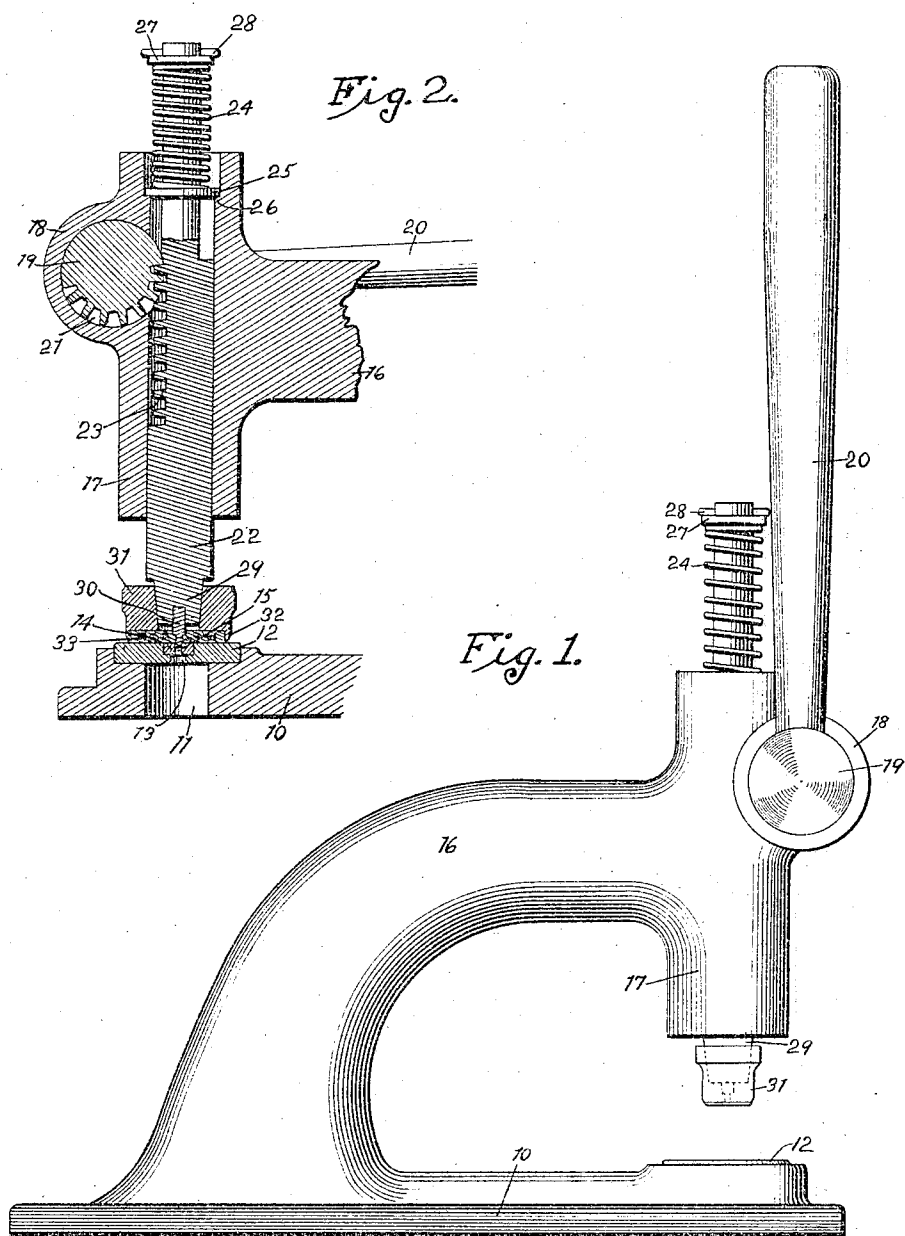


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PATENTED AUG. 2, 1904.

J. A. HALLETT.
DENTAL DISK CUTTER.
APPLICATION FILED JUNE 1, 1903.

NO MODEL.



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UNITED STATES PATENT OFFICE.

JAMES A. HALLETT, OF DES MOINES, IOWA.

DENTAL DISK-CUTTER.

SPECIFICATION forming part of Letters Patent No. 766,693, dated August 2, 1904.

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To all whom it may concern:

Be it known that I, JAMES A. HALLETT, a citizen of the United States, residing at Des Moines, in the county of Polk and State of Iowa, have invented certain new and useful Improvements in Dental Disk-Cutters, of which the following is a specification.

The objects of my invention are to provide a machine of simple, durable, and inexpensive construction and of light weight and small bulk that may be easily handled and carried and that may be operated by hand to cut out sandpaper disks having round concentric openings therein designed for use in connection with dental engines.

