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SELF-CONTAINED DRAINPLUG

Filed April 24, 1967

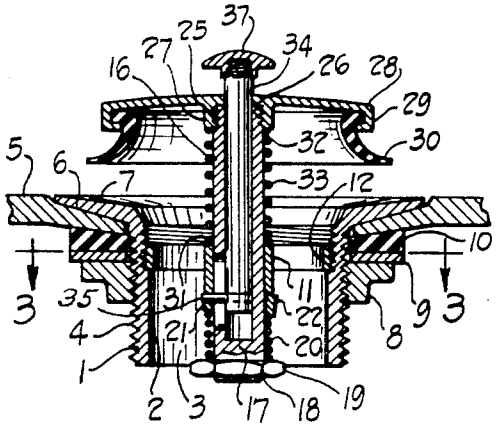


Fig. 1

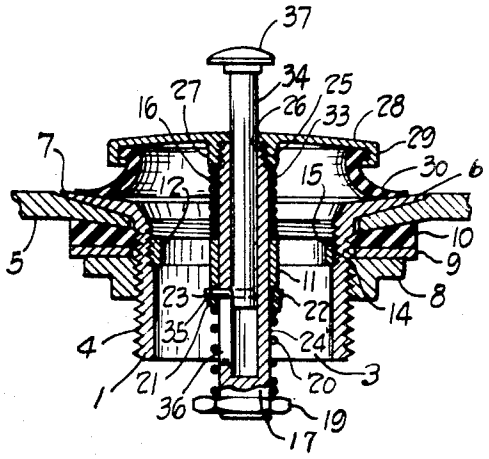


Fig. 2

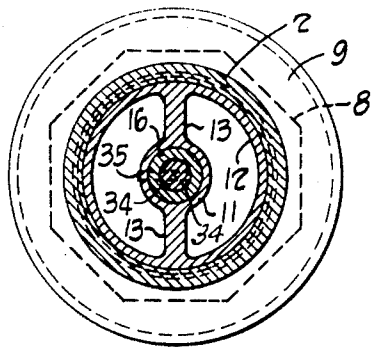


Fig. 3

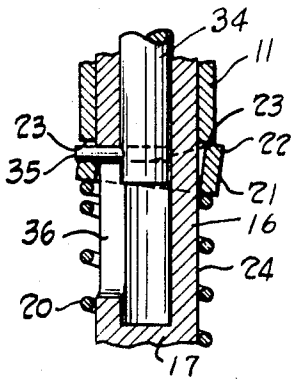


Fig. 4

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SELF-CONTAINED DRAINPLUG

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ABSTRACT OF THE DISCLOSURE

This invention involves a device adapted to be removably mounted in the outlet of a bath tub or similar liquid container and includes a body which supports a closure member movable upwardly and downwardly by the toes of the user for example, with a locking arrangement provided to lock and/or release the closure which is normally biased into an open position the releasing arrangement being positioned about centrally of the closure member itself for ready manipulation and a locking device being a part of the locking arrangement and described as a tilting washer.

This invention relates to an improved type of drainplug primarily designed for use in a bath tub or the like, which drainplug includes in its mechanism all the necessary means to maintain the same in open or closed position in accordance with manipulation which may be resorted to by the toes of the user or, of course, other means as may be appropriate, the broad contemplation being that the closure can be manipulated into position to prevent outflow of water or the like in the bath tub through the drain opening. Release of the closure so that it will move into open position or drain position may be simply effected by manipulation of a centrally disposed post or release rod so that the closure will move out of closed position. The movement of the closure is in a vertical direction and as indicated biased upwardly normally so that usually it will be in open position when release is effected.

It is a principal object of this invention to provide a simplified structure which will enable the closure member to be manipulated into position by a downward pressure, retained in position against upward movement normally exerted by a spring, the means to retain it involving a locking arrangement which is releasable from a position above the closure to allow the biasing means to operate.

A further object of the invention is to provide a novel self-contained drainplug arrangement which includes in it all the necessary mechanism for operating the same and will positively shut-off the out-flow of water through the plug when desired, the closure being maintained in a locked or closed position by a simple device which is readily releasable upon suitable manipulation.

Another object of the invention is to provide a drainplug of the class described, in which the closure member is a part which involves the use of a skirt for contacting sealing surfaces and in conjunction with the body of the closure retain the liquid in the bath tub or similar container. The closure is movable upwardly and downwardly, downwardly by pressure upon the upper surface thereof and upwardly in response to a spring or the like which is permitted to come into operation by release of a lock part, the releasing being effected above the closure and by simple manipulation of a release rod extending through the closure.

Other and further objects of the invention will be understood from a consideration of the specification appended hereto and shown in the drawing wherein:

FIGURE 1 is a sectional view illustrating the various parts in a position in which the drain is in a so-called

open condition to permit outflow of water and indicating the relationship of the parts to effect locking of the closure when desired.

FIGURE 2 is a view similar to FIGURE 1 with the closure operating to retain fluid in the bath tub in which the entire unit is mounted.

FIGURE 3 is a cross-sectional view taken about on the line 3—3 of FIGURE 1 looking in the direction of the arrows.

FIGURE 4 is an enlarged fragmentary sectional view illustrating further detail of a lock part and releasing arrangement therefor.

Referring now to FIGURE 1, the invention is shown as including therein a plug body generally designated **1**, being a part having a cylindrical section **2** which is provided with a drain passage **3** therethrough, the section having suitable threads on the external surface thereof indicated at **4** so that it may be retained in a position shown in FIGURE 2 in a tub generally designated **5** and specifically in the drain opening of such tub.

