

July 2, 1968

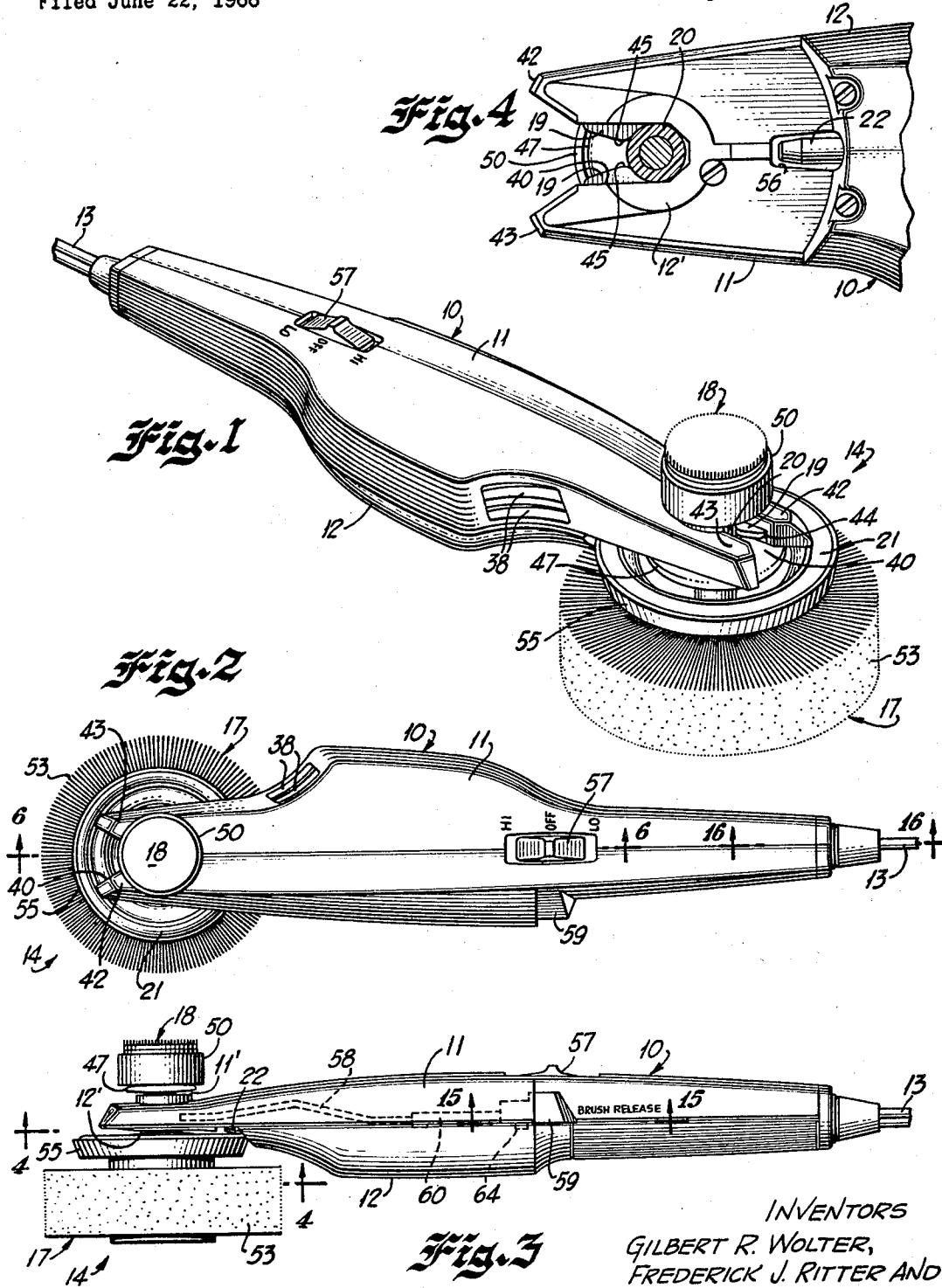
G. R. WOLTER ET AL

3,390,412

SHOE POLISHER

Filed June 22, 1966

4 Sheets-Sheet 1



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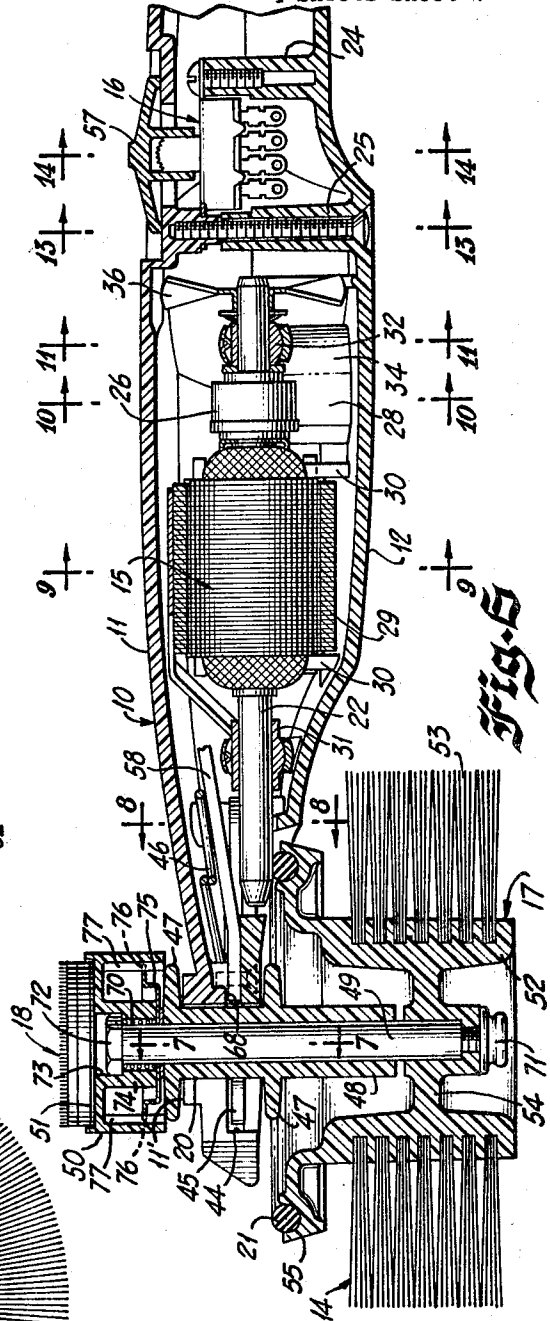
