

No. 857,736.

PATENTED JUNE 25, 1907.

J. G. HODGSON,
PROCESS OF MAKING SHEET METAL PRESERVING CANS.

APPLICATION FILED MAR. 18, 1907.

2 SHEETS—SHEET 1.

Fig. 1

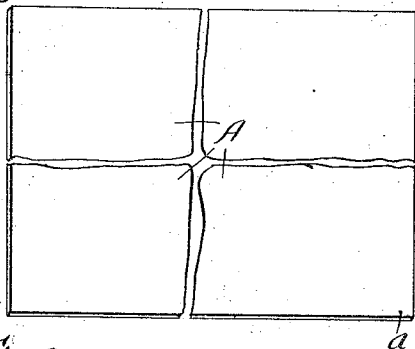


Fig. 2

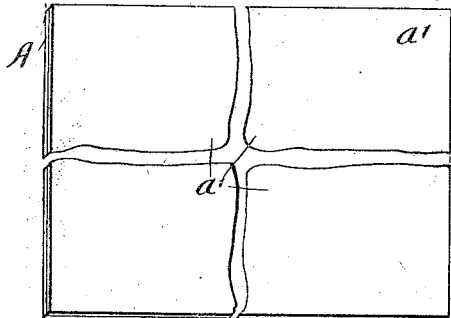


Fig. 3

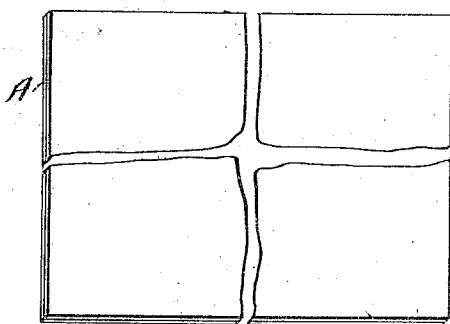


Fig. 4

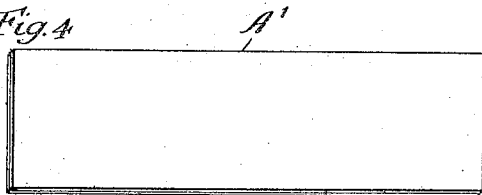


Fig. 5

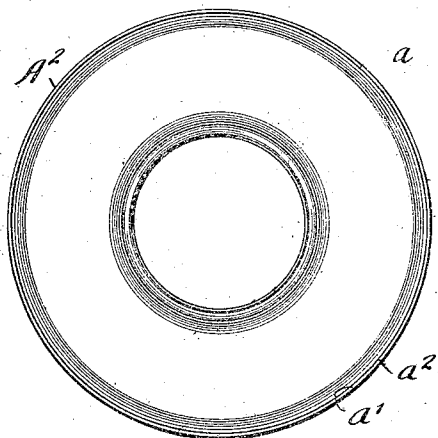


Fig. 6

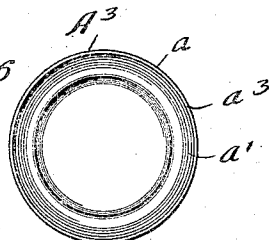
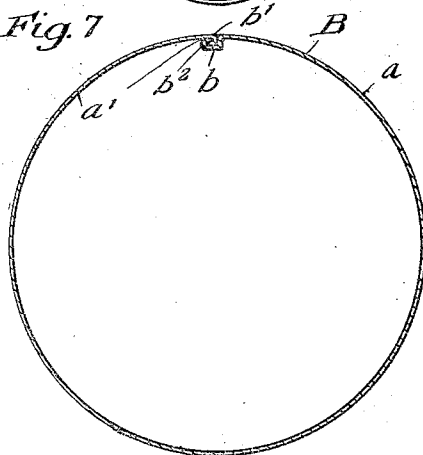


