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E. T. ANDRESEN

2,537,252

ABRASIVE TOOL

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FIG. 2.

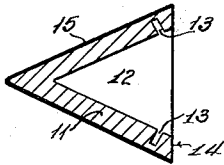


FIG. 3.

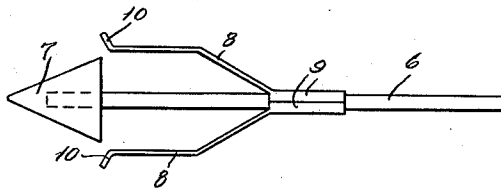


FIG. 4.

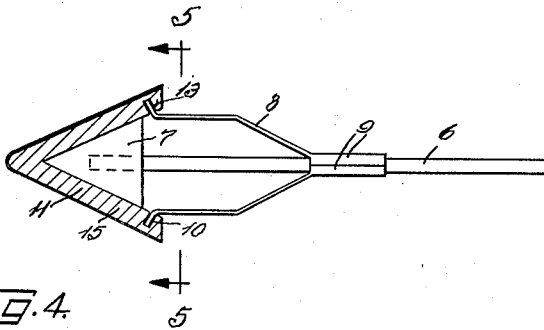


FIG. 5.

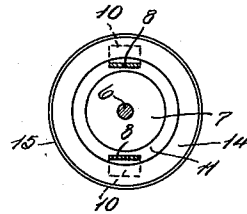
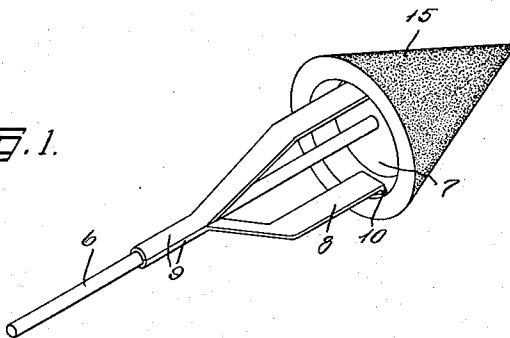


FIG. 1.



INVENTOR:
Earl T. Andresen,
BY *Horace Barnes,*
ATTORNEY

UNITED STATES PATENT OFFICE

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ABRASIVE TOOL

Earl Thomas Andresen, Salem, Oreg.

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4 Claims. (Cl. 51-185)

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This invention relates to improvements in finishing and smoothing tools.

The principal object of my invention is to provide a light abrasive instrument of simple and practicable construction for detachable connection with a manually directed motor or power-driven flexible shaft whereby the surfaces and particularly the corners of wood patterns for sand-castings may be quickly and efficiently smoothed and finished.

A further object of the invention is the provision of a readily detachable and replaceable abrasive-coated tip operable with my invention which is desirable formed of hollow conical configuration lending itself to economical quantity production from pressed wood-pulp or the like and whose tapering form admits of its convenient employment in smoothing and polishing the corners and fillets of wood-patterns.

A still further object of my invention is to provide a firm and stable mounting for afore-described abrasive tip comprising a mandrel for connection with the rotative actuating devices having a conical terminal-block upon which the abrasive tip is mounted, and spring-arms connecting the tip with the block and drawing the same into close engagement therewith.

Other objects and advantages residing in my invention, and objects relating to details of construction thereof, will be fully described and understood in the course of the detailed description to follow.

In the accompanying drawings:

Figure 1 is a perspective view of an abrasive tool embodying my invention, shown on a somewhat larger than normal scale.

Fig. 2 is a view in longitudinal section of the abrasive-coated tip utilized in the invention.

Fig. 3 is a view in side elevation of the mounting devices.

Fig. 4 is an assembled view, partly in cross-section and partly in side elevation.

Fig. 5 is a view in cross-section taken on line 5-5 of Fig. 4.

