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R. HARVELL ET AL

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MOTOR OPERATED VEHICLE BODY AND FENDER FILE

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FIG. 1

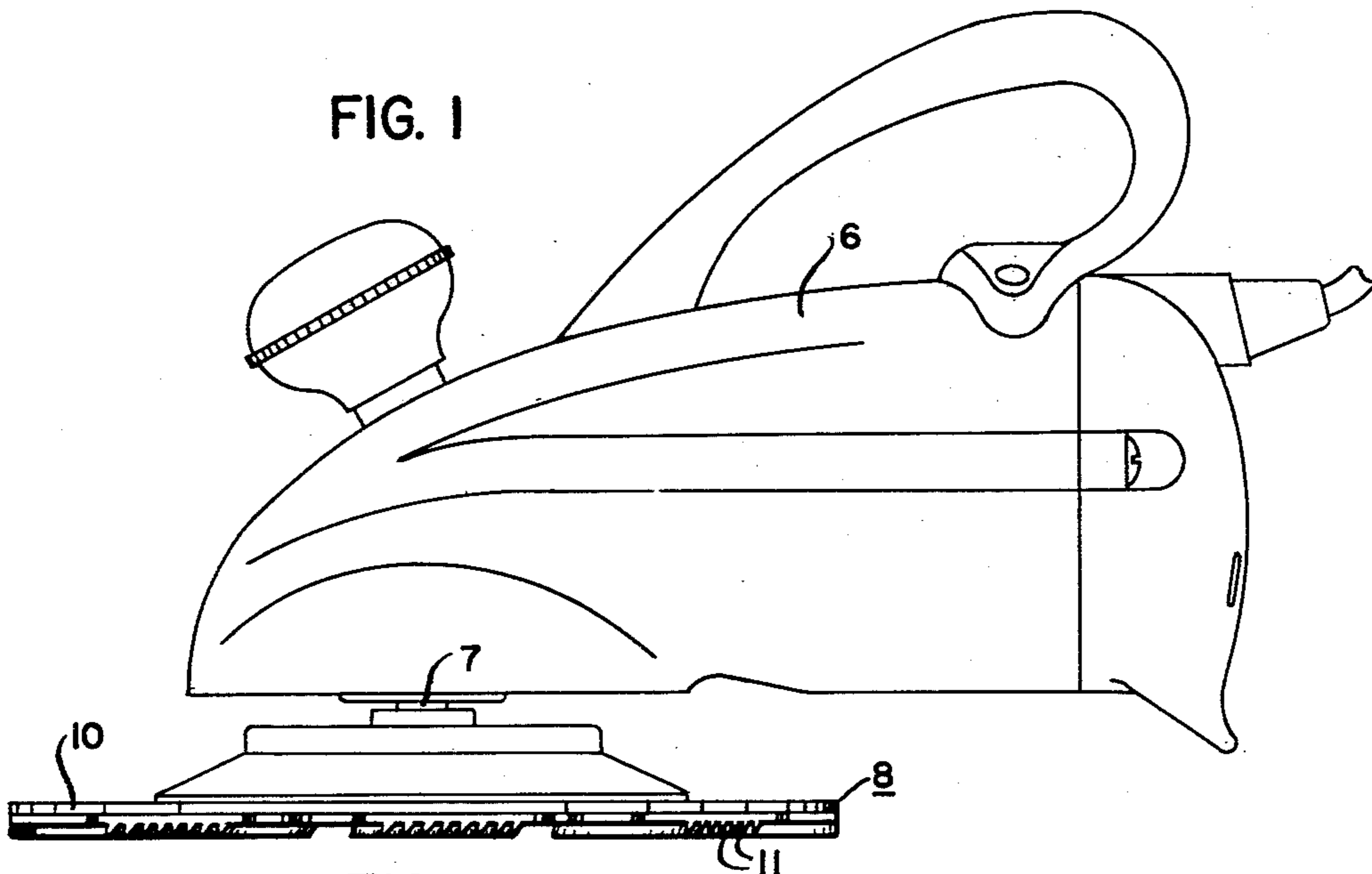


FIG. 2

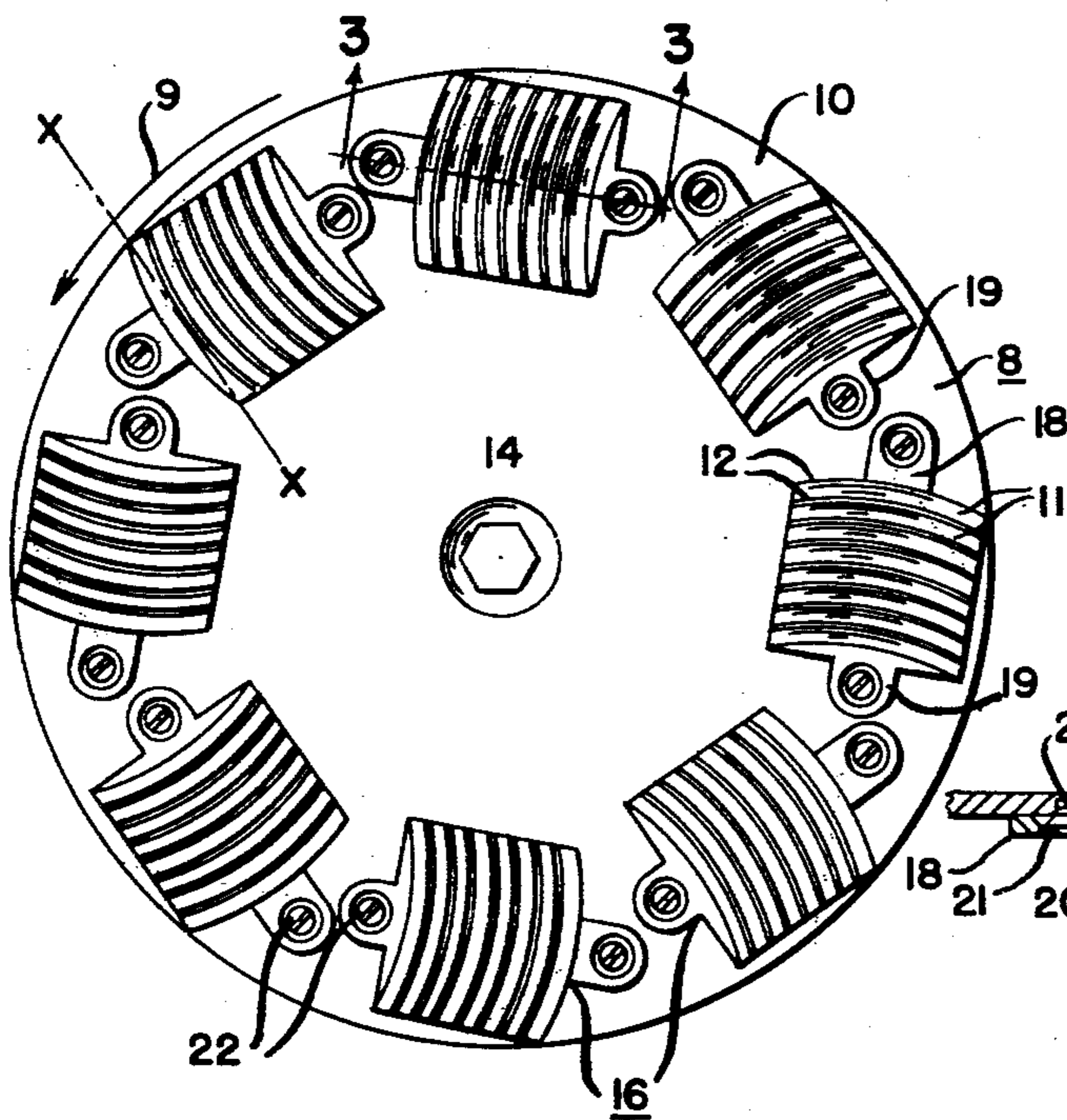
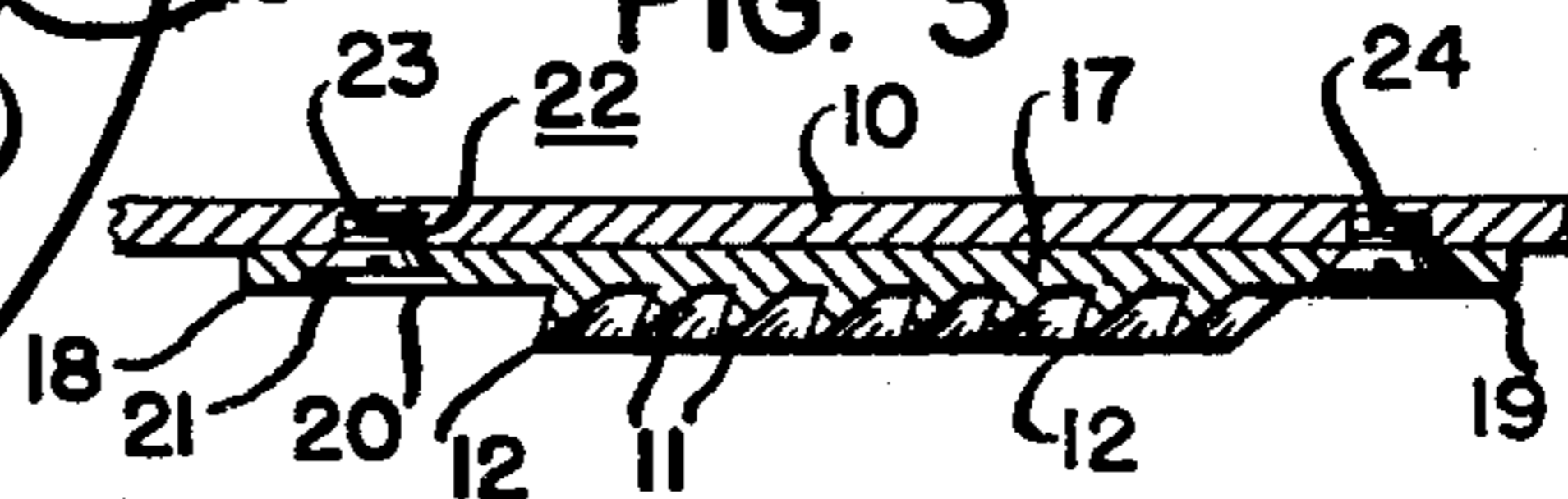


