Nov. 11, 1941. W. D. DAVIES 2,262,315

SHEARS

Filed Dec. 6, 1940

Fig. 1.

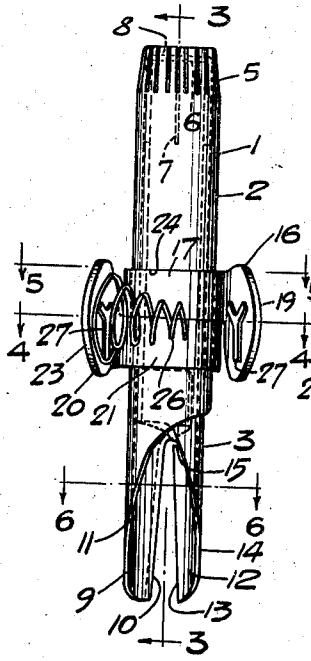


Fig. 2.

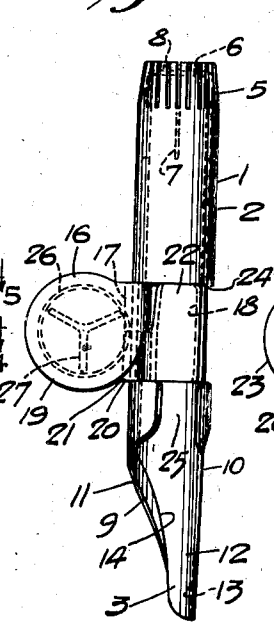


Fig. 3.

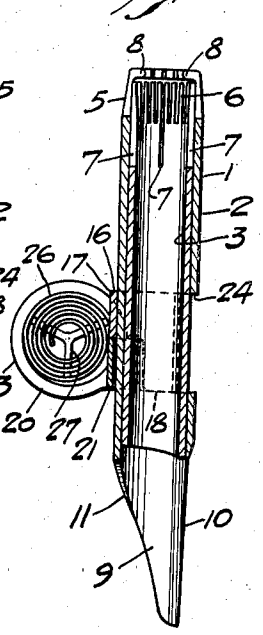


Fig. 4.

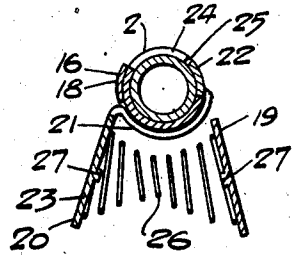


Fig. 5.

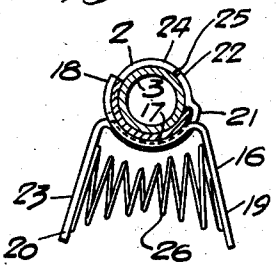
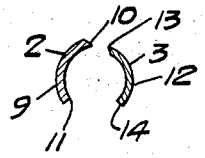


Fig. 6.



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UNITED STATES PATENT OFFICE

2,262,315

SHEARS

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Application December 6, 1940, Serial No. 368,924

6 Claims. (Cl. 30—207)

This invention relates to shears and particularly to a type thereof adapted to sever hairs in restricted or small cavities, such as nostrils or ears, and operate as a cutting means of the ordinary blade type.

An object of the invention is to provide shears having rotatably movable cutting means including parts readily dismantled for cleaning purposes, being resiliently returned to normal position, of simple, compact and durable construction, and of general utility.

Another object of the invention is the provision, in shears or cutting means, of a protective means so that oscillating portions thereof may not sever delicate membranes or skin tissues in cavities, such as nostrils or ears.

Another object of the invention is the provision, in shears, of a pair of relatively movable tubular telescoped tubes with interlocking operating means for holding the tubes in a predetermined relationship and spring means interposed between the operating means for returning the blades to normal position.

These and numerous other objects will become apparent from the succeeding description considered together with the accompanying sheet of drawings which exemplifies a form of the present invention and wherein:

Figure 1 is an enlarged front elevational view of a device embodying the present invention with a portion thereof removed to more clearly illustrate the construction of parts.

Figure 2 is a side elevational view of the shears shown in Figure 1.

Figure 3 is a vertical sectional view of the shears taken along the lines 3—3 of Figure 1, looking in the direction of the arrows.

Figure 4 is a horizontal sectional view taken along the lines 4—4 of Figure 1, looking in the direction of the arrows.

Figure 5 is a horizontal sectional view taken along the lines 5—5 of Figure 1, looking in the direction of the arrows.

Figure 6 is a horizontal sectional view taken along the lines 6—6 of Figure 1, looking in the direction of the arrows.

Referring now in detail to the drawing wherein like reference characters indicate like parts, the numeral 1 is employed to designate, in a general manner, shears which are of general utility and particularly adaptably employed to sever hair or hairs positioned within restricted cavities or as oscillatory cutting blades.

