Jan. 23, 1968 R. C. J. PALSON 3,365,094

HINGE

Filed April 21, 1966

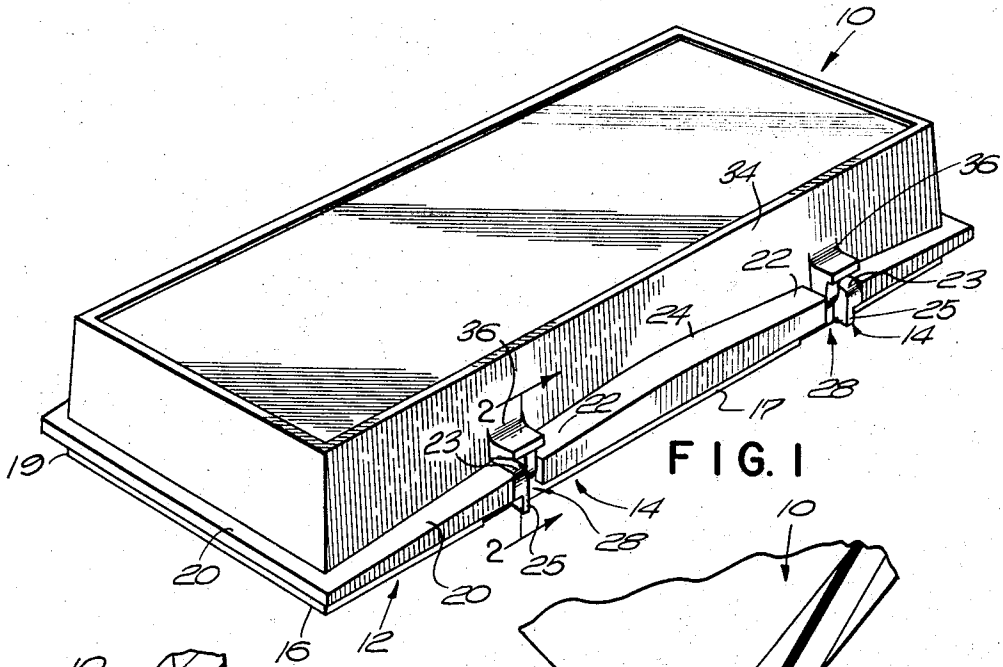


FIG. 1

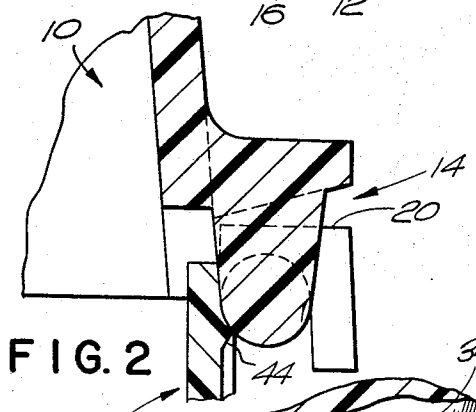


FIG. 2

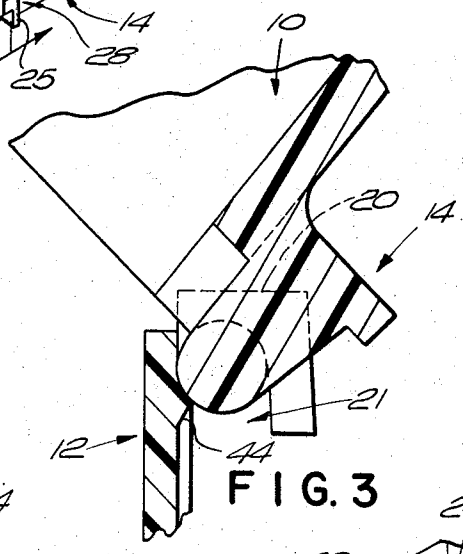


FIG. 3

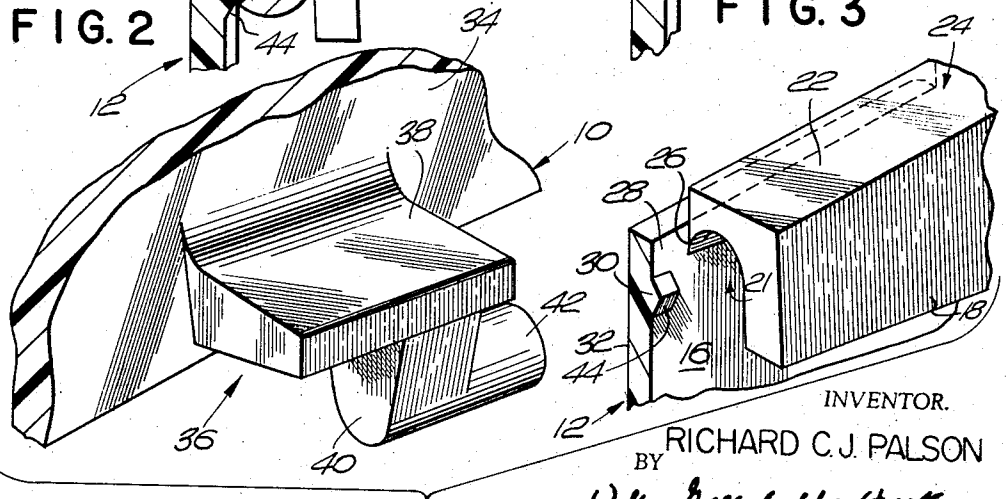


FIG. 4

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ABSTRACT OF THE DISCLOSURE

Plastic boxes are provided having improved hinges formed as an integral part of the box for securing a cover and a base together. Means define a pair of inverted open channel-shaped seats facing downwardly on a wall of the base. A pair of spaced apart hinge pintle means are formed as an integral part of the cover and are retained in the seats.

One important object of this invention is to provide a hinge for a box cover and base that has just two hinge parts so as to make the alignment of the two hinges less critical and reduce hinge binding.

Another important object of this invention is to reduce in a plastic hinge the area of contact between the moving parts of the hinge to reduce friction and the wearing areas.

Another important object of this invention is to provide a hinge construction which may be incorporated inexpensively as an integral part of the container in which it is incorporated.

Yet another object of this invention is to provide a hinge assembly for accomplishing the foregoing objects and which may be incorporated as an integral part of the container and be assembled without additional pins or other parts.

Another important object of this invention is to provide a hinge mechanism which is extremely simple in construction, durable, and easy to form.

To accomplish these and other objects the container of this invention includes a cover and a base. Secured as an integral part of the cover are two hinge parts, each of which includes a single pintle, and which extend toward one another. Formed as an integral part of the base are two hinge parts that mate with the parts on the cover and each of which includes a single recess to receive the pintle of the companion hinge part of the cover. A keeper in the form of an undercut is formed as an integral part of the base and cooperates with the recess and the pintle of each hinge to confine the pintle to the recess after the parts are once assembled.

These and other objects and features of this invention, along with its incident advantages, will be better understood and appreciated from the following detailed description of one embodiment thereof, selected for purposes of illustration and shown in the accompanying drawing, in which:

