

March 24, 1931.

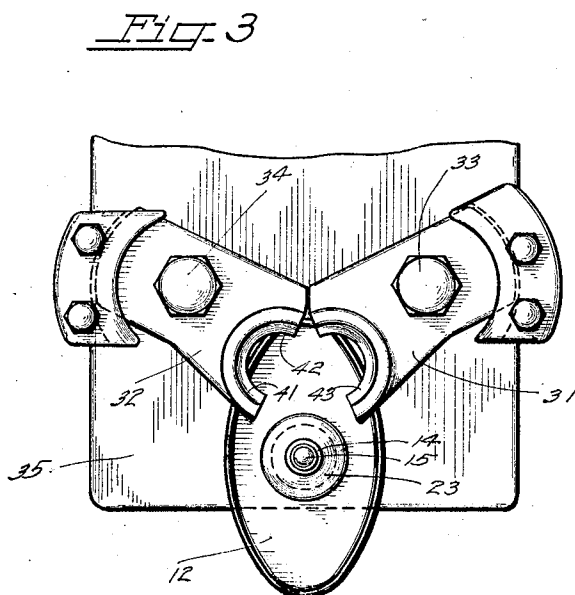
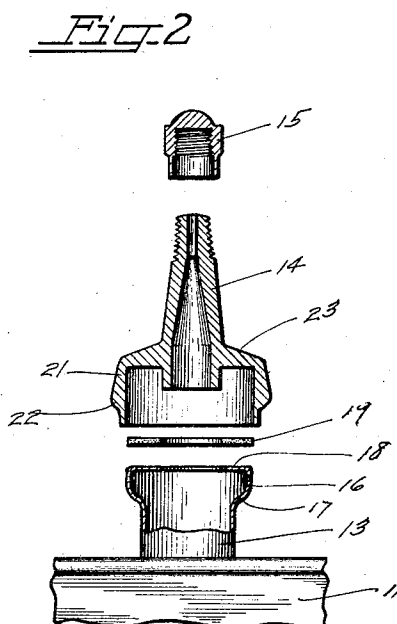
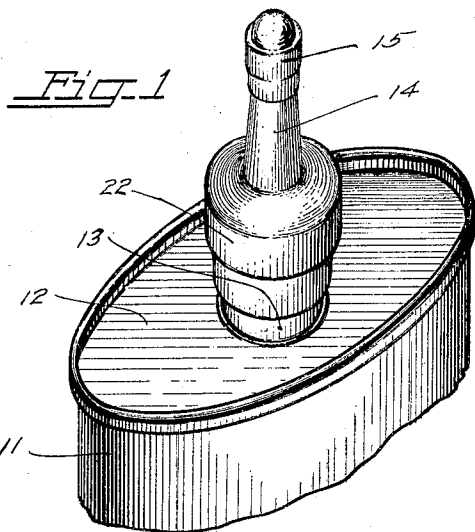
J. M. HOTHERSALL

1,797,418

METHOD OF ATTACHING LEAD SPOUTS

Filed March 6, 1924

2 Sheets-Sheet 1



INVENTOR
J. M. HOTHERSALL
BY *Timothy, Clarke & Carpenter*
ATTORNEYS

March 24, 1931.

