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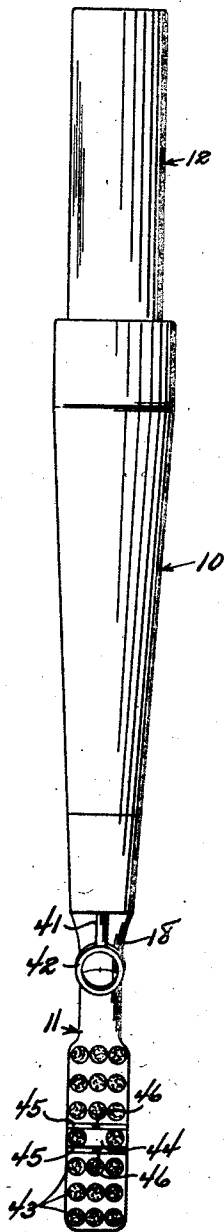
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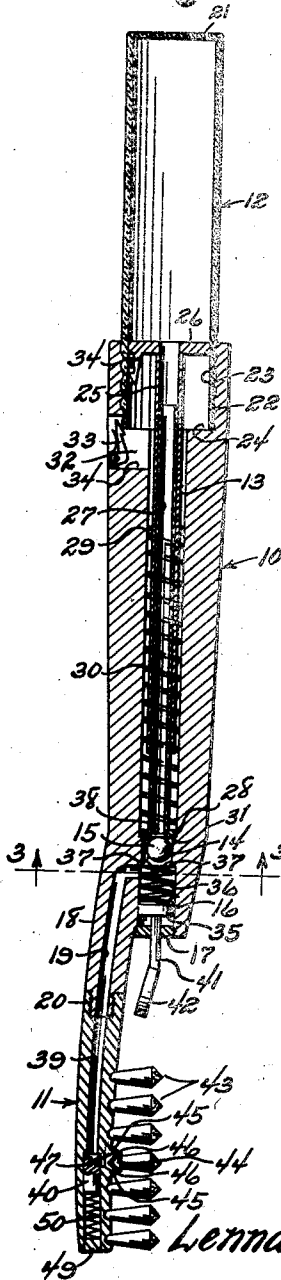
DISPENSING DEVICE

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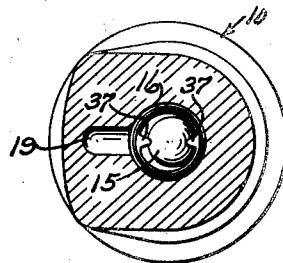
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



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# UNITED STATES PATENT OFFICE

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## DISPENSING DEVICE

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2 Claims. (Cl. 221-78)

This invention relates to toothbrushes and has for an object to provide a fountain toothbrush which will save material by delivering the correct amount for brushing the teeth.

A further object is to provide a toothbrush having an easily replaceable container for a supply of brushing material.

A further object is to provide a toothbrush having a replaceable bristle head having bristles mounted adjacent to the material discharge opening and disposed on a raised bottom of the head.

A further object is to provide a device of this character which will be formed of a few strong, simple and durable parts, which will be inexpensive to manufacture, and which will not easily get out of order.

With the above and other objects in view the invention consists of certain novel details of construction and combinations of parts hereinafter fully described and claimed, it being understood that various modifications may be resorted to within the scope of the appended claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawing forming a part of this specification:

Figure 1 is a side elevation of a toothbrush constructed in accordance with the invention.

Figure 2 is a longitudinal sectional view of the toothbrush.

Figure 3 is a cross sectional view taken on the line 3-3 of Figure 2.

Referring now to the drawing in which like characters of reference designate similar parts in the various views, the toothbrush is shown to comprise a handle 10, a replaceable bristle head 11 and a replaceable tube 12 forming a magazine or fountain.

The handle 10 is provided with an axial bore 13 having a reduced portion 14 in which is mounted a ball check valve 15, the bore being uniformly enlarged beyond the check valve as shown at 16 and closed by a threaded cap 17 adjacent to the bristle head 11. The handle is provided with an extension 18 which is inclined laterally from the end of the handle and is provided with a longitudinal duct 19 which communicates with the enlarged portion 16 of the bore. The end of the extension is provided with an exteriorly threaded stem 20 to receive the replaceable bristle head which will presently be described in detail.