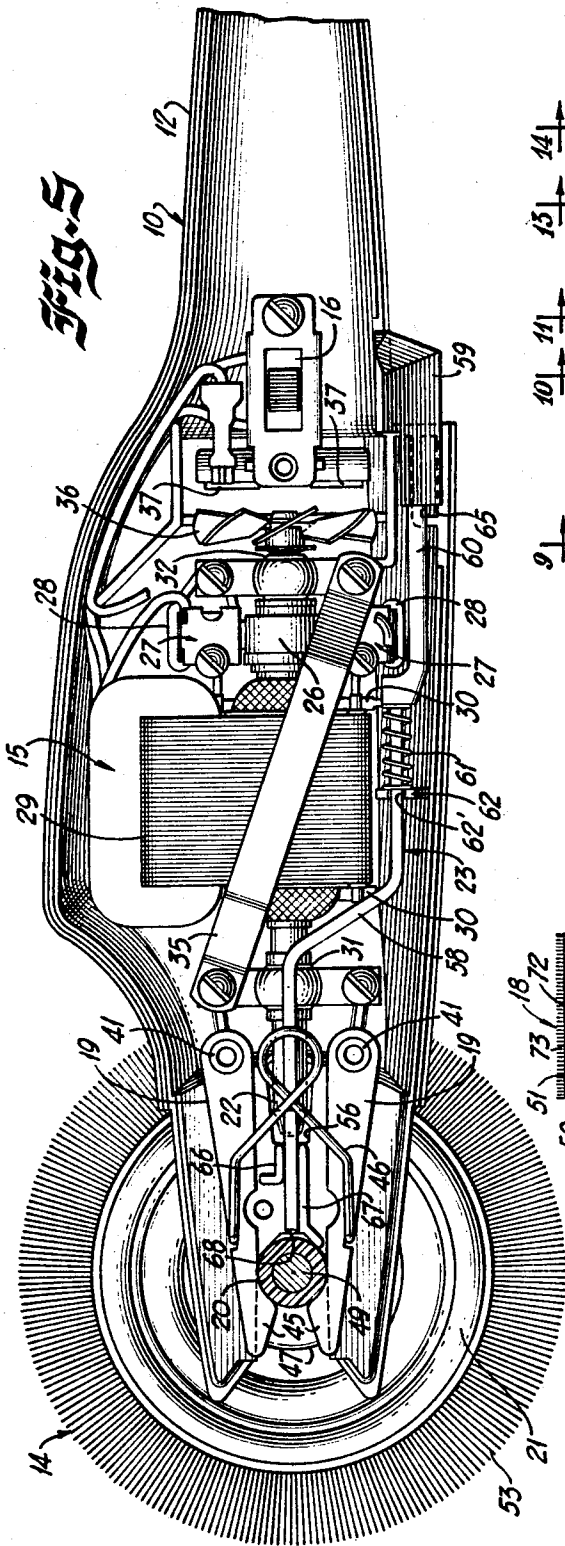
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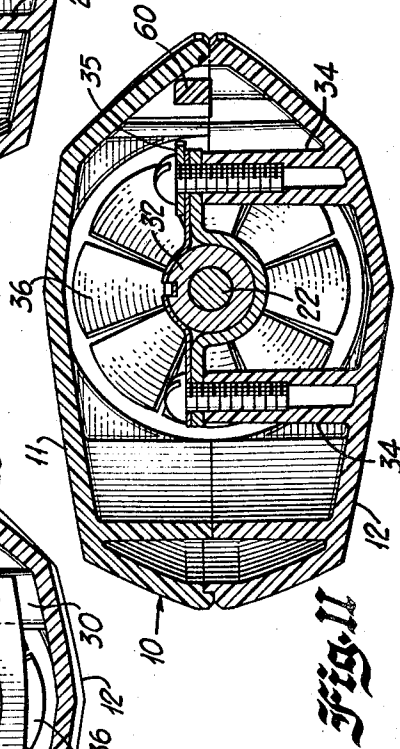
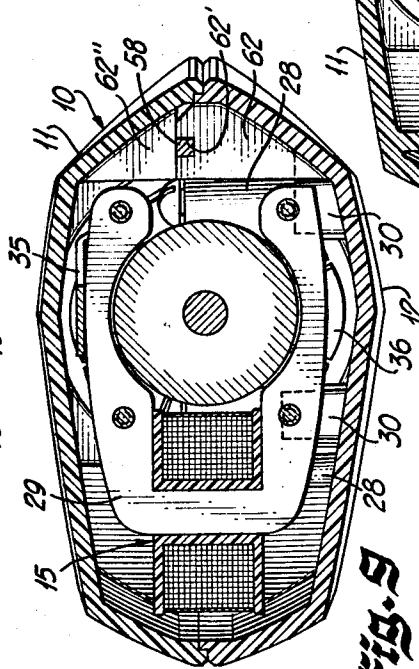
