

Aug. 27, 1935.

F. E. ALLEN

2,012,800

HINGE

Filed Oct. 21, 1931

2 Sheets-Sheet 1

FIG. 1

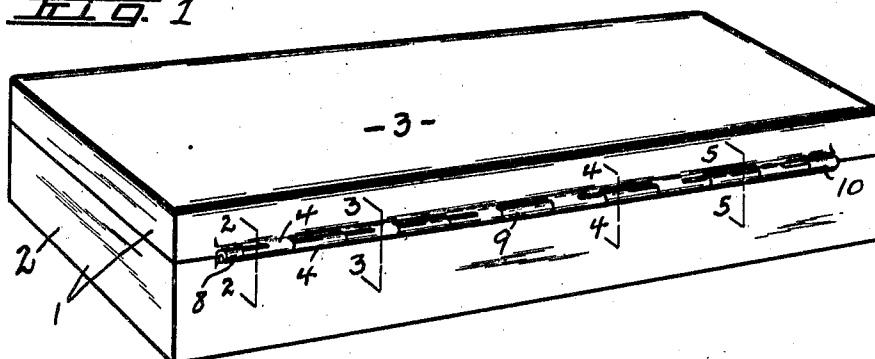


FIG. 2

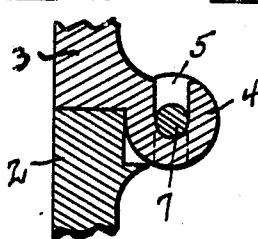


FIG. 3

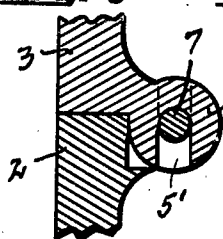


FIG. 4

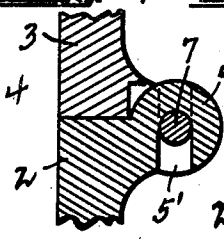


FIG. 5

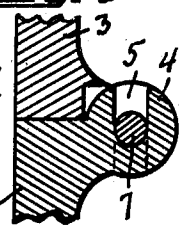


FIG. 6

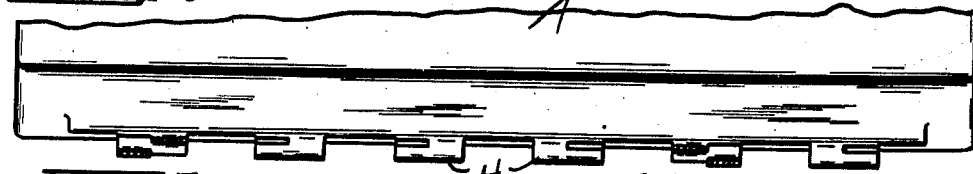


FIG. 7

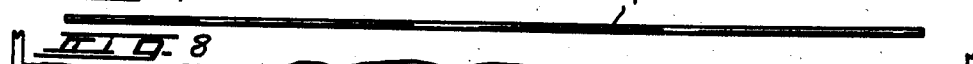


FIG. 8

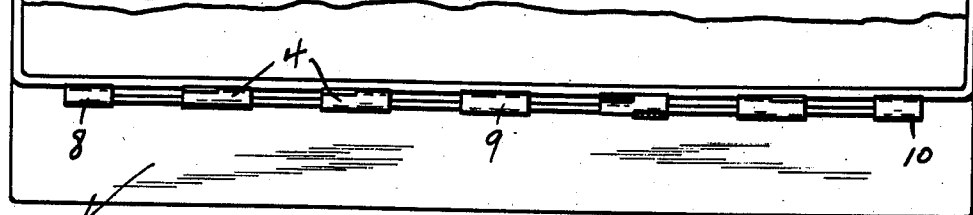
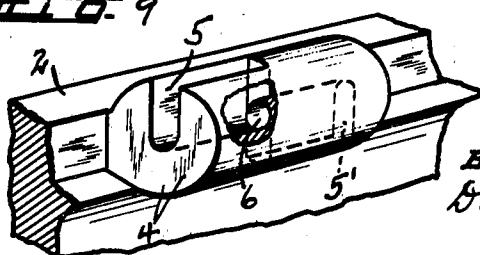


