

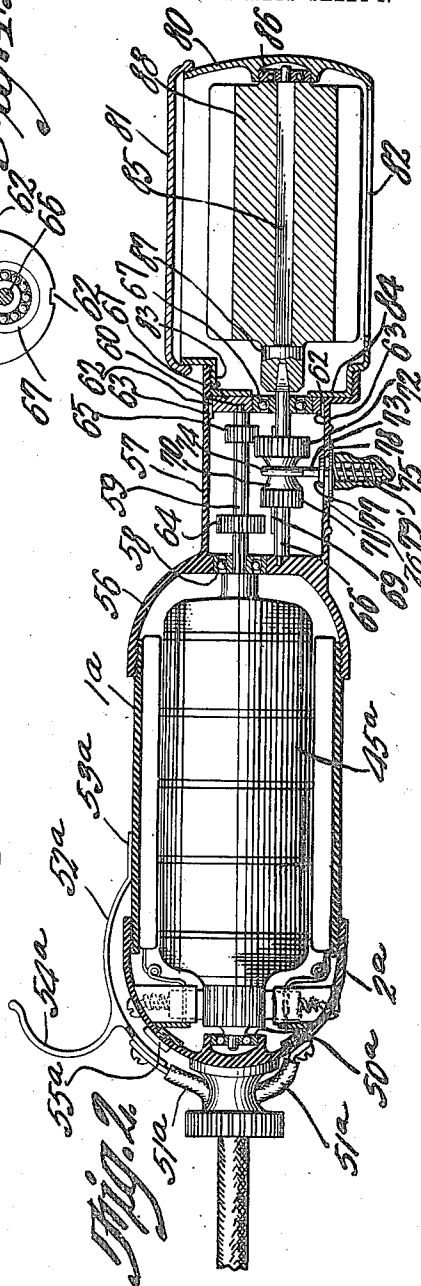
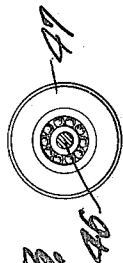
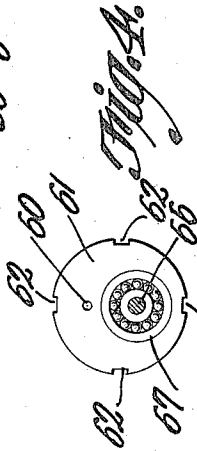
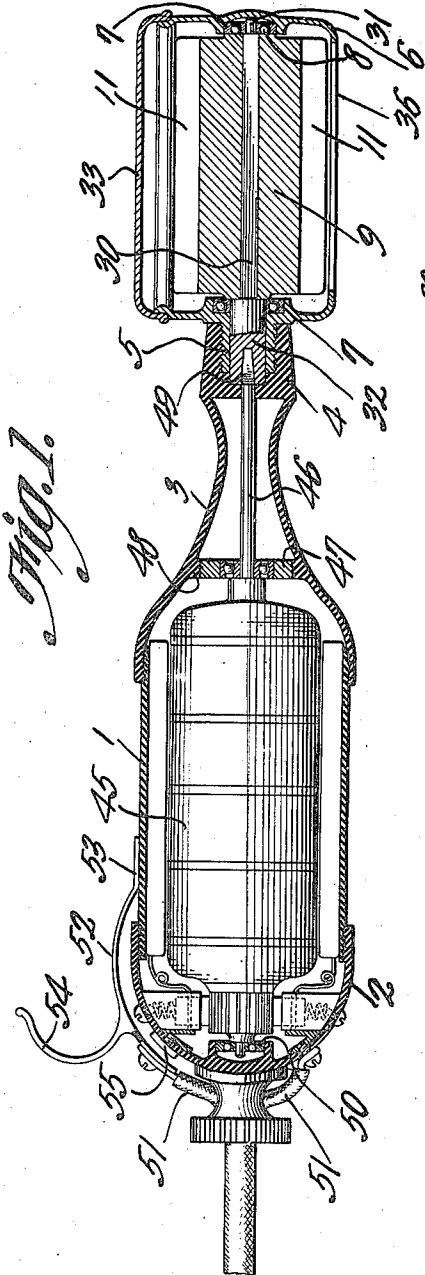
G. L. BONHAM.
SAFETY RAZOR.

