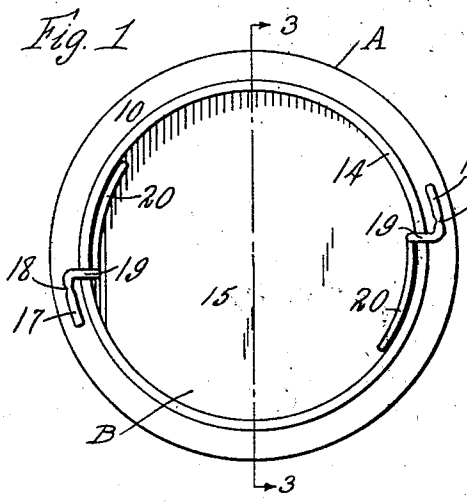
March 29, 1932. B. MOREY 1,851,641

COVER FASTENER

Filed March 12, 1930

Fig. 1



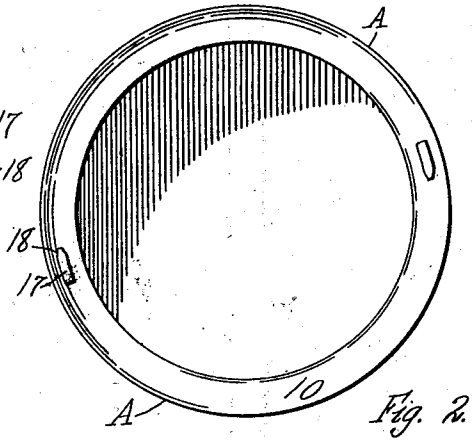


Fig. 2.

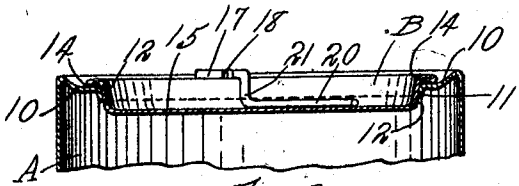
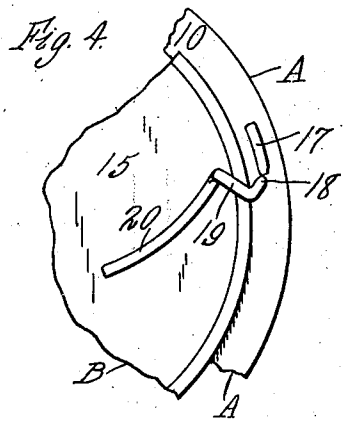


Fig. 3

Fig. 4.



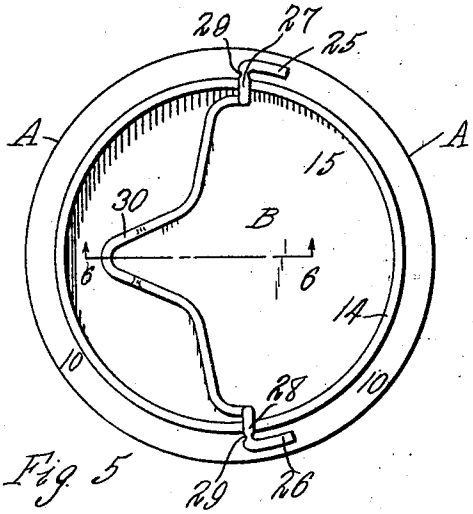


Fig. 5

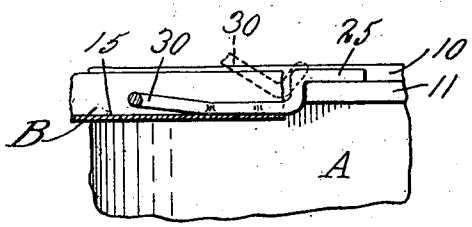


Fig. 6

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UNITED STATES PATENT OFFICE

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COVER FASTENER

Application filed March 12, 1930. Serial No. 435,336.

This invention relates to retainers or fastening means for securing covers or heads on the bodies of receptacles to prevent accidental dislodging of the covers during shipment or handling of the receptacles.

At the present time, many materials are sold in metal cans, drums and other containers which are provided with removable covers or closures, so that after the container has been opened by the user, the cover or closure can be replaced to form a tight seal, such type of container being particularly desirable for use in connection with materials, which may not all be used at one time by the consumer, and which must be sealed to prevent deterioration of the goods by excessive contact with air.

