(No Model.)

W. W. JACKSON.

BUNG FOR BEER KEGS, CASKS, &c.

No. 337,162. Patented Mar. 2, 1886.

Fig. 1

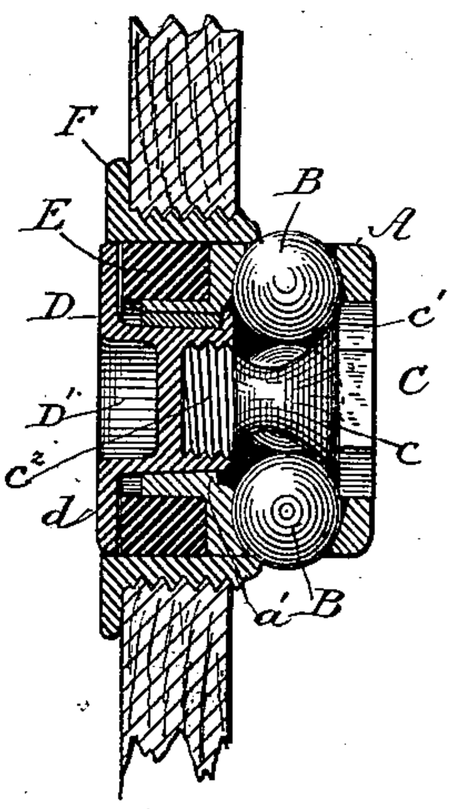


Fig. 3

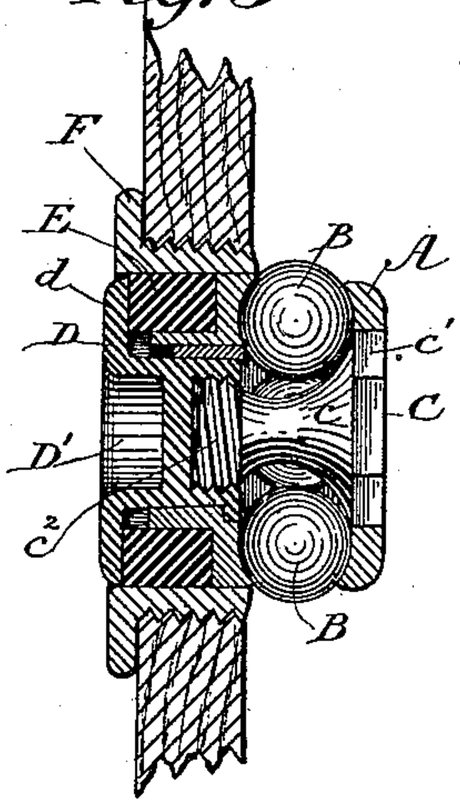


Fig. 2

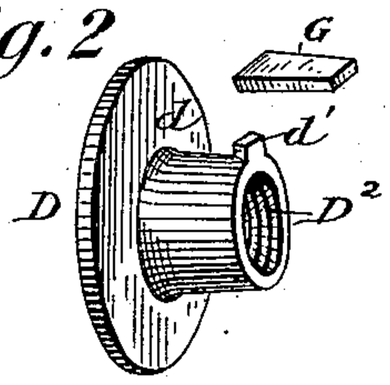


Fig. 4

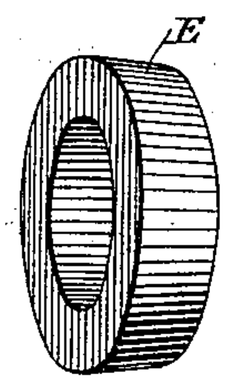


Fig. 5

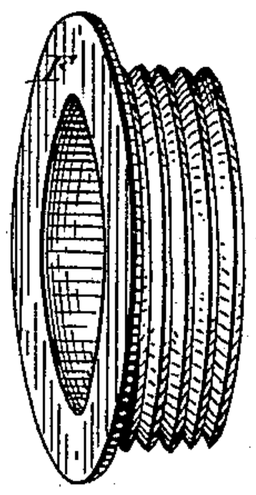


Fig. 6

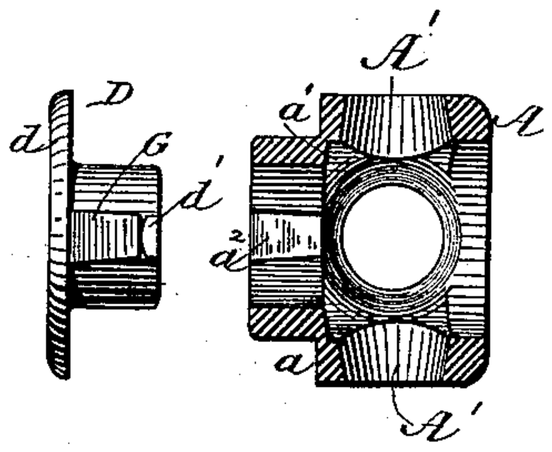


Fig. 7

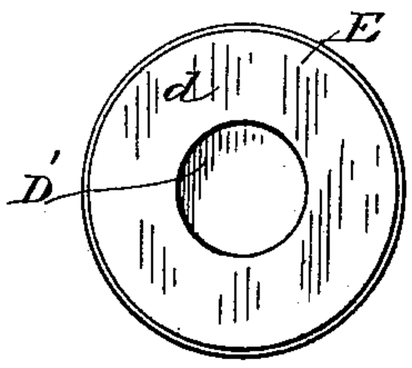


Fig. 8

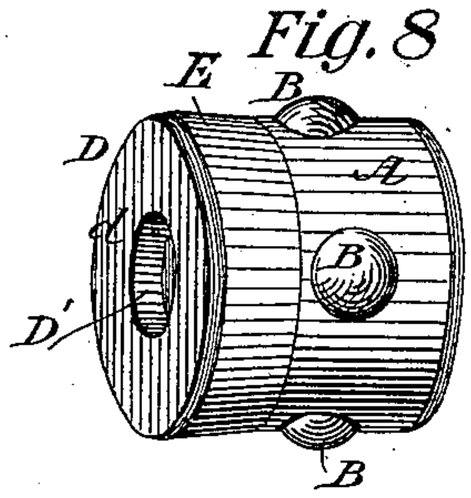
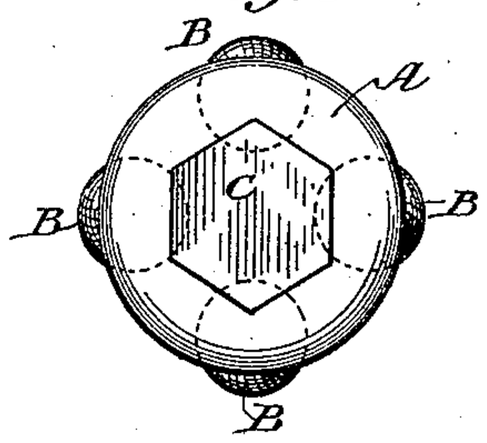


Fig. 9



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UNITED STATES PATENT OFFICE.

WILLIAM W. JACKSON, OF CHICAGO, ILLINOIS.

BUNG FOR BEER KEGS, CASKS, &c.

SPECIFICATION forming part of Letters Patent No. 337,162, dated March 2, 1886.

Application filed April 24, 1885. Serial No. 163,267. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. JACKSON, brewer and maltster, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Bungs for Beer Kegs, Casks, or Barrels, of which the following is a specification.

This invention relates to an improvement in metal bungs in which means are provided for locking the bung within the bung-hole of a beer keg or cask; and it consists in the several matters hereinafter described and claimed.

