June 30, 1942. M. L. RATHBUN 2,287,903

CLOSED RECEPTACLE OR CASE

Filed Aug. 1, 1940

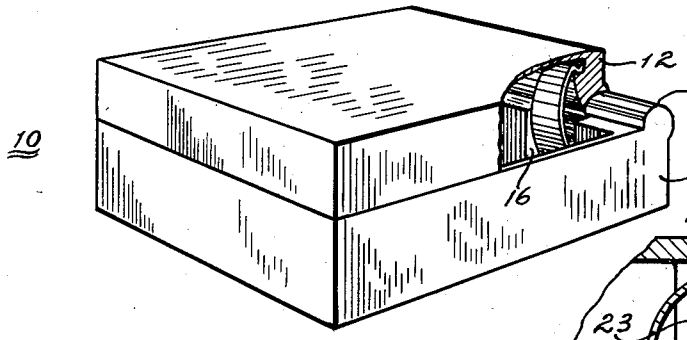


FIG-I

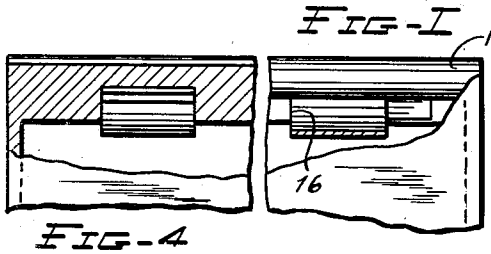


FIG-4

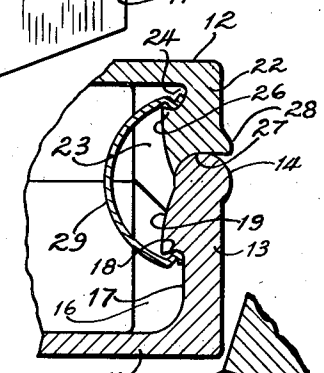


FIG 2

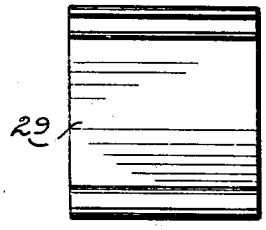


FIG-7

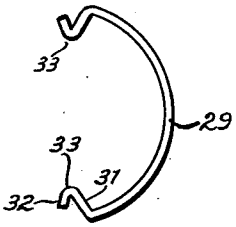


FIG-8

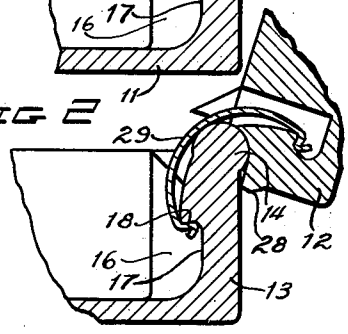


FIG-3

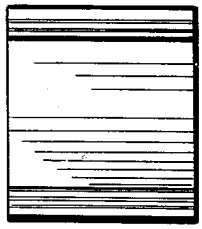


FIG-9

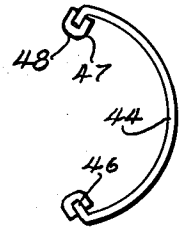


FIG-10

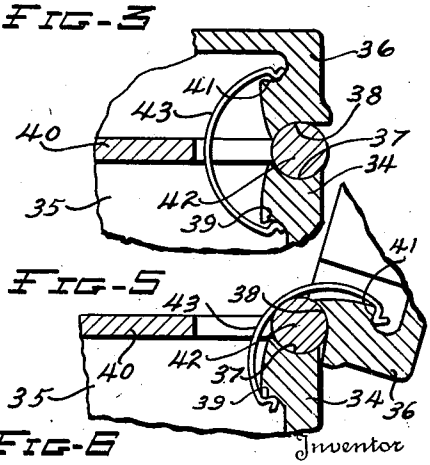


FIG-5

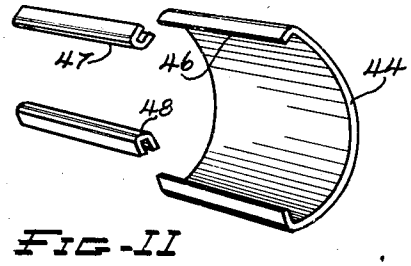


FIG-II

FIG-6

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UNITED STATES PATENT OFFICE

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CLOSED RECEPTACLE OR CASE

Merrill L. Rathbun, Salamanca, N. Y.

Application August 1, 1940, Serial No. 349,203

1 Claim. (Cl. 220—31)

This invention relates to an improvement in pivotal structures for closed receptacles.

