(No Model.)

W. H. TAGGART.

APPARATUS FOR FORMING ABRADING WHEELS.

No. 395,365. Patented Jan. 1, 1889.

Fig. 1.

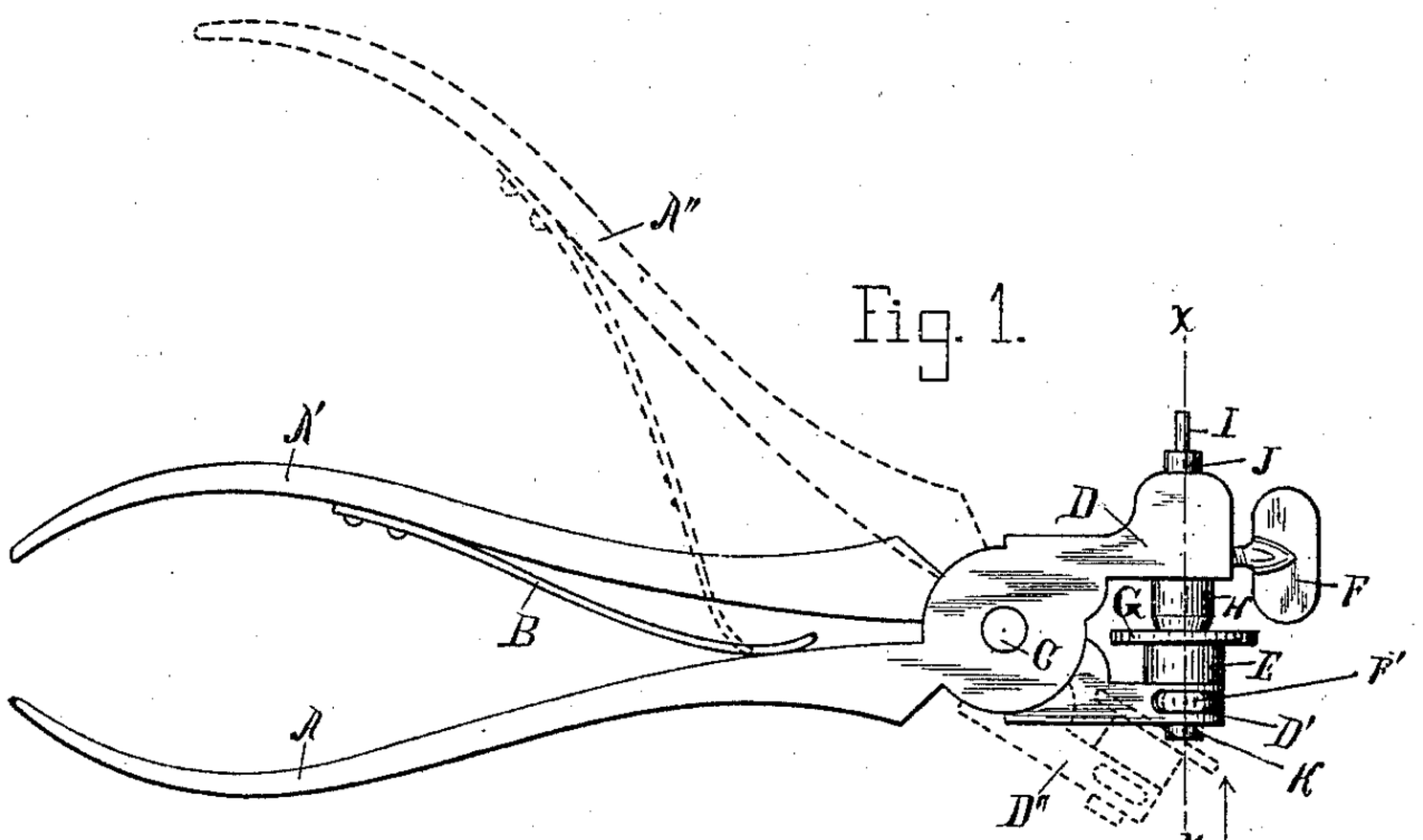


Fig. 2.

