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O. HEINDORF.

SOLDERLESS SEAM FOR SHEET METAL VESSELS.

APPLICATION FILED MAR. 18, 1905.

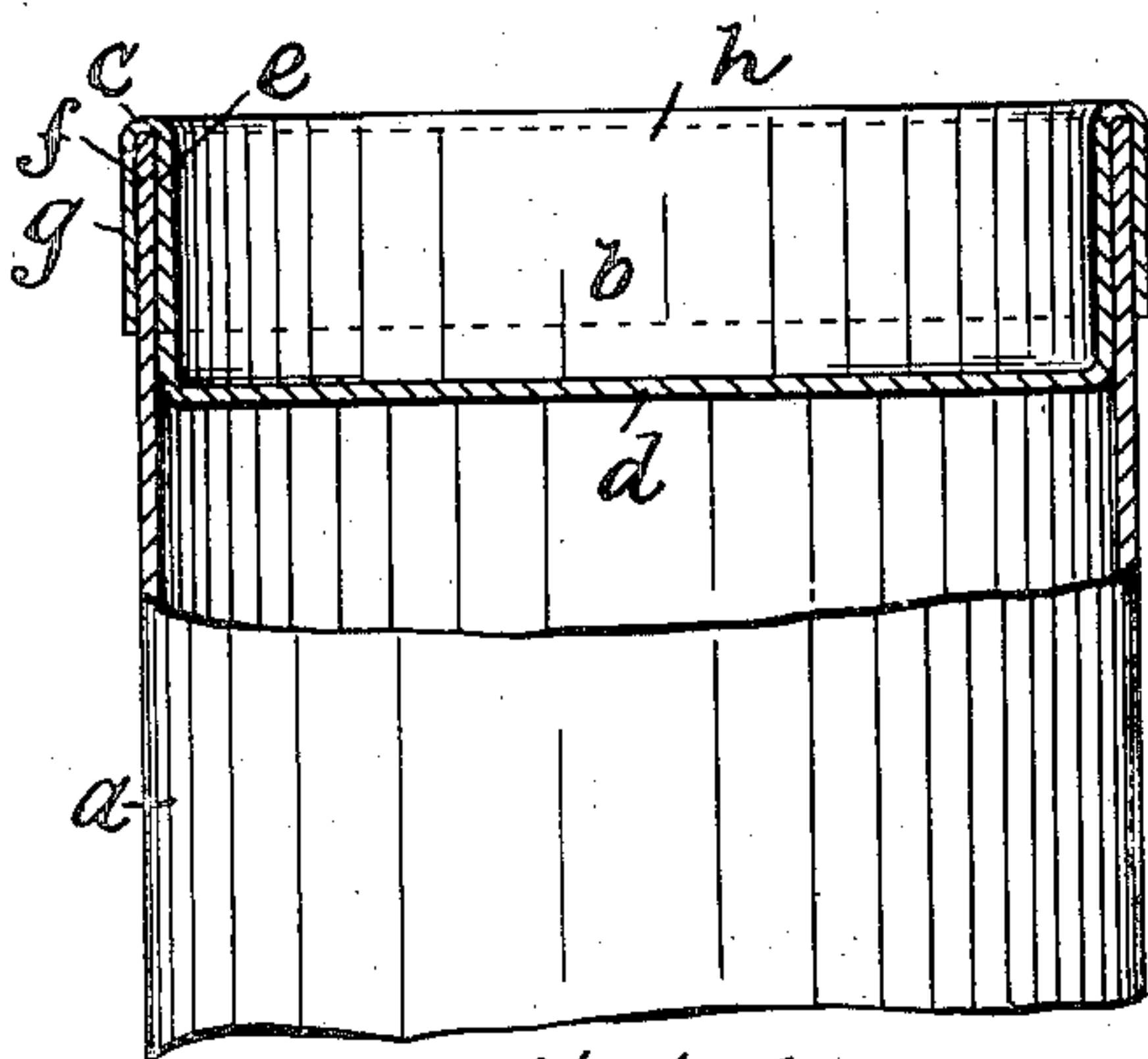


Fig. 1.

