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3,451,576

LOCKING CLOSURE WITH FALSE RELEASE FOR TOXIC CONTENTS

Filed June 14, 1967

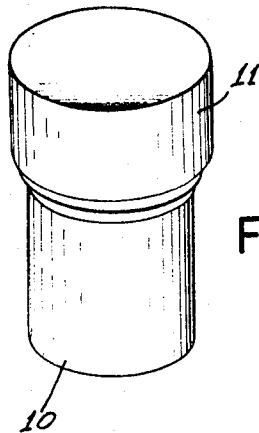


FIG. 1

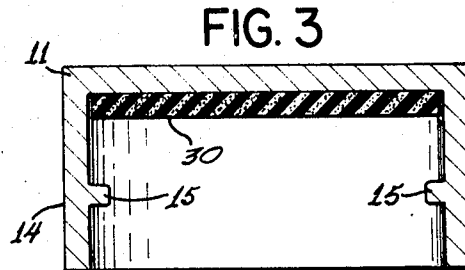


FIG. 3

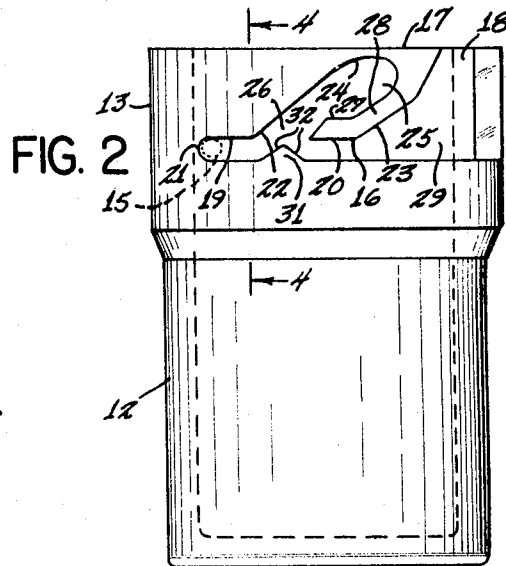


FIG. 2

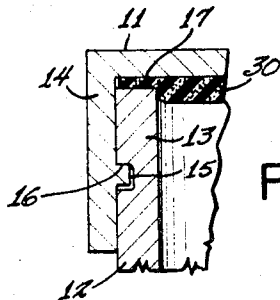


FIG. 4

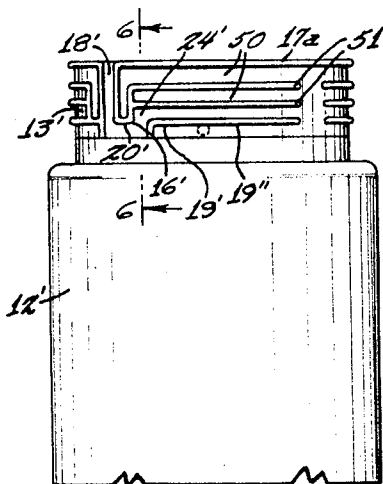


FIG. 5

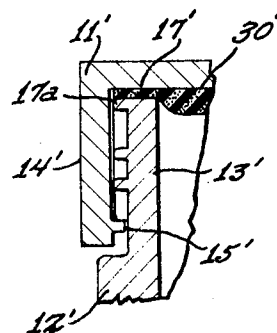


FIG. 6

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14 Claims

ABSTRACT OF THE DISCLOSURE

A receptacle and closure therefor with telescoping and separable plug and socket parts alternately closing and opening access into the receptacle, one of the parts having nibs thereon and the other of the parts having a labyrinth confining the nibs in locked position and requiring alternate relative circumferential and endwise movement of the closure and receptacle to effect removal of the closure.

This invention relates to a receptacle and locking closure therefor.

In storing medicine and other materials in a home or in such other places as may be frequented by numerous persons having various levels of intelligence and knowledge, it is important that such medicines or materials not be confined in containers into which access may be easily obtained. For instance, children around a home must be protected from obtaining access to dangerous and toxic drugs that may be necessary for certain other members of the family. On the other hand, it is often times necessary to store such drugs in locations so that access to the drugs can be easily obtained by persons in need of them.

