June 2, 1936. A. E. JESSER 2,043,101

METAL SPUT AND METHOD OF ATTACHING THE SAME TO SHEET METAL CONTAINERS

Filed Oct. 11, 1933 2 Sheets-Sheet 1

Fig. 1.

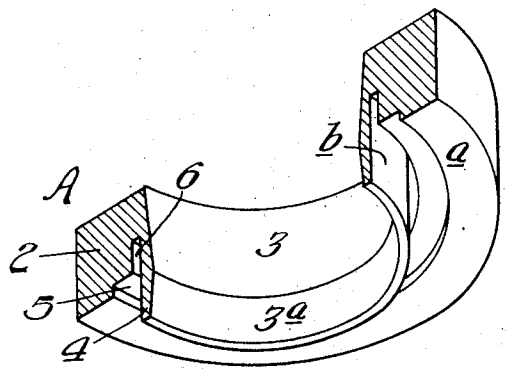


Fig. 2.

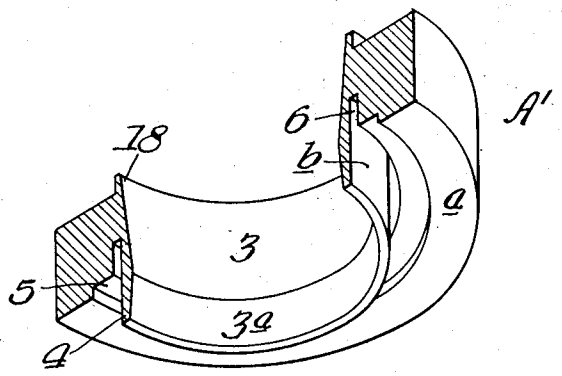


Fig. 8.

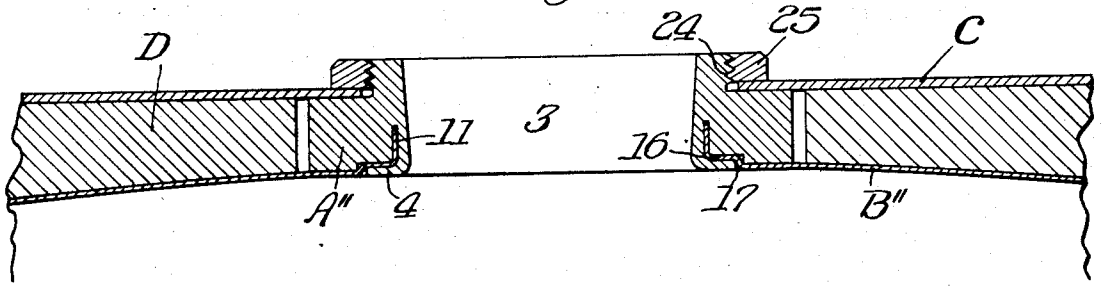
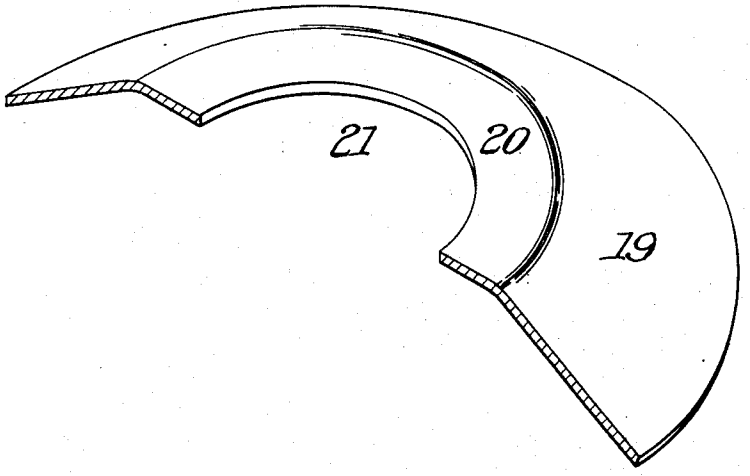


Fig. 7.



INVENTOR.
Albert E. Jesser
BY Clarke & Doolittle
ATTORNEYS.

June 2, 1936. A. E. JESSER 2,043,101

METAL SPUT AND METHOD OF ATTACHING THE SAME TO SHEET METAL CONTAINERS

Filed Oct. 11, 1933 2 Sheets-Sheet 2

Fig. 3.

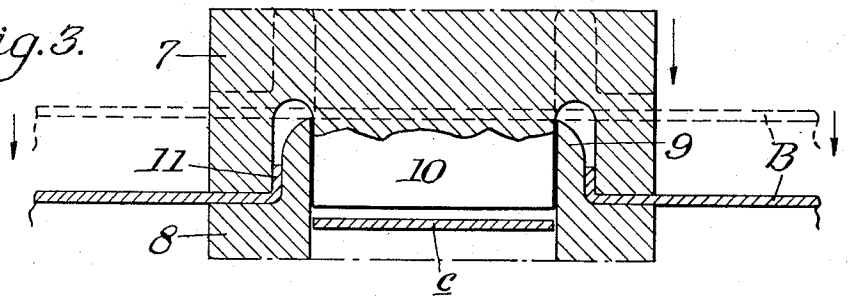


Fig. 4.

