No. 837,408. PATENTED DEC. 4, 1906.

W. S. JOHNSTONE.

STOPPER FOR LABORATORY FLASKS, BOTTLES, AND OTHER CONTAINERS.

APPLICATION FILED MAR. 9, 1906.

Fig. 1.

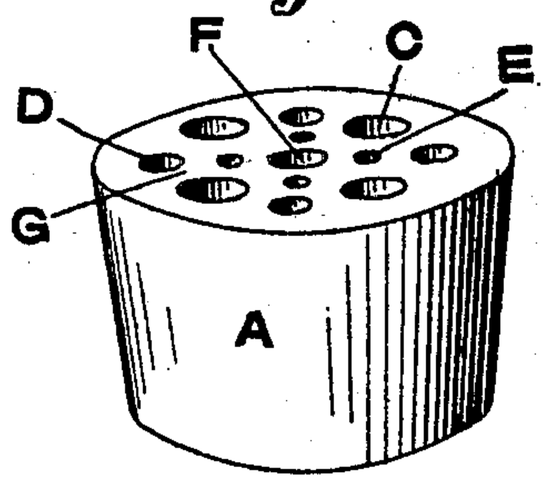


Fig. 2.

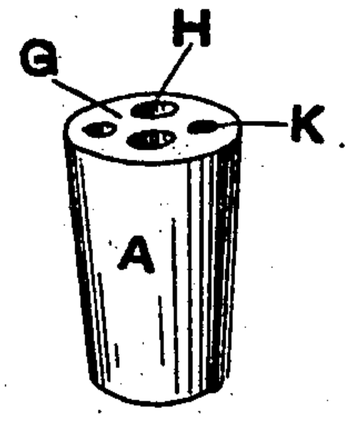


Fig. 3.

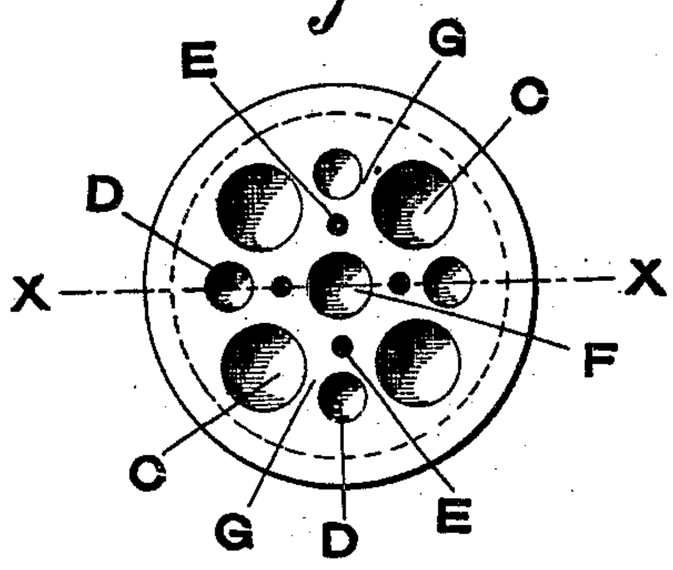


Fig. 4.

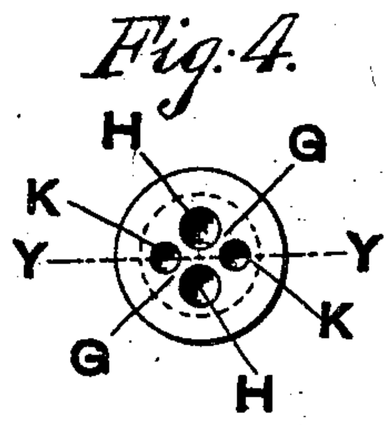


Fig. 5.

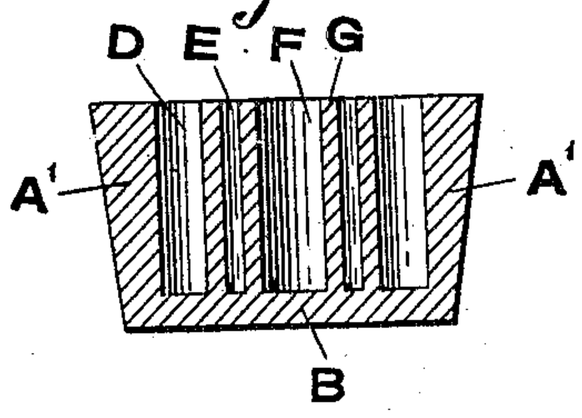
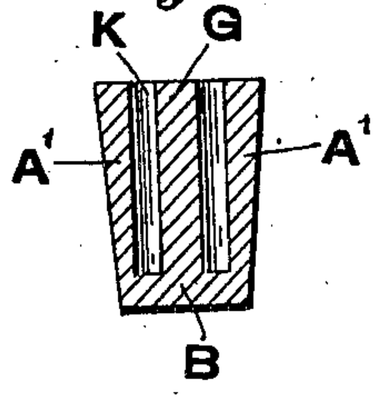


Fig. 6.



