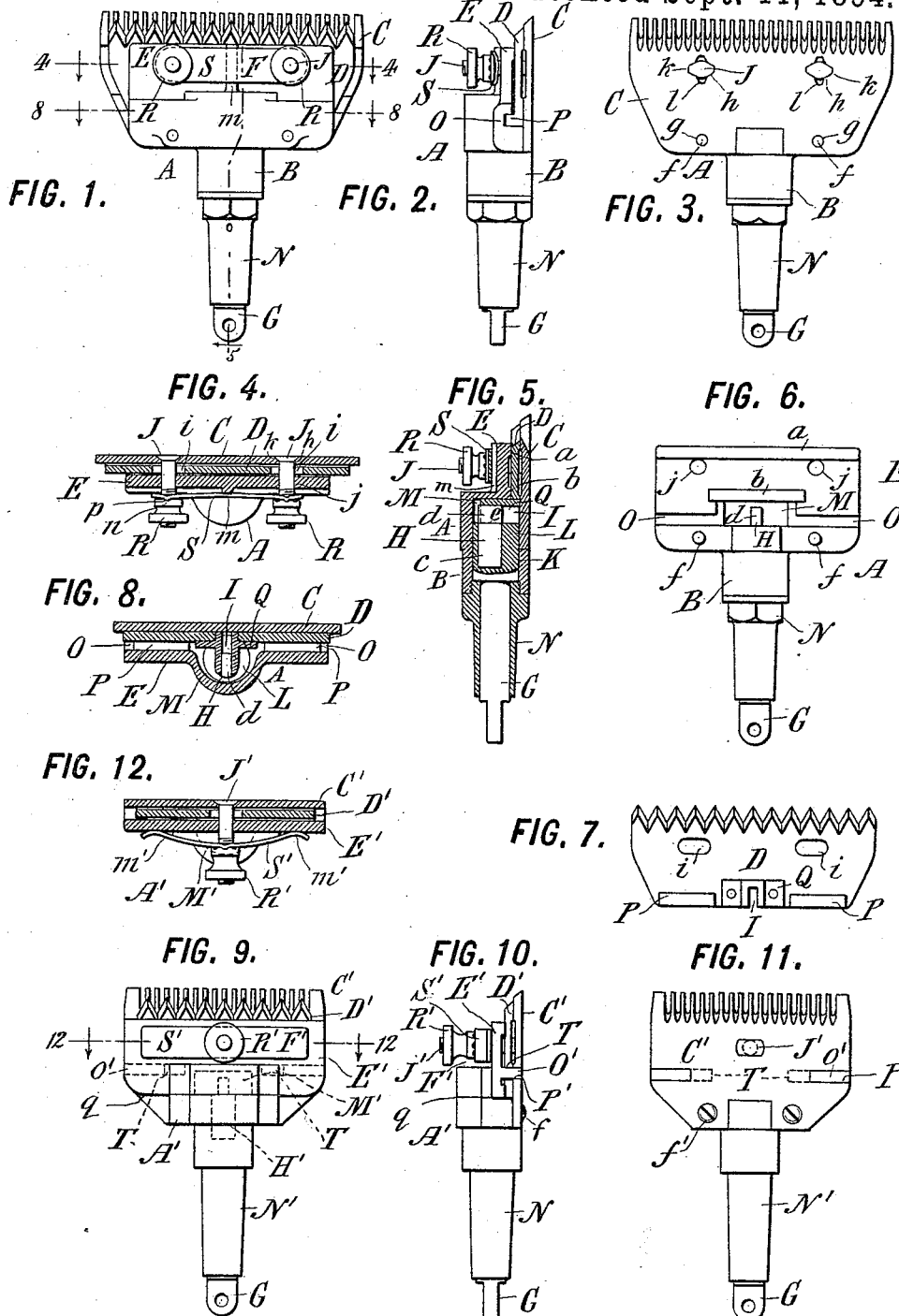


(No Model.)

