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(54) **ELECTRONIC NAIL FILER**

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(57) **ABSTRACT**

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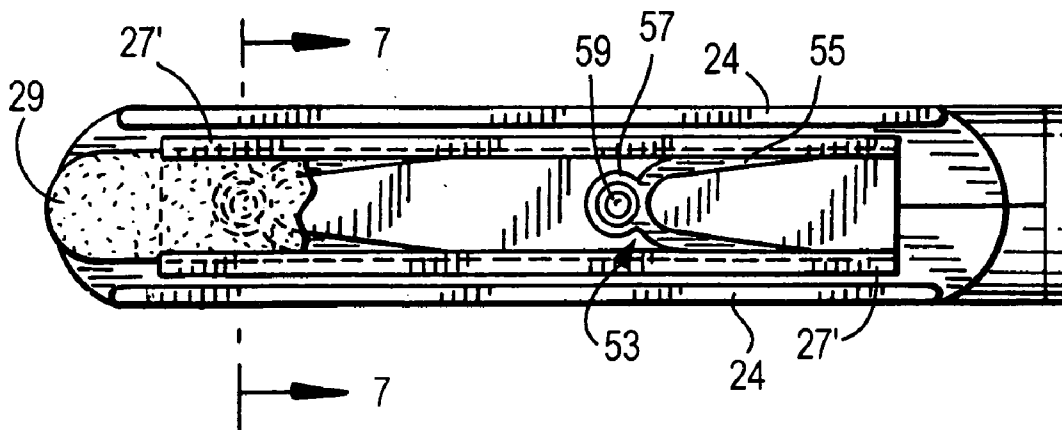
An apparatus for trimming a person's nails is provided. The apparatus comprises a body having a longitudinally extending handle that is connected to a longitudinally extending base with the base being co-extensive with and spaced from the handle. Housed within the body is a power supply for supplying power to the device as well as an electrical drive device that is powered by a power supply. The base of the apparatus has a bottom portion having a longitudinally extending support or mounting plate. The support or mounting plate removably captures an emery board or similar nail file element. The support or mounting plate is mechanically coupled to the drive device and is reciprocally moveable in a longitudinal direction in response to the drive device being electrically activated.