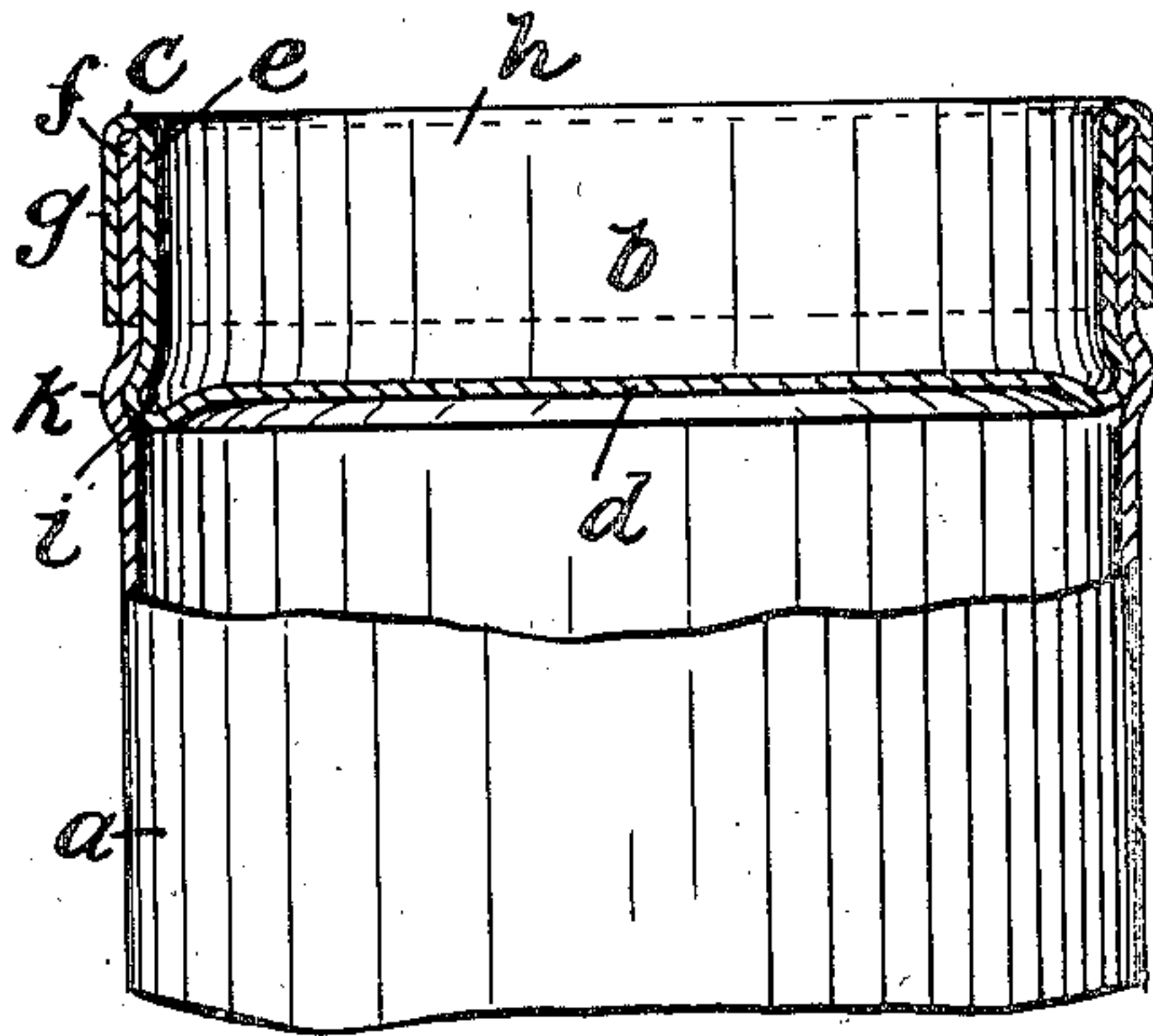


Fig. 2.

