Dec. 13, 1966 D. E. McCOMBS 3,291,345

COLLAPSIBLE TUBE DISPENSER

Filed July 2, 1965

FIG. 1

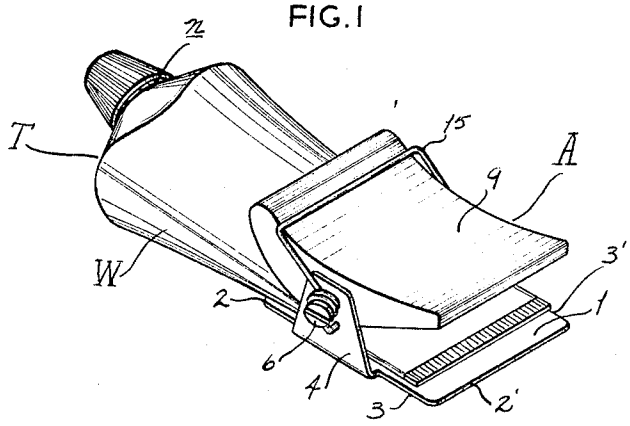



FIG. 2

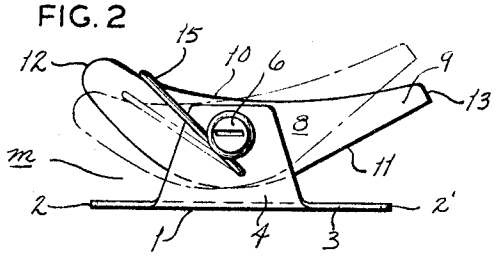



FIG. 3

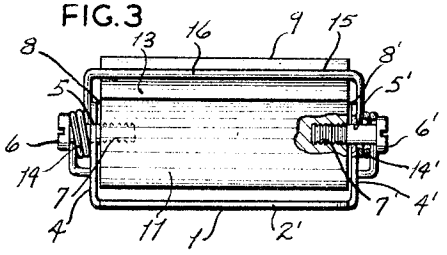



FIG. 4

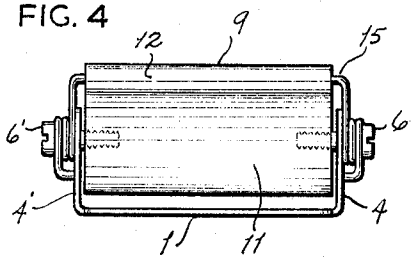
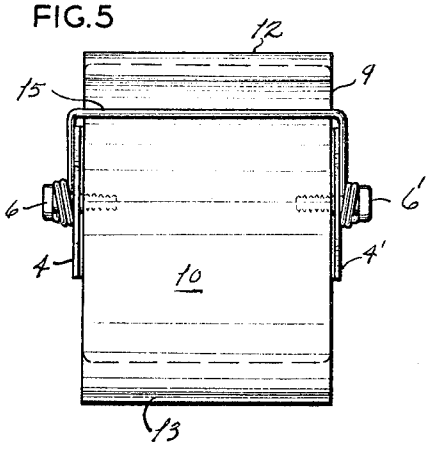



FIG. 5




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# COLLAPSIBLE TUBE DISPENSER

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This invention relates in general to dispensers and, more particularly, to a device for dispensing the contents of a collapsible tube, such as for tooth paste, hair cream, shaving cream, and the like.

Heretofore instruments designed for dispensing contents of collapsible tubes have incorporated a housing or casing for completely receiving the collapsible tube and relatively complex tube squeezing mechanisms integrated with such housing or casing. These devices have proved to be space-consuming, costly to manufacture, and cumbersome, as well as unreliable in usage due to the intricacies of structure.

Therefore, it is an object of the present invention to provide a device for dispensing the contents of a collapsible tube which obviates the utilization of an encasing housing and which comprises a simplicity of sturdy parts for reliable operation being, hence, to all intents and purposes, break-down free.

It is another object of the present invention to provide a device for dispensing the contents of a collapsible tube which completely and evenly effects an advancement of the tube contents for discharge so that maximum economy is achieved.