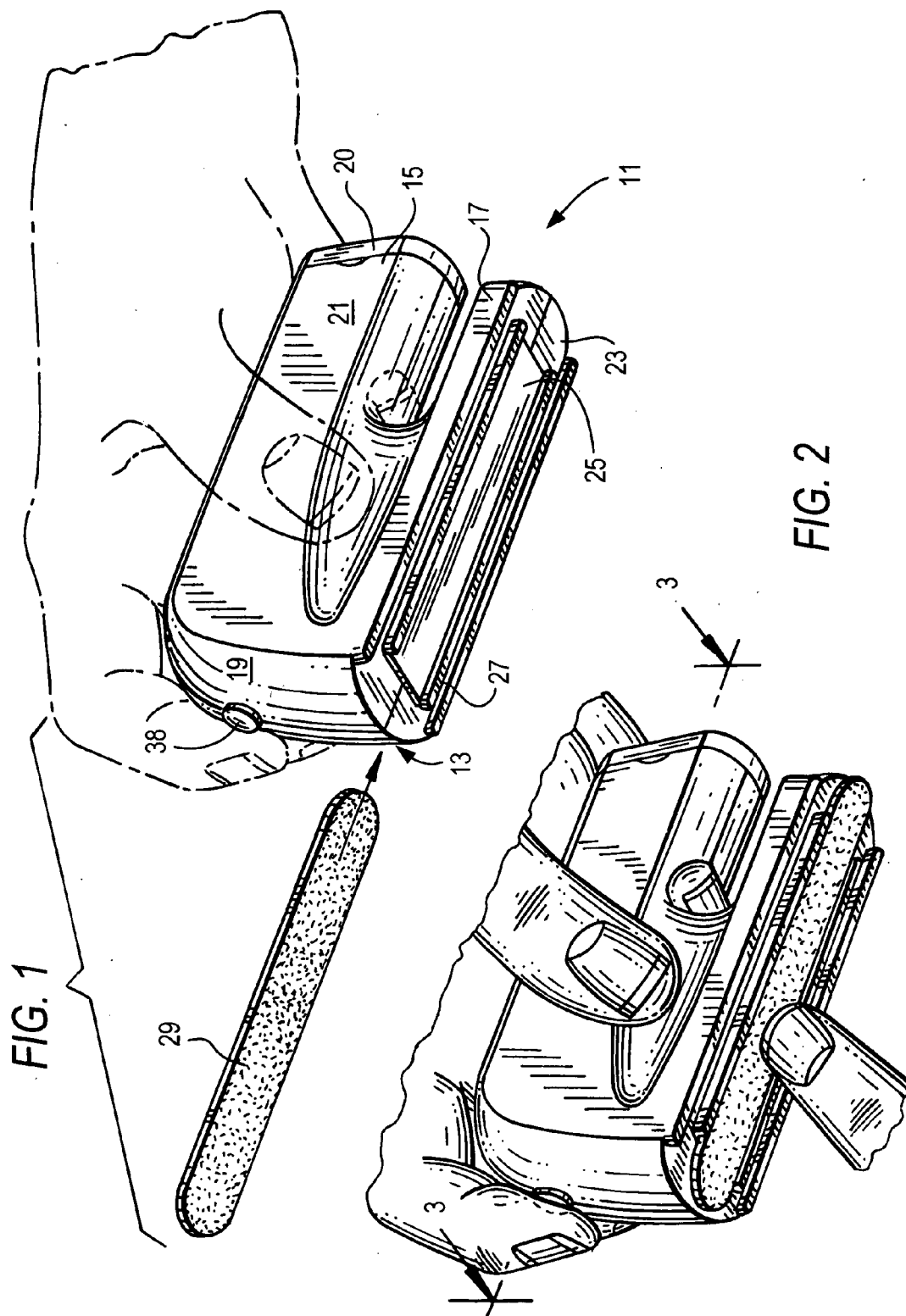
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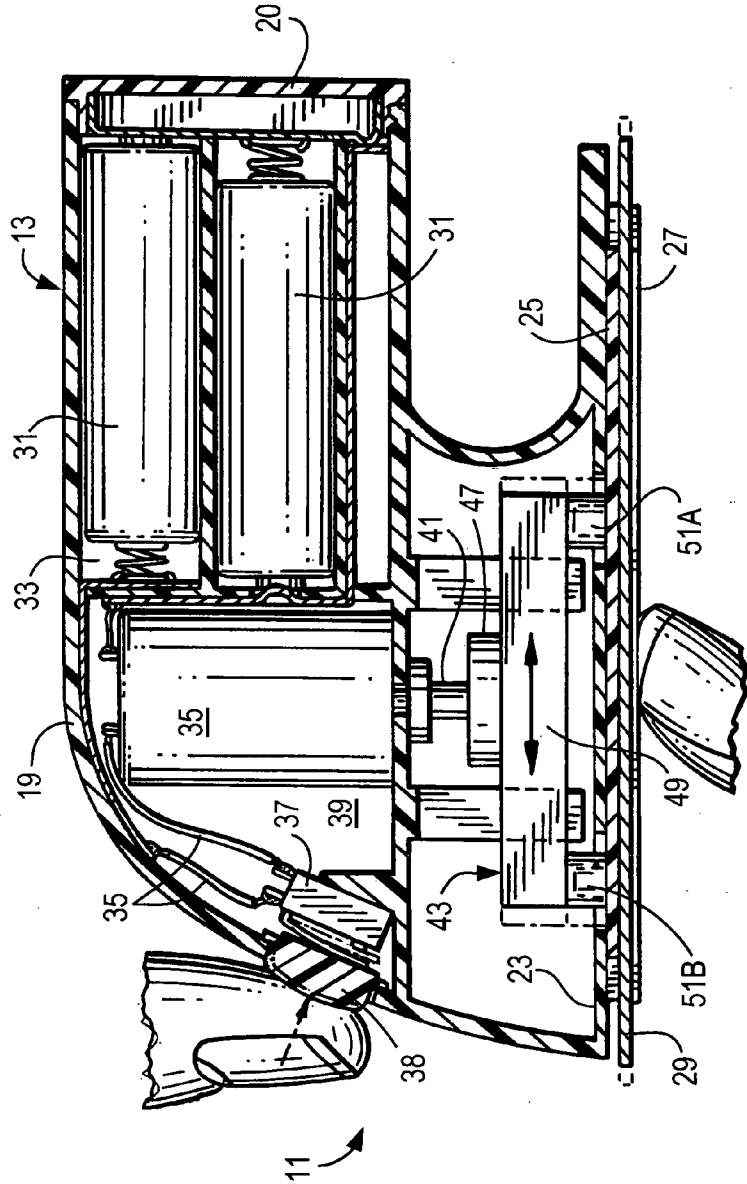


