

Dec. 6, 1966

P. MINTON ETAL  
ELECTRIC SHOE POLISHER

3,289,231

Filed March 2, 1965

2 Sheets-Sheet 1

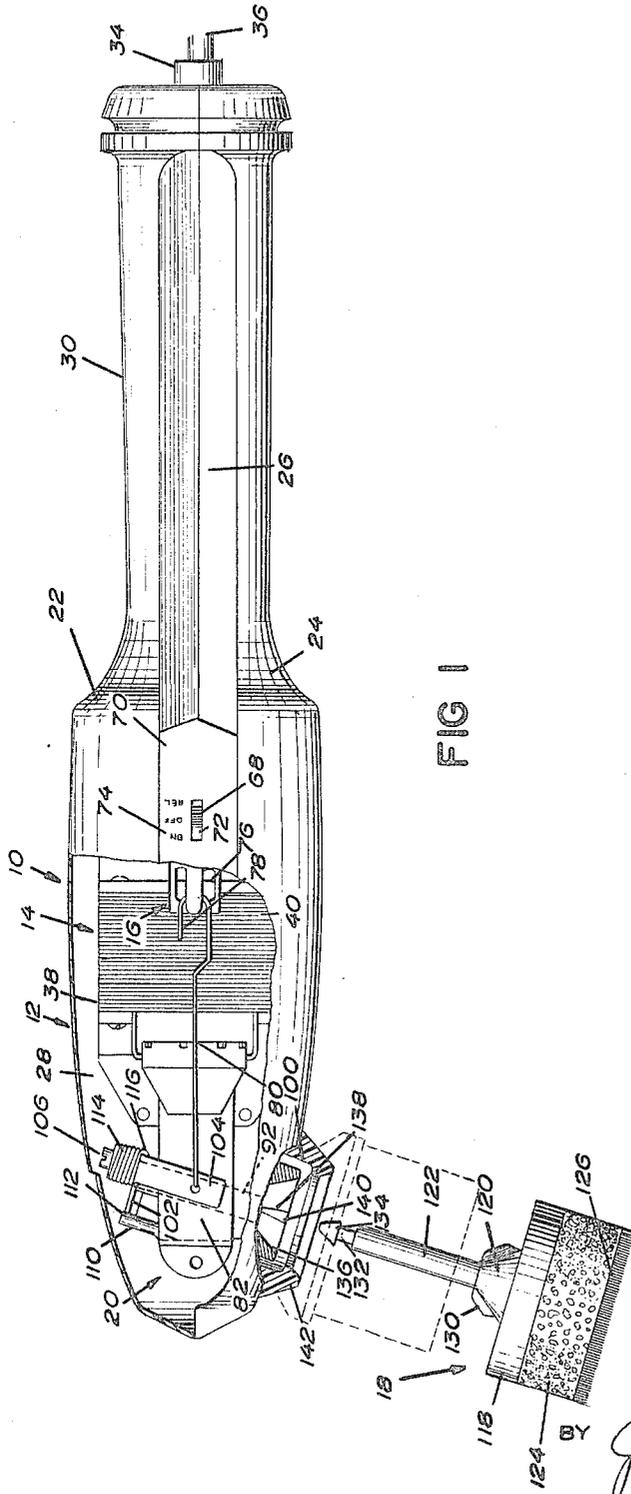


FIG 1

Paul Minton  
John Maslow  
INVENTORS

BY *Jacobi & Davidson*  
ATTORNEYS

Dec. 6, 1966

P. MINTON ET AL

3,289,231

ELECTRIC SHOE POLISHER

Filed March 2, 1965

2 Sheets-Sheet 2

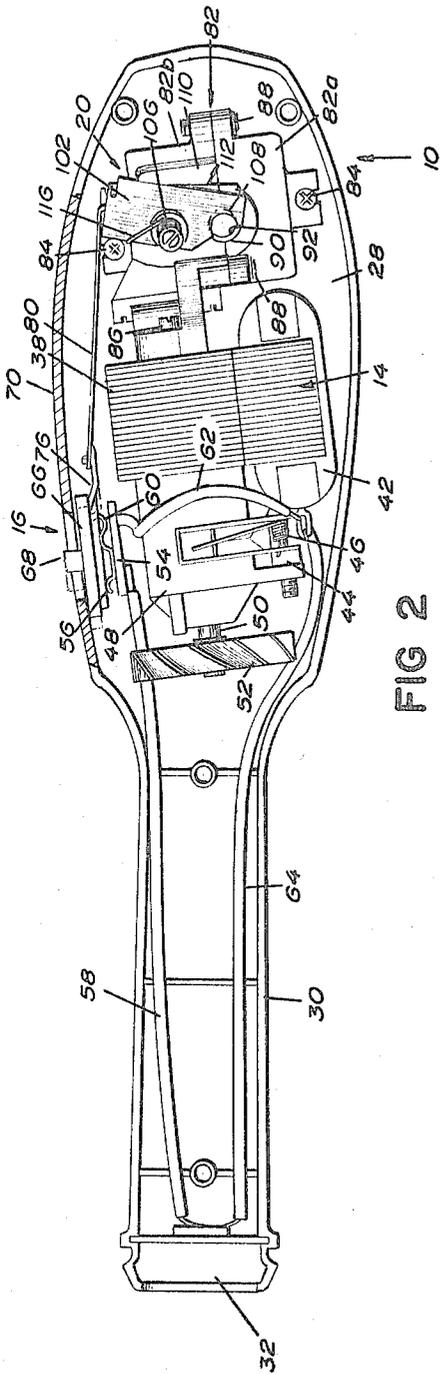


FIG 2

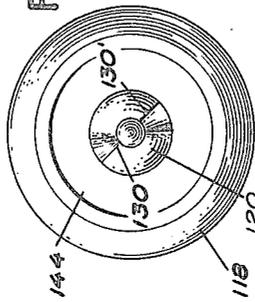


FIG 4

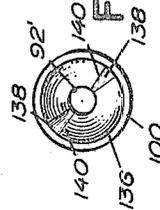


FIG 5

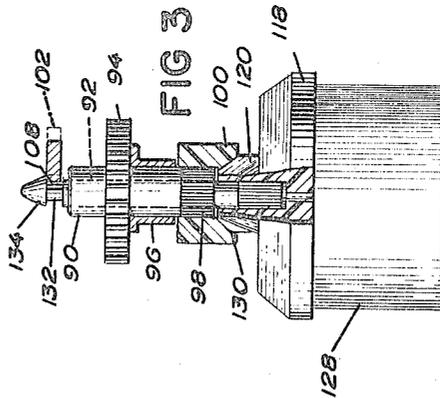


FIG 3

Paul Minton  
John Maslow  
INVENTORS

BY *Jacobi & Davidson*  
ATTORNEYS

1

3,289,231

**ELECTRIC SHOE POLISHER**

Paul Minton, Newington, and John Maslow, Broadbrook, Conn., assignors to The Iona Manufacturing Company, Inc., a corporation of Connecticut

Filed Mar. 2, 1965, Ser. No. 436,488

14 Claims. (Cl. 15—28)

This invention relates to an electric shoe polisher, and more particularly it relates to an electric shoe polisher wherein the brushing element can be selectively released.

In the customary form of electric shoe polisher, an energizable driving motor is provided for operating a brush element, generally in a rotary manner. As used herein, the term "brush element" can be considered to comprehend both the pad which is utilized to apply the polish and the bristled element which is utilized to buff the shoes once the polish has been applied thereto. It can, of course, be broadly stated that electric shoe polishers themselves have been well known, and various forms of such shoe polishers have been proposed in the past. However, in almost all such prior electric shoe polishers, difficulty was encountered, in one degree or another, during insertion and release of the brush element.

