No. 743,638. PATENTED NOV. 10, 1903.

W. R. GREEN.

BOTTLE STOPPERING DEVICE.

APPLICATION FILED MAR. 2, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

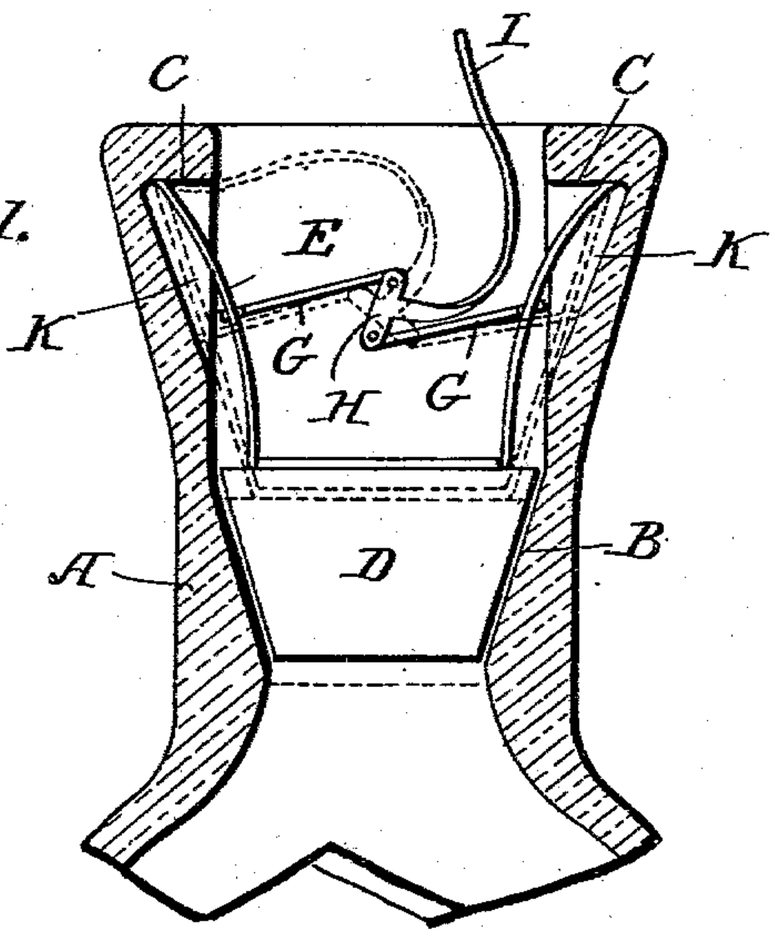


Fig. 2.