One form of the invention discloses a receptacle and cover having cooperating pivotal elements held in operable pivotal relationship by one or more spring members. The spring members, being engaged with both elements of the receptacle, also serve to yieldingly secure the elements in relative opened or closed position.

Prior to this invention it has been the practice to apply this type of pivotal structure to closed receptacles formed from hard materials, such, for example, as metal, thermo-setting plastics and the like. The present trend in closed receptacle manufacture, particularly that relating to the jewelry or analogous trades, is to utilize a moldable material that is thermo-plastic; i. e., one that after being molded is somewhat soft and pliant. Through the use of thermo-setting plastic material, the resulting articles are hard, frangible, and frequent breakage occurs both in manufacture and use. However, articles formed from thermo-plastic material, being somewhat soft and pliant, have less tendency to breakage and include colors and transparencies heretofore not obtainable in the thermo-setting plastic materials.

One of the objects of the present invention is to provide pivotal means for closed receptacles.

Another object of the invention is to provide pivotal means for closed receptacles that are formed from somewhat soft, pliant material, such as is produced through the use of thermo-plastic material.

Another object of the invention is to provide pivotal means for closed receptacles that includes one or more springs designed to secure the pivotal elements in operable relationship and ineffective in use to wear, cut into, or otherwise damage the material from which the receptacle may be formed.

Other objects and advantages of the invention will be more fully understood and appreciated from a consideration of the following specification, taken in conjunction with the accompanying drawing; and in which

Figure 1 is a perspective view of a closed receptacle embodying one form of a pivotal structure constituting the subject matter of the present invention;

Figure 2 is a fragmentary vertical sectional view through the receptacle, being taken to show the pivotal structure;

Figure 3 is a view similar to Figure 2 showing the receptacle in opened position;

Figure 4 is a fragmentary plan view of the receptacle, partly in section to disclose certain of the structural details of the pivot elements;

Figure 5 is an enlarged fragmentary vertical sectional view of a modification of the receptacle, showing the elements thereof in closed position;

Figure 6 is a view similar to Figure 5 showing the elements of the receptacle in opened position;

Figures 7 and 8 are enlarged front and side elevational views of one form of spring embodied in the pivotal structure disclosed;

Figures 9 and 10 are front and side elevational views of a conventional spring to the sharp gripping edges of which clips have been applied; and

Figure 11 is a perspective view of the spring and clip structure shown in Figures 9 and 10.

Reference is now had to the drawing wherein the numeral 10 is employed to generally designate a receptacle in which is embodied one form of the invention. The receptacle may be comprised of a body member 11 and cover 12. The body member includes conventional base, side and front walls, and a rear wall 13. The upper edge of the rear wall may be formed with a bead 14. In the present disclosure this bead is slightly rearwardly offset to overhang the edge of wall 13. However, since the disposition of this bead may control the degree of opening of the cover with respect to the body, it forms no specific part of the present disclosure.

Not only from the standpoint of economy, but for the sake of appearance as well, only the rear wall 13 is of substantial thickness as compared with the other walls of the body 11. One or more recesses 16 are formed in the inner face of the wall 13. The base wall 17 of each recess is formed with a shoulder 18 that provides a seat for one end of a spring hereinafter described. From the shoulder 18, the base wall 17 may be continued upwardly in a slightly laterally curved surface 19 that terminates at the upper end of the wall 13 in the bead 14. The bead 14 may extend the full length of the wall 13, although this is not essential to the proper functioning of the invention.

The cover 12 includes conventional top, side, and front walls, and a rear wall 22 of the same proportions as wall 13 of the body 11. One or more recesses 23, adapted to align with the recess 16, are formed in the inner face of the wall 22. The base wall 24 of the recess 23 is formed with a shoulder 26 that provides a seat for the other end of a spring. From the shoulder 26 the base wall of the recess 23 may be curved to terminate adja-

cent one edge of a recess 27 that may extend the full length of the wall 22. In the present disclosure the rear edge of the recess 27 terminates in a bead 28 projecting laterally beyond the outer face of the wall 22. This, it will be understood, serves in conjunction with certain portions of the pivotal means to limit the extent of opening of the cover 12 with respect to the body 11.