M. G. GILLETTE.
HAIR CLIPPER.

No. 525,783.

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WITNESSES:

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UNITED STATES PATENT OFFICE.

MOTT G. GILLETTE, OF NEW YORK, N. Y.

HAIR-CLIPPER.

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To all whom it may concern:

Be it known that I, MOTT G. GILLETTE, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Hair-Clippers, of which the following is a specification.

This invention relates to machines for cutting or clipping hair, and particularly to machines of this class which are driven by power, as through the medium of a flexible shafting. Heretofore such clippers have been constructed with a bottom or comb cutter plate, a body rigidly carrying said plate and having a neck through which the terminal pintle of the rotary shaft passes, a reciprocating upper cutter plate having teeth crossing the comb teeth of the under plate, a movable bar or tension plate having bearings engaging the upper cutter, two bolts traversing said plate, adjusting nuts on said bolts bearing against the upper face of the tension plate to graduate its pressure on the movable cutter, a crank pin on said pintle, and a pin groove therefor on the movable cutter. With these devices difficulty in equalizing the pressure of the tension plate throughout its length has been experienced, the guidance of the upper cutter has been considerably in advance of the crank pin, and the latter has been subject to wear and looseness.

My present improvements aim to facilitate the adjustment and equalization of the tension plate, provide an improved crank pin connection, improved guides for the movable cutter, and certain improvements in the details of construction of the various parts of the cutter.

To this end in carrying out my invention I construct the clipper in the manner hereinafter described with reference to the accompanying drawings, in which—

Figure 1 is a top view of the preferred form of my improved clipper. Fig. 2 is an edge view thereof; Fig. 3, a bottom plan thereof; Fig. 4, a vertical cross section in the direction of the arrow and on the line 4—4 in Fig. 1; Fig. 5, an axial cross section on the line 5 in Fig. 1 and looking in the direction of the arrow; Fig. 6, an under side plan of the body and bearing plate; Fig. 7, a top plan of the movable cutter; Fig. 8, a vertical cross sec-

tion on the line 8 in Fig. 1 looking in the direction of the arrow; Fig. 9, a top plan of a modification; Fig. 10, an edge view thereof; Fig. 11, a bottom plan thereof, and Fig. 12 a vertical cross section thereof on the line 12—12 of Fig. 9 and looking in the direction of the arrow.

Referring first to Figs. 1 to 8 inclusive, I will describe in detail the clipper constructed according to the preferred form of my invention therein shown.

Let A indicate the body; B, the neck thereof; C, the under, comb, or fixed cutter plate; D, the upper or movable cutter plate; E, the bearing plate; F, the adjusting device for controlling the tension; G, the pintle ending the flexible shafting; H, the crank pin thereof; I, the pin groove in the movable cutter, and J the bolts of the tension device.

According to my invention the body A and neck B are an integral piece on which the bearing plate E is rigidly fixed, preferably by being cast integrally therewith. As shown, the neck has a cylindrical socket K receiving and fitting the cylindrical head L of the pintle G, and in advance of this socket is a chamber M in which the crank pin rotates. The pintle is fixed in place by the usual sleeve nut N entering the neck and engaging a shoulder on the pintle to prevent outward movement thereof, but permitting freedom for inward movement. The bearing plate E has a front track *a* and a rear track *b*, on which the upper face of the cutter rides. At rear of the face *b* and in line with the projecting end of the crank pin H reciprocal rectilinear guiding grooves and projections are provided on the bearing plate and movable cutter. Preferably these consist of a vertical rectangular groove O in the under face of the bearing plate E and vertical rectangular lugs P on the upper face of the movable cutter D. The grooves O traverse the entire width of the bearing plate, from its edges to the chamber M. The movable cutter D is the usual flat plate, on which the lugs P are riveted flush with its extreme rear edge. At its middle it is formed with a pin groove box Q consisting of a piece of hardened steel riveted to the top of the plate and having a vertical rectangular groove fitting the end of the pin H. The under face of the cutter D is as usual constructed with front and rear bearing faces en-

gaging like faces on the fixed cutter C and an intermediate raised portion between these faces.

