

March 5, 1946.

F. M. SPAYD

2,396,027

BUNG

Filed April 10, 1942

FIG. 1

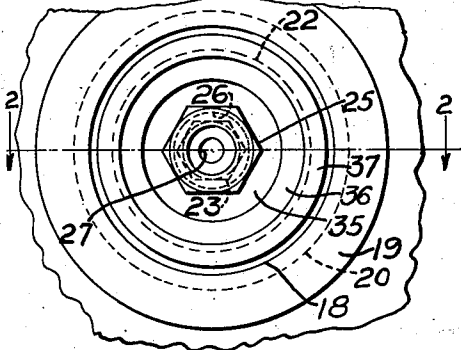


FIG. 2

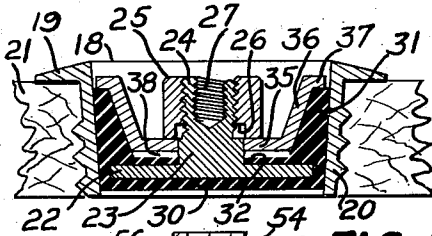


FIG. 3

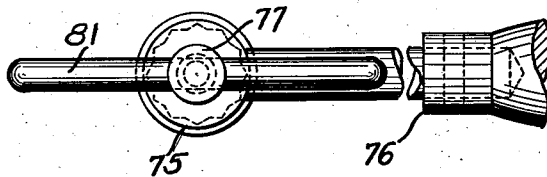


FIG. 4

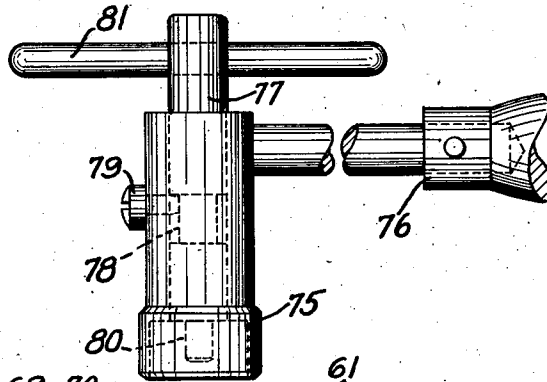


FIG. 5

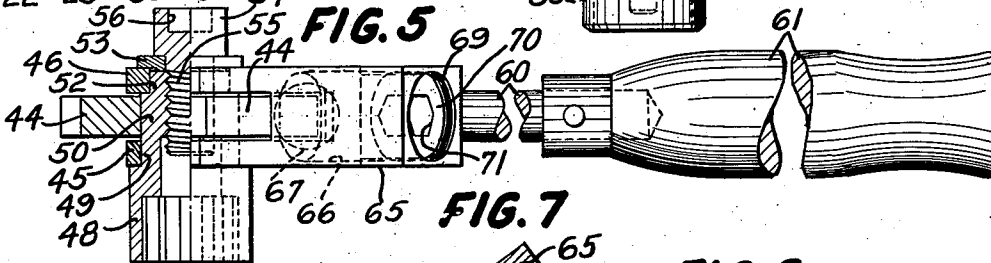


FIG. 7

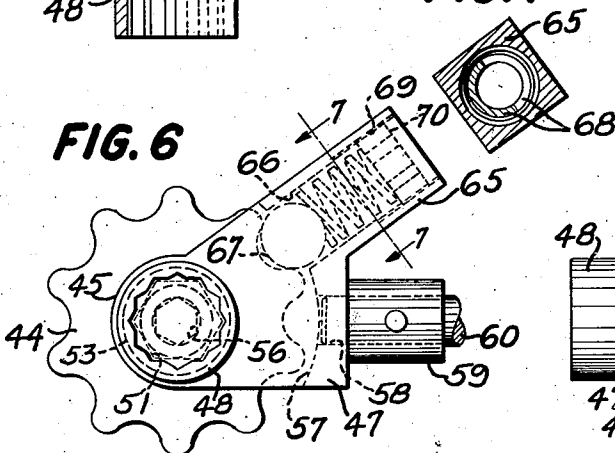
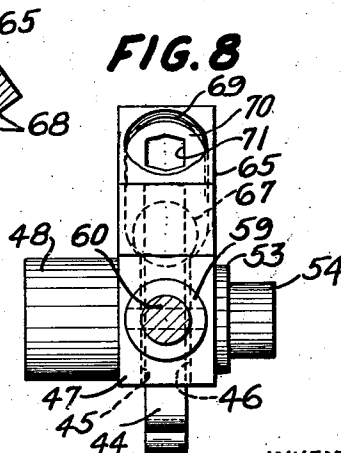


