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POWERED FINGERNAIL FILE

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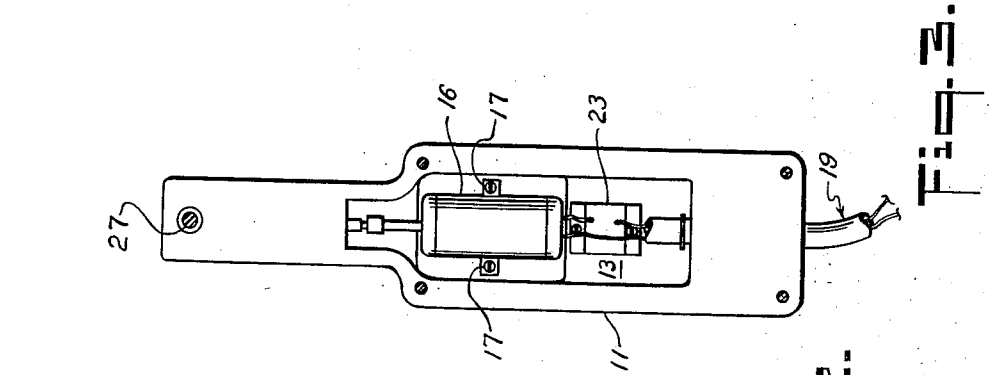



Fig. 3.

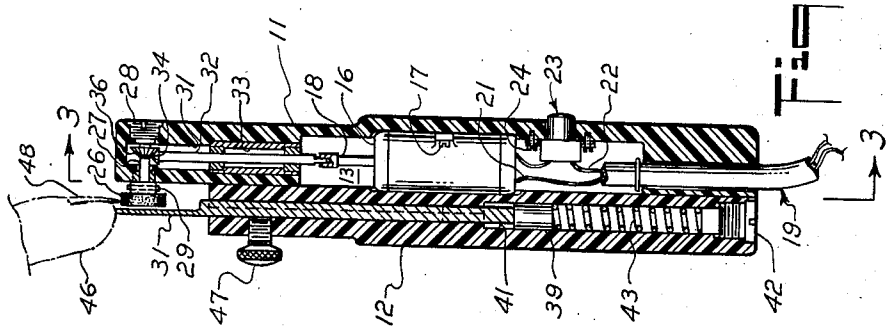



Fig. 2.

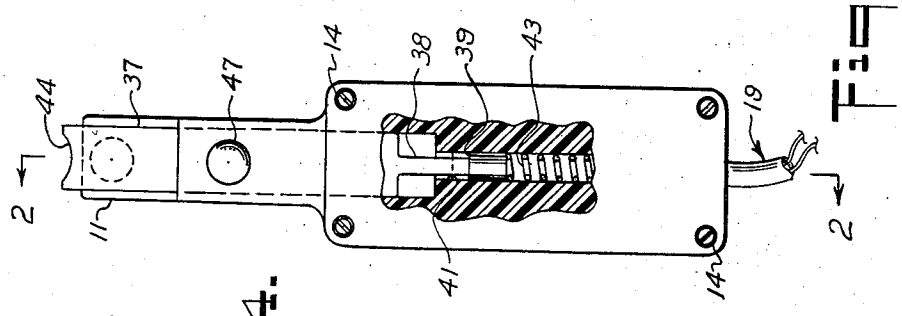



Fig. 1.

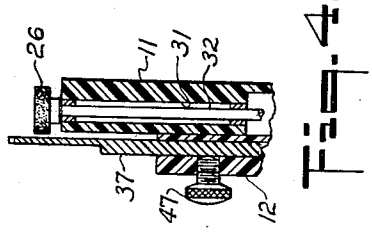



Fig. 4.

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# POWERED FINGERNAIL FILE

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2 Claims. (Cl. 132—75.8)

The present invention relates to an improved electrically driven rotary abrasive for filing fingernails.