FIG. 1 is a perspective view of a box embodying a hinge assembly made in accordance with the present invention;

FIG. 2 is a fragmentary cross-sectional view on an enlarged scale taken along the section line 2—2 of FIG. 1;

FIG. 3 is a cross-sectional view similar to FIG. 2 but showing the position of the hinge parts when the box is open;

FIG. 4 is an exploded fragmentary perspective view of the hinge parts.

The box shown in FIG. 1 includes a cover **10** and base **12** pivotally connected together by a pair of hinge assemblies **14**. The box itself is of the type which may be used to package cosmetics, toilet articles, or other similar products, is molded of a plastic material and may be attractively decorated. The two hinge assemblies are identical and only one will be described in detail.

The base **10** is provided about its side, rear and front walls **16**, **17** and **19** with a surrounding skirt **18** secured to the top of the side, rear and front walls by a top flange **20**. The outer surface of the walls **16**, **17** and **19**, the bottom of the flange **20**, and the inner surface of the skirt **18** together define a channel **21** which faces downwardly about the box periphery. The upper part or outside of the channel provides a wide shoulder about the upper edge of the base and forms a platform for the lower edge of the cover.

The channel **21** along the rear wall **17** of the base is broken at two points **28** as shown in FIG. 1 to provide access for the male hinge parts formed on the cover. The ends **22** of the channel portion **24** that lies between the gaps **28** on the rear wall of the base form the female parts of the two hinge assemblies. In FIG. 4 the channel portion **24** is shown at its end **22** to have a curved configuration on the inside that defines a seat for the hinge pintle **42** secured to the cover. The arcuate seat **26** is defined by a radius substantially equal to the radius of the pintle **42** so that the pintle may rotate in position. Located in the gap **28** is a protrusion **30** formed as an integral part of the rear wall **32** of the base, and the protrusion **30** describes an undercut that retains the pintle in position within the arcuate seat **26**. This will be described more fully in connection with the assembling of the hinges.

