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3,372,825

SAFETY CAP

Filed Aug. 25, 1966

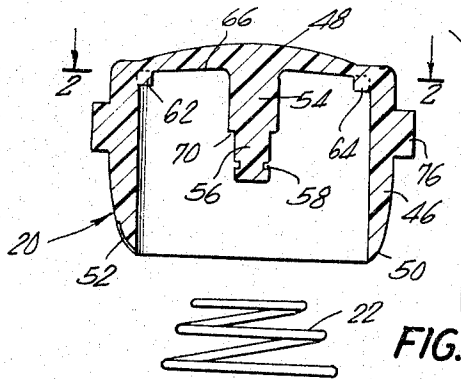


FIG. 1

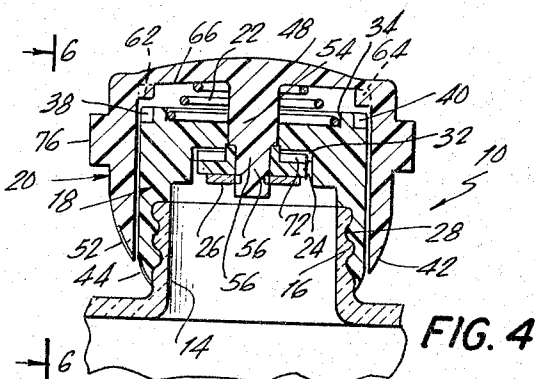


FIG. 4

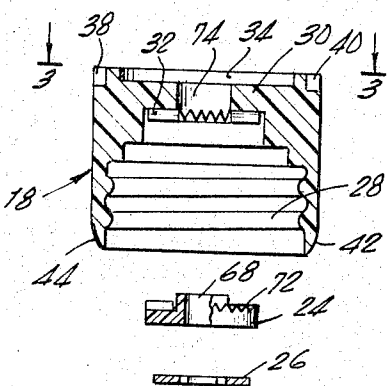


FIG. 5

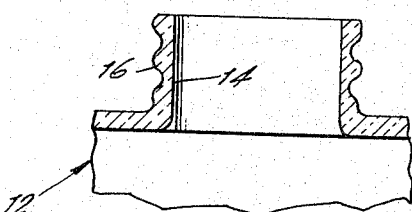


FIG. 6

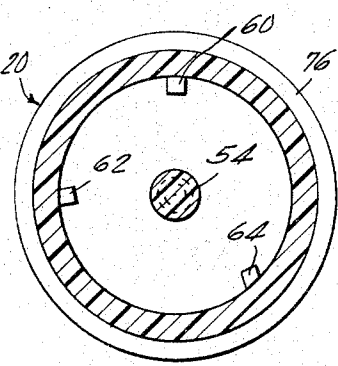


FIG. 2

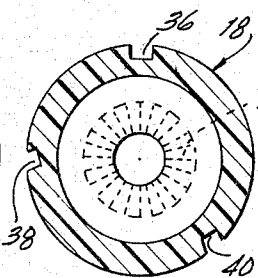


FIG. 3

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SAFETY CAP

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This invention relates to a closure for a container and more particularly to a safety cap adapted to inhibit the opening of a container by children.

The primary object of the present invention is to provide a safety cap which will inhibit and make more difficult the opening of a container having dangerous, poisonous, or potentially harmful material therein by children or unauthorized persons.

A further object of the invention resides in the provision of a closure device that is adapted to be threadedly secured on a container for materials of various types and which can only be removed after a series of predetermined manipulations.

An additional object of the safety cap is to provide for an arrangement of parts wherein a housing is spring pressed to a position wherein the housing may be rotated about a body and relative to the container without loosening or removing the cap yet which upon forceful compression of a spring to engage the parts of the device will permit for the convenient removal of the safety cap and access to the contents of the container.

Still further objects and features of this invention reside in the provision of a safety cap that is simple in construction, capable of being manufactured out of readily available materials, such as synthetic plastics or metals, and which is relatively inexpensive to manufacture thereby allowing for wide use for prevention of harm to children from such materials as medications, acids or alkalies, poisons or other potentially dangerous material.

These, together with the various ancillary objects and features of this invention which will become apparent as the following description proceeds, are attained by this safety cap, a preferred embodiment of which is illustrated in the accompanying drawing, by way of example only, wherein:

FIG. 1 is an exploded longitudinal sectional view of a safety cap constructed in accordance with the concepts of the present invention;

FIG. 2 is a transverse sectional through the housing of the safety cap taken along the plane of line 2-2 in FIG. 1;

FIG. 3 is a transverse sectional view of the safety cap body taken along the plane of line 3-3 in FIG. 1;

FIG. 4 is a longitudinal sectional view of the safety cap shown in an assembled condition on a container and in the normally spring biased position for preventing the removal of the safety cap;

FIG. 5 is a view similar to FIG. 4 but illustrating the safety cap with the housing depressed into an engaged position for removal of the safety cap; and,

FIG. 6 is an elevational view of the invention.

With continuing reference to the accompanying drawings wherein like reference numerals designate similar parts throughout the various views, reference numeral 10 is used to generally designate a safety cap constructed in accordance with the concepts of the present invention and adapted to be made in various shapes and sizes for convenient use with various types of containers for threaded engagement therewith. For example, the container generally designated reference numeral 12 may have a neck 14 which is externally threaded at 16.