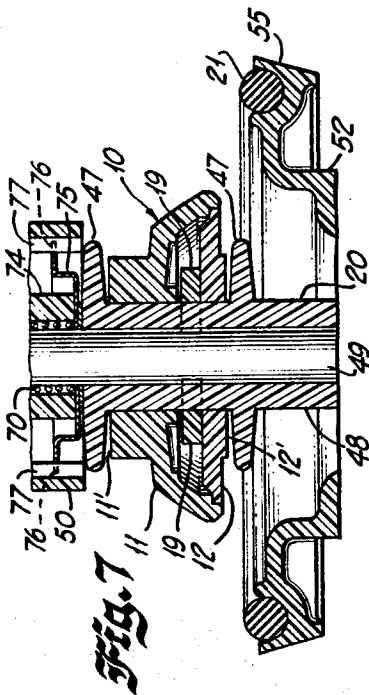
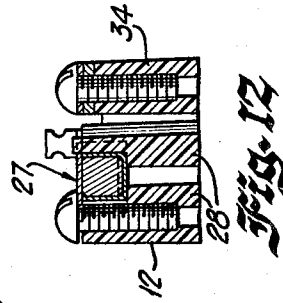
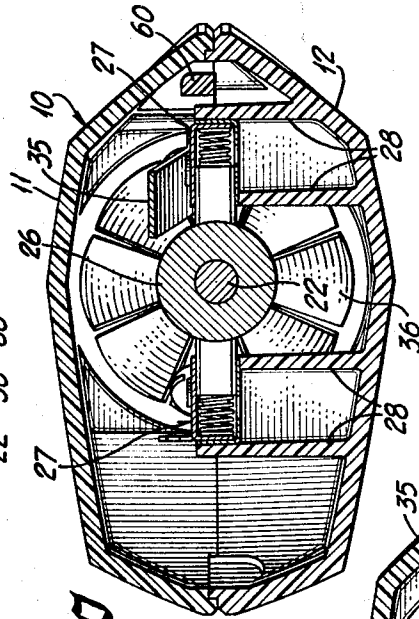
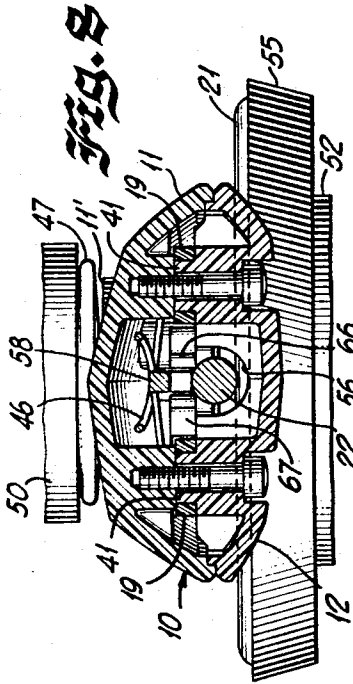
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SHOE POLISHER