FIG. 9



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FIG. 10

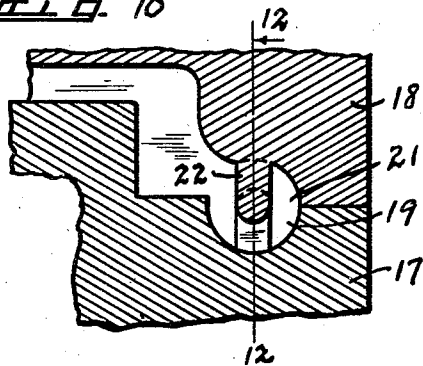


FIG. 11

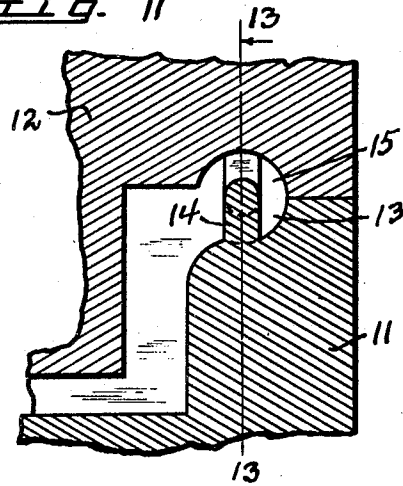


FIG. 12

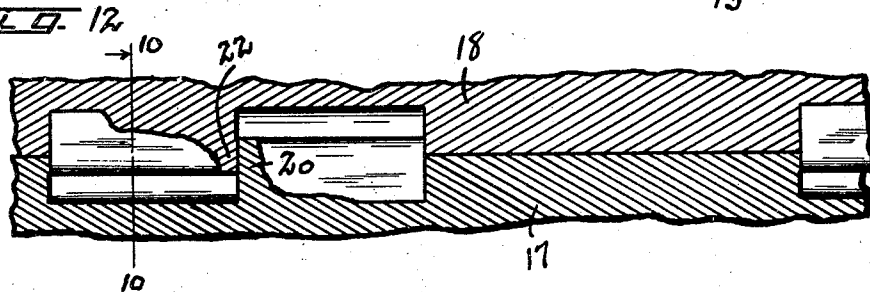
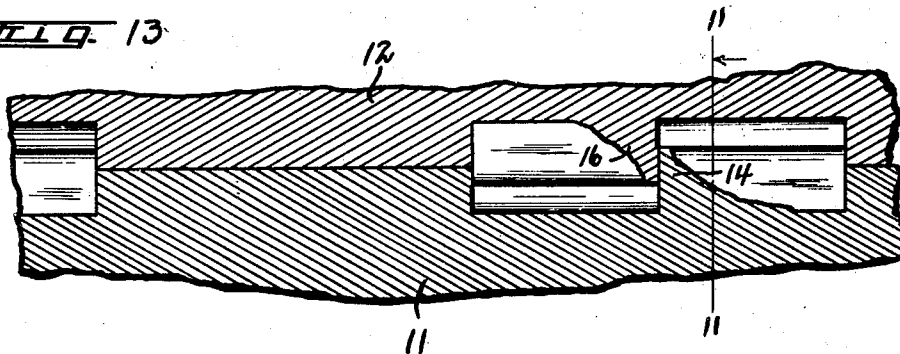


FIG. 13



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Application October 21, 1931, Serial No. 570,177

9 Claims. (Cl. 16—172)

This invention relates to a new and improved hinge.

My improved hinge is particularly well adapted to be used on articles which are molded to form such as a phenol formaldehyde condensation product.

It has been the usual practice in manufacturing hinged receptacles in which the body and cover are molded, to buy or make a metal hinge which is applied to the articles after they have been removed from the mold. This method is expensive in that the hinges themselves add to the cost of the article as does the cost of the labor which is used in assembling the finished article.

