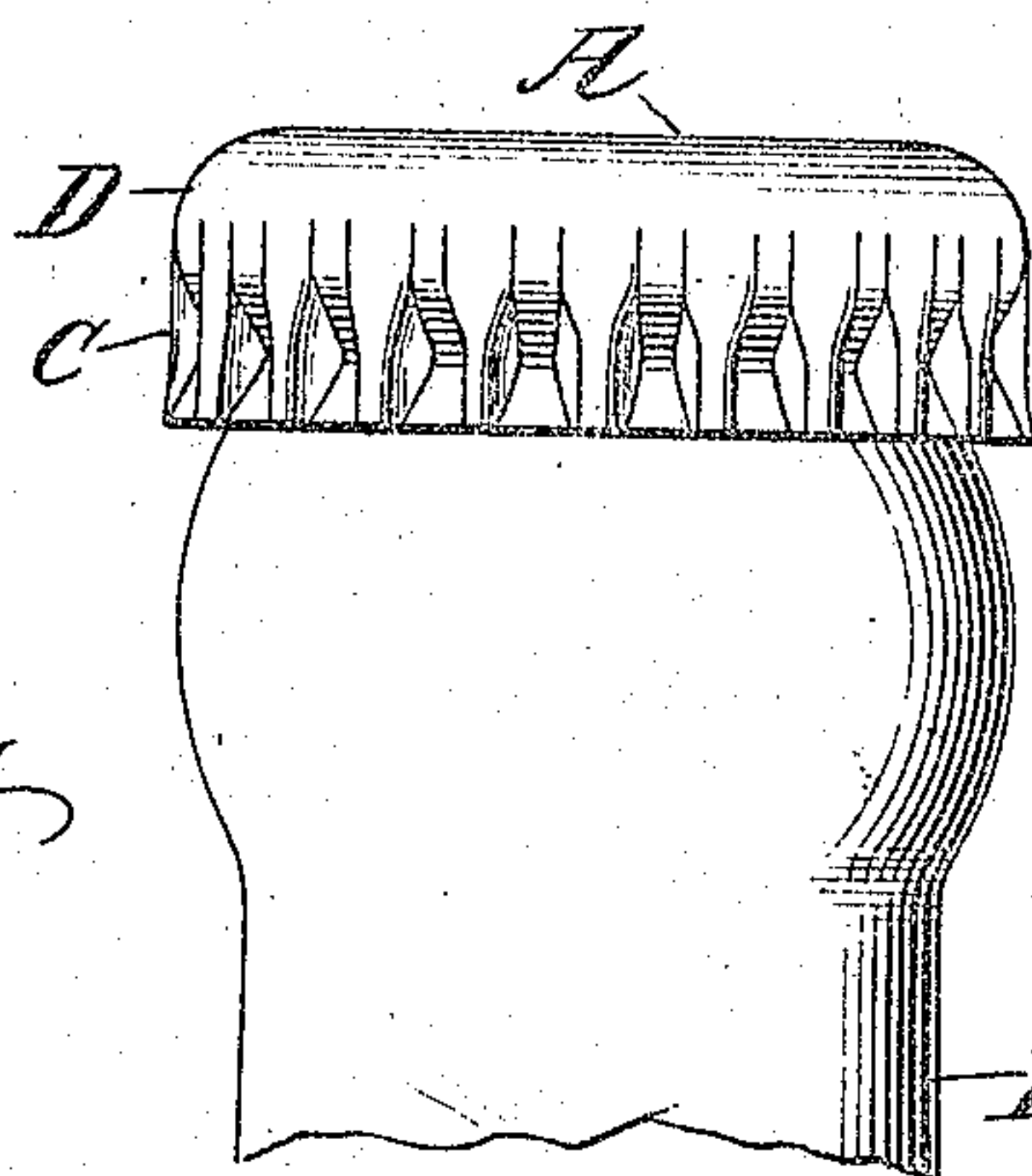