FIG. 8



INVENTOR
FRED M. SPAYD

BY *Agnes H. Stoddard*
ATTORNEY

UNITED STATES PATENT OFFICE

2,396,027

BUNG

Fred M. Spayd, Van Wert, Ohio, assignor to F. M. Spayd Engineering Corporation, Dayton, Ohio, a corporation of Ohio

Application April 10, 1942, Serial No. 438,447

2 Claims. (Cl. 217—110)

My invention relates to sealing means for kegs, barrels, drums or containers of any kind, and particularly to bungs and means for setting, or properly securing said bungs in the kegs, barrels or other containers, and also to novel extracting means for said sealing means or bungs.

My novel sealing means is particularly useful and affords many advantages over the present types of seals or bungs now on the market and especially when used for sealing kegs and barrels of draught beer and other beverages.

Some of the seals and bungs now being used are made of wood and it is therefore necessary to hammer this type of bung into the keg or barrel, and many times they are hammered too hard and broken, or even driven right through the bung opening. Consequently there is danger of breaking not only the bung but also the barrel or keg or the bush into which the bung is driven. Also splinters of wood may be slivered off the bung or off the barrel when the bung is driven or hammered into place if it should not be started absolutely straight, or if hammered too hard as is often the case when large and heavy men seal the kegs and barrels.

Such splinters cause trouble when drawing the beer from the kegs and barrels if they get into the taps and pipes leading from the barrel to the faucet. Such splinters may also leave tiny openings sufficient to prevent a positive or air-tight seal, thus causing "flat" or "off taste" beer, and even may result in spoilage of the entire keg or barrel of beer.

Such wooden bungs are also very difficult to remove and they cannot, in many instances, be used a second time, and are thrown away, thus creating a loss and extra expense.

Many beer kegs and barrels now on the market have a cast metal bush for the bung and when wooden bungs are used these cast metal bushes are sometimes broken when the bung is hammered in to seal the keg or barrel.

Moreover the cast metal bushes are not finished by machine on the inside and consequently these inside surfaces are uneven and pitted, and therefore, a positive, or air tight seal cannot always be obtained, with the result that such leaks in the seal often cause flat or bad tasting beer. Here again spoilage may often take place.

My novel bung overcomes all of the above objections to, and faults of the types of seals and bungs above mentioned, and in addition has many advantages thereover.

It is therefore an object of my invention to produce a novel seal or bung for kegs, barrels or

other containers to provide the maximum of safety against losses due to evaporation, and/or spoilage.

Another object is to produce a sanitary seal or bung for the purposes mentioned, which bung can be easily and thoroughly washed and therefore used over and over again many times.

Another object is to produce a novel bung which can be easily and properly forced into position to form an air tight seal, and which also can be easily removed without damage to the bung, the bung bush, keg or barrel the bung being always wholly within the barrel bush to prevent damage or injury to the bung when the barrel is rolled.

Another object is the production of a novel bung, the sealing portion of which can be positively forced into any and all uneven places in a cast metal bush to provide an absolutely air tight seal.

A further object of my invention is to construct my novel bung with an elastoplastic material in such a state of plasticity that it will readily flow under pressure to create an air tight seal in the bung bush, even though said bush is uneven and has pits therein.

Another object is to provide a pressure device to cause the elastoplastic material to absolutely seal the bung opening.

A further object is to provide a novel elastoplastic sealing means for a bung opening with means for applying pressure thereto to force said sealing means in a direction at substantially right angles to the direction of applied force to create an air tight seal.