The more prominent objects of the invention are to dispense with the necessity of a bushing specially constructed with reference to the locking devices, and to provide a construction which admits of the bung being readily and easily handled and applied and tightly and securely fastened within the bung-hole of a keg or cask, either without the presence of a bushing or in conjunction with a common form of metal bushing heretofore screwed into the bung-hole as a seating for an ordinary wooden bung-plug; also, to provide a bung having a suitable expansion locking mechanism, with a rotary adjustable face or front end portion which serves as a means for operating the expansion locking mechanism, and which involves a construction whereby, when the bung is applied in the bung-hole of a keg or cask, either with or without a bushing, the bung shall present at its front exposed end a socket or depression, formed with a smooth round bore, surrounded by a smooth or plane surface of a nature which necessitates the employment of an expansion-wrench capable of entering the socket and engaging the annular wall thereof as a means for turning the rotary front end portion of the bung in order to operate the locking mechanism; also, to provide the bung with a novel construction of expansion locking mechanism involving the features of strength, simplicity, durability, readiness of action, and applicability to a bung-hole, either with or without a bushing, and also serving to permit the bung to be quickly and easily introduced into the bung-hole; also, to provide the bung with an automatic or self-acting stop device adapted for preventing the detachment of the rotary adjustable front end portion of the bung from the locking mechanism by unauthorized or unskilled persons; also, to provide certain novel details of construction, all as hereinafter set forth, and illustrated in the drawings, in which—

Figure 1 represents a section through a portion of the stave of a keg or cask, with a bung embodying my invention fitted and locked in the bung-hole and shown in longitudinal central section. Fig. 2 is a detail of the cap and an adjustable locking pin or stop. Fig. 3 is a view similar to Fig. 1, and shows the pin of Fig. 2 in position to lock the cap against disconnection from the draw-plug of a locking mechanism. Fig. 4 is a perspective of the packing-ring. Fig. 5 shows an ordinary metal bushing which may be screwed into the bung-hole as a seating for the bung. Fig. 6 is a detail, including a side view of the cap, with the pin or stop G placed upon its stem in position to enter the body of the bung, said view also showing in longitudinal central section the body of the bung. Fig. 7 is a front end view of the bung. Fig. 8 is a perspective of the bung comprising all its parts. Fig. 9 is a rear end view of the bung.

The bung herein shown is constructed with a body portion, A, which is made hollow to receive an expansion locking mechanism suitable for securing the bung within the bung-hole of a keg or cask. The locking mechanism is devised to practically increase the diameter of the bung at a point back of the bung-hole, in order to prevent the withdrawal of the bung therefrom so long as it is desirable to maintain the bung in its application to the keg or cask. To such end the locking mechanism consists of a set of adjustable abutments or stops, B, and a draw-plug, C, the draw-plug being adjustably applied within the bung-body, and the stops being arranged around the draw-plug in coincidence with a corresponding set of apertures, A′, formed laterally through the side of the hollow bung-body and adapted to permit the stops to be projected out from the latter to a suitable extent, or to retract within the circumference of the bung-body, according to the adjustment of the draw-plug. The preferred form of stop is that of a ball, as herein shown, such form being desirable on account of the adaptability of a ball thus employed to shift, during its adjustments, the position of its bearing-points or points of