There is provided by this invention an electric hand instrument adapted to safely and rapidly file fingernails. The device is quite small and easy to operate, so that a person may readily employ same to file their own fingernails and provisions are included for guiding the operation and safeguarding the user or a recipient of the filing from injury or slipping. The simplicity and accompanying low cost of manufacture of the device of this invention makes same widely applicable for home use as well as use by beauticians.

It is an object of the present invention to provide an improved powered file particularly adapted for abrading fingernails.

It is another object of the present invention to provide an improved electrically driven fingernail trimmer with movable guard means for protection and nail alignment.

It is a further object of the present invention to provide in a device for powered fingernail filing a spring mounted finger guide for facilitating controlled filing and for protecting fingers from damage.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of the preferred form of the invention which is illustrated in the drawing accompanying and forming part of the specification. It is to be understood, however, that variations in the showing made by the said drawing and description may be adopted within the scope of the invention, as set forth in the claims.

The invention is illustrated in the accompanying drawing, wherein:

Figure 1 is an elevational view of the invention with a portion broken away as indicated to show the guide mounting.

Figure 2 is a sectional view taken in the plane 2—2 of Figure 1.

Figure 3 is a sectional view taken in the plane 3—3 of Figure 2.

Figure 4 is a sectional view of the head end of the invention in the same plane as Figure 2 and showing an alternative embodiment.

Considering the invention in some detail and referring to Figures 1–3 of the drawing, there will be seen to be provided an elongated housing 11 formed of a light strong material such as "Bakelite" and having a central depression formed in a planar side thereof. A cover 12 fits against the aforementioned planar housing side to define with the housing depression a chamber 13. The cover 12 is removably affixed to the housing 11 as by a plurality of bolts 14 and the cover may also be formed of a material such as "Bakelite." Both housing and cover have a reduced cross section at a head end of the housing and the cover extends somewhat short of the head end of the housing, as best seen in Figure 2.

Within the housing chamber 13 there is mounted a small electric motor 16 as by bolts 17 with a motor shaft 18 extending therefrom longitudinally of the housing toward the head end thereof. The motor is adapted for energization from a convenience outlet, not shown, by means of an insulated electrical cord 19 extending through a bore in the bottom of the housing. The cord 19 includes a first electrical conductor 21 connected directly to the motor 16 and a second electrical conductor 22 connected through a switch 23 to the motor. The switch 23 is mounted as by bolts 24 in the housing with actuating means such as a button extending therethrough so as to be readily operated from the housing exterior.

At the head end of the housing 11 and disposed at the side thereof toward the cover 12, as illustrated in Figure 2, there is rotatably mounted a small abrasive wheel 26. Mounting of the abrasive wheel 26 is accomplished by a shaft 27 extending axially therefrom through a bushing into the housing and locked therein by a removable plug 28 threaded into the housing and engaging the shaft 27 in rotatable relation. A collar or flange 29 about the shaft between housing and wheel fixes the lateral wheel position and a bore 31 longitudinally of the housing accommodates a motor shaft extension 32 in bushings or the like 33. The motor shaft extension 32 is attached to the motor shaft proper 18 in a slip fit joint so that disengagement is possible by relative longitudinal displacement and a bevel gear 34 on the end of the shaft extension meshes with a bevel gear 36 on the abrasive wheel shaft 27. It will be seen from the foregoing that rotation of the motor shaft 18 is transmitted to the abrasive wheel for rotating same about an axis transversely through the head end of the housing.

In addition to the above described elements of the invention there is further provided a guide or guard plate 37 having parallel longitudinal sides and disposed in sliding engagement within a slot longitudinally of the housing cover 12. The guide 37 is oriented with a side thereof facing the housing 11 and includes a lower shank 38 extending into connection with a piston 39 slidably disposed in a bore 41 formed longitudinally in the cover from the bottom thereof. A plug 42 threaded into the bottom of the bore 41 closes same and compresses a light spring 43 disposed between the piston and plug so that the guide 37 is generally urged upwards out of the cover into a position overlying the abrasive wheel 26. The guide 37, which may have a reduced thickness at the upper end thereof, extends over the abrasive wheel 27 and has the upper edge thereof formed with a concave surface 44 for receiving the end of a finger 46 of one using the invention. Additionally there is provided means for retarding or damping motion of the guide in the form of a set screw 47 threaded transversely through the cover from the outer surface thereof to bear against the guide 37 therein. This set screw 47 may be set to press lightly against the guide for damping motion thereof or may be tightened against the guide to fix the extension thereof from the cover.

