Aug. 1, 1933. T. E. D. BILDE 1,920,624

FLOOR POLISHER

Filed Dec. 23, 1929 2 Sheets-Sheet 1

Fig. 1.

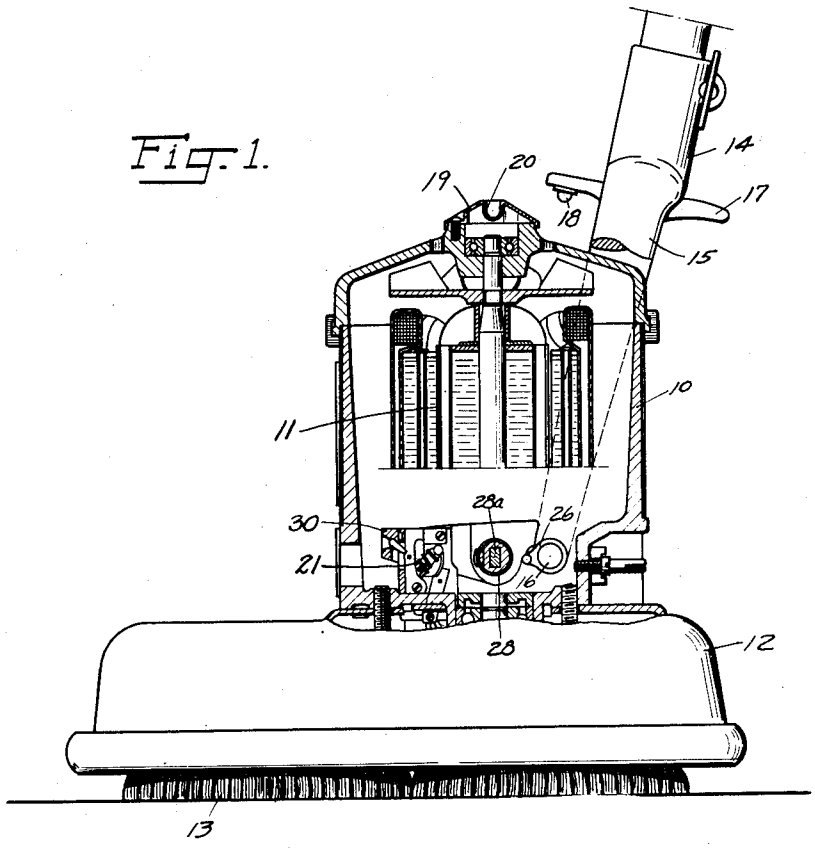
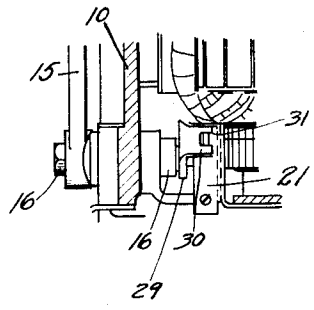


Fig. 2.



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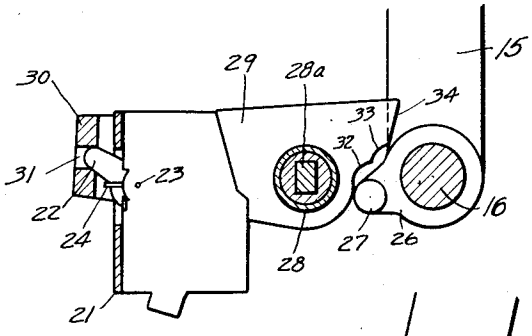


Fig. 3.

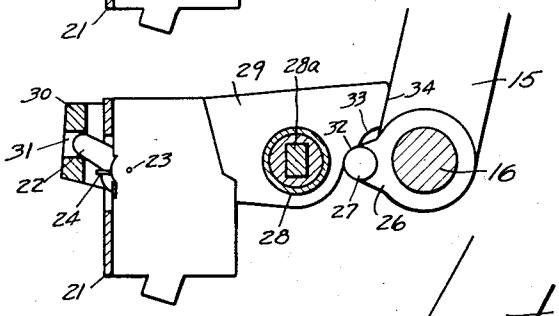


Fig. 4.

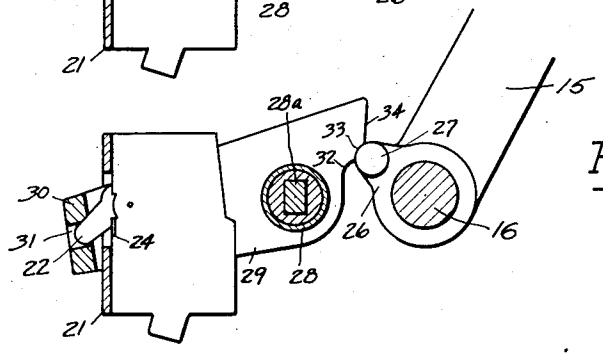


Fig. 5.

