

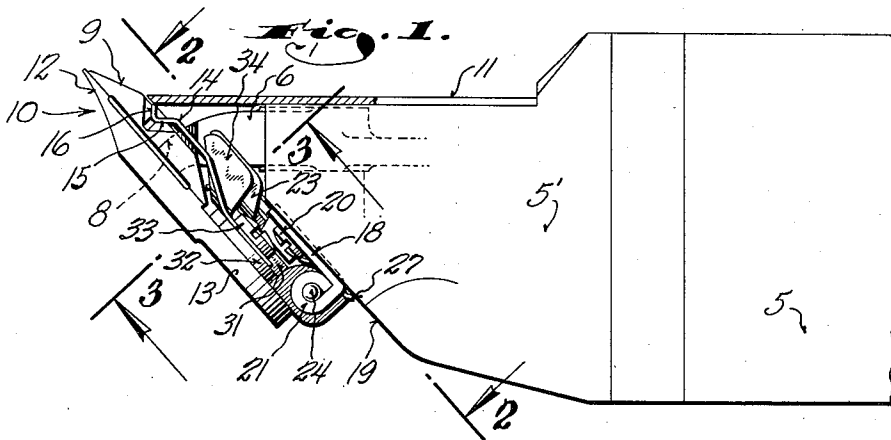
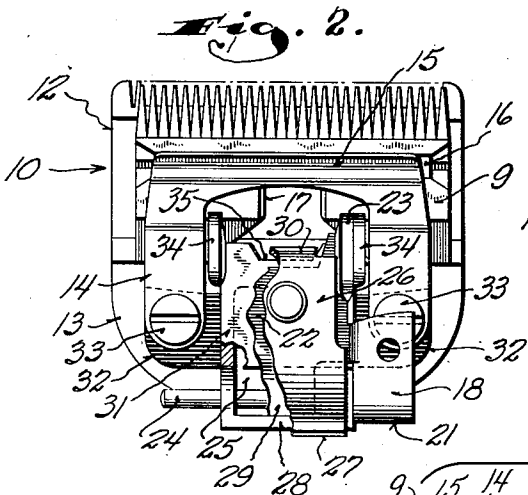
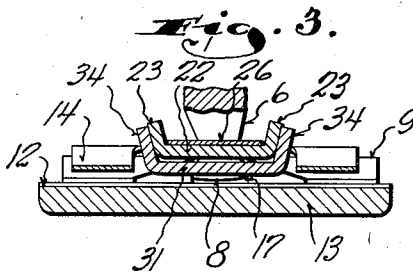
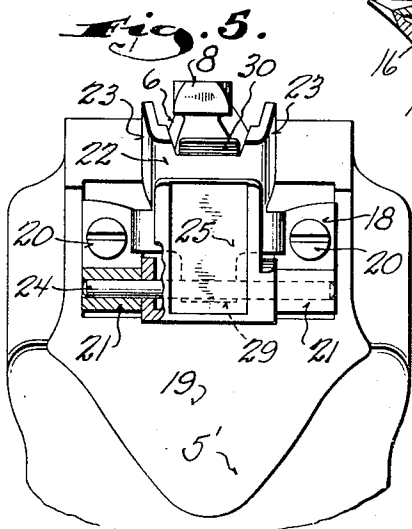
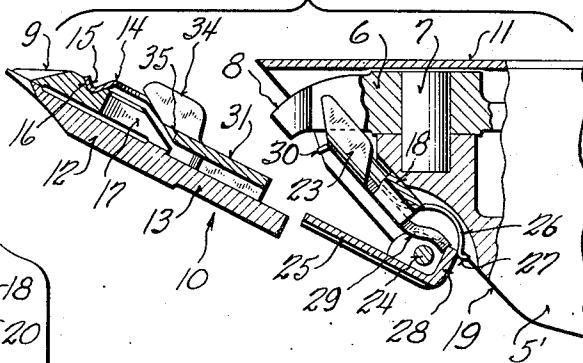
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2,182,597

HAIR CLIPPER

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2,182,597

HAIR CLIPPER

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11 Claims. (Cl. 30—196)

This invention relates to hair clippers and refers particularly to clippers of the type forming the subject matter of Patent No. 1,956,042 issued to John Oster April 24, 1934.

In these clippers the cutting assembly is a complete unit separable from the body of the clipper to permit the same to be easily cleaned and sterilized, and to permit interchangeability of different sized cutting assemblies.

The cutting assembly comprises the usual stationary and movable cutters with means for holding the same in proper relative positions and means for providing the necessary spring tension.