It is a further object of the present invention to provide a device of the character stated which presents the tube in fully exposed condition at all times so that the user is immediately aware of the extent of the remaining contents.

It is an additional object of the present invention to provide a device of the character stated which is adapted for disposition of the tube so that inadvertent twisting or lateral displacement is prevented, assuring smooth operation, and which embodies means for securely retaining the tube for continuous disposition for operation thereon.

It is another object of the present invention to provide a dispenser of the type stated which allows for controllable content discharge; which is lightweight in construction; which is easy to operate; which is durable in usage; and which is amenable to low cost, high volume production.

Other objects and details of the present invention will be apparent from the following description when read in conjunction with the following drawing, wherein

FIGURE 1 is a perspective view of a collapsible tube dispensing device constructed in accordance with and embodying the present invention, illustrating the same in engaged relation with a tube.

FIGURE 2 is a side elevational view of the dispensing device with the same being shown in phantom lines in tube squeezing disposition.

FIGURE 3 is a rearward end view in partial section.

FIGURE 4 is a front view.

FIGURE 5 is a top plan view.

Referring now by reference characters to the drawing which illustrates the preferred embodiment of the present invention, A broadly designates a dispenser device for use with a conventional collapsible tube, as of the type indicated at T, for expelling the contents thereof, such as tooth paste, shaving cream, and the like.

Dispenser A comprises a flat, preferably rectangular, base plate 1 as formed from any suitable sturdy material, such as metal, plastic, or the like, and which incorporates a forward edge 2, a rearward end edge 2', and side edges 3, 3'. Formed with plate 1 and upstruck from side edges 3, 3' substantially intermediate their



length are mounting flanges or ears 4, 4' respectively, having in their upper portions aligned openings 5, 5' respectively, through which project the inner threaded ends of pivot pins 6, 6' respectively, for engagement within an internally threaded socket 7, 7' formed in the side surfaces 8, 8' respectively, of a presser member 9 presented between said mounting flanges 4, 4' for rockable movement about the pivot axis defined by said pins 6, 6'.

Said presser member 9 may be formed of any suitable rigid material, such as, for instance, a thermoplastic, and comprises an upper surface 10 and a lower or under surface 11, which at their forward ends are continuous with a rounded end portion 12 and at their rearward ends may be interconnected by a planar end face 13. The said upper and lower surfaces 10, 11 are arcuated longitudinally, being of downwardly convex configuration. The lowermost portion of under surface 11 is substantially vertically aligned with pivot pins 6, 6', approaching the upper face of base plate 1, but being spaced therefrom by a distance sufficient for projection therethrough of a flattened or fully collapsed tube section. The forward portion of the lower surface 11 of presser member 9 normally inclining upwardly with respect to the underlying portion of base plate 1 coacts with the latter to define a mouth, as indicated at *m*, for receiving therethrough the portion of tube A for subjection to the content-advancing or squeezing operation. Thus, the said forward portion of lower surface 11 of presser member 9 coacts with the confronting surface of base plate 1 in the manner of a movable jaw and a fixed jaw so that upon downward rocking of the forward end of presser member 9 a tube section within said mouth *m* will be subjected to a compression by the aforesaid jaw-forming elements so that the contents will be forced to advance into the non-engaged portion of the tube such as W, causing contents forwardly thereof to be forcibly discharged from the neck *n*. It will be seen that the rearward portion of presser member 9 is not actively engaged in the tube collapsing operation but does provide desirable bulk for facilitating manipulation of presser member 9 and with the curvature of rearward portion of under surface 11 being such as to prevent undesired movement-limiting contact with the underlying portion of base plate 1. It will be observed that such rearward portion of base plate 1 serves to support the now-collapsed tube so as to assure of the linear movement of the same relatively through device A and to conduce to the integrated compactness of device A and the tube T held thereby.

