

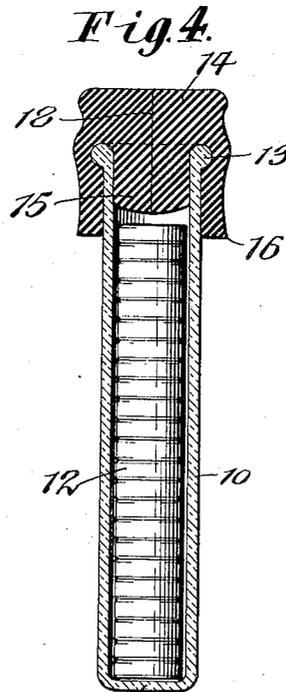
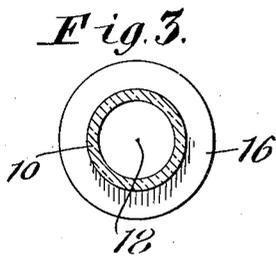
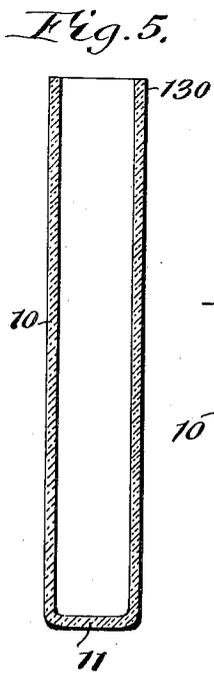
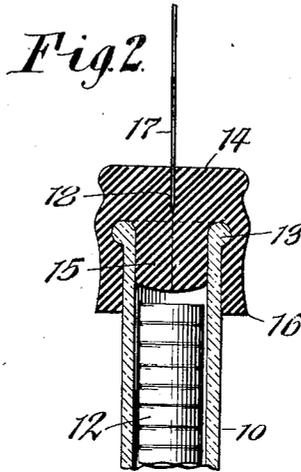
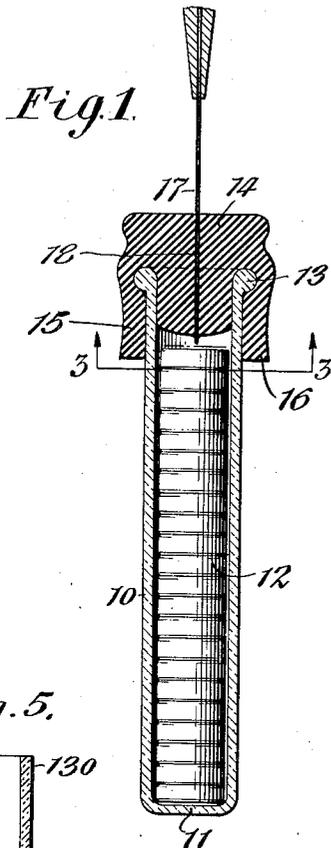
Sept. 30, 1924.

1,509,916

R. B. WAITE

METHOD OF PRESERVING CONTENTS OF CONTAINERS

Filed Oct. 5, 1922



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# UNITED STATES PATENT OFFICE.

RALPH B. WAITE, OF SPRINGVILLE, NEW YORK, ASSIGNOR TO THE ANTIDOLOR MFG. CO., OF SPRINGVILLE, NEW YORK, A CORPORATION OF NEW YORK.

## METHOD OF PRESERVING CONTENTS OF CONTAINERS.

Application filed October 5, 1922. Serial No. 592,646.

To all whom it may concern:

Be it known that I, RALPH B. WAITE, a citizen of the United States, residing in Springville, in the county of Erie and State of New York, have invented new and useful Improvements in Methods of Preserving Contents of Containers, of which the following is a specification.

This invention relates to a method of preserving the contents of containers having a bottle shaped body of rigid material and a closure of elastic material extending across the inlet of the body.

Heretofore materials which would deteriorate when exposed constantly to the atmosphere, for instance, medical tablets, were packed in containers which were hermetically sealed after being filled with the material to be packed, but this has been found unsatisfactory, because the presence of a considerable amount of air in the container after the same was sealed would still operate destructively on the material and deteriorate the same to such an extent that the same in time would either be wholly worthless or at least very greatly weakened or reduced in strength and thus impair the efficiency of the same, this being particularly objectionable in the case of tablets for medicinal use.

In the case of tablets employed for producing anaesthesia injections preparatory to doing dental and surgical work, it has been found that tablets originally white soon become yellow due to decomposition of the ingredients therein under ordinary atmospheric conditions which sap the strength of the tablets, thus impairing the efficiency of the injection, if not rendering the same wholly worthless.

It is the object of this invention to provide a method for preserving the contents of such containers and insure full strength of the same when required for use which not only is very effective in protecting the contents but is also very simple and capable of being practiced without appreciably adding to the cost of packing the materials.