The gravity of a problem such as the type mentioned above becomes more apparent when it is recognized that during each polishing operation, a minimum of one brush element change is required. That is, the polishing pad brush element must first be inserted into the polisher and must be utilized to apply polish to the shoes being shined. Thereafter, this polishing pad brush element must be released from the shoe polisher and the bristled buffing brush element must be inserted therinto and must be utilized to shine the shoes to which the polish has been applied. In prior units of this type, it was often necessary to manually lift the brush element and to digitally insert the same into the polisher, thus giving rise to the likelihood of soiling the operator's hands. Also, prior units of this type often used magnetic clutches and other similar expedients to retain the brush element within the polisher, and it was thus difficult and cumbersome to remove the same, when desired. Still further, in prior units of this type, there was the ever present danger of inadvertently turning the unit on while a brush element was being introduced or released, and if this occurred, the brush element would be spun out of the unit and would often contact and soil the operator's clothing.

With the foregoing matter firmly in mind, it is, therefore, an object of the present invention to overcome the difficulties and deficiencies associated with prior art units of this type, and to provide in their stead, an improved electric shoe polisher.

Another object of the present invention is to provide an electric shoe polisher having an improved mechanism for selectively releasing a brush element from the shoe polisher.

Another object of the present invention is to provide an electric shoe polisher having means therein to assure that the polisher cannot be set into operation while a brush element is being released therefrom.

Further objects of the present invention include the provision of an electric shoe polisher which: (a) is streamlined and attractive in appearance; (b) is relatively inexpensive to produce, yet is capable of operation for extended durations of time without undue maintenance; (c) enables an operator to quickly and easily insert and remove a brush element, when desired; and (d) utilizes a novel form of switching means which is operative both to energize and de-energize the shoe polisher and to operate the brush element release mechanism.

Other objects, advantages and salient features of the present invention will become apparent from the follow-

2

ing detailed description, which, taken in conjunction with the annexed drawings, discloses a preferred embodiment thereof.

Referring to the drawings:

FIGURE 1 is a side elevational view, partially in section, of an electric shoe polisher in accordance with the principles of the present invention;

FIGURE 2 is a top plan view of the electric shoe polisher, with the upper casing portion removed;

FIGURE 3 is a fragmentary sectional view illustrating the details of the brush element engaging and driving mechanism;

FIGURE 4 is a top plan view of a brush element utilized in the electric shoe polisher; and,

FIGURE 5 is a bottom plan view of the drive hub utilized in the electric shoe polisher.

In general, the present invention provides an electric shoe polisher generally designated 10 including a housing or casing generally designated 12, an operating motor generally designated 14 disposed within the casing, switch means generally designated 16, brush element means generally designated 18, and means generally designated 20 operable through the switch means 16 to releasably engage the brush element 18.

The housing or casing 12 is preferably formed by mating sections, including an upper section 22 and a lower section 24 which join together and nest along a central parting line 26. For convenience and ease of manufacture, the casing members 22 and 24 may be formed of a suitable plastic material, which may be colored, as desired. The forward part of the casing 12 is enlarged to form a hollow central cavity 28 which can receive the driving motor 14, while the rearward end of the casing tapers to a narrow elongated handle 30 which the operator can manually grip. At the terminal end of the handle portion 30, a plug 32 is provided, and a socket 34 may be selectively mated with this plug to connect the unit to a suitable wall outlet via an electric cord 36.

The driving motor 14 is disposed within the chamber 28 of the casing and includes conventional elements of a direct current motor; namely, pole pieces 38, an armature assembly 40 rotatably mounted within the pole pieces, a field assembly 42, commutator brushes 44 and spring means 46 biasing the commutator brushes into engagement with the commutator. The brushes 44 and their biasing spring 46 are mounted on a rear bracket assembly 48 disposed within the opening 28 to the rear of the driving motor 14. The bracket 48 is provided with a central aperture or bore to permit the armature shaft 50 to extend therethrough. A fan 52 is mounted at the outboard end of the armature shaft 50 to provide a cooling effect on the shoe polisher while the driving motor 14 is being operated.

