United States Patent [19]

Kiziol

[11] **3,734,076**

[45] **May 22, 1973**

[54] **HINGE STRUCTURE**

[75] Inventor: **Walter Kiziol,** Russell, Ill.

[73] Assignee: **Beatrice Foods Co.,** Chicago, Ill.

[22] Filed: **May 12, 1971**

[21] Appl. No.: **142,490**

[52] **U.S. Cl.** ..... **126/25 R,** 16/171

[51] **Int. Cl.** **A47j 36/00**

[58] **Field of Search** ..... 126/25 R, 25 A; 16/171; 220/31 R, 32, 55 D, 55 C, 55 F; 292/256.73, 256.75

[56] **References Cited**

UNITED STATES PATENTS

3,611,915	10/1971	Glaser et al.	126/25 R X
3,617,022	11/1971	Wiggins	126/25 R X

Primary Examiner—William F. O'Dea
Assistant Examiner—Harold Joyce
Attorney—Neil E. Hamilton and William A. Denny

[57] **ABSTRACT**

A hinge structure for a round cover member adapted to be utilized on a rounded base member in a manner such that the cover can be nested partially around the base and removed from the base only when the cover is in a substantially open position. The flange, forming part of the hinge, has an open slot disposed at a predetermined angle and rests on a post member which is disposed on each side of the base and off-center to serve the dual function of positive opening and closing of the cover with retention of the cover through the inability of the flange to pass over the extended sidewall of the rounded base.