In the accompanying drawings:

Figure 1 is a longitudinal section of a container showing the beginning of my method for preserving the contents of the same. Figure 2 is a similar view showing the final part of the method for practicing my invention. Figure 3 is a cross section taken

on line 3—3, Fig. 1. Figure 4 is a longitudinal section of a container showing the completion of my method of preserving the contents of the same. Figure 5 is a longitudinal section of a modified form of the body or bottle of the container.

Similar characters of reference refer to like parts throughout the several views.

Although my invention may be employed with containers of various forms, that, for example, shown in the drawings comprises a bottle shaped body and a closure for the same. The body has a cylindrical wall 10, a closed bottom 11, an open top forming an inlet or mouth through which the contents of the container are introduced into the same and removed therefrom. The contents may consist of any suitable material which is to be preserved, such for instance, as medical tablets which deteriorate rapidly and lose their strength and efficiency when exposed to any considerable amount of oxygen as found in the ordinary atmosphere.

Around the exterior of the outlet end of the body the same may either be straight as shown at 130 in Fig. 5, or the same may be provided with a projection, rim or bead 13, as shown in Figs. 1, 2 and 4, said body, bottom and head being preferably formed integrally of glass or other suitable rigid material.

The closure comprises an upper or outer head 14, extending over the outlet of the body, a plug or cork 15 arranged centrally on the inner side of said head and adapted to fit tightly into the neck, mouth or outlet of the body, and an annular flange 16 projecting inwardly or downwardly from the marginal part of the head and adapted to surround the bead of the body and the adjacent part of the cylindrical wall thereof. This closure is constructed of soft rubber or other elastic material which can be stretched or sprung sufficiently to permit of applying the closure to the body so that the plug fits the mouth of the bottle and its flange embraces the head and wall of the same and also enables these parts to be readily separated in order to afford access to the interior of the container for filling the same with the material to be packed or emptying the same of its contents.

After the material to be preserved or protected has been placed in the receptacle of the container and the closure has been ap-

plied thereto as above described, the air is withdrawn from the interior of the container whereby the oxygen present in the same is reduced to a minimum and the contents of the container are protected against unduly rapid oxidation which otherwise occurs and impairs the usefulness of the same to a marked degree, particularly in the case of tablets which are used for medicine.

Withdrawal of the air for this purpose is effected by pushing a hollow needle 17 inwardly through the head and plug of the closure so that the inner open end of the same communicates with the storage space within the container, as shown in Fig. 1, and connecting the outer end of this needle with a suitable suction device whereby the air is drawn outwardly from the container through said needle and a vacuum or rarification of air in the container is produced, thereby eliminating a large percentage of oxygen which would attack the medical tablets in the container and produce an undesirable reaction thereon. In practice it has been found satisfactory to use a hypodermic needle and a vacuum pump attached to the rear end of the same, as the means for extracting the air from the vial or container.

Upon withdrawing the needle from the closure, the parts of the latter immediately around the puncture 18 formed by the needle will come tightly together automatically and seal the puncture so as to prevent the entrance of air therethrough into the container. This automatic sealing of this puncture progresses in the same measure as the needle is withdrawn, this being illustrated in Fig. 2 in which the needle has been withdrawn so that its point is only located in the outer part of the puncture while the inner part of the closure has already contracted and sealed the respective part of the puncture within the same.

When the needle has been wholly withdrawn from the closure the puncture therein is closed throughout its entire length, as shown in Fig. 4, thereby effectively sealing the closure and preventing the entrance of air into the container so that the contents of the same are maintained in vacuo.

Upon withdrawing the air from the container by means of the needle, the inward

pressure of the atmosphere against the elastic closure is increased so that the closure is pressed more tightly around the needle and guards more effectively against the entrance of air, and when the needle has been withdrawn from the closure this increased external pressure against the closure causes the parts of the latter around its puncture to be pressed together with increased pressure proportionate to the vacuum produced in the container and the cork or plug of the closure to be sucked into the bottle with increased pressure, so that if there is the least leakage as the rubber stopper resumes its normal position the tendency to close the leak opening is all the stronger, and seals the container so much tighter, thereby effectively preventing breaking of the vacuum in the container and ensuring its contents against deleterious action of the atmosphere.

It is therefore possible by the use of my invention to pack medical tablets or other materials liable to unfavorable influences in the presence of air to be effectively protected or preserved against contamination, weakening or deterioration, so that when they are to be used, they will be fresh and of full strength and operate most efficiently for the purposes for which they were intended.

I claim as my invention:

The hereindescribed method of preserving articles susceptible of deterioration when exposed to air which consists in placing such articles in a receptacle having a rigid wall and an inlet, then mounting a closure of elastic material on said receptacle so that the same extends across and closes the inlet thereof, then passing a hollow needle inwardly through said closure so that the needle communicates with the interior of said receptacle, then applying an exhausting effect on the outer end of the needle so as to withdraw the air from said needle through said needle, and then withdrawing the needle from said closure and permitting those parts of the closure which have been separated by the needle during the perfecting operation to again come together due to the resilience of the closure and operate to seal the puncture.

RALPH B. WAITE.