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(54) **Metal can having a bead.**

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Description

The invention relates to a metal can comprising a bottom and a standing wall which is connected thereto and whereof the zone remote from the bottom comprises an outwardly extending bead having in cross section a first part extending through about 360°, a second part lying against the first part and extending through about 90°-120° and a third part connecting thereto with a considerably smaller radius of curvature. Such a can is known. It is designed to be closed by means of a lid that co-acts clampingly with the bead. To improve reliable closure of the can by means of the lid use is made of a closing ring which grips around the top edge of the lid and the bottom edge of the bead. Reference is made in this respect to applicant's Netherlands patent application which is being filed with the Dutch Patent Office on the same day as the present application and bears the title "Closing ring for a metal can with a lid".

The object of the invention is to improve the reliability of the closure as far as possible. Since it is known that a bead tends to continuously deform, the invention proposes means for preventing this tendency so that a can once closed in the manner described preserves its tightly closed state.

With a view hereto the invention provides a can of the type described which has the feature that the first part is pressed inward in its most outwardly located peripheral zone. The inward pressed peripheral zone also provides an action comparable to the action of a hooking edge, while the advantage is also achieved that the bead has an increased rigidity or, if the rigidity is to remain constant, can be manufactured from a smaller quantity of material. The inward pressed peripheral zone can be obtained by techniques per se known from the metal working art and mechanical engineering, such as performing a deforming operation by means of moulds or performing a rolling operation. A rolling operation can have the advantage that through a number of deforming cycles the degree of deforming per cycle can remain limited. Use can for example be made of a set of rollers placed on one deforming station.

The can according to the invention preferably has the feature that the second part extends through about 90°.

A considerable improvement of the rigidity is obtained with an embodiment in which the inward pressed zone is pressed against the third part.

The rigidity is particularly stimulated with a variant in which the inward pressed zone is pressed against the third part such that the third part is correspondingly deformed and presses against the zone over a considerable surface.

In a preferred embodiment the can has the feature that the inward pressed zone is flat in cross section.

It has been found to be technically advantageous if the middle of the inward pressed zone is situated above the middle of the first part.

In this latter case the variant is advantageous in which the zone situated beneath the inward pressed zone extends further outward than the zone situated above the inward pressed zone.

The can preferably has the feature that the portion of the bead facing toward the standing wall is substantially arcuate in cross section through about 180°.

The bottom surface and the top surface in axial direction of the bead can be substantially flat.

In particular the flat underside in combination with the relatively small radius of curvature of the bead portion connecting thereto assists the good gripping of the lid and the closing band onto the bead.

It is noted that the height of the bead can be equal to the height of the bead normally in use up to the present time. Thus achieved here is that no further alterations in the setting of machines is necessary.

The invention will now be elucidated with reference to the annexed drawing, in which:

figure 1 shows a paint can of the so-called conical type with a closing lid drawn at a distance therefrom and around which a closing ring is arranged;

figure 2 shows the paint can according to figure 1 in the situation in which the lid is placed on the can and the underside of the closing ring is pressed inward to form a sealing;

figure 3 shows on enlarged scale the detail III in cross section, wherein it is noted that the bead is of the known type;

figure 4 shows a detail of a machining device for forming the can according to the invention in a phase in which the bead is placed but not yet deformed;

figure 5 shows a view corresponding with figure 4 of the situation in which the deforming operation has taken place;

figure 6 shows a partially broken away perspective view corresponding to the cross section of figure 5 and showing that the bead is deformed by means of deforming rollers; and

figure 7 is a very schematic perspective view of the deforming operation according to the figures 4, 5 and 6.

Figure 1 shows a metal can 1 according to the prior art comprising a bottom 2 and, connected thereto, a standing wall 3 in which the zone remote from the bottom 2 comprises an outward extending bead 4 (also see figure 3) having in section a first

part 5 extending through about 360°, a second part 6 lying against the first part 5 and extending through about 90°-120° and a third part 7 connecting thereto with a considerably smaller radius of curvature.

Figure 1 shows the can 1 before it is closed by a lid 8.

Figure 2 shows the can 1 after it has been closed by the lid 8.

Figure 3 shows the manner in which the lid 8 co-acts with the can 1. A filler mass or compound 10 is situated between the rim 9 of the lid 8 and the top surface of the bead 4. This mass serves to seal the lid 8 relative to the can 1.