8 Claims, 7 Drawing Figures

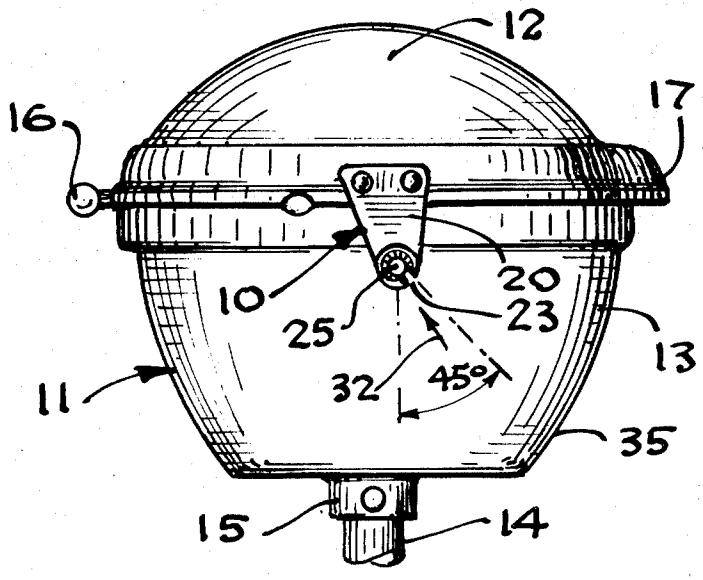


Fig.1

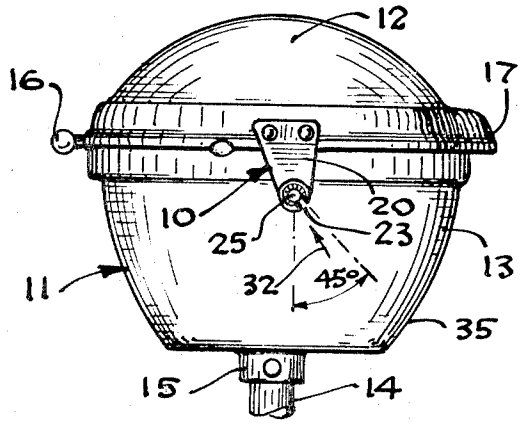


Fig.2

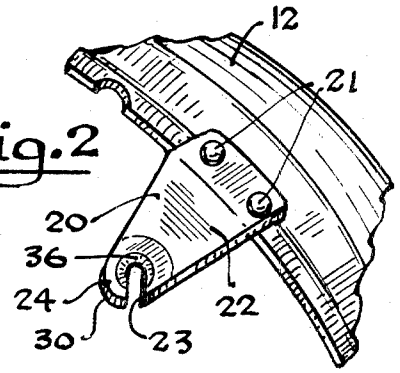


Fig.3

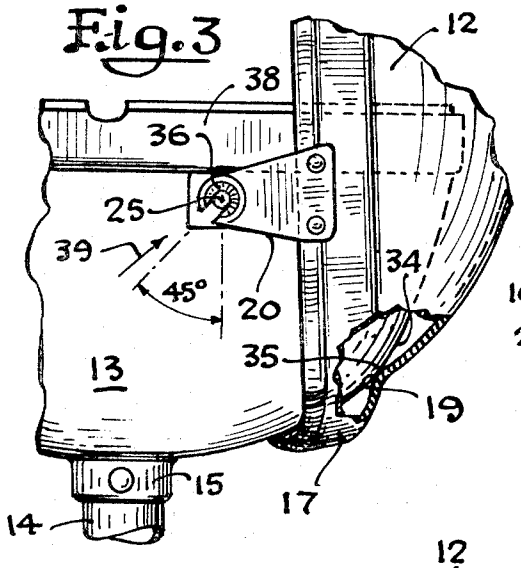


Fig.4

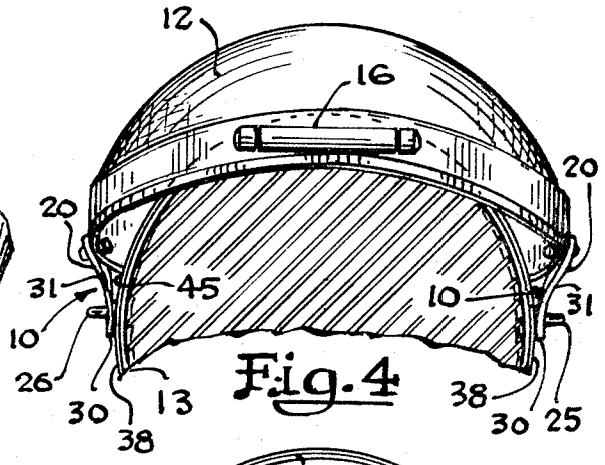


Fig.5

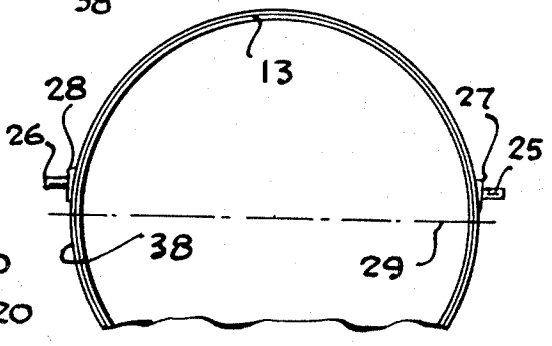


Fig.6

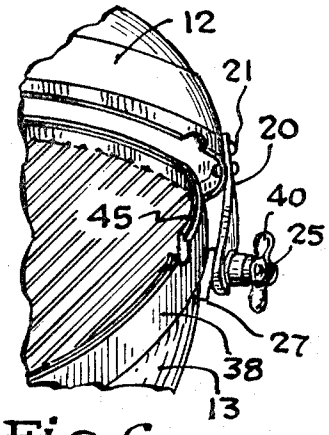
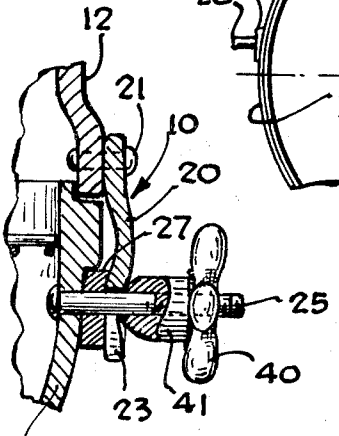


Fig.7



Inventor
WALTER KOZIOL
By Neil E. Hamilton
Attorney

HINGE STRUCTURE

BACKGROUND OF THE INVENTION

This invention relates to a hinge structure of the freely removable type for a rounded cover and base member. More particularly, this invention relates to a hinge for a rounded barbecue wherein the unit and the hinge are constructed so as to permit the cover to open around the base and to captively retain the cover until the cover is in a substantially open position.