It has been long appreciated in the art that it would be a great step forward if some method could be devised by which the knuckles of the hinges could be molded integral with the body and cover of the receptacle so that the only needful thing to do to complete the assembly of the article would be to insert a pintle in the knuckles. Attempts have been made to mold knuckles as integral parts of a body and cover in which the knuckles are of the conventional closed type. In attempting to do this, it has been necessary to place in the mold pins which become embedded in the knuckle and which are subsequently driven out of the knuckles after the article has been removed from the mold.

Such a method is expensive and unsatisfactory in that the molding operation is difficult and in addition, there is a considerable loss due to the fact that knuckles are frequently broken when an attempt is made to drive out the pin. Furthermore, it takes considerable time to prepare and assemble receptacles made in this manner, and this adds to the cost of manufacture.

The main object of my invention is to make a hinged box or other receptacle in which the knuckles of the hinge are integral with the body and the cover respectively.

Another object is to make a device of this character in which the knuckles of the hinge are of such a design that they may be formed in a mold as integral parts of the body and cover, and which will be ready for the insertion of a pintle when the parts are removed from the mold.

Other objects and advantages relate to the size, shape and arrangement of parts and to the method followed in obtaining the finished article, all as will more fully appear from the following description taken in connection with the accompanying drawings in which:—

Figure 1 is a perspective view of a box embodying my invention.

Figure 2 is a section on line 2—2 of Figure 1.

Figure 3 is a section on line 3—3 of Figure 1.

Figure 4 is a section on line 4—4 of Figure 1.

Figure 5 is a section on line 5—5 of Figure 1.

Figure 6 is a perspective view, partially broken away and partially in section, of a cover embodying my invention.

Figure 7 is an elevation of a pintle.

Figure 8 is a perspective view, partially broken away and partially in section of a box body embodying my invention.

Figure 9 is an enlarged perspective view of one of the knuckles on the box.

Figures 10 to 13 illustrate the mold which is used in making the two parts of the receptacle illustrated in Figure 1.

Figure 10 is a section on line 10—10 of Figure 12.

Figure 11 is a section on line 11—11 of Figure 13.

Figure 12 is a section on line 12—12 of Figure 10.

Figure 13 is a section on line 13—13 of Figure 11.

My invention is adapted to be used with any kind of a hinged receptacle or with any article requiring a hinge, but for the purpose of explaining the invention, I have here shown it embodied in a box 1 having a box body 2, and a cover 3.

The knuckles of my hinge may be made in various shapes and may be located in various positions with respect to each other, but I have here shown a hinge in which the majority of the knuckles are of the type shown in Figure 9.

The knuckle 4 extends outwardly from the box body 2 and is preferably circular in cross section for the purpose of appearances. The knuckle 4 has a slot 5 extending from one end to the middle point of the knuckle 4.

Slot 5 extends downwardly some distance beneath the axial line of the knuckle 4, and is preferably rounding in the bottom.

A second slot 5' extends from the opposite end of the knuckle 4 to the middle point thereof, and extends upwardly some distance beyond the axial line of the knuckle 4.

The slots 5 and 5' extend inwardly from opposite directions so that at the center point of knuckle 4 where they meet each other, there is provided a circular aperture 6 adapted to receive a pintle 7.

It will be apparent that when a pintle 7 is in position in slots 5 and 5' and through aper-

ture 6, one end of the knuckle 4 will hold the pintle 7 against downward displacement, and the other end of the knuckle will hold the pintle 7 against upward displacement, the side walls of slots 5 and 5' holding the pintle 7 against displacement in other directions.

The knuckles 4 on box body 2 are in spaced relation, and I provide on cover 3 similar knuckles as 4 which are in spaced relation, and which are adapted to be positioned between the knuckles 4 on the box body 2 with the slots in adjacent knuckles in registration so that a pintle 7 may be inserted through the knuckles 4 on the box body 2, and the cover 3 to form a hinge.