Another object is to provide a pressure applying means adjustable to prevent too much pressure being applied to the sealing means or bung.

A still further object is to provide an elastoplastic material as a sealing means or bung with a rigid means to support said elastoplastic material and with means cooperating therewith to apply pressure to said material after the bung is in place in a bung opening bush, to create an absolutely air tight seal for the bung opening.

Another object is to provide means to release the pressure in the bung and to withdraw the bung from the bush.

Another object is to produce a novel bung for kegs, barrels and other containers, so constructed as to eliminate breakage of said kegs, barrels and containers when the bung is placed therein to seal them. Said barrels and containers may be of wood or metal.

With these and other incidental objects in view my invention includes certain novel features of

construction and combinations of parts, the essential elements of which are set forth in appended claims, and a preferred form or embodiment of which is hereinafter described with reference to the drawing which accompanies and forms part of this specification.

Of said drawing:

Fig. 1 is a plan view of my novel bung, properly located in a metal bush, and shows a fragmentary part of a keg or barrel.

Fig. 2 is a section on line 2—2 of Fig. 1.

Fig. 3 is a top view of the bung releasing and extracting means.

Fig. 4 is a side view of the bung releasing and extracting means.

Fig. 5 is a side view, partly in section, of the means for applying pressure to lock the bung in the bush.

Fig. 6 is a bottom view of the same, with part of the handle broken away.

Fig. 7 is a section on line 7—7 of Fig. 6, taken through the pressure control device.

Fig. 8 is an end view of Fig. 6.

Detailed description

In Figs. 1 and 2 I have shown a threaded metal bush 18 having a flange 19 and a threaded wall 20 screwed into a keg or barrel 21. My novel sealing means or bung is shown in these two figures and it includes a metal disk 22 forming a base for an integral hexagon stud 23 which terminates in a round section 24 threaded to receive a hexagon nut 25. This hexagon nut 25 has a counter-bored clearance hole 26 large enough to clear the points of the hexagon stud 23. The round section 24 has a tapped hole 27 for a purpose to be later described.

The disk 22 is molded into an elastoplastic material which is cured to substantially a Shore durometer hardness A 65.

This elastoplastic material is formed cup shaped and has a circular bottom 30 beneath the disk 22, with a rising tapered side wall 31 and a section 32 above the disk 22, which section 32 surrounds the hexagon stud 23. By molding the disk 22 inside the elastoplastic sealing member, the member can be easily and thoroughly washed and therefore, there is no danger of the liquid or beer sticking to it and becoming sour.

A pressure device including a disk 35 with a hexagon hole to fit the stud 23 has a tapered side wall 36, the outside contour of which fits the inside wall 31 of the elastoplastic material or sealing means. The side wall 36 has a flange 37 resting on the top edge of the wall 31 so that there is normally a clearance 38 between the bottom of the disk 35 and the top of the section 32 of the sealing means.

To seal a keg, barrel or other container having a bush 18 my novel sealing means or bung is placed in the bush 18 in the position shown in Figs. 1 and 2. Then by means of a novel pressure controlled means to be hereinafter described, such means being in the form of a 12-point socket wrench, the bung is forced the proper amount so as to create an air tight seal in the bush 18—20.

The above mentioned 12-point socket wrench is placed over the nut 25 and turned in the tightening direction to screw said nut 25 down upon the threaded section 24. Such turning of the nut 25 forces the pressure disk 35 straight down on the hexagon stud 23 which prevents any turning of the disk 35, whereupon the side wall 36 and flange 37 exert a downward pressure on the elas-

toplastic side wall 31 causing said wall 31 to be forced outwardly against the wall 20 of the bush 18, and as the side wall 31 is in a state of plasticity it will readily flow into any and all uneven places and pits which may be in the inside wall 20 of the bush 18, thus creating an absolutely air tight seal to prevent any loss of material in the keg, barrel or container, through evaporation and/or spoilage.