An object of my invention is to provide a new and improved receptacle and locking closure therefor of simple and inexpensive construction and operation for storing medicines, drugs, and similar materials, access to which should be restricted.

Another object of my invention is to provide a novel receptacle and locking closure therefor into which access may be easily obtained by a person having sufficient knowledge and strength as to open the container, but will limit the access to others.

Still another object of my invention is to provide an improved and novel receptacle and locking closure therefor with interfitting nibs and shoulder surfaces guiding the nibs and constructed so as to deliberately mis-direct the nibs during application and removal of the closure to minimize the likelihood of tampering with the medicines or other materials stored in the receptacle.

These and other objects and advantages of my invention will more fully appear from the following description made in connection with accompanying drawing, wherein like reference characters refer to the same or similar parts throughout the several views, and in which:

FIG. 1 is a perspective view of the receptacle and closure thereon;

FIG. 2 is an elevation view of the receptacle with the closure removed;

FIG. 3 is a section view of the closure;

FIG. 4 is a detailed section view taken approximately at 4—4 in FIG. 2 and also illustrating the closure in assembly with the receptacle.

FIG. 5 is an elevation view of a modified form of the receptacle;

FIG. 6 is a detailed section view taken at 6—6 in FIG. 5 and illustrating the closure applied thereon.

The receptacle 10 and closure 11 therefor may be constructed of any of a plurality of materials and may be cast from aluminum, or may be molded from suitable plastic or resinous materials. Of course the nature of

the materials should be resistant and of a non-reacting nature to the materials which are to be stored therein.

In the particular form shown, the interfitting and telescoping plug and socket parts 13 and 14 of the receptacle and closure are arranged so that the socket part 14 comprises a portion of the closure 11 and the plug part 13 comprises a portion of the receptacle 12. It should be understood that receptacle and closure arrangements may be oppositely arranged wherein the closure comprises a stopper-like element insettable into the open mouth of the receptacle. The plug and socket parts 13 and 14 are of suitable sizes such that the closure 11 is rotatable on the receptacle 12.

The closure 11 has a pair of inwardly projecting nibs 15 disposed diametrically opposite to each other to be confined behind shoulders 16 on the receptacle 12 which face away from the end edge 17 thereof. The shoulder defines one side of a nib-receiving passage area 18 at the periphery of the receptacle.

It will be understood that FIG. 2 illustrates only one side of the receptacle, and the other or back side of the receptacle has a shape identical to that illustrated, in a mirror image, so that both of the nibs 15 will be assembled into a corresponding passage area 18 at respective sides of the receptacle. The comments made herein will refer specifically to the construction illustrated in FIG. 2, but it will be understood that the description also refers to identical details on the opposite side of the receptacle 12.

The shoulder 16 has locking and keeper portions 19 and 20 extending circumferentially of the receptacle and in substantial alignment with each other. At one end of the locking portion 19, the shoulder 16 forms a stop 21 to limit any further circumferential movement of the nib 15 which is illustrated in dotted position in FIG. 2 as illustrative of the final locking position of the nib.

Adjacent the opposite end of the locking portion 19, and at the corresponding end of the keeper portion 20 the shoulder 16 defines a pair of nib guiding segments 22 and 23 which are oriented in very similar obtuse angles with the adjoining locking and keeper portions 19 and 20.

The obliquely oriented nib guiding segment 22 of the shoulder defines one side of an enlarged nib-receiving recess 24, effectively formed in the shoulder 16 and provided with an enlarged and irregularly shaped interior area 25 and a restricted access throat or passage 26. The peripheral portion 27 of the enlarged interior area 25 of the recess cooperates with the keeper portion 20 and nib guiding segment 23 of the shoulder 16 in defining an elongate rib 28 which effectively separates the nib-receiving area 29 of the passage 28 from the recess 24.

