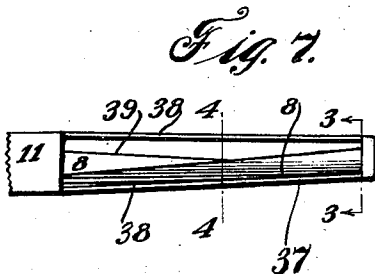
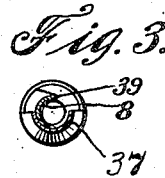
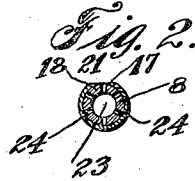
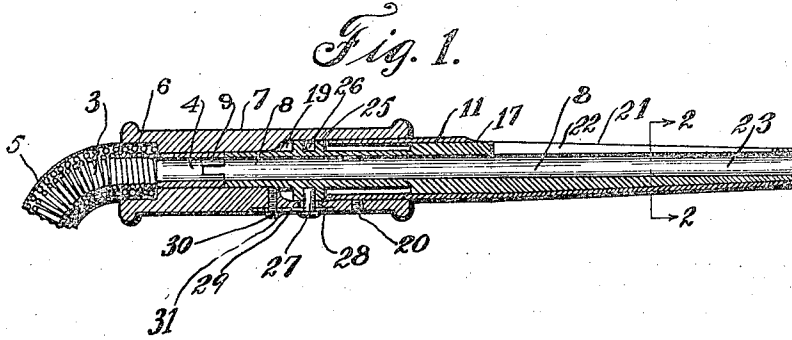


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 MOTOR DRIVEN SHAVING AND HAIR CUTTING MACHINE.
 APPLICATION FILED DEC. 28, 1916.

1,262,536.

Patented Apr. 9, 1918.
 2 SHEETS—SHEET 1.



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Fig. 8.

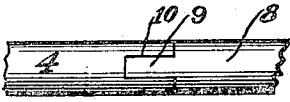


Fig. 9.

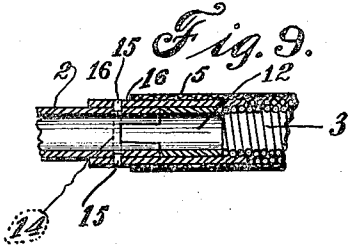


Fig. 10.

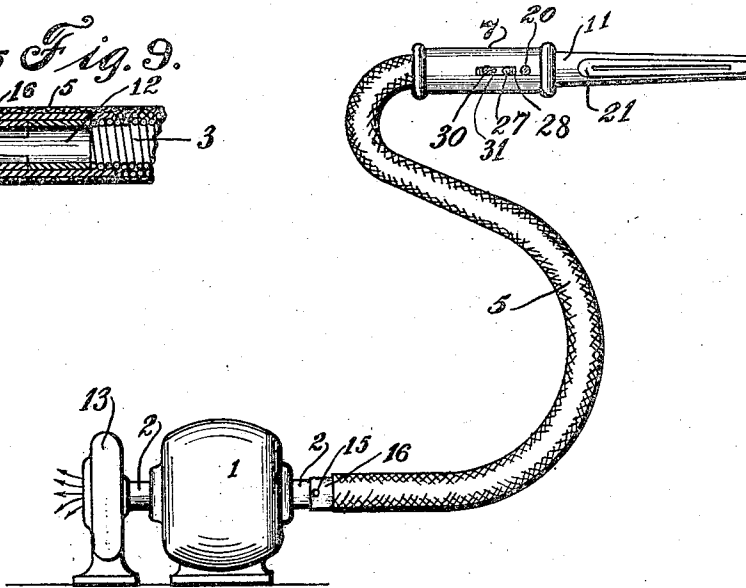
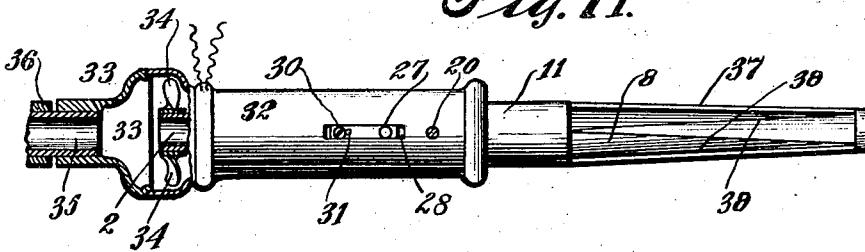


Fig. 11.