Operation of the present invention is accomplished merely by closing the switch 23, whereupon an electrical circuit is completed through the motor 16 from an electrical power source, not shown, and connected across the leads 21 and 22 of the cord 19. Energization of the motor causes the shaft 18 thereof to rotate and thus the attached shaft extension 32 rotates to rotate the abrasive wheel 26 and attached shaft 27 through the meshing gears 34 and 36. Utilization of the invention to file or trim fingernails is readily accomplished by grasping the housing 11 in one hand and pressing upon the button switch, thereby to operate the motor. A finger 46 to be operated upon is then pressed longitudinally against the concave surface 44 of the guide 37 with the fingernail 48 then directed toward the rotating periphery of the abrasive wheel 26.

Pressure by the finger 46 depresses the guide 37 against the spring 43 so as to bring the fingernail 48 into contact with the abrasive wheel 26 and it is then only necessary to slidably pivot the finger on the guide end 44 to evenly file all of the fingernail and the amount of pressure exerted upon the guide determines the amount of fingernail filed off by the wheel. It will be appreciated that the wheel is removable as by a pin connection or the like, so that different grit abrasive may be used and a buffing wheel may be employed.

An alternative arrangement of the head end of the invention is illustrated in Figure 4 wherein the abrasive wheel 26 is directly fixed to the end of the shaft extension 32, which extends through the top of the housing. In this arrangement no offset drive is provided, but instead the abrasive wheel 26 in effect rotates upon the end of a motor shaft and a consequent saving in complexity and cost of manufacture is effected. The guide 37 is herein oriented to be in close proximity with the periphery of the wheel and the thickness of the cover may be minimized to effect this disposition. Operation of this embodiment is the same as above stated for the first described embodiment with the only difference to the user being that the wheel rotates in a plane displaced ninety degrees from the plane of rotation of the offset model. In both cases the rotating abrasive wheel serves to file down the contacting fingernail and the guide with concave upper surface serves to brace the finger, prevent pushing of the finger away from the wheel by same, alignment of the fingernail with the wheel and close control over the entire filing operation for safety, precision of filing and ease of use of the invention.

What is claimed is:

1. A powered fingernail file comprising an electric motor, a housing about said motor, an electric switch connected in circuit with said motor and extending exteriorly of said housing for energizing the motor, an abrasive wheel positioned exteriorly of said housing, means connecting said wheel and motor for rotation of the former by the latter, a guide having a platelike end overlying said wheel with a concave surface thereat, means mounting said guide for resiliently slidable relation to said wheel, means adjustably bearing upon said guide for damping resilient motion thereof, said housing having a depression therein receiving said motor, a cover removably secured to said housing and having a slot therein receiving said guide in slidable relation, said guide mounting means including a spring connected between said guide and cover in said cover slot, and said adjustably bearing means including a set screw threaded in said housing into the slot therein for bearing against said guide.

2. A powered fingernail file comprising a housing including a longitudinally slotted portion, a motor mounted within said housing with control means extending exteriorly of the housing, a rotatable abrasive wheel mounted exteriorly of said housing and operatively and removably connected to said motor for rotation thereby, an elongated guide slidably disposed in said slot and having a platelike end with a concave end edge overlying said wheel, a plug removably closing one end of said slot, a compression spring disposed within said slot in compression between said guide and said plug, and a set screw threaded in said slotted housing portion into said slot for adjustable bearing relation to said guide.



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