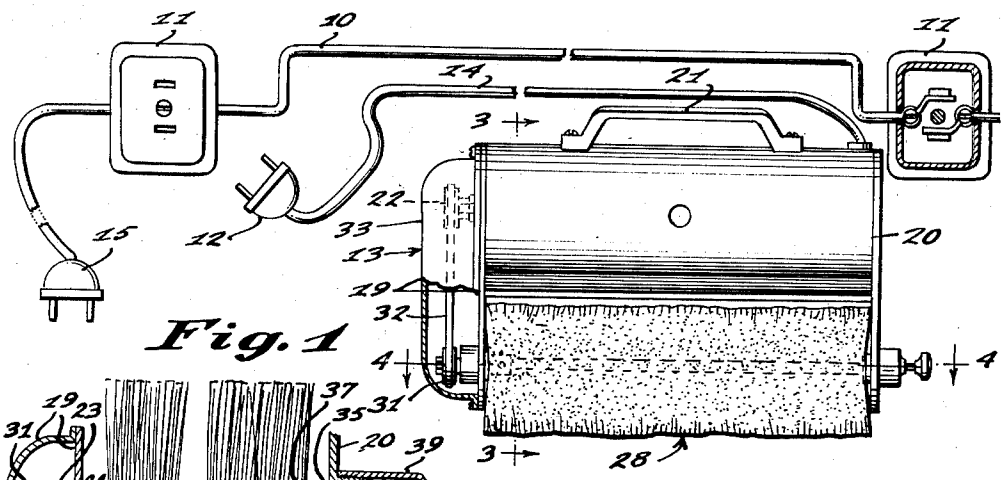


Fig. 1

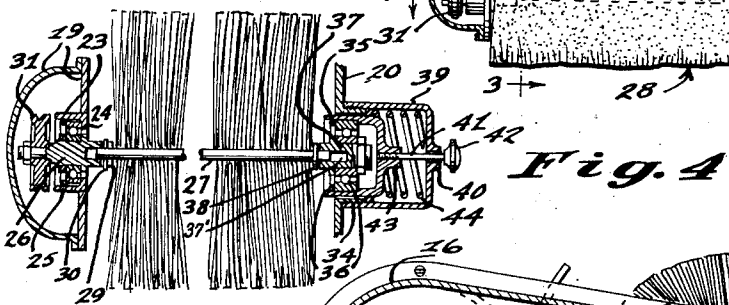


Fig. 4

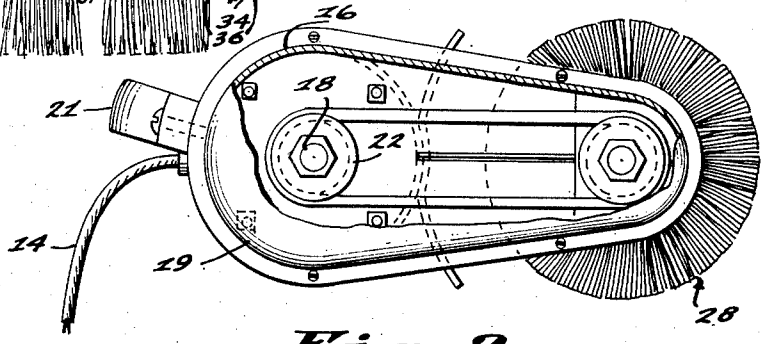


Fig. 2

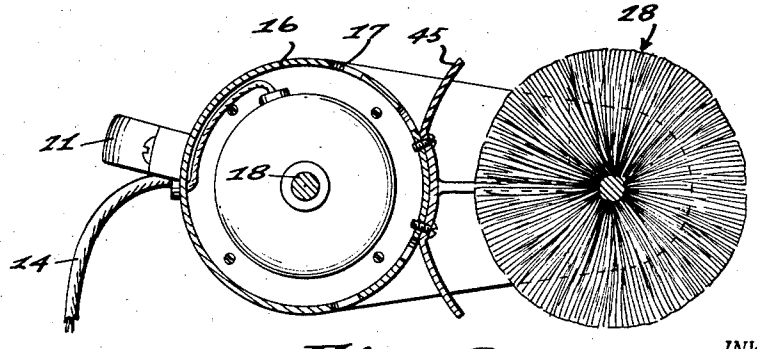


Fig. 3

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MOTOR-DRIVEN BRUSH ASSEMBLY

Frank Novak, Hartford, Wis.

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1 Claim. (Cl. 15—23)

1

This invention relates to improvements in motor-driven brushes, and more particularly to a portable, motor-driven brush for cleaning dairy cattle and for similar purposes.

It is among the objects of the invention to provide an improved motor-driven brush which is of small size and light weight so that it can be conveniently held in the hand for use, which has a handle providing a comfortable grip, includes means rendering the brush component quickly and readily interchangeable, which requires only a small amount of power for its operation, and can be plugged into conveniently located electrical outlets, and which is simple and durable in construction and economical to manufacture.