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UNITED STATES PATENT OFFICE.

JOHN R. MARTIN, OF ST. LOUIS, MISSOURI.

MOTOR-DRIVEN SHAVING AND HAIR-CUTTING MACHINE.

1,262,536.

Specification of Letters Patent.

Patented Apr. 9, 1918.

Application filed December 28, 1916. Serial No. 139,434.

To all whom it may concern:

Be it known that I, JOHN R. MARTIN, a citizen of the United States, and resident of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Motor-Driven Shaving and Hair-Cutting Machines, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to an improved motor-driven shaving and hair-cutting machine, and consists in the novel mechanism hereinafter described and particularly pointed out in the appended claim.

The principal object of my invention is to provide a more efficient means for shaving and for cutting hair, which shall be especially adapted for the use of professional barbers.

In the drawings,

Figure 1 is a longitudinal vertical section of a shaving tool, constructed in accordance with one form of my invention.

Fig. 2 is a cross-section taken through the same on the line 2—2 of Fig. 1.

Fig. 3 is a cross-section taken on the line 3—3 of Fig. 7, both of which views illustrate a modified form of my invention, especially adapted for cutting the human hair.

Fig. 4 is a cross-section of same, taken on line 4—4 of Fig. 7.

Fig. 5 is a side-elevation of the rotor-cutter for the shaving-tool, in a preferred form, detached from the cutter-sleeve.

Fig. 6 is an elevation of the cutter-sleeve, with its base broken away.

Fig. 7 is an elevation of the modified form of the rotor-cutter and its sleeve, as adapted for hair-cutting.

Fig. 8 is a detail-elevation of the base of the cutter, and the coupling-tube of the flexible-shaft, illustrating the slip-joint used in detachably coupling said cutter to said flexible-shaft tube.

Fig. 9 is a detail section of the joint between the tubular armature shaft of the electric-motor and the flexible-shaft, used in one instance in driving the rotor-cutter.

Fig. 10 is a side-elevation of the invention complete, with flexible-shaft, electric-motor, and one form of suction-fan, and

Fig. 11 is an elevation, partly in section, of a modified form of my invention, with all parts arranged as a hand-tool.

The numeral 1 designates any common source of power, such as an electric-motor, where electricity is available, to the armature-shaft 2 of which motor I connect the usual rotatable member 3 of a common flexible-shaft. (See Fig. 10).

To the end of said rotatable member of said flexible-shaft which is opposite the motor I secure (by brazing, as usual, or by other common means) the coupling-tube 4 of my shaving-tool, or of my hair-cutting tool.

The flexible-shaft has the usual tubular outer-casing 5, the tool-end of which is fixed within a suitable socket 6 formed in the inner end of the tool-handle 7. (See Fig. 1).

The base, or butt end, of the shaving rotor-cutter 8 is detachably coupled to the adjoining end of said coupling-tube 4, by a tongue 9 formed on the butt of said cutter which engages a corresponding groove 10 formed in the said tube, so that the cutter may be detached from its handle 7, together with the cutter-sleeve 11, for the purposes of cleaning, sharpening or repair, whenever required. (See Fig. 8).

In Fig. 9 I have shown the preferred details of the manner of connecting the flexible-shaft to the hollow shaft of the motor 1, and in this connection I desire to make myself plain in the statement that an important feature of my invention resides in the fact that I have provided a clear and unobstructed air-passage (through which the cut-beard or hair will be drawn by suction) from the tubular rotor-cutter 8 to the coupling-tube 4, to the tubular rotatable-member 3 of said flexible-shaft, to a coupling-tube 12 brazed to the motor-end of said flexible-shaft member 3, thence into and through the tubular armature-shaft 2, and finally into and through a suitable exhausting-device, such as a common exhaust-fan 13, so that the cut-beard, or the hair, will be discharged from said fan and fall upon the floor, where it may be swept up and removed, or from which fan the said refuse may be caught in a suitable receiver, not shown.