Fig. 7



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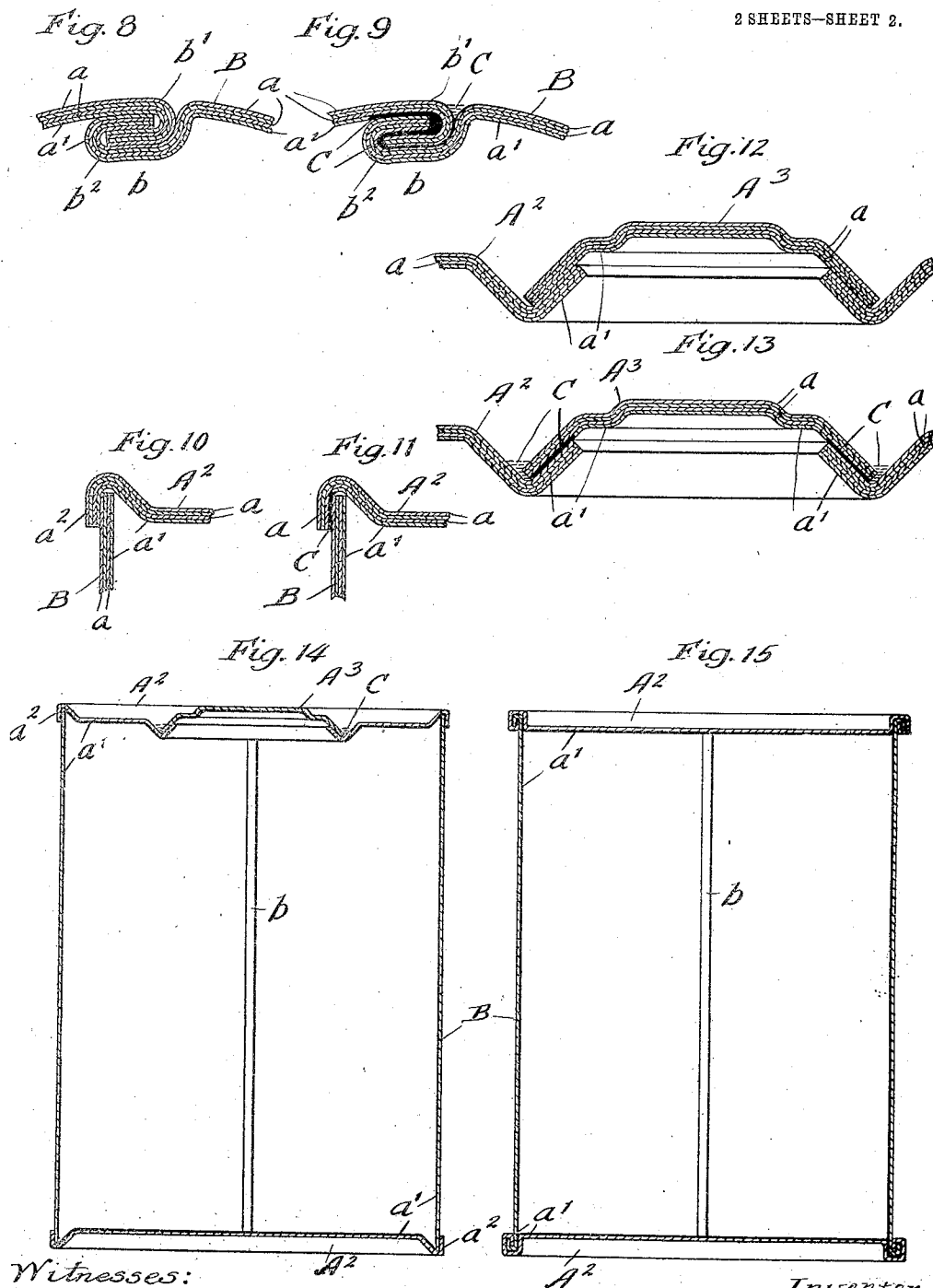
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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PROCESS OF MAKING SHEET-METAL PRESERVING-CANS.

No. 857,736.

Specification of Letters Patent.

Patented June 25, 1907.

Application filed March 18, 1907. Serial No. 382,813.

To all whom it may concern:

Be it known that I, JOHN G. HODGSON, a citizen of the United States, residing in Maywood, in the county of Cook and State of Illinois, have invented a new and useful Improvement in the Art or Processes of Manufacturing Sheet-Metal Preserving-Cans with Lacquer or Protective Coatings, of which the following is a specification.