The shears generally comprise a pair of telescoping tubes or cylinders characterized by an outer tube or cylinder 2 forming, for the most part, the outer casing of the shears and an inner cylinder 3 substantially coextensive with and adapted to fit neatly within the outer tube and being, within certain hereinafter mentioned predetermined limits, freely rotatable with respect thereto. Since the shears are formed by sections of tubing it will be noted that they are rendered readily and easily insertable into a small cavity, such as a nostril or the opening of an ear. The outer tube or cylinder has, adjacent one extremity thereof, a series of spaced teeth 5 positioned circumambient the tube and disposed longitudinally or axially thereof. Adjacent the associated extremity of the inner tube is a plurality of substantially correspondingly spaced teeth 6 also disposed axially of the shears but of a slightly lesser extent than the outer tube teeth and accordingly terminating short of the outermost limits of the latter. The teeth of the two thus described tubes are desirably and normally in radial alignment so as to present spaces therebetween for the accommodation or entrance of a hair or hairs.

From the foregoing it will be noted that the teeth carrying extremities of the thus associated tubes, were they to be inserted into a nostril or ear, the hairs positioned therein would find their way between the teeth and any relative rotative movement of the tubes would result in the teeth of the several tubes passing one another to sever the hairs. It will be observed that since the interior of the inner tube is completely free or unobstructed the severed hairs can be carried free from the cavity and removed from the shears by sending a column of air therethrough.

So as to compensate for manufacturing tolerances and ensure a surface or rubbing contact between the teeth of the respective tubes there is provided a series of cuts or slots 7 formed in the inner tube and communicating with axially aligned spaces between adjacent teeth. The slots 7, desirably quadrantly spaced, extend longitudinally of the shears in a direction away from the related teeth, and accordingly if, by chance, the tubes, when initially mated, do not fit neatly so as to be in complete surface bearing relation with one another, the teeth of the inner tube may be urged radially or outwardly of the shears so as to be positioned in intimate contact with the outer tube teeth. The slots 7, by extending toward the intermediate portion of the inner tube, afford adjustment of the related teeth so that throughout their length they may bear against the outer tube teeth. While the slots 7 are shown

and described as being formed in the inner tube, they may, if desired, be formed in the outer tube to substantially equal advantage to thereby render the outer tube teeth adjustable or capable of being urged inwardly of the shears.

So as to guard against sharp extremities of the teeth severing relatively delicate skin tissues or membranes of a nostril or ear, means has been provided in the shears to form a barrier at the extreme teeth carrying end of the shears. The means referred to is characterized by prongs 8 formed by angularly disposing the free extremities of the outer tube teeth with respect to the main portions thereof. The prongs are radially directed inwardly of the shears and overlie in spaced relation the free extremities of the inner tube teeth so that upon a reciprocating movement of the telescoped tubes no portion of the cutting feature of the teeth will or can come into contact with the skin tissue.

The extremity of the outer tube removed from the teeth is provided with a shear blade 9 defined, in part, by an outwardly beveled cutting edge 10 which starts intermediate the ends of the outer tube and continues toward the associated end thereof on a line forming an oblique angle with a plane passing through the axis of the shears. The other side of the shear blade is defined by a substantially curved trailing edge 11 starting from approximately the same position longitudinally of the outer tube as the cutting edge 10 to proceed toward the adjacent tube extremity and terminating a slight distance circumferentially of the tube from the associated cutting edge extremity. The corresponding extremity of the inner tube is formed as an inwardly beveled shear blade 12 which is partially defined by a tapering cutting edge 13 commencing at approximately the same location longitudinally of the shears as the cutting edge 10 and extending at an oblique angle to a plane passing through the axis of the shears in a direction away from the edge 10. The other side of the blade 12 is defined by a substantially tapered trailing edge 14 starting at about the same location as the cutting edge 13 to continue toward the adjacent extremity of the inner tube and terminate at a location spaced slightly circumferentially from the associated extremity of the cutting edge 13. A notch 15 is formed in the inner tube at the base of the cutting edge thereof so that the latter may be urged outwardly or radially of the shears to ensure a constant or rubbing contact between the outer and inner tubes and render the cutting edges 10 and 13 thereof effective. By thus forming the cutting blades it will be noted that the cutting edges are normally separated to present a V-shaped opening and thereby any rotative movement of the inner tube in a counter-clockwise direction, as viewed in Figure 5, will result in the cutting edges passing one another to sever any article that may be positioned therebetween. It is to be further noted that the cutting blades, by their formation, present access to the interior of the shears for substantially their entire length, and accordingly anything severed by the cutting edges can be directed outwardly of the interior of the shears.

