

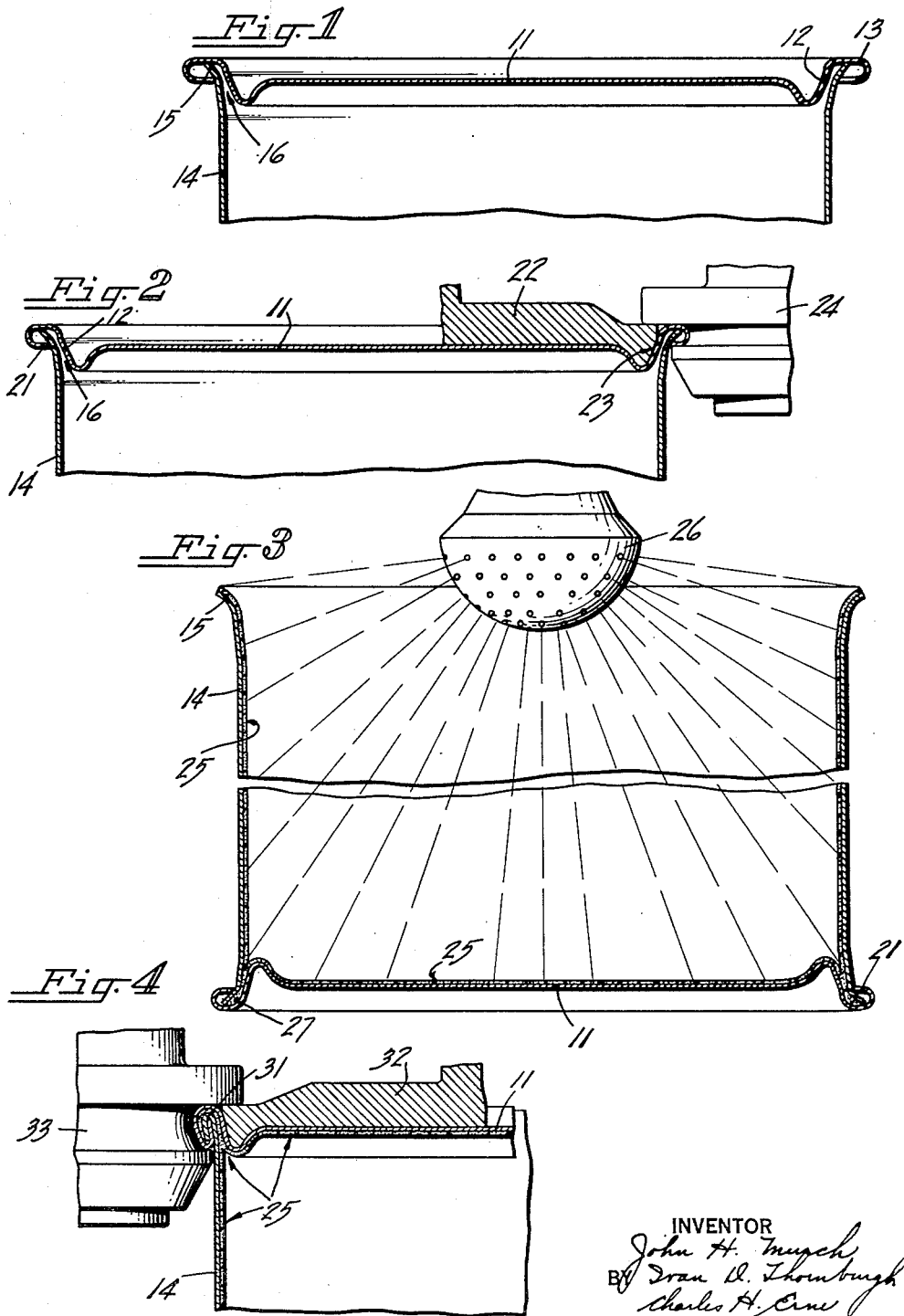
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METHOD OF LINING THE INSIDE OF CANS

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METHOD OF LINING THE INSIDE OF CANS

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The present invention relates to a method of preparing interiorly lined metallic cans for beer and the like, and has particular reference to the preparing of the can so that the protective interior lining material is fully incorporated in the can seam as well as on all exposed interior surfaces.

In the packaging of beer in metallic containers it has been found that the exposure of the tin forming the outer surface of the metal when exposed even in small quantities chemically reacts upon the beer to change its appearance, making it cloudy and unmarketable. Attempts have been made to coat the interior surface of the can parts and this has usually been done before the can and end were formed, the coating being applied directly to a surface of the sheet metal while in a flat condition.

Where the sheet is first coated and then formed into the can parts some of the lining material is often dislodged and the surface is scratched in the can making operations, and where such breaks in the coating occur the can is unfit for commercial use. Cans have also been coated with a lining material after the end has been secured to the can, but in this case it has often been found that the coating fails to properly flow into the bottom connecting parts of the can end and body, being held back in part by capillary or surface tension of the coating and where even a slight metal is left exposed it reacts upon the beer and makes the can unfit for use.

An object of the present invention is the provision of a method of preparing a metal can comprising the steps of providing a body and end and assembling or uniting the same in a partially formed or loose connection which leaves a space between the can body and the can end sufficient to allow free flowing of a lining or coating material subsequently applied to the interior of the can, this space being so arranged as to allow the lining or coating material to completely cover the adjacent can body and can end walls, so that no skips or gaps in the lining or coating result. Following this operation of coating the can surfaces the connection between the can body and end is completed and the connecting parts are formed into a tight seam with the lining material confined therein, this procedure preventing breaks or other imperfections in the lined surfaces.