Referring to said views, the reference numeral 6 indicates a mandrel of cylindrical or other suitable form adapted to be secured and rotatably actuated in a chuck or tool-holder, not shown, of a portable electrically motored grinding tool or of a flexible shaft, similarly powered. Axially mounted upon the opposite end of said mandrel from said power connection to rotate therewith is a conical block 7 of wood or of a material of analogous frictional qualities, the apex of said block being in line with the longitudinal axis

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of said mandrel. A pair of spring-arms 8 are each formed or provided with a half-sleeve 9 at its inner end each adapted to engage the mandrel closely upon opposite sides. Said half-sleeves are arranged symmetrically in opposed relation about the mandrel and are rigidly secured thereto by electric welding, solder, or by any other advisable method. Said arms of flat spring steel or the like extend from the respective sleeve portions outwardly toward the block 7 and in divergent relation each terminating in an outwardly directed inclined cam-end 10.

A shell-tip 11 designed to be mounted upon and rotated with the block 7 is desirably molded or otherwise formed of paper pulp, although other suitable materials may be resorted to for special purposes. The tip is formed with a conical cavity 12 conforming in configuration interiorly with the block so that a considerable amount of friction will develop therebetween to resist any relative rotation, such resistance being aided by the relatively rough, unfinished interior surface of the cavity while the wooden exterior of the block offers a considerable frictional factor to avoid the turning of the tip thereon. The tip 11 is formed with a pair of oppositely disposed slots 13 located interiorly of the cavity 12 adjacent the base-edge 14 of the tip and extending in slightly inclined directions outwardly towards the apex of the tip. Said slots are respectively arranged to receive the cam-ends 10 of the spring-arms 8 which upon the mounting of a tip upon the block 7 are flexed towards each other to cause the cam-ends to enter the slots 13 whereupon the outward tension of the arms exerted through the cam-ends upon the upper walls of said slots will tend to draw the tip more firmly upon the block and at the same time the engagement of the side edges of the cam-ends upon the respective sides of the slots aid in maintaining the unified rotation of the tip with the block.

As shown, the exterior configuration of the shell-tip 11 conforms to the general shape of its interior cavity 12 and with that of the block 7 thus providing a structure of substantially uniform body-thickness, but this is not necessarily so as various degrees of divergence of inclination of the outer surface of the tip to that of the cavity may be advantageous in utilizing the tool for different types of work. Also a frustro-conical form of the tip or form approaching thereto, as shown in Fig. 4, may be desirable in some instances.

The exterior surface of the tip 11 is coated, as

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at 15, with abrasive material such as emery powder applied directly upon the tip surface through the agency of a suitable adhesive.

It will be seen that a most convenient and useful tool is provided in my invention for the use of pattern-makers, wood-workers generally, or artisans in any material in smoothing and finishing their work in its adaptability to reach the various corners and confined surfaces where relatively rough surfaces are frequently encountered. Also it will be noted that the ease and rapidity with which the worn tip or tips of different contours may be replaced or substituted is a weighty factor in supplying to the workman a much needed appliance.

Having described my invention, what I claim, is:

1. An abrasive tool, comprising in combination with a mandrel, and a conical block secured to an end of said mandrel, of an exteriorly abrasive-coated tip having a conical cavity adapted to receive said block therein, said tip extending inwardly beyond the base of said block, and means associated with the mandrel for releasably engaging the inwardly extending portion of the tip, thereby detachably securing the tip to the block.

2. An abrasive tool, comprising in combination a mandrel, a conical block secured to an end of said mandrel, an exteriorly abrasive-coated tip having a conical cavity arranged to receive said block therein, said tip extending inwardly beyond the base of said block, and a pair of spring-arms mounted upon said mandrel and engaging

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the inwardly extending portions of the tip to secure the tip upon said block.

3. An abrasive tool, comprising a mandrel, a conical block, secured to an end of said mandrel, a conical tip having a conical cavity to receive said block therein, said tip having an outer abrasive surface and a pair of oppositely disposed slots located in said cavity, and a pair of spring-arms mounted upon said mandrel and engaging within said slots to secure the tip upon said block.

4. An abrasive tool comprising a mandrel, a conical block secured to an end of said mandrel, a conical tip having a conical cavity to receive said block therein, said tip having an outer abrasive surface and a pair of oppositely disposed slots located in said cavity, and a pair of spring-arms mounted at one end on said mandrel having at their opposite ends outwardly inclined cam-portions arranged to engage within said slots, respectively, and react therein to draw said tip into close relation to the block.

EARL THOMAS ANDRESEN.

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The following references are of record in the file of this patent:

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