Means has been provided in the shears for the operation thereof, and for the accomplishment of this purpose an arm 16 is fixedly associated with or secured to the outer tube. The arm 16 comprises a cylindrical band 17 lying against and partially around the outer tube intermediate the ends thereof. The cylindrical band terminates at one extremity in an angularly disposed foot 18 directed toward the blade extremity of the outer tube. The foot 18 presents an appreciable area for the reception or accommodation of means of any nature or character employed to secure the arm to the outer tube such as welds (not shown). The extremity of the band removed from the foot merges into a disk-like plate 19 extending away from the outer tube at an angle to a plane passing through the axis of the shears. The inner tube is provided with an operating arm 20 formed by a cylindrical band 21 desirably coaxial with the longitudinal axis of the tubes and of substantially the same curvature as the band 17 so that the inner tube band may be positioned outwardly of the outer tube and move freely relative thereto and circumferentially thereof. One end of the band 21 terminates in an angularly disposed foot 22 directed toward the teeth extremity of the inner tube which is offset inwardly of the shears so as to contact the inner tube. The offset foot 22 also presents an appreciable area for any desired means for securing the foot to the inner tube such as welds (not shown). The end of the band removed from the foot 22 terminates in a disk-like plate or finger rest 23 which is angularly disposed to a plane passing through the axis of the shears. For the accommodation of the offset foot 22 there is provided in the outer tube, intermediate its ends, a raceway or guideway 24 which extends partially around the tube or that portion thereof not occupied by the arm 16. This raceway, therefore, not only permits an attachment of the foot 22 to the inner tube but also, since the offset foot 22 is within the plane of the outer tube, forms a means for maintaining the tubes in a predetermined position relative to one another or prevents a longitudinal shifting therebetween. An entrance or channel way 25 is formed in the outer tube to communicate with the guideway. The entrance is directed longitudinally of the shears and of a width slightly greater than the offset foot 22 so that the latter may, during assembly of the tubes, be threaded through the channel way to be positioned in the guideways and moved therein upon manipulation of the shears.

Interposed between the plates of the respective crossing arms is a resilient means characterized by a compression or coil spring 26 which tends to maintain the plates of the arms normally in spaced relation. The coil spring is desirably corset-shaped so as not to interfere with the tubes or bands of the arms and provide ample service clearance therebetween. The plates 19 and 23 are provided with substantially Y-shaped embossments 27 directed away from confronting sides thereof to project into associated extremities of the coil spring and prevent its displacement from an operable position.

It will be noted that the offset foot bears against the outer tube to prevent relative rotation of the tube in one direction and the tubes and crossing arms are arranged and constructed so as to be responsive to forces applied to the plates tending to urge them toward one another for the successful operation of the shears. It is to be further noted that various changes and alterations may be made to the illustrated and described construction without departing from within the spirit and scope of the appended claims.

I claim:

1. In a device of the character described, the combination of an outer tube, an inner tube housed within said outer tube, normally aligned axially extending teeth formed on adjacent extremities of said outer and inner tubes, said teeth on said outer tube having portions thereof angularly disposed inwardly of said tube to overlie extremities of said inner tube teeth, operating means secured to each tube for rotating said tubes relative to one another, and corset-shaped spring means outwardly of said tubes and extending between said operating means.

2. In a device of the character described, the combination of an outer tube, an inner tube housed within said outer tube, normally aligned axially extending teeth formed on adjacent extremities of said outer and inner tubes, said teeth of said outer tube having portions thereof radially disposed inwardly of said tube to overlie extremities of said inner tube teeth in spaced relation thereto, the teeth carrying extremity of one of said tubes having a cut axially in a direction away from the related teeth so that the teeth of the respective tubes may be urged into intimate contact with one another, and operating means secured to said tubes for rotating them relative to one another.

3. In a device of the character described, the combination of inner and outer telescoping tubes provided with normally aligned teeth at adjacent extremities thereof, a guideway formed in and extending partially around said outer tube, a pair of operating means crossing one another and each having an extremity secured to one of said tubes, the operating means extremity secured to said inner tube being positioned within said guideway substantially within the plane of said outer tube so as to prevent said tubes from shifting axially relative to one another.

4. In a device of the character described, the combination of inner and outer telescoping tubes provided with normally aligned teeth at adjacent extremities thereof, portions of the teeth on said outer tube being angularly disposed to overlie the teeth of said inner tube, a guideway formed in and extending partially around said outer tube, a pair of operating means crossing one another and each having an extremity secured to one of said tubes, the operating means extremity secured to said inner tube being positioned within said guideway substantially within the plane of said outer tube so as to prevent said tubes from shifting axially relative to one another.

5. In a device of the character described, the combination of inner and outer telescoping tubes provided with normally aligned teeth at adjacent extremities thereof, the teeth carrying extremity of one of said tubes having a plurality of axially disposed grooves so that the teeth of the respective tubes may be urged into intimate contact with one another, a guideway formed in and extending partially around said outer tube, and a pair of operating means crossing one another and each having an extremity secured to one of said tubes, the operating means extremity secured to said inner tube being positioned within said guideway substantially within the plane of said outer tube so as to prevent said tubes from shifting axially relative to one another.

6. In a device of the character described, the combination of an outer tube, an inner tube housed within said outer tube, normally aligned axially extending teeth formed on adjacent extremities of said outer and inner tubes, said teeth on said outer tube having portions thereof angularly disposed inwardly of said tube to overlie extremities of said inner tube teeth in spaced relation thereto, operating means secured to each tube for rotating said tubes relative to one another, corset-shaped spring means extending between said operating means, and normally open shear blades formed on said tubes at extremities thereof removed from said teeth.

WALTER D. DAVIES.