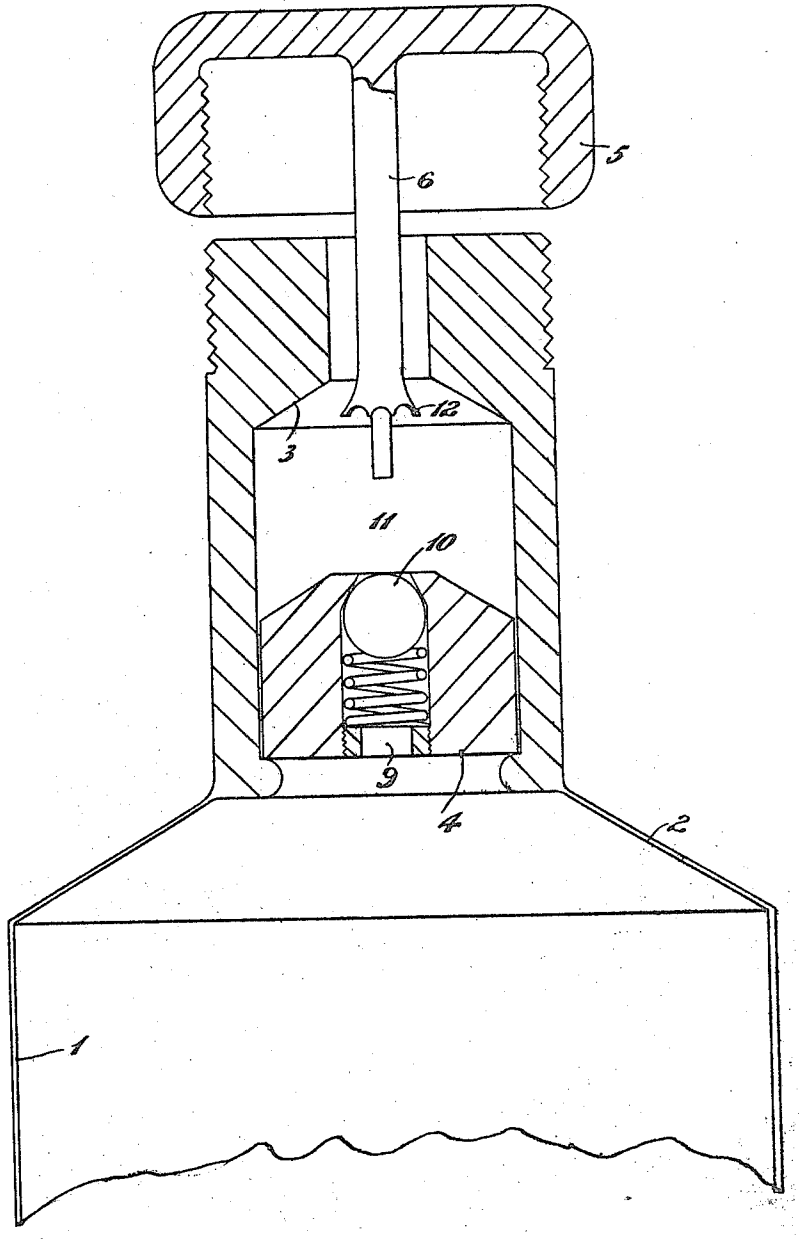
H. O. BERG.

COMBINED CLOSURE AND DELIVERY CONTROLLING MECHANISM FOR DEFORMABLE VESSELS.

APPLICATION FILED JAN. 26, 1915.

1,283,050. Patented Oct. 29, 1918.



Witnesses:
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UNITED STATES PATENT OFFICE.

HART O. BERG, OF PARIS, FRANCE.

COMBINED CLOSURE AND DELIVERY-CONTROLLING MECHANISM FOR DEFORMABLE VESSELS.

1,283,050. Specification of Letters Patent. Patented Oct. 29, 1918.

Application filed January 26, 1915. Serial No. 4,481.

To all whom it may concern:

Be it known that I, HART O. BERG, a citizen of the United States republic, and residing at Paris, France, have invented a certain new and useful Improvement in Combined Closure and Delivery-Controlling Mechanism for Deformable Vessels, of which the following is a specification.