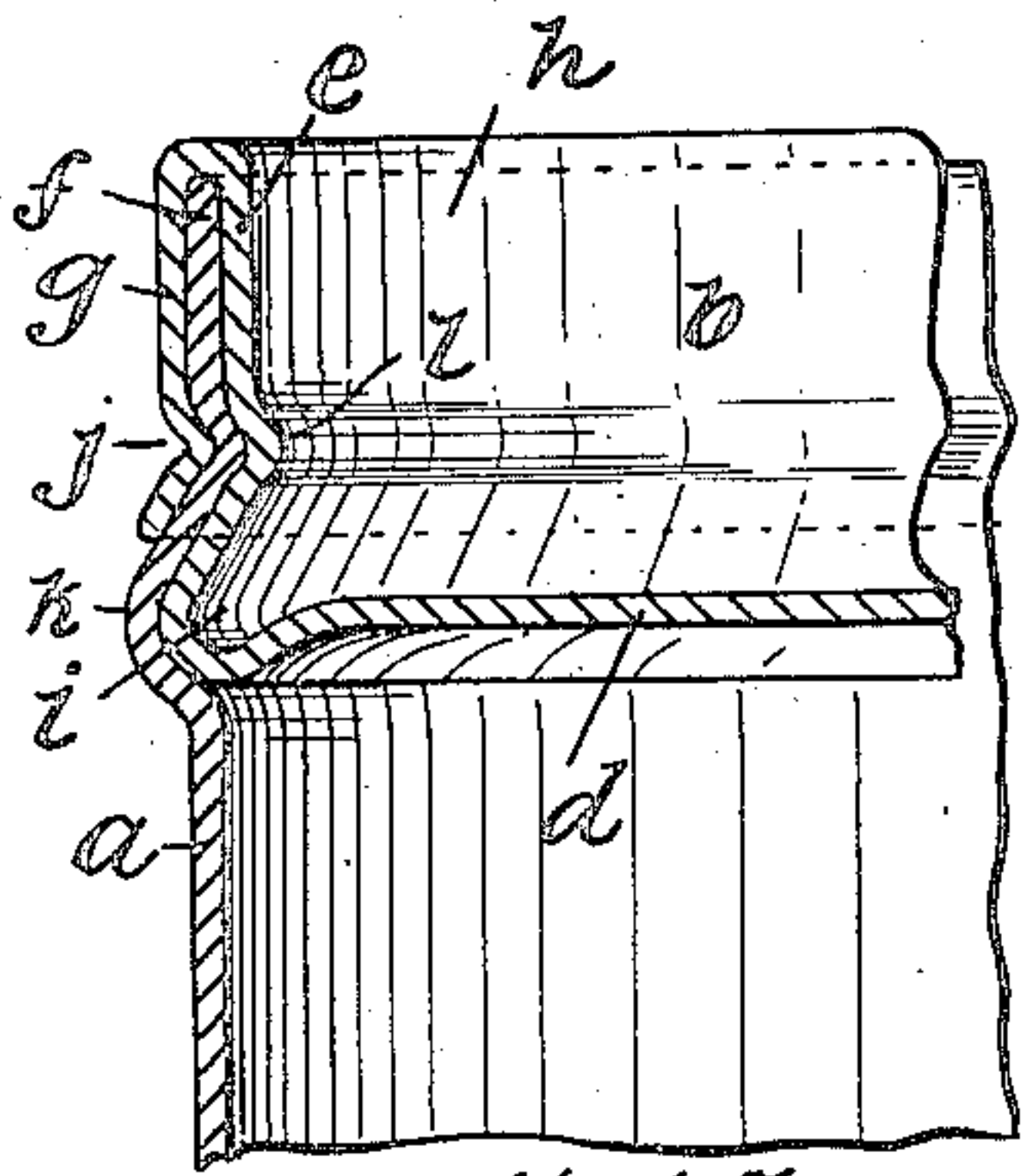


Fig. 3.