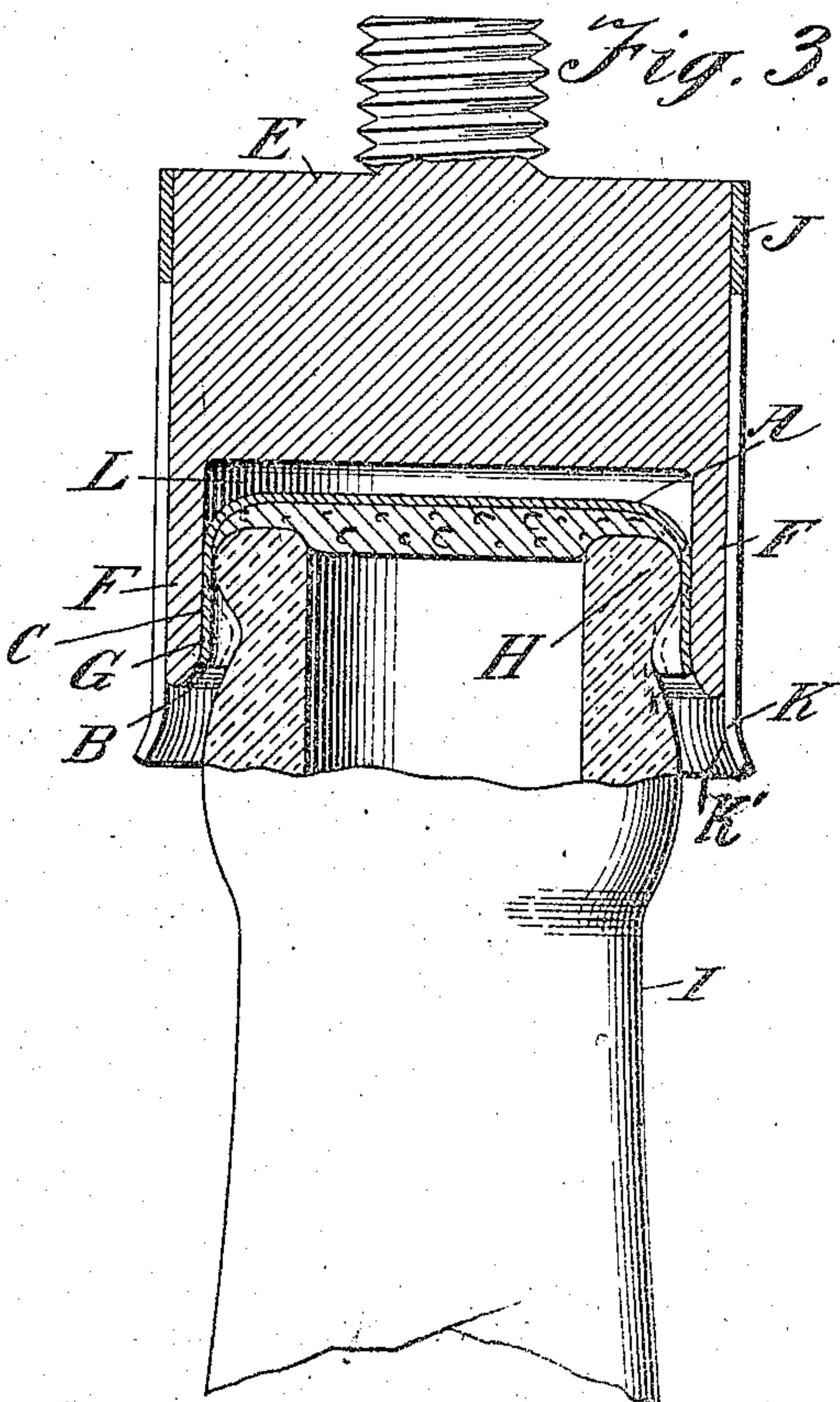
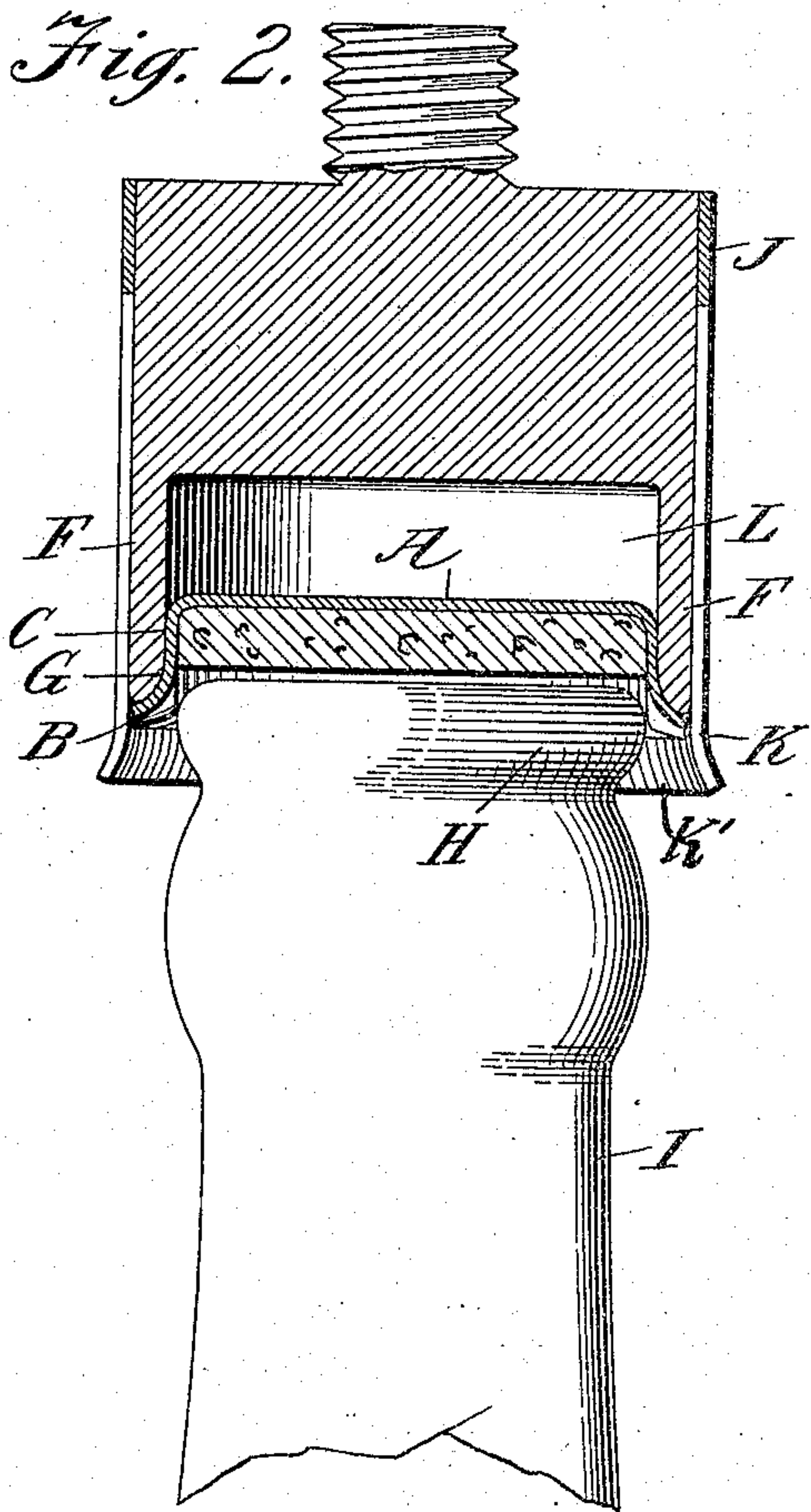
