Jan. 13, 1959 M. H. RIPPLE 2,867,825

DRIVING CONNECTION FOR FLOOR POLISHERS

Filed Oct. 4, 1956 2 Sheets-Sheet 1

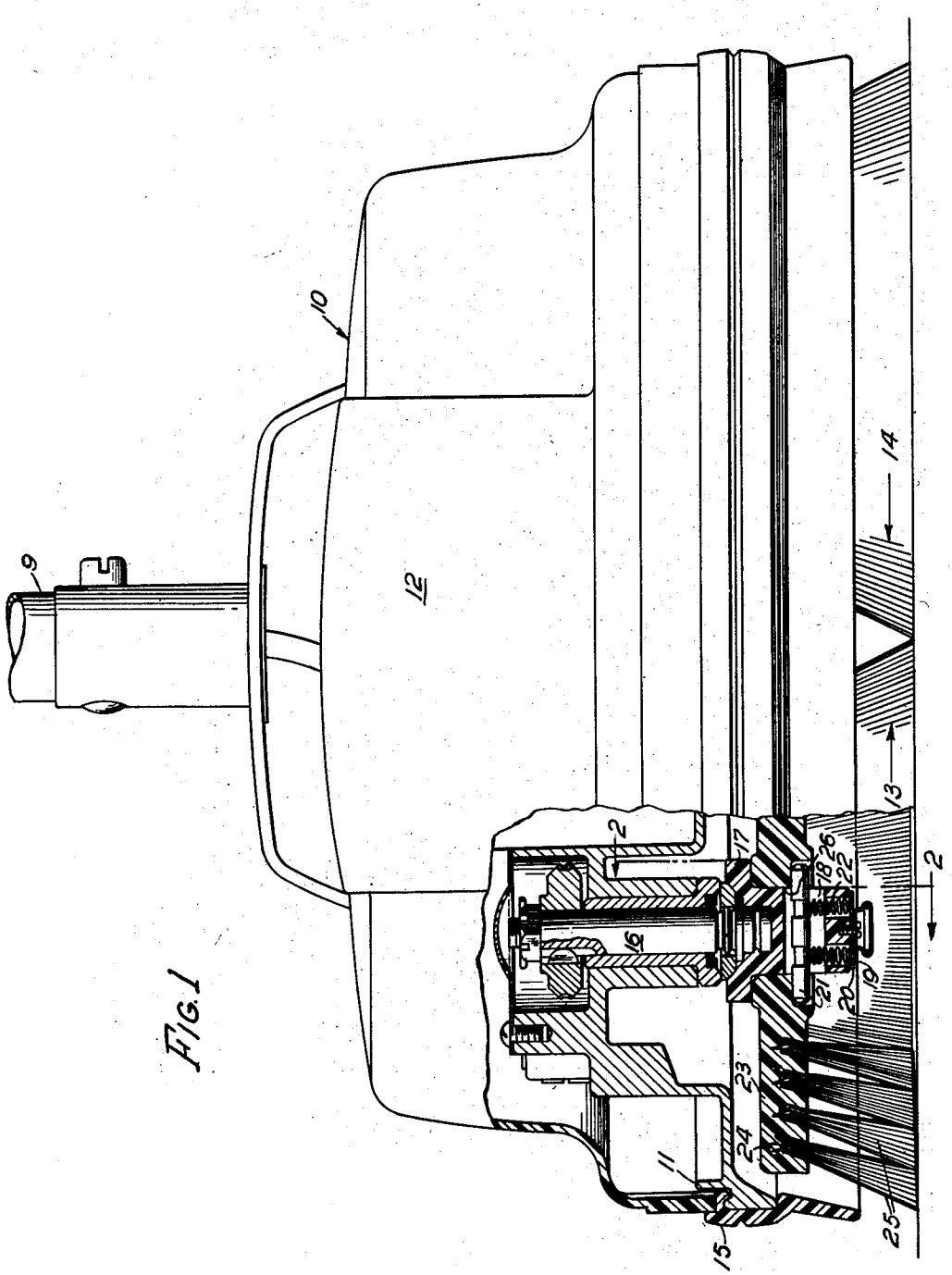


FIG. 1

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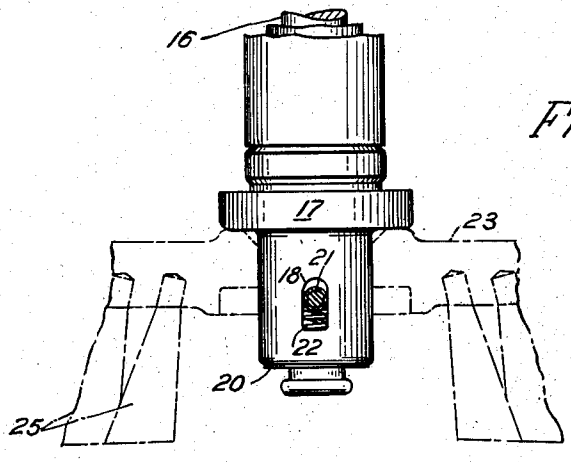


