May 11, 1965 C. T. MINTON 3,182,727

WASTE RECEPTACLE FIRE-PREVENTION CLOSURE

Original Filed Aug. 18, 1961

FIG. 1

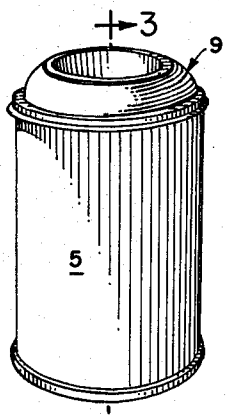


FIG. 2

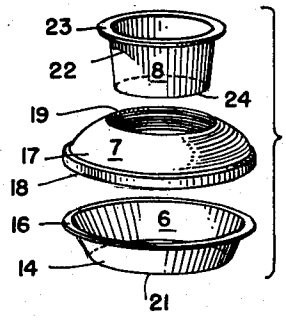
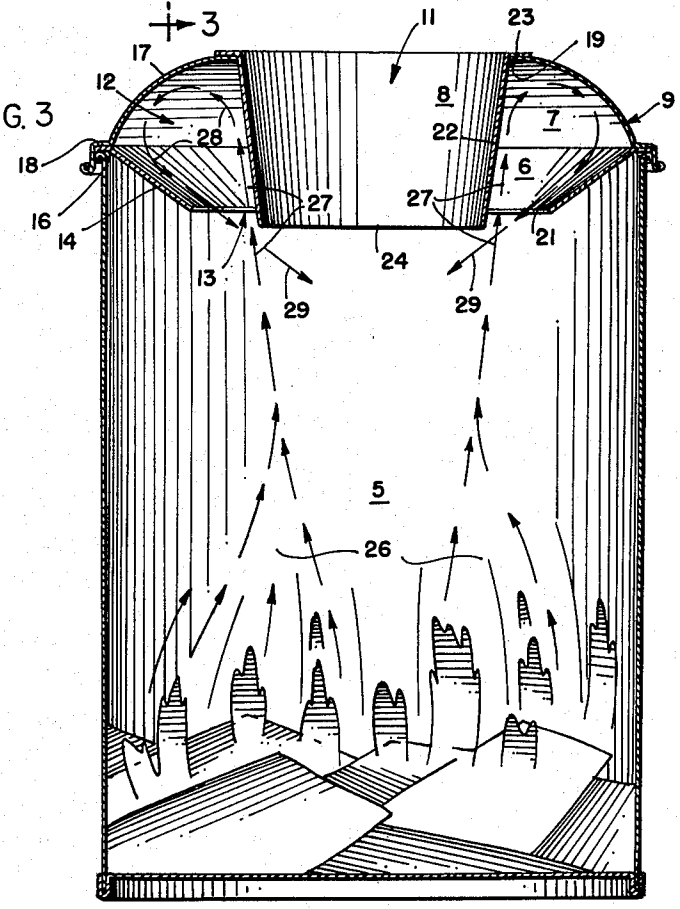


FIG. 3



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WASTE RECEPTACLE FIRE-PREVENTION CLOSURE

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Continuation of application Ser. No. 132,360, Aug. 18, 1961. This application May 29, 1963, Ser. No. 285,548
4 Claims. (Cl. 169—2)

This invention relates to improvements in closures for waste receptacles to prevent the occurrence of a fire therein.

This application is a continuation of my copending application Ser. No. 132,360, filed August 18, 1961, now abandoned.

It is well known that great damage has been caused to property and people by fires starting in waste receptacles. Such fires may have resulted from instantaneous combustion, due to the character of the contents of the receptacle, or from throwing in matches not completely extinguished.

The main objects of this invention are to provide an improved structuring of a closure for the open end of waste receptacles that precludes all possibility of a fire in waste receptacles; to provide an improved receptacle closure of this kind structured to so trap the incipient products of combustion as to choke off all possibility of access of the oxygen in the ambient air to an incipient combustion; and to provide an improved waste receptacle closure of this kind of such simple construction as to make very economical its manufacture in varying sizes and its use absolutely unfailing in its prevention of fires in the receptacle upon which the closure is placed.