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4 Sheets-Sheet 3



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SHOE POLISHER

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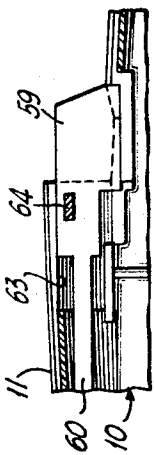


Fig. 15

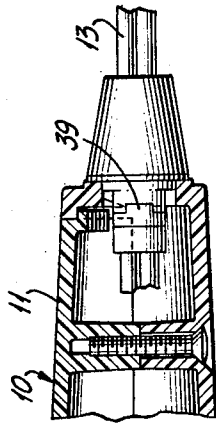


Fig. 16

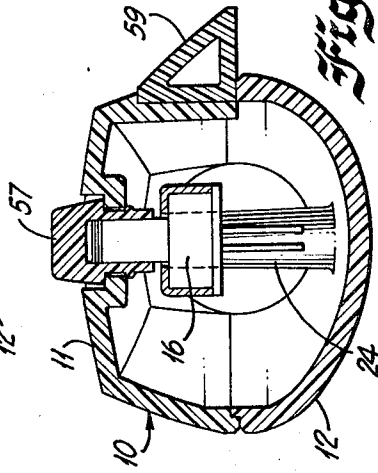


Fig. 14

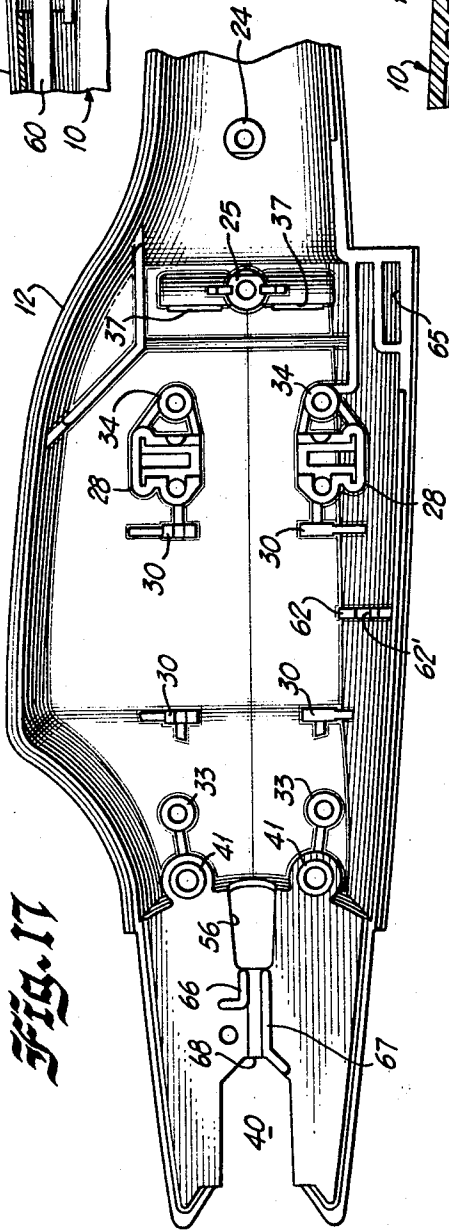


Fig. 17

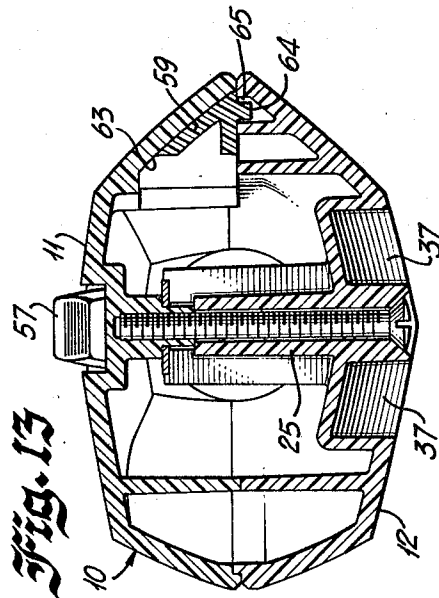


Fig. 13

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3,390,412

SHOE POLISHER

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Filed June 22, 1966, Ser. No. 559,513
12 Claims. (Cl. 15—23)

This invention relates to a shoe polisher, and more particularly, to an improved motor operated and hand held shoe polisher.

It is an object of this invention to provide an improved low cost and easy to use hand held motor operated shoe polisher.

In the invention a friction wheel type drive connection is used between the polishing brush and the motor shaft of the shoe polisher. This type of drive connection is also a speed reducing means between the motor and polishing brush. The polishing brush is mounted on the shoe polisher and retained in drive connection with the motor shaft by a pair of clamping jaws. The shoe polishing brush head is drive connected to the motor shaft merely by inserting a portion of the shoe polisher brush head between the clamping jaws. An ejector mechanism is provided for ejecting the shoe polisher brush head from between the clamping jaws and drive connection with the motor shaft. The ejection mechanism is easy to manually operate by means such as a finger operated button. The shoe polisher brush head comprises a polishing brush and a shoe polish wax applicator or dauber mounted on a shaft of the shoe polisher brush head. The shoe polishing brush and wax dauber are simultaneously driven and can be used together in performing the cleaning and polishing operation on one's shoes. In other words, the combination polishing brush-wax dauber brush head reduces the number of separate parts required to perform the total cleaning and polishing operation on shoes. A control switch is provided on the shoe polisher for operating the brush head at high or low speeds, and the switch also has an off position for the motor. The low speed setting is used in applying wax with the dauber and the high speed setting is used in polishing the shoes.

