

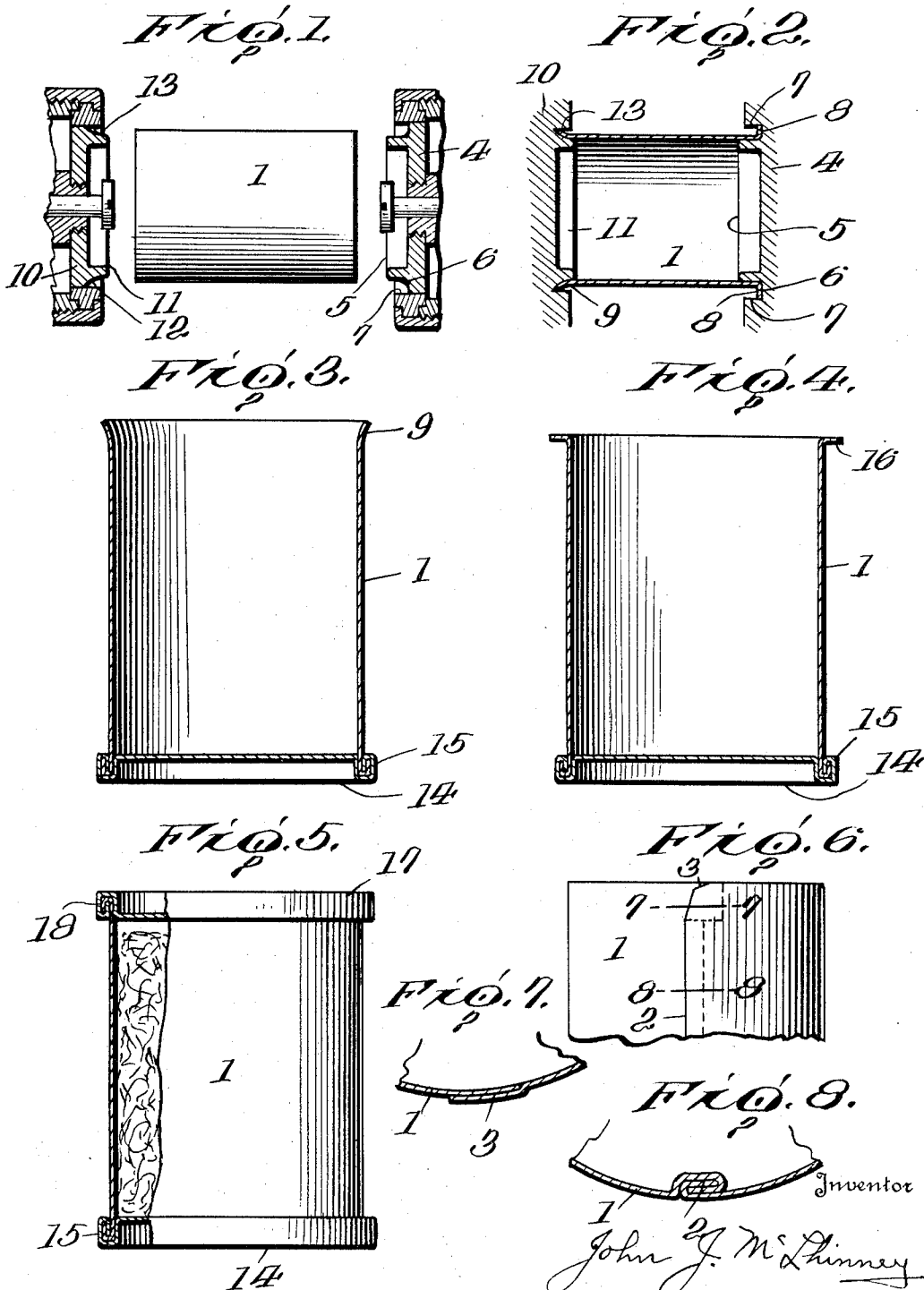
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METHOD OF FORMING HERMETICALLY SEALED METAL CANS