FIG. 3

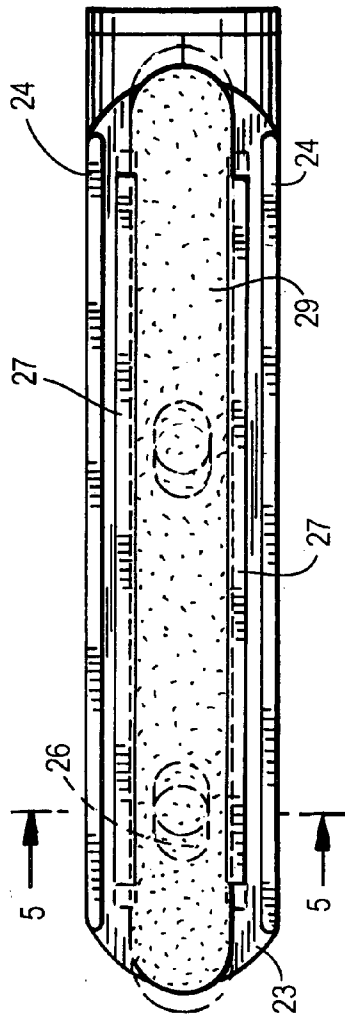
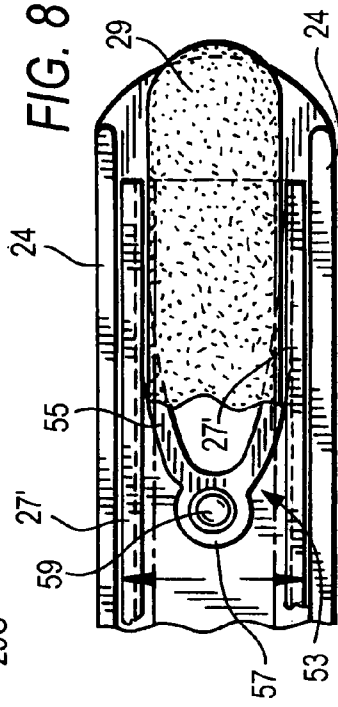
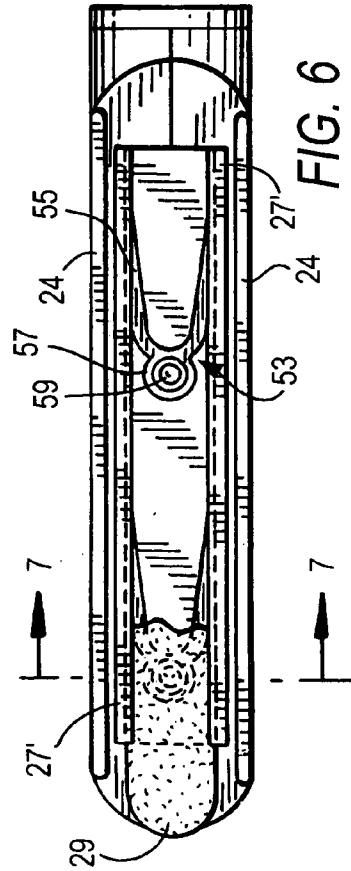
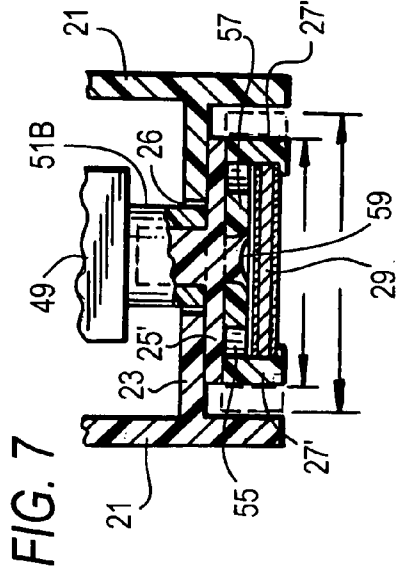
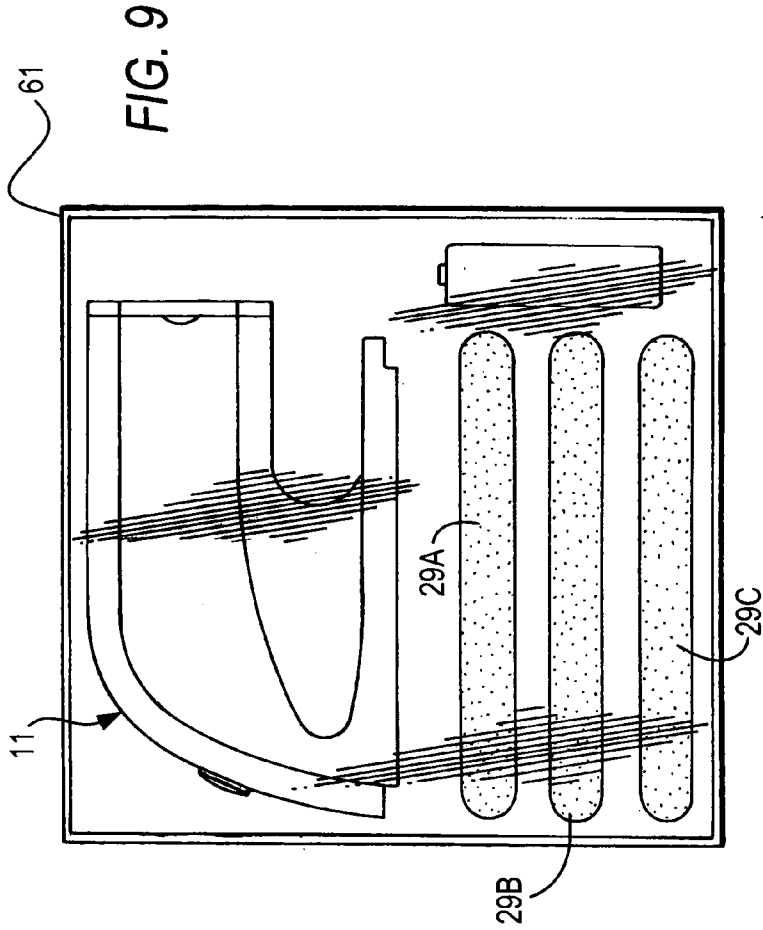
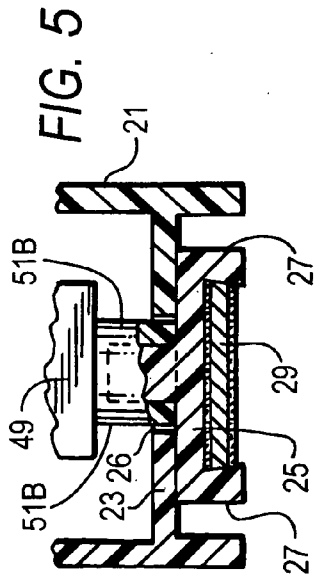


FIG. 4



ELECTRONIC NAIL FILER

BACKGROUND OF THE INVENTION

[0001] This invention relates to filing and/or trimming fingernails and toenails, and, more particularly, to an electrical apparatus for filing and/or trimming fingers or toenails by selectively applying a moving surface.