wear, and thereby render the wear upon its surface uniform. These spherical stops are arranged in annular series around the draw-plug, which, for a portion of its length, as at *c*, is tapered toward the front end of the bung, so that when the draw-plug is drawn forward the annular line of stops will be expanded by reason of the increasing diameter of the draw-plug at a point opposite the lateral apertures, through which latter the stops will be caused to protrude, and conversely, when the draw-plug is moved back, the stops will be permitted to retire within the circumference of the bung-body. The apertures A′ are of a size to permit the stops to protrude to a limited extent only, so as to prevent the stops from dropping out of the bung, it being seen that where a spherical stop is employed the greatest diameter of the stop subserves the purpose of a shoulder, which prevents the stop from passing all of the way through its allotted apertures in substantially the same way as would a lug or shoulder upon an oblong or other form of stop applied to slide through a slot or lateral opening in the side of the bung-body. The taper of the draw-plug and the usual extent of its adjustment are also gaged with reference to the size of the stops and their desired extent of adjustment, so that when the draw-plug is in position to permit the stops to pass within the circumference of the bung-body the loosely-arranged stops will be maintained to some extent within their allotted apertures, and thereby kept in coincidence therewith and prevented from rolling out of their proper positions within the hollow bung-body. The draw-plug has an enlarged rear end, *c′*, adapted to close the hollow bung-body at the rear or inner end thereof, and it is permitted to slide back and forth longitudinally, but held against rotation in any suitable way—as, for example, its enlarged end *c′* is made polygonal and fitted to work in a correspondingly-shaped portion of the bore or opening through the bung-body, such arrangement being in effect the same as a pin or spline on one member engaging in a groove in the other member. The draw-plug is adjusted by means of a rotary cap, D, which is applied at the forward end of the bung-body to form the front end portion thereof, and coupled with the expansion locking mechanism in a manner which permits a rotary motion on the part of the cap to serve as a means for actuating the expansion locking mechanism. A desirable form of cap consists of a disk, *d*, provided at one side with a cylindric recess or socket, D′, arranged centrally in the disk and having a smooth round bore coincident with the axis of the bung, said bore being slightly tapered toward its inner end, if desired. The disk is provided at its rear side with a centrally arranged cylindric hub or stem, *d″*, which is adapted to fit and turn in the forward end of the bung-body. This stem is provided at its rear inner end with a threaded socket, D², which, when the cap is applied to the bung-body, serves to engage a threaded end portion, *c²*, of the draw-plug, so as to provide an adjustable connection between the cap and the draw-plug, and thereby permit a rotary movement of the cap to effect a longitudinal adjustment on the part of the draw-plug. In connection with this form of cap the bung-body is provided with a stout gasket or packing ring, E, which is fitted in an annular seat, *a*, formed around the forward end portion of the bung-body. This packing-ring tapers toward the rear end of the bung, and extends somewhat beyond the forward end of the bung-body, so as to permit the disk *d* of the cap to be drawn against it. Thus, when the bung is fitted in a bung-hole, either with or without the bushing indicated at F, and the cap, coupled with the draw-plug, is turned so as to draw the draw-plug forward and thereby force the stops outwardly into position to bind against the inner end of the bushing or the inner side of the keg or cask at a point around the bung-hole, as the case may be, the disk portion of the cap is drawn against the forward edge of the packing by reason of the cap screwing up to the bung-body, it being seen that after the cap has been turned to a limited extent, so as to draw forward the draw-plug and thereby force out the stops, the draw-plug will be held against further advancement by the stops, while a slight continuation of the rotation of the cap will necessarily screw it farther up on the draw-plug, thus in effect screwing the cap into and up against the forward end of the body of the bung. Under such arrangement the draw-plug is drawn forward by the rotation of the cap in one direction until the forward movement of the draw-plug is positively arrested by the stops projecting through the side of the shell, and at such juncture the draw-plug provides within the shell or hollow body means which serve as a stationary bearing upon which the cap can be turned so as to be tightened up against the packing-ring or washer, the draw-plug at such time being in rigid connection with the shell, and by reason of the threaded connection of the cap therewith necessitating on the part of the cap a combined rotary and longitudinal adjustment when the cap is turned, and so long as the cap bears against the forward end of the washer with a pressure sufficient to maintain the draw-plug in its forward locked position. When the cap is thus tightened up, the packing will be compressed between the disk and the shoulder formed along the inner end of the packing-seat, whereby it will be expanded or thickened up laterally, and thereby provide a tight joint between the bung and the wall of the bung-hole, whether the same is bushed or not. The rotary adjustable cap arranged at the front end of the bung, while socketed at both sides or ends, as set forth, is imperforate, so that it has no opening or aperture whatever leading from one side to the other. When thus constructed and arranged, it constitutes in effect a rotary adjustable front end face

arranged to screw up to and away from the forward end of the hollow body portion, and serving to entirely conceal both said end of the body portion and the locking mechanism, no portion of which latter is visible or accessible through the cap, which must be turned so as to operate the locking mechanism, and which when thus turned screws up to or away from the hollow body, as aforesaid, so that when it is turned in one direction it will tighten up against the hollow body, so as to lock itself with a binding force proportional to the extent to which it is screwed up. This cap also presents a smooth or plane circular front face having a centrally-arranged depression or socket formed with a smooth round bore terminating at its inner end with a flat circular end wall. This face also conceals the outer end of the bung-hole, as well as the bung-body, when the bung is properly applied.