Pivot pins 6, 6' project laterally outwardly of the related mounting flange 4, 4' for presenting a portion of their stems adjacent the heads thereof for encircling, coiled disposition thereabout of the end portions 14, 14' of a spring 15 as formed of suitable wire stock and having a transverse portion 16 extending across the upper surface 10 of presser member 9 for abutment thereon adjacent forward end surface 12 for urging the forward end of said presser member 9 downwardly toward plate 1. The end extremities of spring 15 are anchored in openings formed in flanges 4, 4'. It is to be particularly noted that spring 15 is of limited strength so as to provide a biasing force requisite for secure, but non-content-squeezing of tube T whereby when the latter is received within mouth *m* it will be retained in proper attitude for operation but without danger of any premature content discharge.

From the foregoing the operation of device A should be apparent. However, in presenting the rearward end of a tube T to device A, the user will press downwardly upon the rearward end of presser member 9 so as to effect upward rocking of the forward end, against the bias of spring 15, to open mouth *m* to its widest extent

for facilitating entry of the rearward end of a tube T thereinto. Upon release of such pressure the forward end of presser member **9** will gently descend, through urging of spring **15**, for securely but lightly effecting a gripping of the said received portion of tube T between presser member **9** and the forward portion of plate **1**. It will be noted that the distance between mounting flanges **4**, **4'** is such as for relatively snugly accommodating tube T so that the same will follow a proper linear path through device A, without undesired lateral displacement or shifting. Thus, the relative position of device A with respect to tube T as described above will be the normal relationship during period of disuse.

When it is desired to expel contents from tube T the user, as with the use of a single hand, will apply pressure upon the forward portion of upper surface **10** and thus compress the portion of tube T within mouth *m* so as to effect an advancement of the tube contents through neck *n* as above described. As the contents are thus advanced the now emptied, collapsed portion of tube T is moved rearwardly of dispenser A, as onto the rearward portion of plate **1** so that a filled section of said tube T is located within mouth *m* for the next subsequent content discharging operation.

Thus, by utilization of the present invention the entire contents of a tube may be expelled so that full economy is achieved as customary wastage is avoided. It will be seen that device A comprises a marked simplicity of parts which are of durable, sturdy construction so that the same is substantially proof against damage through normal usage. Furthermore, device A may be most economically manufactured, being amenable to low cost, high volume production methods.

It should be understood that changes and modifications in the formation, construction, and arrangement and combination of the several parts of the collapsible tube dispenser may be made and substituted for these herein shown and described without departing from the nature and principle of my invention.

Having described my invention, what I desire to obtain by Letters Patent is:

For use with a collapsible tube for expelling the contents thereof, a dispenser adapted for slideable mounting on said tube for travel relatively therealong from the closed end thereof toward the discharge end during the dispensing operation comprising:

(a) a flat base,

(b) a pair of transversely aligned mounting flanges substantially intermediate said base and projecting upwardly therefrom,

(c) means defining a bearing located in each of said mounting flanges upwardly of said base,

(d) a presser member disposed between said mounting flanges in overlying relationship to said base,

(e) pivot pins operatively engaging said presser member and being journaled in said bearings for defining a transverse pivot axis for permitting rockable movement of said presser member with respect to said base, said pivot axis being presented substantially intermediate the ends of said presser member,

(f) said presser member having an outer surface and an inner surface,

(1) said inner surface confronting said base,

(2) said inner surface being arcuate and downwardly convex, the lowermost portion of which being spaced from said base at a distance substantially coincident with the thickness of a collapsed tube engaged by said dispenser,

(3) said inner surface forwardly of said mounting flanges defining with the underlying portion of said base a mouth for reception of a portion of a tube to be collapsed, and

(g) a spring member having a transverse portion extending across said outer surface forwardly of said mounting flanges, said transverse portion being in parallel relationship with said transverse pivot axis and disposed forwardly thereof, the ends of said spring member being coiled about each of said pivot pins, said spring being adapted to bias the forward portion of said presser member downwardly toward said base whereby when said tube is received within said mouth it will be retained in proper attitude for operation.


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