In the adaptation shown in the accompanying drawings:

FIG. 1 is a perspective view of a conventional type of waste receptacle equipped with a fire-preventing closure constructed in accordance with this invention;

FIG. 2 is an exploded perspective of the three preformed elements comprising this receptacle closure; and

FIG. 3 is an enlarged, vertical sectional view of the assembly shown in FIG. 1, taken on the plane of the line 3—3 of that figure and indicating how the closure chokes off a supply of oxygen that would be needed to start and/or maintain a fire in the receptacle.

The essential concept of this invention involves a hollow annulus with inwardly-diverging walls having an external perimetrical flange for seating in the open end of a receptacle and concentrically suspending from the upper annulus wall an inwardly-extending hollow cylinder with its inner end disposed adjacently beyond and inwardly from the perimeter of the inner annulus wall to form a chamber within the annulus surrounding the cylinder and opening above the inner perimeter of the cylinder downwardly into the receptacle whereon the closure is positioned.

A fire-preventing closure for a receptacle 5 embodying the foregoing concept comprises three elements 6, 7 and 8 shaped and assembled to form a hollow annulus 9 with a central port 11 surrounded by an annular chamber 12 having an opening 13 concentrically adjacent the inner end of the port 11.

The receptacle 5, as shown herein, is a conventional drum-type, used for the accumulation of waste material in homes, hospitals, offices, factories and the like. In many of these places fires have been known to get started at intervals after the personnel have departed. Such fires usually emerge after a long smoldering resulting from instantaneous combustion of grease and oil soaked rags and/or from a not-completely-extinguished match thrown into the trash in the receptacle. An incipient fire, obviously, is fed by the oxygen drawn in around the walls of the receptacle to the point of later bursting into a

flame. The hereinafter-described closure for such receptacles absolutely prevents fires, resulting from any such incipient smoldering, by choking off any possible flow of oxygen to the point of the smoldering.

The three elements 6, 7 and 8, from which this improved fire-preventing closure is structured, as a rule would be sheet-metal stampings. However, they could be spun metal.

The element 6 has its wall 14 in the form of a straight taper axially inward from a perimetrical flange 16. The element 7 has its wall 17 arched concavely outwardly from an L-shaped perimetrical flange 18. The inner perimeter 19 of the wall 17 of the element 7 is disposed radially inward of the inner perimeter 21 of the wall 14 of the element 6, for reasons that will be apparent presently.

The element 8 has its wall 22 in the form of a straight taper axially inward from a perimetrical flange 23. The juncture of the wall 22 and the flange 23 are of a diameter to fit snugly in the opening in the element 7 defined by the inner perimeter 19 of the wall 17. The inner perimeter 24 of the wall 22 of the element 8 is somewhat less than the inner perimeter 21 of the wall 14 of the element 6.

As clearly shown in FIG. 3, the three elements 6, 7 and 8 are assembled in concentric relationship with the flange 16 of the element 6 seating and bonded to the inner part of the L-shaped flange 18 of the element 7 and with the element 8 suspended by its flange 23 from and bonded to the rim of the wall 17 of the element 7. Thus the assembled elements form the annulus 9 with the chamber 12 surrounding the element 8 with the opening 13 of the chamber 12 disposed adjacently above the perimeter 24 of the element 8.

The central element 8 forms the port 11 through which waste products are cast into the receptacle 5.

The actual dimensions of the three elements 6, 7 and 8 will vary depending upon the size of the receptacle wherewith such a closure is to be used. However, the relative dimensions of the several elements will remain substantially the same.

The L-shaped flange 18 is made in this form to insure a snug fit of the closure over the open end of the receptacle 5 with which it is to be used.

With such a closure in place on a receptacle 5, waste materials may be cast into the receptacle through the port 11 formed by the element 8. When the receptacle 5 is to be emptied it is only necessary to remove the closure and invert the receptacle.