Means are provided for urging the telescoping plug and socket parts 13 and 14 endwise of each other as the parts 13 and 14 are rotated with the nib 15 moving along the shoulder 16. Such means includes a resiliently compressible gasket 30 secured as by adhesive against the inside of the closure 11 so as to confront and bear against the end edge 17 of the receptacle 12 when the closure is applied to the receptacle. The nibs 15 are positioned such that compression of the gasket 30 is necessary in order to move the nib to and along the locking and keeper portions of the shoulder 16. The resiliency of the gasket 30 continuously urges the telescoping parts 13 and 14 endwise of each other, and when the nib 15 moves off the end of the keeper or locking portions 19 and 20 of the shoulder, the gasket 30 will actually produce endwise movement of the telescoping parts 13 and 14 and will move the nibs 15, either into the recess 24, or into the nib receiving area 19 of the passage 18. When the nib is being moved along one of the guiding segments 22 or 23 and toward the adjacent locking or keeper portion 19 or 20,

the gasket 30 must necessarily be manually compressed by the person closing the container.

An obstruction 31 to circumferential movement of the nib 15 has nib camming surfaces 32 oriented obliquely of the circumferential direction of movement of the nib, also produces relative endwise movement of the parts 13 and 14 as these telescoped parts are rotated with respect to each other. In order for the nib 15 to pass from the keeper portion 20 of the shoulder 16 to the locking portion 19 thereof, the nib must actually move upwardly into the access area 26 of recess 24, and likewise the nib must move into this area of the recess when the nib is moving off the locking portion 19 in a receptacle-opening operation.

When the closure 11 is in locked position on the receptacle 12, the nib 15 will lie against the locking portion 19 of the shoulder, as illustrated in FIG. 4 and in the dotted line position of the keeper shown in FIG. 2. The closure 11 will be rotated in a counter-clockwise direction, as seen in FIG. 1, whereupon when the nib 15 moves off the end of the locking portion 19 the resilient gasket 30 will normally urge the closure 11 endwise of the receptacle and this will move the nib 15 diagonally upwardly along the guiding segment 22.

If, by chance, the closure 11 is being manually urged endwise onto the receptacle as the rotation is occurring, the camming surface 32 of the obstruction 31 will engage the nib 15 and this camming surface will effect the endwise movement if rotation is continued, otherwise the obstruction 31 will prevent rotation of the closure 11 on the receptacle.

Movement of the nib into the access area 26 of the recess substantially loosens the closure 11 on the receptacle and the nib 15 will be free to move into the enlarged interior area 25 of the recess 24. If the person attempting to open the receptacle is not acquainted with the functioning of it, it will then appear, because of the looseness of the cap that the closure 11 should be then removable, but in fact the closure 11 may not be removed until the closure is again tightened onto the receptacle, moving it endwise and rotationally so as to progressively move the nib 15 along the keeper portion 20 of the shoulder and into the area 29 of passage 18. The person attempting to open the receptacle must have physical strength to move the nib against the pressure of the gasket 30 into the area adjoining keeper portion 20, and must in fact know that it is necessary to do so. When the nib is moved into the area 29 of passage 18, the receptacle and closure 11 may be readily separated.

In the form of the invention shown in FIGS. 5 and 6, the receptacle 12' and the closure 11' have the interfitting plug and socket parts 13' and 14' similarly to the first form of the invention. In this form of the invention, a bead 17a is provided around substantially the entire periphery of the upper edge 17' of the receptacle. The closure 11' has nibs 15' and a resiliently compressible gasket 30' to bear against the end edge 17' and urge the nibs 15' alternately into engagement with the keeper portion 20' of the shoulder 16' or against locking portions 19', 19'' thereof.

The shoulder 16' is, in this form of the invention, in the form of a bead, and connects with the edge bead 17a adjacent the entrance passage 18'. A recess 24' is provided between the locking and keeper portions 19' and 20' for receiving the nibs 15' urged therein by action of the resilient gasket 30'.

