No. 837,648. PATENTED DEC. 4, 1906.

F. E. STRÖM & C. E. ELFSTRÖM.

BOTTLE AND CAP THEREFOR.

APPLICATION FILED APR. 19, 1906.

Fig. 1.

Fig. 3.

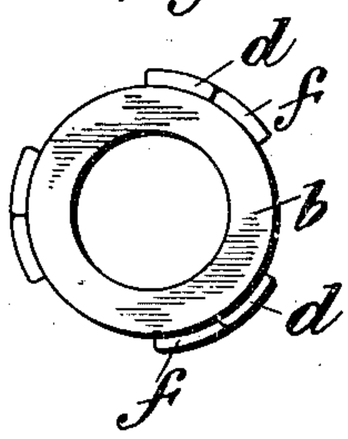


Fig. 2.

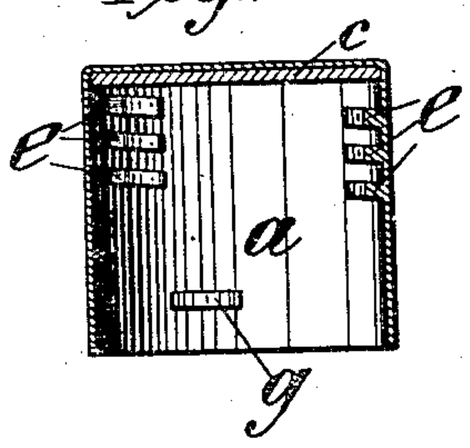


Fig. 4.

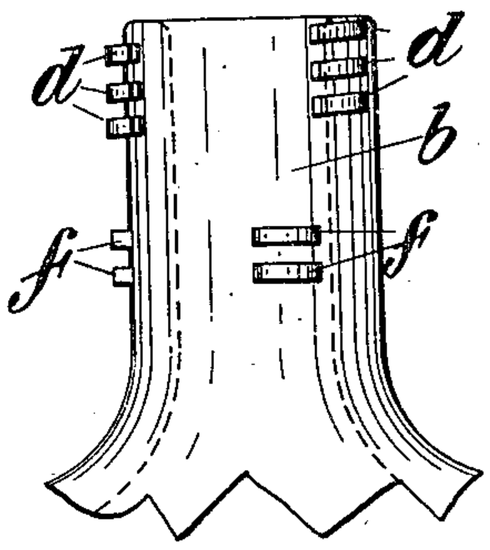


Fig. 5.

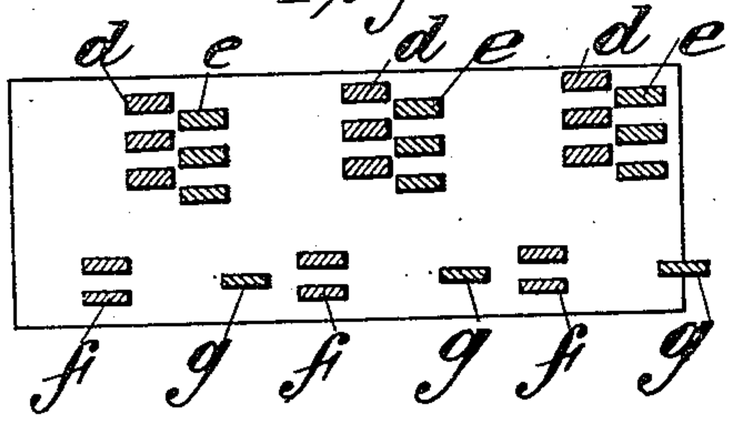


Fig. 6.

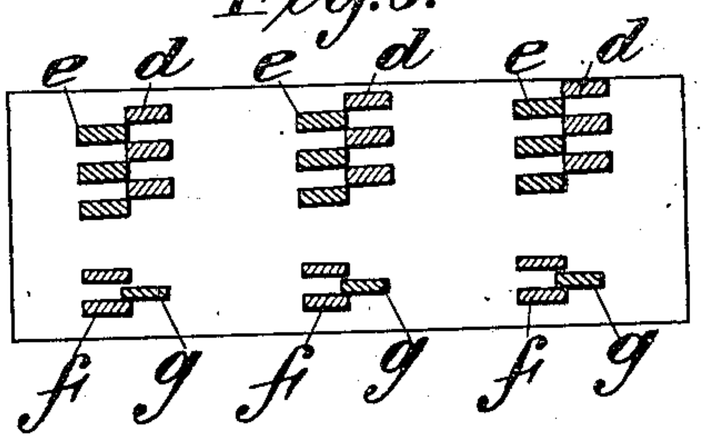
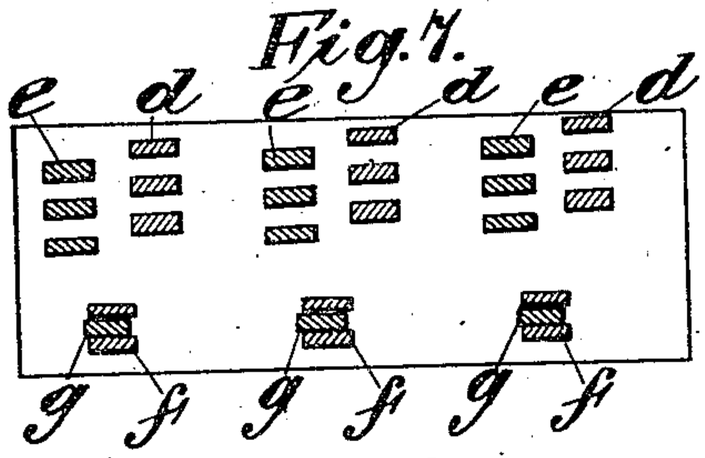


Fig. 7.