Referring again to Fig. 9, it will be seen that the coupling-tube 12 is detachably connected to the adjoining end of the tubular armature-shaft 2 by a tongue 9 engaging a corresponding groove 10 formed in the end of said shaft, in a manner like that in which the butt-end of the rotor-cutter 8 is con-

nected to its coupling-sleeve, as previously described.

Formed in the periphery of said tubular armature-shaft 2 is an annular groove 14
5 which is engaged by opposite pins or screws 15 fixed in a coupling-sleeve 16 carried by the adjacent end of said outer casing 5 of said flexible-shaft and projecting into said annular groove, for the purpose of holding
10 the said casing and sleeve in place, and yet permitting the free rotation of said armature shaft without turning said casing.

When it is desired to detach the motor-end of said flexible-shaft, the said screws or
15 pins 15 are removed, and the said flexible-shaft casing 5, its sleeve 16, the rotatable-member 3 of said shaft, as well as the coupling-tube 12 of said rotatable-member, may be readily disconnected from said armature-shaft.
20 shaft.

The previously mentioned cutter-sleeve 11 I shall hereinafter designate as the "fixed tapered cutter", for the reason that its construction is such that it acts to cut the beard,
25 as well as the said rotor-cutter 8, when the beard is caught between the sharpened edge 17 of said fixed-cutter 11 and the ground edges of the spiral-bars 18 of the said rotor-cutter, during the operation of shaving a customer, or when the user shaves himself
30 or some other person.

Said fixed-cutter 11 has a cylindrical base which is fixed within a socket 19 formed in the end of said tool-handle 7 that is opposite the end to which said flexible-shaft is
35 connected, and a common set-screw 20 is threaded into the wall of said socket and engages said cylindrical base, and holds the same securely in place within said socket.

Said fixed cutter 11 is tubular and conical; or, in other words, the cutter is hollow and tapered, the taper beginning at a point adjacent the end of the handle 7 and continuing to the free outer end of said cutter,
40 both upon the interior as well as upon the exterior, and the internal bore of said cutter is to be very accurately ground and polished, so that an efficient bearing will thereby be formed in said bore for the reception of the said rotor-cutter 8.
50

A comparatively flat contact-face 21 is ground on the exterior of said fixed cutter 11, so that said face will rest upon the face, in shaving, and form a support, to prevent
55 said fixed-cutter from rolling; said flat face being preferably formed by grinding a flat place upon the outer surface of said cutter until the internal bore is reached, thereby forming the said sharpened edges 17 on
60 opposite sides of a long narrow slit 22 in said cutter. By grinding the flat face upon the exterior of the said fixed cutter 11, as above described, the cutting-edges thereof will be sharpened from the exterior, and the
65 said flat face will have its walls in the same

plane with the outer periphery of the said rotor-cutter 8, as well as in the same plane with said cutting-edges, which enables said cutting-edges to be brought very close to (and practically in contact with) the skin
70 of the person being shaved, which is essential (as every barber knows) in order to give the customer a "close", or even a "smooth" shave.

Said narrow slit 22, as well as the said
75 flat face 21, extends longitudinally of said fixed cutter 11 almost the full length of the tapered portion of the cutter; in fact the said flat face preferably extends, as shown in Fig. 6, entirely to the free end of said
80 cutter, so that in shaving the small free end of the same may be used in cutting hairs from the nostrils, ears, and in other close places.

Said shaving rotor-cutter 8 has a straight
85 bore 23 which extends from end to end thereof, the exterior of said cutter being tapered and accurately ground to fit the tapered interior of the said fixed cutter 11, within which the said rotor-cutter is
90 mounted to revolve.

Between each pair of the said spiral bars 18 of the said rotor-cutter 8 is a spiral slot 24, which, together with said bars, is formed by a common milling-machine cutter in a
95 manner well known to skilled machinists; though, of course, the work may be done in any other suitable way.

