May 8, 1923.

1,454,699

W. CHAFFIN

BOTTLE OR JAR SEAL

Filed May 22, 1922

Fig. 1.

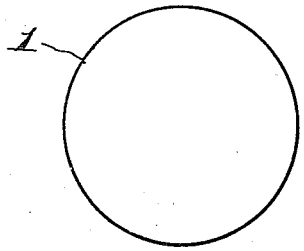


Fig. 2.

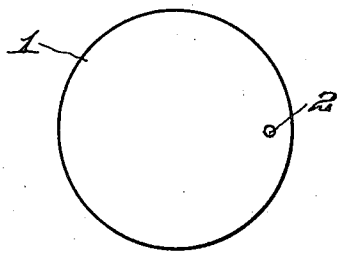


Fig. 4.

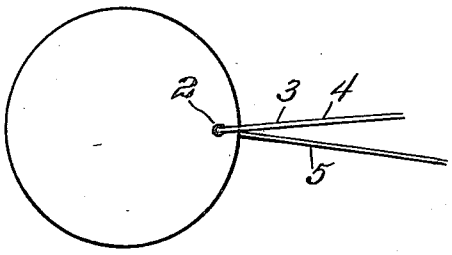


Fig. 3.

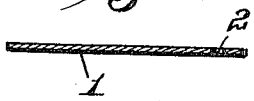


Fig. 5.

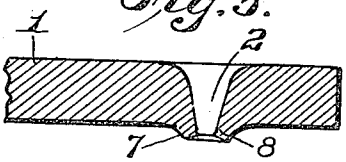


Fig. 6.

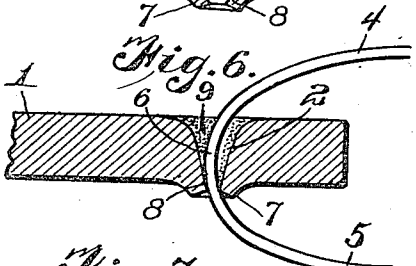


Fig. 7.

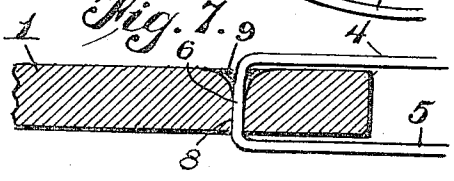
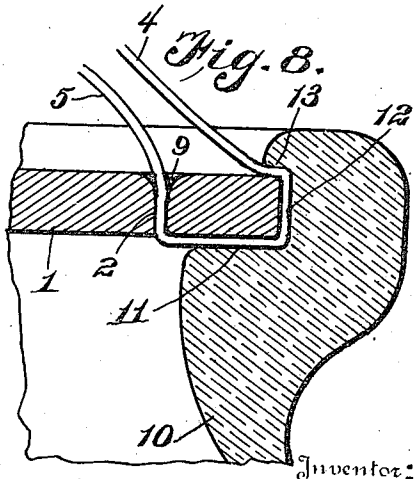


Fig. 8.



Inventor:
William Chaffin,

By C. C. Hines

Attorney.

Patented May 8, 1923. 1,454,699

UNITED STATES PATENT OFFICE.

WILLIAM CHAFFIN, OF HUNTINGTON, WEST VIRGINIA, ASSIGNOR TO HAROLD B. CROWELL AND C. C. CROWELL, BOTH OF PLATTSBURG, NEW YORK.

BOTTLE OR JAR SEAL.

Application filed May 22, 1922. Serial No. 562,656.

To all whom it may concern:

Be it known that I, WILLIAM CHAFFIN, a citizen of the United States, residing at Huntington, in the county of Cabell and State of West Virginia, have invented new and useful Improvements in Bottle or Jar Seals, of which the following is a specification.

This invention relates to certain new and useful improvements in bottle or jar seals of the disk type, such as are commonly used for sealing milk or cream bottles or jars, such disks being ordinarily made of one or more plies of paper and secured in position by pressing the same into contact with an internal shoulder and within an annular groove in the mouth of the bottle or jar.