More specifically, it is my object to provide a machine of this class having a center-punch coacting with a block having an opening therein and a cylindrical disk-cutter coacting with a flat working face, said parts being so arranged that when the machine is operated the punch and its coacting block will engage the stock and hold it firmly before the disk-cutter and its coacting working face engage the stock, to the end that every disk cut from the stock will have a round opening exactly centered in the disk, and so that the stock cannot be moved after the disk-cutter has engaged it and before the disk-cutter has completed its movement.

A further object is to provide disk-cutters of different sizes which may be quickly and easily attached to or removed from the machine without disturbing in any way the other working parts thereof.

A further object is to provide a machine of this class in which the small disks formed by the center-punch are removed from the stock and discharged without any attention by the operator and the large disks intended for use are stripped from the center-punch and also from the disk-cutter automatically and without the attention of the operator.

My invention consists in certain details in the construction, arrangement, and combination of the various parts of the device whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my

claims, and illustrated in the accompanying drawings, in which—

Figure 1 shows a side elevation of the complete machine, showing a small-sized disk-cutter attached thereto and in its elevated position; and Fig. 2 shows a vertical central sectional view through the working parts of the machine and showing a large-sized disk-cutter in position thereon.

Referring to the accompanying drawings, I have used the reference-numeral 10 to indicate the machine-base. At one end of the base is a vertical central opening 11, and set in the top of the base above said opening is a block 12, preferably made of brass, the top of which forms a working face to coact with the disk-cutter, as hereinafter explained. This block 12 is provided with a central opening 13, and set in the center of the block 12 is a block 14, preferably of steel and having a concentric vertical opening 15 to coact with the punch, as hereinafter described. The top face of the block 14 and the working face of the block 12 are flush, and the openings 15, 13, and 11 are all in line, so that small disks cut from the stock by the action of the punch and the block 14 will pass downwardly into the large opening 11 in the base of the machine. These parts are all stationary and do not need to be changed or adjusted in any way when the machine is adapted for cutting disks of different sizes. Formed on the opposite end of the base is an integral arm 16, and on the upper end thereof is an integral vertically-arranged cylinder 17, directly in line with the center of the opening 15 in the base. Formed on this cylinder 17 is an integral bar 18, in which a rocking shaft 19 is mounted at right angles to the cylinder 17. This shaft 19 is provided with a handle 20 and also with cog-teeth 21 for the purpose of actuating the punch-supporting rod, as will hereinafter appear.

Within the cylinder 17 I have slidably mounted the punch-supporting rod 22, having formed thereon the cog-teeth 23, meshed with the cog-teeth 21, so that a rocking movement imparted to shaft 19 will raise and lower the

rod 22. Mounted upon the upper end of the rod 22 is an extensile coil-spring 24, its lower end bearing against a washer 25, which engages a shoulder 26, formed in the top of the cylinder 17, and the upper end of the spring engages a washer 27, held in place on the rod 22 by a pin 28, said spring being of such resiliency as to elevate the rod 22 and its handle 20 when the handle is released. Formed on the lower end of the rod 22 is an extension 29, tapered slightly toward its lower end, and mounted in the lower end of the rod 22 is a punch 30, projecting below the rod 22 and coacting with the opening 15 in the block 14. The disk-cutter comprises a body portion 31, having a concentric tapered opening designed to receive the extension 29. By tapering the said extension and the opening in the body portion of the disk-cutter I have provided means whereby the disk-cutters may be firmly held upon the rod 22 by simply placing the body of the disk-cutter upon the base of the machine and then forcing the tapered end of the rod 22 into the tapered opening by a manipulation of the handle 20. In this connection I have also provided means whereby the disk-cutter after having become firmly fixed on the tapered extension may be quickly and easily removed therefrom as follows: The lower end of the cylinder 17 is arranged at such distance from the base of the machine that when the rod 22 is moved upwardly beyond the position to which the spring 24 carries it then the top of the disk-cutter will strike the lower end of the cylinder 17, thus stripping it from the tapered extension. Projecting from the lower end of the body 31 is a cylindrical disk-cutter 32, with its cutting edge in position to coact with the working face of the block 12, and contained within the said disk-cutter is an elastic stripper 33, resting against the under face of the body portion 31 and normally projecting a slight distance beneath the edge of the disk-cutter. However, when this stripper is compressed the said cutting edge projects below it. In use I have found that cork is a suitable material for said stripper. The lower end of the punch projects through the stripper when the stripper is in its extended position. In this connection it is to be noted that I provide disk-cutters of different sizes, the one shown in Fig. 2 being materially larger than the one shown in Fig. 1. However, these disk-cutters are identical in construction except for the difference in size, and it is my intention to provide each machine with a series of disk-cutters adapted for forming disks of every desirable size.