The switch means 16 includes a switch plate 54 disposed within the casing 12 and having a spring contact finger 56 mounted thereon. The spring contact finger is connected to the plug 32 via an electrical lead 58. Also provided on the switch plate 54 is a contact 60 which is electrically connected to the field assembly of the driving motor via an electrical lead 62. Another electrical lead 64 connects the opposite side of the plug 32 to the field assembly 42, thereby completing the electric circuit for the shoe polisher 10. A slidable finger engageable switch operating means in the form of a push button member having a flat body portion 66 and a projecting serrated button 68 is juxtaposed to the switch plate 54 and the spring finger 56 mounted thereon. A separate indicia bearing member 70 is juxtaposed to the switch means 16 and is nested between the upper and lower sections of the casing 12. An aperture 72 is provided in the member 70 and the button 68 projects through

such aperture and is slidable therein. As can best be seen from FIGURE 1, indicia 74 is imprinted on the member 70 beside the aperture 72 therein. The switch means 16 has at least three separate operating positions, and as illustrated by the indicia 74, these positions can be characterized as a first or "off" position, a second or "on" position and a third or "release" position. In the first position, the button 68 is disposed centrally of the slot 72 and the spring finger 56 is out of engagement with the contact 60 on the switch plate 54. Thus, in this position, the driving motor 14 is not activated or energized, and thus the shoe polisher is in an "off" condition. However, when the button 68 is moved forwardly in the slot 72, as shown in FIGURE 1, the spring finger 56 is pressed into engagement with the contact 60, thereby energizing and activating the driving motor to set the shoe polisher into operation. The third or "release" position is operative to release a brush element from the shoe polisher, in a manner to presently be described.

A pair of spaced slots or openings 76 are provided at the forward end of the plate member 66 to receive the hooked end 78 of an actuating wire 80. The actuating wire 80 couples the trigger means 16 to the brush element drive and release mechanism 20. Broadly, the drive and release mechanism 20 is mounted upon a front bracket assembly 82 which is attached to the lower casing member 24 by screws 84 and is further coupled to the forward end of the driving motor 14 by screws 86. The front bracket assembly 82 is formed of two separable parts 82a and 82b which are joined along a medial parting line by screws 88. The two bracket portions 82a and 82b form between them, a hollow cavity in which the upper portion of the brush drive assembly can be disposed. As shown in FIGURE 3, the brush drive assembly includes a hollow shaft 90 having an axially elongated central bore 92 therein. A spur gear 94 is secured to the exterior of the shaft 90, and beneath the spur gear, a bearing 96 is provided on the exterior of the shaft. The lower end of the shaft is provided with splines 98 to cause the same to nest compactly and to be mated firmly within a drive hub 100, preferably formed of a synthetic resinous material. That portion of the drive assembly from the top of the drive hub 100 to the top of the shaft 90 is disposed between the bracket parts 82a and 82b, and when the screws 88 are tightened into place, such a drive arrangement is firmly housed in position on the shoe polisher unit. Although, for purposes of simplicity of illustration, the exact driving arrangement for the spur gear 94 is not shown in the drawings, it will be understood that the shaft 50 from the armature assembly 40 extends forwardly into the area of the front bracket assembly 82, and is provided at its forward end with a pinion which mates in driving engagement with the spur gear 94. Thus, when the driving motor 14 is actuated via the switch means 16, thereby causing the armature assembly 40 to rotate, this rotational movement is transferred to the spur gear 94 which in turn causes the shaft 90 and the drive hub 100 affixed thereto, to rotate.

