May 20, 1952 M. KESSLER 2,597,525

POWER-DRIVEN MANICURING DEVICE

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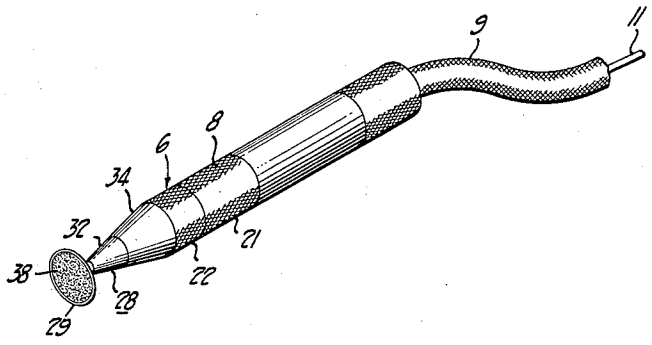


FIG_1_

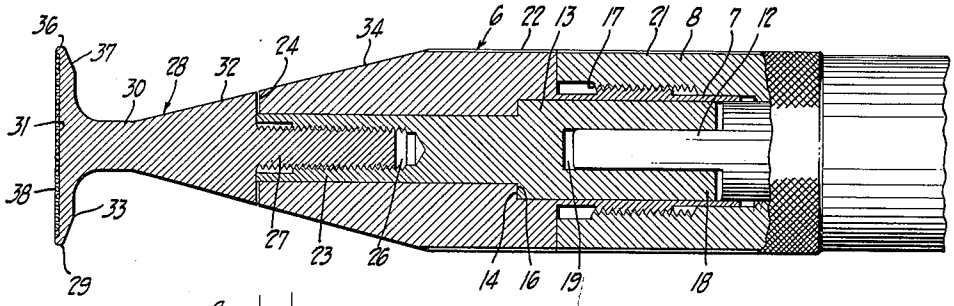


FIG_2_

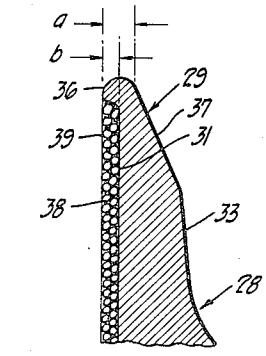


FIG_3_

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POWER-DRIVEN MANICURING DEVICE

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2 Claims. (Cl. 132—75.8)

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The invention relates to devices for manicuring finger-nails and more particularly to rotary manicuring instruments which are arranged for attachment to a motor shaft for power driven operation.

An object of the invention is to provide a manicuring device of the character described which is designed and constructed for insertion under the lateral fold of skin at the side edge of a finger-nail to be manicured for rapid, safe and precise trimming the nail from the joinder of the nail and its bed or quick at the side edge of the nail uniformly and smoothly outwardly to the extended central portion of the nail.

Another object of the invention is to provide a manicuring instrument of the character described in the form of a thin rotary disc formed on one side thereof with a coating of fine abrasive particles of predetermined size to afford proper and readily controlled cutting of a finger-nail without any accompanying burning sensation or other discomfiture and which is so formed and constructed as to positively confine the cutting or abrasive action of the disc to the nail with the adjoining flesh of the finger at all times fully protected against abrasive contact or injury.

A further object of the invention is to provide in a manicuring instrument of the character described a new and improved construction for adhering abrasive particles to a metal disc.

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.

Referring to said drawing:

Figure 1 is a perspective view of a manicuring device constructed in accordance with the present invention.

Figure 2 is a longitudinal cross-sectional view of the device on an enlarged scale.

Figure 3 is a fragmentary longitudinal sectional view of a part of the device on a still further enlarged scale.

The manicuring device of the present invention consists of a handle member 6 formed at one end 7 for detachable connection to an end 8 of a flexible drive 9 having an internal torsional drive element 11 terminating within the end 8 in flattened tongue 12. Journaled for rotation within the member 6 and mounted substantially axially therethrough is a shaft part 13, retained against longitudinal displacement forwardly of the handle by engaged lateral annular shoulders

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14 and 16 on the part 13 and within the internal bearing bore of the member 6.

Preferably, the end 7 of the hand piece 6 is reduced in diameter and threaded externally for engagement with a threaded interior wall 17 provided in the end 8 of the flexible drive concentric to and spaced from the drive tongue 12. The drive connection is effected by the provision in one end 18 of the shaft part 13 of a cross slot 19 opening to the end of the part for receiving the tongue 12 and joining the tongue and part for joint rotation upon threading the hand piece 6 into the attachment 8. Preferably, and by reason of the stepped down arrangement of end 18, the external walls 21 and 22 of the end 8 and hand piece 6, contiguous to their point of attachment, are of the same diameter and provide a smooth continuous external surface for the engagement in the hand of the user. If desired and as here shown portions of the adjoining surfaces 21 and 22 may be knurled to facilitate holding.

The opposite end 23 of shaft part 13 is extended to the adjacent end 24 of the hand piece 6 and is formed with an internally threaded bore 26 for receipt of a threaded axially extended stem 27 of a manicuring instrument 28 so as to join parts 13 and 28 for joint rotation. The opposite end 29 of the member 28 is formed as an enlarged disc shaped head having a circular front face 31 arranged concentric to the axis of rotation and in a plane substantially perpendicular thereto. Desirably, the exterior surface 32 of the instrument 28 is tapered forwardly, that is toward the head 29, to a reduced neck portion 30 adjoining the rear face 33 of the head 29. Also as here shown, the forward end 34 of the hand piece 6 is likewise tapered in conformity with the taper of surface 32 whereby a continuous tapered surface is provided from the neck 30 to approximately the mid-point of the hand piece 6.