The purpose of running said slots 24 and said bars 18 spirally is to secure a "draw"
100 cut, or shear, of the hair being cut between the rotating spiral bars and the straight sharpened edge of the said fixed cutter 11.

When it is desired to axially adjust the said rotor-cutter 8, for wear or for proper
105 operation, within the said fixed cutter 11, all that is necessary is to slide said rotor-cutter endwise a slight distance farther in said fixed cutter, and then secure the two parts in the desired relative position.
110

In the present instance, I have formed an annular enlargement, or flange, 25 on the exterior of said rotor-cutter 8 adjacent the butt end thereof, and have made an annular-groove 26 in the periphery of said
115 flange, which is engaged by a pin 27, and said pin may be moved bodily in adjusting said rotor-cutter from the exterior of the handle 7.

Said adjusting-pin 27 extends to the exterior of said handle 7 through a longitudinal slot 28 formed in the handle, and has its outer portion fixed by brazing (or otherwise) to a slidable plate 29 secured to said handle by a cap-screw 30 passed through a
120 slot 31 in said plate and threaded into said handle. The said longitudinal slot 28 is connected with the said handle-socket 19 by the passage through which the said adjusting-pin 27 extends. (See Figs. 1, 10 and 130

11). Further description of the manner of adjusting the rotor-cutter need not be given, as the same is obvious. (See Fig. 1).

In the modification illustrated in Fig. 11, the common electric-motor, as that shown in Fig. 10, is made of smaller dimensions, and is located within the handle of the tool, so that there is a combined electric-motor and handle 32, which is provided with the means for adjusting the rotor-cutter as above-described.

Furthermore, in the said modification shown in Fig. 11 the fan-casing 33 is made a part of the handle also, the common fan-blades 34 being mounted upon the tubular armature-shaft, to rotate therewith and create a suction within said tubular-armature shaft, and thereby draw the cut beard or hair from the cutter into and through said shaft, and into and through said fan-casing 33, and discharge such cut hair and beard into a suitable discharge-pipe 35 which is connected to said fan-casing, and to which discharge-pipe a suitable flexible pipe or hose 36 is attached, for the purpose of depositing such cut beard or hair in any desired receptacle, or on the floor of the room.

In the modified construction of the invention, for hair-cutting, as illustrated in Figs. 3, 4, 7 and 11, the fixed cutter 37 is tapered and mounted the same as is the fixed shaving-cutter 11, but the tapered portion is made semi-circular in cross-section, in the present instance, so that the cutting (or shearing) edge of same, 38, may cooperate with the sharpened-edge 39 of the rotor-cutter, to cut or shear the hair between them. (See Fig. 4).

In the hair-cutting tool mentioned, the rotor-cutter is marked with the numeral 8, because its construction (except that the spiral-bars and spiral slots are done away with) is much the same as that previously described in connection with the rotor-cutter 8 of the shaving-tool, such cutters, in both instances, being tapered to fit the taper of the inclosing fixed-cutter, and having their bases mounted to rotate within a suitable handle, in the manner before described.

The rotor-cutters, in both of such instances, also of course rotate within said fixed cutters, and have suitable bearing therein and thereagainst, to properly support them during operation.

The opposite edges of the semi-circular rotor-cutter for hair-cutting are (as shown in Fig. 7) cut off at an angle with relation to the cutting-edge 38 of said fixed-cutter 37, to produce a "draw-cut" effect on the hair being cut.

The operation of the invention is as follows:

In shaving, the shaving tool, as shown in Figs. 1 and 10, is of course made use of, the motor 1 (or some other common device

for supplying rotary motion to the flexible-shaft) being started, and caused to rotate the rotor-cutter 8 at a very high speed (say, 1000 to 2500 revolutions per minute).

Then the operator grasps the handle 7 and directs the flat supporting or guiding surface 21 of the tapered fixed-cutter 11 over or along the skin of the person to be shaved, the movement of the tool being facilitated by a suitable agreeable and sanitary lubricating-oil previously spread over the skin; or, if the customer prefers that his face be lathered, or his beard softened by the application of hot towels, that may be done, although with my improved method of shaving neither the lather nor the hot towels, or any other beard-softening means, are necessary.