Sheet metal preserving cans having lacquer or protective coatings on the inside to keep the food or other products within the can from direct contact with the tin plate and with the solder upon the inside of the can at the soldered seams or joints thereof, have heretofore been made either by spraying or flowing over the inside surface of the can (after the can is made) the lacquer or protective coating, or else by coating the sheets or blanks from which the can bodies and can heads are made, while in the flat, with lacquer or other protective coating excepting at the narrow strips or portions thereof which form the seams where the tin plate is left free from lacquer or protective coating, so that the meeting surfaces may be soldered together. Both of these old methods or processes are, however, slow and expensive in operation, and result in the production of defective and unsatisfactory lacquered or protective coated cans; the first because it is a slow and expensive operation to spray or flow a coating film over the entire interior surface of a can after it is made up, and also a very tedious, difficult and expensive operation to properly dry or bake the coating on the interior of the can; and the coating thus produced is frequently imperfect, however carefully the work may be done, owing to imperfections from improperly covering the entire interior surface of the can with the coating, or from the coating material collecting at or flowing to certain parts of the interior surface of the can, thus denuding other portions and causing the coating to be so thick at portions as to imperfectly dry and harden. And the second or other method is slow, tedious, difficult and expensive, because of the difficulty incident to applying the lacquer or protective coating to certain portions of the blank while leaving other portions or narrow seam strips uncoated; and because in the subsequent operation of soldering the can seams the heat of the soldering operation burns and blisters off the lac-

quer or protective coatings heretofore in use at the portions of the can adjacent to the soldered seams, frequently leaving strips a half inch or more in width, not only substantially free of any protective coating, but the burned, blistered and discolored coating material frequently forms a black or brown powder, very objectionable to quality and appearance of the food products preserved in the can. And in the preserving cans heretofore in use having lacquer or protective coatings on the inside, the coating has been of such character as to impart a more or less disagreeable odor, taste or flavor to the goods in the can.

The object of my invention is to provide a simple and efficient method or process of rapidly and cheaply manufacturing preserving cans having soldered seams and inside protective coatings, and by means of which the objections heretofore experienced may be entirely obviated or overcome, and the cans be uniformly produced with perfect or complete interior protective coatings of an efficient, durable, odorless, tasteless, flavorless, harmless and sanitary character.

My invention consists in the method or process I have discovered for practically accomplishing this object or result as herein described; that is to say it consists in first coating the sheets of tin plate from which the can bodies and can heads are to be cut and formed throughout their whole surface on one or both sides with a protective lacquer coating, which will also operate as a flux in the subsequent soldering operation, the same consisting preferably of boiled linseed oil one part and turpentine two or three parts; then baking or drying the coated sheets, preferably in an oven or drier, at a temperature of about 300 or 400° Fht., for a period of two or three hours; then cutting and forming from such protective coated sheets of tin plate the can bodies and can heads and can caps, in the usual manner; then fluxing and soldering the side seam of the can body; and then applying the can heads to the can body and fluxing and soldering the heads thereon; and, finally, after the cans have been filled, applying and soldering thereto the can caps. In cases where the cans are of the open top variety and have the can heads secured to the can bodies not by soldered seams but by folded seams, the step of soldering the heads on the can body is omitted, as well as the step of soldering the cap in the top head after the

can is filled, as such open top cans have no filling holes in their tops nor caps for closing such filling holes.