FIG. 3



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MOTOR OPERATED VEHICLE BODY AND FENDER FILE

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3 Claims. (Cl. 29—79)

This invention relates to means for conditioning vehicle bodies and fenders for the application of finishes, such as paint, enamel, etc., thereto either during the course of manufacture or repair, and more particularly to files adapted to be motor operated, either by connection with a portable electric motor, such as are provided as a part of sanding machines, or by connection with a flexible shaft operated by an electric or other type of motor located remote from the work.

It has been common practice, for quite some time, to use hand tools during such conditioning operations, such as relatively stiff and long files equipped with a handle at one end, or relatively long flexible files carried by holders in which the files are held straight or made concave or convex by turnbuckle arrangements. This use of these during a short period of time, such as from ten to fifteen minutes, is very fatiguing and as a result many vehicle bodies and fenders display evidence of abandonment of the conditioning operation before perfection is attained. This is particularly true with respect to repair work where dented or damaged metal is first hammered or dollyed until the original shape is approximately reached, at which stage the metal is noticeably rough and the area replete with small indentations and protuberances. This is followed by hand filing to remove the top or high points and reveal the low zones and subsequent hammering or dollying and filing in an attempt to reach perfection. In assembly and finishing lines there may also be insufficient time to accomplish this hand filing to the extent desired, in order to remedy imperfections of stamping, fitting and welding, so that the finished products are not as attractive as desired for display in show rooms and for delivery to customers.

The principal objects of the present invention are to provide motor operated vehicle body and fender files which may be used by workmen to quickly, conveniently and accurately accomplish the conditioning steps incident to removal of the protuberances referred to, and to guide the major portion of the cuttings produced when filing, to a predetermined zone with respect to the file, so that it may be used in a manner not to scatter the cuttings over parts where their presence might cause excessive wear of mechanism of the vehicle or damage a finished portion of the body or fender.

Other objects and advantages will appear in the following detailed description of two forms of the present invention, taken in connection with the accompanying drawings, forming a part of this specification, and in which drawings:

FIG. 1 is a side elevational view of one form of body and fender file, embodying the present invention, carried by a conventional portable motor.

FIG. 2 is a bottom plan view of the file.

FIG. 3 is an enlarged sectional view on the line 3—3 of FIG. 2.

Referring to the drawing, we disclose a portable electric motor 6, by way of example, provided with a depending driving spindle 7, rotatable in a predetermined direction, such as counterclockwise when viewed from below, as indicated by the arrow 9, on which spindle is secured a file 8, driven thereby in a predetermined or definite direction for impinging the work when filing.

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In the example shown, the file comprises a carrying plate or disc 10 and a plurality of closely spaced, arcuate teeth 11 at one face thereof, having convex cutting edges 12 facing or leading in the direction referred to, the chords, one of which is shown along the imaginary line X—X of FIG. 2, extending diagonally with respect to the direction referred to and extending outwardly with respect to the central portion 14 of the disc, which is free of the projections, and rearwardly with respect to the direction of rotation indicated by the arrow 9. In this manner at least the major portion of the cuttings produced when filing will be guided by the teeth to a zone surrounding the periphery of the disc, aided by the centrifugal force incident to rapid rotation of the disc.

When filing a small area, such as the convex surface of a fender, the operator applies the file so that the work is impinged by the teeth, while passing through a zone, to one side of the axis of spindle 7, preferably selecting a position so that the cuttings are not thrown toward any bearings or finished surface not covered by a protective cloth or the like. During the filing period, the teeth sweep diagonally with respect to the protuberances, which assists the operator in applying the file to the work without likelihood of "chattering."