The features of the invention which are believed to be novel are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and operation, together with further objects and advantages thereof, may best be understood by reference to the following description taken in connection with the accompanying drawings; in which:

FIG. 1 is a perspective view of a preferred form of the invention;

FIG. 2 is a top plan view thereof;

FIG. 3 is a side elevation view thereof;

FIG. 4 is an enlarged sectional view along the section line 4—4 of FIG. 3;

FIG. 5 is a broken away top plan view thereof to enlarged scale similar to that of FIG. 2 and with the top cover member of the housing being removed;

FIG. 6 is an enlarged sectional view along the section line 6—6 of FIG. 2;

FIG. 7 is an enlarged sectional view taken along the section line 7—7 of FIG. 6;

FIG. 8 is an enlarged sectional view taken along the section line 8—8 of FIG. 6;

FIG. 9 is an enlarged sectional view taken along the section line 9—9 of FIG. 6;

FIG. 10 is an enlarged sectional view taken along the section line 10—10 of FIG. 6;

FIG. 11 is an enlarged sectional view taken along the section line 11—11 of FIG. 6;

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FIG. 12 is a sectional view taken along the section line 12—12 of FIG. 10;

FIG. 13 is an enlarged sectional view taken along the section line 13—13 of FIG. 6;

FIG. 14 is an enlarged sectional view taken along the section line 14—14 of FIG. 6;

FIG. 15 is an enlarged sectional view taken along the section line 15—15 of FIG. 3;

FIG. 16 is an enlarged sectional view taken along the section line 16—16 of FIG. 2; and

FIG. 17 is a top plan view of the bottom section of the shoe polisher housing with all the parts ordinarily assembled therein being removed.

Referring now particularly to the drawings for a detailed description of a preferred form of the device, the improved shoe polisher comprises a housing 10 which includes top and bottom sections 11 and 12 respectively. An electric extension cord 13 enters the housing at the rear end thereof. A shoe polisher brush assembly or brush head 14 is adapted to be connected to the other or front end of the device. The brush is driven by a motor 15 positioned in housing 10 between its opposite ends. A motor control switch 16 is provided for controlling the motor. The switch has multiple positions. An off position is provided for the motor, and also high and low settings.

The shoe polisher brush head 14 actually comprises a shoe polishing brush 17 and a wax applicator 18. In using the applicator or wax dauber 18 the switch 16 is moved to its low speed setting, and for polishing with the brush 17 the switch is moved to its high speed setting. The brush head is mounted on the front end of the shoe polisher housing 10 and is retained in this position and in drive engagement with the motor 15 by a pair of clamping jaws 19. The brush head has a spool portion 20, and to connect the brush head 14 to the front end of the housing it is merely necessary to insert the spool portion 20 into position between the clamping jaws 19. In this position of the brush head a friction drive wheel or ring 21 on the brush head is engaged with the forward end of the shaft 22 of motor 15 so that the motor rotates the brush head.

In order to remove the brush head 14 from the front end of the device and from drive engagement with the motor 15 it is merely necessary to operate an ejection mechanism 23. Operation of the ejection mechanism 23 results in ejection of the spool portion 20 from between the clamping jaws 19 and simultaneous drive disengagement of the brush head from the motor 15.

The details of the above mentioned and generally described main parts and features of the shoe polisher will now be described. The top and bottom housing sections 11 and 12 respectively are preferably constructed from lightweight molded plastic material. The bottom member 12 serves as a base or frame for mounting all of the internal working parts of the shoe polisher, and the top member 11 serves as a cover for the member 12 to provide a closed housing for all the internal parts. For example, and referring particularly to FIGS. 5, 6, and 17, the switch 16 is mounted on integral portions 24 and 25 of the base member 12. The motor 15 has a commutator 26. Commutator brush assemblies 27 are provided on opposite sides of the commutator 26 and these commutator brushes assemblies are mounted in integral portions 28 of base member 12. The field portion of the motor 15 comprises a stator 29 which is supported on integral portions 30 of base member 12. The opposite ends of the shaft 22 for motor 15 are provided with bearings 31 and 32. These bearings are supported by appropriate bearing retainers on integral portions 33 and 34 respectively of base member 12. The stator core 29 is clamped in position on the portions 30 by a strap 35 extending across stator 29 from between one of the portions 33 to one of the

portions 34. A motor cooling fan 36 is mounted on the rear end of motor shaft 22. Air inlet openings 37 are provided in the base member 12 adjacent to the integral portion 25 for switch 16, and air outlet openings 38, see FIG. 1, are provided in the top housing member or cover 11. The electric extension cord 13 is connected to the rear of housing 10 by a strain relief 39. The two housing sections are retained closed on each other by screws or the like which extend through integral portions of the base member 10 into integral portions of the cover member 11 in a manner which will be obvious to those skilled in the art, see for example FIGS. 4, 8, 13 and 16.

Thus, the main components of the device are aligned along the length of housing 10. The electric cord 13 is connected to the rearmost portion thereof. The motor 15 is disposed in an enlarged central portion of housing 10. The switch 16 is mounted just behind the motor 15. A portion of housing 10 located between the strain relief 39 and the switch 16 is given a slim shape so as to provide a stick type handle or contour for the housing 10 which can be hand grasped. The clamping jaws 19, are located at the front end of housing 10 ahead of the motor 15.