To accomplish the releasable engagement of a brush element 18, a generally L-shaped lever member is provided at the front bracket assembly 82, with such lever member having an upper surface 102 extending across the top of the bracket assembly and an integral depending leg portion 104 extending downwardly along the side thereof. As can be seen in FIGURE 1, the forward end of the actuating rod or wire is connected to the depending leg portion 104 of the bracket. An upstanding pivot stud 106 projects upwardly from the bracket half 82b through the lever portion 102 to pivotally mount the same. A circular cut-out or opening 108 is formed at the forward end of the lever 106, with the size and shape of such opening corresponding substantially to that of the central bore 92 in the shaft 90. An upstanding cam 110 projects upwardly from the bracket portion 82b a slight dis-

tance forwardly of the pivot stud 106, and this cam is provided with an angled flat abutment surface 112. When, as shown in dashed lines in FIGURE 2, the forward flat edge of the lever 102 is in engagement with the angled abutment surface 112 on the cam, the cut-out portion 108 fully exposes the central bore 92. However, a fulcrum spring 114 is coiled about the pivot stud 106, and is provided with an extending leg portion 116 which extends over the rear edge of the lever 106, and pivotally biases the lever from its dotted line position to the solid line position shown in FIGURE 2, wherein the cut-out portion 108 partially overlies the opening 92 in the central shaft 90.

As to the configuration of the brush element 18, attention is directed to FIGURES 1, 3 and 4 wherein it can be seen that each brush element includes a flat plastic plate 118, an upstanding integral crown portion 120, and an elongated upstanding stem 122 coupled to the plate 118, as, for instance, by having a splined lower end. The brush article shown in FIGURE 1 is the polish applying brush, and as such, includes a sponge pad 124 interposed between the plate 118 and a fabric polish applying disc 126. The brush article in FIGURE 3 is the buffing brush, used to shine the polish applied to the user's shoes, and as such, includes a plurality of bristles 128 depending from the plate member 118.

Examining the constructional features of the brush articles 18 more carefully, it will be noted that the crown portion 120 is essentially a frusto-conical portion, but on the exterior thereof, a pair of oppositely directed abutments are disposed. These abutment surfaces, designated 130, are flat surface areas disposed 180° apart, as can best be seen from FIGURE 4. On the upstanding stem 122, a reduced diameter portion or groove 132 is formed near the upper end thereof, and above the groove, an integral conical cap 134 is provided. Before discussing the manner of coupling the brush element 18 to the shoe polisher 10, attention is directed to FIGURE 5 wherein a bottom plan view of the drive hub 100 is shown. The internal walls 136 of the drive hub 100 extend in a converging conical manner upwardly until they merge into an aperture 92' which communicates with the central bore 92 of the shaft 90. Upon that conically tapering face 136, a pair of spaced apart abutment members or portions are integrally formed. Each abutment portion includes an angled face 138 and a straight or flat face 140. Again, as was the case with the flat faces 130, the faces 140 are disposed 180° apart.

To introduce the brush element 18 into the shoe polisher 10, the stem 122 is inserted through the aperture 92' in the drive hub and through the aperture 92 of the hollow shaft 90. When this occurs, the brush element can be pushed upwardly into the polisher until the abutments 130 on the crown 120 engage the wall 136 of the drive hub, whereupon simultaneously, the abutments 138, 140 on the drive hub engage the crown portion. In such a position, the brush element may not freely be pushed fully into the polisher, because of the counter-acting effect of the various abutments. However, at this time, the brush element is rotated until the flat abutment surfaces 130 on the crown are in alignment with the flat abutment surfaces 140 on the drive hub. When this occurs, the brush element may be inserted fully into the shoe polisher. During this final full insertion operation, the tapered conical head 134 at the top of the stem engages the cut-out portion 108 of the lever 102, and gradually cams the same from its solid line position of FIGURES 2 and 3 to the dotted line position thereof. Then, as the brush element becomes fully inserted and seated within the polisher, the conical head passes beyond the lever 102, and the force of the fulcrum spring 116 can then cause the lever 102 to pivot back to its solid line position, whereat the cut-out portion 108 engages the reduced diameter portion or groove 132 on the brush stem. Once the brush has been engaged in this manner, the mating of

5

the lever **102** with the groove **132** prevents any inadvertent or accidental release of the brush element. As can be seen from FIGURE 1, beneath the driving and engagement mechanism **20**, the lower casing half **24** is provided with a frusto-conical projection **142** having a central opening therein which permits access to the drive hub **100**. Each of the brush element plate members **118** is provided on its upper surface with a compatible, though slightly larger, frusto-conical recess **144** which can surround the projection **142** when the parts are assembled, as shown in dotted lines in FIGURE 1.