The clearance 38 permits the downward movement of the disk 35 and the clearance 26 permits downward movement of the nut 25 over the hexagon stud 23, as said nut 25 is being screwed down on the threaded section 24.

The pressure controlled wrench above mentioned is shown in Figs. 5 to 8 and consists of scalloped driving disk 44 mounted between forks 45 and 46 of a wrench block 47. A 12-point socket wrench 48 has a tenon 49 fitting in a hole in the fork 45. Above the tenon 49 there is a hexagon portion or section 50 fitting in a hexagonal hole 51 in the scalloped disk 44. Above this section 50 is another smaller tenon 52 fitting in a hole in the fork 46. This tenon 52 is slightly shorter than the thickness of the fork 46 and a tenoned washer 53 rests on the tenon 52 and is firmly pressed against it by a head 54 of a bolt 55 screwed into the tenon 52 and hexagon section 50 of the wrench 48. The head 54 has a hexagon hole or socket 56 whereby the bolt 55 can be screwed down tight, thus holding the wrench 48 in position. Since the pressure of the bolt 55 is applied only between the tenon on the washer 53 and the upper end of the tenon 52 there can be no squeezing of the forks 45 and 46 and consequently no binding of the driving disk 44 and wrench 48 the latter turning freely in the forks 45 and 46 with the tenons 49 and 52 respectively as the bearings.

The forks 45 and 46 are formed by cutting the block 47 on the line 57. The block 47 is drilled at 58 and has a bearing 59 to receive a handle rod 60 which is pinned therein and has pinned to the other end thereof a handle 61.

The block 47 has an arm 65 with a hole 66 to receive a ball 67 and a heavy spring 68 to hold the ball in one of the scallops on the edge of the disk 44. The outer end of the hole 66 is threaded as at 69 to receive a threaded plug 70 having a hexagon socket 71 for turning the plug to apply pressure to the spring 68 to hold the ball 67 firmly in the scallop so that by turning the block 47 by the handle 61 when the wrench 48 is placed over the nut 25 (Figs. 1 and 2) said nut 25 will be screwed down on the section 24 to tightly set or lock the bung in the bush 18. By adjusting the screw plug 70 the pressure of the ball 67 on the disk 44 is definitely controlled so that when the bung is tight enough to create an air tight seal, the ball 67 will ratchet over the scalloped edge of the disk 44 thus preventing too much pressure and positively controlling the pressure of the wall 36 and flange 37 against the plastic wall 31 of the sealing means or bung so that it will not be ruined.

Such pressure control prevents damage to the bung while at the same time insuring that said bung is pressed into the bush 18 with sufficient force to create an absolutely air tight seal.

Therefore, my novel bung can be used many times whereas some of the former wooden bungs could be used once only.

In order to easily release and remove the bung from the bush 18, that is to break the seal and extract the bung from the bush without damag-

ing the bung or the bush, I have provided a 12-point socket wrench 75 (Figs. 3 and 4) to fit the nut 25 (Figs. 1 and 2). A handle 76 is provided to turn the wrench 75 to loosen the nut 25.

In order to break the seal between the bung and its opening, and also in order to extract the bung easily and without any danger of damaging the bung when it is removed from the bush 18 I have provided the wrench 75 with an extracting pin 77 having an annular groove 78 which cooperates with a pilot screw 79 to retain the pin 77 in the wrench 75 and at the same time permit it to be turned. The pin 77 has an integral threaded tenon 80 to fit the tapped hole 27 (Fig. 2) of the bung stud 23—24.

When the wrench 75 is placed over the nut 25 the tenon 80 raises the pin 77, which is permitted by the annular groove 78. The nut 25 is then loosened which relieves the plastic material for contraction, after which the tenon is screwed into the tapped hole 27 by means of a pin 81, or handle, driven into the pin 77 near its top. Then by gripping the handle 81 and lifting straight upwardly, the bung is easily removed from the bush 18, thus preventing any damage to the bung or to the bush 18, in contrast to the difficult removal or extraction of former types of bungs which were very often splintered and broken thus eliminating a second use thereof. At the same time splinters of wood often were left in the barrel and sometimes caused considerable trouble in the draught system when drawing off the liquids.

