

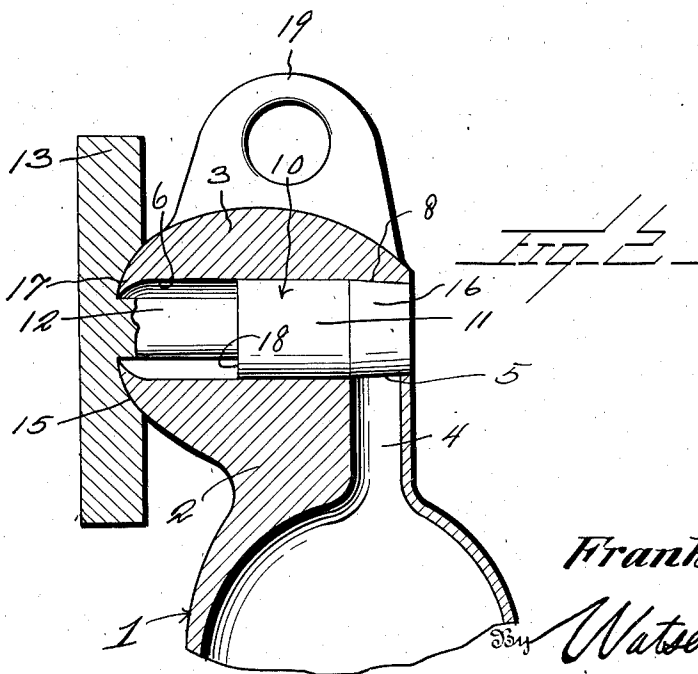
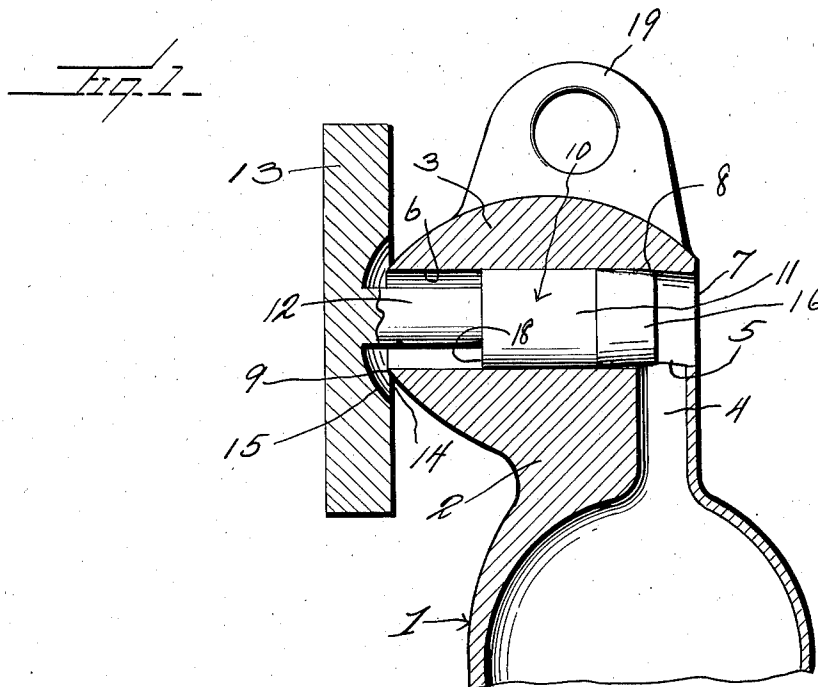
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DISPENSING TUBE CLOSURE

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DISPENSING TUBE CLOSURE

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5 Claims (Cl. 221-60)

This invention relates to stoppers or closure members and pertains particularly to an improved closure for collapsible tubes of the type commonly employed for toothpastes, shaving creams and the like.

The present invention has for its primary object to provide an improved plunger closure or stopper for collapsible tubes which is so designed that when it is moved to closed position after a quantity of material has been discharged through the discharge aperture which the stopper closes, all of the residual material will be ejected so that no material will be left in the outlet opening of the tube where it will be exposed to air to become hardened.

