July 4, 1933. G. K. SCRIBNER 1,916,693

MOLDED CLOSURE

Filed May 5, 1930

Fig. 1.

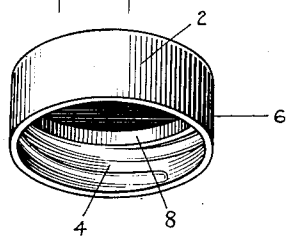
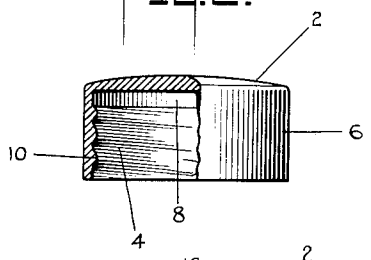


Fig. 2.



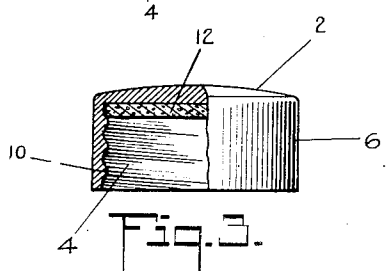


Fig. 3.

INVENTOR
George K. Scribner
BY
Cavanagh & James
ATTORNEYS

Patented July 4, 1933 1,916,693

UNITED STATES PATENT OFFICE

GEORGE K. SCRIBNER, OF BOONTON, NEW JERSEY, ASSIGNOR TO BOONTON MANUFACTURING COMPANY, OF BOONTON, NEW JERSEY, A CORPORATION OF NEW JERSEY

MOLDED CLOSURE

Application filed May 5, 1930. Serial No. 449,851.

This invention relates to closures, and more particularly to molded closures made from plastics such as synthetic resins.

The present invention centers about caps, covers, or closures for bottles, collapsible tubes, jars, and the like. Such closures are frequently provided with sealing liners made, for example, of cork or/and wax paper in order to seal the bottle or jar on which the closure is placed. Considerable and sometimes expensive trouble is caused by the fact that the liner placed in the closure often falls out during assembly or shipment of the cap, and during use of the same by the bottler or the ultimate purchaser. The primary object of the present invention is to overcome the foregoing difficulty, and resides in the provision of a cap or closure having an internal recess or ledge for receiving and holding a liner in place, and more particularly resides in the provision of such a cap or closure made of a hard molded composition, especially a synthetic resin, such, for example, as phenolic condensation product, for such resins possess numerous highly desirable characteristics as regards manufacture, appearance, and use.

A further and more specific object of the present invention resides in the provision of such caps or closures having an exterior configuration which may be different from and wholly independent of its internal configuration, and which specifically may, if desired, be internally threaded while having a smooth cylindrical exterior. In any case, the exterior configuration of the cap need not correspond to or disclose the presence of the internal liner recess.

To the accomplishment of the foregoing and such other objects as will hereinafter appear, my invention consists in the cap or closure elements and their relation one to the other as hereinafter are more particularly described in the specification and sought to be defined in the claims. The specification is accompanied by drawing in which:

Fig. 1 is a perspective view of a bottle cap embodying my invention;

Fig. 2 is a partially sectioned elevation of the same; and

Fig. 3 is the same with a liner in place.

Plastic compositions of the class called synthetic resins, particularly phenolic condensation products, are peculiarly well adapted for the molding of manufactured articles, inasmuch as these resins possess desirable features such as strength, rigidity, durability, and immunity to the action of water and acids, as well as a pleasing appearance. Such compositions are adaptable for molding under the action of heat and pressure, and when cooled finally assume a hard, set, and infusible condition.

The present invention is a novel cap or closure characterized by the provision therein of a vacant liner recess or ledge in which a soft sealing liner may be subsequently inserted, the liner being dependably retained in position by the recess or ledge. The cap, when finished and ready for use, is, of course, provided with an appropriate liner, but the liner is not an integral part thereof and is not molded in the cap during the molding process, nor need it be cemented in place, it being retained in position by the aforesaid recess or ledge. The cap is made economically yet with a beautiful finish and durable and resistant qualities, by molding the same out of a synthetic resinous material.