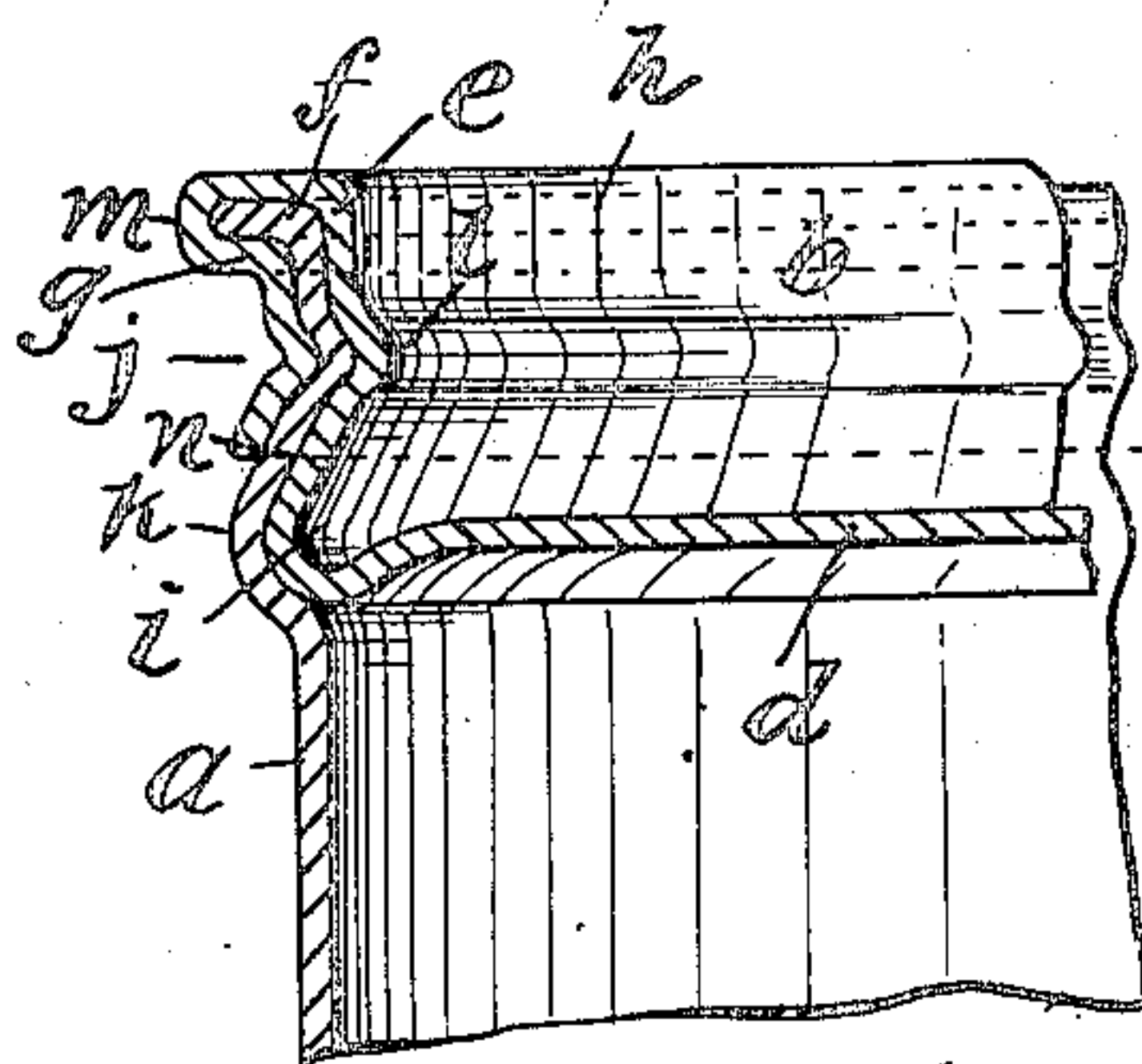


Fig. 4.

WITNESSES:

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# UNITED STATES PATENT OFFICE.

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MESNE ASSIGNMENTS, TO JOHN MURPHY, OF BROOKLYN, NEW YORK.

## SOLDERLESS SEAM FOR SHEET-METAL VESSELS.

No. 818,438.

Specification of Letters Patent.

Patented April 24, 1906.

Application filed March 18, 1905. Serial No. 250,801.

