

Dec. 13, 1949

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2,490,878

PLASTER CAST CUTTER

Filed Feb. 20, 1947

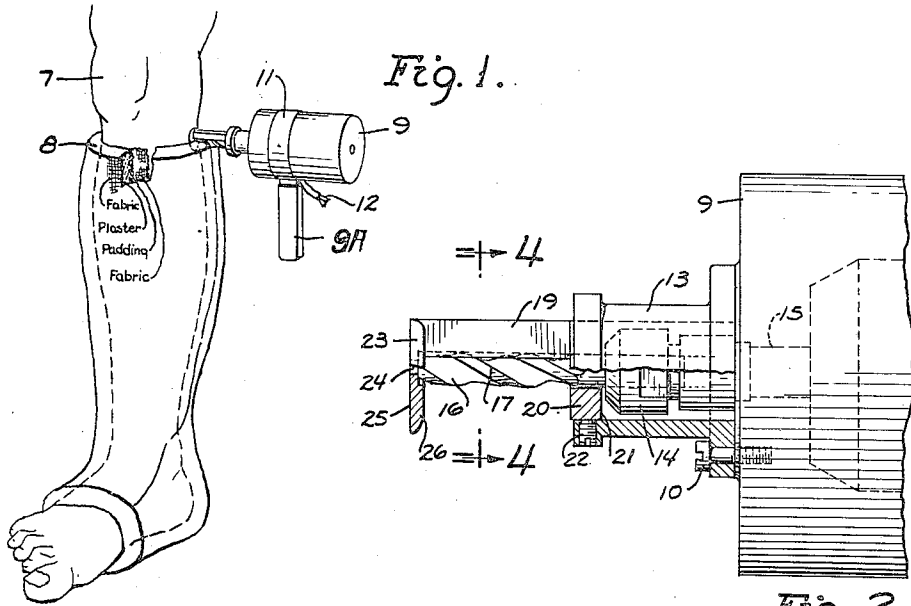


Fig. 1.

Fig. 2.

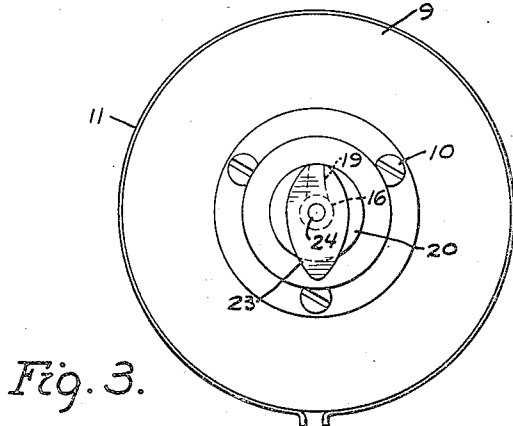


Fig. 3.

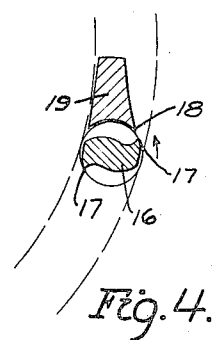


Fig. 4.

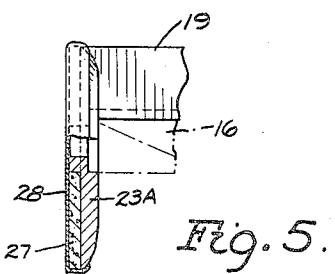


Fig. 5.

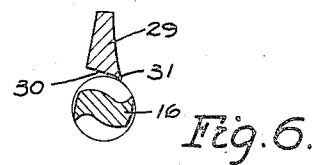


Fig. 6.

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# UNITED STATES PATENT OFFICE

2,490,878

## PLASTER CAST CUTTER

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Application February 20, 1947, Serial No. 729,821

2 Claims. (Cl. 30—276)

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This invention relates to power tools, and has particular reference to a cutter for removing plaster casts from the limbs and other parts of the human body and the like.

An object of the invention is to generally improve devices of the character indicated, and to provide a plaster cast cutter which is light in weight, easily maneuverable, safe, economical to manufacture, and efficient in operation.

Another object of the invention is the provision of a plaster cast cutter which is constructed and arranged so that it will cut and remove all forms of materials used in the construction of the cast.

Another object of the invention is the provision of a plaster cast cutter which will cut in a straight line, in an arc, or at an angle in any direction, all of the materials comprising a cast.

Another object of the invention is the provision of a device of the character indicated, which is constructed and arranged in such manner that it is impossible to injure the patient with the device in the normal cast removing operation.

Another object of the invention is the provision of a cast cutting tool which is constructed and arranged so that the cutting element removes all of the debris from the cutting area.