A strap spring 29 serves to secure the pivotal parts of the body and cover in operable relationship. This spring is of a contour substantially that disclosed and terminates at its ends in flanges 31 that are somewhat return bent to provide surfaces 32 and rounded portions 33. The distance between the portions 33 is somewhat less than that between the shoulders 18 and 26. Consequently, the spring must be slightly extended to be engaged with the elements of the receptacle, and, when so engaged, is under sufficient tension to prevent inadvertent disengagement. It is to be noted that the spring seats in the body and cover are of such proportions that when the spring is engaged therewith, the portions 33 contact the bases of the seats and the surfaces 32 abut the base walls 17 and 24 when the elements of the receptacle are in the position shown in Figure 2. The shoulders 18 and 26, when the receptacle is closed, are out of contact with the spring 29. When the cover moves from closed to opened position, substantially as shown in Figure 3, the portions 33 are free to rotate slightly on the spring seats without damage thereto, and flanges 31 of the spring come into contact with shoulders 18 and 26.

As has already been mentioned, the invention is well adapted for use with material of somewhat soft, pliant form, such, for example, as would be readily cut through or chipped by contact with the sharp edge of a strap spring. By reason of the substantial amount of material interposed between the spring ends and because of the provision of rounded spring ends that rotate on their seats, the spring 29 is ineffective to break off or wear through the shoulders 18 and 26. Since the receptacle to which the invention is applied is of relatively small proportions, it would be possible to rotate the cover further and break or chip the spring seats. However, this is guarded against by causing the inner surface of the central portion of the spring to contact the bead 14 when the cover 12 assumes its openmost position. Additionally, the bead 28 of the cover cooperates for this purpose.

Reference is now had particularly to Figures 5 and 6 wherein is disclosed a modification of the structure already described. In this instance, the rear walls 34 and 36 of the body and cover of a receptacle 35 terminate along their adjacent edges in corresponding recesses 37 and 38. Spring seats 39 and 41 are formed in the walls 34 and 36 in the manner described in connection with the disclosure in Figures 2 and 3. A pin or roller 42 is interposed between the surfaces 37 and 38 and substitutes for the bead 14 that is integral with the rear wall of the body 11 of the receptacle already described. This pin may have a receptacle divider 40 joined to or made integral therewith. A spring 43, similar to spring 29, is engaged with the spring seats 39 and 41 and serves to hold the roller 42 in engagement with recesses 37 and 38.

The spring 43 additionally, when the receptacle is open, contacts the pin or roller 42 and serves as a stop to limit further opening of the cover with respect to the body. In both modifications described, it will be noted, with the cover fully opened and the spring in contact with the bead or pin, that there is space between a part of the inner face of the spring and the curved surfaces adjacent the spring seats and, at least insofar as the cover is concerned, it could be rotated slightly beyond the opened position until the curved surfaces contacted the spring. While this position of the cover is beyond the position which the cover would normally assume, no damage to the elements of the receptacle would occur. The invention is, therefore, well adapted to somewhat soft, pliant material, the spring seat positions and spring arrangement providing a safeguard against damage from improper operation of the cover.

The spring shown in Figures 7 and 8 is the same spring as indicated at 29 and 43 in the modification already described. It is contemplated under certain circumstances of use of the invention that a conventional spring, such as indicated at 44 (Figures 9 and 10), may be used. In this instance, the spring has sharply defined end flanges 46. These flanges, while suitable for engagement with metal spring seats or seats formed from suitably hard material, would cut into, wear, or break off spring seats in a receptacle that is formed from somewhat soft and pliant material. It is, therefore, desirable to enclose the flanges 46 by providing substantially U-shaped clips 47. These clips have a somewhat rounded surface 48 that prevents their cutting into the material of the spring seats. The spring 44, when mounted in a receptacle of the type illustrated, functions in the manner described.

It is evident from the foregoing that through the provision of reinforced spring seats relocation of the seat positions with respect to their center of rotation and a modified type of strap spring, a pivotal structure of the pin and socket type may be successfully incorporated in a receptacle formed from somewhat soft, pliant material, and although applicant has shown and described only two modifications of the applicability of the invention, it will be understood that other modifications or adaptations are contemplated insofar as they are within the spirit and scope of the invention as set forth in the hereunto annexed claim.

Having thus set forth my invention what I claim as new and for which I desire protection by Letters Patent is:

In a closed receptacle having a body and cover, cooperating pivotal means on said body and cover, spring seats integral with said body and cover and within said receptacle adjacent said pivotal means and separated thereby, each of said seats having two contact surfaces connected by a rounded surface, the seat in said body comprising an outwardly projecting shoulder defining a downwardly opening groove and the seat in said cover comprising an outwardly projecting shoulder defining an upwardly opening groove when said cover is in closed position, a flat spring engageable with said seats and serving to secure said pivotal means in operable relationship, each end of said spring having two contact surfaces connected by a rounded surface, the rounded surfaces being opposite and contacting the rounded surfaces of said seats, whereby during movement of the cover to and from closed position a rounded surface of said spring will rotate on the rounded surface of said seats.

MERRILL L. RATHBUN.