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COMBINATION SAFETY RAZOR AND LATHER DISPENSER HAVING
TELESCOPICALLY RELATED HEAD
AND DISPENSING ASSEMBLIES
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2,866,265

FIG-1

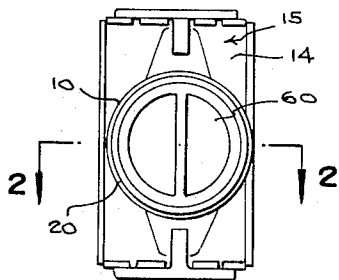


FIG-5

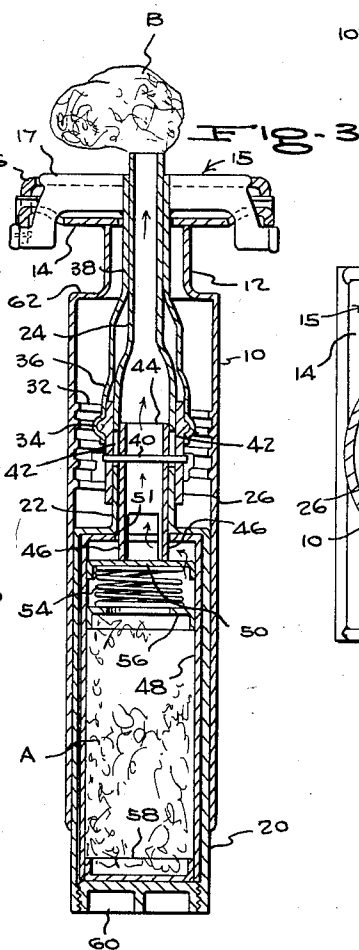
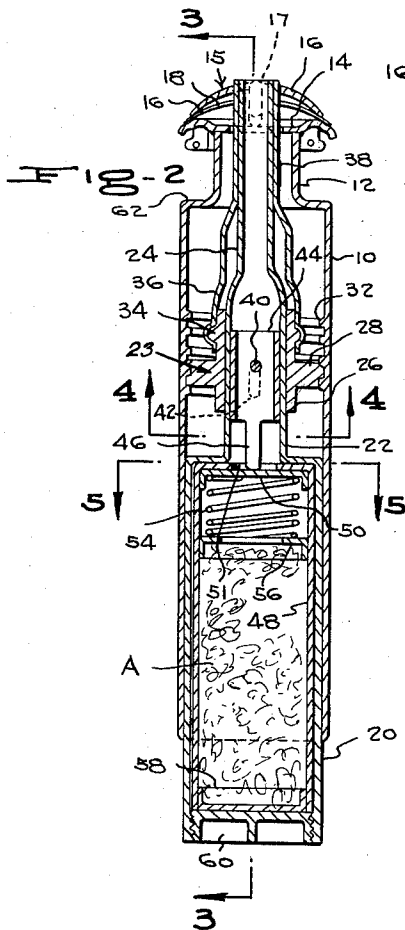
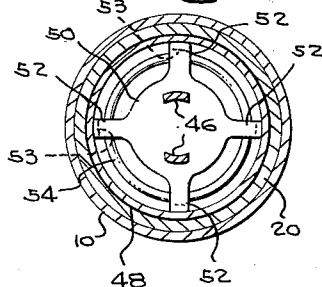
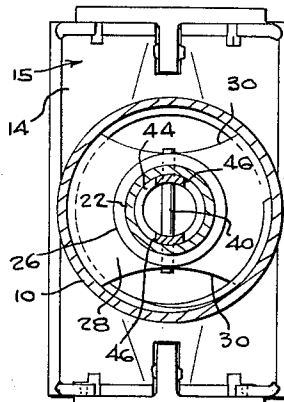


FIG-4



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COMBINATION SAFETY RAZOR AND LATHER DISPENSER HAVING TELESCOPICALLY RELATED HEAD AND DISPENSING ASSEMBLIES

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4 Claims. (Cl. 30—41)

This invention relates generally to safety razors. More particularly the invention is a safety razor incorporated therein a dispenser for shaving lather or other material of fluid properties.

