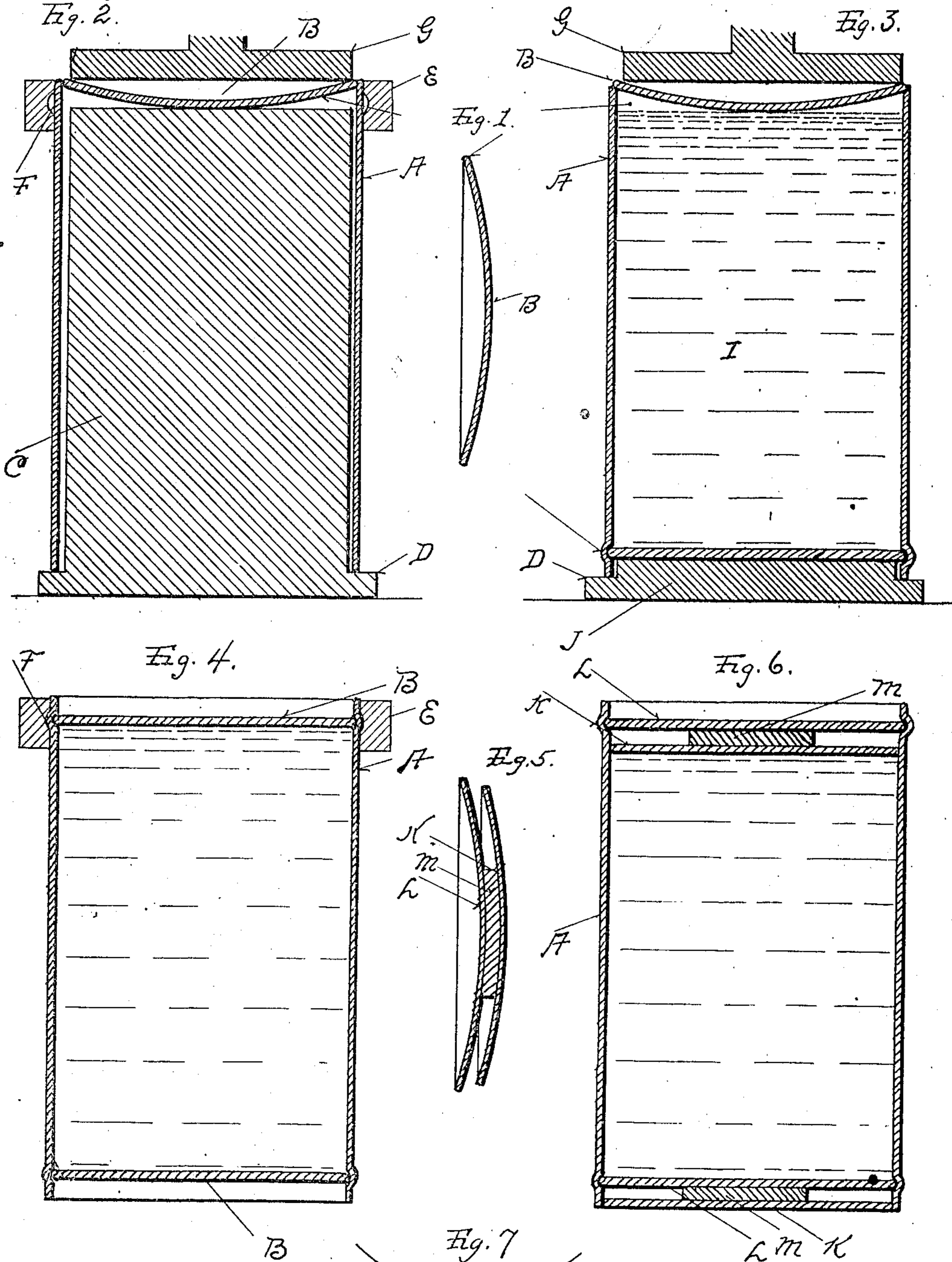


G. L. JENKINS.
METHOD OF MAKING PAPER BOTTLES.
APPLICATION FILED JUNE 27, 1907.

927,801.

Patented July 13, 1909.



WITNESSES:
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UNITED STATES PATENT OFFICE.

GRACE L. JENKINS, OF WASHINGTON, DISTRICT OF COLUMBIA.

METHOD OF MAKING PAPER BOTTLES.

No. 927,801.

Specification of Letters Patent.

Patented July 13, 1909.

Application filed June 27, 1907. Serial No. 381,055.