The safety cap 10 includes five main members, including a body 18, a housing 20, a spring 22, a toothed member or ratchet 24, and a spring washer 26. The body 18 is preferably molded of a synthetic plastic material and is

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of a generally cylindrical construction having an internally threaded lower portion 28 and provided with a web 30 at the upper portion thereof. The under surface of the web 30 is provided with a plurality of teeth 32, while the upper surface of the web is provided with a recess 34 as well as notches 36, 38, and 40 therein. Any suitable number of notches may be utilized and the notches are of preferably different shapes and unequally spaced from each other and open into the peripheral edge of the body 18. The lower surface of the body tapers inwardly at 42 and is preferably provided with a scribe mark 44.

The housing 20 is of a generally cylindrical shape having cylindrical side walls 46 and having an integral top 48 preferably molded out of a synthetic plastic material or formed from a suitable metal. The lower portion of the cylindrical side walls 46 are tapered at 50 and a scribe mark 52 adapted to cooperate with the scribe mark 44 is provided on the tapered lower portion 50. Descending from the top 48 and integral therewith is a stem 54 which has a lower portion 56 of reduced cross sectional dimensions and provided with a groove 58 therein. Also descending from the top are a plurality of detents 60, 62 and 64 which are of the same shape and spacing as the notches 36, 38, and 40 and adapted to seat therein. The spring 22 is a helical coil spring and is adapted to engage the under surface 66 of the top 48 and the upper surface of the web 30. The spring 22 has its lower portion of larger diameter that the upper portion so that the lower portion seats within the recess 34 and the upper portion of the spring 22 is kept clear of the detents 60, 62, and 64. The toothed member 24 is generally ring-shaped and provided with a hub 68 adapted to engage the shoulder 70 on the stem 54 and is provided with teeth 72 extending about the periphery thereof for toothed engagement with the teeth 32. The toothed member 24 is of larger diameter than the bore 74 extending through the web 30 and is adapted to be held in place on the stem 54 by the spring washer 26 which is received in the groove 58. For facilitating movement of the housing 20, the housing is provided with a suitable outer configuration which may include a rib 76.

The safety cap is assembled by inserting the spring 22 into the housing and onto the stem 54 after which the body 18 is disposed with the stem 54 extending through the bore 74. Thereafter, the toothed member 24 is disposed on the stem portion 56 of reduced cross sectional area and the spring washer 26 is then disposed in groove 58 to hold the assembly together.

The safety cap is installed on the container by threadedly engaging the internally threaded body 28 with the threads 16 and thence depressing the housing so that the detents 60, 62 and 64 are engaged at the notches 36, 38 and 40, the assembly may be turned until the body is tightly threaded on the container 12. Then, release of the housing 20 will cause the assembly to be spring pressed to the position as shown FIG. 4 with the spring 22 under some compression. Rotation of the housing 20 will not serve to open the container 12. The toothed means 24 may be constructed in two ways. Firstly, the toothed means 24 may have its teeth so constructed like a ratchet that the housing 20 and teeth 72 will be freely rotatable relative to the teeth 32 in one direction, but which will lock with the body 48 for rotation in the other direction which will be the direction which will further tighten the grip on the container. Alternatively, the teeth 72 and 32 can permit for free rotation in either direction.

When it is desired to purposefully remove the cap from the container, the scribe mark 44 and 52 are preferably aligned and the housing 20 is then depressed to the position as shown in FIG. 5 whereby engagement of the detents 60, 62 and 64 in the notches 36, 38 and 40 will cause the body 18 to rotate with the housing 20 upon

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rotation thereof for threadedly removing the safety cap from the container.

The different size detents and notches and the unequal spacing thereof serve to permit for only one position wherein the notches are engageable by the detents. This reduces the chance of accidental engagement of the housing with the body, the housing being always biased away from the body by the spring 22. If no scribe marks 44 and 52 are provided, an adult or other knowledgeable person purposefully intending to open the container 12 can rotate the housing 20 relative to the body 18 until the complementary parts mesh with slight pressure being constantly applied on the housing 20.

A latitude of modification, change and substitution is intended in the foregoing disclosure and in some instances some features of the invention will be employed without a corresponding use of other features. Accordingly, it is appropriate that the appended claims be construed broadly and in a manner consistent with the spirit and scope of the invention herein.

I claim:

1. A safety cap comprising a cylindrical body having a transverse web at the upper portion thereof, the lower portion of said body being internally threaded for threaded engagement with a container, said web having a bore there through, the undersurface of said web being provided with teeth, the upper surface of said web being provided with notch means therein, a housing for receiving said body, said housing having a top provided with a depending stem extending through said bore, detent, means depending from said top and complementary with and engageable in said notch means, spring means biasing said web and said top normally urging said housing to a raised position with said detent means out of engagement with said notch means, and toothed means mounted

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on said stem of greater diameter than said bore for engagement with said teeth.

2. A safety cap in accordance with claim 1, wherein said spring is disposed about said stem, said toothed means being arranged to permit rotation of said housing relative to said body in a first direction and for locking engagement with said teeth upon rotation in the opposite direction.

3. A safety cap in accordance with claim 2, wherein said notch means include a plurality of spaced notches opening into the peripheral edge of said body.

4. A safety cap in accordance with claim 3, wherein said notches are unequally spaced from each other.

5. A safety cap in accordance with claim 4, wherein said notches are dissimilar in shape from each other.

6. A safety cap in accordance with claim 1, wherein said toothed means includes a ratchet and a spring washer disposed about said stem for holding the ratchet in place.

7. A safety cap in accordance with claim 1, wherein said body has a recess in the upper surface thereof, said spring means being disposed in said recess.

8. A safety cap in accordance with claim 1, wherein said body and said housing are provided with indicator means for visually providing an indication when said detent means are in alignment with said notch means.

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