[0002] A conventional way of trimming one's fingernails or toenails is with the use of a nail clipper or a scissor. These devices leave the nail course or jagged edged, and it is common to file the edge of the nail with either an "emery" board or sometimes with a metallic file in order to smooth out the nail edge. Emery boards are pieces of hard wood or wood-like board which have emery affixed or have emery paper glued to them, thereby rendering them both coarse and flexible. They are widely used by individuals and beauty shop manicurists to shape and smoothen the nail. Because emery boards are made inexpensively so as to be disposable, they are a sanitary alternative to metal nail files. The flexibility of an emery board also makes this method preferred over the use of a metallic file. In addition to filing, the emery board also can be used as a trimming device in place of a clipper or scissor.

[0003] The problem of manually using an emery board is that it is both a tiring and time consuming process. Accordingly, it would be desirable to provide an apparatus or device which enables one to file and smooth out a fingernail using an emery board and which operates rapidly in cutting and filing the nail.

SUMMARY OF THE INVENTION

[0004] Generally speaking, in accordance with the invention, an apparatus for trimming a person's nails is provided. The apparatus comprises a body having a longitudinally extending handle that is connected to a longitudinally extending base with the base being co-extensive with and spaced from the handle. Housed within the body is a power supply for supplying power to the device as well as an electrical drive device that is powered by a power supply. The base of the apparatus has a bottom portion having a longitudinally extending support or mounting plate. The support or mounting plate removably captures an emery board or similar nail file element. The support or mounting plate is mechanically coupled to the drive device and is reciprocally moveable in a longitudinal direction in response to the drive device being electrically activated.

[0005] In one embodiment, the support or mounting plate is formed with a pair of spaced-apart longitudinally extending fins between which the emery board is captured. In its preferred design, the spaced-apart fins are outwardly moveable in a transverse direction by means of a spring mechanism so that the emery board or nail file can be disposed therebetween for capture by the fins.

[0006] Accordingly, it is an object of the invention to provide an improved apparatus for trimming a person's nails.

[0007] Another object of the invention is to provide an improved apparatus for trimming a person's nails that is easy and safe to use. A further object of the invention is to provide an improved apparatus for trimming a person's nails which utilizes replaceable emery boards sold in the market place.

[0008] A further object of the invention is to provide an improved apparatus for trimming a person's nails which controllably applies a reciprocal moving abrasive surface.

[0009] Still other objects and advantages of the invention will, in part, be obvious and will, in part, be apparent from the following description.

[0010] The invention accordingly comprises the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth and the scope of the invention will be indicated in the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] For a fuller understanding of the invention, reference is made to the following description, taken in connection with the accompanying drawings, in which:

[0012] FIG. 1 is a perspective view of the nail trimming apparatus of the invention before a conventional emery board is captured along the bottom thereof;

[0013] FIG. 2 is a perspective view of the inventive nail trimming apparatus showing the emery board being captured along the bottom of the apparatus;

[0014] FIG. 3 is a cross-sectional view taken along line 3-3 of FIG. 2;

[0015] FIG. 4 is a bottom plan view of the inventive nail trimming apparatus depicted in FIG. 2;

[0016] FIG. 5 is a cross-sectional view taken along line 5-5 of FIG. 4;

[0017] FIG. 6 is a bottom plan view of one alternative form of the inventive nail trimming apparatus;

[0018] FIG. 7 is a cross-sectional view taken along line 7-7 of FIG. 6;

[0019] FIG. 8 is an enlarged plan view of a portion of the underside of the inventive nail trimming apparatus as depicted in FIG. 6 but showing the pair of fins spread apart for enabling capture of an emery board; and

[0020] FIG. 9 is a front view of a nail trimming packaging system for marketing and sale and which includes the inventive nail trimming apparatus and a plurality of different emery boards.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0021] Referring first to FIGS. 1 and 2, an electronic nail file or nail trimming apparatus, generally indicated at 11, is shown. Nail file apparatus 11 is defined by a substantially U-shaped moulded body 13 made of plastic or metal. Body 13 includes a longitudinally extending handle portion 15 and an integrally formed longitudinally extending base portion 17. Handle portion 15 and base 17 are co-extensive with and spaced from one another. Body 13 is further defined by top wall 19, side walls 21 and bottom wall 23. Handle portion 15 of apparatus 11 is formed with a selectively removable front panel 20 (see FIG. 3) for enabling access inside apparatus 11.