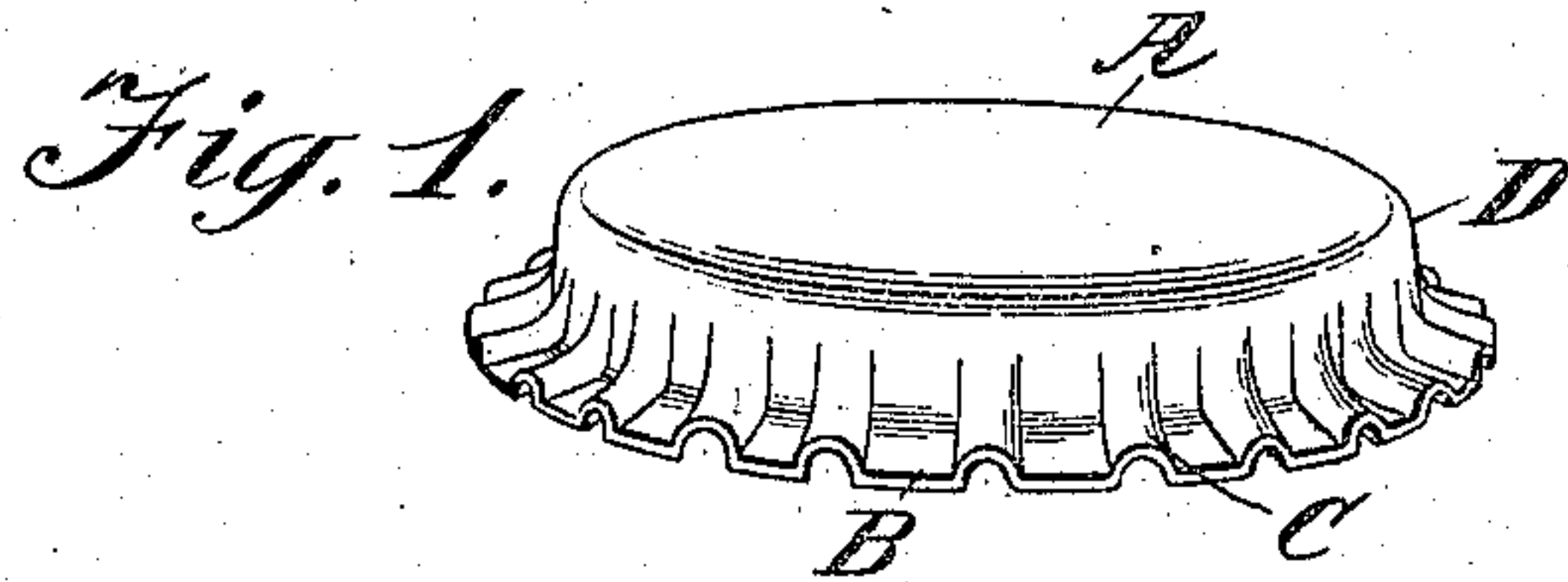


