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M. L. RATHBUN
CLOSED RECEPTACLES OR CASES

2,379,254

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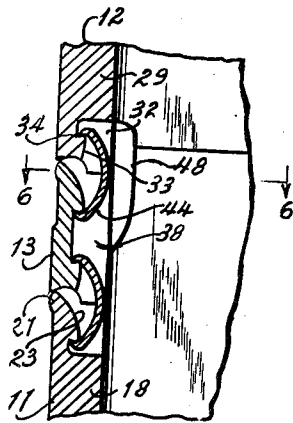


FIG-2

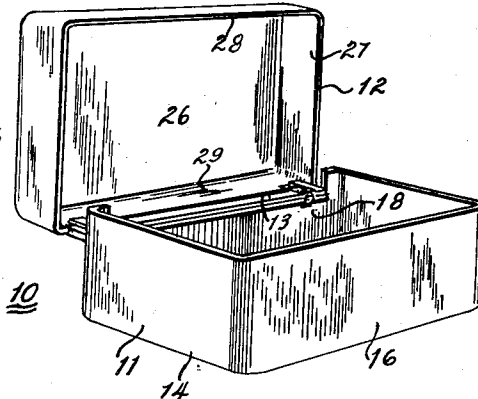


FIG-1

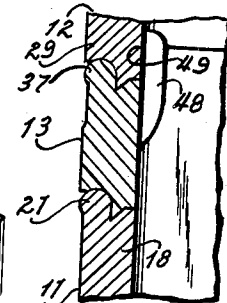


FIG-7

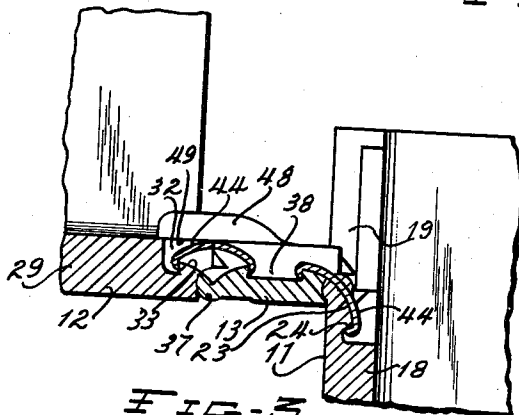


FIG-3

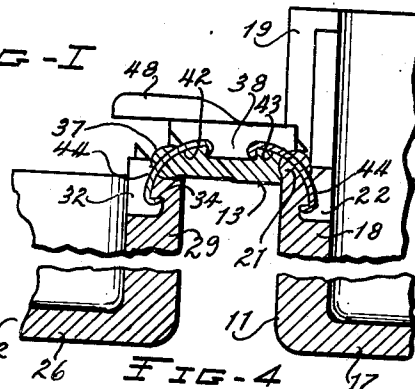


FIG-4

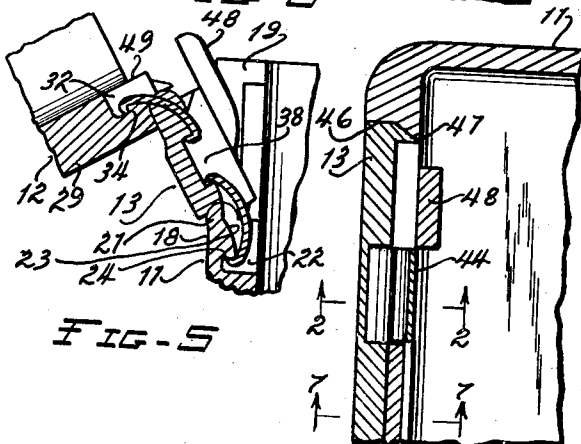


FIG-5

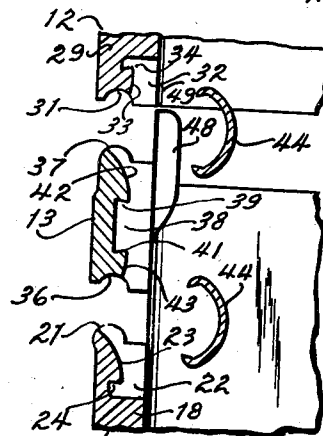


FIG-8

FIG-6

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2,379,254

CLOSED RECEPTACLE OR CASE

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4 Claims. (Cl. 220—34)

This invention relates to improvements in closed receptacles or cases, and more particularly to a means for pivotally mounting a cover on a body of the receptacle.

The invention is more specifically directed to the provision of a pivot structure for the cover of a closed receptacle that is patterned after the structure shown in my Patents #1,833,305 and #2,141,449. The first mentioned patent discloses a pivot structure for the body and cover of a receptacle that is held in operable relationship through the use of one or more springs. In the latter mentioned patent, this type of pivot structure has been applied to a three-element receptacle; namely, one having a base, cover, and intermediate element. In the present invention the intermediate element is combined with the cover and base of a receptacle to provide what may be termed a compound pivot structure.