Hinge structures of the type concerned with in this invention are described in U.S. Pat. Nos. 2,263,946; 2,794,208; 3,007,595; 3,390,804; and 3,144,863. U.S. Pat. No. 2,263,964 illustrates a hinge structure at the back of a round broiler wherein an elongated extension **25** rides in an arcuate surface **22** of a lug **21.** A window hinge is described in U.S. Pat. No. 2,794,208 wherein a pin **8** which is cylindrical with a cut away portion is designed to be insertable in slotted elements **7** or be removed as shown in FIG. **5** while captively retained once it seats itself in the bottom of slot **9.** In U.S. Pat. No. 3,007,595 an elongated hinge pin **37** is illustrated for insertion through a narrowing section of a flange and for rotation in the cylindrical zone **43.** U.S. Pat. Nos. 3,144,863 and 3,390,804 both illustrate an open slot arrangement for a hinge by providing rotation on or for a pin member. The prior art nowhere teaches a hinge structure for a rounded cover and base member which permits the nesting of a portion of the cover around the base and wherein a flange element has an open slot for riding on a post member with the slot so designed that the flange and the cover can be removed only when the cover is in a substantially open position. Neither does the prior art illustrate a hinge structure which is particularly suitable for use on a rounded base member with the post positioned off-center so as to obtain the maximum leverage when the cover is closed and opened. Further, there is not presently available a hinge structure for a round barbecue cooking device which is easily fabricated by simple mold and fastening procedures and which employs the base portion as a stopping means for the cover when it is in a substantially open position.

It is an object of the present invention to provide a novel hinge structure which is particularly adapted to a round cover and base member to afford opening of the cover around the base. It is another object of this invention to provide a hinge structure which has a minimum number of parts and can be easily placed on or removed from a base member. It is still another object of the present invention to provide a hinge structure for a round barbecue which captively retains the cover member on the base until the cover member is in a substantially open position. It is yet another object of this invention to provide a hinge member for a cover which is positioned so that ease of opening of the cover is afforded yet positive opening or closing is also effected.

SUMMARY OF THE INVENTION

The foregoing objects are accomplished and the shortcomings of the prior art are overcome by the present hinge structure which is comprised of two oppositely disposed support members mounted externally and off-center on a rounded base member. Two oppositely disposed flange members extend from a cover member which has a diameter larger than the base member and are also positioned off-center with an

open slot in each flange. The slot is constructed and arranged to engage the post member and to rest on the endwall surface of the slot when the cover is in an open position and partially surrounds the base member. The open slots are disposed at an angle to direct the flanges toward an extending sidewall of the base member except when the cover is in a substantially open position.

BRIEF DESCRIPTION OF DRAWINGS

A better understanding of the present hinge structure will be accomplished by reference to the drawing wherein:

FIG. **1** is a view in side elevation of a round barbecue unit with the lateral hinge structure.

FIG. **2** is a partial view in perspective showing in detail a flange comprising the hinge structure shown in FIG. **1.**

FIG. **3** is an enlarged view of the round barbecue unit shown in FIG. **1** illustrating a portion of the cover member but showing the cover in an open position surrounding the base member and the flange situated for removal of the cover.

FIG. **4** is a partial view of the cover and the base of the round barbecue unit as shown in FIG. **3,** and illustrating the positioning of the hinge structure at the side of the barbecue unit.

FIG. **5** is a top view of the base member with all other parts removed except the post elements and illustrating their relative position on the base.

FIG. **6** is a view of an alternative embodiment showing a screw type clamping member on the post for holding a cover member in a partial open position.