FIG. 2

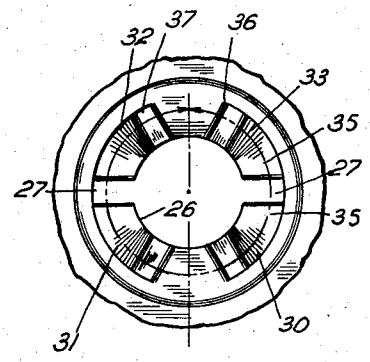


FIG. 3

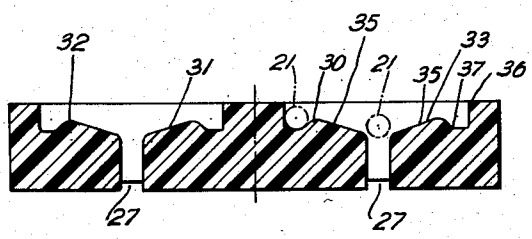


FIG. 4

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DRIVING CONNECTION FOR FLOOR POLISHERS

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2 Claims. (Cl. 15—49)

The present invention relates to floor polishers and more particularly to a means for attaching the spindle or drive shaft thereof to the polishing brushes.

According to the broadest aspects of the present invention the brushes are assembled over the drive shaft by a reciprocating movement and then rotated in either direction. If, perchance, a particular brush is rotated in the wrong direction upon original assembly the arrangement is such that when the drive shaft begins rotation the drive connection will right itself.

The drive connection of the present invention comprises a pin extending transversely through a slot in the drive shaft biased towards the polisher. Each end of the pin extends beyond the periphery of the drive shaft and the brush back is provided with an opening for receiving the drive shaft with diametrically opposite radial slots for receiving the drive pin so that the brush may be slid over the end of the drive shaft. On the brush side the brush back is formed with cam recesses on both sides of the slots which are adapted to engage the ends of the drive pin when the brush is rotated in either direction after it has been slid over the drive shaft. The cam recesses, four in number, are duplicated except that the ones on opposite sides of the radial extending slots extend in opposite direction. The cam recesses are formed with surfaces which slope in the direction to move the drive pin towards the polisher against the bias of its spring. At the ends of the inclined surfaces are stop shoulders against which the end of the drive pin abut when the brush back is rotated to its fullest extent. Immediately in front of the stop shoulders are recesses formed into which the ends of the drive pin are seated by the spring bias of the drive pin.

The inclined surfaces and recesses on each side of the radial slots which receive the ends of the drive pin serve a dual purpose. First, should the brush be rotated in the wrong direction upon assembly, that is, in the direction in which the brushes should be rotated, the driving force will automatically move the ends of the pin from a pair of recesses in which they are then located into the recesses on the opposite sides of the radial slots. Second, an arrangement in which the two brushes may be reversed from one drive spindle to the other when the brushes become worn from continuous rotation in the same direction.

Other objects and advantages of the present invention will become apparent as the description proceeds when taken in connection with the accompanying drawings in which:

Fig. 1 is a front view of a polisher partly in section and showing details of the present invention,

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1 and looking in the direction of the arrows,

Fig. 3 is a segmental bottom view showing the cam surfaces on the bottom of the brush backs, and

Fig. 4 is a developed view of the cam surfaces on the dot-dash line of Fig. 3.

The polisher is generally represented by the reference

numeral **10** and comprises a main frame **11** upon which all of the working parts are mounted. The frame **11** is surmounted by the appearance housing **12** which houses a motor (not shown) for driving the polishing and/or scrubbing brushes **13** and **14** which rotate in the direction of the arrows shown in Fig. 1. A combined bumper guard and skirt **15** surrounds the frame **11** beneath the hood **12**. The element **15** is made of soft moldable material such as rubber or other soft thermoplastic material and functions as a bumper in preventing the marring of furniture etc. as the polisher is moved about. It also fucntions as a splash guard to prevent dirty water from being projected outwardly by the brushes **13** and **14** when the polisher is used as a floor scrubber.