One of the more important advantages and objects of the structure of the present invention lies in the multiple use of a pivot structure of the type shown in Patent #1,833,305 to obtain a full 180° opening of the cover with respect to the body of the receptacle.

Another advantage and object of the invention lies in the provision of a pivot or hinge structure that utilizes a part of one of the walls of either the cover or body of the receptacle as an intermediate pivot element.

Another object of the invention is to provide, in a structure of this kind, means for preventing over pivoting in at least one direction.

A further object of the invention lies in the provision of a relationship of cover and intermediate element depth to base depth by which to enable movement of the cover to an inverted position where it may rest upon the same surface as the receptacle base, and it is also contemplated that in the application of the present invention to different uses the relationship of cover element and body of the receptacle may be varied.

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

Fig. 1 is a perspective view of a receptacle and closure in which is embodied one form of the invention, the closure being shown in partly open position;

Fig. 2 is an enlarged fragmentary vertical sectional view of the pivotal connections of the elements of the receptacle, being shown with the

cover in closed position, and is taken substantially as indicated on the line 2—2 of Fig. 6;

Fig. 3 is an enlarged fragmentary vertical sectional view of the elements of the receptacle with the cover in partly open position, similar to the cover position of Fig. 1;

Fig. 4 is a fragmentary vertical sectional view of the elements of the receptacle with the cover in fully open position;

Fig. 5 illustrates the position of the operative parts of the receptacle in a position intermediate the position shown in Figs. 3 and 4;

Fig. 6 is a fragmentary horizontal sectional view taken through one of the pivot structures, substantially as indicated by the line 6—6 of Fig. 2;

Fig. 7 is a fragmentary vertical sectional view taken substantially on the line 7—7 of Fig. 6; and

Fig. 8 is a fragmentary exploded view of the elements in their relative positions as illustrated in Fig. 2.

Reference is had more particularly to the drawing wherein the numeral 10 is employed to generally designate a closed receptacle in which one form of the present invention is embodied. This receptacle comprises a base portion 11, cover 12, and intermediate element 13. The base 11 includes any conventional side, front, and base walls, 14, 16, and 17, respectively. A rear wall 18 is not conventional in that it is cut away to provide a recessed area 19 along its upper edge and this cut away portion constitutes the intermediate element 13.

On the upper edge of the wall 18, one or more rolled portions or beads 21 are provided, these beads being preferably set toward the rear edge of the wall and in some instances extending in part beyond the vertical edge of this wall, substantially as illustrated in the drawing. Of course the bead 21 may be continuous across the entire wall 18, except as interrupted at one or more places in its length by a recess or slot 22 which extends downwardly of the wall 18 from the bead. The base wall 23 of this recess is preferably formed in a predetermined curve or provided with suitable projections on its surface and terminates in a spring seat 24. As is customary in this type of pivot structure, the wall 23 is so curved, or projections on its surface are so disposed as to constitute a stop to limit movement of the intermediate element 13 to a desired degree by contact thereof with a strap spring which forms a part of the pivot structure.

The cover 12 includes a top wall 26, side wall 27, front wall 28, and rear wall 29. The wall 29 ter-

minates along its lower edge in a recess or seat 31 which receives, and is complementary to, a bead formed on the intermediate element 13 and, for convenience, preferably corresponds in proportions to the bead 21 of the body element 11. This recess, if continuous across the edge of the wall 29, may be interrupted by one or more slots 32, each slot having a curved base wall 33 which terminates in a spring seat 34.

Of course the length of the recess 31 in the present disclosure will be not greater than the length of the recess 19 or the intermediate element 13. Furthermore, although that portion of the wall 29 providing recess 31, extends somewhat beyond the edges of the remaining walls of the cover, this is not to be construed as a fixed position for this recess, since it may be within the limits of the cover walls or extend a greater distance beyond that shown in the drawing.

The intermediate element 13, in the present showing of the invention, is proportioned to fit into the area 19 of the wall 18 and includes a seat 36 on its lower edge that is complementary to and adapted to at least in part receive the bead 21. As indicated by the drawing, this element may be of the same thickness as the rear walls of the base and cover of the receptacle and the seat 36 will of course correspond in length to the length of the bead 21. The upper edge of this element is formed with a bead 37 that, as mentioned, is complementary to the seat 31 of the rear wall of the cover. Both seat 36 and bead 37 of the element are interrupted by one or more slots 38. The base wall of this slot is formed with opposed spring seats 39 and 41 from which extend curved surfaces 42 and 43. The curved surface 42 forms a continuation of the curved surface 33 when the cover is in the position shown in Fig. 4 of the drawing, and the surface 43 forms a continuation of the surface 23 of the base when the cover is in the position shown in either Fig. 3 or 4. The intermediate element 13, as shown, is of sufficient width to facilitate vertical alignment of slots 22, 22', and 38, and if, as shown in Fig. 1, the receptacle is so proportioned as to require only two holding springs, there will be only two of each of these slots in the elements of the receptacle. When the elements are assembled, C springs 44 may be snapped into engagement with the spring seats and will serve to secure the elements in a pivotal relationship such that the cover 12 may be moved with respect to the base in a manner illustrated in the drawing.