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BOTTLE AND CAP THEREFOR.

No. 837,648. Specification of Letters Patent. Patented Dec. 4, 1906.

Application filed April 19, 1906. Serial No. 312,549.

To all whom it may concern:

Be it known that we, FREDRIK E. STRÖM, residing in Richmond Hill, in the borough of Queens, and CARL E. ELFSTRÖM, residing in the borough of Brooklyn, city of New York, in the State of New York, have invented certain new and useful Improvements in Bottles and Caps Therefor, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

Where bottles containing liquids under pressure are provided with screw-caps, the latter have a tendency to work loose to such an extent that they are regarded as unsatisfactory for such purposes. This has been found to be the case also where a yielding packing is employed between the cap and the bottle and compressed between the cap and the bottle to prevent the contents from leaking out. It is probable that the loosening of the cap is due to the component of motion along the threads of the screw, which is produced by interior pressure or by the elasticity of the packing, as the case may be.

It is the object of this invention to provide means whereby a screw-cap may be employed under the conditions mentioned and at the same time may be locked upon the bottle in such a way as to be held absolutely from any loosening or displacement after it has once been screwed down in place.

Another object of the invention is to provide such means to fasten the cap to the bottle and to hold it in place as shall make the application of the cap to the bottle and its removal therefrom easy and convenient.

The invention will be more fully described hereinafter with reference to the accompanying drawings, in which the invention has been embodied in a practicable form.

In the drawings, Figure 1 is a plan view of the cap. Fig. 2 is a vertical section thereof. Fig. 3 is a plan view of a bottle-neck. Fig. 4 is an elevation thereof. Figs. 5, 6, and 7 are diagrammatic views illustrating a development of the curved surfaces of the bottle and cap in three different positions.

A conventional form of cap is illustrated at *a*, and an ordinary bottle-neck at *b*, the cap in the present case being adapted to fit upon the outside of the bottle. In the top of the cap is a cork washer *c* or other suitable yielding packing, which is adapted when the cap is brought down upon the bottle to be compressed between the cap and the bottle. For screwing the cap upon the bottle and for compressing the packing *c* between the cap and the bottle broken threads *d* are employed upon the bottle, being arranged at an inclination thereto, and corresponding threads *e* are provided upon the cap and are arranged at the same inclination thereto, so as to coöperate with the threads *d* upon the bottle. The object in breaking the threads *d* and *e* is to provide for their disengagement the one set from the other after the cap is sufficiently tight upon the bottle and after other threads *f* and *g*, arranged horizontally or transversely upon the bottle and the cap, respectively, have engaged each other. These horizontal threads *f* and *g* are below the inclined threads and are so arranged with respect thereto that as soon as the inclined threads have become disengaged they will be in square engagement. There is a slight play between the horizontal threads *g* and the horizontal threads *f*, so that as the cap is screwed down upon the bottle by the inclined threads the horizontal threads may properly engage each other and after which, as the cap continues to be turned the threads *g* may move slightly downward between the threads *f*.

Referring now to the diagrams of Figs. 5, 6, and 7, the relation between the threads upon the bottle and the threads upon the cap as the screwing down of the cap is begun is shown in Fig. 5. Fig. 6 illustrates the same parts when the cap is substantially half-way down, and Fig. 7 illustrates the same parts when the inclined threads have become disengaged. From Fig. 7 it will be seen that the cap is firmly held upon the bottle by the engagement of the horizontal or transverse threads and that there can be no component of motion acting along these threads on account of any interior pressure in the bottle or on account of any elasticity in the packing *c*. It will also be seen from Fig. 7, which it will be understood illustrates the parts in the relative positions which they occupy when the cap is fastened upon the bottle, that the cap may be disengaged from the bottle by simply turning it in a right-handed direction, the parts then assuming again the positions shown in Fig. 5.

The parts *d*, *e*, *f*, and *g*, which have hereinbefore been referred to as "broken threads" or as "threads," are of course projections and may be referred to as "projections." It will be understood that the number of these projections is in general immaterial. It will also be understood that the particular arrangement

of the projections may be departed from without avoiding the spirit of the invention. It will be further understood that the arrangement of the projections upon the bottle and the cap may be reversed and that other kinds of caps may be employed, such as caps which fit within the bottle instead of upon the outside of the bottle.

Various other changes may be made in the device shown and described without departing from the invention.

We claim as our invention—

1. The combination with a bottle and a cap therefor, of broken threads for tightening the cap on the bottle and other broken threads for locking the cap thereto.

2. The combination with a bottle and a cap therefor, of inclined projections upon the bottle, inclined projections upon the cap coöperating therewith, horizontal projections upon the bottle, and horizontal projections upon the cap coöperating with the latter projections.

3. The combination with a bottle and a cap therefor, of a yielding packing between the bottle and the cap, broken threads between the bottle and the cap arranged at an inclination whereby the packing may be compressed between the bottle and the cap, and broken threads arranged transversely of the bottle and the cap to hold the cap on the bottle.

4. The combination with a bottle and cap therefor, of broken threads adapted to tighten the cap upon the bottle, and other broken threads adapted to engage when the first-named threads are disengaged to lock the cap upon the bottle.

5. The combination with a bottle and a cap therefor of a yielding packing between the bottle and the cap, broken threads upon the bottle and the cap arranged at an inclination, and horizontal threads upon the bottle and the cap adapted to engage after the inclined threads have been disengaged.

This specification signed and witnessed this 9th day of April, 1906.

FREDRIK E. STRÖM.
CARL E. ELFSTRÖM.

In presence of—
HELEN L. PIERCE,
LUCIUS E. VARNEY.