[0022] Referring to FIG. 3, the inside of apparatus 11 is now shown. Apparatus 11 is formed with a pair of tubular compartments 33 for removably housing a pair of replaceable batteries 31 within handle portion 15. Rearwardly of battery compartments 33 is a motor 35 fixedly mounted within apparatus 11. Motor 35 is an electrical communication by means of wires 35 with a switch 37. Switch 37 is selectively activated by means of an operating button 38 protruding along the rear portion of top wall 19. When button 38 is pressed, it closes the circuit within switch 37, thereby activating motor 35. Motor 35 has a rotatable shaft 41 that is connected to a clutch unit 43. Clutch unit 43 consists of a first clutch member 47, rotatable

in response to the rotation of shaft **41**, and a second clutch member **49**, reciprocally moveable in response to the rotation of first clutch member **47**. Second clutch member **49** has a first pair of supporting feet **51A** downwardly depending from the forward portion thereof and a second pair of feet **51B** downwardly depending from the rear portion thereof. Feet pairs **51A** and **51B** are fixed to a longitudinally extending mounting plate **25** slidably moveable in a longitudinal direction with respect to bottom wall **23** of apparatus **11** (see also FIG. 4).

[0023] Referring to FIGS. 3-5, mounting plate **25** is integrally formed with a pair of longitudinally extending and downwardly depending ribs **27**. Ribs **27** are spaced apart from one another such that a conventional emery board **29** can be captured therebetween and overlie plate **25**. In order to capture emery board **29** along mounted plate **25** and between ribs **27** (see FIG. 4), emery board **29** may be slid therewithin from one end of bottom wall **23**. Alternatively, ribs **27** may be moulded to be slightly outwardly flexible in order for an emery board to be inserted between ribs **27** for capture thereby.

[0024] In operation, the user presses a button **38**, which activates switch **37**, thereby causing motor **35** to operate. When motor **35** operates, it causes second clutch member **49** of clutch unit **43** to reciprocally move in a longitudinal direction. Because second clutch member **49** is coupled to mounting plate **25**, by means of feet pairs **51A** and **51B**, mounting plate **25**, with captured emery board **29**, reciprocally moves back and forth at a high rate of speed. Such movement of mounting plate **25** with captured emery board **29** effectively mimics the movement of an emery board during a manual application to a nail. The advantage, of course, is that the rate of the speed of reciprocal movement is far greater than could be manually generated.

[0025] As can be appreciated, once emery board **29** has worn out as a result of extensive use of apparatus **11**, it may be removed from capture along mounting plate **25** and replaced with a new emery board. In addition, the captured emery board, whether or not it is worn out, may be replaced in position over moving plate **25** by an emery board having a different coarseness level.

[0026] Referring now to FIGS. 6-8, a second embodiment of the inventive nail trimming apparatus is shown. In this embodiment, bottom wall **23** has a pair of space slots **26** through which pairs of feet **51A** and **51B** extend with the ends of pairs of feet **51A** and **51B** being fixed to a mounting plate **25'**. Mounting plate **25'** has a pair of spring elements **53** fixed thereto along the underside thereof. Each of spring elements **53** (see FIG. 6) has a hub **57** and rivet **59** which fixedly attaches hub **57** to the underside of mounting plate **25'**. Each of spring elements **53** further includes a pair of spring arms **55**. One of spring arms **55** of each spring elements **53** is fixedly attached along the inside surface of a first longitudinally extending moveable fin **27'**; similarly, the other spring arm **55** of each spring element **53** is attached along the inside surface of a second longitudinally extending moveable fin **27'**.

[0027] Accordingly, and as shown in FIGS. 6 and 8, each of moveable fins **27'**, which are substantially parallel to and spaced from one another, may be selectively urged in an outward transverse direction in order to enlarge the space therebetween so as to enable emery board **29** to fit along the underside of mounting plate **25'**. Once emery board **29** is in appropriate position along the underside of mounting plate

25', fins **27** are released and spring arms **55** of spring elements **53** urge fins **25'** towards each other in the position shown in FIG. 6. As a result, fins **27'** now capture emery board **29** therebetween.