A further object of the invention is the provision of a method of fully lining the can surfaces of a can to be used for beer and the like which may be formed in the usual manner and

the can parts seamed together by the ordinary double seaming process, the lining or coating of the can being introduced after the body and end are loosely connected and before the final or tight double seam operation has been performed.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawing, discloses a preferred embodiment thereof.

Referring to the drawing:

Figure 1 is a cross sectional view of a can end assembled on a can body, the latter being shown partly broken away;

Fig. 2 is a view similar to Fig. 1 illustrating the loose connection first made between the can end and the can body;

Fig. 3 is a transverse sectional view of a can body and its loosely applied end being subjected to a spraying or coating operation wherein the lining material is applied to all of the interior surfaces of the can; and

Fig. 4 is a fragmentary sectional view of the finally united or double seamed can body and end, this view illustrating the second or final operation of seaming.

For the purpose of illustrating by example the operations in the method steps of the present invention there is disclosed a can end 11 (Fig. 1) having a countersunk conical wall 12 merging into an outwardly extending flange 13. A can body 14 is illustrated as having a peripheral flange 15 which is slightly flared outwardly.

The can end 11 is first placed on the flanged end of the can body 14, as illustrated in Fig. 1, and in such position there is an annular space 16 formed with an open throat, this throat tapering down into a narrow space between the adjacent wall of the can body and the conical end wall 12. A loose connection is then formed between body and end in any suitable manner as by bending the outer peripheral edge of the can end flange 13 into loose engagement (as at 21, Fig. 2) with the can body. This may be done by a first operation double seam if desired.

In performing such an operation a chuck 22 may be used, the outer wall 23 of which engages closely within the conical wall 12 of the end and backs up the end wall while a first operation seaming roller 24 is moved into the can end flange 13 in the usual manner. After the can parts have been united in a loose connection as shown in Fig. 2, the annular space 16, it will be observed, is still present.

The can and its loosely applied end may then be

inverted into the position illustrated in Fig. 3 or it may be left in its first position with the end on top. In either position it is subjected to a coating or spraying operation wherein a suitable lining material (indicated by the numeral 25) is deposited upon all of the interior walls of the can parts as by means of a spraying head 26. The lining material or coating issues from perforations formed in the head and is directed against the can surfaces as graphically shown by the dash lines in Fig. 3. An asphalt and wax compound constitutes one of many suitable lining materials that may be used.

This material is deposited in equal thickness on the side walls of the can body 14 and on the inside surface of the can end 11 as at 25 and when the can has been inverted as shown a part of the material indicated at 27 flows down by gravity into the space 16 between the can body and can end. Where the can is in the other position the material coating is forcibly thrown into the space. In either case there is formed an unbroken, fully lined interior body surface and the space 16 between the body and end is sufficiently large to overcome the usual pull of capillary attraction or surface tension of the coating which is a harmful factor where a can with its fully seamed end attached is subjected to interior spraying.

The first operation seam 21 or other loose connection is then completed and a double seam 31 (Fig. 4) results, the can and end is sufficiently held in a chuck 32 and the formation of the double seam being completed by a second operation double seaming roller 33.

This completes the operation of providing a fully lined can and it will be observed that the lining material or coating 25, including the lining material confined between the seamed parts, is unbroken and no exposed metal surfaces exist on the inside of the can.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the steps of the process described and their order of accomplishment without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the process hereinbefore described being merely a preferred embodiment thereof.

I claim:

1. A method of coating cans for beer and the like, which comprises providing a can body with a substantially vertical tubular wall and a can

end with a flange and an annular wall disposed inside of and adjacent to said can body wall and spaced away and at an angle to said can body wall, leaving an annular space between said adjacent walls, assembling said body and end in a loose connection by curling said end flange against the exterior of said body wall, applying a coating material between said angularly disposed body and end walls and also on the inside of the assembled body and end, thereby completely covering the adjacent body and end walls and completing said connection and bringing said walls together by forming a closed seam.

2. A method of coating cans for beer and the like, which comprises providing a can body with a substantially vertical tubular wall and a can end with an annular wall adjacent to said can body wall spaced away and at an angle to said can body wall leaving an annular space formed with an open throat between said adjacent walls, assembling said body and end and uniting the same in a loose partially formed seam, spraying a coating material between said angularly disposed body and end walls and also on the inside of the assembled body and end with the said seam at the bottom so that the lining material flows down into the said open throat and fills said space, and forming a full double seam while confining the coating in said space and between the interposed seam parts to produce an unbroken, fully lined interior can surface.

3. A method of coating cans for beer and the like, which comprises providing a flanged can body with a substantially vertical tubular wall, providing a flanged can end having a depressed conical wall smaller in diameter than the flanged end of said body, assembling the same by inserting said annular end wall within the end of said body, uniting the body flange with the outer flange of said end in a loose connection leaving an annular space between the inside of the flanged end of said body and the said annular wall of the can end thereby forming a tapered throat, depositing a lining material between said angularly disposed body and end walls and also on all of the inside surfaces of the assembled body and end while filling the said space by flow of said material into said tapered throat, and forming a close connection between the parts by bringing the adjacent can and end walls closer together and closing off said throat while tightly confining the lining in said space to produce an unbroken, fully lined interior can surface.

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