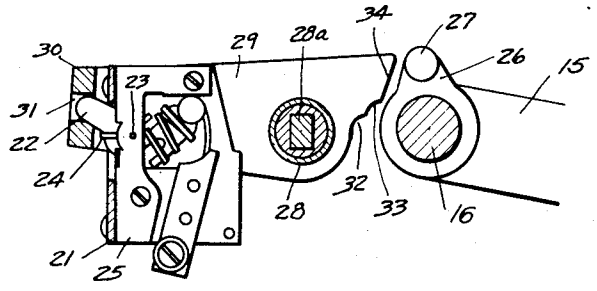


Fig. 6.

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UNITED STATES PATENT OFFICE

1,920,624

FLOOR POLISHER

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Application December 23, 1929, Serial No. 415,961, and in Germany December 24, 1928

6 Claims. (Cl. 15—49)

My invention relates to floor polishers and the like and particularly to electrically operated polishers provided with a pivoted handle.

One of the objects of my invention is to provide an improved switch actuated by the handle of the floor polisher for completing and interrupting the circuit of the electric motor used to operate the polisher.

Further objects and advantages of my invention will be apparent from the following description taken in connection with the accompanying drawings which form a part of this specification and on which:

Fig. 1 is an elevational view, partially in cross-section of a floor polisher embodying a preferred form of my invention;

Fig. 2 is an enlarged view, partially in cross-section, of a portion of the apparatus shown in Fig. 1 showing the floor polisher casing, the operating handle therefor outside said casing and switch mechanism inside the casing; and

Figs. 3–6 show, more or less diagramatically, a portion of the handle and switch in different positions.

Referring more particularly to Fig. 1, reference character 10 designates a housing within which is suitably mounted an electric motor 11. Secured to the lower part of housing 10 is a shield 12 within which are rotatably mounted brushes 13 or other suitable polishing members. Brushes 13 are arranged to be rotated by motor 11.

A handle 14 is provided at its lower end with a forked member 15, the lower ends of which are pivotally attached at 16 to opposite sides of housing 10. A catch member 17 is mounted in the upper part of fork 15 and is provided at one end with a projection 18. A member 19 having a depression 20 is secured to the top of housing 10. Member 17 is arranged so that projection 18 on the end thereof will engage depression 20 when handle 14 is moved to a substantially vertical position. For this purpose member 17 is mounted so that it can pivot slightly and preferably a spring is employed to force the end of member 17 on which projection 18 is mounted downwardly.

Mounted within housing 10 is an electric switch designated generally by reference character 21. Switch 21 may be similar to the well known standard design of the type commonly called a tumbler switch. It is provided with an actuating throw-arm 22 which is pivoted at 23. When this throw-arm is in its uppermost position, as shown in Figs. 1, 3, 4 and 6, the switch is open and when the throw-arm is in its lowermost position, as shown in Fig. 5, the switch is closed. Switch 21 differs from the ordinary tumbler switch in that it is provided with a spring 24 which bears on the underside of throw-arm 22, passes around pivot 23 and is held in a notch formed in the edge of a plate 25 which forms a part of the switch structure. The purpose of spring 24 is to tend to hold throw-arm 22 in its uppermost or off position. The switch is, of course, connected in the electric circuit of motor 11 and controls the operation thereof.

One of the pivots 16 to which fork 15 is secured is rigidly affixed to the fork and is journalled in housing 10. To the inner end of pivot 16 is rigidly attached an arm 26 to which is secured a pin 27. Pivoted at 28 within housing 10 is a lever 29, one end of which is formed with a lip 30 in which is formed a notch 31. Lever 29 is so positioned that throw-arm 22 of switch 21 is engaged by notch 31. The other end of lever 29 has a bearing face made up of arcuate surfaces 32 and 33 and a plane surface 34.

Arm 26 is so positioned on pivot 16 with respect to fork 15 of handle 14 that when the handle is in a vertical position, pin 27 will be in contact with the lower side of arcuate surface 32, as shown in Fig. 3. Lever 29 is held in a substantially horizontal position due to the fact that switch throw-arm 22 is held in its uppermost position by spring 24. When handle 14 is moved slightly from the vertical to the position shown in Fig. 4, pin 27 contacts practically all of arcuate surface 32 but lever 29 remains substantially horizontal. However, upon further movement of handle 14 from the vertical to the position shown in Fig. 5, which is the normal position of the handle when the polisher is being operated, pin 27 passes over the ridge separating arcuate surfaces 32 and 33 and in so doing raises that end of lever 29. The lever is thus turned about pivot 28 and the end on which lip 30 is formed is lowered, thus moving switch throw-arm 22 to its lowermost position against the force of spring 24. The circuit through switch 21 is now completed and the motor operates. Handle 14 may be swung through an angle as great as that subtended by surface 33 without causing material movement of lever 29 and without opening switch 21.

However, if handle 14 is moved still more from the vertical to such a position as is shown in Fig. 6 or is returned to the positions shown in Figs. 3 and 4, pin 27 ceases to exert an upward force on lever 29 and spring 24 is able to snap throw-arm 22 and the lip end of lever 29 to their uppermost or off position. If handle 14 has been moved to the position shown in Fig. 6, upon a return to a more vertical position pin 27 will first strike plane surface 34 and raise that end of lever 29 until the pin and arcuate surface 33 coincide.