The body provides a housing for the motor and the driving instrumentalities as well as a handle for the clipper and has a driving lever pivoted in its front end to actuate the movable cutter upon proper attachment of the cutting assembly to the body.

In view of the extreme rapidity with which the driving lever oscillates and the deficiencies of the attaching means heretofore employed for holding the cutting assembly to the body, difficulty has been experienced in properly securing the cutting assembly against wobbling or vibrating especially after the clipper has been in use long enough to cause wear at the engaging surfaces of the attaching means.

It is therefore an object of this invention to improve the manner of readily removably attaching the cutting assembly to the body of the clipper and to make special provision against the possibility of having the cutting assembly work loose during operation of the clipper.

More specifically it is an object of this invention to provide means for readily removably attaching a cutting assembly to the clipper body which is so designed that interengaging wall surfaces carried by the cutting assembly and the body are positioned substantially in line with the application of driving force from the driving lever to the movable cutter to thereby eliminate the leverage tending to swing the cutting assembly laterally as a result of the oscillation of the driving lever.

Another object of this invention is to so design these interengaging surfaces that they engage with a wedge-like action and insure a tight connection free from play at all times.

Another object of this invention is to provide means for readily removably attaching the cutting assembly to the body of the clipper which incorporates loosely fitted interengaging means carried by the cutting assembly and the body for guiding the cutting assembly quickly and easily

into proper position and other means which comes into play subsequently to the proper positioning of the cutting assembly on the clipper body for firmly holding the same against any movement whatsoever with respect to the clipper body.

With the above and other objects in view which will appear as the description proceeds, this invention resides in the novel construction, combination and arrangement of parts substantially as hereinafter described, and more particularly defined by the appended claims, it being understood that such changes in the precise embodiment of the hereindisclosed invention may be made as come within the scope of the claims.

The accompanying drawing illustrates one complete example of the physical embodiment of the invention constructed in accordance with the best mode so far devised for the practical application of the principles thereof, and in which:

Figure 1 is a view in side elevation of the front end portion of a clipper constructed in accordance with this invention, part of the front cover being broken away and in section;

Figure 2 is a detail view looking at the inside of the cutting assembly and the body carried part of the attaching means shown separated from the body, said view being taken on the plane of the line 2—2 in Figure 1 and having parts broken away;

Figure 3 is a detail sectional view taken through Figure 1 on the plane of the line 3—3 and showing particularly the disposition of the wedge-like connection between the cutting assembly and the body with respect to the driving lever and the movable cutter;

Figure 4 is a view partly in longitudinal section and partly in elevation through the cutting assembly and the front end of the body illustrating the manner in which the cutting assembly is removed; and

Figure 5 is a front end view of the body showing its part of the attaching means and having part thereof broken away and in section.

Referring now particularly to the accompanying drawing in which like numerals indicate like parts throughout the several views, the numeral 5 designates the body of the clipper which provides a housing for the motor and the driving instrumentalities (not shown) through which the motor oscillates or rocks a driving lever 6 pivoted on a stud 7 fixed in the front end of the body. The front end of the body is inclined as illustrated, and the outer end 8 of the driving lever projects forwardly therefrom to have an operative engagement with the movable blade 9 of the

cutting assembly, designated generally by the numeral 10.

The manner in which the motor drives the lever 6 forms no part of this invention, and therefore has not been shown. It is desired to note, however, that the transmission mechanism employed for this purpose is housed within the forepart 5' of the body, and that this portion of the body is closed by a removable cover 11.

The cutting assembly, in addition to the movable cutter 9, includes a stationary cutter 12, the rear portion of which is extended to provide a base plate 13. The movable cutter overlies the stationary cutter and is held in proper relation thereto by a substantially U-shaped spring 14, the arms of which are secured to the base plate portion 12 of the stationary cutter.

The outer closed end of this spring has a substantially V-shaped ridge 15 facing the stationary cutter and engaging in a correspondingly shaped groove 16 in the back of the movable cutter. The spring thus not only serves to hold the movable cutter in proper relation to the stationary cutter, but also provides the necessary spring tension.

At its mid-portion, the movable cutter has a recess or socket 17 accessible between the arms of the spring for engagement with the outer end 8 of the driving lever so that the rocking motion of the lever is translated into reciprocation on the part of the movable cutter.

The means for readily removably attaching the unitary cutting assembly to the body and for holding the same firmly in place thereon comprises interengaging parts carried by the cutting assembly and the body. The body carried part of this connecting means consists of a formed attaching plate or base 18 fixed to the inclined front wall 19 of the body by screws 20. This attaching plate or base is preferably stamped from stiff metal and has rearwardly extending laterally spaced arms, the extremities of which are curled to form hinge loops 21.