To all whom it may concern:

Be it known that I, GRACE L. JENKINS, citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Methods of Making Paper Bottles, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to a method for forming and closing paper bottles, such for example as milk bottles, and particularly to a method for inserting tops and bottoms in the tubular bodies of such bottles.

In the accompanying drawings, Figure 1 represents in diametrical section a disk adapted to be inserted in a bottle as a bottom or a top for the same. Fig. 2 is a sectional view of a bottle, a bottom in process of insertion, and certain appliances involved in the operation. Fig. 3 is a similar view showing a disk in process of insertion as a top in a filled bottle. Fig. 4 is a similar view showing a filled bottle with both top and bottom in place. Fig. 5 is a section similar to Fig. 1 showing a double disk. Fig. 6 is a view similar to Fig. 4, showing double disks in place in a filled bottle. Fig. 7 is a plan view of a portion of a certain divided ring.

In these drawings, A represents a tubular bottle body of paper, made in any suitable manner and B a concave paper disk which is preferably slightly greater in diameter than the internal diameter of the body A and when pressed into plane form is further increased in diameter. To insert one of these disks in the body A, to serve as a bottom, the body is placed over a rigid slightly smaller cylindrical form C of such height that when the lower end of the paper body rests upon a flange D, or the like support, the plane upper face of the form lies at some distance below the upper end of the paper body, as shown in Fig. 2. Around the paper body is preferably placed a closely fitting ring E (shown in this instance, as extending from the top of the body only a little below the plane of the upper end of the form) having an internal annular groove F nearly in the plane of the upper end of the form. One of the disks is then laid upon the upper end of the paper body and pressed down by a rigid plane-faced plunger G of approximately the same diameter as the disk and the interior of the paper body, and having its center, or axis, in the common axis of the form, disk and body A.

As the disk is forced down, its downwardly bulging middle is prevented from descending by the form, and its margin swells the body A outward into the groove in the ring, as shown in Fig. 4, the disk under the heavy pressure necessarily assuming plane form. In practice, when the plunger and ring are removed, the disk remains substantially plane and securely held in the groove which it has itself formed in the body A. The removal of the ring is facilitated by dividing it as shown in Fig. 7, the ends being held by any suitable locking device, shown as a pivoted link E'.

When the bottle is to be filled and closed, the desired quantity of liquid I, which is usually milk, is placed in the bottle, the latter is placed upon a form J, Fig. 3, similar to the form C but only high enough to reach the bottom of the bottle, and another disk is placed upon the upper end of the bottle and forced down by the plunger as before, the liquid itself serving in this case as the form. Of course, the liquid is at first centrally displaced by the disk, but practically none escapes and when the disk reaches its lowest point the air is practically all forced out leaving the bottle in effect hermetically sealed with no air inside. It might appear that since air can escape it can return, but it is to be remembered that it escapes under heavy pressure while there is no pressure to urge its return, and further the tendency of the material to recoil slightly when pressure is removed practically closes the space through which the air escaped. The ring is not shown in Fig. 3, but is, or may be, used in closing the bottle the same as in inserting the bottom. After the package is thus filled, neither disk can be removed without its clearly showing that it has been tampered with, and hence bottles sealed at the factory, dairy, or farm, reach the consumer with the contents practically guaranteed; and it is practically impossible for intermediate handlers to replace part of the contents with water as sometimes happens with ordinary packages.

Fig. 5 shows a double disk, the two plates K, L, being connected at the middle by a separating piece M. When this form is used, one of the plates is preferably made slightly smaller than the other, the larger one only, seating itself in the groove in the body A, as shown in Fig. 6.

What I claim is:

1. The method of closing a tube of yielding material which consists in passing a closely fitting concave plate into the tube to the closing point, and then flattening the plate
5 until its edge forms a depression in the wall of the tube and is firmly seated in said depression.

2. The method of sealing a filled receptacle which consists in supplying thereto a concave disk of a diameter approximately equal
10 to the internal diameter of that portion of the receptacle in which it is to be seated and forcing the disk into the receptacle until it flattens against the contents thereof.

3. The method of forming paper bottles 15 which consists in providing a pliable tubular body, inserting in said body a closely fitting transverse, concave disk, holding the exterior of the body alongside the plane of the disk's margin to localize expansion, and compelling the disk to assume approximately
20 plane form.

In testimony whereof I affix my signature in presence of two witnesses.

GRACE L. JENKINS.

Witnesses:

ALICE J. MAXFIELD,
J. JEROME LIGHTFOOT.