Disks of this kind have been employed both with and without extracting means. Where the disk is employed without extracting means, it is necessary to puncture it with some sort of tool in order that it may be engaged and removed, an objectionable practice because the disk can not be reapplied for continuous use without liability of air entering through the puncture and causing the contents of the jar to be spoiled. In order to avoid this objection, and to enable the disk to be removed in a convenient manner, various forms of extractors have been employed consisting of tabs formed by slitting one of the plies of the disk or by providing a tab upon the periphery of the disk, or by fastening flexible tabs or looped wire grips to the disks in various ways. Tabs formed integral with the disks are open to the objection that they tear or pull off and require the insertion of the finger-nail beneath them in order to lift them for use, which is often a difficult and inconvenient as well as an annoying operation, and if the finger-nail is not long enough the use of tools must be resorted to. Extractors fastened to the disk are open to the objection that they are sometimes made of metal liable to contaminate the contents of the bottle, or they require fastening steps in process of manufacturing the disk making them comparatively costly to apply. While it is desirable to provide a disk seal which may be used as a closure until the contents of the bottle are fully exhausted, it is also a desideratum to employ an extractor which will not contaminate the contents of the bottle and which may be easily and conveniently applied, as by machinery, quickly and at a very low cost, in view of the low prices at which such disks are sold by the manufacturers to the trade.

One object of my invention is to provide a construction whereby a string extractor may be applied to the disk for use in a reliable, rapid, efficient and economical manner, by machine operation and at a very low cost.

A further object of the invention is to provide a string extractor which will be reliably secured to the disk, in such a manner as to prevent it from pulling out or becoming displaced.

A still further object of the invention is to provide a string extractor which will be held in position, when the disk is applied, in an effective manner and so that it may be drawn upon to extract the seal without liability of straining the fastening connection between the string and disk.

A still further object of the invention is to provide a disk with a string extractor so constructed and arranged as to allow the disks to be piled flat in a stack for package in tubes for transportation in the usual way, and in which the projecting ends of the string are free from interconnection and therefore so disposed that they are not looped and liable to be caught in interfering objects when the disks are handled in their movements through the machine which applies the strings thereto.

In the accompanying drawing illustrating my invention,—

Figure 1 is a plan view of the disk prior to the application of the extractor.

Figure 2 is a similar view showing the first step of application of the extractor.

Figure 3 is a sectional view through the disk shown in Figure 2.

Figure 4 is a view of the disk with the extractor applied for use.

Figure 5 is a view on a magnified scale through a portion of the disk shown in Figure 2, showing the form of the hole or perforation made therein.

Figure 6 is a similar view showing the

string extractor applied and secured by the fastening or sealing means, as said disk appears prior to the final step of operation.

Figure 7 is a similar view of the complete seal as ready for use.

Figure 8 is a view similar to Figure 7 showing the seal applied within the mouth of a bottle, a portion of which is shown.

In carrying my invention into practice I provide a seal comprising a circular disk 1 made of one or more plies of paper or other fibrous material, this disk being cut or stamped out of sheets of the material in the usual manner. In the operation of applying the extractor, the disk 1 is formed, adjacent to a portion of its periphery, with a hole or perforation 2 extending therethrough from bottom to top thereof. This hole or perforation is made in practice by a needle, similar to a sewing machine needle of a machine employed in applying the extractor according to the mode hereinafter described.

The extractor 3 consists of a cord of comparatively thin, tough twine or the like. This is threaded by the needle which makes a perforation 2 through said disk, after which the part of the thread forming the extractor is cut off from the main body of thread, leaving the extractor applied in the form of end portions or strands 4 and 5 projecting beyond opposite sides of the disk and a bight portion 6 extending through the hole or perforation 2.

The needle employed for making the perforation and threading the cord therethrough makes an opening of tapering form which is enlarged or flares at the end which emerges through the top of the disk, and is constricted or cone-shaped where it emerges through the bottom of the disk. In the passage of the needle through the disk 1 it pushes the portion of the material displaced to form the opening 2 beyond the face of the disk in the form of a boss or excrescence 7. The portion of the opening which extends through this excrescence is of a diameter approximately the same as the diameter of the cord 3, and the opening thence flares toward the top of the disk to a diameter slightly greater than the diameter of the cord, the construction being such that the walls of the constricted portion of the opening formed in the boss 7 will frictionally grip the severed cord with sufficient force to hold it in position against displacement during subsequent manipulations. The end 5 of the cord which projects beyond the bottom of the disk may be of the same length as the end 4 of the cord which projects from the top of the disk, but it is preferably made somewhat longer in order that it may be extended outwardly in a prescribed manner under the disk and over its periphery so that both ends of the cord will extend beyond the top of the disk for the hereinafter described holding and manipulating operations.