Such disadvantages are wholly eliminated by the use of my novel bung extracting device, and moreover much time is saved in opening the barrels when preparing to wash them before re-filling.

Operation

It is believed that from the above detailed description the operation of locking the bung in the barrel bush 18 and then at the same time forcing it to such an extent as to create an air tight seal by the use of my novel pressure control wrench, and also the breaking of the seal and the final extracting of the bung, can be readily understood, and therefore, I shall give a brief résumé only, of these operations.

After filling a barrel with liquid, especially beer, it is absolutely necessary that the barrel be sealed with a perfect air tight seal so as not to lose any of the gases by escapement through the filling bung, which if this occurs, the beer is flat or "off taste" and it cannot be sold. Consequently there is much loss to the dealer.

Therefore, as above pointed out I have invented a bung which eliminates all danger of such losses. I have also invented a novel pressure control wrench to set or lock the bung in the bush in a very easy manner, and have provided a convenient extracting device for removing the bung.

After the barrel has been filled, the bung (Figs. 1 and 2) is merely pressed into the bush 18 by the thumbs or fingers and the wrench socket 48 (Figs. 5, 6 and 8) is placed over the nut 25 and the wrench is turned in the tightening direction by the use of the handle 61 until the ball 67 slips or ratchets over the scallops on the periphery of the disk 44. The pressure of the ball 67 on the scallops of the disk 44 is determined beforehand to give the right amount of pressure to create a perfect air tight seal between the bung and the

bush 18, by adjusting the nut 70 to increase or decrease the tension of the spring 68 (Figs. 6 and 7) whichever is necessary.

The turning of the nut forces the pressure plate 35 down and its wall 36 and flange 37 force the wall 31 of the elastoplastic sealing means very tightly against the inner wall of the bush 18 so as to positively fill up any uneven places on said wall, and also fill up or seal any pits that may be in the cast bush 18.

To break the seal preparatory to cleaning the barrel, the wrench 75 is used and the tenon 80 is screwed into the hole 27 to extract the bung from the bush.

I do not wish to limit my invention to the one form shown, as it is susceptible of embodiment in other forms, all coming within the scope of the claims which follow.

What I claim is:

1. The combination of a re-usable sanitary sealing means for a bung bush, said sealing means including an elastoplastic member molded around a disk and having a tapered side wall; a multi-sided stud carried by said disk and projecting through a portion of said member; threaded means projecting from said stud and having a threaded hole in the top thereof adapted to receive a bung extracting means to facilitate removal of the sealing means from the bung bush to prevent injury to said sealing means during its removal; pressure means adapted to fit and slide on said multi-sided stud, said pressure means having a tapered side wall to fit the inside of the wall of the elastoplastic member, and a flange resting on the top of the wall of said member; and means to move the pressure means down on said multi-sided stud to cause the wall and flange of the pressure means to force said elastoplastic member outwardly to create an air tight seal between its wall and said bush.

2. The combination of a bung for a barrel bung bush, said bung being wholly within the bush to prevent injury to the bung when the barrel is rolled including a hollow plastic member having a bottom and a tapered side wall, the outside of which is adapted to fit said bush; rigid means partially imbedded in the bottom of said plastic member to prevent relative movement between said member and said rigid means, the latter having an exposed portion thereof extending upwardly into the hollow of the plastic member and from the inside of the bottom of the member; a hollow pressure means the main portion of which extends into the hollow of the plastic member and adapted to slide upon the exposed portion of the rigid means said pressure means having a tapered wall with a flange which normally rests on top of the wall of the plastic member, the outside of the pressure means tapered wall fitting the inside wall of the plastic member; and a device turnably and adjustably mounted on said exposed portion of the rigid means and within the hollow of the pressure means for actuating the pressure means to cause the tapered side wall and the flange thereof to force the plastic member radially outwardly at right angles to the direction of applied force to press the plastic member against the inside wall of the bush to cause a seal between the plastic member and the bush.

FRED M. SPAYD.