The crank pin H consists of a cylindrical pin freely and rotatively fitting in a cylindrical socket formed eccentrically in the head L, the body *c* of the pin being cylindrical to substantially the depth of the socket, and at its projecting portion beyond the end of the pintle being equally cut away on both sides to form a flat sided head *d* fitting the pin groove of the box Q and having two parallel faces coinciding with the walls of this groove. Thus as the pintle rotates the crank pin rises and falls in the groove but is prevented from rotation therein, its faces having simply a sliding contact over an extensive portion of the surface thereof, while its cylindrical body *c* rotates in its socket in the head L. In this way extensive rubbing surfaces are provided for the crank pin, whereby the wear incident to its function of converting the rotary motion of the shaft into reciprocating motion of the cutter is reduced to a minimum.

The front and rear tracks *a* and *b* receive all vertical bearing of the movable cutter, and the grooves and lugs O and P take up all lateral strains. The latter being disposed substantially in line with the crank pin thrusts give a thorough guidance for the movable cutter without undue wear due to diagonal strains which would be occasioned were these guiding provisions disposed in advance of the crank pin bearing.

The rear face of the box Q engages the right angle shoulder *e* on the pin H and also the end face of the pintle G, and prevents undue forward movement of either of these parts. The box Q reciprocates freely in the chamber M.

The under or comb cutter C is adjustably mounted on the body to be capable of movement toward the movable cutter, but restrained from other movement. To adjust the tension the plate C is drawn toward the bearing plate by the tension device F. Preferably two studs *f* are fixed in the under face of the body A and the plate C is constructed with corresponding holes *g* passing over and fitting these studs, but freely removable therefrom. Near its forward portion the usual bolt sockets *h* are provided, through which pass the bolts J of the tension device. Elongated slots *i* for these bolts are provided in the movable plate D. Cylindrical holes *j* corresponding in position to the holes *h*, are provided in the bearing plate E, and through these several holes the bolts J pass, their heads being removably seated in the usual undercut recesses *k* in the holes *h* when in the fixed position, and passing out through the enlargements *l* of these holes when the plate C is to be removed. The upper screw threaded ends of the bolts J are slitted and carry nuts R, by screwing down which the under plate is drawn against the upper plate and the latter drawn against the bearing E

to give the requisite tension and lock the parts in proper relative position.

To properly equalize the tension throughout the length of the bearing plate, my invention provides an improved equalizing device, which preferably consists of an elastic bar S engaging a central lug *m* on the bearing plate E at its middle and engaged by the nuts R at its ends, whereby the action of the nuts is transmitted to the bearing plate through the bar S, being thereby applied to the bearing plate exactly intermediate of the two points at which the clamping force is applied to the under cutter, whereby the latter may be held against the upper knife, and the upper knife against the bearing plate, with equal force at both sides. With this construction the excessive tightening or loosening of one screw is transmitted by the bar in part to the other screw, so that whichever screw is adjusted the adjustment on the parts affected is equalized. Preferably the nuts have grooves *n* in their under faces and the bar reciprocal projections *p* engaging these grooves, whereby the free loosening of the nuts is prevented. It will be seen that in this construction the under-plate C serves, in addition to its usual function of a cutter plate, also the function of a tension plate, and that the tension adjusting device need not necessarily require the employment of two bolts J connected to this movable plate, in order to equalize the tension, as this may as well be done by the employment of a single bolt engaging the tension plate and the bar S and constructing the latter to engage the bearing plate at two points equi-distant from that where it is engaged by the nut of the bolt. It will also be understood that the under plate may be rigidly carried by the body and the bearing plate be made the movable member required for adjusting the tension.