After the cord has been threaded in place and severed from the main body of cord, the disk carrying the same is shifted in the machine, and subjected to one or more operations for the purpose of fastening the bight 6 of the cord firmly in the opening 2. This may be carried out in various ways. As an example, the disk may be subjected to pressure to force the material forming the boss or excrescence 7 back into normal position, within the plane of the disk, thereby diametrically contracting the opening 2 to a circular form throughout its lower half and to a slightly flaring form at its upper half, as shown in Figure 7. By such operation the walls 8 of the lower portion of the opening 2 will be closed about the bight 6 and caused to bind said bight firmly and securely in position against any possibility of casual displacement in the ordinary handlings of the disk and extractor. I may, however, employ suitable means for securing the bight 6 in position and at the same time sealing the opening 2 against any possibility of the inlet of air into the bottle. For this purpose I may use a securing and sealing means, such as a coating or filling of glue or cement 9. A drop of this will be sufficient under all ordinary conditions, and this cement may be applied to the portion of the cord forming the bight as it is threaded into position, or it may be suitably inserted or injected into the flaring top of the opening 2, so that it will coat the bight of the cord and walls of the opening and substantially fill any space around the cord and seal the opening. This cementitious fastening, used alone, or in conjunction with the binding action of the compressed walls of the gripping surfaces of the walls of the opening before referred to, will serve to hold the cord in position against any possibility of displacement, even in rough handling, and incidentally, as stated, will seal any portions of the opening which are of larger diameter than the cord to prevent the inlet of air, dirt or other foreign substances under any and all conditions of service.

The disk is applied within the mouth of a bottle or jar 10 in the usual manner by forcing it downwardly to seat upon an internal shoulder 11 and to peripherally fit within a groove 12 within the jar mouth, as shown in Figure 8. The groove 12 is formed as usual between the shoulder 11, which forms it bottom wall, and an overhanging lip 13 which is of less length than said shoulder 11 and partially overhangs the same and forms the top wall of the groove, the construction being such that when the disk is applied it will have an adequate seat bearing on the shoulder 11 and

fit peripherally within the groove 12 in which it is normally retained against displacement by the loop 13, from under which it may be drawn for extraction by bending or doming it upwardly and thereby diametrically contracting it so that it will be free for disengagement.

In applying my improved disk the end 4 of the cord is arranged so that it will extend straight up from the top of the disk and be exposed at the top of the bottle, and the end 5 of the cord is extended across the bottom of the disk from the opening 2 to the adjacent portion of the periphery of the disk, and thence upwardly in engagement with the periphery of the disk and outwardly over upon the top of the disk, so that the two ends of the cord will lie upon the top of the disk and in proximity to each other. When the end 5 is so arranged and the disk is applied in the stated manner, it will be observed that the portion of said end 5 between the bight and its free projecting portion will lie in the form of a loop and brace the adjacent part of the disk and be clamped between the surfaces 11, 12 and 13 of the bottle. This end of the cord will therefore be firmly held and clamped within the groove with a portion of the disk and held from displacement and in operative position, and with this arrangement of the said end 5 it will be understood that the free portion of the said end may be engaged and pulled upon with the result that the portion of the disk seated in the groove and practically surrounded by the looped portion of the cord will be drawn outwardly from the groove and the disk diametrically contracted, allowing the disk to be displayed for removal without in any manner imposing any strain upon the bight portion 6 held within the opening 2. If desired, however, both ends of the cord may be grasped and drawn upon, with the same result, and without imposing any strain on the bight portion 6, allowing greater force to be exerted so that no matter how tightly the disk is fitted in position it may be readily and conveniently extracted.

The cord may be paraffined or otherwise suitably treated so that it can not possibly contaminate the contents of the bottle and, as but a small portion of it is exposed on the interior of the bottle contamination is not liable to occur in any case, and as it is secured in position in such manner as to seal the opening or perforation 2, air or other foreign matter can not enter the bottle and cause the contents to be spoiled or otherwise injured. When the device is applied in position the free ends of the cord will lie upon the top of the disk or upon the rim of the bottle and will thus be in position to be readily grasped for the extracting operation, while they will not project to any undue extent so as to cause annoyance or inconvenience. The ends of the cord may be knotted or tied to form an extracting loop, but I preferably leave the ends of the cord entirely free from connection, as the tying involves an additional and expensive operation and, by leaving the ends of the cord free, they are not so liable to become entangled with parts of the machine used in the applying operation or with other external objects in the handling of the disks, and the ends of the cords in a stack of disks are not so liable to become entangled, as by being left free they will readily move through one another in the individual stacking of the disks or their removal from a stack.