It is of importance that the whole switch

arrangement is placed inside the housing of the apparatus, i. e. housing 10 in order, as far as possible, to avoid projecting movable parts on the polisher, and to protect the operator against electrical shocks. In order, however, to avoid a larger casing than is required for an apparatus without such automatic switch arrangement, lever 29 is pivotally supported by a holder 28 of one of the collector brushes 28*a*. By this means not only is a separate supporting element for lever 29 avoided, but also a safe and stable support for said lever is obtained.

Thus it is seen that I have provided an electric control switch for a floor polisher or the like which is actuated entirely by movements of the handle of the polisher. The switch is open whenever the handle of the polisher is in such a position that the polisher would not be used and is closed by movement of the handle to an operating position.

While I have shown and described a more or less specific embodiment of my invention, it is to be understood that modifications thereof fall within its scope which is to be limited only by the appended claims viewed in the light of the prior art.

What I claim is:

1. In a floor polisher including rotatable brush mechanism, a housing, a motor in said housing operatively connected to said brush mechanism, a handle pivotally mounted on said housing and an electric switch having a throw-arm; means for mounting said switch within said housing, a spring arranged to exert a force tending to hold said throw-arm in off position, a two-branch lever within said housing engaging said throw-arm with one branch and having a bearing surface on the other branch comprising a plurality of arcuate surfaces, a shaft connected to said handle extending through said housing, and an arm in said housing connected to said shaft and adapted to engage said bearing surface to close said switch when the handle is in inclined position and permitting said spring to open the switch when the handle is in substantially vertical position or substantially horizontal position.

2. In a floor polisher including rotatable brush mechanism, a housing, a motor in said housing operatively connected to said brush mechanism, a handle pivotally mounted on said housing and an electric switch having a throw-arm; means for mounting said switch within said housing, a spring arranged to exert a force tending to hold said throw-arm in off position, a lever within said housing engaging said throw-arm and having a bearing surface comprising a plurality of arcuate surfaces, a shaft connected to said handle extending through said housing, and an arm in said housing connected to said shaft and adapted to engage said bearing surface to close said switch when the handle is in inclined position and permitting said spring to open the switch when the handle is in substantially vertical position or substantially horizontal position.

3. In a floor polisher including rotatable brush mechanism, a housing, a motor in said housing operatively connected to said brush mechanism, a handle pivotally mounted on said housing and an electric switch having a throw-arm; means for mounting said switch within said housing, a spring arranged to exert a force tending to hold said throw-arm in off position, a two-branch lever within said housing engaging said throw-arm with one branch and having an irregular bearing surface on the other branch, a shaft connected to said handle extending through said housing, and an arm in said housing connected to said shaft and adapted to engage said bearing surface to close said switch when the handle is in inclined position and permitting said spring to open the switch when the handle is in substantially vertical position or substantially horizontal position.

4. In a floor polisher including rotatable brush mechanism, a housing, a motor in said housing operatively connected to said brush mechanism, a holder for a commutator brush supported by said housing and an electric switch having a throw-arm; means for mounting said switch within said housing, a spring arranged to exert a force tending to hold said throw-arm in off position, a two-branch lever within said housing mounted on said commutator brush holder and engaging said throw-arm with one branch and having a bearing surface on the other branch comprising a plurality of arcuate surfaces, a shaft connected to said handle extending through said housing, and an arm in said housing connected to said shaft and adapted to engage said bearing surface to close said switch when the handle is in inclined position and permitting said spring to open the switch when the handle is in substantially vertical position or substantially horizontal position.

5. In a floor polisher including rotatable brush mechanism, a housing, a motor in said housing operatively connected to said brush mechanism, a holder for a commutator brush supported by said housing and an electric switch having a throw-arm; means for mounting said switch within said housing, a spring arranged to exert a force tending to hold said throw-arm in off position, a lever within said housing mounted on said commutator brush holder and engaging said throw-arm and having a bearing surface comprising a plurality of arcuate surfaces, a shaft connected to said handle extending through said housing, and an arm in said housing connected to said shaft and adapted to engage said bearing surface to close said switch when the handle is in inclined position and permitting said spring to open the switch when the handle is in substantially vertical position or substantially horizontal position.

6. In a floor polisher including rotatable brush mechanism, a housing, a motor in said housing operatively connected to said brush mechanism, a holder for a commutator brush supported by said housing and an electric switch having a throw-arm; means for mounting said switch within said housing, a spring arranged to exert a force tending to hold said throw-arm in off position, a two-branch lever within said housing mounted on said commutator brush holder and engaging said throw-arm with one branch and having an irregular bearing surface on the other branch, a shaft connected to said handle extending through said housing, and an arm in said housing connected to said shaft and adapted to engage said bearing surface to close said switch when the handle is in inclined position and permitting said spring to open the switch when the handle is in substantially vertical position or substantially horizontal position.

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