After the lid 8 is placed on the can 1 the connection is reinforced by means of an encircling closing band 11. This grips around the rim 9 and the bead 4 as figure 3 clearly shows.

The figures 4, 5, 6 and 7 show schematically a finishing operation on the bead 4 which has for its object to press inward the first part 5 in its peripheral zone lying furthest to the outside.

Use is made for this purpose of two co-acting rollers which can be carried toward one another, respectively a profile roller 12 rotatably supported by rotation bearings 20 and a pressing roller 13. The latter has a pressing surface 14 the shape of which corresponds with the portion of the first part 5 of the bead 4 connecting to the wall 3. As indicated with an arrow 15, the pressing roller 13 can be moved toward the profile roller 12 whereby the first part 5 comes into engagement in its peripheral zone 16 lying furthest to the outside with a modelling surface 17, the profiled shape of which can be seen in figures 4, 5 and 6.

Figures 5 and 6 show that the peripheral zone 16 has obtained a shape which corresponds with the shape of the modelling surface 17. The peripheral zone is therefore designated with 16' in figures 5 and 6. It is apparent that this peripheral zone has an inwardly pressed portion 18.

Figure 7 shows very schematically a rotatably arranged positioning member 18 with clamps 19 for fixedly holding the can 1 for rotation around its axis. The profile roller 12 and the pressing roller 13 engage onto the bead 4 through at least one revolution.

Per se known drive means are not drawn here.

The profile roller 12 has two identical modelling surfaces 17, 21. The profile roller 12 can hereby be used twice if desired.

Claims

1. Metal can, comprising a bottom (2) and a standing wall (3) which is connected thereto and whereof the zone remote from the bottom comprises an outwardly extending bead (4)

having in cross section a first part (5) extending through about 360°, a second part (6) lying against the first part and extending through about 90°-120° and a third part (7) connecting thereto with a considerably smaller radius of curvature,

characterized in that

the first part is pressed inward in its peripheral zone lying furthest to the outside.

2. Can as claimed in claim 1, **characterized in that** the second part extends through about 90°.
3. Can as claimed in claim 1, **characterized in that** the inward pressed zone is pressed against the third part.
4. Can as claimed in claim 3, **characterized in that** the inward pressed zone is pressed against the third part such that this third part is correspondingly deformed and presses against the zone over a considerable surface.
5. Can as claimed in claim 1, **characterized in that** the inward pressed zone is flat in cross section.
6. Can as claimed in claim 1, **characterized in that** the middle of the inward pressed zone is situated above the middle of the first part.
7. Can as claimed in claim 6, **characterized in that** the zone situated beneath the inward pressed zone extends further outward than the zone situated above the inward pressed zone.
8. Can as claimed in claim 1, **characterized in that** the portion of the bead facing toward the standing wall has a substantially arcuate cross section through about 180°.
9. Can as claimed in claim 1, **characterized in that** the underside and/or the upper part of the bead is substantially flat.

Patentansprüche

1. Metallische Dose, enthaltend einen Boden (2) und eine aufrechtstehende Wand (3), die damit verbunden ist und deren vom Boden entfernt liegende Zone einen sich auswärts erstreckenden Wulst (4) enthält, der im Querschnitt einen sich über ungefähr 360° erstreckenden ersten Teil (5), einen gegen den ersten Teil anliegenden und sich über ungefähr 90° bis 120° erstreckenden zweiten Teil (6) und einen damit verbundenen dritten Teil (7) mit einem beacht-