APPLICATION FILED AUG. 4, 1913.

1,093,102.

Patented Apr. 14, 1914.

2 SHEETS—SHEET 1.



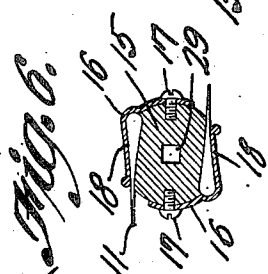
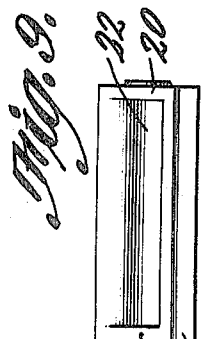
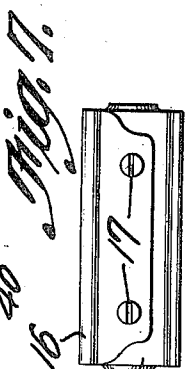
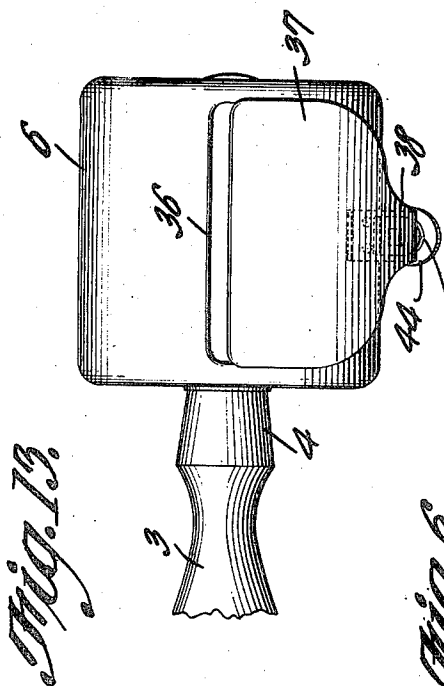
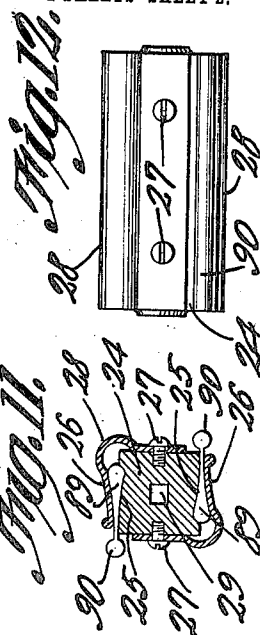
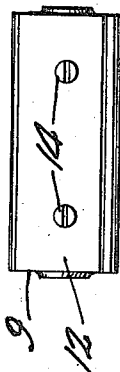
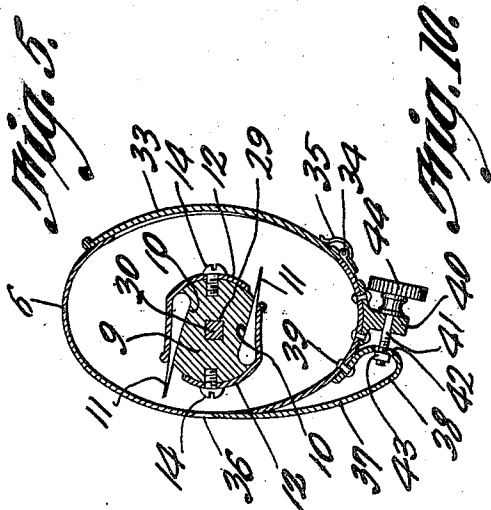
Witnesses

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1,093,102.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

GUY L. BONHAM, OF WEST HARTFORD, CONNECTICUT.

SAFETY-RAZOR.

1,093,102.

Specification of Letters Patent.

Patented Apr. 14, 1914.

Application filed August 4, 1913. Serial No. 782,992.

To all whom it may concern:

Be it known that I, GUY L. BONHAM, a citizen of the United States, residing at West Hartford, in the county of Hartford and State of Connecticut, have invented a new and useful Safety-Razor, of which the following is a specification.

The device forming the subject matter of this application is a combined safety razor and massage implement.