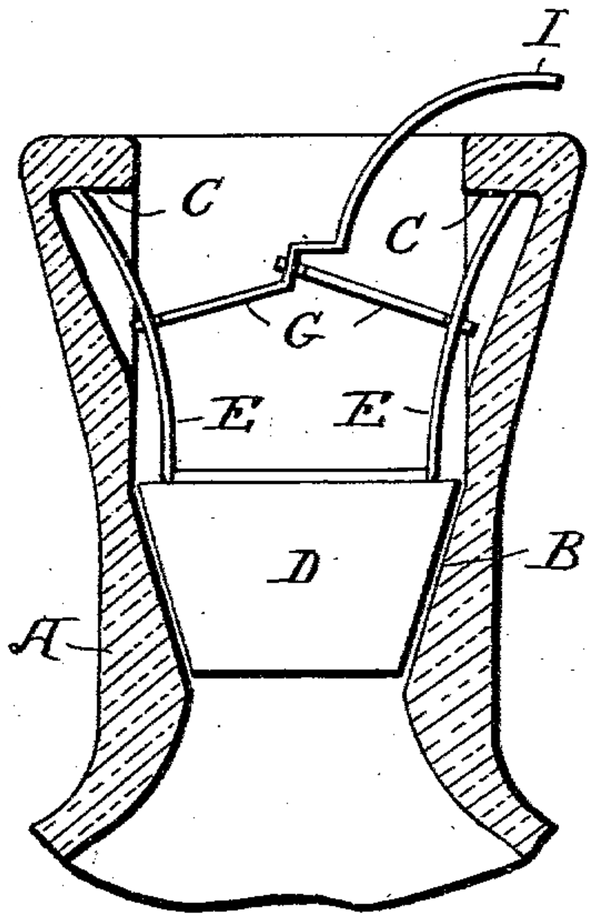


Fig. 4

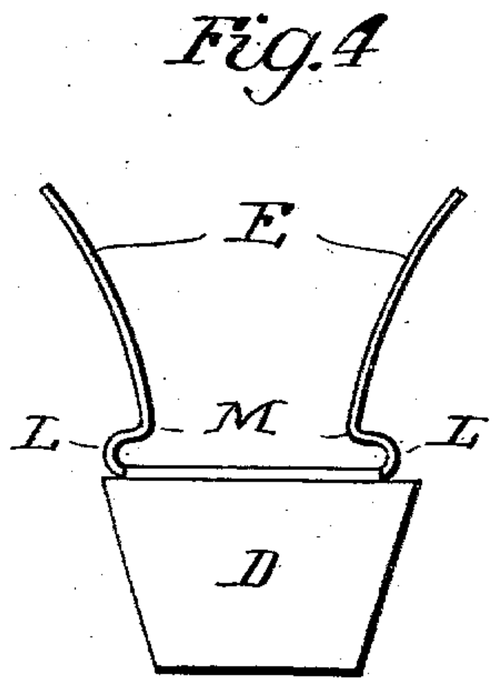


Fig. 3.

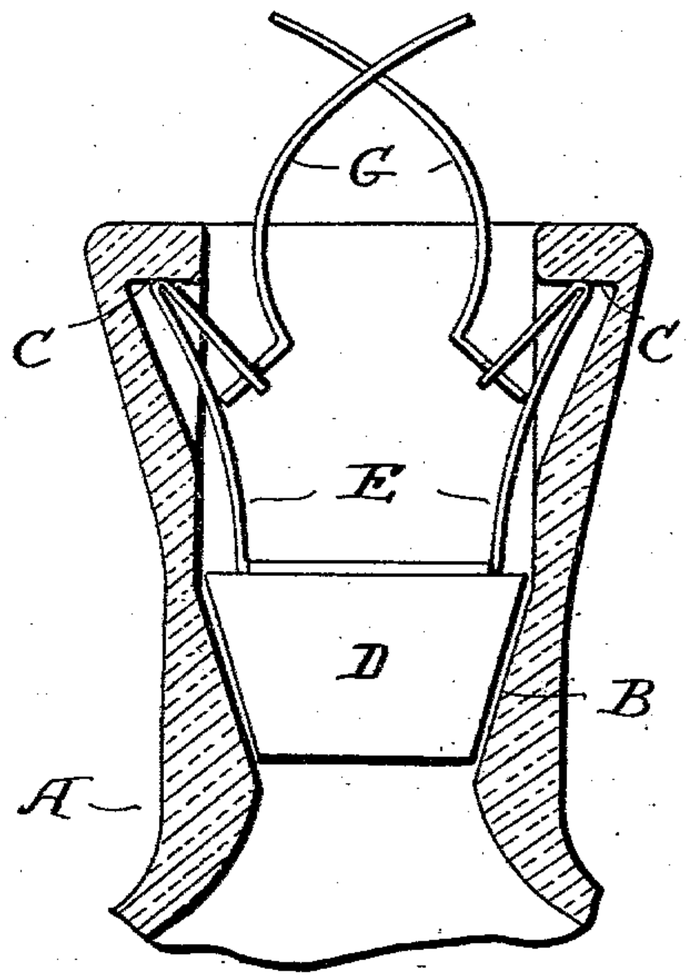
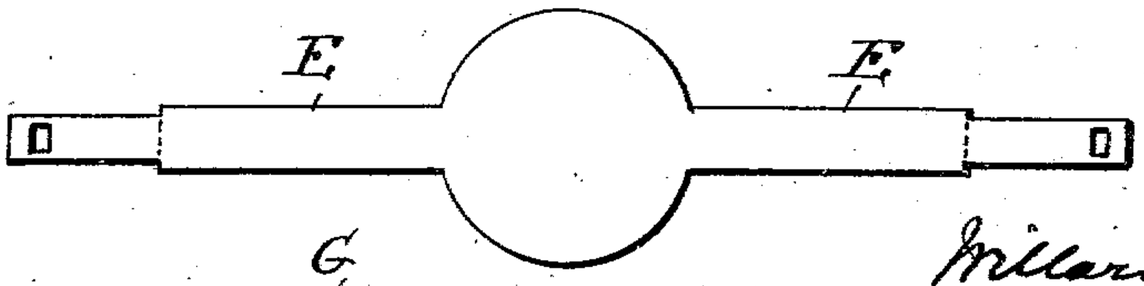


Fig. 5.



