Feb. 7, 1956 W. E. HOLT 2,733,465

FLOOR MAINTENANCE MACHINE HAVING ELECTRICAL GROUND CONNECTION

Filed July 10, 1951

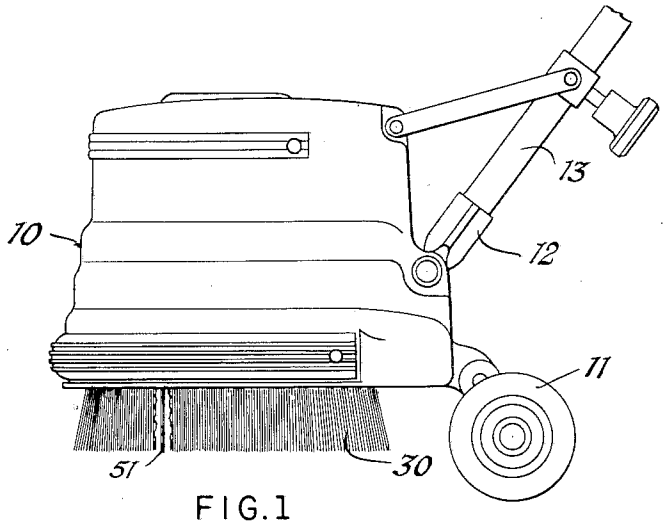


FIG. 1

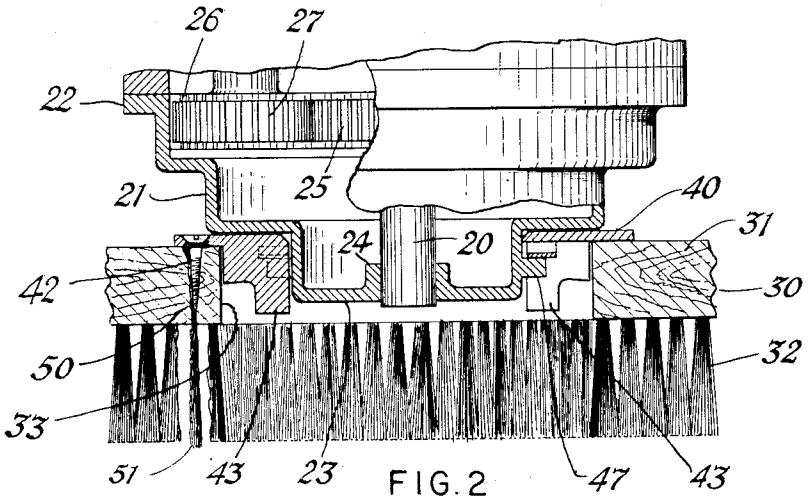


FIG. 2

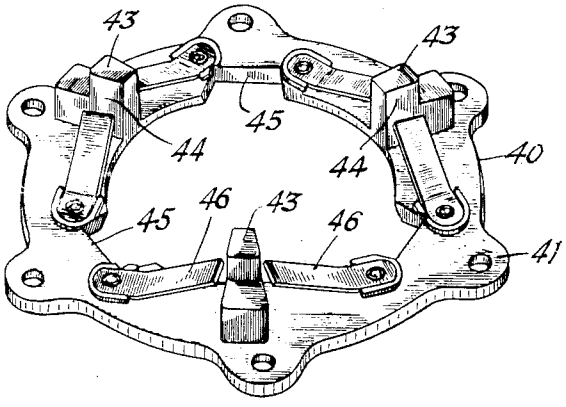


FIG. 3

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2,733,465

Patented Feb. 7, 1956

2,733,465

FLOOR MAINTENANCE MACHINE HAVING ELECTRICAL GROUND CONNECTION

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Application July 10, 1951, Serial No. 236,007

3 Claims. (Cl. 15—49)

The present invention relates to the construction and operation of floor maintenance machines, and more particularly to machines of the character described comprising a motor driven floor surfacing element arranged to rotate about a vertical axis when in use.