This feature of a bung provided with a rotary adjustable cap applied at and screwing up to its front end, and having a front outer face formed as described, necessitates the employment of an expansion-wrench suitable for engaging the smooth annular wall of a cylindric or slightly-tapering bore as a means for turning the cap when the rim of the cap is not accessible and force is required. Thus the employment of a wrench of such character is not only necessitated as a means for tightening up the cap against the packing, but also for unscrewing the cap, so as to loosen the joint between the packing and the bung-hole wall, and, further, to actuate the locking mechanism in order to permit the stops to be retracted within the circumference of the bung. In this way, after the bung has been applied and locked within the bung-hole of a keg or cask, the removal of the bung by unauthorized persons, not in possession of a specially-devised expansion-wrench, is prevented, and hence the loss of metal bungs by willfulness or theft is effectively guarded against. This will be evident, since when the cap is turned so as to actuate the locking mechanism the rim or peripheral edge of the cap will be brought within and against the inner wall of a surrounding bushing or directly against the wall of the hole, which is equivalent to the bushing when the latter is omitted; and hence, while the cap can be turned when in such position, the only practically available portion of the cap will be the wall of its socket D, and as this is formed by a smooth bore or straight unbroken cylindric surface, terminating at the inner end of the socket in a smooth unbroken end wall, the employment of some sort of an expansion wrench or key for turning the cap is rendered necessary. In addition to such service, it may be observed that when an expansion wrench or key is applied, so as to obtain a firm grip upon the cylindric wall of the socket, the wrench can be used for withdrawing the entire bung, as well as for turning the cap.

As a means for interlocking the cap with the bung-body, and at the same time permitting the cap to be turned for the purpose of adjusting the draw-plug or screwing up the cap at a time when the draw-plug is held stationary by the stops, the stem of the cap is provided at its inner rear end with a lateral projection or lug, d', which, when the cap is applied to the bung-body, is brought into position to lie back of and against an internal annular shoulder, a', of the bung-body. A short longitudinal channel, a', Fig. 6, is formed along the passage for the stem, and extended from the shoulder a' to the front end of the bung-body. This channel provides an entering passage for the lug when the stem is inserted into the bung-body, whereby, after the cap has been applied, it may be turned so as to bring the lug upon its stem round against the shoulder a. After the stem of the cap has been thus fitted into the bung-body and properly coupled with the draw-plug it is desirable to limit the rotation of the cap so as to guard against its being accidentally turned to an extent sufficient to disconnect it from the draw-plug. A device provided for such purpose consists of a self-adjustable or gravity stop, G, confined within the bung and arranged to shift longitudinally in a line substantially parallel with the axis of the bung and at a point where, when it has shifted to the limit of its movement in one direction, it will stand in the circular path described by the lug upon the cap-stem when said cap is turned either way. The preferred guide for this gravity or self-adjusting stop G is the channel a^2, extending from the shoulder a' to the forward end of the bung-body, as hereinbefore set forth, the said channel being in such case contracted somewhat toward its rear inner end, and the stop G being likewise formed with a similar contraction in a like direction, and of a width relative to the width of the channel, so that when the stop is shifted back so as to extend back of the plane of the shoulder a it will be checked by the converging sides of the channel, and thus prevented from leaving the latter and dropping into the space or chamber within the bung-body.