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METHOD OF FORMING HERMETICALLY
SEALED METAL CANS

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1 Claim. (Cl. 113—121)

The invention relates to new and useful im-
provements in a method of making metal cans,
and more particularly cylindrical cans. It has
been a common expedient to form a cylindrical
can body using a side seam wherein the metal at
the ends of the side seam is lapped and secured by
solder. This metal body is provided with a right-
angle flange at both ends thereof, and a can end is
double seamed to one end of the can body and
after the can body is filled the other end is dou-
ble seamed thereto. It has been found in prac-
tice that when a right-angle flange is formed on
the can body by the manufacturer, the solder bond
joining the lapped end portions of the seam is put
under strain so that the solder bond after an in-
terval of time will rupture.

An object of the present invention is to pro-
vide a method of making cylindrical cans wherein
the body is provided with a right-angle flange by
the packer so that the end for closing the body
may be attached thereto at a relatively short in-
terval of time after the flange is formed.

A further object of the invention is to provide
a method of making cylindrical cans where the
open end of the can body is flared in the region
to be flanged for reinforcing the same to facilitate
shipping and handling of the cans without the
open ends being unduly collapsed.

In the drawing which shows by way of illustra-
tion the various steps of the method embodying
the invention:

Figure 1 is a view showing more or less dia-
grammatically a cylindrical can body, the dies
which engage the can body for forming a right-
angle flange at one end and a reinforcing flange
at the other end;

Fig. 2 is a similar view showing the can body
as having been provided with the right-angle
flange and the reinforcing flange;

Fig. 3 is a view showing the can with the bot-
tom end thereof double seamed to the can body;

Fig. 4 is a view showing the right-angle flange
as applied to the can body by the packer;

Fig. 5 shows the can filled and with the closing
or top end double seamed thereto;

Fig. 6 is an enlarged side view of the upper por-
tion of the can body in the region of the side seam
before it is flanged;

Fig. 7 is a sectional view on the line 7—7 of
Fig. 6, and

Fig. 8 is a sectional view on the line 8—8 of
Fig. 6.

The invention is directed to a method of making
cans from metal which are hermetically sealed
by the double seaming of the ends thereto. The

body is cylindrically formed and is of the ordi-
nary construction. It may have its side edges
joined by a seam which is lapped throughout its
entire extent or by a seam which is lapped at the
ends and interlocked between the ends. This
can body is provided with a right-angle flange
at one end and simultaneously therewith a rein-
forcing flared portion in the region which is sub-
sequently formed into a right-angle flange. The
bottom end is attached to this right-angle flange
on the body by double seaming. A closing end is
also provided, but is not attached to the body.
This finishes the can so far as the manufacturer
is concerned. The can thus completed and the
ends therefor are shipped to the packer. The
packer provides the body with a right-angle
flange at the open end and after the can is filled
the can end is double seamed to this right-angle
flange for hermetically closing the can. By this
method the flanging of the open end of the can
does not occur until after the shipping of the can
and within a short interval of time before the
closing end is to be attached thereto.

Referring more in detail to the drawing, the
invention is shown as applied to a cylindrical can
which includes a can body 1 rolled into a cylinder.
When a locked and lapped seam is used then the
side edges of the blank forming the body are inter-
folded as indicated at 2 in Figs. 6 and 8, while
the end portions of the side edges are lapped as
indicated at 3 in Figs. 6 and 7. The side seam is
soldered throughout its length and thus the
lapped parts are joined solely by a solder bond.
In the usual practice a can body thus formed is
provided with a right-angle flange at the op-
posite ends thereof, and these flanges are simul-
taneously formed by flanging dies. One of the
flanging dies is shown diagrammatically at 4 in
Fig. 2 of the drawing. Said die is provided with a
central projecting portion 5 which leads to a
curved surface 6 terminating in a vertical wall 7.
As the die is forced into the end of the can body
the metal in the end will be turned or rolled out-
wardly into a flange 8 which is substantially at
right angles to the body wall. This rolling of the
metal outwardly into a flange of course expands
the metal inasmuch as the outer diameter of the
flange is greater than the diameter of the can
body. This expanding of the metal in the region
of the lapped portions 3 places the solder bond
under a severe strain. It has been found in
practice that the flanging operation does not frac-
ture the solder bond at the time when the flange
is formed but when these bodies thus flanged
are shipped and stored that after an interval of