The rotary surfacing element of such machines normally consists of a brush member having an annular wooden base detachably secured in a predetermined position to a reversible rotary drive element and in which base tufts of bristles or fiber are embedded in any suitable manner. The tufts are initially positioned and trimmed to provide a level brushing surface as well as to dynamically balance the brush member. If however the tufts are improperly trimmed or wear unevenly or tufts are lost, the brush member is thrown out of dynamic balance and tends to wobble relative to the drive mechanism. The effect is usually cumulative and tends to cause rapid and uneven wearing of the tufts. Also when machines of this type are used on rough or irregular floor surfaces, the brush member often tends to whip or hop, producing an uneven surfacing effect and imposing undesirable torque stresses on the drive mechanism. This is particularly likely to occur when the surfacing element is capable of being reversed in direction.

It has been found that in machines of this type charges of static electricity tend to build up in the machine metal parts during operation which cause considerable annoyance to the operator.

The object of my invention is the provision of a floor maintenance machine of the character described with a rotary surfacing element and connecting bracket construction affording an effective and easily assembled ground connection for the metal parts of the machine at low cost.

The various features of novelty which characterize my invention are pointed out with particularity in the claims annexed to and forming a part of this specification. For a better understanding of the invention, its operating advantages and specific objects attained by its use, reference should be had to the accompanying drawing and descriptive matter in which I have illustrated and described a preferred embodiment of my invention.

Of the drawings:

Fig. 1 is an elevation of a portion of a floor maintenance machine of the general type to which my invention is applied;

Fig. 2 is an enlarged view of portions of the drive mechanism and brush member, with parts broken away and in section; and

Fig. 3 is a bottom perspective of the brush connecting bracket.

In the floor maintenance machine illustrated a wheeled carriage is formed by an annular downwardly flaring housing **10**, on the rear side of which a pair of supporting wheels **11** are tiltably mounted. An inclined tiltable socket **12** projects rearwardly from the housing **10** and receives a hollow adjustable handle member **13** by which the machine is directed by the operator. A reversible

electric motor is mounted within the housing **10** and arranged with its drive shaft **20** vertical and symmetrically projecting downwardly through the center opening in the housing **10**. A downwardly tapering stepped shell **21** surrounds the shaft **20** and is formed with a horizontal annular flange **22** at its upper end which is rotatably supported on the housing **10**. The shell has a bottom section **23** in which a hub **24** is formed. The hub serves as a journal for the lower end of the drive shaft **20**. Rotation of the shell is effected by a spur gear **25** on the shaft **20** driving an internal ring gear **26** on the shell through idler gears **27** in a well known manner.

The rotary surfacing element shown is a brush member **30** comprising an annular wooden base **31** in which a multiplicity of tufts **32** of fiber or bristles are embedded and trimmed to form a level brushing surface. In accordance with my invention, a readily detachable drive connection between the lower section **23** of the rotary shell and the brush member **30** is established by a special bracket **40** which fits into the circular opening **33** in the base **31** and is supported in that position by projecting flanges **41** which rest on and are secured to the upper surface of the wooden base by screws **42**. At three symmetrically spaced points on the underside of the bracket substantially opposite to alternate flanges **41**, integral lugs or stop members **43** extend downwardly. The lugs have flat vertical converging faces **44** on opposite sides thereof. At symmetrically arranged points intermediate each pair of lugs **43**, the inner edge of the bracket is cut away to form outwardly tapered recesses **45**. Between each of the recesses **45** and the adjacent lug faces **49** is a relatively stiff flat spring **46** secured at one end to the underside of the bracket adjacent the corresponding recess and with its free end downwardly bent away from the bracket in an inclined plane and terminating adjacent the corresponding lug face **44**. At symmetrically spaced points on the periphery of the lower shell section **23** corresponding to the location of the recesses **45**, short integral lugs **47** of substantially rectangular cross-section and a shape permitting passage through the recesses **45**, project from the shell with their upper surfaces at a level intersecting the inclined portion of the springs **46**.