The body **1** is provided at its upper end with a peripheral flange **6** having a seating surface **7** thereon, this being circular as will be appreciated.

The threads **4** are provided so that a lock nut **8** may be engaged therewith and by pressure against a suitable washer **9** engage a sealing member **10** to prevent leakage around the flange **7**, all of the foregoing of generally conventional form and well known.

Disposed centrally within the drain passage **3**, is a guide sleeve **11** being tubular and of relatively short length, mounted or supported in the upper end of the drain passage **3** by means of a threaded ring **12** having the arms **13** extending inwardly therefrom and suitably fastened to the guide or sleeve-like element **11** in any preferred manner. It is to be understood that the sleeve **11** may be integral with the parts **13** and the parts **13** of course being integral with the threaded ring **12** thus provide for assembly within the drain passage.

Suitable threads **14** on the ring **12** engage with threads **15** provided interiorly of the body and in the drain passage **3**.

The sleeve-like element **11** is intended to support a cylindrical post **16** of substantial length, the post **16** having a closed end or bottom **17** which end or bottom **17** is provided on its external portion with threads **18** to receive a retaining nut **19** thereon, the nut **19** in turn supporting a lock spring **20**, which lock spring **20** engages a lock part **21**. The lock part **21** is a washer having an upwardly extending shoulder **22** formed integrally therewith, the shoulder **22** being located to abut the lower edge **23** of the guide or sleeve-like element **11** previously mentioned, so as to tilt the lock part **21** into the position illustrated in FIGURE 4 whereby the same will engage and grippingly co-act with the exterior surface **24** of the cylindrical post member **16** previously described.

As indicated, the cylindrical post member **16** is arranged to be threadedly engaged at its upper end by means of threads **25** formed thereon with suitable threads **26** formed in a boss **27** extending downwardly from a closure **28** which is arcuate in cross section and round in plan, having a skirt and flange arrangement **29** on the periphery of said closure so as to engage with a skirt **30** formed of flexible material such as rubber or the like which skirt is adapted to co-act with the surface **7** of the flange **6** of the plug body **1** as indicated in FIGURE 2 when the closure **28** is in its closed position as indicated in said figure.

Arranged between the upper edge **31** of the guide or sleeve-like element **11**, and the lower edge **32** of the boss **27** formed on the closure **28** previously mentioned, is a spring **33** which normally biases the closure **28** into the position illustrated in FIGURE 1, the spring surrounding

the cylindrical post **16** as will be readily apparent from a consideration of the respective figures.

Disposed within the cylindrical post member **16**, is a release rod **34**, having at its lower end a release pin **35** extending outwardly through a slot **36** formed in the post member **16**, into a position about as indicated in FIGURE 4 so that the said release pin **35** may engage the surface of the washer or lock part **21** to move the lock part **21** out of the tilted position disclosed in FIGURE 4 and thus out of its locking engagement with the exterior of the post member **16**.

This releasing action is effected by downward pressure exerted on the knob **37** on the upper extremity of the reelase rod **34**, this knob being positioned above the closure **28** so that it may be manipulated in any manner desired.

It will be understood that when the washer **21** is moved into a position which may be described as out of the tilted condition illustrated in FIGURE 4, the engagement of the said washer with the member **16** will be overcome against the spring **20** and allow the spring **33** to operate to move the closure into the normally open position of FIGURE 1.

It will thus be understood that downward pressure exerted on the closure **28** will cause the skirt **30** to move downwardly into engagement with the surface **7** of the plug body **1** and thereby close the drain passage **3**.

Suitable downward pressure momentarily exerted on the knob **37** and release rod **34** upon which the said knob is mounted, will move the tilted washer **21** into an untilted position and thereby cause the operation of the spring **20** and permit the spring **33** to go into action for upward movement of the closure **28**.

I claim:

1. In a drain shoe plug of the class described, in combination, a plug body, a drain passage in the body, a closure for said passage movable to open and close the same, means to retain said closure in closed position comprising a member extending from the closure into the passage, a guide for said member, means intermediate the guide and closure biasing said closure toward open position, a lock part on said member in the passage having means to grippingly engage the member when the axis of said part is tilted with respect to the axis of the member, and means in the passage to move the part out of tilted position to release the gripping engagement, said means being connected to a handle operable from a position above the closure.

2. The combination as claimed in claim **1**, wherein the

lock part includes means to maintain the same in tilted position until release is effected.

3. The combination as claimed in claim **1**, wherein the member extending from the closure is cylindrical and connected at one end to the closure, said member extending downwardly through the guide to compel vertical movement of the member, and the means to move the part out of tilted position comprises a rod positioned in the member for vertical movement therein, a pin extending through the member to engage the locked part for moving the same out of tilted position, whereby to effect release of the member.

4. The combination as claimed in claim **3**, wherein a spring is mounted on the member to bias the closure to open position, a second spring acts on the lock part to position the same, said part having a shoulder portion to contact the guide to effect tilting of the part, said second spring likewise engaging the pin on the rod to maintain said pin and rod in position for movement of the part as stated.

5. The combination as claimed in claim **3**, wherein the guide is a sleeve-like element arranged about on the axis of the plug body, the cylindrical member moves up and down in the element, the closure being connected to the upper end of the member, a spring surrounds the member intermediate the element and closure to bias the latter toward open position, the part is washer-like and surrounds the member below the element, a shoulder on the part engages the element to tilt the part for locking, a second spring acts on the lock part to position the same, said second spring likewise engaging the pin on the rod to maintain said pin and rod in position for movement of the part as stated.

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U.S. Cl. X.R.

4—295; 251—103; 287—58