I have discovered that by coating the
5 sheets of tin plate in the flat with a protective
coating of boiled linseed oil, suitably cut or
thinned with turpentine or other solvent or
drier, and suitably baking or drying the
coated sheets, an absolutely harmless, taste-
10 less, sanitary, flavorless and odorless hard,
dry, solid and firmly adherent protective
coating is produced, which will not be burned,
blistered, cracked or injured by the heat of
the subsequent soldering operation, and that
15 such protective coating, although extending
throughout the seam or contacting surfaces
to be united by the solder, will not in any
way interfere with the soldering operation,
or the strength, perfection or hermetic tight-
20 ness of the soldered seam, but that this baked
linseed oil protective coating will itself, on
the contrary, act in a measure as a flux to
facilitate the soldering operation, and insure
the strength and perfect hermetic tightness
25 of the soldered seam. In addition, I have
discovered that while this dried or baked pro-
tective coating of linseed oil while apparently
facilitating the perfect sweating or capillary
flowing of the solder into and through the
30 seam, or between the contacting surfaces
thereof, that it at the same time substan-
tially prevents the crawling or flowing of the
solder into or upon the interior surface of the
can adjacent to the seam, as has always here-
35 tofore taken place to a greater or less extent
in soldering the seams of cans. For ex-
ample, heretofore in soldering the side seams
of can bodies there is frequently a strip ex-
tending from end to end of the can body a half
40 inch or more in width on the inside surface of
the can body adjacent to the side seam which
is smeared or coated with solder, and liable to
come in contact with and poison or injure
the food products in the can. This objec-
45 tion or defect is also overcome by my inven-
tion as the baked linseed oil protective coat-
ing prevents the solder from flowing and be-
coming smeared or coated over the inside
surface of the can body adjacent to the side
50 seam. And in my invention this same ad-
vantage also applies in soldering the end
seams of the can which unites the can heads
to the can body.

In practicing my invention the sheets of
55 tin plate from which the bodies, heads and
caps of the cans are to be made, are first
coated with a thin film of a flux-acting pro-
tective coating, preferably composed of
boiled linseed oil and turpentine. The coat-
60 ed sheets of tin plate are then placed in an
oven or drier and subjected to a drying or
baking temperature, preferably of from 300°
to 400° Fht. for two or three hours, this ac-
tion expelling the volatile turpentine, oxidiz-
65 ing the linseed oil and producing a solid, con-

tinuous, homogeneous, hard, dry, firmly ad-
herent, odorless, tasteless and flavorless pro-
tective coating on the sheets of tin plate, and
having the further characteristic or quality
of acting, in a measure, as a flux, or of not
70 interfering with, the soldering, or with proper
and effective sweating of solder into the seam
or between contacting surfaces of such pro-
tective coated tin plate which form the mem-
bers of the seam to be soldered or flowed. 75
The protective coated sheets of tin plate are
then cut and formed up into can bodies and
can heads, the side seams of the can bodies
are then soldered, the same being first prefer-
ably fluxed, one or both can heads are then
80 applied to the can body, the end seam or
seams are then soldered, being first prefer-
ably fluxed, and then, after the can is filled,
the can cap is applied and soldered in place.
If the cans are of the open top kind without
85 caps, instead of the annular top kind with
caps, the caps are, of course, omitted. And
if the cans are of the kind in which the heads
are secured to the can body by double or
other folded seams, instead of soldered there-
90 to, the can heads and can bodies are fur-
nished with suitable seaming flanges and the
soldering operation for the head is omitted.

To enable my invention to be more clearly
understood I have in the accompanying 95
drawing, forming a part of this specification,
illustrated tin plate sheets and the parts of
cans formed therefrom in successive steps of
manufacture according to my invention.

In said drawing Figure 1 is a perspective 100
view of a tin plate sheet before the protective
coating is applied thereto; Fig. 2 is the same
after the protective coating is applied; Fig.
3 is the same after being baked; Fig. 4 shows
a can body blank as cut from the sheet; Fig. 105
5 shows a can head as cut and formed up
from the sheet; Fig. 6 is a can cap; Fig. 7 is a
cross sectional view of a can body before the
side seam is soldered; Fig. 8 is an enlarged
cross section of the side seam before solder-
110 ing; Fig. 9 is a similar view after the side
seam is soldered; Figs. 10 and 11 are en-
larged sections of the end seam before and
after soldering. Figs. 12 and 13 are en-
larged views of the cap seam before and after
115 soldering. Fig. 14 is a section of the can
complete. Fig. 15 is a similar view of an
"open top" can, or one in which the cap is
omitted and the top and bottom heads se-
cured by double or other folded seams with-
120 out solder.