The front end of housing 10 is given a U-shape so as to provide a notch or space 40 therein, see FIG. 17. The clamping jaws 19 are elongated members and are disposed in housing 10 inside the hollow opposite sides or leg portions of this front end U-shaped part of housing 10. At their rear ends the jaws 19 are pivotally mounted on integral portions 41 formed on base member 12. The jaws 19 extend lengthwise of the opposite sides of the U-shaped portion of the front end of housing 10. In FIG. 1 the opposite sides of this U-shaped portion for the front end of the housing are designated by reference numerals 42 and 43. The facing inner sides of portions 42 and 43 are provided with notches 44. The front ends of clamping jaws 19 have latch formations 45 which protrude through the notches 44 into the space 40. The clamping jaws 19 are continually biased in a direction towards each other by a spring 46 so as to cause the latch formations 45 to protrude through the notches 44 into the space 40. The previously referred to spool portion 20 on the brush head 14 is insertable into the space 40 between the jaws 19. After the spool portion 20 is passed beyond the latch formations 45 the brush head is removably locked and clamped on the front end of the shoe polisher. In order to remove the brush head 14 off the front end of the shoe polisher it is merely necessary to spread the jaws 19 against their spring bias. This is accomplished by causing the ejection mechanism 23 to strike the spool 20 in a manner hereinafter to be described to push the spool 20 out from between the clamping jaws 19.

The details of the shoe polisher brush head 14 will now be described. The spool portion 20 has opposite end flanges 47. These flanges 47 are positioned along the top and bottom surfaces of housing 10 when the brush head is in latch clamped position. The spool 20 actually comprises an integral part of a sleeve bearing 48 for a brush shaft 49. Brush shaft 49 is rotatably mounted in the sleeve 48 and at its opposite ends extends through the sleeve 48. The shoe polishing brush 17 is fixed to the lower end of shaft 49 and the wax applicator 18 is fixed to the upper end of shaft 49. Accordingly when shaft 49 is rotated the brush 17 and applicator 18 are simultaneously revolved. The end flanges 47 on the spool 20 retain the brush head from sliding out from between the clamping jaws 19 in an axial direction when pressure is applied on the brush head as by bearing down on shoes with the applicator 18. They additionally make it easy to guide the spool into the notch 40 for insertion between the clamping jaws 19. It will be appreciated that two brush heads 14 are provided to the consumer with each shoe polisher. One brush head would be for brown shoes and the other for black shoes. In the preferred form of the invention the dauber 18 is mounted on shaft 49 by a dauber carrier 50. Dauber 18 has a synthetic cellular sponge backing

which is attached to the carrier 50 by an adhesive laminar coating 51 on the dauber 18. In other words, dauber 18 is an expandable and replaceable wax applicator, inasmuch as it will wear with prolonged usage.

The polishing brush 17 comprises a carrier 52 for the bristle 53. Carrier 52 is fixed to shaft 49 by an integral hub portion 54. The previously referred to friction drive wheel or ring 21 for the brush head comprises an integral flange 55 having a circular notch for receiving the ring 21 which may be constructed from suitable friction drive material such as rubber.

When the brush head is assembled on the front end of the shoe polisher the friction wheel or ring 21 is disposed beneath the bottom surface of the base member 12. A notch 56 is formed in the base 12 just above the friction ring 21. The front end of motor shaft 22 protrudes through this notch 56 into overlying drive engagement with the friction ring 21. Accordingly, when brush head 14 is latch clamped within the space 40 between the clamping jaws 19 the brush head is in friction drive engagement with the motor 15. A finger operated button 57 is provided on the housing above the switch 16. When the button 57 is moved to its extreme forward position the motor rotates at high speed and in this condition of the device the polishing brush 17 is ordinarily used. For applying wax to the shoes the button 57 is moved to its rearwardmost position to operate the motor at a low speed. The central position of the button 57 is in off position for de-energizing the motor.

When the brush head is inserted between the jaws 19 the friction drive ring 21 will readily ride up on the front end of motor shaft 22 inasmuch as the endmost front portion of shaft 22 is tapered. Proper positioning of the brush head is assisted by the end flanges 47 of spool 20. These end flanges are located along parallel surfaces 11' and 12' formed on the top and bottom of the front end of housing 10, see FIGS. 4, 6 and 7.

Means is provided in the brush head to insure constant pressure between drive elements 21 and 22. This means comprises a spring 70 surrounding the portion of brush shaft 49 disposed inside the dauber carrier 50. The brush 17 is fixed to the lower end of shaft 49 by means such as screw 71. The dauber 18 is fixed to the upper end of shaft 49 by means such as a hexagonal shaped head 72 on the upper end of shaft 49 and a matching hexagonal shaped seat or recess 73 in carrier 50 for the head 72. The depth of notch 73 is greater than the height of the head 72. The parts 72 and 73 cause shaft 49 and dauber 18 to rotate together but permit some limited movement therebetween in an axial direction. The spring 70 biases the shaft in an upward direction to continually bias the ring 21 against the motor shaft 22 with uniform pressure. Carrier 50 has a hub portion 74 which is oversize with respect to the size of the shaft 49. Spring 70 is disposed inside hub portion 74 and bears up against head 72. The lower end of spring 70 bottoms on a washer 75 resting on the upper side of the top flange 47 of spool 20. Washer 75 surrounds shaft 49 and has a pair of tabs 76 which engage grooves 77 formed on the inside of the peripheral portion of carrier 50. This steadies the lower end of the dauber 18 from wobbling, and the washer 75 also provides a seat for the lower end of the spring 70. It will be appreciated that conventional manufacturing tolerances may cause a slight looseness in the parts. However, spring 70 pushes shaft 49 up to cause the ring 21 to at all times engage the tip of motor shaft 20. Also, when applying wax with the pad of dauber 18 the carrier 50 may move slightly towards the spool 20 and even push it slightly in an axial direction. However, this will not disturb the friction drive connection between parts 21 and 22 or cause slippage since regardless of the exact position of parts 50 and 20 the spring 70 is pushing up on the head 72 to move the shaft 49 in an opposite direction so that ring 21 continues to engage motor shaft 22 with uniform force.

