Oct. 4, 1927. 1,644,506

R. A. BENNETT ET AL

PAPER CONTAINER

Filed April 1, 1925

Fig. 1.

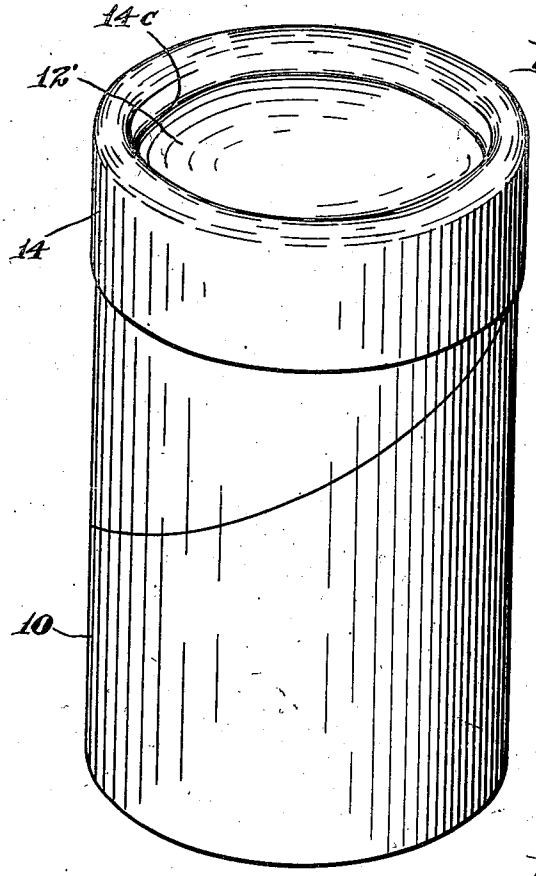


Fig. 3.

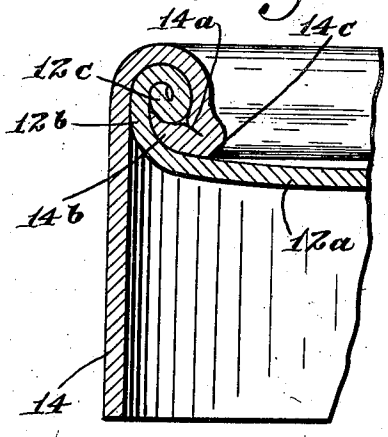
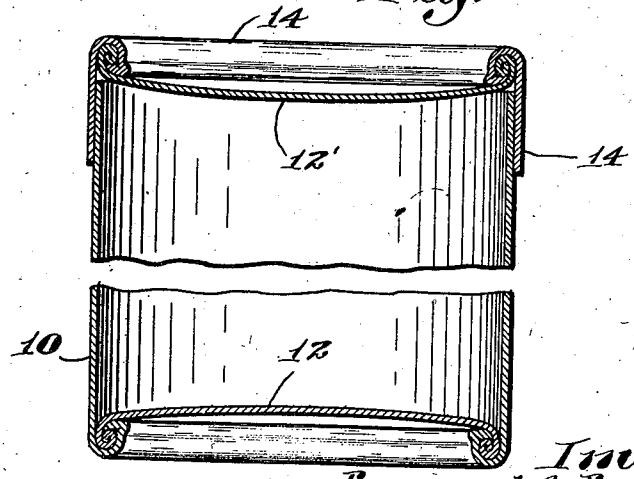


Fig. 2.



Inventors
Raymond A. Bennett
Albion M. Boothby
by Mitchell, Chadwick & Kent
Attorneys

Patented Oct. 4, 1927. 1,644,506

UNITED STATES PATENT OFFICE.

RAYMOND A. BENNETT, OF ROXBURY, AND ALBION M. BOOTHBY, OF WATERTOWN, MASSACHUSETTS, ASSIGNORS TO BOOTHBY FIBRE CAN COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

PAPER CONTAINER.

Application filed April 1, 1925. Serial No. 19,862.

This invention relates to improvements in paper containers. More particularly it relates to containers adapted for holding powders and liquids and which can conveniently be formed of a section of paper tubing whose ends are fitted with paper closures. Paper which is capable of withstanding the moistening effect of liquid contents has been known for some time; but it has been a problem to make the ends tight against siftage and leakage and strong enough to hold against the force exerted by contents tending to bulge or drive off the closure. This force may at times be considerable, especially when the contents have not filled the interior, in which case there is a shock in the nature of water hammer upon the sudden stoppage of any endwise movement of the container. The difficulty of the problem is enhanced by the fact that the paper material is somewhat elastic and cannot be "set" at a small angle as easily as tin plate, nor bent as sharply; and yet can be rather easily bowed outward or inward. It is an object of the present invention not only to provide an adequate solution, but also to make the solution so simple and inexpensive that containers can be made at a figure in which the cost for labor is almost negligible, with certainty that the closure is tight for the powdered or liquid contents, and is secure when applied as a permanent cover.