Witnesses

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No. 743,638. PATENTED NOV. 10, 1903.

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BOTTLE STOPPERING DEVICE.

APPLICATION FILED MAR. 2, 1903.

NO MODEL. 2 SHEETS- SHEET 2.

Fig. 6.

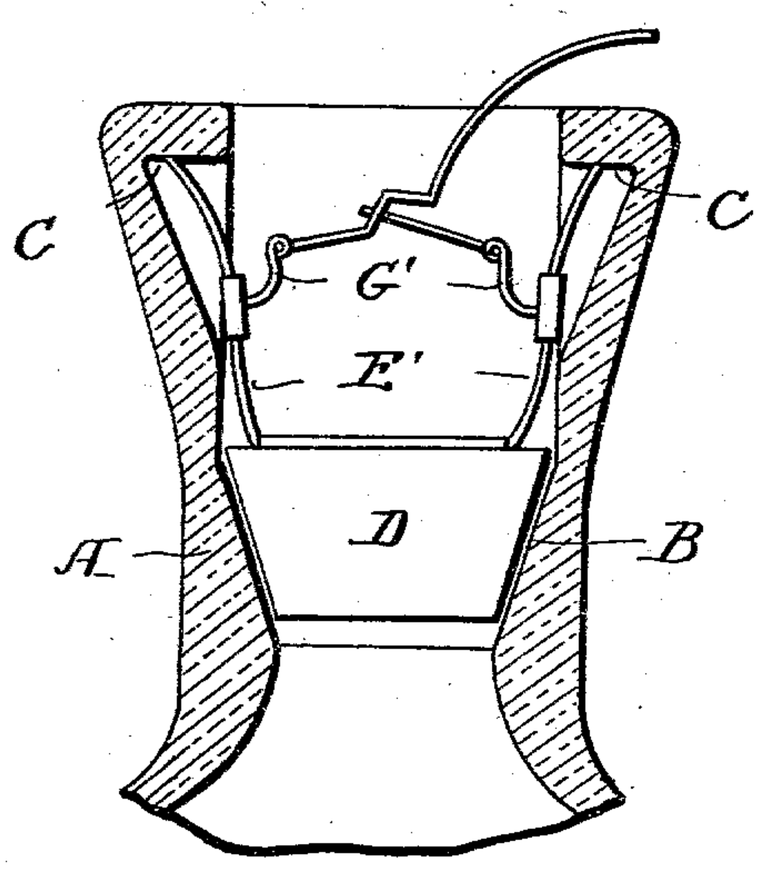


Fig. 7.