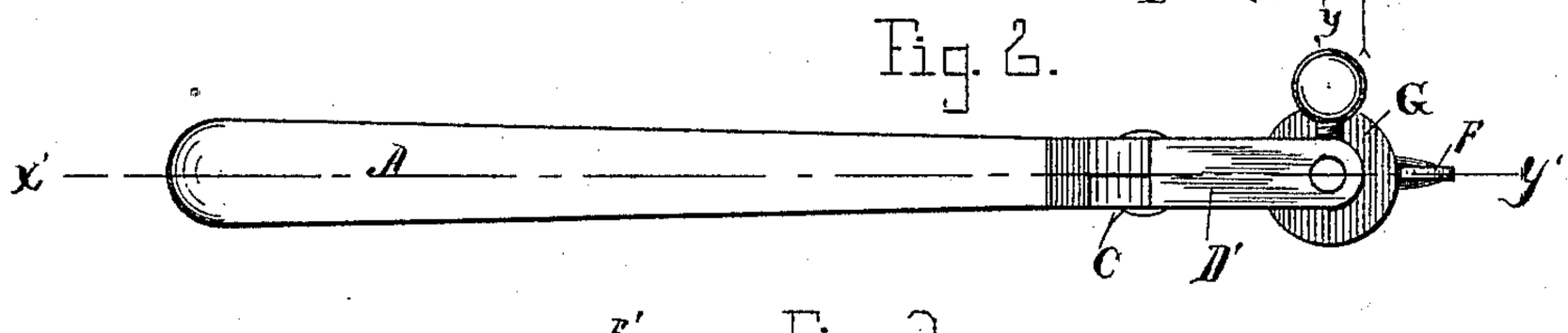


Fig. 3.

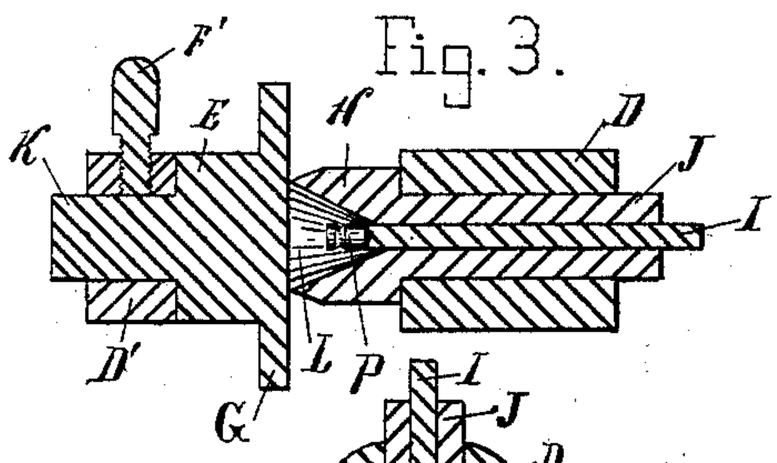


Fig. 4.

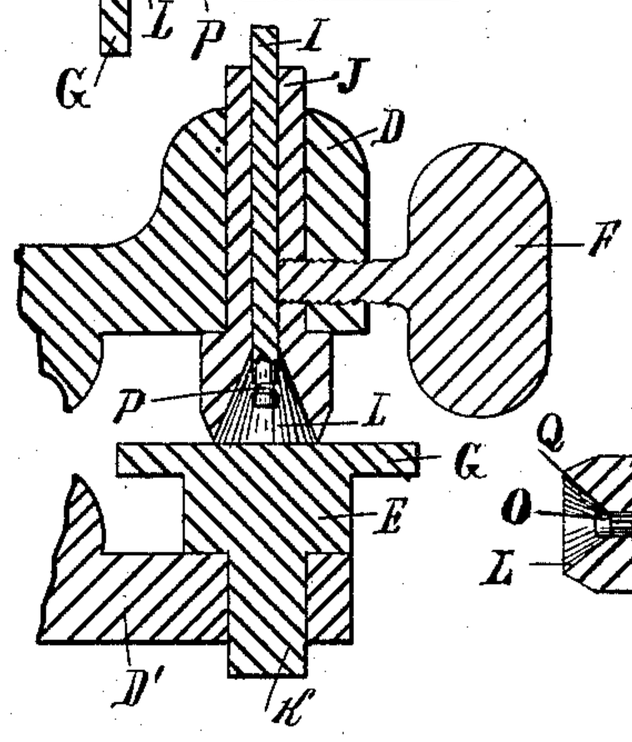
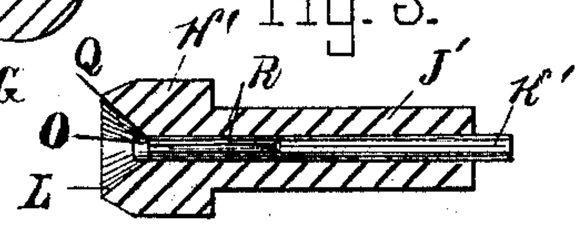


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM H. TAGGART, OF FREEPORT, ILLINOIS.

APPARATUS FOR FORMING ABRADING-WHEELS.

SPECIFICATION forming part of Letters Patent No. 395,365, dated January 1, 1889.