With the foregoing structural features of the invention having now been described, attention can again be directed to the manner of operation of the shoe polisher unit **10** and particularly to the three position movement of the switch means **16** thereof. As aforementioned, when the switch means is in its first position, the switch button **68** is aligned with the indicia reading "off" and the spring finger **56** is out of engagement with the contact **60**. In this position, the driving motor **14** is de-energized and the unit is at rest. This is normally the position encountered when the unit is first removed from its casing and when the first brush element **18** is introduced thereinto. Once the stem **122** of the brush element has been inserted through the aperture **92** and the brush has been rotated until the abutment faces **130** and **140** are in alignment, an upward pushing on the brush element will cause the lever **102** to lock into engagement with the groove **132** on the stem, thereby firmly securing the brush element within the shoe polisher. At this time, the switch means is moved to its second position by moving the switch operating means or button **68** into alignment with the indicia which reads "on." In this position, the spring finger **56** is pressed into engagement with the contact **60** on the driving motor, thereby energizing the same and causing the armature **40** therewithin to rotate. The armature shaft **50** likewise rotates and by way of a pinion mounted at its forward end, engages and rotates the spur gear **94**. Rotation of the spur gear **94** causes a simultaneous rotation of the shaft **90** and the drive hub **100** affixed thereto. As the drive hub rotates, its abutment surfaces **140** contact the mating abutment surfaces **130** on the crown of the brush element, and thereby effect a simultaneous rotation of such brush element. The rotational movement of the brush element **18** can be utilized to apply polish to the operator's shoes, or alternatively, to buff the operator's shoes, the choice depending upon which form of brush element **18** is utilized.

When at last the brushing operation has been completed, and it is desired to release the brush element from the shoe polisher unit **10**, the switch operating means is moved to its third position wherein the button **68** is aligned with the indicia reading "rel" or "release." Movement of the switch operating means to this position again releases the spring finger **56** from engagement with the contact **60**, and thereby de-energizes the driving motor **14**. Simultaneously, such movement of the button **68** effects a rearward movement upon the actuating rod or wire **80**. Since this actuating rod is connected to the leg **104** on the lever **102**, such rearward movement causes the lever **102** to pivot about the pivot stud **106**, even against the action of the fulcrum spring **116**. This pivotal movement of the lever continues until the lever **102** reaches the dotted line position of FIGURE 2, i.e., until the forward edge of the lever abuts against the angled abutment surface **112** of the upstanding cam **110**. Such movement of the lever **102** releases the cut-out portion **108** from engagement with the groove **132** on the brush stem, and thus permits the brush element **18** to be freely released from the shoe polisher unit **10**. Naturally, since the driving motor **14** is necessarily in a de-energized condition when the switch means is moved to its third or "release" position, it is impossible to inadvertently actuate the unit during release, and therefore, the possi-

6

bility of having the brush element **18** come spinning out from the unit, is obviated.

After reading the foregoing detailed description, it should be apparent that the objects set forth at the outset of the specification have been successfully achieved. Accordingly,

What is claimed is:

1. In an electric shoe polisher, the improvement comprising: brush means releasably coupled with said shoe polisher;

a driving motor within said polisher operatively coupled to said brush means for operation thereof; engaging means disposed at least partially within said polisher coupling said brush means with said polisher; and

a manually operable switch means including switch operating means movable to at least three positions nominally defined as first, second and third positions; said switch operating means in its first position being operative to de-activate said driving motor;

said switch operating means in its second position being operative to activate said driving motor and hence to operate said brush means;

said switch operating means in its third position being operative to actuate said engaging means to thereby release said brush means from its coupling with said shoe polisher;

said brush means having an upstanding stem and said engaging means being movable into and out of releasable engagement with said stem.