As heretofore mentioned, in order to remove the brush head from the housing 10 and disengage the friction drive

connection between the brush head and the motor it is necessary to eject the spool 20 from between the clamping jaws 19. The ejection mechanism 23 for accomplishing this will now be described in detail. The ejector mechanism comprises a rod 58, a finger operated button 59, a portion 60 which is integral with the button 59 and connects the button to the rear end of rod 58, and a spring 61. The spring 61 is disposed on rod 58 between the front of portion 60 and a guide 62 for rod 58. Guide 62 is an integral formation on the base 12. The spring 61 biases the rod 58 in a rearward direction. The button 59 is located along side the switch button 57 in a guide opening 63 formed in a lateral portion of the housing 10. The front end of rod 58 is straight and aligned with the lengthwise axis of housing 10. Adjacent to the motor bearing 31 the rod 58 is bent in a lateral direction and then extends through a slot 62' in the guide formation 62 to the connecting portion 60. A tab 62'' formed on cover 11 above guide 62 closes the slot 62' to keep the ejector rod 58 seated therein. The underside of button 59 has a guide lug 64 formed thereon which is guided in a groove 65 formed in base 12. Just ahead of the opening 56 in the base 12 for the motor shaft 22 a pair of guide ridges 66 and 67 are formed for the front end of rod 58. In addition, an opening 68 is formed in the housing 12 at the inner end of the space 40 to expose the front end of rod 58 when it is moved in a forward direction. When the button 59 is pushed forwardly the front end of rod 58 extends through the opening 68 into the space 40 to strike the spool 20 and urge it in a forward direction against the spring bias of the clamping jaws 19 to eject the spool 20 from between the jaws 19 and out from within the space 40. Such forward ejection movement of the spool 20 results in simultaneous disengagement of the friction wheel type drive connection between the parts 21 and 22 of the brush head 14 and motor 15 respectively. When the button 59 is released the spring 61 causes the front end of rod 58 to be withdrawn from the space 40 back into the housing 10. Thus, in the invention it is possible to eject the shoe waxing and polishing brush head 14 from the handle-type power unit of the shoe polisher without touching the brush 14 and possibly soiling one's hands. In addition, in mounting the brush head on the front end of the power handle it is also possible to accomplish this without touching the brush head. For example, if the brush head is turned over on its side the front end of the power handle can then be aligned with the spool portion and by pushing down on the power handle the brush head will be snapped into position between the latching clamping jaws 19.

While there has been shown and described a particular embodiment of the invention, it will be obvious to those skilled in the art that changes and modifications may be made without departing from the invention, and therefore, it is intended by the appended claims to cover all such changes and modifications as fall within the true spirit and scope of the invention.

What is claimed as new and desired to be secured by Letters Patent of the United States is:

1. In a hand held motor operated shoe polisher comprising a housing, said housing having a shape which is adapted to be hand grasped, a motor in said housing, a finger operated switch on said housing for controlling said motor, and a shoe polishing brush assembly removably mounted at one end of said housing, said brush assembly being drive connected to said motor for rotation thereby; the improvements of a pair of jaws for removably mounting said brush assembly on said housing, said jaws being mounted in said one housing end in opposed and movable relationship with respect to each other, means for moving said jaws towards each other to clamp said brush assembly therebetween, and means for moving said jaws away from each other to release said brush assembly.

2. In a shoe polisher as in claim 1, the further improvements of said one housing end having a U-shape,

said jaws being mounted in opposite sides of said U-shape, a portion of said brush assembly being adapted to be received in the space between the opposite sides of said U-shape, said jaws comprising a pair of elongated members which are aligned lengthwise of said opposite sides, the inner ends of said jaws being pivotally mounted inside said housing, the means for moving said jaws towards each other to clamp said brush assembly therebetween comprising spring means continually biasing said jaws towards each other, and the means for moving said jaws away from each other to release said brush assembly comprising a finger operated brush assembly release mechanism on said housing.

3. In a shoe polisher as in claim 2, the further improvements of said finger operated brush release mechanism comprising an ejector for said brush assembly, said ejector comprising an elongated ejector member, said ejector member being mounted in said housing and having one end thereof positioned between the opposite sides of said U-shape, an opening formed in said housing between the opposite sides of said U-shape to expose said ejector member one end, and a finger operated button on said housing connected to said ejector member to move said ejector member one end through said opening and against said brush assembly portion to push said brush assembly portion out of said space from between said jaws.

4. In a shoe polisher as in claim 1, the further improvements of said means for moving said jaws towards each other to clamp said brush assembly therebetween comprising spring means continually biasing said jaws towards each other, a portion of said brush assembly being adapted to be manually inserted between said jaws against their spring means bias, said brush assembly portion comprising a sleeve, a shaft rotatably mounted in said sleeve, and a polishing brush mounted on said shaft, and the means for moving said jaws away from each other to release said brush assembly comprising a finger operated ejector member mounted on said housing for movement against said sleeve to eject said brush assembly portion from between said jaws.