- lich kleineren Krümmungsradius hat,
dadurch gekennzeichnet,
daß der erste Teil in seiner am weitesten zur
Außenseite hin liegenden Umfangszone ein-
wärts gedrückt ist. 5
2. Dose nach Anspruch 1,
dadurch gekennzeichnet,
daß sich der zweite Teil über ungefähr 90°
erstreckt. 10
3. Dose nach Anspruch 1,
dadurch gekennzeichnet,
daß die einwärts gedrückte Zone gegen den
dritten Teil gedrückt ist. 15
4. Dose nach Anspruch 3,
dadurch gekennzeichnet,
daß die einwärts gedrückte Zone so gegen
den dritten Teil gedrückt ist, daß dieser dritte 20
Teil entsprechend deformiert ist und über eine
beachtliche Oberfläche gegen die Zone drückt.
5. Dose nach Anspruch 1,
dadurch gekennzeichnet, 25
daß die einwärts gedrückte Zone einen flachen
Querschnitt hat.
6. Dose nach Anspruch 1,
dadurch gekennzeichnet 30
daß die Mitte der einwärts gedrückten Zone
über der Mitte des ersten Teils angeordnet ist.
7. Dose nach Anspruch 6,
dadurch gekennzeichnet, 35
daß sich die unter der einwärts gedrückten
Zone angeordnete Zone weiter nach außen
erstreckt als die über der einwärts gedrückten
Zone angeordnete Zone. 40
8. Dose nach Anspruch 1,
dadurch gekennzeichnet,
daß der der aufrechtstehenden Wand zuge-
wandte Bereich des Wulstes einen im wesentli-
chen gebogenen Querschnitt über ungefähr 45
180° hat.
9. Dose nach Anspruch 1,
dadurch gekennzeichnet,
daß die Unterseite und/oder der obere Teil des 50
Wulstes im wesentlichen flach ist.
2. Boîte métallique selon la revendication 1, ca-
ractérisée en ce que la seconde partie s'étend
sur environ 90°.
3. Boîte métallique selon la revendication 1, ca-
ractérisée en ce que la zone comprimée vers
l'intérieur est comprimée contre la troisième
partie.
4. Boîte métallique selon la revendication 3, ca-
ractérisée en ce que la zone comprimée vers
l'intérieur est comprimée contre la troisième
partie de manière que cette troisième partie
soit déformée de manière correspondante et
appuie contre la zone sur une surface impor-
tante.
5. Boîte métallique selon la revendication 1, ca-
ractérisée en ce que la zone comprimée vers
l'intérieur a une section transversale plane.
6. Boîte métallique selon la revendication 1, ca-
ractérisée en ce que le milieu de la zone
comprimée vers l'intérieur est situé au-dessus
du milieu de la première partie.
7. Boîte métallique selon la revendication 6, ca-
ractérisée en ce que la zone située sous la
zone comprimée vers l'intérieur s'étend plus
loin vers l'extérieur que la zone située au-
dessus de la zone comprimée vers l'intérieur.
8. Boîte métallique selon la revendication 1, ca-
ractérisée en ce que la partie du bourrelet
placée en face de la paroi verticale a une
section transversale sensiblement cintrée sur
environ 180°.
9. Boîte métallique selon la revendication 1, ca-
ractérisée en ce que le dessous et/ou la partie
supérieure du bourrelet sont sensiblement
plats.

Revendications

1. Boîte métallique, comprenant un fond (2) et 55
une paroi verticale (3) qui est reliée au fond et
dont la zone éloignée du fond comporte un
bourrelet (4) s'étendant vers l'extérieur, ayant