time the solder bond snaps or is ruptured. No matter how careful the can may be inspected by the manufacturer this rupturing of the solder bond during shipping or after the can has been shipped cannot be detected by the manufacturer and often results in leaks. The present invention is directed to a method of forming the cans whereby this right-angle flanging of the open end during shipping or storing of the same after it is flanged for a long interval of time is avoided. According to the present method the can body after it is formed is provided with a right-angle flange at one end only thereof. The other end is provided with a flared portion 9 in the region where the right-angle flange is to be formed. This is done by dies, one of which is diagrammatically illustrated at 10 in the drawing. Said die has a central projecting portion 11 which leads into a curved portion 12 terminating at a vertical wall 13. This flared portion 9 curves outwardly only to a slight extent and the flaring of the end places the solder bond at the lapped portion of the side seam under very little tension which is not severe enough to result in a rupturing of the solder bond during handling or during storing. The flared end of the can body however is reinforced to such an extent that during handling it will not collapse beyond the elastic limit of the metal and can be readily returned to a circular shape. A flared end such as shown in the drawing will stand bending strain even much better than a right-angle flange which is likely to become cracked or broken under severe crushing strain.

This right-angle flange which is of the usual construction and the flared end of the body which is believed to be new with applicant are both produced by the manufacturer and are preferably simultaneously formed on the can body by co-operating flanging dies. The limiting walls on the dies insure that after one end is completed the other is forced so that it will be likewise completed, forming a full right-angle flange at one end and the full desired flare at the other end.

A can end 14 is then joined to the right-angle flange portion of the can body by a double seam 15. An end is formed ready to be attached to the other end of the can body but is not secured thereto. The can is then shipped to the packer. It may be stored for any length of time, and there will be no snapping or rupturing of the solder bond between the lapped end portions of the metal in the side seam. The packer is of course supplied with the necessary machine for forming a right-angle flange on this open end of the can body. This is preferably done at the time when the can is to be filled and closed. In Fig. 4 of the drawing a flared end is shown as changed into a right-angle flange end indicated at 16. The can is then filled after which the can end 17 is secured to this right-angle flange 16 by a double seam 18.

From the above it will be apparent that a new method has been devised for producing metal cans wherein the losses incident to the rupturing of the solder bond at the lapped portion of the side seam are reduced to a minimum. The flanging of the open end of the can at the packer's insures that the closing end is double seamed to the right-angle flange formed without the solder bond becoming ruptured either through shipment or through long standing whereby the stresses and strains set up during the flanging operation finally result in a fracturing of the solder bond. Furthermore this flanging of the can by the packer insures a uniformity of height to the cans, and also a uniformity in the forming of the flange and the forming of the end of the can for the attachment of the closing end thereto. Then again, the can after it is flanged is not subjected to the crushing forces incident to shipment, and the flanges are not broken but remain intact, as well as the solder bond remains intact.

While I have referred to the flange as a right angle flange, it will be understood that the angle to which the flange is turned may be varied but it should be preferably substantially at a right angle; it may be slightly greater or slightly less than a right angle. While I have referred to the use of solder, it will be understood that this is not restricted to any special form of solder. Any bonding material may be used that is suitable for joining metal parts.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

The method of forming hermetically sealed filled cans consisting in forming a cylindrical can body having the metal parts at the end of the side seams lapped and secured by a solder bond, providing one end of said body with a substantially right angle flange, double seaming an end to the formed flange of the body, curving the other end of the body outwardly to a slight extent for strengthening the same but insufficient to place the solder bond under excessive tension, providing said flared end of the can body with a substantially right angle flange immediately before filling and double seaming a can end to said last named flange for hermetically closing and sealing the can after it is filled.

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