Because the shoulder 16' is discontinuous, a locking portions 19', 19'' is connectable to the passage 18' through the recess 24' so that the nib 15' must be moved in a rather complicated and predetermined route to the entrance passage 18' if the nib is retained against the locking portion 19'' of the shoulder. It will be recognized that the form of the invention illustrated in FIGS. 5 and 6 has a plurality of single ended passages 50 defined by ribs or beads 51 for purpose of confusing a person not knowing the

specific nature of the construction in an opening operation. In this form of the invention, as well as the first form of the invention, the closure 11' is urged and moved endwise of the receptacle when the nib is rotated off the end of the locking portions 19' or 19''.

The person attempting to open the receptacle must subsequently move the closure 11' inwardly against the pressure of the gasket 30' before the nibs may be passed along the keeper portion 20' for egress through the passage 18' which allows removal of the closure 11'.

It will be seen that I have provided a new and improved receptacle and locking closure therefore to prevent access into the receptacle which may contain materials to which free access should not be attainable. The invention is constructed as to give the closure the feeling of being released as a part of its normal condition in the opening procedure after which the closure must again be tightened and manipulated further in order to actually effect the complete removal thereof and access into the receptacle.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the various parts without departing from the scope of my invention.

What is claimed is:

1. In a receptacle having a closure, the receptacle and closure having telescopically interfitting and relatively rotatable plug and socket parts separable from each other to remove the closure and permit access into the receptacle,

one of said parts having a nib on its periphery, said periphery being otherwise unobstructed adjacent the nib,

the other of said parts having an end edge and an elongate nib-engaging shoulder with a locking portion extending generally circumferentially on the periphery of the part and facing away from said edge for retaining said nib therebehind and thereby securing the parts in assembly with each other,

the shoulder also having a keeper portion in substantially endwise alignment with said locking portion and spaced circumferentially from said locking portion, said keeper portion also facing away from said edge, said shoulder also having an enlarged nib receiving recess between said locking and keeper portions thereof, said recess having a depth sufficient to completely receive the nib and thereby loosen the closure, and means urging said parts endwise of each other and urging said nib into said recess during relative rotation thereof.

2. The invention according to claim 1 and a stop adjacent the locking portion of the shoulder to limit relative rotary movement of the parts to retain the closure and receptacle in predetermined relation.

3. The invention according to claim 1 and the other of said parts also having an obstruction to circumferential movement of said nib and located adjacent to and between said locking and keeper portions of the shoulder and opposite the recess to necessitate movement of the nib into the recess during traversing by the nib between said locking and keeper portions.

4. The invention according to claim 3 and said obstruction having an obliquely oriented nib camming surface deflecting the nib into the recess when urged circumferentially against the obstruction.

5. The invention according to claim 1 and said means including a resiliently compressible gasket at the periphery of said socket part and bearing in an endwise direction against the socket and plug parts and urging said parts in opposite directions.

6. The invention according to claim 1 and the keeper portion of the shoulder having a first and second ends, the locking portion also having a second end adjoining the recess, the shoulder also having nib guiding segments respectively connected with the second ends of the keeper and locking portions, said nib guiding segments having

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similar oblique and angular orientation with the respective locking and keeper portions.

7. The invention according to claim 6 and said nib guiding segments having obtuse angular orientation with the respective locking and keeper portions of the shoulder to guide the nibs toward the locking and keeper portions of the shoulder and to allow movement of the nibs away from said locking and keeper portions in similar directions.

8. The invention according to claim 6 and one of said nib guiding segments defining one side of said recess, the opposite side of the recess being in juxtaposed and spaced relation with said keeper portion of the shoulder to cooperatively define a narrow rib, whereby the recess has an enlarged and irregularly shaped periphery.

9. The invention according to claim 3 and said means including a resiliently compressible gasket at the periphery of said socket part and bearing in an endwise direction against the socket and plug parts and urging said parts in opposite directions.