The cap is made by a stripping process generally set forth in my copending application Ser. No. 449,852 filed concurrently herewith, as is there explained, I have discovered that after the plastic molding condition of a synthetic resin and before the molded article completely sets and hardens, there is an intermediate state in which the material is sufficiently set to be removable from the mold and yet elastic and resilient rather than rigid and hard so that the article may be stripped from the mold in spite of the presence of a ridge or recess, particularly if it is separated from the mold slightly before the composition has completely set. The cap is extracted from the outer mold by the molding pin, in conventional manner, and is then removed from the molding pin, the elasticity of the cap during the final stages of the molding

process and while still hot permitting removal of the cap despite interlocking of the liner recess with the molding pin. In stripping the cap from the pin, the threads as well as the liner recess may be disregarded, being taken care of by the elasticity of the material, as aforesaid.

Caps or covers for numerous articles may be manufactured embodying features of my invention, but for purposes of illustration I here disclose and describe a simple cap or closure for bottles, collapsible tubes, and the like. Referring to the accompanying drawing, the bottle cap 2 is molded from a phenolic condensation product in a single operation, preferably in accordance with the method disclosed and claimed in my aforementioned copending application. This cap has top and side walls, and is provided with holding means, here exemplified by the thread 4 on its inner surface, while all of the remaining surface of the cap is smooth and cylindrical. The smooth cylindrical surface 6 on the outer periphery of the cap gives the same an attractive appearance which differs markedly from caps now used, all of which, so far as I am aware, have either been made polygonal in form, or have been molded or otherwise roughened.

Such caps or closures are frequently desired to be provided with liners made of cork or/and wax paper and the like, and these have proven very troublesome because of the tendency of the same to fall out during manufacture, shipment, and use of the caps, thereby necessitating replacement and considerable loss. The present cap is provided with a liner recess 8 which terminates the thread 4 and extends around the inside periphery of the cap. This liner recess greatly improves the utility of the cap, and constitutes an important single feature of my invention. With such an arrangement, the liner, when pushed into place is held securely by the liner recess or undercut, and loss of the same is prevented for the entire life of the cap. Of course, if a liner is to be changed, an old one may be intentionally pried out of place and a new one substituted, but the liner is incapable of falling out of the cap accidentally. This recess may be provided in the cap regardless of the diameter of the same, and even tiny caps for collapsible tubes may be provided with such a recess, as well as caps having a diameter of say one-half an inch for relatively small bottles, and large diameter caps for jars.

The presence of the liner recess or/and the thread within the cap does not spoil the exterior appearance of the cap, for the recess and thread are formed by appropriately varying the thickness of the wall of the cap.

It will be noted that the thread 4 is relatively smooth and rounded in cross section as is indicated by the numeral 10, and the thread may be given considerable pitch so that the cap may be closed in a small number of, or even a fraction of a revolution. This type of thread suffers from no disadvantage in not being as leakproof as certain other threads, for the reason that the cap may be and preferably is permanently fitted with a liner which itself prevents leakage. Furthermore, it fills up and mates accurately with threads on glass bottles and jars, which threads are themselves blunt and rounded.

Fig. 3 shows the cap of Fig. 2 after placing therein a soft and yieldable liner 12 which in the specific case here shown may consist of a disc of cork, for example.

The nature of the cap or closure of my invention and the many advantages of the same will, it is believed, be apparent from the foregoing description thereof. The cap is provided with a liner recess or liner retaining ledge which holds a liner securely in place during shipment of the closures, during mounting of the same on bottles or the like, and during subsequent use of the bottle by the ultimate consumer. The molded cap is cheap, beautiful, strong, resistant to attack by water, acids, and the like, and may be molded to any desired shape and decorated or left plain, as preferred, for artistic appearance. The cap is made accurately to dimension and is provided with a smooth and polished surface finish directly by the molding operation. The outside configuration is independent of the inside configuration. The liner is held in place without cementing or like procedure, and may rotate in the cap. A compound or laminated liner is held together by the liner retaining ledge. The liners may be added separately to the caps so that a variety of liners may be supplied with a single type of cap, according to orders received. The liner recess need not be machined, to do which would be difficult and costly. Although the synthetic resin composition is largely filler, as is conventionally the case, the exposed surface including the liner recess has been in contact with the mold and is therefore surfaced with a skin of resin. The cap is wholly devoid of fins or flash. The blunt or rounded thread produced is of advantage in mating with the blunt and rounded threads of glass bottles, jars, and the like.

It will be apparent that while I have shown and described my invention in the preferred form, many changes and modifications may be made in the structure disclosed without departing from the spirit of the invention, defined in the following claims.