Another object of the invention is to provide a plunger stopper for a collapsible tube discharge aperture which is so designed that it may be readily shifted from closed to open position or vice versa and in which the construction of the parts is such that the assembly thereof is accomplished in a novel manner so as to effect the establishment of a locking connection between the parts which will prevent full or complete removal of the stopper from the tube discharge nozzle and consequently prevent loss of the stopper.

A still further object of the invention is to provide a novel method of assembling a plunger type stopper for the discharge nozzle of a collapsible tube or similar material container, wherein the forcible insertion of the stopper or forcible movement of the stopper to its closed position following the assembly of the parts, will establish an intumed guide collar around a reduced portion of the shank of the stopper which in addition to functioning as a guide for longitudinal movement of the stopper, will operate as a stop or movement limiting means whereby to prevent loss of the stopper from the tube nozzle.

Still another object is to provide a closure member for a dispensing receptacle which is made up of few parts and which is of simple construction and easily and quickly assembled.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawing forming part of this specification, with the understanding, however, that the invention is not to be confined to any strict conformity with the showing of the drawing but may be changed or modified so long as such changes or modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawing:

Fig. 1 is a view in longitudinal section through a closure member constructed in accordance with the present invention, and showing the parts prior to full assembly.

Fig. 2 is a sectional view similar to Fig. 1 and showing the parts in finished assembled form.

Referring now more particularly to the drawing, the numeral 1 designates a portion of a dispensing receptacle of the type with which the present invention is designed to be used, such receptacle being in the form of a paste tube such as is commonly used for marketing toothpastes, shaving creams, paints and the like. However, it is to be understood that whereas the invention has been designed primarily for use in connection with such collapsible receptacles, it may be used in association with any type of dispenser desired and the invention is not to be understood as being restricted to this particular type of container.

In carrying out the present invention, the container or tube 1 is provided with a nozzle 2 terminating in a head 3 which may be of substantially circular cross-section and which has a length greater than its diameter, the length of the head being transversely of the nozzle 2, as shown. From within the receptacle 1 a discharge passage 4 leads which terminates in the aperture or outlet end 5, which opens into the bore 6 which is formed axially through the head 3. This outlet end of the passage 4 opens into the bore 6 in close proximity to one end of the bore, which end is indicated by the numeral 7 and constitutes the discharge mouth through which material is ejected.

Adjacent its discharge end the bore 6 is tapered slightly, as indicated at 8, so as to provide a tight seat for the closure plug hereinafter described.

The material of the head 3 will be formed of an easily deformable metal such as is commonly employed for collapsible tubes and initially the bore will be of constant diameter from the inner end of the tapered portion 8 to the end remote from the mouth 7, providing at the end remote from the mouth the relatively sharp deformable edge 9.

The numeral 10 generally designates the closure plug. This plug has a portion 11 having a major diameter equal to the major diameter of the bore 6, and a portion of reduced diameter or a minor portion 12 which may be referred to as the stem. The stem is integral with the head 13 of the stopper and the under or inner face of the head is provided with an annular recess

encircling the neck 12, as indicated at 14, and having an arcuate inner wall which curves upwardly and inwardly toward the neck, as indicated at 15.

The end of the main stopper portion 11 is tapered as indicated at 16 to correspond with the taper of the seat 8 upon which this portion of the stopper is adapted to position.