Another object of the invention is the provision of a device of the character indicated, which effects a substantial shearing action, which severs wrapping and padding fabrics, and prevents threads from wrapping about the cutting tool.

Another object of the invention is the provision of a power driven cast cutting tool which is constructed and arranged whereby the flesh contacting portion of the tool is insulated to prevent the transmission of heat from the power driven tool to the patient.

The foregoing and other objects and advantages of the invention will become more apparent as the description proceeds, reference being made from time to time to the accompanying drawings, forming part of the within disclosure, in which drawings:

Fig. 1 is a perspective view of the device embodying the invention shown in position during the operation of cutting a plaster cast from a human limb.

Fig. 2 is an enlarged view of the driving end of the motor with the cutting tool attached, with parts in section, and parts broken away to illustrate the relation of other parts.

Fig. 3 is an end view of the device shown in Fig. 2.

Fig. 4 is a section taken on the line 4—4 of Fig. 2.

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Fig. 5 is an enlarged detail of a modified form of foot for the cutting tool.

Fig. 6 is a cross sectional view of a modified form of cutting bar with a back off angle, to more efficiently dispose of the cutting debris.

Referring now more particularly to the drawings, it will be understood that in the embodiment herein disclosed the reference character 7 indicates a human limb on which is positioned a plaster cast 8 which is about to be removed.

In conventional practice the plaster casts generally consist of a multiplicity of layers of fabric, plaster, padding, and the like, and there has long been a need for a power driven tool which would readily cut through such an assortment of materials in a rapid, safe, and efficient manner. Such a tool is herein disclosed.

In Fig. 1 a portable electric motor 9 is provided with a handle 9A which may be secured about the housing of the motor by means of a metal strap 11, or other suitable means. The reference character 12 indicates the source of electric power for the motor 9.

Secured to the driving end of the housing of the motor 9 by machine screws 10, or other suitable means, is a flanged housing 13 which is adapted to house a drill chuck 14 which is secured at the end of the motor shaft 15. Secured to the chuck 14 and adapted to rotate therewith is a spiral cutting bit 16 which is provided with sharp cutting edges 17, which are adapted to cooperate with the cutting edges 18 (Fig. 4) formed on a radially ground cutting bar 19, the latter being formed integrally with a circular portion 20 which is adapted to fit into a recess 21 formed in the end of the flanged member 13, and be secured therein by means of a set screw 22. The opposite end of the bar 19 is formed with a foot 23, the latter being provided with a bearing recess 24 adapted to accommodate the end of the cutting bit 16.

The foot 23 is substantially the shape of a tear drop with a flat surface 25 which is adapted to contact the flesh of the patient, and a compoundly curved surface 26 which is adapted to offer little if any resistance to the plaster cast.

As shown in Fig. 1 the foot 23 is interposed between the patient's limb and the plaster cast, and is moved into position so that the cutting edges 17 of the cutting bit 16 will engage the material comprising the plaster cast. As the cutting bit 16 rotates it shears the wrapping and padding fabric between the spiral cutting edges 17 of the cutting bit and the cutting edges 18 of the bar 19. The spiralling effect of the bit 16 removes

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the material from the cutting area, and the device cuts a clean track through the plaster cast the width of the cutting bit 16.

The tool may be moved so that a curved slot is cut, or the device may be held at any desired inclination during the cutting operation with equally effective results.

In Fig. 5 I show a modified form of foot 23A. In this embodiment a heat insulating medium 27 is positioned on the outside of the foot 23A, and is secured in position by means of a metal cap 28, which is preferably rolled around the ends of the foot 23A. This prevents the transmission of excessive heat to the patient during the cutting operation.

In Fig. 6 I illustrate the cross section of a modified form of cutting bar 29. In this embodiment I provide a back off angle 30 which insures a more rapid disposal of the debris resulting from the cutting action at the point 31.

Having described my invention, what I claim and desire to secure by Letters Patent is:

1. In a device of the character described, including an electric motor having a hand grip thereon, the combination of a flanged collar secured to the housing of said motor and arranged to provide a housing for the end of the shaft of said motor, a chuck secured to the end of said shaft, a spiral bit secured in said chuck, a radially ground cutter bar having a circular flange adapted to engage one end of said flanged collar, and means to secure the flange of said cutter bar to said flanged collar.

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2. In a device of the character described, including an electric motor a spiral bit, and means for manually supporting said motor, the combination of a housing secured to the end of said motor and arranged to accommodate a chuck at the end of the shaft of said motor, a closure member for the end of said housing, said closure member having a central opening adapted to accommodate said spiral bit, and a cutter bar secured to said closure member and extending parallel with and in close proximity to said spiral bit, said cutter bar having a concave surface of the same curvature as the curvature of said spiral bit said bit in its operating position moving in the concave portion of the cutter bar.

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