At their forward ends these arms are joined by a central plate 22 which projects forwardly in parallel relationship to the inclination of the body front wall 19. This central plate 22 has flanges 23 on its side edges, the outer extremities of which lie on opposite sides of the outer end portion of the driving lever to be located close to its point of connection with the movable cutter. These side flanges 23 are inclined outwardly so as to form substantially the side walls of a wedge.

A hinge pin 24 passing through the hinge loops 21 hingedly mounts a tongue 25 in a position overlying the plate 22 for movement toward and from the same. A stiff spring 26 riveted to the inner face of the plate 22 and having one end portion 27 shaped for engagement with the inner end 28 of the tongue 25 holds the same either in an open or closed position. The open position of the tongue is defined by the engagement of the inner end of the tongue with a rearward extension 29 on the plate 22 as shown in Figure 4, and in its closed position shown in Figure 1, the spring yieldingly urges the tongue toward the plate 22.

The opposite end 30 of the spring 26 projects outwardly beyond the plate 22 for a purpose to be hereinafter described.

That part of the attaching means carried by the cutting assembly consists of a bridge piece 31 having attaching ears 32 which lie flat against the inner face of the base plate portion 13 under the arms of the spring 14 where they are held

by the screws 33 which also hold the spring in place. The central part of the bridge piece forms a strap or loop to freely fit the tongue 25.

The outer end of this central portion of the bridge piece projects toward the teeth of the cutters and has flanges 34 formed on its side edges. These flanges project up from the bridge piece and are inclined outwardly to receive therebetween the correspondingly inclined flanges 23.

It is to be observed that the flanges 34, like the flanges 23, extend outwardly toward the teeth of the cutters to lie close to the recess or socket 17 of the movable cutter so that their grip on the flanges 23 is substantially in line with the application of force from the driving lever 6 to the movable cutter.

Removal of the cutting assembly from its position properly attached to the body of the clipper as shown in Figure 1, is quickly effected by merely pressing the outer end of the cutters forwardly or away from the body, which motion is permitted by the hinged mounting of the tongue 25 and the taper of the interengaging walls of the flanges 23 and 34. Swung outwardly in this manner, the cutting assembly is disengaged from the driving lever and in position to be removed by sliding the same off the tongue 25, as illustrated in Figure 4.

As pointed out hereinbefore, the tongue is held in its outswung position defined by the engagement of its inner end 28 with the stop 29 by the action of the spring 26.

In applying the cutting assembly to the body of the clipper, it is only necessary to slide the bridge piece 31 onto the tongue which is easily effected as these parts have a comparatively loose fit, and then snap the cutting assembly inwardly toward the body in which direction the spring 26 yieldingly urges the tongue and consequently the cutting assembly after the initial closing motion.

During the flatwise movement of the cutting assembly toward the clipper body, the interengaging wall surfaces of the flanges 23 and 34 contact each other and in view of their inclined wedge-like formation and the tension of the spring 26, all play between the parts is taken up; and inasmuch as the spring 26 is quite stiff, this engagement between the flanges 23 and 34 is firmly maintained so that the cutting assembly is securely held against all motion with respect to the body of the clipper.

As best shown in Figure 3, sufficient clearance is allowed between the adjacent flat surfaces of the bridge piece 31 and the attaching plate 22 to insure the proper functioning of the wedge action regardless of wear which might take place.

Ordinarily, the grip between the interengaging wall surfaces of the flanges 23 and 34 is sufficient to prevent outward edgewise motion of the cutting assembly, but to positively secure against such undesired movement of the cutting assembly, the outer end 30 of the spring 26 engages over the adjacent edge 35 of the bridge piece.

From the foregoing description taken in connection with the accompanying drawing, it will be readily apparent to those skilled in the art that this invention improves the attachment of unitary cutting assemblies to the bodies of clippers and that it provides assurance against having the cutting assembly work loose or wobble or tend to vibrate because of the location of the lateral interengaging gripping surface substantial-

ly in line with the application of force from the driving lever to the movable cutter.