2. The improvement defined in claim 1 wherein said engaging means and said switch operating means are positively coupled by an actuating element whereby movement of said switch operating means to its third position moves said engaging means to thus release the engagement between said engaging means and said brush stem.

3. An electric shoe polisher comprising, in combination:

a casing having a manually engageable portion and an internal cavity;

a driving motor disposed within said internal cavity and adapted to be connected to a suitable power supply;

a brush element having a base portion and an elongated upstanding stem portion;

a brush element drive means operatively connected to said driving motor;

a selectively operable and at least partially movable brush element engagement means adapted to engage said brush element stem;

said brush element being insertable into said shoe polisher and thus into engagement with said drive means and said engagement means;

multi-position switch means including switch operating means operative to control said driving motor and said engagement means; and

connecting means coupling said switch operating means to said engagement means for moving said engagement means responsively to movement of said switch operating means;

said switch operating means being movable to one of its multiple positions to operate said connecting means and to thereby cause a responsive movement of said engagement means to release the same from contact with said brush element stem, thereby releasing said brush element from said shoe polisher.

4. An electric shoe polisher as defined in claim 3 wherein said switch operating means is movable to a driving motor energizing position, to a driving motor de-energizing position, and to a said connecting means operating position which also de-energizes said driving motor.

5. An electric shoe polisher as defined in claim 3 wherein said engagement means includes a pivotally

7

mounted lever having a portion thereof shaped for engagement with said brush element stem.

6. An electric shoe polisher as defined in claim 5 wherein said engagement means further includes a cam abutment surface against which an edge of said lever can abut, and a spring means normally biasing said lever edge out of engagement with said abutment surface.

7. An electric shoe polisher as defined in claim 6 wherein said brush element stem is provided with a peripheral groove and wherein said spring means normally biases said lever shaped portion at least partially into said peripheral groove to thus prevent movement of said brush element axially of its stem.

8. An electric shoe polisher as defined in claim 7 wherein said connecting means couples said switch operating means to said lever whereby movement of said switch operating means to its said one position pivots said lever against the action of said spring means to move said lever edge into engagement with said cam abutment surface and hence to simultaneously move said lever shaped portion out of engagement with said stem peripheral groove, thereby releasing said brush element from said shoe polisher.

9. An electric shoe polisher as defined in claim 7 wherein said brush stem above said peripheral groove is conically shaped, whereupon, when said brush element is inserted into said shoe polisher, said conically shaped stem portion engages said lever shaped portion and gradually pivots said lever against the action of said spring means until said peripheral groove moves into alignment with said shaped portion at which time said spring means causes said lever to pivot oppositely until said shaped portion becomes disposed within said peripheral groove.

8

10. An electric shoe polisher as defined in claim 3 wherein said brush element base portion includes a crown portion having abutment face means projecting therefrom for engagement with said drive means.

11. An electric shoe polisher as defined in claim 10 wherein said drive means includes a drive hub having abutment face means projecting therefrom and being adapted to receive said brush element crown portion when said crown portion abutment face means are aligned with said drive hub abutment face means.

12. An electric shoe polisher as defined in claim 11 wherein said drive hub is attached to a shaft which is rotatably driven by said driving motor, whereby, when said shaft rotational movement is imparted to said drive hub, said brush element will be rotated due to respective interengagement between said drive hub and said crown portion abutment face means.

13. An electric shoe polisher as defined in claim 12 wherein said shaft has a central bore therethrough for accommodation of said brush element upstanding stem.

14. An electric shoe polisher as defined in claim 13 wherein said brush stem upper end projects above the upper end of said shaft and wherein said brush element engagement means is disposed for selective engagement with said stem upper end.

#### References Cited by the Examiner

##### UNITED STATES PATENTS

30	2,737,371	3/1956	Gerry	-----	259-1
	3,027,585	4/1962	Freedman et al.	----	15-28 X

CHARLES A. WILLMUTH, *Primary Examiner.*

E. L. ROBERTS, *Assistant Examiner.*