The objects of this invention are to provide a retainer for container covers, which acts positively to retain the cover in place on the container body even during severe mishandling of the container, and which can be easily removed when the container is to be opened; also to provide a cover retainer of this type, which is so constructed that much less force is necessary to remove the retainer at will for opening the container than would be required to accidentally remove the retainer; also to provide a retainer of this kind, which is so arranged relatively to the cover that the leverage acting on the retainer by the cover to remove the retainer is much less than the leverage which results when the retainer is removed by the user; also to provide a cover retainer which is deformed at a portion thereof in such a manner that the removal of the retainer at will to open the container is facilitated, without materially impairing the strength of the retainer to hold the cover against accidental displacement; also to provide cover retainers which can be readily broken by the user to remove the cover, but which offer a much greater resistance against breakage due to pressure exerted by the cover on the retainer; also to provide a retainer for a cover which is so formed that the material of the retainer offers greater resistance against breakage to the cover than to a person breaking the same at will; and also to improve the construction of cover retainers in other respects hereinafter specified.

In the accompanying drawings:

Fig. 1 is a top plan view of a container body and cover having retainers embodying this invention applied thereto;

Fig. 2 is a similar view thereof, with the retainers and cover removed;

Fig. 3 is a fragmentary, transverse sectional elevation thereof, on line 3—3, Fig. 1;

Fig. 4 is a fragmentary top plan view on an enlarged scale showing a cover retaining device being removed;

Fig. 5 is a top plan view of a container and cover having a cover retaining member of modified construction applied thereto; and

Fig. 6 is a fragmentary, sectional elevation on line 6—6, Fig. 5.

A represents the body of a container, and B the cover or closure therefor. The container body and cover may have cooperating parts of any suitable or desired form to make a seal between the cover and the body. In the particular embodiment of the invention illustrated, the container body is provided at its upper end with an inwardly and downwardly extending portion or flange 10 terminating at its inner periphery in a sealing flange 11, which cooperates with a corresponding upwardly extending part 12 of the cover. The outer edge of the cover may be turned outwardly as indicated at 14 to rest upon the flange 10. A seal of this kind between the cover and the container body provides only single friction surfaces on the cover and the body, which cooperate to hold the cover on the body, and also forms a liquid tight seal therewith. It will be understood, however, that this invention does not concern itself with the structure of the con-

tainer or its cover or closure, nor with the type of seal employed, nor with the manner in which the container body and top are formed to provide a seal, it being preferable, although not necessary, that the cover have a depressed portion 15 therein, as illustrated. My invention can be used with containers of other types than the one illustrated, or for holding against movement any two parts movable relatively to each other in one direction.

In accordance with my invention, one or more retaining members are secured to the container body, after the cover is put in place thereon, these retaining members being preferably made of metal, for example, of a suitable rod or wire, and extend over the cover in such a manner as to prevent the moving of the cover out of its seating position. Preferably, though not necessarily, the wire retaining member or members are deformed or weakened at a portion thereof near the end which is secured to the body, the deforming being done by notching or flattening the wire or rod near the point at which it is secured to the body in such a manner that the deformation will render it easy to move the retaining member out of its holding position, for example, by breaking the retaining member at the deformed portion by movement of the free or unsecured part of the retainer in a direction other than that in which the cover acts against the retaining member. It is, however, not necessary in all cases to weaken or deform a portion of the retaining member, as will hereinafter be explained.

The principles which constitute the subject matter of my invention may be applied in different embodiments or forms, only two such embodiments of my invention being shown. In the particular form shown in Figs. 1 to 4, two or more retaining members are employed, each retaining member including a short length of rod or wire having one end 17 rigidly secured in any desired manner to the container body adjacent to the cover. In the construction illustrated, the end 17 of the retaining member is welded, for example, by spot welding, to the inwardly extending flange 10 of the body. Immediately adjacent to the end 17, the retaining member is deformed in any desired manner, for example, by means of a notch or notches 18 in the retaining member, which notches extend in an upright direction. Beyond the notches, the retaining member is bent to provide an inwardly extending portion 19 which presses against the outer edge of the cover, for example, against the flange 14 of the cover, in the construction shown, and beyond the part 19, the retaining member has lever portion 20, which may be of any suitable or desired form, that shown extending substantially at right angles to the part 19 and being first bent downwardly, as shown at 21, so that the greater portion of the lever part 20 of the retaining member lies in the recessed part 15 of the cover and near the upwardly extending flange 12 thereof. Both of the retaining members shown in Figs. 1 to 4 are of the same shape.