J. M. HOTHERSALL

1,797,418

METHOD OF ATTACHING LEAD SPOUTS

Filed March 6, 1924

2 Sheets-Sheet 2

Fig. 4

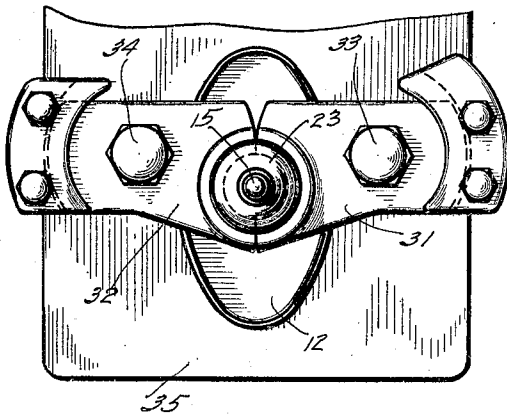


Fig. 5

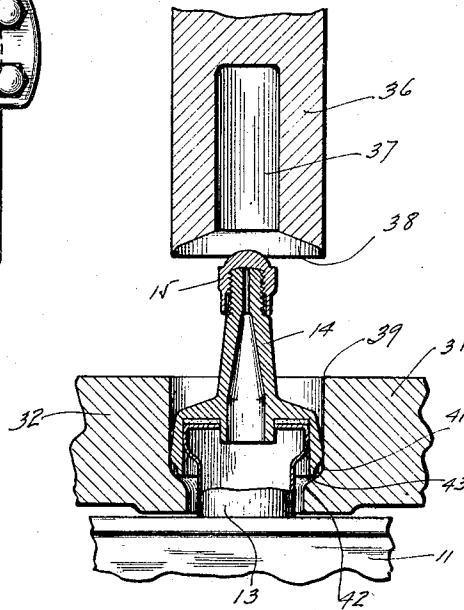


Fig. 6

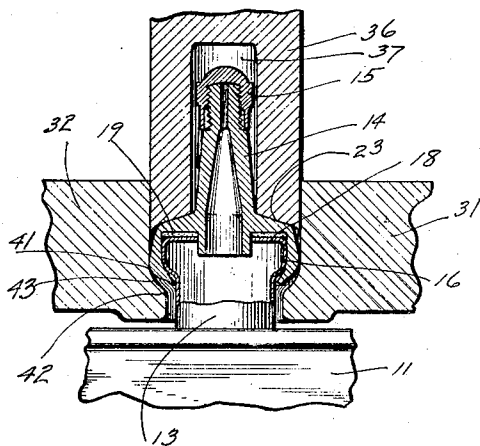
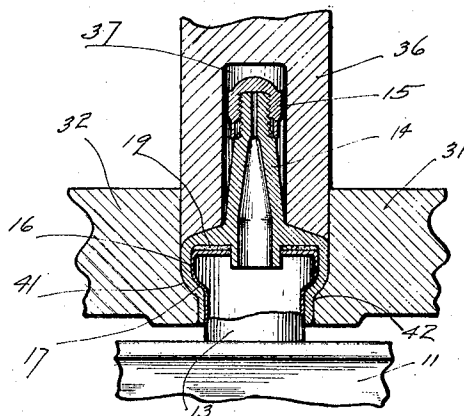


Fig. 7



INVENTOR.
J. M. HOTHERSALL
BY *Timothy Clark & Carpenter*
ATTORNEYS

UNITED STATES PATENT OFFICE

JOHN M. HOTHERSALL, OF BROOKLYN, NEW YORK

METHOD OF ATTACHING LEAD SPOUTS

Application filed March 6, 1924. Serial No. 697,354.

This invention relates to the formation and attachment of spouts to container bodies and while the invention will be hereinafter described as embodied in a spout attached to a nozzle or neck of a sheet metal can or container it will be readily manifest that the invention has wider and more general use being capable of being employed to marked advantage in the attaching of spouts of containers otherwise constructed and of other materials, for example, bottles and jars of glass and the like of other materials.

A principal but by no means the only object of the present invention is the provision of an improved process for attaching spouts of relatively soft metal to an upwardly extending neck of a can of the type shown on the drawings and which is well known as a widely used can for lubricating oils of fine quality.

These spouts are and have been constructed by die-casting them of soft metal, then placing the spout over the neck of the can and by pressure rolls engaging the skirt, rolling the metal into tight engagement to the neck side. Such process has required complicated and expensive machinery and because of the accuracy of the action required such machinery has been difficult to maintain within the allowance of adjustment. Another process of attaching spouts of this character which has been employed and which is subject to the same objections has been the crimping or contraction of the spout skirt by laterally moving active dies, i. e. dies consisting of a number of segments moving radially in against the skirt to force it in against the can neck. This process has been attended by the further evil that because of the segmental die construction even engagement has been impossible about the entire circumference. The roll process earlier mentioned caused a flowing of the metal ahead of the roll and a looseness at such location which was frequently productive of leaks and which

in any event failed to provide an even surface about the nozzle skirt.

My invention contemplates the constriction and in fact the reformation of the skirt portion of the spout by uniform pressure and action about the entire circumference and this through the employment of a greatly less number of moving parts, all of which may be of sturdy construction and which will eliminate any necessity for adjustment.

Another important object of the invention is the provision of a process and apparatus for securing spouts to container bodies which will permit of the employment of a much greater pressure in the production of the engagement than has heretofore been possible without danger of deforming or destroying the container part to which the spout was being attached. The pressure is applied as will be presently better understood gradually and this as well as other circumstances well adapts the invention to valuable use in connection with glass as well as metal containers.

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

Referring to the drawings,

Fig. 1 is a perspective view of the upper part of a can for fine lubricating oil selected for the purposes of illustrating a valuable application and use of my present invention.

Fig. 2 is an enlarged cross-sectional view of the spout and attendant can part, shown in disassembled relation.

Fig. 3 is a top plan view of the mold parts before receiving the can and nozzle for attachment.

Fig. 4 is a similar view showing the mold parts in operative positions.