5. In a shoe polisher as in claim 4, the further improvements of an opening formed in said one housing end, one end of the drive shaft of said motor being exposed through said opening, said polishing brush comprising a hub fixed to the brush assembly shaft and polishing bristles on said hub, and a friction drive ring formed on said polishing brush, said motor drive shaft one end being engaged with said friction drive ring to rotate said polishing brush.

6. In a shoe polisher as in claim 1, the further improvements of a portion of said brush assembly being insertable between said jaws, said brush assembly portion comprising a sleeve, a rotary brush shaft position in said sleeve, a polishing brush fixed to said shaft, a friction drive ring fixed to said shaft, an opening formed in said housing, and one end of the drive shaft of said motor extending through said opening into engagement with said friction drive ring to rotate said polishing brush shaft.

7. In a shoe polisher as in claim 6, the further improvements of said brush shaft being exposed through opposite ends of said sleeve, the polishing brush being fixed to one end of the brush shaft, and a shoe polish wax applicator fixed to the other end of the brush shaft, said finger operated switch comprising a multiple position switch for operating said motor at high and low speed, and said switch including an off position for said motor.

8. In a hand held motor operated shoe polisher comprising an elongated housing, one end of said housing having a shape which is adapted to be hand grasped, an electric extension cord connected to said one end of the housing, a shoe polisher brush assembly removably mounted on the other end of said housing, a motor in said housing between its opposite ends for rotating said shoe polisher brush assembly, and a finger operated switch on

said housing between its opposite ends for controlling said motor; the improvements of the brush assembly end of said housing having a U-shape, notches formed in the facing sides of said U-shape, a pair of clamping jaws positioned in the opposite portions of said U-shape, portions of said jaws being exposed through said notches and spring means biasing said jaws towards each other to clamp a portion of said brush assembly therebetween when said portion is inserted between said jaws, said brush assembly portion comprising a bearing sleeve and a rotary brush shaft in said sleeve, a movable ejector member in said housing, an opening formed in said housing between said jaws, and a finger operated button on said housing between its opposite ends for moving said ejector member through said opening into engagement with said bearing sleeve to eject said brush assembly from said clamping jaws, and a friction drive wheel fixed to said brush shaft, another opening formed in said housing at the brush assembly end thereof, the motor having a drive shaft extending through said another opening into engagement with said drive wheel when said brush assembly is in clamped position between said jaws.

9. In a shoe polisher as in claim 8, the further improvements of a spool portion having end flanges formed on said sleeve, said spool portion being receivable between said jaws and said end flanges being positioned on opposite sides of said U-shaped end of the housing when the brush assembly is mounted on the brush assembly end of the housing, the brush shaft extending through opposite ends of the spool, a polishing brush fixed to one end of the brush shaft, said friction drive wheel being integrally formed on said polishing brush, a shoe polish wax applicator fixed to the other end of the brush shaft, said switch having multiple positions for driving said motor at high and low speeds and including an off position for said motor, and a coil spring surrounding said other end of the brush shaft, said applicator and brush shaft being fixed to each other by a drive connection therebetween which permits them to move axially with respect to each other while rotating together, and said coil spring biasing said brush shaft for movement through said spool and applicator in the direction of from said spool to said applicator to retain said drive wheel and motor drive shaft engaged.

10. In a hand held motor operated shoe polisher comprising a housing containing a motor and means for re-

movably drive connecting a shoe polisher brush to said motor; the improvements of said drive connecting means comprising a separable friction wheel-type drive connection between said brush and motor for driving said brush off said motor, a pair of separable spring biased clamping jaws for retaining said brush in drive engagement with said motor, and a manually operated ejector on said housing for separating said brush from said jaws and disengaging said brush from said motor.

11. In a shoe polisher as in claim 10, the further improvements of a portion of said housing having a U-shape, notches formed in the facing sides of said U-shape, said jaws being mounted in opposite portions of said U-shape and having portions thereof projecting through said notches into the space within said U-shape, a brush shaft, a bearing spool for said brush shaft, said brush shaft being rotatably mounted in said bearing spool and said brush being fixed to said brush shaft, end flanges formed on said bearing spool, the portion of said bearing spool between its end flanges being adapted for insertion into the space within said U-shape, and the projecting portions of said jaws having latch formations thereon to latch and clamp said spool in the space within said U-shape.

12. In a shoe polisher as in claim 11, the further improvements of said friction wheel-type drive connection comprising a friction drive ring connected to said brush shaft, an opening formed in said housing, said motor having a drive shaft which is exposed through said opening, said drive shaft extending through said opening into frictional engagement with said drive ring when said spool is latch clamped in said housing U-shape, said ejector comprising a movable rod in said housing, another opening formed in said housing U-shape, said rod extending through said another opening and between said jaws for striking said spool to simultaneously separate the spool from said jaws and the drive ring from said motor shaft, and a finger operated button on said housing for operating said ejector rod.

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