I claim:

1. A liner recess closure cap made directly in finished form by a simple molding operation out of a synthetic resin composition

which, during the final stages of the molding operation, is somewhat elastic and thereby adapted to be removed from a molding pin despite interlocking of the molding pin with the liner recess, said cap having an inner surface molded to provide holding means and a vacant annular liner recess located above the holding means and defined by a liner supporting ledge, said recess serving to subsequently receive and retain a separate liner in place within the cap.

2. A liner recess closure cap made directly in finished form by a simple molding operation out of a synthetic resin composition which, during the final stages of the molding operation, is somewhat elastic and thereby adapted to be removed from a molding pin despite interlocking of the molding pin with the liner recess, said cap having an inner surface molded to provide a thread and a vacant annular liner recess located above the thread, said recess being larger in diameter than the smaller diameter of the thread and serving to subsequently receive and retain a separate liner in place within the cap.

3. A liner recess closure cap made directly in finished form by a simple molding and stripping operation out of a synthetic resin composition which, during the final stages of the molding operation, is somewhat elastic and thereby adapted to be stripped from a molding pin despite interlocking of the molding pin with the liner recess, said cap having an inner surface molded to provide a thread and a vacant liner recess defined by a retaining ledge located above the thread, said recess serving to subsequently receive and retain a separate liner in place within the cap.

4. A liner recess closure cap made directly in finished form by a simple molding and stripping operation out of a phenolic condensation product composition which, during the final stages of the molding operation, is somewhat elastic and thereby adapted to be stripped from a molding pin despite interlocking of the molding pin with the liner recess, said cap having an inner surface molded to provide a thread and a vacant liner recess defined by a retaining ledge located above the thread, said recess serving to subsequently receive and retain a separate liner in place within the cap, the threads of said cap being relatively blunt or rounded in section.

5. In combination, a liner recess closure cap made directly in finished form by a simple molding operation out of a synthetic resin composition which, during the final stages of the molding operation, is somewhat elastic and thereby adapted to be removed from a molding pin despite interlocking of the molding pin with the liner recess, said cap having an inner surface molded to provide holding means and an annular liner recess located above the holding means and defined by a liner supporting ledge, and a relatively soft sealing liner inserted in said cap and held in place by the liner recess.

6. In combination, a liner recess closure cap made directly in finished form by a simple molding operation out of a synthetic resin composition which, during the final stages of the molding operation, is somewhat elastic and thereby adapted to be removed from a molding pin despite interlocking of the molding pin with the liner recess, said cap having an inner surface molded to provide a thread and an annular liner recess located above the thread, said recess being larger in diameter than the small diameter of the thread, and a relatively soft and yieldable sealing liner inserted in said cap and held in place by the liner recess.

7. In combination, a liner recess closure cap made directly in finished form by a simple molding and stripping operation out of a synthetic resin composition which, during the final stages of the molding operation is somewhat elastic and thereby adapted to be stripped from a molding pin despite interlocking of the molding pin with the liner recess, said cap having an inner surface molded to provide a thread and a liner recess defined by a retaining ledge located above the thread, and a relatively soft sealing liner inserted in said cap and held in place by the liner retaining ledge.

8. In combination, a liner recess closure cap made directly in finished form by a simple molding and stripping operation out of a phenolic condensation product composition which, during the final stages of the molding operation, is somewhat elastic and thereby adapted to be stripped from a molding pin despite interlocking of the molding pin with the liner recess, said cap having an inner surface molded to provide a thread and a liner recess defined by a retaining ledge located above the thread, the threads of said cap being relatively blunt or rounded in section, and a relatively soft and yieldable disc-shaped sealing liner inserted in said cap and held in place by the liner retaining ledge.

Signed at Boonton in the county of Morris and State of New Jersey this second day of May, A. D. 1930.

GEORGE K. SCRIBNER.

CERTIFICATE OF CORRECTION.

Patent No. 1,916,693. July 4, 1933.

GEORGE K. SCRIBNER.

It is hereby certified that the above numbered patent was erroneously described and specified as "Boonton Manufacturing Company" whereas said name should have been described and specified as "Boonton Molding Company", as shown by the records of assignments in this office; page 1, line 84, strike out the comma after "herewith" and insert a period; and line 85, for "as" read "As"; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 29th day of August, A. D. 1933.

M. J. Moore.

(Seal) Acting Commissioner of Patents.