In the drawing A represents the tin plate
sheet having the customary tin coating *a* on
its side, *a'* is the protective coating of linseed
oil and turpentine, the same after being 125
baked or dried being hard, dry, firmly ad-
herent, tasteless, odorless, flavorless, harmless
and sanitary, and flux-acting thin coating or
film of linseed oil, the turpentine being chiefly
driven off by the drying or baking operation. 130

A¹ represents the can body blank and A² the can head, and A³ the can cap, cut and formed from the tin plate sheet A, and having the protective coatings extending to the extreme marginal edges of the can body, can head and can cap blanks.

B is the can body formed from the blank A¹, and having the customary side seam b, preferably a lock seam, and composed of oppositely turned, interlocked and compressed hooks or edge folds b¹ b² with the protective coating a¹ extending into or through the seam. The can head A² has the customary integral flange a² with the protective coating a¹ covering the same. The can cap A³ has the customary flaring flange a³ with the protective coating extending over or covering the same.

As the protective coating a¹ is of a flux-acting character, or of a character that does not interfere with soldering, the interposed protective coating a¹ between the folds or members of the seam does not interfere with the proper and perfect union of the seam members by the solder C. Before soldering the side seam of the can body and the end seams of the can, the seams, or the individual members or parts thereof to be joined are fluxed. For fluxing the seams I prefer to use an acid flux, although a rosin flux may be used. If rosin flux is used it should be cut in turpentine instead of in alcohol. The seams may be soldered in the usual way customarily employed in soldering cans the bodies and heads of which are of tin plate without any protective coating of any kind.

The soldering is done from the outside; that is to say in soldering the side seam the solder is applied to the outside of the seam, and if a soldering tool is employed to aid in sweating the solder into the seam, it is also applied to the outside of the can. If the flange is applied after the parts, folds or members of the seam are assembled, the flux is also applied to the outside of the seams. If desired however, the flux may be applied to one or both parts to be joined before the same are assembled. In the soldering the thin film or coating of linseed oil between the members of the seam, under action of the heat flux and solder apparently acts much the same as a thin film of still liquid acid, rosin or other flux acts in an ordinary soldering operation. At least my experiments have successfully demonstrated that this thin, dry, hard, solid protective coating of linseed oil interposed between the members of the seam does not interfere with the production of strong, perfect and hermetically tight soldered seams or joints.

In the drawing it will be understood that the thickness of the tin plate and of the protective coating is greatly exaggerated for clearness of illustration.

I claim:

1. The improvement in the art or process of manufacturing sheet metal preserving cans having hard, solid, firmly adherent, tasteless and odorless protective coatings on the inside, consisting in first coating sheets of tin plate in the flat throughout on one side with a thin film or coating of boiled linseed oil and turpentine, then baking and drying the same, then cutting and forming the sheets into can bodies and can heads, then soldering the side seam of the can body, then applying the can heads to the can bodies, and finally soldering the end seams of the cans, substantially as specified.

2. The improvement in the art or process of manufacturing sheet metal preserving cans with hard, solid, firmly adherent protective coatings on the inside, consisting in first coating sheets of tin plate in the flat throughout on one side with a flux-acting coating material, then baking and drying the same, then cutting and forming can bodies and can heads from such sheets, then soldering the side seam, and subsequently applying the can heads to the can bodies, substantially as specified.

3. The process of manufacturing can bodies having protective coatings, consisting in first coating sheets of tin plate in the flat with a flux-acting protective coating, and then cutting therefrom can bodies with the protective coating extending to the extreme edges of the can body blanks, then forming blanks into can bodies and soldering the side seams, substantially as specified.

4. The process of manufacturing can bodies having protective coatings, consisting in taking a can body blank in the flat having a non-metallic protective coating thereon extending to the extreme edges thereof, forming the blank into a can body with the protective coating extending into the seam, and soldering its side seam, substantially as specified.

5. The process of manufacturing protective coated can bodies, consisting in taking a can body blank having a hard, dry, firmly adherent flux-acting non-metallic protective coating extending over the seam portion of the can body blank, forming the blank into a can body with the protective coating extending into the seam, and soldering the side seam thereof, substantially as specified.

6. The process of making protective coated can bodies, consisting in taking a can body blank having a hard, solid, firmly adherent non-metallic protective coating extending over the seam portion of the blank, forming the same into a can body with the protective coating extending into the seam and soldering the side seam thereof, substantially as specified.