The main object is to provide an improved safety razor of the type wherein the shaving soap or lather may be forced out of the head of the razor under pressure, in a manner to avoid the usual necessity of maintaining separately, a safety razor and a shaving cream or lather dispensing device.

A more particular object is to provide a combined safety razor and shaving lather dispenser that will be adapted for incorporation in modern safety razors of the type including a head having a base and clamping leaves pivoting to and from a blade-engaging position responsive to relative rotation of aligned components of the razor blade handle. It is proposed, however, to so design the device that it may be adaptable, with minor modifications, to other types of safety razor heads.

A further object of importance is to provide a safety razor as stated in which the dispensing means will not interfere in any way with the use of the razor in actual shaving operations, or with the changing of blades.

A further object is to form a device in a manner such that it will be usable with conventional safety razor blades, without requiring modification or redesign of said blades.

Still another object is to effect the dispensing of the shaving lather responsive merely to a squeezing pressure exerted upon the razor blade handle in a direction axially thereof at locations spaced longitudinally of the handle.

A further object is to facilitate the removal of an exhausted cartridge of shaving cream or lather, and the replacement thereof by a fresh cartridge.

Yet another object is to form the dispensing device in a manner such that a discharge nozzle thereof will be normally disposed substantially flush with the top of the razor blade head, but will be projected beyond the razor blade head a short distance during the actual dispensing operation, responsive to the previously mentioned squeezing pressure exerted axially of the handle, thus to locate the discharge orifice of the dispensing means outwardly from the razor blade head in a position such that the dispensed quantity of shaving lather can be readily removed without becoming smeared upon or otherwise contacting the surface of the head of the razor.

Other objects will appear from the following description, the claims appended thereto, and from the annexed drawing, in which like reference characters designate like parts throughout the several views, and wherein:

Figure 1 is a bottom plan view of a safety razor formed according to the present invention;

Figure 2 is a longitudinal sectional view substantially on line 2—2 of Figure 1;

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Figure 3 is a longitudinal sectional view substantially on line 3—3 of Figure 2, with the components of the device being operated from their Figure 2 position, into position to dispense a quantity of shaving lather;

Figure 4 is an enlarged transverse sectional view substantially on line 4—4 of Figure 2; and

Figure 5 is a transverse sectional view, taken substantially on line 5—5 of Figure 2.

Referring to the drawings in detail, designated at 10 is an elongated outer casing of circular cross-section, hollowly formed throughout its length and formed open at its lower end. The outer casing 10, at its upper end, is integrally formed with a reduced, axial extension 12 also of circular cross-section and this is fixedly secured, by a weld or equivalent means, at its outer end, to the base 14 of a razor head generally designated at 15.

The head is of the type including a pair of leaves 16 pivoting above the stationary base 14, between closed positions in which the leaves cooperate with base 14 in clampably engaging a razor blade 18 therebetween, and open positions in which the blade is freed for removal from the razor blade head 15.

The illustrated head includes a mechanism for operating the leaves 16 to and from their blade-clamping position, which mechanism includes a cross bar 17 (Figure 3) having a motion-translating linkage to the leaves such that on up or down movement of the cross bar the leaves will be swung to open or closed positions, depending upon the direction in which the cross bar is so operated. Further, said movement of the cross bar for the purpose of swinging the leaves is effected by relative rotation of coaxial components of the razor blade handle, said relative rotation being converted into the specified movement of the cross bar for the purpose of effecting the swinging movement of the leaves. In this connection, the full details of the referred-to mechanism for swinging the leaves to and from open position will not be given herein, since the swinging mechanism is not, of itself, a part of the present invention and can be found in U. S. Patent 2,562,115. A feature of the present invention, however, resides in the fact that dispensing of a lather through the head responsive to relative axial movement of different components of the razor blade handle is effected in a structure in which there is also included a razor blade head of the character described, operable into and out of blade-clamping position responsive to relative rotatable movement of coaxial handle components.