Figs. 5, 6 and 7 are cross-sectional views which show the progressive actions in the spout attachment.

Referring to Fig. 1 reference character 11 indicates the can body, reference character 12 the can end at the top and reference character 13 the upwardly extending neck provided upon the end 12. The spout consists in the present instance of a pouring member 14 and a threaded spout cap 15.

Referring now to Fig. 2 it will be noticed that the neck 13 is of non-uniform diameter being bulged out adjacent the top as indicated at 16 to provide an abutment or shoulder 17 beneath which the spout is to be engaged. At the top a ledge 18 extending inwardly is or may be provided and upon this is or may be seated a gasket 19. The pouring portion 14 of the spout is provided with a downwardly extending skirt 21 adapted to pass over and about the enlarged part 16 of the neck 13. The spout illustrated in Fig. 2 may be considered a blank for the reason that its formation particularly of the skirt portion is incomplete. The skirt is made with a thickened lower part 22 which is thicker than the final thickness of the skirt when the assembling is complete, and, of course, the skirt portion has to be reformed into engagement with the smaller portion of the neck.

In accordance with my present invention it is intended that the nozzle after being placed upon the neck of the can will be moved relatively with respect to a mold by pressure upon the surface 23 above the skirt and in the relative movement of the assembled can and spout with respect to this mold, the skirt will be reformed into tight binding engagement with the spout.

The mold preferably consists of two pivoted halves 31 and 32 pivoted at 33 and 34 upon a suitable bed 35. These mold parts move to the open position shown in Fig. 3 and may be closed by inserting the can neck between them to swing them to the position shown in Fig. 4. When in the position shown in Fig. 4 the mold is in operative position and throughout the assembling action is passive. The active assembling member is a plunger or die 36 shown in Figs. 5, 6 and 7. This is of cylindrical form having an opening 37 to receive the pouring portion of the spout and having an under surface 38 to engage upon the surface 23 of the spout during the assembling action. Only the mold members 31 and 32, the bed or table 35 and the plunger or die 36 are shown on the drawing since it is believed that these parts are all that is necessary to an understanding of the present invention. These operative members can of course be incorporated in any suitable supporting and actuating mechanism. I, however, prefer to employ the mechanism of my Patent 1,444,418 issued February 6, 1923.

It will be noted that the mold provides a passage of annular form about the neck of

the can in which may be received the skirt of the spout blank. Referring to Fig. 5 it will be noted that between the top surface of the mold at 39 and a lower point therein at 41 the mold passage is cylindrical. Below the point 41 the passage is constricted as indicated at 42. As the plunger or die 36 descends the skirt portion is first constricted or contracted by engagement with the curved connection 43 beneath the portion 41 of the mold. This curvature is substantially that in the present instance of the neck 13 in or beneath its part of the enlarged diameter. As the die or plunger descends it carries the nozzle and can downwardly forcing the metal of the skirt first into the form shown in Fig. 6 and then thins the metal as shown in Fig. 7, reforming the entire skirt by contracting it laterally against the neck and also by flowing the metal axially as may be seen by comparing Figs. 5 and 7. The bottom of the passage between the neck and the mold is open to permit extrusion of the metal as to any excess that may be provided.

It will be manifest that the pressure applied axially of the can is gradually converted into powerful lateral pressure felt uniformly about the entire neck and it will be apparent also that without the use of complicated active or passive members powerful holding pressure is supplied to the spout about its engagement with the neck for the formation of a tight seal.

Throughout this specification and in the claims the spout is said to be of soft metal and, of course, this means any metal capable of being formed in this fashion under the pressures that may be provided.

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

I claim:

1. The method of securing spouts having depending skirts of soft metal to containers, which comprises arranging the skirt of the spout and the container in a mold, and then applying pressure all around the spout and independently of the spout so as to preserve the form of the spout portion, on the top of the skirt portion in an axial direction and thereby causing the metal of the skirt portion to flow axially and conform with the mold and also with a portion of the container and form an extended skirt tightly around the latter.

2. The method of securing soft metal spouts to containers which comprises providing the container with a spout engaging por-

tion of non-uniform thickness and the spout
with the skirt adapted to embrace said por-
tion, arranging the spout on said portion,
then applying axial pressure to the top of the
skirt all around the spout and independently
5 of the spout and forcing the skirt into a re-
stricted passage and contracting said skirt
to engage behind or beneath a container part
of larger diameter and then reforming the
contracted portion of said spout skirt into
10 tight engagement with the container portion
of lesser diameter.

JOHN M. HOTHERSALL.

15

20

25

30

35

40

45

50

55

60

65