It will be obvious from the construction described that, if the outer end of the lever portion 20 of the retaining member be moved in a direction substantially parallel to the cover and toward the center of the cover, as indicated in Fig. 4, the deformed or notched portion 18 of the retaining member will offer very little resistance to such movement of the lever portion 20, and will break at the deformed portion 18, after one or more such movements of the retaining member. When all of the retaining members have been thus broken off, the removal of the cover can be easily accomplished by prying it upwardly in the usual manner, the ends 17 of the retaining member in no way interfering with the removal or replacing of the cover. Since the notches or depressions in the deformed portions 18 of the retaining members extend in an upright direction, these deformed portions will offer a much greater resistance to breakage by the outward movement of the cover, since such movement would be in a direction to bend the deformed portion of the retainer in a direction parallel to its greatest dimension. It is even possible, by pressing the depressions 18 into the retainer, to increase the vertical dimension of the deformed portion of the retainer, and thus cause this deformed portion to offer greater resistance to displacement of the cover than other parts of the retainer. Furthermore, the force exerted by the cover itself in a direction to remove the cover from its sealing position acts on the part 19 in close proximity to the deformed portion 18, so that very little leverage is exerted by the cover in a direction to break the retainer. On the other hand, when force is applied to the lever portion 20 of the retainer near the end thereof, a very much greater leverage is exerted, thus facilitating the breaking of the retainer at the deformed portion.

As a result of the construction described, for two separate reasons the force exerted by the cover against the retainer or retainers is much less effective in breaking the retainers than the force employed by an individual to remove the retaining members. The retaining members, therefore, can be made to very effectively and securely hold the cover in place, without placing any difficulty in the way of the removal of the retaining members by a person wishing to open the container. The object of the deformed portion 18 is mainly to facilitate the breaking of the retainer from its holding portion at a point beyond the periphery of the cover, and consequently the

deformed portion of the retainer may be located anywhere between the periphery of the cover and the welded or secured portion 17 of the retaining wire. It will be understood, however, that the deformed or weakened portion of the retainer can be entirely eliminated, since the retainers shown in Figs. 1 to 4 will break or bend only at a point immediately adjacent to the part secured to the container.

In the construction shown in Figs. 5 and 6, the principles embodied in my invention are applied in another manner. In this construction, a single retainer is employed, which, however, has the two ends thereof secured to the container body, as indicated at 25 and 26. This retaining member is provided with bends 27 and 28 adjacent to the parts 25 and 26 respectively, these bends causing the metal of the retaining member to extend across the outer edge or flange 14 of the cover. Each of the two bends of the retaining member is provided at 29 with deformed or weakened portions which may also be in the form of upright grooves in the retaining member, and which are arranged so as to lie outwardly beyond the outer edge of the cover B. The retaining member is bent to form a handle portion 30, the nature of the bends being immaterial, those shown being such that this portion of the retaining member lies within the depressed portion slightly raised out of contact with the cover so as to render the handle portion 30 more readily accessible. In breaking the retaining member shown in these views, the handle 30 is lifted or moved away from the cover B, this movement of the retaining member being indicated by broken lines in Fig. 6, thus subjecting the weakened portions 29 of the retaining member to tortional strains, which result in a ready breaking of the retaining member at the weakened portions 29, so that the cover B can be easily removed.

In this embodiment of the invention, the upright grooves which result in the weakening of a retainer at 29, preferably extend in the same direction described in connection with Figs. 1 to 4. The deformed portions of the retainer, therefore, offer practically the same resistance to breakage due to pressure exerted by the cover thereon, as would an unweakened portion of the wire, since the pressure by the cover is exerted in the direction of the largest dimension of the weakened portion. When, however, the handle 30 of the retainer is raised, the weakened portions of the metal are subjected to torsional or twisting strains, at a leverage many time greater than that at which the flange of the cover can act upon the retaining member, so that a ready breaking of the metal at the weakened portion results.

In both of the constructions illustrated, the depression 15 of the cover is utilized to protect the lever or handle portion of each retainer against accidental movement. It is not, however, necessary to have the covers provided with recessed portions, since the chances of movement of the levers in a direction necessary to break the retaining members are almost negligible during the ordinary handling or shipping of the containers. In connection with the retainers shown in Figs. 1 to 4, it will also be noted that the movement of the lever portions 20 directly outwardly from the cover portion is resisted by the longest dimension of the weakened portion of each retainer, so that it is very difficult to remove this type of retainer, unless the lever portions 20 are moved parallel to the cover, as indicated in Fig. 4, thus further reducing the chance of accidental breaking of these retainers. In both of the constructions illustrated, only a very slight notching or grooving of the retaining members is necessary to produce a deformed portion therein, the main object of the deformed portion or portions being to insure the breaking of the retaining members at points outwardly beyond the outer edge of the cover.

Retainers embodying this invention may be applied to various types of containers, such as sheet metal cans, kegs, drums or barrels. The expression "cover", as herein used, is intended to apply to any form of closure for the receptacle. When it is desired to use retainers of this kind with cans or small containers, it is possible to secure the cover and the retaining means to the can bodies at the factory, the bottoms of the containers being applied after the cans are filled. If desired, the retaining means may be welded or otherwise applied to the container body after the container is filled.

Claims:

1. A retainer for holding two parts against relative movement in one direction, said retainer being secured to one of said parts and overlying the other part to prevent such movement, a portion of said retainer not overlying said other part, being of modified cross section, said modified cross section including a reduction thickness in a direction other than that of the movement of said parts relatively to each other to permit a portion of said retainer to be moved in said other direction at will to sever said retainer at said reduced portion to permit said relative movement.