As I have stated, other forms of knuckles may be used, but in this embodiment, I show three knuckles 8, 9 and 10 on box body 2, each of which has a slot running the full length thereof and extending upwardly from the bottom of such knuckles.

It will be apparent that if desired, all of the knuckles carried on box body 2 and cover 3 might have a slot extending the full length thereof provided only that some of the knuckles on the box body 2 should have a slot extending upwardly from the bottom, while others should have a slot extending downwardly from the top. This of course is also true of the cover 3.

With such a construction, the pintle 7 will be seated in the bottom of the slots in the knuckles 4, some of such knuckles holding the pintle 7 against upward displacement and others of such knuckles holding the pintle 7 against downward displacement, the sides of the slots holding the pintle 7 against movement in other directions.

So that the pintle 7 may be held against axial displacement, I prefer to form the slots in the various knuckles in such relation to each other that when the pintle 7 is inserted therethrough, there will be a certain amount of friction between the pintle 7 and the knuckles 4.

In making the particular receptacle here shown, I provide a permanent mold of an appropriate metal for the box body 2 having the usual bottom 11 and top 12. On one longitudinal edge of the bottom 11 are provided a plurality of spaced cutaway recesses 13 of a size and shape to receive moldable material to form the lower halves of the knuckles 4.

In one end of each recess 13 and extending half way of such recess 13 is a vertically extending core piece 14 which forms the slot 5' in the knuckle.

The top 12 is provided on one longitudinal edge with a plurality of spaced cutaway recesses 15 of a size and shape to receive moldable material to form the upper halves of knuckles 4.

In one end of each recess 15 and extending half way of such recess is a downwardly extending core piece 16 which forms the slots 5 in knuckles 4.

The relation of parts is such that when the top 12 is in position on the bottom 11, the ends of core pieces 14 and 16 will abut against each other.

In the case of knuckles 8, 9 and 10, the recesses in the bottom 11 which receive moldable material to form the same are provided with vertically extending core pieces for the full length thereof, and the corresponding recesses in the top 12 have no core pieces.

Similarly, the mold for the cover 3 has a bottom 17 and top 18. On one longitudinal edge of the bottom 17 are provided a plurality of spaced cutaway recesses 19 of a size and shape to receive moldable material to form the lower halves of the knuckles 4.

In one end of each recess 19 and extending half way of such recess 19 is a vertically extending core piece 20 which forms the slot 5' in knuckle 4. The top 18 is provided on one longitudinal edge with a plurality of spaced cutaway recesses 21 of a size and shape to receive moldable material to form the upper halves of knuckle 4.

In one end of each recess 21 and extending half way of such recess 21 is a downwardly extending core piece 22 which forms the slots 5 in knuckle 4.

The relation of parts is such that when the top 18 is in position on the bottom 17, the ends of core pieces 20 and 22 abut against each other.

The novelty of this method of making receptacles having integral hinge knuckles resides in the fact that the different parts of the receptacle are formed in a mold which is provided with recessed portions to receive moldable material to form the hinge knuckles, and which is provided with a plurality of core pieces, some extending upwardly and some extending downwardly, to form slots in the hinge knuckles, some of the slots being in the upper face of the knuckles and others of the slots being in the opposite or lower face of the knuckles.

Although I have shown and described a specific structure and form and relation of the parts thereof as an embodiment of an exemplification of my invention, I do not desire to restrict myself to the exact size, shape and relation of parts, as various changes may be made within the scope of the appended claims.

I claim:

1. In a hinge for a receptacle, a hinge knuckle for the cover, said hinge knuckle having a pintle-receiving opening, a slot extending outwardly from the opening, said slot being less in length than the length of the opening, a second slot extending outwardly from said opening in another direction, a hinge knuckle for the base, said base hinge knuckle being substantially similar in form to the knuckle for the cover, and a pintle adapted to fit through the opening in said knuckles and retain the cover in hinged relation to the base.