10. A receptacle and a closure therefor, the receptacle and closure having telescopically interfitting and relatively rotatable plug and socket parts separable from each other to remove the closure and permit access into the receptacle, one of said parts having a pair of radial nibs on the periphery thereof and spaced from each other,

the other of said parts having an end edge and also having a pair of elongate nib engaging shoulders each disposed opposite a respective nib. Each of said shoulders having a locking portion extending generally circumferentially on the periphery of said other part and facing away from said edge for retaining the corresponding nib therebehind and thereby securing the parts in assembly with each other, said locking portion having opposite first and second ends,

the other of said parts also having a stop adjacent the first end of said locking portion of the shoulder to limit relative rotary movement of the parts,

the shoulder also having a keeper portion in substantially endwise alignment with said locking portion and spaced circumferentially from said locking portion, said keeper portion also facing away from said edge and having opposite first and second ends,

each of said shoulders also having an enlarged nib-receiving recesses between said locking and keeper portions thereof, said recess having a restricted access portion adjacent the ends of said locking and keeper portions of the shoulder, and said recess also having an enlarged inner area considerably broader than said access portion, said shoulder defining a first nib guiding portion defining one side of said recess and adjoining the second end of the locking portion of said shoulder, the opposite side of the recess lying in juxtaposed and spaced relation with the keeper portion of the shoulder and defining a rib therebetween and thereby providing the recess with an enlarged and irregular inner periphery,

each of said shoulders also having a second nib guiding segment adjoining the second end of said keeper portion, both of said nib guiding segments having substantially similar obtuse angular orientations with respect to the adjoining locking and keeper portions of the shoulder,

the other of said parts also having a pair of obstructions to circumferential movement of said nibs and each of said obstructions being located adjacent to and between the locking and keeper portions of the corresponding shoulder and opposite the access portion of the recess to necessitate movement of the nib

into and out of the recess during traversing by the nib between the locking and keeper portions of the shoulder, said obstructions each having a pair of obliquely oriented nib camming surfaces facing in opposite directions and toward said locking and keeper portions and deflecting the nib into the recess when urged circumferentially in either direction against the obstruction,

and a resiliently compressible gasket disposed between the plug and socket parts and creating a sealed relationship therebetween and also urging said plug and socket parts in opposite endwise directions and also urging said nibs alternately against said shoulders during relative rotation thereof and also into said recesses.

11. The invention according to claim 1 and said end edge of the other of said parts having a nib retaining bead extending therearound and having an access opening there-through adjacent the keeper portion of the shoulder, the shoulder extending to said bead adjacent said keeper portion, and said shoulder being discontinuous between the locking and keeper portions thereof and thereby permit movement of the nib in multi-directions.

12. A receptacle and a closure therefor, the receptacle and closure having telescopically interfitting and relatively rotatable plug and socket parts separable from each other to remove the closure and permit access into the receptacle,

one of said parts having a nib on its periphery, said periphery being free of obstructions adjacent the nib, the other of said parts having an end edge and an elongate nib-engaging shoulder with a locking portion extending generally circumferentially on the periphery of the part and facing away from said edge for retaining said nib therebehind and thereby securing the parts in assembly with each other, the shoulder having a keeper portion in substantially endwise alignment with said locking portion and spaced circumferentially from said locking portion, said keeper portion also facing away from said edge, and said shoulder also having an enlarged nib receiving recess between said locking and keeper portions thereof, said recess being larger than the nib to completely receive the nib therein to loosen the closure.

13. The invention according to claim 11 and said means comprising a resiliently compressible gasket at the periphery of said socket part and bearing in an endwise direction against the socket and plug parts and urging the parts in opposite direction.

14. The invention according to claim 1 and said means comprising an obstruction to circumferential movement of said nib, said obstruction being disposed on said other of said parts and located adjacent to and between said locking and keeping portions of the shoulder and opposite the recess, said obstruction having an obliquely oriented nib camming surface deflecting the nib into the recess when urged circumferentially against the obstruction.

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U.S. Cl. X.R.

215—44; 220—40