The self-adjusting stop G is conveniently applied by placing it upon the cap-stem between the lug and disk, prior to the application of the cap, as in Fig. 6, after which the stem can be inserted into the bung-body, as in Fig. 1, and turned so as to couple it with the draw-plug. If the keg or cask is stood on end during such operation or otherwise placed so as to maintain the bung with its axis horizontal or proximately so, the stop G will be left entirely within the channel a^2, at which point it is confined between the stem and the walls of the channel. As long as the stop G keeps this position the cap may be turned to any desired extent so far as any action of the said stop is concerned. In order, however, to bring the stop into position to limit the movement of the cap it is only necessary to tip or tilt the keg or cask so as to bring the forward or outside end of the bung uppermost, whereby the

stop will drop by gravity into the position shown in Fig. 3, which position the stop will maintain, although the keg or cask may be turned so as to bring the bung with its axis into the horizontal position shown in said figure. It will also retain this position until the keg or cask is turned so as to bring the outside of the bung underneath, or nearly so, and thereby permit the stop to shift back toward the forward or outer end of the bung. This arrangement provides a serviceable guard against the accidental detachment of the cap from the locking mechanism during the operation of unscrewing the cap to an extent suitable for permitting the bung to be withdrawn from the bung-hole, and obviously the stop may be so located with reference to the position assumed by the lug *d'* after the cap has been tightened up, that by permitting the stop to drop to one side of said lug, a back rotation of the cap to any appreciable extent will not be permitted until the stop has been allowed to shift out of the way of the lug. This feature also affords an additional safeguard against the bung being tampered with by persons ignorant of the fact that in addition to the employment of a wrench or tool capable of engaging in the round smooth bore of the cap the keg or cask must be first manipulated in a particular manner before the expansion-wrench becomes available as a means for unscrewing the cap.

With regard to the feature of a bung provided at its outer end with a cap formed with a front face, as hereinbefore described, and susceptible of adjustment so as to tighten it up, I desire to be understood as covering in the broadest claim for the cap the said feature independent of any special locking mechanism, it being apparent that the cap thus formed and applied serves to conceal the front end of the bung-body or bung proper, and when screwed up also serves to tighten the packing against the bushing or the unbushed wall of the bung-hole, from which condition it becomes necessary to employ an expansion-wrench in order to unscrew it.

In several instances bungs have heretofore been provided with a socket or centrally-arranged aperture within which an expansion-wrench could be introduced and expanded, so as so grasp the cylindric side wall of the cap or outer end portion of the bung; but in all such instances the wall of the socket has been in one way or another broken so as to permit the use of devices other than an expansion-wrench for engaging in or with the socket-wall, or an arbor of some sort has been arranged to extend forward from the rear end wall of the socket, thus rendering the use of nippers or the like available; but so far as I am aware, a bung or stopper has not been produced prior to my invention wherein the end cap adapted for actuating a locking mechanism has been arranged to fit and turn within the bushing or other surrounding annular wall, so as to expose solely a smooth front face having a socket or depression, D, formed as hereinbefore described and adapted to be engaged solely by an expansion mechanism, and forming the only practically available place where the cap can be taken hold of by an instrument of any character.

What I claim as my invention is—

1. The combination, in a bung, of the hollow body portion provided with a locking mechanism, and the imperforate rotary adjustable screw-cap constituting the entire front end face of the bung and arranged to screw up to and away from the forward end of the hollow body portion, substantially in the manner described, said imperforate rotary adjustable screw-cap being coupled with the locking mechanism to operate the same, substantially as set forth.