[0028] In FIG. 9, a packaging unit, suitable for sale and purchase is shown at **61**. Packaging unit **61** houses a single inventive nail file apparatus **11** and a plurality of different emery boards **29A**, **29B** and **29C**. Each of emery boards **29A-29C** can be manufactured to have a different coarseness level as compared to the coarseness of the remaining emery boards housed in packaging **61**. Alternatively, each emery board **29A-29C** may have different width size; in accordance with the inventive embodiment of FIGS. 6-8, different width size emery boards may be accommodated for capture along the bottom of apparatus **11**.

[0029] The invention accordingly comprises the features of construction and arrangement of parts as exemplified in the claims.

1. An apparatus for filing or trimming a person's nail comprising:

a body including a longitudinally extending base;
an electronically operable drive device housed within the body;

an electrical power supply housed within the body for supplying electrical power to the drive device;

wherein said longitudinally extending base has a bottom with a longitudinally extending support longitudinally moveable with respect to said bottom;

wherein said longitudinally moveable support is designed to removably capture a nail file or emery board along its entire length, said support being mechanically coupled to said drive device and reciprocally moveable in a longitudinal direction in response to the drive device being electronically activated.

2. The apparatus of claim 1 wherein the body comprises a longitudinally extending handle connected to said longitudinally extending base, the longitudinal extending base being coextensive with and spaced from said longitudinally extending handle.

3. The apparatus of claim 1, wherein said body includes a removable panel for enabling access inside said body.

4. The apparatus of claim 1, wherein said body has an operating button for selectively activating said drive device.

5. The apparatus of claim 1, wherein said support is coupled to drive device by means of a clutch unit.

6. The apparatus of claim 1, wherein said support has a pair of spaced apart downwardly depending ribs between which said nail file or emery board is removably captured.

7. The apparatus of claim 6, wherein said ribs are flexible in a lateral direction.

8. The apparatus of claim 6, wherein said ribs are outwardly moveable in a lateral direction along said support.

9. The apparatus of claim 8, wherein said support includes a spring mechanism for selectively urging said ribs to outwardly move.

10. An apparatus for trimming a person's nail comprising:

a body having a surface;

a drive device in said body electronically operable by means of a power supply; and

a nail file or emery board;

wherein said apparatus body removably captures said nail file or emery board along said surface such that said file or board is grabbed substantially along its entire length,

wherein said nail file or emery board when captured is reciprocally moveable in a longitudinal direction in response to activation of said drive device.

11. The apparatus of claim 10, further including a switch electrically connected to said drive device for activating said drive device when said switch is in one of an open or closed condition.

12. The apparatus of claim 10, wherein the body includes an activation button for closing said switch when said button is pressed.

13. The apparatus of claim 10, further including a pair of spaced apart fins for selectively capturing said nail file or emery board along said base surface.

14. The apparatus of claim 13, wherein said fins are selectively moveable in a lateral direction between a first open position such that said nail file or emery board has sufficient space to be inserted between said fins and a second closed condition such that said disposed nail file or emery board is fixedly captured by said fins.

15. The apparatus of claim 14, wherein said fins are selectively moveable between said positions by means of a spring mechanism.

16. A system for maintaining a person's nails in a filed or trimmed condition comprising:

a plurality of off-the-shelf nail files or emery boards; and an electronic nail filing apparatus defined by a body having a support surface and including a drive mechanism housed within the body;

said support surface having means for removably capturing any one of said nail files or emery boards along its entire length, said nail files or emery boards being reciprocally moveable in a longitudinal direction when captured by said capturing means;

said reciprocal movement being in response to said drive mechanism being activated.

17. The system of claim 16, wherein each of said nail files or emery boards has a surface made of a material with a different coarseness value than any of the other nail files or emery boards.

18. The system of claim 17, wherein said capturing means includes a spaced apart pair of fins between which one of said nail files or emery boards is selectively retained.

19. The apparatus of claim 19, wherein said apparatus further includes spring means for selectively urging said fins to move apart in a lateral direction.

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