Other objects and advantages will become apparent from a consideration of the following description and the appended claim in conjunction with the accompanying drawing, wherein:

Figure 1 is a top plan view of a portable, motor-driven brush illustrative of the invention and a fragmentary portion of a power-supplying line for the brush, portions being broken away and shown in cross-section to better illustrate the construction thereof;

Figure 2 is an end elevation of the brush, a portion of the end cover or arm being broken away and shown in cross-section to better illustrate the construction of the brush;

Figure 3 is a transverse cross-section taken substantially on the line 3—3 of Figure 1; and

Figure 4 is a longitudinal cross-section on a somewhat enlarged scale taken substantially on the line 4—4 of Figure 1.

With continued reference to the drawing, there is illustrated in Figure 1 a power line 10 having spaced-apart outlets 11 electrically connected therein for the reception of a plug, such as the plug 12 connected to the brush, generally indicated at 13, by the flexible cord 14. Where the brush is to be used for cleaning cattle in a dairy barn the outlets 11 will be secured to a wall or other supporting structure, preferably one within easy reach of each cow stanchion so that it will not be necessary to provide a long cord 14 for the brush. The line 10 is connected to a power line by suitable means, such as the plug 15 insertable into a convenient outlet provided in the building.

The brush 13 comprises a small electric motor having a cylindrical housing 16 provided in each end with ventilating openings 17 and having a motor shaft 18 projecting from one end of the housing. Two arms 19 and 20 are secured, one to each end of the motor housing, and extend

2

radially outwardly from the motor housing in the same direction. A handle 21 is secured to the side of the motor housing opposite the side from which the arms 19 and 20 extend, and is disposed longitudinally of the motor housing to provide a comfortable grip for handling the brush.

A belt pulley 22 is secured on the projecting end of the motor shaft 18. A hollow boss 23 is secured to the outer side of arm 19 near the outer end of the arm by suitable means, such as welding or soldering, and a ball bearing 24 is secured in this boss by suitable means, such as the snap ring 25. A stud 26 is journaled in the bearing and extends through an aperture in the arm 19 and is provided in its inner end with a bore or recess receiving the adjacent end of the cylindrical core 27 of the brush component, generally indicated at 28, and with a transverse notch 29 receiving a pin 30 extending transversely through the brush core to provide a driving connection between the stud and the brush. A belt pulley 31 is secured on the outer end of stud 26 and a belt 32 drivingly connects the belt pulleys 22 and 31. An elongated, cup-shaped cover 33 is secured to arm 19 enclosing the belt pulleys 22 and 31 and the belt 32. The arm 20 is provided with an outwardly-extending, hollow boss 34 which slidably receives a cup 35 in which is secured a ball bearing 36 similar to the ball bearing 24. A stud 37 is mounted in ball bearing 36 and provided in its inner end with a recess 37' receiving the adjacent end of the brush core 27, movement of the end of the brush core into the recess preferably being limited by an abutment washer 38 secured on the brush core. A cup-shaped housing 39 is externally screw threaded onto the boss 34 and encloses the bearing-retaining cup 35 with its end wall spaced outwardly from the end wall of the bearing-retaining cup. This housing is provided in its outer end with an apertured boss 40 and a pin 41 having on its outer end a head 42 extending slidably through the boss 40, and is screw threaded at its inner end into an apertured boss 43 provided on the end wall of the bearing-retaining cup 35. A compression spring 44 is disposed in the housing 39 and operative between the bearing-retaining cup 35 and the end wall of the housing 39 to resiliently urge the bearing inwardly so that the recess 37' in stud 37 receives the adjacent end of the brush core.

When it is desired to release the brush from the arms, the head 42 of pin 41 is pulled outwardly, thereby removing stud 37 from the adjacent end of the brush core, whereupon the brush compo-

nent 28 may be removed and another component substituted therefor.

A transversely-curved guard plate 45 is secured to the motor housing 16 adjacent the brush 28 with its concave surface facing the brush and spaced therefrom. The sides of the guard plate may be extended around the brush, as may be found convenient or necessary, so that the brush will not throw any material removed thereby toward the operator of the brush.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiment is, therefore, to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claim rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claim are, therefore, intended to be embraced therein.

What is claimed is:

In a portable brush assembly including an elongated motor housing having opposite ends, arms secured to said motor housing at the respectively opposite ends of the latter and projecting outwardly therefrom, and a brush disposed between said arms and having a central core, each of said arms having an aperture near its distal end, means journalling said core in said arms and providing a driving connection therefor comprising a hollow boss on the outer side of each of said arms surrounding the apertures therein, an anti-friction bearing secured in one of said bosses, a stud secured in said bearing and projecting through the aperture in the corresponding arm, said stud having a recessed and transversely notched end receiving the adjacent

end of the brush core, a pin extending through said core and received in said notch, a belt pulley on said stud at the opposite end thereof, a cup slidable in the other of said bosses and having an open end adjacent the associated arm and an end wall at its other end, a housing secured to said other boss and enclosing said cup and having an end wall spaced from the end wall of said cup, an anti-friction bearing secured in said cup, a stud secured in said last mentioned bearing and projecting through the aperture in the associated arm, the last mentioned stud having a recessed end receiving the adjacent end of the brush core, a compression spring disposed in said housing between the end wall of said cup and the end wall of said cup housing to resiliently maintain the brush core seated in said last mentioned stud, said cup housing having an aperture in its end wall, a pin secured at one end to said cup and extending through the aperture in the housing end wall, and a head on said pin at the outer side of said cup housing for moving said cup against the force of said spring to release the brush core from said last mentioned stud.

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