In the assembling of the head and stopper, the edge 9 will have a diameter corresponding with the major diameter of the bore 6 so that the plug portion 11 can be smoothly inserted into the bore and after insertion the deformable edge 9 will contact the surface 15 of the annular recess before the tapered end of the plug is fully seated on the seat 8. The plug is then forced to its seat and this will result in the arcuate surface 15 of the annular recess acting as a cam against the deformable edge 9 to turn such edge inwardly so as to form the inturned flange such as is indicated at 17 in Fig. 2 to serve as a combined guide collar for the stem 12 of the plug and as a stop against which the shoulder 18, formed between the stem 12 and the main plug portion 11, will engage when the plug is drawn outwardly for the purpose of uncovering the discharge opening 5. Thus it will be seen that the assembly of the parts is readily accomplished and that after the same have been assembled in the manner stated, they will be securely coupled together so that all possibility of the plug coming out of the bore and being lost is avoided by the plug is permitted sufficient movement in the bore to uncover the outlet end of the passage 4 so that a quantity of material may be ejected from the tube into and through the bore mouth 7. When the plug is returned to its closing position, it will be readily apparent that as it seats on the tapered surface 8, it will force out all of the material remaining in the bore so that there will be no material left to be exposed to the air and to harden and seal the plug or deteriorate through such contact with the air.

From the foregoing, it will be readily apparent that the closure device embodying the present invention is ideally suited for such substances as toothpastes, shaving creams, paints, glue or mucilage and all other substances which dry out or harden or become spoiled when left in contact with the air.

In order to facilitate handling and disposing of the receptacle when the same is not in use, the head 3 may be provided with the apertured extension or tongue 19 so that the receptacle may be hung from a hook or other suitable support.

What is claimed is:

1. A closure for a dispensing receptacle having a nozzle provided with a discharge passage, comprising a head integral with the nozzle and having a bore extending entirely therethrough and having said passage opening thereinto at one end, the said one end of the bore constituting a discharge outlet, a plug slidably disposed in the bore and having a reduced stem portion extending through the end thereof opposite said outlet, a collar integral with and formed from the material of the head at the end of the bore remote from said outlet and surrounding said stem and forming the sole means for limiting the outward movement of the plug, and a head upon the stem end of said plug facilitating turning

the plug and reciprocating the plug in the bore.

2. A closure for a dispensing receptacle having a nozzle provided with a discharge passage, comprising a head integral with the nozzle and having a bore extending entirely therethrough and having said passage opening thereinto at one end, the said one end of the bore constituting a discharge outlet, a plug slidably disposed in the bore and having a reduced stem portion extending through the end thereof opposite said outlet, a collar integral with and formed from the material of the head at the end of the bore remote from said outlet and surrounding said shank and forming the sole means for limiting the outward movement of the plug, and a head upon the shank end of said plug facilitating turning the plug and reciprocating the plug in the bore, said plug being tapered through a portion of its length at the end remote from the shank and said bore being tapered at that end into which said passage opens to form a seat for the tapered end of the plug.

3. In a dispensing tube structure including a tube body, a head on the body, a bore formed through the head and having communication with a passage leading from the tube, the head being formed at one end of the bore to have a tapered end edge for the bore, a plug reciprocable in the bore relative to said passage to open and close the same, the plug having a stem extending through the said one end of the bore, and a head on the extended end of the stem which is movable relative to said bore end edge, said tapered end edge extending inwardly toward said stem to form a collar around the shank which limits the movement of the plug away from said passage.

4. In a dispensing tube structure including a tube body, a head on the body, a bore formed through the head and having communication with a passage leading from the tube, the head being formed at one end of the bore to provide a tapered thin end edge for the bore, a plug reciprocable in the bore relative to said passage to open and close the same, the plug having a stem extending through the said one end of the bore, a head on the extended end of the stem which is movable relative to said bore end edge, and means carried by the head for contact with said edge by which deformation of the edge inwardly may be effected for the formation of a collar around the stem to limit the movement of the plug away from said passage.

5. In a dispensing tube structure including a tube body, a head on the body, a bore formed through the head and having communication with a passage leading from the tube, the head being formed at one end of the bore to provide a tapered thin end edge for the bore, a plug reciprocable in the bore relative to said passage to open and close the same, the plug having a stem extending through the said one end of the bore, a head on the extended end of the stem which is movable relative to said bore end edge, and a recess formed in the head around the stem having a curved wall opposing said bore end edge, said tapered end edge extending in toward the stem to form a collar around the stem which limits the movement of the plug away from said passage, the deformed edge being received in said recess against the curved wall thereof when said plug is closing said passage.

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