The invention aims to provide a device of this type in which the blade carrying head is mounted to rotate, the same being power-driven, and so constructed as to operate smoothly, rapidly, and with safety, the construction being such that the device may be used upon a smooth or tender skin, without endangering the same, either through cutting or scraping.

Another object of the invention is to provide a device of this type in which the razor blades may be removed, to permit the insertion of massage elements after the shaving operation has been completed, to the end that the skin may be kneaded or worked, at a pressure varying from a slight touch to a strong impinging action.

Another object of the invention is to provide novel means whereby the opening in the blade-inclosing casing may be varied in extent, thereby to permit the blades or the massage elements to move at a greater or less distance from the skin.

Another object of the invention is to provide novel mechanism whereby the speed of the rotating, blade-carrying head may be varied at will.

Another object of the invention is to provide a device of this type which will operate with a minimum amount of friction.

It is within the scope of the invention to improve generally and to enhance the utility of, devices of that type to which the present invention appertains.

With the above and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawings:—Figure 1 shows one form of the invention in longitudinal sec-

tion; Fig. 2 is a longitudinal section showing a modified form of the invention; Fig. 3 is an elevation of one of the bearing members; Fig. 4 is an elevation of another of the bearing members; Fig. 5 is a transverse section taken through the casing within which the rotating head is inclosed; Fig. 6 is a transverse section showing one form of head; Fig. 7 is an elevation of the head shown in Fig. 6; Fig. 8 is a transverse section showing a modified form of head; Fig. 9 is an elevation of the head shown in Fig. 8; Fig. 10 is an elevation showing that form of the head which is depicted in cross section in Fig. 5; Fig. 11 is a cross section showing a modified form of head, the massage elements being shown assembled with the head; Fig. 12 is an elevation of the structure shown in Fig. 11. Fig. 13 is an elevation showing the casing in which the blade-carrying head is inclosed.

The invention includes a handle which is a composite structure, the handle including a tubular casing 1, to one end of which a cap 2 is threaded or otherwise secured. Threaded or otherwise secured to the opposite end of the casing 1 is a reduced neck 3 constituting a connecting member, the connecting member 3 terminating at one end in a solid head 4 into which is threaded or otherwise secured a bearing 5 formed at one end of a casing 6, the outline of which is shown in Fig. 5. Rings 7 are mounted in the ends of the casing 6, the rings carrying anti-friction balls 8.

Located within the casing 6 is a head which may be of any desired form. The head in Figs. 5 and 10 is denoted by the numeral 9 and is provided in its opposite faces with seats 10 adapted to receive razor blades 11, held in place by clips 12 secured to the head by means of set screws 14.

In Fig. 6, a modified form of head is shown, the same being denoted by the numeral 15. The clip, shown at 16, is held in place by a set screw 17 and is struck inwardly, in a longitudinal direction, as indicated at 18, so as to conform properly to the rear edge of the razor blade.

As shown in Fig. 8, the head is denoted by the numeral 19 and may be provided with end flanges 20, connected by a body 21 having superficial, oppositely disposed recesses 22. The body 21 includes longitudinally extended, internal seats 23, adapted to receive the razor blades, the construction be-

ing such, in the present instance, that the razor blades may be inserted endwise.

As shown in Fig. 11, the head 24 is of approximately rectangular cross section and is provided in its opposite faces with superficial seats 25 adapted to receive the razor blades or the massage implements hereinafter described, the same being held in place by means of angular clips 26 united with the head 24 by means of set screws 27, the clips 26 being outwardly arched, at their angles, as indicated at 28, in order to stiffen them.

Whatever be the form of the head, the same is provided with an axial opening 29 which preferably is of rectangular cross section, to receive a rectangular shaft 30, one end of which, indicated at 31, is anti-frictionally supported in one of the rings 7. The opposite end of the shaft 30 is enlarged as indicated at 32 and is journaled within the bearing 5 formed at the inner end of the casing 6.