These objects are accomplished by providing a tubular casing of light, thin rolled paper material, such as manila board, constituting the body of the container, with closures for its ends made of the same sort of material. Each closure consists of a drawn cap whose body may be flat, or, as preferred, dished inward, forming a sort of arch closure concave outward across the hollow of the casing. This cap is set within the hollow and has its edge portion bent into a flange which lies along the inner face of the cylindrical casing, being turned back upon itself at its extremity to form a peripheral bead. The end portion of the cylindrical casing is turned inward around this peripheral bead so that it extends back inward parallel to itself, into contact with the said flat or concave body portion of the cap, where it is folded sharply outward from the axis so that it lies along the outer surface of the body portion of the cap between the said peripheral bead and the body portion of the cap, terminating at its said flange. If desired the contacting surfaces of the cap and casing may be glued together, but this is not necessary as they hold each other firmly in position at all times and become still more firmly pressed together when the body of the cap is bulged outward, as when the contents of the container press against it.

It is intended that the patent shall cover, by suitable expression in the appended claims, whatever features of patentable novelty exist in the invention disclosed.

In the accompanying drawings:

Figure 1 is a perspective of a container constructed in accordance with the present invention;

Figure 2 is a medial section, on the axis of the container; and

Figure 3 is like Figure 2, on larger scale, showing a portion of the container.

Referring to the drawings, the container comprises a cylindrical tubular casing 10, whose bottom end is closed by a cap 12, and whose top end is closed by a cover shell 14 having a similar cap 12′. As the construction of the bottom and top closures is the same, the following detailed description of the top closure is applicable to both.

The cap 12′ is made from suitable flat paper stock and consists of a body or disk portion 12^a which may be either flat or, preferably, dished inward as illustrated. Its edge is turned in the endwise direction to form a peripheral cylindrical flange 12^b, which extends a short distance endwise of the container, at right angles to the plane or approximate plane of the disk. This cupped shaped cap is set within the tubular casing 14, with its flange fitting against the inner face of the casing and with its plane or dished body portion crossing and closing the hollow thereof, and both are placed upon a core or arbor (not shown) whose end is shaped to conform to the shape of disk illustrated. By suitable means the flange and adjacent portion of the casing, both of which are cylindrical at this stage of construction, are then turned or rolled inward toward the disk body, the end of the flange being bent or rolled over on itself to form a peripheral bead 12^c which is separated from the disk body by a small space.

The casing shell 14 is bent around this bead until it reaches the disk body where it has a sharp fold outward, at 14^a, into approximate parallelism with the disk body, to continue along the disk body portion into the said space between it and the bead 12^c. As the rolling and bending is done under pressure, the thickness of the shell stock which occurs at the fold is caused to flatten out, thereby forcing its end 14^b in one direction firmly into the annular space under the bead between the bead and disk body, and in he other direction at 14^c slightly along the surface of the disk body portion 12^a.

Thus the turned over edge of the shell becomes a sort of abutment against which the contents of the container press the disk to bulge it. When this latter occurs the dished-in disk must first become flat again before pressure from within can bulge it outward, and during this flattening it enlarges radially thereby forcing the inner end of its flange more firmly radially against the shell wall and at the same time pressing harder in the direction of the axis upon the bead of the shell. This last mentioned pressure is transmitted through the portion of the shell lying in the annular space and is applied to the peripheral bead on the flange, causing the latter and thereby the outer end of the flange to press also more firmly against that portion of the shell that is bent around it. Accordingly the crevice between the shell and the flange is made impassable to liquid or powdered contents and no leakage can occur.

We claim:

1. A paper container comprising a tube combined with a closure for its end having a disk with its main body portion within and extending across the hollow of the tube and terminating at the tube wall in a peripheral flange bent from the disk toward the tube end; said flange being folded back inward upon itself into a peripheral bead, and the tube end being turned around said bead and tucked with its end between said flange and its bead, and with the portion next to its said end flattened between said bead and the adjacent part of the disk portion.

2. A paper container comprising a tube combined with a closure for its end having a disk with its main body portion within and extending across the hollow of the tube and terminating at the tube wall in a peripheral flange bent toward the tube end and turned back inward upon itself to form a peripheral bead; the tube end being turned around said bead and extended inward into contact with the main body portion of the disk and there folded outward between the bead and said portion in contact with both said bead and said portion to bring its edge against the flange.

3. A paper container comprising a tube combined with a closure for its end having a disk with its main body with dished-in portion within and extending across the hollow of the casing and terminating at the tube wall in a flange bent from the dished-in portion toward the tube end; said flange being rolled back upon itself to form an internal peripheral bead slightly removed from the dished-in portion, and the tube end being bent over said bead with its edge filling the space between the bead and the said portion, and set so that endwise pressure of contents on the dished-in portion presses the disk, turned tube end, and bead the more tightly together.

Signed at Boston, Massachusetts, this twenty-sixth day of March, 1925.

RAYMOND A. BENNETT.
ALBION M. BOOTHBY.