What I claim as my invention is:

1. A hair clipper comprising: a body portion carrying a driving mechanism including, an oscillatory driving lever pivotally mounted on the body portion and having an end portion projecting from the body, said pivotal mounting constraining the lever to oscillatory movement in a plane normal to the axis of the pivotal mounting; a unitary cutting assembly including stationary and movable cutters, and means for holding the same in proper relative positions, the movable cutter having means connectible with said end portion of the driving lever; and means for readily detachably holding the cutting assembly in position on the body with the movable cutter drivingly connected with the driving lever comprising, interengaging wall surfaces carried by the cutting assembly and the body disposed crosswise to the line of motion of the movable cutter and having portions intersecting the plane of movement of the oscillatory driving lever near its connection with the movable cutter; and means for yieldingly maintaining said wall surfaces in engagement.

2. A hair clipper comprising: a body portion carrying a driving mechanism including, an oscillatory driving lever pivotally mounted on the body portion and having an end portion projecting from the body, said pivotal mounting constraining the lever to oscillatory movement in a plane normal to the axis of the pivotal mounting; a unitary cutting assembly including stationary and movable cutters, and means for holding the same in proper relative positions, the movable cutter having means connectible with said end portion of the driving lever; and means for readily detachably holding the cutting assembly in position on the body with the movable cutter drivingly connected with the driving lever comprising, a part rigid with respect to the body; a part rigid with respect to the cutting assembly, one of said parts having spaced walls tapered outwardly to form the female part of a wedge connection, the other of said parts having walls forming the male part of a wedge connection; said walls being engageable to form a wedge connection between said parts and having portions so disposed that said wedge connection intersects the plane of movement of the oscillatory driving lever near its connection with the movable cutter; and means for yieldingly maintaining said walls in engagement.

3. A hair clipper comprising: a body portion carrying a driving mechanism including, a driving lever having an oscillatory end portion projecting from the body; a unitary cutting assembly containing stationary and movable cutters, and means for holding the same in proper relative positions, the movable cutter having means connectible with the oscillatory end of the driving lever, said end of the driving lever moving in a plane between defined limits as the movable cutter is reciprocated; and means for readily detachably holding the cutting assembly in position on the body with the movable cutter drivingly connected with the driving lever comprising, spaced opposed abutments carried by the cutting assembly one beyond each limit of motion of said driving lever end and intersecting its said plane of motion; and cooperating abutments carried by the body and firmly engaging said cutting assembly carried abutments; and means for yieldingly maintaining said abutments engaged.

4. A hair clipper comprising: a body portion carrying a driving mechanism including, an oscillatory driving lever pivotally mounted on the body portion and having an end portion projecting from the body, said pivotal mounting constraining the lever to oscillatory movement in a plane normal to the axis of the pivotal mounting; a unitary cutting assembly including stationary and movable cutters, and means for holding the same in proper relative positions, the movable cutter having means connectible with said end portion of the driving lever; and means for readily detachably holding the cutting assembly in position on the body with the movable cutter drivingly connected with the driving lever comprising, cooperating parts carried by the cutting assembly and the body slidably engageable to guide the cutting assembly quickly into operative position on the body; and a wedge-like connection substantially transverse to the line of motion of the movable cutter and having portions so disposed that said wedge-like connection intersects the plane of movement of the oscillatory driving lever near its connection with the movable cutter for firmly holding the cutting assembly in position on the body; and means for yieldingly maintaining said wedge-like connection.

5. A hair clipper comprising: a body portion carrying a driving mechanism including, an oscillatory driving lever pivotally mounted on the body portion and having an end portion projecting from the body, said pivotal mounting constraining the lever to oscillatory movement in a plane normal to the axis of the pivotal mounting; a unitary cutting assembly including stationary and movable cutters, and means for holding the same in proper relative positions, the movable cutter having means connectible with said end portion of the driving lever; and means for readily detachably holding the cutting assembly in position on the body with the movable cutter drivingly connected with the driving lever comprising, a tongue carried by the body; a socket carried by the cutting assembly loosely fitting the tongue to guide the cutting assembly into proper position on the body; spaced opposed walls carried by the body; and cooperating spaced walls carried by the cutting assembly, said walls being snugly engageable and being disposed crosswise to the line of motion of the movable cutter and having portions intersecting the plane of movement of the oscillatory driving lever near its connection with the movable cutter.

6. A hair clipper comprising: a body portion carrying a driving mechanism including, a driving lever having an oscillatory end portion projecting from the body; a unitary cutting assembly including stationary and movable cutters, and means for holding the same in proper relative positions, the movable cutter having means connectible with the oscillatory end of the driving lever; and means for readily detachably holding the cutting assembly in position on the body with the movable cutter drivingly connected with the driving lever comprising, a tongue carried by the body; a socket carried by the cutting assembly loosely fitting the tongue; space opposed walls carried by the body projecting therefrom and lying at opposite sides of the projecting end portion of the lever near the end thereof; and cooperating spaced walls carried by the cutting assembly to have firm engagement with said first named spaced opposed walls at opposite sides of the outer end of the driving lever.