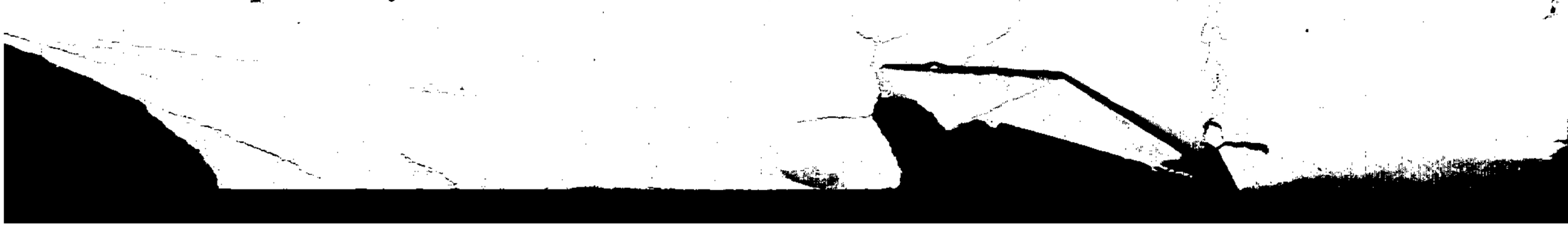
2. The combination, with the hollow body portion provided with a locking mechanism back of its forward end, of an imperforate rotary adjustable screw-cap concealing both the said forward end of the hollow body portion and the locking mechanism, and arranged to screw up to and away from the hollow body portion, said imperforate rotary adjustable screw-cap being at its front provided with a socket, D, and at its rear connected with the locking mechanism to operate the same, substantially as described.

3. The combination, with a bung provided with a packing-ring, E, extended beyond its forward end, of a rotary screw-cap rotatable independently of the bung and arranged to screw up to and away from the forward extended end of the packing-ring, and means, substantially as described, providing within the bung a bearing for the said rotary screw-cap, for the purpose set forth.

4. The combination, in a bung, of an expansion locking mechanism, for the purpose described, with a rotary cap connected with the said locking mechanism and screwing up to and away from the front end of the bung, and a packing-ring, E, applied around the body of the bung and extended beyond the front end thereof, substantially as and for the purpose described.

5. The hollow bung-body provided with one or more lateral apertures, in combination with a longitudinally-adjustable draw-plug confined within the hollow bung-body and one or more stops loosely held between the draw-plug and the lateral apertures of the bung-body and formed with reference to the size of said apertures to render them incapable of being projected entirely through the same, and means for operating the draw-plug, substantially as and for the purpose described.

6. The hollow bung-body provided with an annular series of lateral apertures, in combination with the draw-plug C, provided with a tapering portion and adjustable longitudinally within the hollow bung-body, a set of spherical stops, B, arranged around the tapering portion of the draw-plug in coincidence with the lateral apertures of the bung-body,



and means for operating the draw-plug, substantially as and for the purpose described.

7. The hollow bung-body provided with an annular series of lateral apertures, A′, in combination with the stops B, the draw-plug C, screw-threaded at its forward end, and the rotary cap applied at the front end of the bung-body and connected with the draw-plug by a threaded connection, whereby a rotary movement of the cap shall effect a longitudinal movement on the part of the draw-plug, substantially as described.

8. The laterally-apertured hollow bung-body provided with a packing-ring, E, of the movable stops B, the draw-plug C, and the rotary cap D, coupled with the draw-plug by a screw-connection, whereby when the cap is turned and the draw-plug held by the stops the cap will be drawn against the packing-ring, substantially as described.

9. The combination, in a bung, of a locking mechanism, for the purpose described, with a rotary cap applied to actuate the locking mechanism and detachably connected therewith, and a self-adjusting stop confined within the bung and adjustable into position to limit the extent of rotation on the part of the cap and prevent the accidental disconnection of the same from the locking mechanism, substantially as described.

10. The hollow bung-body provided with an internal shoulder, in combination with a cap having a stem which is fitted to turn in the bung-body and provided with a lug at a point back of said shoulder, a locking mechanism, for the purpose described, actuated by and detachably connected with the cap-stem, and a self-adjusting stop, G, applied to limit the movement of the cap and stem, substantially as and for the purpose described.

11. The laterally-apertured hollow bung-body having an internal shoulder, a', and a channel, a^2, extending from said shoulder to the front end of the bung-body, in combination with the draw-plug, the stops operated by the draw-plug, the cap D, having a lateral lug at the rear inner end of its stem, and the self-adjusting stop G, fitted to work in said channel a^2, substantially in the manner and for the purpose described.

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