The test-proven reason why such a structured closure, as herein shown and described, prevents fire from occurring in such a covered receptacle 5 is as follows:

An incipient, smoldering combustion in the receptacle 5 will result in the gases of combustion rising as indicated by the arrows 26. These rising gases will tend to converge as they approach the opening through the element 8, as shown by the arrows 26. However, the downwardly-tapering walls 22 of the element 8, with its perimeter 24 located inwardly of and below the perimeter 21 of the element 6, will tend to divert this rising gas flow into the opening 13, as shown by the arrows 27. As the continuing upward flow of gases become trapped in the chamber 12 of the annulus 9 they will be deflected by the wall 17 of the element 7 downwardly toward the wall 14 of the element 6, as indicated by arrows 28. Striking the wall 14 the gases will be baffled inwardly and downwardly, as indicated by the arrows 29, into the continuing flow of gases rising from the incipient combustion in the lower part of the receptacle 5. Thus, there is set up a congestion of gases across and below the open end of the element 8 which serves to choke off the port 11 and prevent the ambient, oxygen-laden air from descending into the receptacle through the port 11. Consequently, the incipient

combustion gradually becomes smothered until extinguished.

Therefore because of the smooth, unbroken surfaces of the device of this invention the gases of combustion will freely and readily flow as described to obtain the aforesaid results.

Although but one specific embodiment of this invention is herein shown and described, it will be understood that details of the construction shown may be altered or omitted without departing from the spirit of the invention as defined by the following claims.

I claim:

1. A fire-prevention closure for waste receptacles comprising, a closure element having:

(*a*) one wall
diverging inwardly downwardly at an acute angle from its axis and of a length substantially less than the radius of the external perimeter thereof,

(*b*) a second wall
connected to and arched upwardly outwardly from said one wall and being of a length substantially equal to or slightly greater than said one wall and disposed at an acute angle to its axis and opposite the angle of said one wall, and

(*c*) a third wall
depending from the inner perimeter of said second wall and
tapering slightly inwardly, with the lower end thereof being located below the inner perimeter of said one wall,

whereby an annular chamber is formed around the third wall communicable with the receptacle through an annular opening disposed above the open end of the third wall.

2. A fire-prevention closure for waste receptacles comprising, a closure element having:

(*a*) one wall
diverging inwardly downwardly at an angle of approximately 45 degrees from its axis and
of a length less than half the radius of the external perimeter thereof,

(*b*) a second wall
arched outwardly from the one wall and subtended by a chord
of a length greater than the length of the one wall and
disposed at an angle of approximately 45 degrees to its axis and opposite the angle of the one wall, and

(*c*) a third wall
depending from the inner perimeter of the second wall and
tapering inwardly less than 10 degrees to its axis, with
the lower end located below the inner perimeter of the one wall,

whereby an annular chamber is formed around the third wall communicable with the receptacle through an annular opening disposed above the open end of the third wall.

3. A fire-prevention closure for waste receptacles as set forth in claim 2 wherein
the one wall is formed with a continuous, flat, perimetrical flange, disposed normal to the axis of the wall, and
the second wall is formed with a continuous, inverted L-shaped flange dimensioned to nest therein the flange of the one wall and to seat over the open end of a receptacle, and
the third wall is formed with a continuous, flat, perimetrical flange disposed normal to the axis of the wall to suspend the third wall from the inner perimeter of the second wall.

4. A fire prevention closure for waste receptacles comprising an outwardly arched top closure wall having a circular outer peripheral edge and a central inlet port, a solid tubular downcomer extending downward from said inlet port, an inward and downward diverging solid bottom wall extending from said peripheral edge and having a central opening, said downcomer being spaced inwardly from and extending through said central opening and terminating at an outlet and below said central opening, the outer surface of said downcomer and the inner surfaces of said top and bottom walls defining a gas directing chamber bypassed by said downcomer, the space between said bottom wall central opening and said downcomer defining a bottom opening in said chamber as an annular peripheral portion of said central opening and as the sole opening in said chamber capable of gas communication exteriorly thereof, said surfaces defining said chamber being configurated to direct combustion gases received at said bottom opening into a curved path to return the received gases at said bottom opening in a path greater than 180° from the path of combustion gas reception and in a downward and inward direction through said bottom opening and across said outlet end of said downcomer, and means at said peripheral edge for removably mounting said closure on a top lip edge at the open end of a waste receptacle.

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