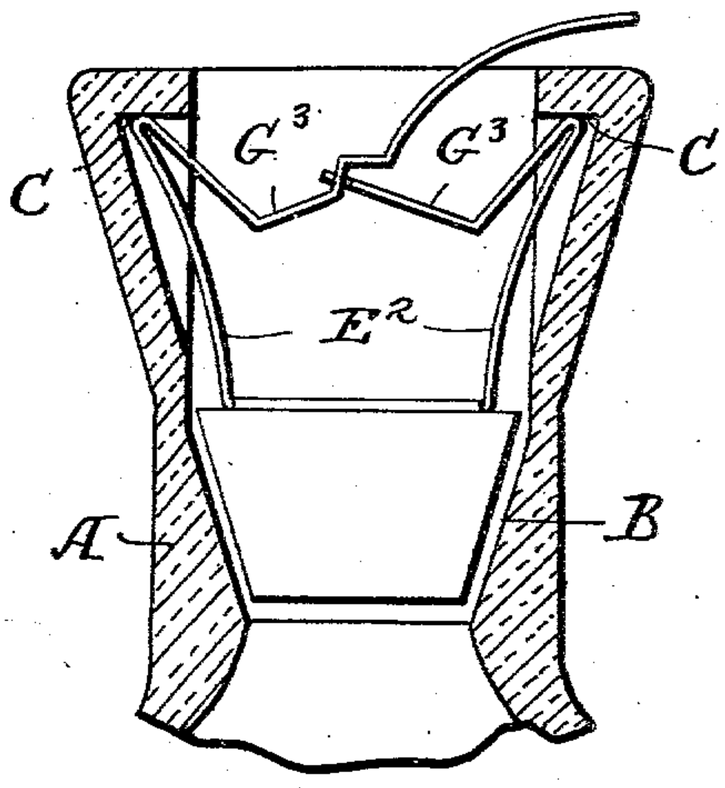
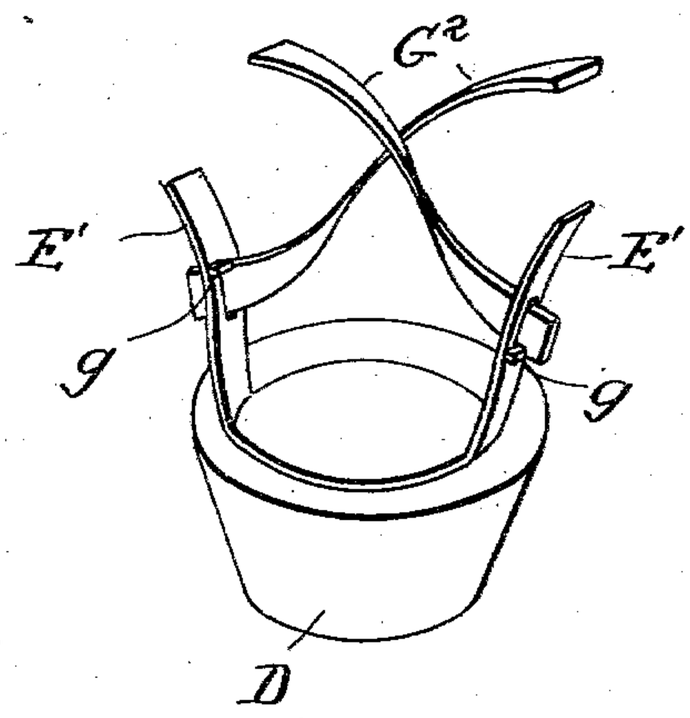


Fig. 8



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No. 743,638. Patented November 10, 1903.

UNITED STATES PATENT OFFICE.

WILLARD R. GREEN, OF DENVER, COLORADO.

BOTTLE-STOPPERING DEVICE.

SPECIFICATION forming part of Letters Patent No. 743,638, dated November 10, 1903.

Application filed March 2, 1903. Serial No. 145,780. (No model.)

To all whom it may concern:

Be it known that I, WILLARD R. GREEN, a citizen of the United States, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Bottle-Stoppering Devices, of which the following is a specification.

One of the objects of this invention is to provide simple and positive means for effectively placing and retaining in position a valve or seal within the neck of a bottle or other vessel, and which means may be placed or contained entirely within the neck of said bottle, whereby it is not subject to disturbance from outside or accidental influence.

Embodiments of the invention are illustrated in the drawings accompanying this specification, of which—

Figure 1 represents an elevation, partly in section, showing the seal and the attached mechanism in place in the neck of a bottle. Fig. 2 represents a modified form of the same with a different means for crowding or compressing the parts. Figs. 3 and 4 represent other forms of the different parts. Fig. 5 is a plan view of the retaining devices employed in Fig. 3. Fig. 6 shows a modified form of the arms wherein a reversed curve is provided in order to give additional elasticity to the arms. Fig. 7 shows a further modification in which the arms and levers are formed from one strip of metal. Fig. 8 shows a further modification.

In the drawings, A represents a bottle having a seat B within the neck thereof and having bearing-surfaces C, which may be projections upon or depressions in the material of the vessel's neck at or near the top or outer extremity thereof.