FIG. **7** is a view in vertical section of the clamping member shown in FIG. **6** but taken directly from the front of the barbecue unit.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Proceeding to a detailed description of the present invention and in particular to the embodiment shown in FIGS. **1** through **5,** the novel hinge structures generally **10** are shown in conjunction with and forming the housing for a cast aluminum gas type outdoor barbecue unit generally **11** comprised of a cover member **12** and a base member **13** with the usual handle **16** and vent **17,** the barbecue unit being supported from the ground or floor by a cylindrical pole **14.** The base **13** is supported on post **14** in a rotatable manner by a collar **15** which affords the rotation in a well known manner. A lateral flange **20** forming hinge structure **10** is connected to cover **12** in a suitable manner such as by means of rivets or nuts and bolts **21** in an arm portion **22** and an elongated slot **23** is provided into the foot portion **24** of flange **20** and at an angle of approximately **45** degrees as measured from a plane taken normal through the cover member and posts **25** and **26.** This is indicated also in FIG. **1.** Slot **23** is designed with a width to receive post member **25** and to ride against the innermost rounded wall section **36.** Support members are provided by post **25** as well as oppositely disposed post **26** and extend from tangential block members **27** and **28** so as to position posts **25** and **26** in a sturdy manner and parallel to the diameter of base member but offset therefrom as can best be seen in FIG. **5.** In FIG. **5** the diameter of the base is indicated by line **29.**

As best shown in FIG. 4, flanges 20 have curved arm portions 31 extending inwardly from cover 12 so as to place the end 30 of flanges 20 directly against blocks 27 and 28 and thus close to the outer periphery of base 13. This is an important feature of the present hinge structure and will be described more in detail during the operational phase.

Referring to FIGS. 1 and 3 in particular, it will be seen that the enlarged vent portion 17 opposite to handle 16 is important in that it allows additional clearance over the bottom section of the base such as indicated at 35 when the cover is opened as shown in FIG. 3. Thus, cover 12 which has a diameter substantially larger than base 13 and is dimensioned somewhat larger than base 13 can be opened in a nesting like manner until the inner section 19 of the cover will engage the outer section 34 of base 13 with the contact point indicated by the numeral 35.

DESCRIPTION OF THE ALTERNATIVE EMBODIMENT

FIGS. 6 and 7 indicate an alternative feature of this invention in that a clamping type nut 40 is illustrated for screw thread engagement over post 25 which is also externally screw threaded. In this manner, flange 20 is clamped between the cylindrical body section 41 of nut 40 to press flange 20 against the tangential block plate 27. All of the other elements of the barbecue unit 11 as shown in the previous figures and the hinge are the same and are indicated with the same numerals.

OPERATION

A better understanding of the advantages of the hinge structures 10 and their free retentive features will be had by a description of their operation in conjunction with the round barbecue 11. Assuming the cover 12 is already positioned on the base 13 of the barbecue unit 11 as shown in FIG. 1, it will be noted that slot 23 of flange 20 will be disposed at an angle of approximately 45 degrees with respect to posts 25 and 26 and a plane normal to the cover 12. If an attempt would be made to remove cover 12 while in this position, it will be seen that the angle of slot 23 would direct flange 20 upwardly but toward the larger diameter section of the wall portion 38 of base 13. This can be visualized by reference to both FIGS. 4 and 5 and the arrow 37 shown in FIG. 1. When the cover member is moved to a position substantially as shown in FIGS. 3 and 4, with the slot positioned at the angle indicated in FIG. 3, and cover 12 moved in a direction indicated by arrow 39, it will be seen that flanges 20 will now clear the exterior wall section 45 because of the reduced dimension of this section. This likewise is best illustrated in FIG. 4. The opening of the cover will continue until the internal wall section 19 will engage the exterior portion 34 of base 13 as shown in FIG. 3 with a portion of cover 12 encompassing base 13 and in a nesting manner. In view of the angle of the slot and the positioning of the posts 25 and 26, the cover cannot be removed until it is in a position as shown in FIG. 3. The location of the posts 25 and 25 near the midpoint and widest dimension of the base makes this possible. Further, by positioning the post members 25 and 26 for engagement with flanges 20, a definite and decisive opening and closing of cover 12 on base 13 is afforded. This is effected because of the fact that a major portion of the weight of cover 12 will be toward the front of cover 12 and ahead of hinge 10 and post 25 when the cover is closed yet when the cover is opened as shown in FIG. 3, the weight of the cover is behind post 25 and it will not drop forward until the weight of the cover is past the forward point of an axis through posts 25 and 26.