Access is had to the interior of the casing 6 by means of a lid 33, hinged in place as indicated at 34 and maintained in closed position by means of a spring 35. The casing 6, further, is provided with a longitudinal opening 36, shown in Figs. 5 and 13, the function of this opening being to permit the razor blades and the massage elements, hereinafter described, to come into contact with the skin of the operator. The opening 36 is controlled by a resilient closure plate 37, one end of which bears upon the casing 6 adjacent the opening, as will be understood best from Fig. 5. The resilient closure plate 37 is curved as indicated at 38 and is secured as shown at 39 to the casing 6. Projecting from the casing 6 is a lug 40 into which is threaded a screw 41, passing through a slot 42 in the curved portion 38 of the closure plate 37, the screw 41 carrying at its inner end a nut 43 or like projection, adapted to engage the concaved surface of the bend 38 of the closure plate 37. At its outer end, the screw 41 terminates in an enlarged, milled head 44 which bears against the lug 40.

Located within the casing 1 is an electric motor 45, the armature shaft of which is denoted by the numeral 46. The armature shaft 46 is journaled in a ball carrying ring 47, threaded or otherwise secured in an annular rib 48, projecting inwardly from the neck 3. The extremity of the armature shaft 46, indicated at 49 is received removably, but against rotation, in the enlarged portion 32 of the shaft 30. Mounted in the cap 2 is a ball carrying ring 50 which receives rotatably, the corresponding end of the armature shaft 46. The conductors are denoted by the numeral 51, one conductor being operatively connected with a switch which may be of any form, the switch in the present instance being depicted as a resilient, curved

tongue 52, secured at one end, as shown at 53 to the casing 1, the tongue 52 being equipped with an outstanding finger piece 54. The construction is such that the free extremity of the tongue 52 may be brought into contact with a terminal 55, supported by the cap 2 and interposed in the circuit of the motor 45.

The operation of the device as thus described, is as follows:—The casing 1 is held in the hand of the operator, the little finger being engaged with the grip piece 54 and the switch tongue 52 and when contact is established with the terminal 55, the motor 45 will be put into rotation, the same rotating the armature shaft 46, and the armature shaft imparting rotation to the plate carrying head 19 which is located within the casing 6. When the plate carrying head 19 is rotated, in the manner hereinbefore described, the razor blades 11 will come successively into contact with the skin, thus effecting a shaving operation.

By rotating the screw 44, the closure plate 37 may be advanced and retracted with respect to the opening 36 in the casing 6, thus varying the extent of the opening. By thus shifting the closure plate 37, the razor blades 11 will operate to give a close shave, or to give a shave approximating what is known as "once-over." Special attention is directed to the feature last above described, since thereby, the device herein disclosed is well adapted to operate upon a skin which is tough, or, to operate with equal facility upon the most tender one.

After the shaving operation has been completed, the razor blades 11 may be replaced by the massage elements shown in Figs. 11 and 12 and indicated by the reference character 89. The massage elements 89 are resilient and flexible, and may be formed of rubber or the like, the massage elements approximating in cross section, the form of a razor blade, but being provided along their reduced edges with enlarged ribs 90. It will be understood, of course, that when the device is operating as a massage implement, the closure plate 37 will be retracted to a maximum extent, thereby to enlarge the opening 36.

In that form of the invention which is depicted in Fig. 2, some of the elements hereinbefore described are employed and need not be referred to in detail. These duplicated elements are represented by reference characters hereinbefore employed, the suffix "a" being added. The duplicated elements, for the most part, comprise the electric motor 45^a and attendant parts found at the left hand ends of Figs. 1 and 2.

The connecting member which unites the motor casing with the blade inclosing casing is denoted by the numeral 56 and is threaded or otherwise secured to the casing 1^a, the