Extending into the open, lower end of the outer casing 10 is an inner casing 20. The outer end of inner casing 20 projects beyond the lower end of the outer casing 10, with the casing 20 being rotatable relative to the outer casing 10 as will be noted by comparing Figures 2 and 3, and being also shiftable longitudinally of the outer casing.

At its inner end, the inner casing 20 is integrally formed with an elongated, reduced, hollow, axial extension 22, which in turn merges into an axial prolongation 24 cooperating with extension 22 in forming a discharge tube for shaving cream A or other flowable material to be dispensed through the razor head 15.

Circumposed about extension 22 is a nut 23 including a sleeve 26 and a collar 28 integral with the sleeve. Collar 28, as shown in Figure 4, is formed with diametrically opposite, arcuate recesses 30 providing relief openings for air which might otherwise be trapped between the nut 23 and the large diameter portion of inner casing 20.

The nut is formed with coarse threads at its periphery engaging internal, complementary threads 32 formed

on the inner surface of the outer casing 10 (see Figure 3).

On sleeve 26, adjacent the upper end thereof, is a circumferential bead 34, and receiving the beaded end of the sleeve is the lower end portion 36 of a tubular operating rod 38 extending loosely through an opening formed in the base 14 of the razor head and welded or otherwise fixedly connected, beyond the base 14, to the cross bar 17. The operating rod snugly receives the prolongation 24 of the discharge tube, with the discharge tube and operating rod being relatively slidable in an axial direction.

At its lower end, the operating rod is expanded over the bead 34, to permanently connect the operating rod and the nut, while still permitting relative rotation of these components of the device. Thus, the nut 23 may be rotated without, at the same time, rotating the operating rod, which is held against rotation by reason of a fixed connection to the cross arm 17 which is in turn so connected to the base 14 as to be held against rotation relative to the base.

Normally, the outer ends of the operating rod 38 and discharge tube are in registration, and are substantially flush with the outer surfaces of the leaves 16 when said leaves are in closed position (see Figure 2). However, when the shaving cream is being dispensed, the discharge tube moves outwardly beyond the outer end of the operating rod as shown in Figure 3, so that the discharge orifice through which a selected quantity B of the shaving cream or lather is dispensed will be disposed outwardly from the outer surfaces of the leaves 16, to prevent smearing of the dispensed lather on the razor head and to facilitate removal of the dispensed quantity with the finger for application to the face.

The discharge tube and the nut, and hence the inner casing 20, are all connected for conjoint rotation, through the medium of a cross pin 40 the ends of which engage in openings provided at diametrically opposite locations in sleeve 26, with said cross pin extending through slots 42 formed diametrically opposite one another in axial extension 22 of the inner casing (see Figure 3). It becomes apparent, thus, that the inner casing, nut, and discharge tube rotate together, with the inner casing and the discharge tube being also free to move longitudinally of the nut through the provision of the longitudinal slot 42, with the limits of travel determined by the length of the slots.

The pin 40 also extends through diametrically opposite apertures formed in the wall of an abutment sleeve 44 disposed within the axial extension 22 and formed at its lower end with diametrically opposite, longitudinally extending stop or abutment fingers 46, projecting at their free ends into the large diameter portion of the inner casing, as shown in Figures 2 and 3. The abutment sleeve thus also rotates with the nut and discharge tube, but will not shift longitudinally of the nut with the discharge tube and inner casing, being held against axial displacement with respect to the nut by reason of the cross pin 40.

Removably engageable in the inner casing 20 is a cylindrical cartridge 48 holding a quantity of shaving cream, lather, or other fluid shaving material A. Cartridge 48 is permanently closed at its lower end by a closure cap 58.