J. A. HICKS.
METHOD OF SEALING VESSELS.
APPLICATION FILED MAY 15, 1908.

936,893.

Patented Oct. 12, 1909.



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METHOD OF SEALING VESSELS.

936,893.

Specification of Letters Patent.

Patented Oct. 12, 1909.

Application filed May 15, 1908. Serial No. 432,982.

To all whom it may concern:

Be it known that I, JOHN AUGUSTUS HICKS, a citizen of the United States, residing at Summit, Union county, New Jersey, have invented certain new and useful Improvements in Methods of Sealing Vessels, of which the following is a specification.

My invention relates to a method of applying sealing caps to vessels and it consists in certain operations fully set forth in the following specification and claimed at the end thereof.

The object of my invention is to secure a crimped flange sealing cap, similar in construction to the cap known as the crown and seal cap, to a vessel neck by an improved means, and to apply the cap in such a manner that quite a perfect sealing results, including features which are not now known or practiced.

Another object of my invention is to draw a cup shaped sealing cap so rigidly down over a bead on a bottle neck, that the angular space which forms the intersection of the top surface with the pendent flange is eliminated, and the stretched out metal made to conform closely to the shape of the outer surface of the bottle bead.

In order that those skilled in the art to which my invention appertains may understand, construct and use my invention, I will proceed to describe it referring to the accompanying drawings forming part of this specification in which—

Figure 1 shows a perspective view of a crimped flange sealing cap, in outside view. Fig. 2 shows a central longitudinal section of the cap on the top of a vessel, over its neck bead, and the tool, by means of which the sealing cap is applied to the vessel in its initial position of closure. Fig. 3 shows the same as Fig. 2 but with the cap crimps folded under the neck bead of a vessel by the internal parallel walls of the applying tool, and the cap drawn down over the neck bead closely by contact of the inner surface of the applying tool with the top of the crimps of the flaring flange close to the pendent flange or barrel of the cap and without

any pressure being exerted upon the top surface of the cap, and made to conform closely to the shape of the neck bead, by the grip of the tool on the top surface of the cap flange crimps, without any top compression, so that the outer circumference of the flaring flange when the operation is completed, is substantially in line with the vertical lines of the barrel or pendent flange of the cap. Fig. 4 shows in elevation the cap applied to a vessel, showing the resulting practically straight sided flange, as to the prominences of the crimps, and the depressions, pressed under the neck bead.

A shows the top surface of the cap.

B shows the raised portion of the flaring cap flange.

C shows the depressions between the raised portions of the flaring cap flange, both B and C constituting the crimps of the cap.

D shows the barrel of the cap above the flaring flange, and the crimps are formed both in the flaring flange, and also partially in the barrel D.

H shows a bead upon a vessel neck, and in Fig. 2, the cap is situated upon it previous to securing it to the vessel permanently.

E shows a cap tool for applying the cap to a vessel. It is cupped out as shown at L, and the walls F of the cup are of the same diameter internally as the exterior of the barrel of the cap, which it is to apply, including the crimp prominences B. The bottom G, of the wall of the cup L, is shaped to fit the flare of the cap flange over its crimp prominences B. Around the cap tool E a casing J is secured, split at its lower part into spring fingers K, to act as cap temporary holding means.

K¹ represents the line of slits between the fingers K, which divide the casing J at its lower portion into spring fingers K, to hold the cap by friction from dropping out of the applying tool, and to aid in entering the cap in the said tool, other means for retaining the cap in the tool may be used, without departing from my invention.

The vessel neck is lettered I.