D is a seal of the valve type, containing on its lower side or seat a layer of cork or other suitable material and adapted to take a seat upon and form a seal with the seat B in the neck of the vessel. Operatively connected with the said disk or seal are curved arms E, preferably made of spring metal. The said arms E are adapted to engage with their outer ends the bearing-surfaces C, and when in such position the seal D is in operative contact with the seat B, but not under pressure from the said arms. Operatively connected with the arms E are the levers G, also operatively connected with the lever H upon the handle or lever I.

It is obvious that upon moving the levers G through the handle I the said levers will act upon the backs of the curved arms E and tend to straighten them or depress the said curve, whereby the said arms are elongated in line with the dotted lines K and the force thereof is applied upon the valve or disk to powerfully seat the same upon the seat B. It will be seen that the leverage thus applied to the arms B is at such an advantage as to produce practically a maximum pressure upon the seal and which may be so adjusted and proportioned as to produce practically any pressure desired. It is also obvious that the levers G and H may be so proportioned as to give a maximum advantage in leverage, and thus the handle I may be very easily moved while producing a very great force upon the seal, and that the parts of said levers may be so constructed as to pass the dead-center and to lock themselves into position. It is also evident that the handle I may be formed and disposed to lie entirely within the neck of the vessel and to be free from outside interference, while at the same time be freely accessible to the fingers, which will be amply sufficient to either seat or remove the seal.

In the modified forms shown in Figs. 2 and 3 it will be seen that the said levers may be similarly altered and disposed, so as to give corresponding advantages with those stated respecting Fig. 1.

In Fig. 4 the action and effect of the reversed curve L M will be readily seen, and the principle is that a yielding will be obtained in the arms E by a bending at the cross-sections L and M before the longitudinal thrust is fully applied from the straightening of the upper portion of said arms, and thus some relief will be given from the maximum effect of action of said arms.

In Fig. 6 the arms E′ are shown bent in the form of a reversed curve throughout their general length, and in this case the levers G′ take the form of a wrench applied to grip or act upon the said two curves, so as to straighten or bring them into a straight line, or approximately so, whereby the same elongation of the said arms is obtained and the resulting

force is applied to the said seal. Any form of suitable wrench may be employed for this purpose, and the form shown in Fig. 6 is suitable, or a lever G^2 may be directly thrust through or applied upon the said arms, as shown in Fig. 8, made of stamped sheet metal and provided with two lugs *g* to bear against the curves. Only one lug *g* is seen on each lever G^2 in Fig. 8.

In Fig. 7 the arms E^2 and levers G^3 are made from a single strip of metal.

It is obvious that the form and application of the invention may be varied and modified without departing from the principles of the invention; also, that the parts of the vessel may be likewise varied and that the seat or mouth of the bottle-neck may be given any angle or taper and that a seal or stopper of any ordinary form may be used; also, that by adapting the arms any length of throw or travel of the seal longitudinally in the neck may be obtained and a powerful wedging or seating of a stopper produced. The parts may be used to release and withdraw the seal or stopper.

What I claim is—

1. In a bottle-seal the combination with a bottle having a seat within the neck thereof and having bearing-surfaces above said seat within said neck at or near the mouth of said neck, of a seal or stopper adapted to make a sealing contact with said seat, arms connected to and extending upward from said seal in other than a direct line and adapted to take a bearing upon said bearing-surfaces, with means for straightening the said arms whereby they are elongated upon a direct line and a pressure is produced upon said seal.

2. In a bottle-seal the combination with a bottle having a seat within the neck thereof and having bearing-surfaces at or near the upper extremity of said neck, of a seal adapted to making a sealing contact with said seat, curved arms connected with and extending upward from said seal, adapted to make an operative contact with said bearing-surfaces, and means for compressing or straightening said curved arms more or less to a straight line, whereby a pressure is applied to said seal to seat the same.

3. In a bottle-seal, the combination with a bottle having a seat within the neck thereof and bearing-surfaces at or near the upper extremity of said neck, of a seal adapted to make sealing contact with said seat, curved arms connected therewith extending upward to make an operative contact with the bearing-surfaces and bent upon themselves to form levers operatively connected and coacting to depress or straighten the said curved arms to apply pressure upon said seal, substantially as set forth.

In testimony whereof I have signed my name to this specification.

WILLARD R. GREEN.

Witnesses:

JOS. M. MALAMENT,

J. R. SARSIEVE.