The object of this invention is to provide improved means for controlling the delivery of tooth paste, shaving cream, cold cream and other viscous or semi-fluid substances or thick liquids, from the deformable tubes in which they are commonly sold, the special object in view being to permit the delivery of a limited quantity only on each occasion of use. The deformable tubes are generally made of soft metal and the delivery of the contents is effected by squeezing the tubes between the fingers, the end opposite the delivery outlet being commonly rolled or folded. It will be understood, however, that the present invention is applicable to any kind of a container which is progressively deformable, that is, the volume of which is progressively reduced by any suitable means or in any suitable manner and is not practically applicable to a container in which, by the operation of a plunger or otherwise, a portion of the contents is displaced by air drawn in through the outlet. In accordance with the invention, the neck or reduced outlet of the tube or container is provided at or near its extremity with a valve seat and within the neck or outlet is placed loosely a freely movable valve element, the relative size and the character of which are such that normally it is suspended in the contents of the tube and is caused to move forward against the valve seat by the movement of the contents when the tube is deformed. With substances capable of becoming at summer temperatures, for example, of such consistency that the valve element will readily sink through them, by its own weight, it may be desirable to provide a rear seat or stop to limit the rearward movement of the valve element, but for most of such substances as have been named a forward seat will be sufficient. Means are provided, however, whereby the valve element can be pushed back from the forward valve seat by hand to a limited distance through the contained substance which, under the pressure exerted, finds its way through the comparatively narrow space between the valve element and the neck of the container. The invention will be more fully explained hereinafter with reference to the accompanying drawing, the single figure of which represents in longitudinal section a structure which embodies the invention.

The deformable tube or container 1 having a reduced end, as at 2, is shown as having at or near the extremity of the neck or reduced outlet, as at 3, an internal valve seat. Within the neck and freely movable therein, not subject to the action of any spring, is a valve element 4. This valve element is not only freely movable in the neck but is of such size or shape as to leave between it and the surrounding wall or through itself a comparatively narrow space. It may be generally cylindrical and fitting snugly in the neck and provided with a central bore. In any case it is freely movable in the neck with the forward movement of the contents of the tube, is adapted to fit closely against the seat 3 so as to prevent the further delivery of the contents, and permits the contents to pass between it and the neck or through itself when it is pressed back by hand from the valve seat.

It is necessary that the valve element be so pressed back by hand from the valve seat after every operation in order that a fresh quantity of the contents may be forced into the neck, in front of the valve element, so that when the tube is next squeezed this fresh quantity may be discharged. The means provided for the purpose consist of a short rod 6 interposed between the valve element and the cap 5 which is screwed externally upon the neck as usual. In the drawing it is shown as carried by the cap 5, so that as the cap is screwed on after use it forces the valve element back, compelling the contents to flow around it or through it into the space in front of the valve element.

In the drawing, the valve element 4 is shown as having a central bore 9, with a slightly reduced forward end and as having a spring-seated supplementary valve 10 in the bore while the rod 6 is shown as having a reduced end and a notched flange 12. In this construction the valve element is pressed forward by the forward movement of the contents of the tube and when the cap 5 is applied and screwed on the reduced

end of the rod 6 first presses the supplemental valve 10 back from its seat and then the notched flange 12 engages the forward end of the valve element and the valve element is then pressed back, the contents of the tube flowing through the central bore of the valve element into the space 11 in front of the valve element.

It will be understood that various changes in details of construction and arrangement may be made to suit different conditions of use without departing from the spirit of the invention except so far as the same is defined in the accompanying claim.

I claim as my invention:

The combination with a deformable container having a reduced outlet with an internal valve seat at its forward end, of a valve element freely movable in the outlet and providing a narrow channel through which the contents may be squeezed into the space in front of the valve element when the valve element is pushed back, the valve element being adapted to be suspended in the contents of the container, and means to push the valve element rearwardly, the valve element having a central bore with a spring-seated supplemental valve and the means for pushing the valve element rearwardly consisting of a rod with a reduced end and a notched flange to first press the supplemental valve rearwardly against its spring and to press the valve element rearwardly.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HART O. BERG.

Witnesses:
H. D. JAMESON,
O. J. WORTH.