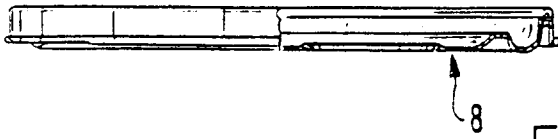


FIG. 1

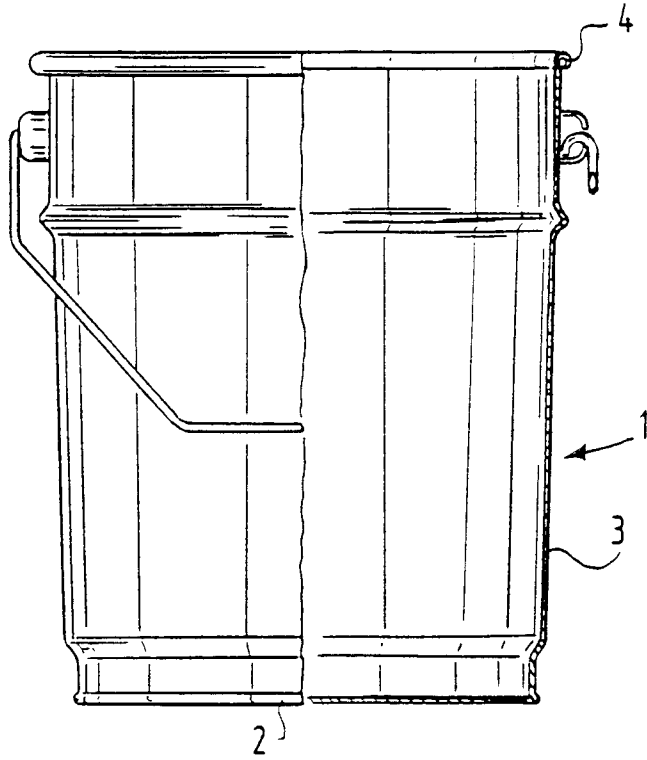


FIG. 2

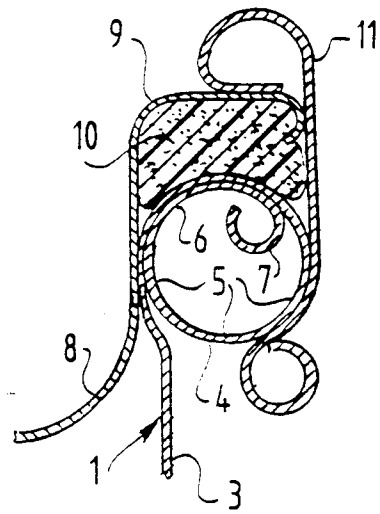


FIG. 3

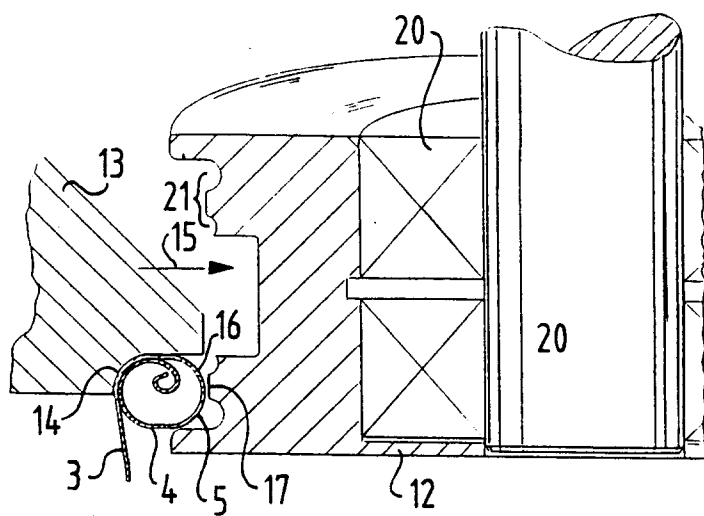