In practical use the stock, which is preferably ordinary sandpaper, is prepared for use by applying shellac or other stiffening material to the smooth surface thereof, and when this is hardened I place a sheet of the stock thus formed upon the base of the machine

with the sandpaper face resting upon the base. I then select a disk-cutter of the desired size and place it upon the tapered end of the rod, as before described. I then move the handle 20 downwardly. The stripper 33 projects a slight distance beyond the disk-cutter, and hence said stripper will first engage the stock. Then the punch which projects below the cutter will cut out a small disk therefrom, which is forced downwardly into the opening 15 of the block 14. As soon as this punch has passed through the stock obviously the stock is immovably held upon the base of the machine, and then as the disk-cutter engages the stock it will cut through the stock to the working face of the block 12 and will sever from the stock a disk provided with a central opening accurately centered. If the disk-cutter were permitted to engage the stock first or simultaneously with the punch, it is obvious that the stock might possibly be moved and disks cut therefrom that were not perfect disks and in which the opening would not be concentric. When the handle 20 is released, the spring will draw the disk-cutter upwardly, the stripper having been compressed will immediately expand, thus stripping the disks from the punch, and as the stripper further expands it will hold the disk downwardly on the base while the disk-cutter withdraws from the stock—that is to say, the disks will be retained in their position in the stock except that a small opening is made in the center of each one, and after a sufficient number of disks have been cut in the sheet of stock they may be removed therefrom by pressing them through the stock. This feature is of material advantage in that the disks do not drop from the stock and do not tend to obstruct the working of the machine.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States therefor, is—

1. The combination of a member, comprising a punch and a disk-cutter surrounding the punch, a member comprising a flat working face susceptible of coacting with disk-cutters of different diameters and having a central opening to admit the punch and means for moving one member toward the other.

2. The combination of a punch, a disk-cutter detachably secured to the punch, a flat working face susceptible of coacting with disk-cutters of different diameters and having a central opening to receive the punch.

3. The combination of a machine-frame, a punch slidably mounted in the machine-frame, a flat working face susceptible of coaction with disks of different diameters, and having a central opening to receive the punch, and a disk-cutter coacting with said working face and detachably secured to the punch.

4. In a machine of the class described, the combination of a rod having a tapered end, a

punch carried by the rod and a disk-cutter having a tapered opening to receive a tapered end.

5 In a machine of the class described, the combination of a machine-frame having a base provided with an opening and a vertical cylinder some distance above the base, a rod slidingly mounted in the cylinder, a punch carried by the rod to enter the opening in the base, said rod having a tapered lower end, a disk-cutter body portion having a tapered lower end, said disk-cutter body portion having a tapered opening to receive the tapered end of the rod and having a cutting edge to engage the base when the punch enters the opening in the base, and means for forcing the rod downwardly to press the disk-cutter body against the base and thereby force the tapered end of the rod firmly into the tapered disk-cutter body portion and means for elevating the rod so that the disk-cutter body portion will strike against the lower end of the cylinder and remove the disk-cutter body portion from the tapered end of the rod.

6. In a machine of the class described, the combination of a base having an opening therein, a rod movable to and from the base, a punch carried by the rod coacting with the opening in the base, said rod having a tapered lower end, a disk-cutter body portion having a tapered opening to receive the tapered end of the rod and having a disk-cutting edge, and a stripper within the disk-cutting edge and surrounding the punch.

7. In a machine of the class described, the combination of a base, an arm on the base, a rod slidingly mounted in said arm to move to and from the base and having a tapered lower end, a disk-cutter having a tapered opening therein to receive the tapered end of the rod

and means for moving the rod from a position where the cutter engages the base to a position where the cutter body portion engages the extension in which the rod is mounted, for the purposes stated.

8. In a device of the class described, the combination of a base having an opening therein, a cylinder supported in the opening in the base, a rock-shaft mounted at right angles to the cylinder and having cog-teeth thereon, a handle connected with the rock-shaft, a rod mounted in the cylinder movable to and from the base and having cog-teeth meshed with those of the shaft, a spring for elevating the rod, a tapered lower end portion on the rod, a punch carried by the rod to enter the opening in the base, a cutter-body portion having a tapered opening, a cutting edge projecting downwardly from the body portion and a stripper-block carried by the body portion between the disk-cutting edge, surrounding the punch, and projecting beneath the cutting edge.

9. In a machine of the class described, the combination of a machine-frame, a cylinder, a rod slidingly mounted in the cylinder having a tapered end, a disk-cutter having a tapered opening to receive the tapered end of the rod, a spring for elevating the rod to position where the cutter will stand adjacent to the end of the cylinder, and manually-operated means for elevating the rod to position where the cutter will strike upon the adjacent end of the cylinder, for the purposes stated.

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