By forcing contact between the vessel bead H and cap A, through the vertical approach

of the cap and bead toward each other, by means of the cap tool E, the prominences B of the crimp are bent downward and inward toward the neck, thus contracting the diameter of the flare of the cap flange, and forcing the depressions beneath the neck bead, to lock the cap to the vessel; in doing this the flaring flange enters the cup L of the cap tool, and contracts it to the same diameter as the exterior of the barrel of the cap, and the grip or friction of the inside of the walls F, of the tool E, draws the cap down over the neck bead of the vessel and compresses the sealing wafer within it to its full capacity, and shapes the metal of the cap itself to the neck bead, so that all space within the cap, outside of the inner walls of the vessel mouth is eliminated, and all chance of air remaining within the confines of the inner walls of the cap flange and the top part of the vessel bead is destroyed. The walls of the cup of the applying tool E, are straight vertically, and there is no taper part to said walls in the cup.

By the generally accepted method of securing to and forming crimped sealing caps upon vessels, the cap is held firmly upon the top of the vessel by pressure directly upon its top, and the cap and sealing wafer, are obliged to take the form of the compressing tool. After this first operation is completed, side pressure is applied to the lower and outer extremities of the crimps or corrugations, to force them and the sides of the cap into locking contact with the under side of the bottle bead. This last operation is a forming or compressing force and not a drawing force.

The object of my invention is first to hold the sealing cap in the rigid walls of a cup shaped tool firmly, in order that the nose of a vessel to be capped will be directed to the center of the cap by the under side of the corrugations in the flaring flange, secondly that the bottom walls of the cup shaped tool shall bear upon the upper surface of the crimps of the flaring flange and close to the barrel of the cap or pendent flange in order to secure the greatest amount of resistance of the tool upon the cap flange. When the vessel and cap in the act of capping, are forced toward each other the thrust is first received by the cork wafer in the cap which is thus compressed to its full limit of compression, and then the metal of the upper part of the cap is drawn down to conform to the vessel bead. By further movement the flaring flange is pressed into and between the parallel walls of the cup shaped tool and consequently the crimps of the flaring flange are forced under the bead on the vessel neck and brought to the diameter of the pendent flange and securely locked.

It is important in order to draw out the

metal at the intersection of the top surface and the pendent flange, which is practically a corner recess, that the power to do this should be vertical and applied to the metal of the barrel of the cap where it joins the flaring flange, in order to get a direct vertical pull upon the flange. It will not do to accomplish this by a tool which must conform to some one form of vessel bead, and is unchangeable. My tool by drawing down the flange by vertical pull, is calculated to conform the cap to varying forms of bead on the vessels which are often flat on top and also have varying curved surfaces. My invention causes the cap to conform to whatever form of bead is used and eliminates all useless spaces within the cap.

The firm grip which the tool E has upon the flange of the cap close to the barrel causes the cap to conform to any inequalities of the vessel bead, and also the sealing wafer to fill any vacancy which may be within the cup of the cap. It is also to be noted, that the cap being entered in the spring holding fingers, and the barrel of the cap in the hollow of the applying tool E, with bottoms of the walls at G, fitting the flaring part of the cap flange, the cap is perfectly and positively aligned with and controlled by the cap applying tool E, so that during the vertical movement to produce contact and closure over the neck bead of the vessel, the cap is centered and firmly held against side movement.

It is absolutely necessary in securing a sealing cap on a vessel, to make a perfect sealing that the vessel bead shall be guided accurately with respect to the center of the cap, and to do this by means of the crimps projecting below the flaring flange, the cap must be held firmly in a tool which centers the cap in accurate alinement with the center line of the thrust of the machine in applying the cap. It is of course understood that this method is to be performed in a capping mechanism, where the vessel and cap are caused to approach each other in central alinement.

Having now fully described my invention and the manner in which the same is to be performed, what I claim as new and as my invention and desire to secure by Letters Patent is—

The within described method of applying a sealing cap having a top surface, a flange pendent from said top surface and a crimped flange flared outwardly from near the base of said pendent flange, to a vessel having a bead surrounding its mouth, which consists, first in exerting sufficient force upon the top surface only of the crimped flange to cause the top surface of the cap to take the form of the top surface of the vessel bead, and thereby produce an extreme compression of

the sealing material between the top surface of the cap and the top surface of the vessel bead, to complete the sealing, and then locking the crimped depressions beneath the vessel bead, by forcing the crimped ribs through an unyielding aperture to lock the cap to the vessel.

In testimony whereof, I have signed my

name to this specification in the presence of two subscribing witnesses, this 13th day of 10 May 1908.

JOHN AUGUSTUS HICKS.

Witnesses:

LINCOLN A. STUART,
JAMES M. HICKS.