FIG. 4

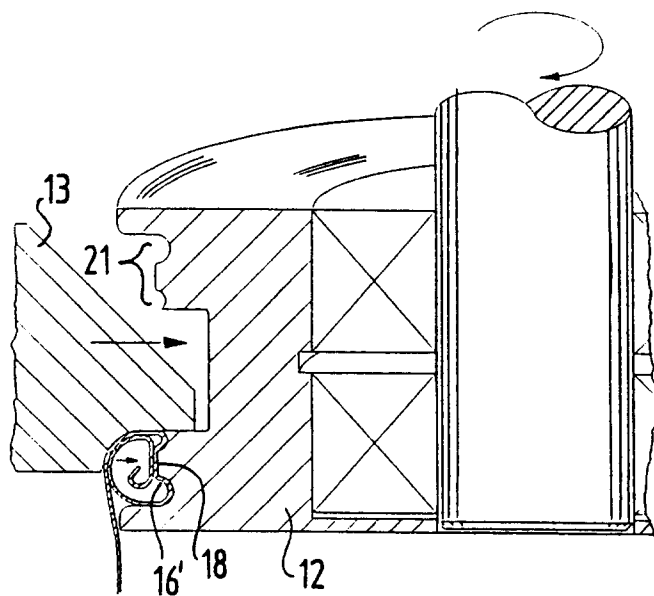


FIG. 5

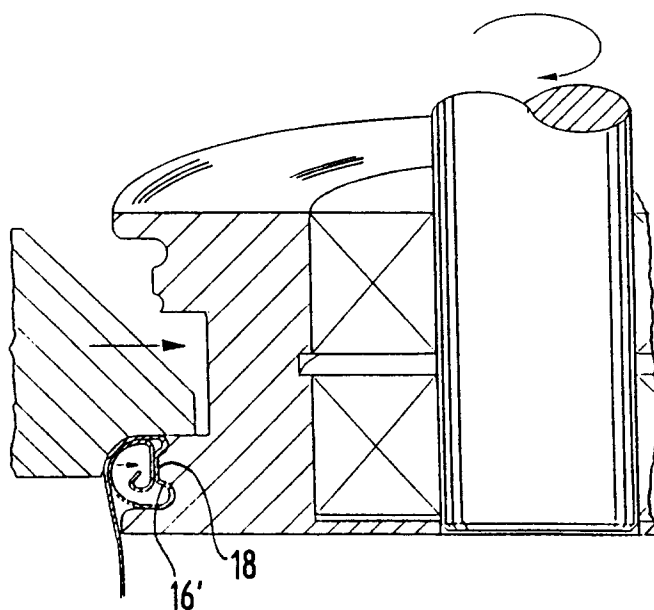


FIG. 6

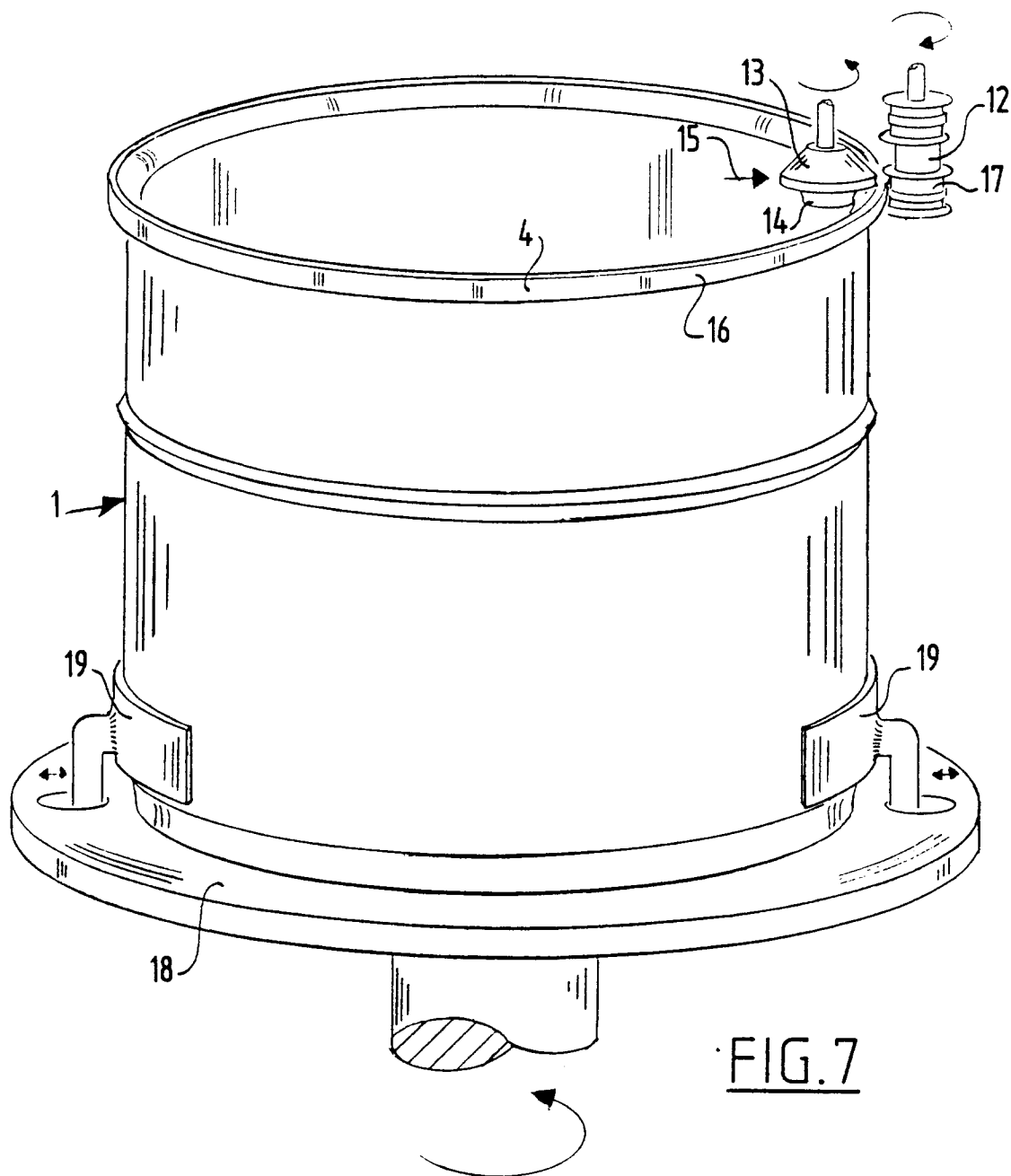


FIG. 7