OPERATION OF THE ALTERNATIVE EMBODIMENT

The operation concerning the free retentive features of opening and closing the cover 12 is the same in FIGS. 6 and 7 as previously described in FIGS. 1 and 3. With the addition of the nut 40 incremental opening of the cover is afforded through the clamping action of nut 40 against flange 20. It will again be seen in FIG. 6 that when the cover 12 is closed, slot 23 will direct flange 20 toward the front of the base 13 such that the flange 20 would engage a side portion 38 of base 13. With the cover 12 located in the position as shown in FIG. 7, flange 20 would easily clear sidewall 45 of the base near the rear portion.

Posts 25 and 26 are positioned substantially near and parallel to the widest portion or diameter of base 13. If desired, the hinges could be located at a point backward from the diameter although the farther back the flanges 20 would be placed for the hinge, the more problem would be created with clearance over the base portion 13. Further, there would also be a problem with having too much of the weight of the cover extending above base 13 when the cover is in the open position. As indicated in FIGS. 6 and 7, posts 25 and 26 can be threaded or they can be unthreaded depending upon whether the clamping nut 40 is to be utilized. If desired, vent portion 17 could be eliminated without adversely affecting the nesting feature of the cover and base.

The preferred material for fabricating the hinge structure 10 as well as the round barbecue 11 is aluminum. However, any rigid or semi-rigid material such as iron, steel, or other cast or rolled metals could be employed. Flange 20 for hinge structure 10 is shown attached to cover 12 with rivets or screws 21. If desired, the flange could be integrally molded on the cover and in a similar manner posts 25 and 26 could be molded on base 13 rather than bolted or welded.

It will thus be seen that through the present invention there is now provided a novel hinge structure for a round barbecue unit which is simple in structure, easy to fabricate, yet is quite simple to operate as regards to placement and removal of the cover. The cover member is freely yet retentatively held on a post so as to prevent accidental removal of the cover member until it is in a substantial open position. Even when in the open position the cover is safely retained on the base by engagement with a section of the base member. A windbreak is afforded for the grill when the cover is opened in a nesting like manner around the base and the degree of opening can also be adjusted.

The foregoing invention can now be practiced by those skilled in the art. Such skilled persons will know that the invention is not necessarily restricted to the particular embodiments presented herein. The scope of the invention is to be defined by terms of the following claims as given meaning by the preceding description.

I claim:

1. A hinge structure for a rounded base and cover member providing free retention of said cover member and partial nesting of said cover member around said base comprising two oppositely disposed support mem-

bers mounted externally on said rounded base member, two oppositely disposed flange members extending from said cover member, an open slot provided in each flange, said slot constructed and arranged to engage said support member and to rest on the end wall surface of said slot, said rounded cover member being of a substantially larger diameter than said base member so as to permit a portion of said rounded cover member to encompass a portion of said rounded base member, said support members being comprised of post members positioned off center on said rounded base member and said open slot in said flanges is disposed at an angle to direct said flange toward an extending sidewall of said base member except when said cover is in a substantially open position whereby said cover is captively retained on said base except when said cover is in a substantial open position.

2. The hinge structure as defined in claim **1** wherein said cover member is constructed and arranged to engage the bottom wall portion of said base to serve as a stop means.

3. The hinge structure as defined in claim **1** wherein said base and said cover members form the exterior housing for a barbecue grill and said cover has an enlarged vent portion to seat around said base.

4. The hinge structure as defined in claim **1** wherein said slot is formed at an angle of about **45** degrees with respect to said posts and a plane extending through and normal to the cover member.

5. The hinge as defined in claim **1** wherein said flange is formed from an arm portion and a foot portion containing said slot.

6. The hinge structure as defined in claim **5** wherein said arm of said flange is curved outwardly from said cover member.

7. The hinge structure as defined in claim **1** further including a threaded post and a screw type clamp member adapted to engage said post with said flange thereon.

8. The hinge structure as defined in claim **1** wherein said post members are mounted parallel to and a short distance from the diameter of said base portion.

* * * * *