2. In a hinge for a receptacle, a hinge knuckle for the cover, a pair of angularly spaced slots extending inwardly to and beyond a common center, each of said slots being of less length than the length of the knuckle and said slots adjoining each other to provide an opening lengthwise of the body of the hinge knuckle, a hinge knuckle for the base having a pintle-receiving opening therein, and a pintle adapted to fit through said openings and retain the cover in hinged relation to the base.

3. In a hinge for a receptacle, a hinge knuckle for the cover, said hinge knuckle having a pintle-receiving opening, a pair of slots extending outwardly from the opening on opposite sides of the hinge knuckle, said slots being less in length than the length of the hinge knuckle, a similarly formed hinge knuckle for the base of the receptacle having an opening in registry with the opening in the knuckle for the cover, and a pintle adapted to be fitted through said openings and retain the cover in hinged relation to the base.

4. In a hinge adapted for integral molding of the knuckles thereof with the members of a covered receptacle, the combination of a plurality of longitudinally aligned knuckles integral with one of said members, said knuckles having slots disposed radially in angularly spaced relation, at least one knuckle integral with another of said members and longitudinally aligned with the re-

maining knuckles, said knuckle likewise having a radial slot and all of said slots being disposed in longitudinally adjoining relation and in overlapping relation at the longitudinal axis of the knuckles, thereby defining a pintle-receiving opening.

5 5. In a hinge adapted for integral molding of the knuckles thereof with the members of a covered receptacle, the combination of a set of
10 knuckles integral with each of said members, said knuckles being longitudinally aligned and said sets of knuckles being relatively movable in relation to each other, the knuckles of each set having slots disposed radially in angularly spaced
15 relation and all of said slots being disposed in longitudinally adjoining relation and in overlapping relation at the longitudinal axis of the knuckles, thereby defining a pintle-receiving opening.

20 6. In a hinge adapted for integral molding of the knuckles thereof with the members of a covered receptacle, the combination of a plurality of longitudinally aligned knuckles having longitudinal slots extending inwardly from the periphery
25 of said knuckles in radial planes, a slot in at least one of said knuckles being positioned in angularly spaced relation to slots in the remaining knuckles, and said slots being disposed in longitudinally adjoining relation and in overlapping
30 relation at the longitudinal axis of the knuckles, thereby defining a pintle-receiving opening.

35 7. In a hinge adapted for integral molding of the knuckles thereof with the members of a covered receptacle, the combination of a plurality of longitudinally aligned knuckles having longitudinal slots extending inwardly from the periphery

of said knuckles in radial planes, a slot in at least one of said knuckles being angularly spaced at approximately 180° from slots in the remaining knuckles, and said slots being disposed in longitudinally adjoining relation and in overlapping
5 relation at the longitudinal axis of the knuckles, thereby defining a pintle-receiving opening.

8. In a hinge adapted for integral molding of the knuckles thereof with the members of a covered receptacle, the combination of a plurality of
10 longitudinally aligned knuckles, at least one knuckle being integral with each of the members of said receptacle, each of said knuckles having longitudinal slots disposed inwardly from the periphery of the knuckle body in radial planes, at
15 least one of said slots being positioned in angularly spaced relation to the remaining slots, and said slots being disposed in longitudinally adjoining relation and in overlapping relation at the longitudinal axis of the knuckles, thereby
20 defining a pintle-receiving opening.

9. In a hinge adapted for integral molding of the knuckles thereof with the members of a covered receptacle, the combination of a plurality of
25 longitudinally aligned knuckles, at least one knuckle being integral with each of the members of said receptacle, each of said knuckles having longitudinal slots disposed inwardly from the periphery of the knuckle body in radial planes, at
30 least one of said slots being angularly spaced at approximately 180° from the remaining slots, and said slots being disposed in longitudinally adjoining relation and in overlapping relation at the longitudinal axis of the knuckles, thereby defining a pintle-receiving opening.
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