2. A retainer for holding two parts against relative movement in one direction, said retainer being secured to one of said parts in close proximity to said other part and having a weakened portion adjacent to said secured portion of the retainer, and an arm extending over said other part and engaging the edge of said other part adjacent to the secured portion of the retainer, said arm affording leverage to facilitate flexing of said retainer about said weakened portion.

3. A retainer for holding a cover on the

body of a metal receptacle, including a metal member having one part rigidly secured to the receptacle and another part extending over the cover, said parts being integral and connected by a deformed portion, shaped to offer greater resistance to breakage in the direction of movement of the cover from the receptacle than in another direction, whereby the retainer may be readily broken to permit removal of the cover.

4. A retainer for holding a cover on a container, including a portion secured to the container and a portion immediately adjacent thereto engaging a part of said cover, and a free end extending beyond said last mentioned part, said free end being movable to place said last mentioned part out of engagement with said cover, the resistance to movement of said last mentioned part being overcome by the leverage afforded by said free end and said cover acting on said last mentioned part without the advantage of said leverage.

5. A retainer for holding a cover on a receptacle, said retainer including a part secured to said receptacle, a part adjacent thereto engaging said cover to hold the same in place, including a weakened portion adjacent the part secured to said receptacle, and a lever portion extending beyond said part to facilitate removal of said last mentioned part out of holding engagement with said cover by breaking at said weakened part.

6. A retainer for holding a cover on a receptacle, said retainer including a part secured to said receptacle, a part immediately adjacent thereto engaging said cover, and a part acting as a lever and extending beyond said last mentioned part, said first two parts being integrally connected by a deformed portion arranged beyond the edge of the cover, said lever part facilitating the breaking of said retainer at said deformed portion.

7. A retainer for a cover, for a metal container, said retainer being formed of a metal rod having a portion rigidly secured to said container, and a portion immediately adjacent thereto engaging said cover and connected with said first mentioned portion by a deformed portion, said deformed portion being of a cross section offering greater resistance to flexing in a direction in which the cover is removed from said container than in a direction at an angle thereto, whereby said cover engaging portion can be more readily moved out of engagement with said cover at will than by said cover.

8. A retainer for holding a closure on a receptacle, said retainer being in the form of a metal rod having a portion thereof secured to the receptacle and a part immediately adjacent thereto engaging said closure, said parts being integrally connected by a portion of different cross section than other parts of said retainer, said cross section having a greater dimension in the direction of movement of said closure from said receptacle than in another direction, and an extension on said retainer for moving said closure engaging part in said other direction to permit removal of said closure.

9. A retainer for holding a closure on a receptacle, said retainer including a portion secured to said receptacle, and a portion adjacent thereto engaging said closure, said retainer being of substantially uniform cross section except at a portion connecting said two parts, which portion is deformed to facilitate breaking of the retainer at such portion, and a lever extension forming a part of said retainer to permit breaking of the retainer at will at said portion.

10. A retainer for holding a closure on a receptacle, said retainer including a portion secured to said receptacle, and a portion adjacent thereto engaging said closure, said retainer being of substantially uniform cross section except at a portion connecting said two parts, which portion has a notch extending substantially in the direction in which said closure is removed from said receptacle, to facilitate flexing of said parts relatively to each other to permit removal of said closure.

11. The combination with a sheet metal container having a cover provided with a depressed portion therein, of a retainer having one end thereof secured to the container and having a portion immediately adjacent thereto extending over the edge of the cover to hold the same in place on the container, and having the other end of said retainer arranged in said depressed portion, said retainer having a weakened portion near the end thereof secured to said container and beyond the periphery of said cover, at which the retainer may be broken by swinging the end thereof arranged in said depressed portion about the secured end of the retainer.

12. A retainer for holding two adjacent parts against relative movement in one direction, a portion of said retainer being attached to one of said parts at a point adjacent to the other part and having a free end extending across said other part to prevent such relative movement in said one direction, said retainer having adjacent to its attached portion a section of greater dimension in said one direction than in a direction at right angles thereto to afford a maximum resistance to flexure in said one direction, whereby said retainer may be broken at said section by moving the free end thereof in a direction approximately at right angles to said direction of relative movement of said parts.

13. A retainer for holding two adjacent parts against relative movement in one direction, a portion of said retainer being attached to one of said parts at a point adjacent to the other part and extending across

said other part to prevent such relative movement in said one direction, said retainer having adjacent to its attached portion a section with a maximum resistance to flexure in said one direction, the portion of said retainer extending across said other part being movable in a direction to subject said retainer to a twisting strain to break said retainer at said section thereof to permit said parts to move in said one direction.

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