In Figs. 9 to 12 is shown a construction embodying these modifications. In these figures A' is the body; C', the under cutter rigidly fixed to the body by screws *f'*. D' is the movable cutter. E' is the bearing plate, and F' the tension device. The body A' here terminates at the line *g*, at which point the bearing plate begins. The bearing plate is loosely fastened to the body through the medium of vertical lugs O' on the plate fitting corresponding slots P' on the bottom plate, which provisions prevent lateral movement on the bearing plate, while the nut R' of the bolt J', acting against the cross bar S', prevents upward escape of the bearing plate. The bar S' is depressed at its center by the nut R', and equi-distant from this nut at its opposite ends it has bearing points *m'* engaging the top of the plate E' and transmitting thereagainst the thrust of the nut with equal force against the opposite ends of the plate.

The pin chamber here lettered M' and shown in dotted lines in Figs. 9 and 12, is formed in the bearing plate. The guiding

provisions in this instance consist of grooves T traversing the moving cutter and fitting the lugs O' of the bearing plate, slightly in advance of the crank pin H'.

5 In my improved clipper the crank pin is entirely inclosed in the chamber M, whereby all danger of clogging by entrance of hair at this point is avoided. The parts can be readily assembled and separated, and conveniently adjusted without the exercise of any particular care, and the reduction in thickness of the movable cutter by wear or grinding can be taken up by a closer adjustment of the tension plate without causing any noticeable change in the operation of the clipper.

15 What I claim is—

1. In a hair clipper, a body A, having a neck B, in combination with a rotating pintle G within said neck and having a crank pin 20 within said body, a stationary comb cutter attached to said body, a reciprocating cutter mounted on said comb cutter and engaged and reciprocated by said crank pin, a tension bearing plate E carried by said body and bearing on the top of said movable cutter, a spring bar S resting freely on the outer face of said bearing plate at its middle, bolts J connected at their head ends to said comb cutter, traversing through the latter and said 30 movable cutter and bearing plate, and having screw threaded upper ends passing through the opposite ends of said spring bar S, and nuts R for said bolts screwing on the ends thereof and against the outer ends of said bar, all substantially as and for the purpose set forth.

2. In a hair clipper, a body A, having a neck B at rear, a bearing plate E at front, a pin chamber M intermediate of its ends and 40 grooves O in its bottom face substantially in line with said pin chamber and all formed in one integral piece of cast metal, in combination with a rotary pintle G in said neck, having a crank pin in said pin chamber, a stationary comb cutter C set loosely against and

removable from the under side of said body, a movable cutter D resting on said comb cutter and bearing against the under face of said bearing plate E, and having vertical lugs P at rear entering and fitting said grooves O of 50 said body, and a bolt engaging said comb cutter at its head end, passing through the latter and said movable cutter and said bearing plate, and a nut screwing on the upper end of said bolt and drawing said comb cutter 55 and bearing plate together against said movable cutter, all substantially as and for the purpose set forth.

3. In a hair clipper, a body A, a bearing plate E carried at the upper face thereof and 60 having a central ridge *m*, and a stationary comb cutter C carried at the bottom plate thereof, in combination with a movable cutter G between said plate and comb cutter, means for reciprocating said cutter D, two bolts passing 65 through said bearing plate, movable cutter and comb cutter, engaging the latter at their head ends, a tilting bar F having apertures in its ends, bearing at its middle on said ridge *m* of said bearing plate, and passing 70 over the ends of said bolts at its ends, and nuts screwing on the ends of said bolts against the ends of said bar, all substantially as and for the purposes set forth.

4. In a hair clipper, a body, a comb cutter 75 and a movable cutter, in combination with a rotary pintle G having an eccentric pin-socket, a crank pin H consisting of a cylindrical body *c*, fitting said socket rotatively, and a flat working end *d*, projecting therefrom, said movable cutter having a vertical 80 groove I receiving the flat end of said pin.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

MOTT G. GILLETTE.

Witnesses:

GEORGE H. FRASER,
THOMAS F. WALLACE.