As will be best seen from Figure 3, the front face 31 of the instrument 28 is recessed slightly within a surrounding peripheral bead 36. The latter as will be seen from this figure is desirably rounded for smoothness and is reduced to a very thin cross section by tapering to the bead 36, the outer portions 37 of the rear side 33 of the disc. Desirably, the full thickness of the bead 36, as denoted by dimension a in Figure 3, is held to approximately $\frac{1}{32}$'' so as to permit the ready insertion of the disc periphery under the finger-nail to be manicured and particularly under the lateral fold of skin at the edge of a finger-nail adjacent to the quick. The depth of the recess of face 31, as denoted by dimension b in Figure 3, is preferably held to approximately $\frac{1}{64}$'' and this recess is filled with abrasive particles 38 ad-

hered to the face **31** and extending therefrom to the front plane **39** of the bead **36**. I have found for a disc of the size, and rotated at the speeds herein described, that the size of the particles **38** should be carefully held to between 0.003'' and 0.010''. Particle sizes smaller than this range manifest a decided tendency to cause a burning sensation on the nail of the user. Particle sizes larger than the range indicated produce too course and too rapid cutting of the nail to provide a precise, smooth and readily controlled trimming of the nail. Particles held closely to 0.007'' have found to produce optimum results. Emery particles are satisfactory for present purposes.

An important feature of the present invention, is the method of and construction for the securing of the abrasive particles **38** in place against the end face **31** of the disc within the recess above noted. Insofar as I am aware, no satisfactory process has been developed and available in the art for securing emery particles directly to a metal surface. After a great deal of experimentation I have found that the emery particles may be secured to the end face **31** with great cohesive force in the following manner. The surface **31** is preferably roughened slightly by means of tool marks or the like. Thereafter, a thin and continuous film of glue is spread over the face **31** and the latter is pressed firmly into a mass of emery particles so as to securely imbed the particles into the glue. For this purpose, I prefer to use a cylindrical cup approximately fitting the diameter of the disc **29**, deposit the emery particles in the base of the cup and force the disc face **31** into the cup into pressure contact with the emery particles. Upon removing of the disc from the cup, or after otherwise imbedding the emery particles in the glue film, the face of the tool is carefully scraped so as to level the particle layer to the front plane **39** of the bead **36**. The bead is wiped clean of any adhering particles and the tool set aside for drying and setting up of the glue. A slow drying operation is preferred. While various glues may be used for the purpose above, I have found that animal glue, and particularly glue made from animal hoofs, is entirely satisfactory.

Of importance in obtaining proper manicuring action of the disc is its speed of rotation. Desirably, the flexible drive shaft is connected to an electric motor having a substantial constant speed of rotation within the range of 500 to 2,000 R. P. M. If possible, several speeds should be available within this range to enable the operator to select the best speed for trimming and finishing various finger-nails encountered. The size of the disc corresponding to the indicated speed range is approximately ¼'' to ½'', that is the diameter taken across the front plane of the disc at the bead **36**.

In use the operator will initially apply the face of the disc to the side edge of the nail adjacent the quick and at the lateral skin fold. For proper cutting, the periphery of the disc is inserted under the edge of the nail within the lateral skin fold so as to place the front face of the disc against the edge of the nail. For this purpose the disc must be reduced to a thinness at its periphery as above indicated and the bead **36** and the adjacent rear portion **27** of the disc should be smooth and polished and without any sharp edges so as to fully protect the adjacent flesh of the finger against which the rim and back side of

the disc are pressed. The operator then moves the face of the disc along the nail in a direction generally outwardly with regard to the nail to the approximate mid-point or center of the nail. The operation is repeated, starting at the opposite side of the nail and moving across the end of the nail to its center so as to produce a general convergence of the sides of the nail to the center. In all of these movements of the disc across the nail, and not withstanding the fact that the disc is power operated at a substantial speed, the quick and fleshy part of the finger adjoining the nail is fully protected at all times against abrasive contact or possible injury.

I claim:

1. A manicuring instrument for a rotary power driven manicuring device comprising, a disc having a recessed end face bounded by a smoothly rounded peripheral bead projecting axially therefrom, the opposite end face of said disc having a flat bevelled portion adjacent said peripheral bead to permit a ready insertion of the disc periphery and said bead under the finger nail to be manicured and for support of said recessed end face in opposed juxtaposition to the finger nail, and a layer of abrasive particles glued to said recessed end face and extending therefrom to the plane of said bead thereby providing a flat abrasive surface in the plane of said bead.

2. A manicuring instrument for a rotary power driven manicuring device comprising, a disc having a diameter from one-quarter inch to one-half inch and adapted for rotation at a speed of approximately five hundred to two thousand revolutions per minute, said disc having a recessed end face bounded by a smoothly rounded peripheral bead projecting axially therefrom by a distance of approximately one sixty-fourth of an inch, the opposite end face of said disc having a flat bevelled portion adjacent said peripheral bead to permit ready insertion of the disc periphery and said bead under the finger nail to be manicured and for support of said recessed end face in opposed juxtaposition to the finger nail, and a layer of abrasive particles glued to said recessed end face and extending therefrom to the plane of said bead thereby providing a flat abrasive surface in the plane of said bead.

MERRILL KESSLER.

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