The replaceable tube 12 is closed at the exposed end as shown at 21 and the tube is pro-

vided with screw threads 22 at the open end to engage screw threads 23 formed in an uniformly enlarged portion of the bore 13. The uniformly enlarged portion terminates in a shoulder 24 against which the rim of the tube abuts.

A hollow plunger stem 25 is disposed within the bore 13 of the handle and is equipped at one end with a plunger 26 which is enclosed within the tube 12. Telescopically engaged in the plunger stem is a tube 27. The lower end of the tube 27 is equipped with a collar 28 and the hollow plunger stem is equipped with a collar 29. A helical spring 30 is sleeved upon the plunger stem and tube and bears against both collars. Since the collar 28 of the tube 27 bears upon a shoulder 31 in the bore 13 of the handle near the ball check valve 15, the spring will constantly tend to move the plunger stem outwardly forcing the plunger 26 against the contents of the supply tube 12 to force the brushing material through the hollow plunger stem and tube within the stem into the enlarged portion 16 of the bore 13.

A recess 32 is formed in the side of the handle and a spring-pressed dog 33 is pivotally mounted in the recess. A dog 34 extends inwardly from the plunger. When the supply tube 12 is to be replaced, the empty tube is unscrewed from the handle and then the plunger 26 is forced against the pressure of the helical spring 30 until the plunger dog 34 engages with the pivot dog 33. The full tube may now be substituted for the empty tube and screwed into the ends of the handle. As the rim of the tube reaches the pivoted dog 33, it dislodges the dog laterally from the plunger dog 34 and permits the spring 30 to move the plunger into the full tube 12 and exert pressure against the contents thereof.

A plunger 35 is mounted in the enlarged portion 16 of the bore 13 of the handle and a helical spring 36 is disposed in the enlarged portion of the bore between the plunger 35 and a pair of stop lugs 37 which form one seat for the ball check valve 15. The other seat 38 for the ball check valve is formed on the lower end of the small tube 27 within the hollow plunger stem 25.

Brushing material normally fills the small tube 27, the enlarged portion 14 of the bore of the handle, the enlarged portion 16 of the bore between the plunger 35 and the stop lugs 37 and the duct 19 of the extension 18, and also a duct 39 in the brush head 13 to a spring-pressed valve in the duct 39 which will later be described in detail.

The plunger 35 is provided with a stem 41 having a ring grip 42. When the plunger 35 is man-

ually forced inwardly against the pressure of the spring 36, the ball check valve 15 will be seated on the seat 38 to close the small tube 27 and prevent brushing material escaping therefrom. Simultaneously the brushing material in the enlarged portion 16 of the bore and in the ducts 19 and 39 will be urged to open the check valve 40 to dispensing position.

The brush head 11 is provided with conventional bristles 43. Also the brush head is provided with a transversely disposed raised portion 44, best shown in Figure 1, having inclined sides 45 through which open small passages 46 which communicate through a duct 47 with the duct 39 of the brush head.

The spring pressed valve hereinabove mentioned consists of a cylindrical check valve 48 mounted in the bore 39 which latter is closed by a plug 49 at the end of the brush head. A helical spring 50 is disposed between the plug and the check valve 48.

When the plunger 35 is manually operated, the material, as above stated, will be forced through the duct 39 in the brush head and dislodge the check valve 40 which normally seals the duct 37 to permit the material being ejected through the small passages 46 in a sufficient economical quantity for brushing the teeth.

Since the operation of the parts has been described as a description of the parts progressed, it is thought the invention will be fully understood without further explanation.

#### What is claimed is:

1. A dispensing device comprising, a hollow handle, a replaceable brushing material tube screw-threadedly engaged with one end of the handle, a spring-pressed plunger in the tube having a telescoping hollow stem disposed within the hollow handle, a spring carried by the stem exerting outward pressure against the plunger to force brushing material through the hollow stem into the handle, means for holding the spring compressed during replacement of an empty tube with a full tube, a normally open check valve in the hollow handle, and a manually operable plunger in the handle adapted to be moved to force material in the handle to effect closing of the last-named check valve to eject a measured quantity of brushing material.

2. The structure as in claim 1 and in which said means comprises a pivoted dog carried by the handle, a dog fixed to the first-named plunger engageable with the first-named dog when said spring is manually compressed to permit replacement of an empty tube with a full tube, said full tube having means to dislodge the pivoted dog from the plunger dog when the full tube is screwed into the handle to permit the spring to expand and cause the first-named plunger to exert pressure against the material in the full tube.

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