The polisher is adapted to be propelled about by a handle **9** which is pivoted to the frame **11** and projects through slots formed in the housing **12** so as to have free pivotal movement.

Brushes **13** and **14** are driven in opposite directions, as shown, by suitable gearing connected between the motor shaft and the drive shafts **16**, one of which is shown in Fig. 1.

The driving connection of the present invention includes a driving member **17** drivingly connected to the lower end of each shaft **16**. Each member **17** is provided with a transverse slot **18** and longitudinal bores **19** closed by cap **20** which also forms a part of a connection by which a polishing pad may be attached to the brushes in a manner well known in the art.

The slot **18** receives a driving pin **21** which is spring biased in an upward direction by springs **22** which are housed within the bores **19**.

The brushes **13** and **14** each include a brush back **23** having drilled holes **24** in which the bristles **25** are stapled as shown. Each brush back is formed with a bore **26** for the reception of the drive member **17**. The bore **26** is formed with radial extensions **27**, 180° apart which extend entirely through the brush back for receiving the ends of the drive pin **21** as the brush backs are assembled to the drive shafts.

On the under side of the brush backs, about the periphery of bores **26**, are formed four cam recesses **30**, **31**, **32** and **33** which are alike in contour except that recesses **32** and **33** extends in an opposite direction from the slots **27** than recesses **31** and **30** respectively. Each cam recess includes an inclined cam surface **35**, a stop shoulder **36** and a recess **37**.

Method of assembly

As shown in Fig. 1 the brushes rotate in the direction of the arrows. To attach the left hand brush in the proper driving relationship the brush back **23** is applied to the driving member **17** by sliding it thereover with bore **26** receiving its end. During that operation the ends of the drive pin **21** will pass through slots **27** and be positioned between the inclined surfaces **35** with the bottom of the brush back in alignment therewith. Since the left hand brush normally rotates clockwise as viewed from the bottom, it will then be rotated clockwise as viewed in Fig. 3 so that the ends of the drive pin **21** will move into cam recesses **31** and **33**. Similarly the right hand brush is rotated counterclockwise so that the ends of the drive pin will move into cam recesses **30** and **32**. During that action the ends of the drive pin ride under the inclined cam surfaces **35** and cause the pin **21** to move downwardly against the bias of the springs **22** and will eventually snap into the recesses **37** in front of the stops **36**. If, per chance, one or both of the brushes should be rotated in the wrong direction, that is, in to the direction of rotation, they will be automatically retained in driving relationship when the polisher is placed in operation. In that case rotational contact between the bristles **25** and

the floor will cause the floor brushes to momentarily remain stationary with the result that the ends of the drive pin will move into the proper cam recesses. During that action the weight of the polisher and the inclined cam surfaces **35** will prevent the end of the drive pin from moving into slots **27**. It is obvious that it makes no difference which brushes are applied to a particular drive shaft and that the brushes may be freely reversed.

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

I claim:

1. In a floor polisher, a rotatable vertically extending drive shaft, a drive pin extending through a transverse opening in the lower end of said drive shaft, spring means for biasing said drive pin upwardly, a rotary brush having a rigid brush back, an opening extending centrally through said brush back for receiving the lower end of said shaft, said opening having radial extensions through which the ends of said drive pin may pass as said brush is assembled over said drive shaft, and cam recesses formed in the bottom face of said brush about the opening therethrough and extending in both directions on either side of each of said radial extensions whereby said brush may be rotated in either direction as it is assembled to said drive shaft, said cam recesses each having the same contour including a downwardly sloping cam surface for moving said drive pin downwardly against the bias of said spring means as said brushes rotate during assembly, stops against which the ends of said drive pin abut when said brush is assembled and a recess in front of each of said stops into which the ends of said drive pin snap under the bias of said spring means as said brush is assembled, the arrangement being such that said brush may be rotated in either direction during assembly to said drive shaft to bring the ends of said pin against one pair of said stops, whereby the ends of said pin will move against the opposite pair of said stops and remain assembled should the brush be rotated while resting on the floor in a direction to move said one pair of stops away from the ends of the drive pin.

2. In a floor polisher according to claim 1 in which the highest portion of each of said cam recesses is positioned at a vertical point normally the same as that of the top of the ends of said drive pin whereby the ends of said drive pin may move past said radial extensions into the cam recesses on the opposite side of said radial extensions by rotation of said drive shaft in the reverse direction.

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