As the said shaving-tool is moved over the face of the person being shaved, his beard will extend into the long narrow slit 22 of said fixed-cutter 11, and will be instantly caught and painlessly sheared off, or cut, very close, depending upon whether the said flat surface 21 of the tool is pressed firmly or gently into contact with the skin; the more firmly the tool is pressed upon the skin the closer will be the shave, and vice versa.

As soon as the shaving begins, the cut beard will be sucked, or drawn, into the bore 23 of said rotor-cutter, through the said slit 22 of the said fixed-cutter and the slots 24 of said rotor-cutter, and from said bore the beard will pass into and through said coupling-tube 4 into and through the flexible-shaft, thence into and through the tubular motor shaft 2, and finally into and through the casing of the suction-fan, and delivered on the floor or into any suitable receptacle which may be provided for receiving the cut beard.

The motor 1, and the fan 13, in barber-shops, may be set at any point convenient to the barber's chair; or may be mounted on the back of the chair itself, or upon a common wheeled-stand or table, and be moved from place to place, as desired, when a shaving-tool driven by a flexible-shaft is made use of; but when the motor and fan are made a part of the handle of the tool, as shown in Fig. 11, only the usual electric connections for the motor need be provided.

Although I have shown the handle equipped with the hair-cutting devices in Fig. 11, and have shown the handle equipped with shaving cutters in Fig. 1, yet it will be obvious that if the bases of the cutters are made interchangeable (as they should be made), any desired set of cutters, either for hair-cutting or for shaving, may be inserted in the handle, thereby making the tool either a hair-cutting or a shaving tool, at the will of the user.

The operation of the hair-cutting tool, as shown in Fig. 11 is as follows:

The rotor-cutter is driven as in the case of the shaving-tool, previously described, and the hair will be drawn into the space between the sharp edges of the rotor-cutter and the fixed cutter 37, and will be thereby sheared off, with a "draw" cut, and will also be immediately thereafter drawn by the suction-creating device into and through all the hollow (or tubular) parts through which air is being drawn by said suction-creating device, and will be deposited at any desired place or in any suitable receptacle which may be provided to receive the cut hair.

It is clear that the closer the cutting-edge 39 of the rotor-cutter is brought to the scalp the closer the hair will be cut.

In both the shaving and hair-cutting operations, the work is accomplished very speedily, efficiently, and pleasantly, and almost noiselessly on account of the absence of all vibrating or reciprocating parts; all parts of my device which revolve doing so without any "rattling" whatever,—the motion being smooth and continuous in one direction, as is the case with all machinery which merely revolves in its bearings, in contradistinction to machinery which has vibrating or reciprocating parts moving at high speed and causing disagreeable vibration.

I do not confine myself to the exact form of the parts shown in the drawings, nor to any certain material, as it is understood that certain changes may be made within the

scope of my invention, without departing from its spirit.

What I claim as my invention is the following:

An improved shaving and hair-cutting device, comprising a handle having a socket at one end, and a longitudinal slot connecting with said socket; a fixed cutter having its butt-end secured in said socket, and being tapered and hollow, and having opposite cutting-edges; a rotary cutter mounted within said fixed cutter and provided with an enlargement having an annular groove in its periphery; a slotted slidable plate on the exterior of said handle; an adjusting-pin extending to the interior of said socket through said longitudinal slot, so that the inner end of said pin engages the walls of said annular groove of said rotary cutter, the outer portion of said adjusting-pin being fixed to said slidable-plate; an adjusting-screw passed through the slot of said slidable plate and engaging said handle, to lock said plate to the handle after said rotary cutter has been adjusted axially; and a motor for rotating said inner cutter.

In testimony whereof, I have signed my name to this specification, in presence of two subscribing witnesses.

JOHN R. MARTIN.

Witnesses:

WM. OLIVER REEVE,
HENRY L. HIGDON.