connecting member 56 including a tubular housing 57. Mounted in the connecting member 56 at one end of the housing 57 is a ball carrying ring 58 in which the armature shaft 59 is journaled, the extremity of the armature shaft 59 being rotatably mounted in an opening 60 formed in a disk 61 having notches 62 in its periphery adapted to receive longitudinal fins 63 formed upon the interior of the tubular housing 57. Secured to the armature shaft 59 are gear wheels 64 and 65, the gear wheel 64 being of greater diameter than the gear wheel 65. Located parallel to the armature shaft 59 and disposed within the tubular housing 57 is a shaft 66, received at one end for rotation in a ball carrying ring 67, mounted in the disk 61, the other end of the shaft 66 being journaled in the connecting member 56. Splined as shown at 69 upon the shaft 66 for longitudinal movement thereon is a wheel 70, provided with gears 71 and 72, the gear 71 being of a less diameter than the gear 72. Disposed transversely of the shaft 66 is a shifting rod 73, provided at its inner end with an eye or hook 74 which surrounds the intermediate portion of the gear carrying wheel 70. The shifting rod 73 extends through a longitudinal slot 76 formed in one side of the housing 57, and is equipped at its outer end with a handle 75. The rod 73 is provided with a transverse head 77 adapted to bear against the inner face of the housing 57. Mounted upon the outside of the housing 57 and carried by the shifting rod 73 is a plate 78 constituting a closure for the slot 76 in the housing 57, the plate 78 being held in place upon the housing by means of a spring 79, surrounding the shifting rod 73 and mounted in a recess in the handle 75. The casing which receives the blade carrying head is denoted by the numeral 80, and the details of this casing are shown in Fig. 5, the casing including a movable lid 81, an opening 82 adapted to permit the razor blades to come into contact with the skin of the operator, and the movable closure 37, herein before described. At its inner end, the casing 80 terminates in a reduced neck 83, which is threaded into one end of the tubular housing 57, the neck 83 being provided with an inwardly extended flange 84 which constitutes an abutment for the disk 61. Located within the casing 80 is a shaft 85, the outer end of which is journaled in a ball carrying ring 86 supported upon one end of the casing 80, the other end of the shaft 85 being enlarged as indicated at 87, the enlarged end 87 of the shaft receiving removably, against relative rotation, the inner end of the shaft 66 hereinbefore described. The blade carrying head is denoted by the numeral 88, this numeral being employed to designate the head generally, it being un-

derstood that any suitable form of head or, more specifically, any of the heads hereinbefore described, may be employed.

So far as the general operation of the structure shown in Fig. 2 is concerned, the same does not differ from the operation of that form of the invention which is shown in Fig. 1, at least, so far as the operation of the head 88 upon the skin, and the manner of imparting rotation to the armature shaft 59 is concerned. As will be understood readily, by moving the handle 75, the gear carrying wheel 70 may be shifted longitudinally on the shaft 66, so that the gear wheel 71 may be coupled up with the gear wheel 64, or, upon the other hand, the gear wheel 72 may be coupled up with the gear wheel 65, thereby to change the speed of rotation of the shaft 85 and the head 88. When the gears 71 and 72 lie between the gears 64 and 65, the rotation of the blade carrying head 88 will cease.

Having thus described the invention, what is claimed is:—

1. In a device of the class described, a handle; a driving member movable in the handle; a blade carrying head movable in the handle; variable speed gear change mechanism operatively connecting the driving member with the head; and means under the control of an operator for actuating the gear change mechanism.

2. In a device of the class described, a handle; a shaft journaled in the handle; a blade carrying head journaled in the handle and including a shaft; variable speed gear change mechanism operatively connecting the shafts for simultaneous rotation; and means movable with respect to the handle for operating the gear change mechanism.

3. In a device of the class described, a handle; a motor located in one end of the handle and including a shaft; a blade carrying head journaled in the other end of the handle and including a shaft; variable speed gear change mechanism operatively connecting the shafts for simultaneous rotation; and means movable upon the handle for operating the gear change mechanism.

4. In a device of the class described, a handle; a motor mounted in the handle and including a shaft; a blade carrying head journaled in the handle and including a shaft; a pair of gear wheels secured in spaced relation to one shaft, and of different sizes; a wheel splined upon the other shaft and including a pair of gear wheels of different sizes, and adapted to cooperate with the first specified gear wheels; and means for shifting the splined wheel upon its shaft.

5. In a device of the class described, a handle including a casing having an opening; a rotatable, blade carrying head journaled in the casing and adapted to rotate adjacent the opening; a resilient plate bear-

ing upon one edge of the casing and constituting an adjustable closure for the opening, the other edge of the plate being curved, and being secured to the casing; and an adjusting member mounted on the casing, the adjusting member being operatively connected with the curved portion of the plate.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

GUY L. BONHAM.

Witnesses:

FELIX J. BONVOULOIR,
E. H. FRENCH.