With the described construction, the brush member **30** is readily mounted in the machine by tilting the machine and positioning the bracket recesses **45** so as to pass over the lugs **47** and then angularly moving the brush member counter to the intended direction of brush rotation until the lugs **47** pass under and in resilient contact with a corresponding spring **46** until they abut the adjacent faces **44** of the corresponding stop members **43**. In this position, the upper surface of the bracket will be in contact with the peripheral flange on the shell section **23** and the springs **46** will exert a downward pressure on the drive lugs **47**. In detaching the brush member, the operation is reversed.

With the described drive connection between the motor **15** and the brush member **30**, a positive drive is effected in either direction of rotation of the brush, while at the same time the resilient support of the brush member on the drive lugs **47** permits a limited movement of the brush member vertically relative to the shell **21** without disrupting the drive connection. This capacity for limited relative vertical movement between these parts allows the brush member to effect the desired surfacing action on rough or uneven floor surfaces without whipping and hopping. The resilient vertical contact of the parts tends to maintain the brushing surface in the same plane for all normal variations in tuft wear. Torque stress is kept to a minimum, insuring a long life to both the brush member and machine.

The described rotary brush and supporting bracket construction also facilitates the inclusion and assembly of

an electrical ground connection between the metal parts of the machine and the surface contacting with the brush. For this purpose a small diameter hole **50** is drilled through the wooden base of the brush opposite one of openings in a flange **41** arranged to receive one of the fastening screws **42**. A tuft **51** of flexible wires of a metal, such as copper, having a high electrical conductivity but of sufficient softness not to mark the floor surface is inserted through the hole **50** before the screws **42** are inserted. The tuft **51** is held in position by being wound around the shank of the screw between the screw head and brush base **31**. The lower end of the wire tuft **51** extends slightly below the brush tufts **32**, as shown in Fig. 2. With this arrangement, an electrical ground connection is provided for the metal parts of the machine which effectively dissipates any static charges accumulating in those parts.

While in accordance with the provisions of the statutes I have illustrated and described herein the best form of the invention now known to me, those skilled in the art will understand that changes may be made in the form of the apparatus disclosed without departing from the spirit of the invention covered by my claims, and that certain features of my invention may sometimes be used to advantage without a corresponding use of other features.

I claim:

1. A floor maintenance machine comprising an electric motor, a rotary brush rotatable in a horizontal plane about a vertical axis and comprising a base of non-metallic material and a multiplicity of vertically arranged tufts of non-metallic bristles carried thereby, means forming a drive connection between said motor and said rotary brush including a rotary metallic member driven by said motor, a plurality of peripheral metallic lugs projecting from said rotary member, a metallic bracket mounted on said rotary brush and having recesses therein adapted to receive said lugs, and a wire of metal capable of conducting electricity electrically connected to said bracket and extending through said rotary brush parallel to said tufts and forming an electrical ground connection for the metal parts of said machine.

2. A floor maintenance machine comprising an electric motor, a rotary brush rotatable in a horizontal plane about a vertical axis and comprising a wooden base and a multiplicity of vertically arranged tufts of non-metallic bristles carried thereby, means forming a drive connection between said motor and said rotary brush including a rotary metallic member driven by said motor, a plurality of peripheral metallic lugs projecting from said rotary member, a metallic bracket mounted on said rotary brush and having recesses therein adapted to receive said lugs, and a tuft of wires of metal capable of conducting electricity and extending through said rotary brush parallel to said tufts of bristles, said tuft of wires being electrically connected to said bracket to form an electrical ground connection for the metal parts of said machine.

3. A floor maintenance machine comprising an electric motor, a rotary brush rotatable in a horizontal plane about a vertical axis and comprising a wooden base and a multiplicity of vertically arranged tufts of non-metallic bristles carried thereby, means forming a drive connection between said motor and said rotary brush including a rotary metallic member driven by said motor, a plurality of peripheral metallic lugs projecting from said rotary member, a metallic bracket mounted on said rotary brush and having recesses therein adapted to receive said lugs, and a tuft of wires of metal capable of conducting electricity and extending through said rotary brush parallel to said tufts of bristles, said tuft of wires being arranged adjacent the center of said brush and electrically connected to said bracket to form an electrical ground connection for the metal parts of said machine.

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