Application filed October 28, 1887. Serial No. 253,671. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. TAGGART, a resident of Freeport, in the county of Stephenson and State of Illinois, have invented certain new and useful Improvements in Apparatus for Forming Abrading-Wheels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention is an improved device for forming abrading wheels or cutters directly upon their shafts. It is fully illustrated in the accompanying drawings, in which—

Figure 1 shows a side view of the entire apparatus. Fig. 2 is a view in the direction of the arrow of Fig. 1. Fig. 3 is an enlarged section on the line $x\ y$, Fig. 1. Fig. 4 is a section on the line $x'\ y'$, Fig. 2. Fig. 5 is a section similar to those shown in Figs. 3 and 4, illustrating a slight modification in construction, for purposes hereinafter set forth.

In the drawings, A A′ are handles, and D D′ are corresponding jaws pivoted together at C and thrown open by a spring, B, in the usual manner. The jaws are perforated, and in them are placed, respectively, a steel matrix, H, and a steel pressure-block, G. Both matrix and block are provided with shoulders resting upon the face of the jaws, respectively, and with integrally-formed shafts J K, fitting the perforations in the jaws. The inner surface of the block is plane and at right angles to the axis of the shaft K, which, when the forceps are closed, as shown, is in line with the axis of the matrix H and its shaft J. The inner end of the matrix-head H is provided with a recess of the form desired for the emery-wheel, and is beveled from the outside toward this recess to form a sharp cutting-edge, all whose points may meet the face of the block G when the forceps are closed, the construction of the jaws being such that in this position their inner faces are at a distance from each other just equal to the combined lengths of the block G and matrix H, exclusive of their shafts.

The shaft J is centrally perforated in the direction of its length, and in this perforation is placed a shaft, I, whose roughened end portion, P, projects to any desired distance into the depression L in the matrix-head H. A set-screw, F, working in the jaw D, passes through a suitable opening in the shaft J and secures the shaft I in any desired position, and a set-screw, F′, in like manner fastens the shaft K. If, now, a piece of an emery or corundum wheel, or of any similar substance, be warmed until it reaches a plastic state and be then placed in the matrix, closing the forceps will force it into every part of the recess, including the slight depressions in the surface of the shaft I, and the surplus material, if there be any, will be neatly and cleanly separated from the portion within the matrix by the cutting-edge as the latter meets the surface of the block G. The mass being then cooled is afterward removed from the matrix as a perfect disk perfectly mounted upon the shaft I and ready for use in the dental engine.

It is plain that matrices of any desired form may replace the frusto-conical matrix shown, and that the face of the block G may be provided with a depression or projection of such form that the outer face of the completed wheel may be projecting or re-entrant, and, further, it is evident that a great variety of matrices may be used without substituting another block for the plane-faced block G, (shown in the drawings,) the size of the wheel to be formed being limited only by the size of the plane pressure-surface.

For some purposes it is necessary that the portion of the shaft I near the cutter or wheel mounted upon it be much smaller than it is practicable to make the body thereof, it being desirable that the entire series of wheels may be used in the same shaft-holder. Two difficulties are then presented: The shaft is too small to afford secure attachment for the wheel, and the material of which the wheel is formed is forced into the space surrounding the small portion of the shaft and must be removed after the wheel is completed. The shaft is therefore provided with an end disk, O, Fig. 5, at least equal in diameter to the diameter of the main portion of the shaft, and this, whatever the form of the matrix, always covers or fills the perforation in the bottom thereof and prevents the plastic substance

from passing into the space about the small portion of the shaft. It may be remarked that this space is necessary in order that the same matrix may be used with either shaft, and that the shaft may be removed longitudinally when the corundum disk has been formed upon its extremity. Making the jaw D in two parts attains one of these objects, but not the other.

I have forced the matrix and pressure-blocks together by various other devices—*e. g.*, by a screw and by a cam moving either one in the line of its axis; but I prefer the method illustrated as essentially the same, but more convenient and rapid in operation.

Having now fully described and illustrated the construction and operation of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a device for forming abrading-wheels directly upon their shafts, the combination, with two coacting jaws, of a pressure-block attached to one of said jaws, a matrix attached to the other jaw and having a cutting-edge adapted to bear upon said pressure-block, and an axial bore adapted to receive a shaft, and means, substantially as shown and described, for securing a shaft in the bore of said matrix during the formation of an abrading-wheel, substantially as and for the purpose set forth.

2. In an apparatus for forming abrading-wheels directly upon their shafts, the combination, with two suitably-bored coacting jaws, of a pressure-block having a shank removably seated in the bore of one of said jaws, an axially-bored matrix having a shank removably seated in the other of said jaws and formed with a transverse opening, and a transverse set-screw seated in said last-named jaw and adapted to pass through the transverse opening in the shank of the matrix and to secure a shaft in said shank and at the same time to secure the shank in the jaw in which it is seated, substantially as and for the purpose set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WILLIAM H. TAGGART.

Witnesses:
C. W. GRAHAM,
G. H. PATTISON.