7. The process of making protective coated can bodies, consisting in taking a can

body blank having a hard, dry, solid continuous linseed oil protective coating extending throughout the seam portion of the blank, forming said blank into a can body with the protective coating extending into the seam, and soldering the side seam, substantially as specified.

8. The process of making protective coated can bodies, consisting in taking a can body blank having a hard, dry, solid continuous linseed oil protective coating extending throughout the seam portion of the blank, forming said blank into a can body with the protective coating extending into the seam, and fluxing and soldering the side seam, substantially as specified.

9. The process of making protective coated cans, consisting in applying to a can body a can head having a hard, dry, non-metallic protective coating on its inside extending over the seaming flange and then soldering the end seam at the contacting inner surface of the coated seaming flange, substantially as specified.

10. The process of making protective coated cans with soldered end seams, consisting in applying to the can body a can head having a non-metallic protective coating extending over the inside surface of its flange and then soldering the end seam at the contacting inner surface of the coated seaming flange, substantially as specified.

11. The improvement in the art or process of manufacturing sheet metal preserving cans having hard, solid, firmly adherent, tasteless and odorless protective coatings on the inside, consisting in first coating sheets of tin plate in the flat throughout on one side with a thin film or coating of boiled linseed oil and turpentine, then baking and drying the same, then cutting and forming the sheets into can bodies and can heads, then soldering the side seams of the can body, then applying the can heads to the can bodies, soldering the end seams of the cans, and then, after the cans have been filled applying and soldering to the top heads of the cans can tops having a like preservative coating on the inside thereof, substantially as specified.

12. The improvement in the art or process of manufacturing sheet metal preserving cans with hard, solid, firmly adherent protective coatings on the inside, consisting in first coating sheets of tin plate in the flat throughout on one side with a flux-acting coating material, then baking and drying the same, then cutting and forming can bodies and can heads from such sheets, then soldering the side seams, subsequently applying the can heads to the can bodies, and then after the cans have been filled applying and soldering to the top heads of the cans, can caps having a like protective coating on the inside thereof, substantially as specified.

13. The process consisting in applying to a

can a can cap having a hard, dry, non-metallic protective coating on its inside extending over the seam portion of the cap, and then soldering the cap on the can at the inner contacting coated seam portion of the cap, substantially as specified.

14. The process consisting in applying to cans having a hard, dry, non-metallic protective coating on the inside thereof, a can cap having a dry, hard, protective coating on its inside extending over the seam portion thereof, and then soldering the cap to the can at the inner contacting coated seam portion of the cap, substantially as specified.

15. The process of making protective coated cans, consisting in first applying to the tin plate sheets from which the parts of the can are to be formed a protective coating of linseed oil, then drying the coating, then cutting and forming the parts of the can from such coated sheets, then assembling the parts and soldering the parts together, substantially as specified.

16. The process of making soldered seams in cans without causing the solder to coat or smear the inside surface of the cans adjacent to the seam or seams, consisting in first providing the seam portion and adjacent portion of the can with a hard, dry, flux-acting protective coating, and then soldering the seam from the outside, substantially as specified.

17. The process of making soldered seams in cans without causing the solder to coat or smear the inside surface of the cans adjacent to the seam or seams, consisting in first providing the seam portion and adjacent portion of the can with a hard, dry, flux-acting non-metallic protective coating, then fluxing the seam and soldering the seam at the contacting protective coated portion thereof from the outside, substantially as specified.

18. The process of making soldered seams in cans without causing the solder to extend upon the inside surface of the cans adjacent to the seams, consisting in first coating the inside surface of the part or parts to be joined by the solder-seam with a hard, dry, solid, protective coating of linseed oil, and then soldering the seam from the outside, substantially as specified.

19. The process of making soldered seams in cans without causing the solder to extend upon the inside surface of the cans adjacent to the seams, consisting in first coating the inside surface of the part or parts to be joined by the soldered seam with a hard, dry, solid, protective coating of linseed oil, and then fluxing the seam and soldering the same from the outside, substantially as specified.

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