While the teeth 11 may be formed in spaced sets integral with the carrying plate or disc 10, we prefer to provide a plurality of units 16 each comprising a plurality of crosswise teeth 11 on a substantially rectangular base 17, provided with front and rear ears 18 and 19, respectively, each having a countersink 20 for the head 21 of a screw 22, the shank 23 of which is in screw threaded engagement in a hole 24 in the plate or disc 10. The several units 16 are carried in a circular pattern near the periphery of the disc with the rear ears 19 nearer the axis of the disc than the front ears 18. Thus the disc may be made of a different grade of metal than the units 16, so as to function best for the purpose intended, and to permit ready replacement of any broken or damaged unit.

The present invention differs from those types of milling and planing disc intended to be secured to the mandrel or chuck of floor mounted machine, such as a lathe, mill, etc. With such types of discs, the operator moves the work against it, the work usually being supported by and moved relative to a suitable rest. The operator determines whether the work is to be moved against the abrasive mediums on the face of the revolving milling disc near its periphery, having great linear speed, for rapid reduction of material, or move toward the abrasive mediums on the face of the disc toward its center, having less linear speed, for planing the work. The disc of the present invention is for portable use—the workman applies it to the zone of the work, to be reduced. In other words, the work is stationary while being acted upon, and the tool is manually guided relative to the work. This guiding of the tool can be hazardous or fatiguing if the abrasive mediums of the disc are so arranged that strong arms are required to hold the tool against the work. For that reason milling and planing discs intended to be revolved by use of stationary or floor mounted machines are not very suitable for vehicle body and fender or analogous work, where the disc must be manually supported and guided. The abrasive or cutting mediums of the present invention, as may be observed from an inspection of FIG. 2, are so arranged that the workman does not find it necessary to greatly resist tendency of the tool to veer off to an unwanted zone of action. The disc can be guided so that one set of teeth or one file unit at a time impinges the work at such angle as to materially reduce tendency of the tool to veer off to one side or the other or "chatter" as in the case with the types of milling and

planing discs previously proposed, if used as a portable unit.

The present invention differs from those types of cutting and polishing wheels used with abrasive or smoothing material sometimes referred to as "mud," in that with such wheels it is desirable to draw the abrasive or smoothing material toward the center of the wheel, whereas we have discovered that it is important from the standpoint of efficiency to free the file, while in operation, of filings, chips or flakes of paint, etc., by discharging such peripherally of the file by centrifugal action and the guiding characteristics of the file teeth. This also prevents gumming of the teeth since the use of the file causes the temperature of the metal to rise above ambient or room temperature.

By the term "closely spaced" reference is had to a spacing of the teeth a distance of approximately one-eighth of an inch or less.

We claim:

1. A portable motor operated vehicle body and fender file comprising a disc revoluble about an axis, in a definite direction for impinging the work when filing, and a plurality of sets of arcuate file teeth projecting from said disc at a face thereof, the teeth of each set having convex cutting edges leading in the same direction, disposed in the same plane and having parallel chords, said sets of file teeth disposed in spaced relation and in a circular pattern nearest the periphery of the disc, leaving a central portion of said disc face free of projections, and said teeth of each set disposed with the convex cutting edges of the teeth foremost in said direction of rotation and with the chords of the teeth extending diagonally with respect to said direction of rotation, outwardly with respect to said central portion and rearwardly with respect to said direction of rotation.

2. A portable motor operated vehicle body and fender file comprising a disc revoluble about an axis, in a definite direction for impinging the work when filing, a plurality of file units, each comprising a substantially rectangular base and a plurality of closely spaced arcuate teeth projecting from a face of said base, having convex cutting edges, leading in the same direction, disposed in the same

plane and having parallel chords, and means securing said file units to a face of said disc in spaced relation, and in a circular pattern nearest the periphery of the disc, leaving a central portion of said disc face free of projections, said file units disposed with their cutting edges foremost in said direction of rotation and with the chords of the teeth extending diagonally with respect to said direction of rotation, outwardly with respect to said central portion and rearwardly with respect to said direction of rotation.

3. A portable motor operated vehicle body and fender file comprising a disc revoluble about an axis in a definite direction of rotation for impinging the work when filing, a plurality of file units, each comprising a substantially rectangular base, a plurality of closely spaced arcuate teeth projecting from a face of said base, having convex cutting edges leading in the same direction, disposed in the same plane and having parallel chords, a front ear extending from said base at an end thereof toward which said teeth lead, and a rear ear extending from said base at the end thereof toward which said teeth trail, and means securing said file units to a face of said disc at said ears and in spaced relation and in a circular pattern nearest the periphery of the disc, leaving a central portion of said disc face free of projections, said file units disposed with their said rear ears nearer said central portion than said front ears and with said arcuate teeth disposed so that said arcuate cutting edges are foremost in said direction of rotation and with the chords of the teeth extending diagonally with respect to said direction of rotation, outwardly with respect to said central portion and rearwardly with respect to said direction of rotation.

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