The end of the cartridge remote from the closure cap 58 is formed with a center opening, through which the stop and abutment fingers 46 are adapted to project as shown in Figures 2 and 3, into engagement with a valve disc 50 (see Figure 5), the diameter of which is smaller than the inner diameter of cartridge 48, but larger than the outlet opening 51 of the cartridge. Integrally formed upon the valve disc are radially outwardly extending arms 52 terminating at their outer ends in downwardly projecting lugs 53 slidably bearing against the wall of the cartridge.

Bearing at one end against the underside of the valve disc 50 is a compression, coil spring 54, the other end of which bears against a centrally apertured spring seat 56 fixedly secured to the inner wall of cartridge 48 in spaced relation to the outlet end of the cartridge.

The cartridge contains the lather under pressure, in the same manner as conventional pressurized shaving cream lather dispensers now in widespread use. Thus, the lather is maintained within the cartridge together with a suitable propellant, which causes the lather to be forced out of the cartridge under pressure whenever the valve 50 is unseated and shifted from its Figure 2 position to its Figure 3 position. When the valve is unseated as in Figure 3, the lather passes under pressure through the center opening of the spring seat, and then passes about the periphery of the valve disc, the lather then passing between the stop fingers 46 through the outlet opening 51 and outwardly through the discharge tube to dispense a quantity of the material.

Assuming that a fresh cartridge of shaving cream is to be inserted in the razor blade handle, a closure cap 60 of the handle, having threads engaging internal threads provided upon the outer end of the inner casing 20, is removed, thus permitting the cartridge 48 to be inserted. The cartridge will have the valve disc 52, spring 50, and spring seat 56 assembled as component parts thereof during the manufacture and charging of the cartridge, and the exhausted cartridge which is to be replaced need merely to be removed preliminary to the insertion of the new cartridge, after which the closure cap 60 is returned to place to hold the cartridge within the inner casing in the position thereof shown in Figures 2 and 3.

In use of the device, it will be observed that a conventional razor blade 18 can be used, if it is of the type that has a center opening of a size sufficient to permit extension of the operating rod 38 therethrough. The leaves 16 are swung to open or closed positions by relative rotation of the outer casing 10 and inner casing 20.

Thus, assuming that one desires to swing the leaves 16 to open position, he would grasp the outer casing 10 with one hand, and holding the same stationary, would rotate the inner casing 20 with the other hand. This would cause rotation of the nut comprising sleeve 26 and collar 28, conjointly with the inner casing, as a result of which the nut will travel longitudinally of the outer casing due to its engagement with the threads 32 of the outer casing.

The longitudinal movement of the nut will effect corresponding longitudinal movement of the operating rod 38, though the rod 38 will not turn with the nut since it is provided with a swivelled connection to the nut. Longitudinal movement of the operating rod 38 relative to the outer casing of the base 14 of the head effects operation of the motion-translating linkage whereby the leaves 16 are swung to open position to permit changing of the blade.

The blade changing is effected, of course, without interfering with or being interfered with by the dispensing mechanism.

Assuming that the user desires to dispense a quantity B of lather, it is merely necessary that one exert a pressure with the thumb of one hand against the closure cap 60, that is, against the outer end of inner casing 20, while at the same time spanning and pressing downwardly, with the index finger and the second finger of the same hand, on the shoulder 62 defined by the reduced axial extension 12 of the outer casing 10. This causes the inner casing to be telescoped within the outer casing, that is, moved longitudinally of the outer casing, from the Figure 2 to the Figure 3 position, the longitudinal movement being limited by the slots 42.

When the inner casing is moved inwardly of the outer casing in the manner described, it carries with it the

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cartridge 48. As a result, since the abutment sleeve 44 and fingers 46 are held against movement longitudinally of the outer casing 10 through the provision of the cross pin 40 connecting the abutment sleeve to the nut and through the further provision of the nut engaging threads on the outer casing, the movement of the cartridge inwardly of the outer casing will cause the abutments 46 to hold the valve disc 50 against said inward movement with the body portion of the cartridge.

