Sept. 12, 1939. W. A. HOWARD ET AL 2,172,819

METHOD OF FABRICATING LINED VESSELS

Filed March 16, 1938 2 Sheets-Sheet 1

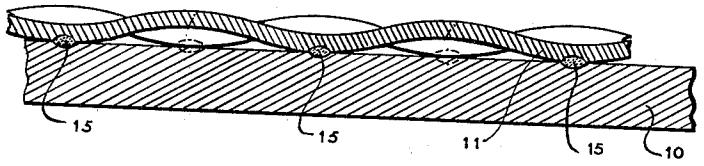


FIG. 3

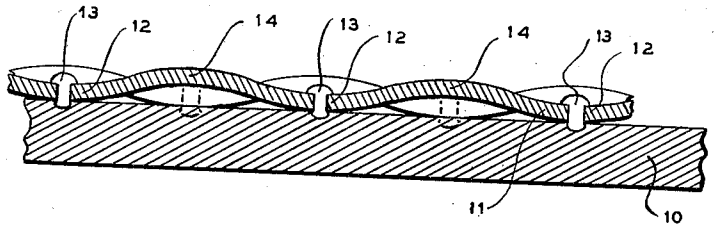


FIG. 2

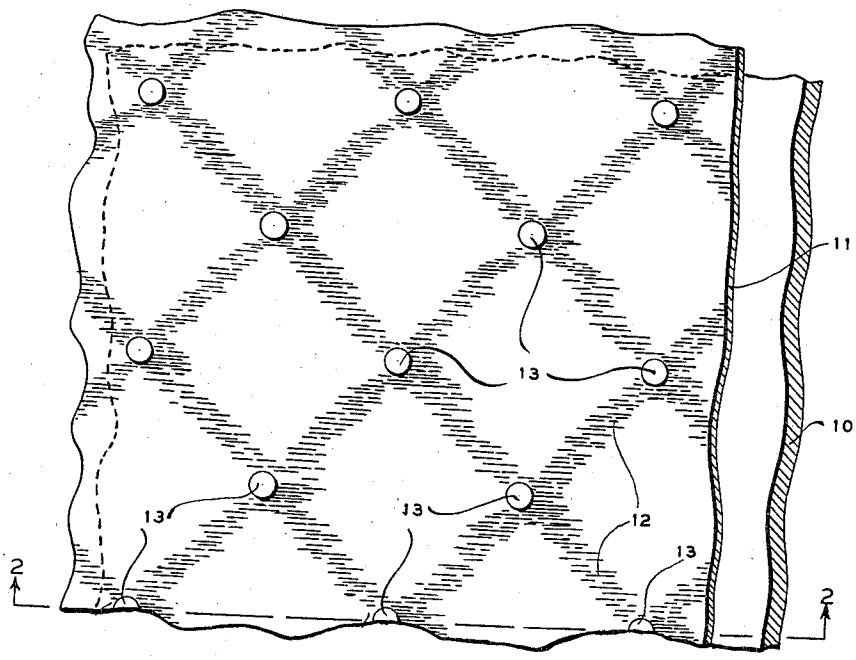


FIG. 1

WAYNE A. HOWARD
TURNER C. SMITH
INVENTORS

Paul W. Prutzman
ATTORNEY

Sept. 12, 1939. W. A. HOWARD ET AL 2,172,819

METHOD OF FABRICATING LINED VESSELS

Filed March 16, 1938 2 Sheets-Sheet 2

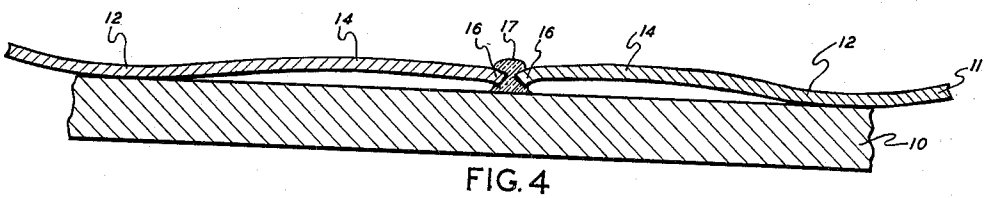


FIG. 4

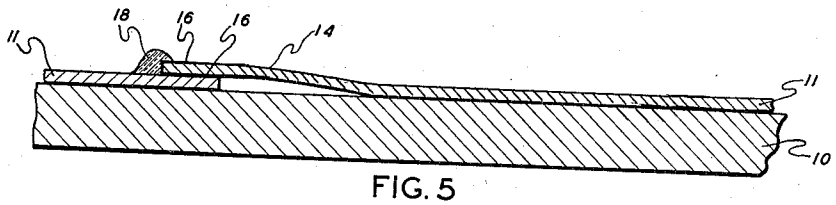


FIG. 5

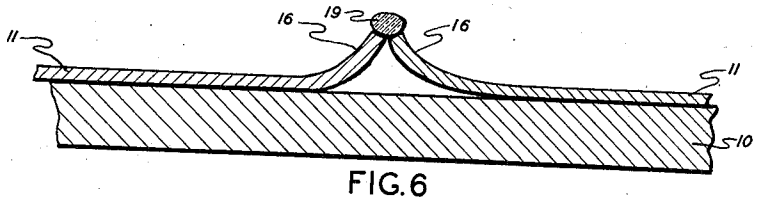


FIG. 6

WAYNE A. HOWARD
TURNER C. SMITH
INVENTORS

Paul W. Pritchard
ATTORNEY

Patented Sept. 12, 1939 2,172,819

UNITED STATES PATENT OFFICE

2,172,819

METHOD OF FABRICATING LINED VESSELS

Wayne A. Howard, Whittier, and Turner C. Smith, Huntington Park, Calif., assignors to Socony-Vacuum Oil Company, Incorporated, New York, N. Y., a corporation of New York

Application March 16, 1938, Serial No. 196,131

1 Claim. (Cl. 29—162)

This invention relates to the art of lining steel and other metallic vessels with thin sheets of corrosion or erosion resisting metals.

The object of the invention is to provide an improved method of attaching the lining sheets to each other and to the wall of the vessel.

Heretofore it has been the practice to lay the lining sheets flat against the wall of the enclosing vessel, to join individual sheets by butt welds and to spot or button weld the lining sheet to the shell to support it in position. These methods have the disadvantage that while the lining may closely fit the shell (enclosing vessel) so long as the two remain at one common temperature, this fit does not persist during changes of temperature in either direction. Under these conditions differential expansion and contraction tend to, and often do, tear the lining sheets away from each other and from the shell, destroying the value of the lining.

We have discovered that this tendency may be partially or wholly offset by springing the lining sheets away from the inner wall of the shell between the points of attachment of the sheets to the shell and to each other, thus providing resilience sufficient to take up expansion and contraction differences.

The manner in which this method is practiced is illustrated in the attached drawings, in which