*To all whom it may concern:*

Be it known that I, OSCAR HEINDORF, a subject of the King of Great Britain, residing in the city of London, England, have invented certain new and useful Improvements in Solderless Seams for Sheet-Metal Vessels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to folded or lock seams for sheet-metal vessels, and particularly to seams of this kind having curved or otherwise continuous form and employed as the joint between the body and head of a vessel.

My invention has for its object to provide a hermetically-tight joint or seam with the minimum layers, thus saving metal and wear and tear on the machinery and augmenting the rapidity of the output.

My invention will be found fully illustrated in the accompanying drawings, wherein—

Figure 1 is a view, partly in side elevation and partly in section, of a can body and head assembled ready for the operation involved in producing the hermetic joint or seam. Fig. 2 is a similar view showing the condition of the parts after the first step in this operation. Fig. 3 is a sectional view showing the condition of the parts after the second step in said operation; and Fig. 4 is a view similar to Fig. 3, showing the condition of the parts after the third step.

The seam or joint is perhaps best described with reference to the operation of making it.

$a$  is the body of the can, and  $b$  its head. The head is of that type wherein the perimeter portion  $c$  projects upwardly out of the plane of the body portion  $d$  thereof. In the present instance it stands at right angles to the body portion  $d$  of said head and has its edge rebent downwardly, Fig. 1. Thus formed, the head and body are assembled by fitting the end of the body  $a$  into the rebent of the head, so that the end or edge portion of the body and the rebent perimeter portion of the head form three concentric layers  $e, f,$

and  $g$ , together making a flange  $h$  on the can. A continuous groove  $i$  is now formed in this flange in one plane and another continuous groove  $j$  formed therein in another plane, said grooves being the one inside and the other outside of the flange. This grooving is of such character that it preferably affects all the thicknesses of the flange involved, making thus a bead  $k$  ( $l$ ) for each groove on the opposite surface of the flange. Having thus grooved the flange, its extremity is bent outwardly to produce a reinforcing bead or rim  $m$ , which both gives strength and a finish to the can and preserves the integrity of the joint against the effects of blows or jars. The grooving, it will be observed, has the effect of, in the one instance, expanding the flange for a limited width annularly or continuously and of, in the other instance, similarly contracting it.

It is preferred that the groove  $j$ , which is formed in the outside of the flange, be above the groove  $i$ , which is formed in the inside of the flange, for then the continuous annular portion  $n$ , which stands between them, will be of truncated-cone shape with its smaller diameter uppermost, with the consequence that upon the bending over of the edge of the flange to form the rim  $m$  the portions of the layers comprised in the annulus  $n$  will wipe upon each other, and so act to further the closing up of interstices or possible leak-openings.

It will be observed that the groove  $i$  is shown as dipping down below the level of the body portion  $d$  of the head  $b$ . This is not essential in the broad aspect of my invention; but it is of considerable importance and value, in that thus the metal is crowded or forced downwardly to meet the adjacent end of the side seam of the vessel, and thus close off any opening which would otherwise exist at this point.

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

1. A sheet-metal vessel having the edge portions of its body and head arranged as concentric layers and thereby forming a flange on said vessel, said flange being continuously or annularly grooved and thus expanded in one portion and continuously or



annularly contracted in a portion above and remote from the aforesaid portion, substantially as described.

2. A sheet-metal vessel having the edge portions of its body and head arranged as concentric layers and thereby forming a flange on the vessel, said flange being continuously or annularly expanded in one plane and continuously or annularly contracted in another plane and having its edge portion bent over to form a rim or bead, substantially as described.

3. A sheet-metal vessel having the edge portions of its body and head arranged as concentric layers and thereby forming a flange on said vessel, said flange being continuously or annularly expanded in one plane and continuously or annularly contracted in a plane above the aforesaid plane of expansion and having its edge portion bent over to form a rim or bead, substantially as described.

4. A sheet-metal vessel having the edge portions of its body and head arranged as concentric layers and thereby forming a flange on said vessel, said flange being continuously grooved on the inside and said groove being depressed below the level of the body portion of said head, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 24th day of February, 1905.

OSCAR HEINDORF.

Witnesses:

WM. D. BELL,  
JOHN W. STEWARD.