One advantage of my construction is that it enables a string extractor, of a novel and improved form, to be applied by machinery in a reliable, rapid and convenient manner, and at extremely low cost, thus enabling a superior type of extractor to be furnished without in any manner adding to the cost of manufacture of the disk. Furthermore, it provides an extractor which is free from the disadvantages incident to the use of other types of extractors of the kinds before mentioned. The described arrangement of the cord ends further adapts the disks to be piled flat in stacks for storage in tubes for transportation in the usual manner, and also admits of their ready and convenient separation and application to the bottle by disk applying machinery of types in common use. The projecting string ends also adapt the seal to be removed and held in one hand free from contact with any object while the other hand is being employed to tilt and pour out a portion of the contents of the bottle, after which, by means of the ends of the string, the disk may be drawn or slid the seal may be drawn over the rim of the bottle and into proper position for reapplication, so that it may be forced into sealing position again simply by pressure applied to the top thereof. This avoids the necessity of gripping the edge of the disk or bringing the fingers into contact with the underside thereof, which is sometimes coated with a film of the milk, and obviating liability of thus introducing germs or dirt upon the interior of the bottle. Of course it will be understood that while, in Figure 8, I have shown the disk applied to a bottle having a groove formed with a lip overhanging the edge of the disk, this mode of use in connection with such a bottle is not essential, as it may be applied in connection with any type of bottle of this character and may simply rest upon a supporting shoulder and, if desired, in peripheral contact with a wall surface devoid entirely of any overhanging lip or flange.

Other advantages of my invention will be

apparent to those versed in the art from the foregoing description.

Having thus fully described my invention, I claim:—

1. A bottle seal comprising a disk having an opening extending therethrough, a string extending through said opening and having end portions arranged to be exposed on the outer side of the disk, and a filler of cementitious material both hermetically sealing said opening and securing the string therein.

2. A bottle seal comprising a disk having an opening extending therethrough, said opening being primarily of flaring form and displacing a portion of the material of the disk at one side thereof, and a string extending through said opening and having end portions arranged for manipulation, said string being bound in the opening by compression of the walls thereof as a result of the replacement of said displaced portion within the plane of the disk body.

3. A bottle seal comprising a disk having an opening extending therethrough, a string extending through said opening and held bound therein by inwardly compressed portions of the walls of the opening, and cementitious material in said opening both hermetically sealing the opening and securing the string therein and to the walls thereof.

4. A bottle seal comprising a seal having an opening extending between its top and bottom faces adjacent to its periphery, and a string extending through and secured in said opening, said string having separate and independent end portions arranged normally on opposite sides of the disk, one of said end portions adapted to be extended from the opening beneath the disk to the periphery thereof and across said periphery to the upper surface of the disk, whereby both ends of the string may be disposed in position for separate or conjoint manipulation.

5. A bottle seal having a string extractor comprising a disk having an opening extending from side to side thereof, said opening being primarily of tapering form varying from a portion of greater diameter than the string to a portion approximately of equal diameter to the string, the walls of the opening being extended at the latter-named portion beyond the plane of the adjacent side of the disk, an extractor string extending through said opening and bound therein by compression of the walls of the opening due to the pressing of the displaced material back into the plane of the disk, and a cementitious material filling the opening and both hermetically sealing the same and binding the string therein.

6. The method of applying string extractors to bottle or jar sealing disks, which consists in forming an opening in the disk extending from side to side thereof, said opening tapering from one face toward the opposite face of the disk and having its walls displaced at its contracted end beyond the adjacent face of the disk, threading an extractor cord through said opening, injecting a cementitious material into the opening from the enlarged end thereof, and then compressing the disk to bring the displaced portions of the wall of the opening into the plane thereof and forcing the same and the cementitious material into binding contact with the portion of the string passing through the opening.

7. The method of applying string extractors to bottle or jar sealing disks, which consists in simultaneously forming an opening extending from side to side of the disk and threading a string therethrough, said opening tapering from a diameter of greater diameter than the string at one end of the disk to a diameter substantially equal to the diameter of the string at the other side of the disk, while displacing the walls of the constricted end of the opening beyond the plane of the latter-named side of the disk, injecting cementitious material into said opening through the enlarged end thereof, and then subjecting the disk to pressure to bring the displaced portions of the walls of the bore back into the plane of the disk and binding the same against the string and forcing the cementitious material into the surfaces of the walls of the bore and portion of the string passing therethrough.

In testimony whereof I affix my signature.

WILLIAM CHAFFIN.