Valve disc 50, as a result, is unseated, shifting to its position against the restraint of the spring 54, which compresses as necessary during this stage of the operation. The lather is thus free to flow under pressure into the discharge tube, being dispensed from the outer end of the discharge tube at a location beyond the razor head.

It will be observed that the shifting of the inner casing inwardly of the outer casing causes the discharge tube to move with the inner casing, so that the outlet end of the discharge tube is automatically positioned beyond the surface of the razor head as shown in Figure 3, to prevent smearing of the dispensed material upon the head and to facilitate the removal of the dispensed material with the fingers of the other hand, from the discharge tube.

It will be understood that the device could be used not only with the razor head of the character particularly shown and described, but also with various other types of razors, that shown being merely an example of a razor to which the invention is particularly adapted for application.

It is believed apparent that the invention is not necessarily confined to the specific use or uses thereof described above, since it may be utilized for any purpose to which it may be suited. Nor is the invention to be necessarily limited to the specific construction illustrated and described, since such construction is only intended to be illustrative of the principles of operation and the means presently devised to carry out said principles, it being considered that the invention comprehends any minor change in construction that may be permitted within the scope of the appended claims.

What is claimed is:

1. In a safety razor the combination, with a razor head including a base and leaves pivoting on and cooperating with the base to clamp a razor blade therebetween, and with a cross bar shiftable toward and away from the base and adapted when so shifted to pivot the leaves on the base, of: a tubular outer casing connected to said base; a tubular operating rod shiftable longitudinally of and within the outer casing and connected to said cross bar to shift the same toward and away from the base; a tubular inner casing axially, slidably engaged in the outer casing, said inner casing having a reduced, hollow, axial extension, said extension defining a discharge tube slidably mounted within the operating rod and having at one end an outlet through which shaving material may be dispensed, said outlet lying flush with the head and with the corresponding end of the operating rod, the inner casing when axially slidably moved inwardly of the outer casing shifting said end of the discharge tube outwardly from the head and operating rod, thereby to constitute said end of the discharge tube as a dispensing nozzle projecting beyond the head; a cartridge within the inner casing holding a fluid shaving material under pressure, said cartridge connected to the inner casing and including a normally seated valve, the cartridge having its interior in communication with the discharge tube in the unseated position of the valve; and means having a connection to the outer casing and abutting against the valve in position to unseat the same responsive to said axial movement of the inner casing inwardly of the outer casing.

2. In a safety razor the combination, with a razor head including a base and leaves pivoting on and cooperating with the base to clamp a razor blade therebetween, and

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with a cross bar shiftable toward and away from the base and adapted when so shifted to pivot the leaves on the base, of: a tubular outer casing connected to said base; a tubular operating rod shiftable longitudinally of and within the outer casing and connected to said cross bar to shift the same toward and away from the base; a tubular inner casing slidably engaged in the outer casing and formed with a reduced, hollow, axial extension defining a discharge tube slidably engaged in the operating rod in coaxial alignment therewith, the discharge tube having at one end an outlet flush with the corresponding end of the operating rod, through which outlet shaving material may be dispensed, said one end of the discharge tube and the corresponding end of the operating rod lying in flush relation, the inner casing when slidably moved shifting inwardly of the outer casing to shift said end of the discharge tube outwardly from the head and operating rod, thereby to constitute said end of the discharge tube as a dispensing nozzle projecting beyond the head; a cartridge in the inner casing holding a fluid shaving material under pressure and connected to the inner casing for movement conjointly therewith, the cartridge including a normally seated valve adapted, when unseated, to communicate the interior of the cartridge with the discharge tube; a nut sleeved on the discharge tube and having a threaded connection to the outer casing, said nut and discharge tube connected for conjoint rotation with the operating rod swivelly connected to the nut, whereby to adjust the operating rod longitudinally of the outer casing responsive to relative rotation of the inner and outer casings; and means having a connection to the nut such as to be held against axial displacement in respect to the nut and abutting against the valve to unseat the same responsive to the axial movement of the inner casing inwardly of the outer casing.