The rear wall **34** of the cover **10** carries two male hinge parts **36**, each adapted to cooperate with an end **22** of the channel portion **24**. The parts **36** are mirror images of one another and only one will be described. The part **36** includes a substantially horizontal plate **38** formed as an integral part of the rear wall **34**. Depending from the plate **38** is a boss **40** which in turn carries the horizontally extending pintle **42**. The pintles **42** extend toward one another; that is, both pintles extend into the opposite ends **22** of the channel portion **24** carried on the base when the hinge parts are assembled. As suggested above, the radius which defines the pintles **42** is substantially identical to the radius which defines the curvature of the seats **26** at the ends **22** of the channel portion **24**.

The bosses **40** that carry the pintles **42** are just a few thousandths of an inch narrower than the width of the gaps **28** at the ends of the channel portion **24**. Therefore, when the hinges are assembled, the cover is prevented from shifting laterally with respect to the base. The pintles themselves are quite short and accordingly extend only a short distance into the seats.

To assemble the separately molded cover and base, the pintles **42** are aligned with the seats **26** below the protrusions **30** with the cover in the open position with respect to the base. As the pintles are forced upwardly toward the seats, they ride up on the inclined surfaces **44** on the bottoms of the protrusions. Thus, the surfaces **44** serve as cams which force the pintles outwardly away from the rear wall **17** and cause the skirts **18** of the channel portion **24** to flex outwardly to allow the pintles to pass over the protrusions. The upper inclined surfaces **46** retain the pintles on the seats **26** within the channels. After the hinges are assembled, the cover may be swung to the closed position with the pintles in the seats as shown in FIG. 2.

In FIG. 1 it will be noted that the skirt **18** and the flange **20** are rounded at the outside margins **23** of the gaps at the portions which underlie the plates **38** so that the plates do not contact the skirt and flange and prevent the cover from opening fully. There may be provided depending stops **25** as shown in FIG. 1 to engage the plates **38** to support the cover in the open position. It will be appreciated that the plates **38** do not overlie the pintles **42** as the bosses **40** extend down at the inner edges of the

plates, and therefore the ends 22 of the channel portion 24 are not rounded.

From the foregoing description it will be appreciated that but two pintles are employed in the hinge assemblies and consequently there are just two hinge points between the cover and base. As a result, somewhat less precision is required in forming the hinge parts because the alignment of the pintles is much less critical than in hinges having more than two. Further, the limited extent of the frictional contact between the seats and the pintles limits the area where wear may occur.

From the foregoing, those skilled in the art will appreciate that numerous modifications may be made of the present invention without departing from its spirit. Therefore, it is not intended to limit the scope of this invention to the single embodiment illustrated and described Rather, it is intended that the scope of this invention be determined by the appended claims and their equivalents.

What is claimed is:

1. A box comprising a cover and a base, a hinge secured to the base and cover together, comprising

means defining a pair of inverted open channel-shaped seats formed as an integral part of one wall of the base with the channels facing downwardly on that wall,

and a pair of spaced-apart hinge pintle means formed as an integral part of the cover and extending in opposite directions and retained in the seats.

2. A box as defined in claim 1 further characterized by

a protrusion formed as an integral part of the wall of the base adjacent the channels and supporting the hinge pintle means in the seats, said protrusion being dimensioned to permit passage of said pintle means through said channel to said seats.

3. A box as defined in claim 2 further characterized by

said protrusions engaging a portion of the pintle means lying outside the seats.

4. A box as defined in claim 3 further characterized by

said channel-shaped seats being formed by a continuous channel along the wall of the base,

a pair of gaps in the channel,

and supports forming part of the pintles and integral with the cover and disposed in the gaps.

5. A box as defined in claim 1 further characterized by

spaced apart supports integral with the cover and pintles being carried by the supports and extending toward one another from their respective supports with the pintles lying in the seats, said supports and pintles comprising the hinge pintle means.

6. A box as defined in claim 5 further characterized by

protrusions disposed on the wall of the base as an integral part thereof and engaging the supports for retaining the pintles in the seats, said protrusion being dimensioned to permit passage of said pintle means through said channel to said seats.

7. A box as defined in claim 6 further characterized by

each of said supports including a plate and a depending boss with the boss carrying the pintle,

said channel-shaped seats being formed by a continuous channel along the wall of the base with the seats at the end thereof,

said bosses lying immediately adjacent the ends of the channel and preventing lateral displacement of the cover with respect to the base and means for limiting arcuate movement of said cover with said last-mentioned means comprising a stop mounted on said base positioned to contact said plate when said cover is opened.

References Cited

UNITED STATES PATENTS

2,508,951	5/1950	Kazimier	220—31
3,295,713	1/1967	Optner	220—31

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