7. A hair clipper comprising: a body portion

carrying a driving mechanism including, an oscillatory driving lever pivotally mounted on the body portion and having an end portion projecting from the body, said pivotal mounting constraining the lever to oscillatory movement in a plane normal to the axis of the pivotal mounting; a unitary cutting assembly including stationary and movable cutters, and means for holding the same in proper relative positions, the movable cutter having means connectible with said end portion of the driving lever; and means for readily detachably holding the cutting assembly in position on the body of the movable cutter drivingly connected with the driving lever comprising, cooperating means carried by the cutting assembly and the body providing a sliding connection therebetween and loosely engageable upon endwise motion of the cutting assembly toward the body; and cooperating interfitting wall surfaces carried by the cutting assembly and the body engageable with a wedge-like connection upon flatwise motion of the cutting assembly toward the body, said wedge-like connection having portions intersecting the plane of movement of the oscillatory driving lever near its connection with the movable cutter to firmly hold the cutting assembly against a tendency to wobble.

8. A hair clipper comprising: a body portion carrying a driving mechanism including a driving lever having an oscillatory end portion projecting from the body; a unitary cutting assembly including stationary and movable cutters, and means for holding the same in proper relative positions, the movable cutter having means connectible with the oscillatory end of the driving lever; and means for readily detachably holding the cutting assembly in position on the body with the movable cutter drivingly connected with the driving lever comprising, a tongue pivoted to the body; a socket carried by the cutting assembly adapted to loosely receive the tongue; spaced ears struck from the socket and projecting outwardly to be disposed adjacent the plane defined by the point of connection between the lever and the movable cutter during motion of these parts; and other spaced ears carried by the body engageable with the first named spaced ears, said ears being tapered to have a wedge-like engagement so as to firmly hold the cutting assembly against lateral motion.

9. A hair clipper comprising: a body portion carrying a driving mechanism including, a driving lever having an oscillatory end portion projecting from the body; a unitary cutting assembly including stationary and movable cutters, and means for holding the same in proper relative positions, the movable cutter having means connectible with the oscillatory end of the driving lever; and means for readily detachably holding the cutting assembly in position on the body with the movable cutter drivingly connected with the driving lever comprising, a tongue pivoted to the body; a socket carried by the cutting assembly

adapted to loosely receive the tongue; spaced ears struck from the socket and projecting outwardly to be disposed adjacent the plane defined by the point of connection between the lever and the movable cutter during motion of these parts; other spaced ears carried by the body engageable with the first named spaced ears, said ears being tapered to have a wedge-like engagement so as to firmly hold the cutting assembly against lateral motion; and spring means yieldingly urging the tongue toward the body to maintain the wedge-like connection at all times firmly established.

10. A hair clipper comprising: a body portion carrying a driving mechanism including, an oscillatory driving lever pivotally mounted on the body portion and having an end portion projecting from the body, said pivotal mounting constraining the lever to oscillatory movement in a plane normal to the axis of the pivotal mounting; a unitary cutting assembly including stationary and movable cutters, and means for holding the same in proper relative positions, the movable cutter having means connectible with the end portion of the driving lever; and means for readily detachably holding the cutting assembly in position on the body with the movable cutter drivingly connected with the driving lever comprising, spaced ears carried by the cutting assembly and the body, said ears having a wedge-like engagement and being disposed crosswise with respect to the line of motion of the movable cutter and having portions directly adjacent to the plane of movement of the oscillatory driving lever near its connection with the movable cutter.

11. A hair clipper comprising: a body portion carrying a driving mechanism including, a driving lever having an oscillatory end portion projecting from the body; a unitary cutting assembly including stationary and movable cutters; and means for holding the same in proper relative positions, the movable cutter having means connectible with the oscillatory end of the driving lever; and means for readily detachably holding the cutting assembly in position on the body with the movable cutter drivingly connected with the driving lever comprising, cooperating parts carried by the cutting assembly and the body having a tongue and socket engagement, the body carried part being movable with respect to the body to carry the cutting assembly quickly to its operative position; and abutments carried by the cutting assembly and the body engageable upon movement of the cutting assembly to its operative position, said abutments having portions disposed crosswise to the line of motion of the movable cutter and having portions directly adjacent to the point of connection between the driving lever and the movable cutter to firmly hold the cutting assembly against wobbling.

JOHN OSTER.