3. In a safety razor the combination, with a razor head including a base and leaves pivoting on and cooperating with the base to clamp a razor blade therebetween, and with a cross bar shiftable toward and away from the base and adapted when so shifted to pivot the leaves on the base, of: a tubular outer casing connected to said base; a tubular operating rod shiftable longitudinally of and within the outer casing and connected to said cross bar to shift the same toward and away from the base; a tubular inner casing axially, slidably engaged in the outer casing, said inner casing having a reduced, hollow, axial extension, said extension defining a discharge tube slidably mounted within the operating rod and having at one end an outlet through which shaving material may be dispensed, said outlet lying flush with the head and with the corresponding end of the operating rod, the inner casing when axially slidably moved inwardly of the outer casing shifting said end of the discharge tube outwardly from the head and operating rod, thereby to constitute said end of the discharge tube as a dispensing nozzle projecting beyond the head; a cartridge within the inner casing holding a fluid shaving material under pressure, said cartridge connected to the inner casing and including a normally seated valve, the cartridge having its interior in communication with the discharge tube in the unseated position of the valve; a nut sleeved on the discharge tube and having a threaded connection to the outer casing, said nut and discharge tube connected for conjoint rotation with the operating rod swivelly connected to the nut, whereby to adjust the operating rod longitudinally of the outer casing responsive to relative rotation of the inner and outer casings; and means having a connection to the nut such as to be held against axial displacement in respect to the nut and abutting against the valve to unseat the same responsive to the axial movement of the inner casing inwardly of the outer casing, comprising a sleeve engaged in the discharge tube and formed at one end with abutment fingers extending into engagement with the valve.

4. In a safety razor the combination, with a razor head including a base and leaves pivoting on and cooperating

with the base to clamp a razor blade therebetween, and with a cross bar shiftable toward and away from the base and adapted when so shifted to pivot the leaves on the base, of: a tubular outer casing connected to said base; a tubular operating rod shiftable longitudinally of and within the outer casing and connected to said cross bar to shift the same toward and away from the base; a tubular inner casing axially, slidably engaged in the outer casing, said inner casing having a reduced, hollow, axial extension, said extension defining a discharge tube slidably mounted within the operating rod and having at one end an outlet through which shaving material may be dispensed, said outlet lying flush with the head and with the corresponding end of the operating rod, the inner casing when axially slidably moved inwardly of the outer casing shifting said end of the discharge tube outwardly from the head and operating rod, thereby to constitute said end of the discharge tube as a dispensing nozzle projecting beyond the head; a cartridge within the inner casing holding a fluid shaving material under pressure, said cartridge connected to the inner casing and including a normally seated valve, the cartridge having its interior in communication with the discharge tube in the unseated position of the valve; a nut sleeved on the discharge tube and having a threaded connection to the outer casing, said nut and discharge tube connected for con-

joint rotation with the operating rod swivelly connected to the nut, whereby to adjust the operating rod longitudinally of the outer casing responsive to relative rotation of the inner and outer casings; and means having a connection to the nut such as to be held against axial displacement in respect to the nut and abutting against the valve to unseat the same responsive to the axial movement of the inner casing inwardly of the outer casing, comprising a sleeve engaged in the discharge tube and formed at one end with abutment fingers extending into engagement with the valve, the connection of the sleeve to the nut comprising a cross pin extending diametrically of and engaged at its ends in the sleeve and nut, the discharge tube having diametrically opposed longitudinal slots receiving the cross pin to limit axial displacement of the inner casing relative to the outer casing in opposite directions.

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