Should it be found desirable to incorporate the present pivotal structure in a closed receptacle of considerable proportions, or assure accuracy of the fitting of the cover on the body of the receptacle when moved to a closed position, the intermediate element 13 may be formed with ledges or shoulders 46 at its ends which are complementary to projections 47 in the vertical edges of the area 19. These complementary shoulders and projections may preferably be formed with inclined meeting surfaces which cooperate, during a closing operation, to accurately center the intermediate element within the area 19 and thus assure the cover edges aligning with the edges of the walls of the base. Additionally, if that portion of the rear wall 29 of the cover, in which the seat 31 is formed, extends beneath the normal cover edge (substantially as shown), this part will also be caused to accurately enter the upper portion of the area 19 by reason of the shoulder, projection combination 46, 47 of the intermediate element.

In a structure of this kind, and possibly due to a difference in temper of one set of springs with respect to another, or in the manipulation of the cover, it is possible that there may be a tendency of the connection, between the base of the receptacle and the intermediate element, or between the intermediate element and the cover, to permit over pivoting, especially during a closing operation. By over pivoting is meant a tendency of head and recessed parts to become separated by movement in excess of the normal relative movement prescribed by the springs. For example, in moving the cover from the position of Fig. 4 to that of Fig. 2, the parts pass through the position suggested in Fig. 5, and should continued movement of the cover in a closing direction move the intermediate element 13 into a position of alignment with the wall 18, the intermediate element could not further pivot or swing into the base of the receptacle, by reason of its contact of the shoulders 46 with the projections 47. To prevent over pivoting as between the intermediate element 13 and cover 12, suitable lugs 48 may be provided. These lugs may be integral with the intermediate element or attached thereto, and serve to abut the inner face 49 of the rear wall of the cover when the cover is, for example, in the position shown in Figs. 2 and 3. It will, of course, be understood that the number and size of the lugs 48 will necessarily vary as to the size of receptacle, number of springs, and use to which the receptacle may be put.

Although applicant has shown and described only one form of a compound pivot structure by which to move the cover of a receptacle into a 180° or more open position, it will be understood that with a further recessing of the rear wall of the receptacle, an additional intermediate element might be provided similar to the element 13 and by means of which, with consideration being given to the depth of cover, receptacle, and intermediate element, the cover might be movable into a back-to-back position with respect to the base, and such variations of the structure, together with other adaptations necessary in applying the invention to a variety of materials, are contemplated as being within the scope of the invention insofar as they are set out in the annexed claims.

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

1. A closed receptacle comprising at least three elements cooperating to form a closed receptacle, complementary pivotal means in corresponding walls of pairs of adjacent elements, spring seats in all of said elements, said seats being arranged in cooperative pairs, one in each adjacent element, a pair of seats for an adjacent pair of elements being in vertical alignment with a corresponding pair of seats in another adjacent pair of elements, springs engaged with said pairs of seats and serving to secure the complementary pivotal means of each pair of adjacent elements in operable pivotal relationship, and means forming part of at least a pair of adjacent elements for aligning said elements during pivotal movement into an open or closed position.

2. A closed receptacle comprising a base and cover, one wall of said base being cut away to provide a recess, an element located in said recess and cooperating to complete the wall of said base, complementary pivotal means on said element and said base wall, a spring securing said means in operable pivotal relationship, means in corresponding sides of said recess and said element

cooperating to limit, in the direction of closing said cover on said base, the extent of relative pivotal movement of said element and said base, further complementary pivotal means on said cover and said element, and a spring securing said further pivotal means in operable relationship.

3. A closed receptacle comprising at least three elements cooperating to form a closed receptacle, complementary pivotal means in corresponding walls of pairs of adjacent elements, spring seats in all of said elements, said seats being arranged in cooperative pairs, one in each adjacent element, springs engaged with said pairs of seats and serving to secure the complementary pivotal means of each pair of adjacent elements in operable pivotal relationship, one wall of one of said elements being cut away to provide a recess, another of said elements being proportioned to fit in said recess, and means in corresponding sides of said recess and the element therein cooperating to limit, in one direction, the extent of relative pivotal movement of said one element and said other element.

4. A closed receptacle comprising at least three elements cooperating to form a closed receptacle, complementary pivotal means in corresponding walls of pairs of adjacent elements, spring seats in all of said elements, said seats being arranged in cooperative pairs, one in each adjacent element, springs engaged with said pairs of seats and serving to secure the complementary pivotal means of each pair of adjacent elements in operable pivotal relationship, one wall of one of said elements being cut away to provide a recess, another of said elements being proportioned to fit in said recess, means in corresponding sides of said recess and the element therein cooperating to limit, in one direction, the extent of relative pivotal movement of said one element and said other element, and further means forming a part of at least a pair of adjacent elements for aligning said elements during pivotal movement into an opened or closed position.

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