Witnesses
Stuart H. Allen
Williams & Cruse Troy.

Inventor
William S. Johnstone.
By Fred B. Johnstone Jr. Atty.

UNITED STATES PATENT OFFICE.

WILLIAM SAMUEL JOHNSTONE, OF MONTREAL, QUEBEC, CANADA.

STOPPER FOR LABORATORY FLASKS, BOTTLES, AND OTHER CONTAINERS.

No. 837,408. Specification of Letters Patent. Patented Dec. 4, 1906.

Application filed March 9, 1906. Serial No. 305,041.

To all whom it may concern:

Be it known that I, WILLIAM SAMUEL JOHNSTONE, of the city of Montreal, in the Province of Quebec and Dominion of Canada, have invented certain new and useful Improvements in Stoppers for Laboratory Flasks, Bottles, and other Containers, of which the following is a full, clear, and exact description.

My invention relates to stoppers for bottles or like receptacles, and particularly to that class of stoppers made from rubber or other highly-resilient material. As the demand for this material has greatly increased in proportion to the supply, it has become highly important to conserve the product whereever it is possible. Consequently instead of using pure gum for bottle-stoppers an inferior material is generally used, which on constant exposure becomes so hardened and inflexible as to be practically useless.

The object of my invention is to provide a stopper which will not only save a large percentage of the material in its manufacture, but which can be made from an inferior quality of material and still maintain the necessary flexibility.

A further object is to provide a stopper which can be used to great advantage in laboratory work. In chemical experiments with thin glass flasks or bottles it is advantageous to use highly-flexible stoppers, and it is often necessary to perforate such stoppers for the purpose of inserting glass tubes.

From the following description it will be obvious that the nature and construction of my device render it particularly adaptable to this class of work.

The invention consists, essentially, of a stopper of rubber or other suitable material having a plurality of apertures extending vertically from the top of the stopper to a point near the bottom, where the material remains intact for a distance sufficient to prevent any liability of leakage. The material between the apertures gives sufficient rigidity to the stopper to prevent it collapsing, and at the same time a large degree of flexibility is imparted to the stopper.

In the drawings which illustrate my invention, Figure 1 is a perspective view of a larger-sized stopper, showing a number of apertures of various sizes. Fig. 2 is a perspective view of a smaller-sized stopper. Fig. 3 is a plan view of the stopper shown in Fig. 1. Fig. 4 is a plan view of the stopper shown in Fig. 2. Fig. 5 is a vertical section on the line X X of Fig. 3. Fig. 6 is a vertical section on the line Y Y of Fig. 4.

Referring to the drawings, A represents a tapered stopper of the ordinary frusto-conical form, having a plurality of apertures extending from the top of the stopper to a point near the bottom. The apertures are so arranged that the circumferential portion A′ of the stopper will always remain intact. B represents the bottom portion of the stopper, the material of which also remains intact for a sufficient distance to prevent leakage, as shown in Figs. 5 and 6.

Referring to Figs. 1, 3, and 5, a number of comparatively large apertures C are arranged with smaller apertures D between them. Another ring of still smaller apertures E are shown, and a central aperture F. The apertures are vertical and are separated by ribs G of the material, whereby a certain amount of rigidity is maintained and the material prevented from collapsing under pressure.

In Figs. 2, 4, and 6, showing a smaller stopper, two sizes of apertures H and K are shown separated by the webs G. It is found advantageous to vary the width of the ribs between said apertures in order to increase the flexibility of the stopper. The principal reason, however, for varying the size of the apertures is to adapt the stopper for laboratory use. It is often found necessary in chemical experiments to perforate a stopper in order to insert a glass tube therein. With my device, containing various-sized apertures, one or more glass tubes of various required sizes may easily be inserted in the stopper by merely continuing the perforations through the bottom portion B. A tightly-fitting joint will thus be insured with a minimum of trouble and time involved.

Besides the saving of a large percentage of the material and the adaptability of this form of stopper for laboratory use other advantages will be obvious to those skilled in the manufacture or use of devices of this class.

The percentage of pure gum used in the manufacture may be considerably reduced without thereby endangering the utility of the stopper.

Having thus described my invention so that the same may be readily understood by those skilled in the art to which it appertains, what I claim, and desire to secure by Letters Patent, is—

1. A stopper for bottles and like recepta-

cles comprising a body portion of rubber or other suitable material having a plurality of central vertical apertures terminating near the bottom of said stopper.

2. A stopper for bottles and like receptacles comprising a tapered body portion of highly-resilient material having a plurality of apertures of various sizes opening from the top and terminating near the bottom of said stopper.

3. A device of the class described, comprising a body portion of highly-resilient material having a plurality of apertures of various sizes opening from the top of the stopper and extending to a point near the bottom, said apertures being separated by ribs or webs integral with the material of the stopper.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

WILLIAM SAMUEL JOHNSTONE.

Witnesses:
C. W. TAYLOR,
STUART R. W. ALLEN.