Fig. 1 is a view in face of a lining sheet attached to the shell by button welding;

Fig. 2 is a section as on the line 2—2 of Fig. 1;

Fig. 3 is a similar section in which the lining sheet is spot welded to the shell;

Fig. 4 is a section illustrating a method of attaching the lining sheets at once to each other and to the shell;

Fig. 5 is a section illustrating a method of attaching the lining sheets to each other by a lap joint, and

Fig. 6 similarly illustrates a butt joint junction between two lining sheets.

Referring first to Figs. 1 and 2, 10 is a fragment of the wall of the enclosing vessel or shell and 11 a fragment of the lining sheet. This sheet is pressed or otherwise formed into a quilted pattern, with the valleys 12 intersecting at more or less right angles. The sheet is punched or drilled at these intersections and fastened to the shell by button welds 13. When the sheet expands and contracts at a greater rate than the shell to which it is attached, the ridges 14 correspondingly rise and fall without placing any shearing stress on the rivets.

In Fig. 3 the spot welds 15 take the place of buttons 13 of the preceding figures.

The same principle may be applied to the joining of the edges of lining sheets. For example, in Fig. 4 the sheet is bent as at 12 and 14 and the downturned edges 16—16 are brought into closed or open abutting relation on the surface of the shell, the two edges being joined to the shell and to each other by the weld.

In the form of Fig. 5 the edges 16—16 are overlapped and joined by the weld 18, a fold 14 being provided in one or both of the sheets to provide resilience.

In the form of Fig. 6 the edges 16—16 are upturned and abutted and are joined by the weld 19, the curvature at 16 providing the necessary elasticity.

We claim as our invention:

The method of lining a metallic vessel with sheets of a different metal which includes: producing throughout said sheets smoothly sinuous curvature having two sets of parallel valleys, the valleys of one set intersecting the valleys of the other set at substantially right angles, and the low points of said valleys occurring at the intersections; attaching said sheets to the wall of said vessel at said intersections of valleys; overlapping the margins of adjacent sheets; and welding the edges of the upper sheets to the faces of the lower sheets.

TURNER C. SMITH.
WAYNE A. HOWARD.