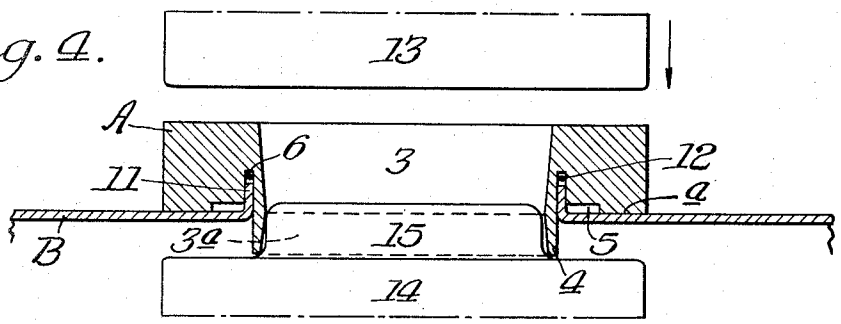


Fig. 5.

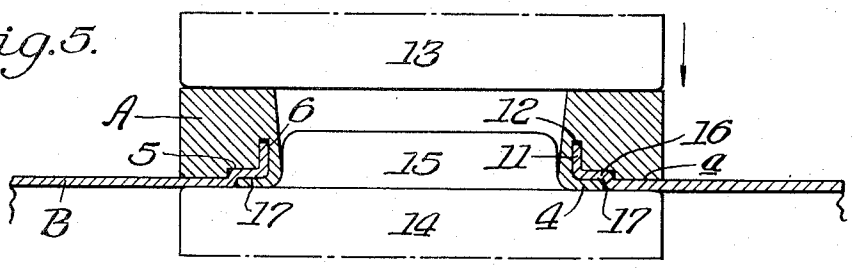
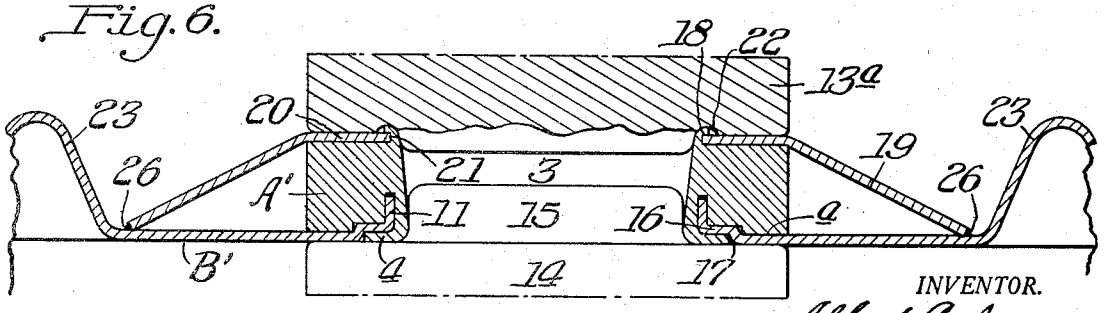


Fig. 6.



INVENTOR.
Albert E. Jesser
BY Clarke & Doolittle
ATTORNEYS.

Patented June 2, 1936 2,043,101

UNITED STATES PATENT OFFICE

2,043,101

METAL SPUT AND METHOD OF ATTACHING THE SAME TO SHEET METAL CONTAINERS

Albert E. Jesser, Vandergrift, Pa., assignor to Pittsburgh Steel Drum Company, Pittsburgh, Pa., a corporation of Pennsylvania

Application October 11, 1933, Serial No. 693,089

11 Claims. (Cl. 29—148.2)

This invention relates to improvements in metal sputs or similar fittings, and to the manner of applying and securing the same to sheet metal containers and the like.

For example, in making a metal drum, barrel or other container, a bung is necessary for filling and emptying, and accordingly a separate metal sput or bunghole fitting is employed. Such fitting is generally of heavier metal than the body of the container and is therefore difficult of simple and inexpensive attachment.

Welding has been generally employed for this purpose, but due to the relative thicknesses of the metals, difficulty has been encountered in obtaining a perfect weld without impairing the strength of the sheet metal.

My invention has in view to provide a simple and efficient mechanical joint between such a sput or fitting and the wall of a sheet metal container, whereby to produce a leak-proof sealed connection therebetween; to provide a practical fitting construction inexpensive to manufacture and having novel interfitting and interlocking engagement with the container wall; to provide a connecting joint between said sput and container disposed flush with the container wall to give unobstructed fluid passage therethrough; and to provide a method of connecting and securing said sput and container with a minimum number of operations.

The invention may be more readily understood from the following description taken in connection with the accompanying drawings, wherein:

Fig. 1 is a sectional perspective view of a sput or bunghole fitting constructed in accordance with my invention;

Fig. 2, a view similar to Fig. 1 showing a modified construction;

Figs. 3 to 5 inclusive, sectional views respectively illustrating the successive steps in the method of securing the fitting of Fig. 1 to a single walled sheet metal container or similar article;

Fig. 6, a view similar to Fig. 5, showing the final step in the method of securing the fitting of Fig. 2;

Fig. 7, a sectional perspective view of a reinforcing member employed in connection with the form of Fig. 2; and

Fig. 8, a sectional view showing my invention employed in connection with a double walled sheet metal container or the like.

Referring to the drawings, A designates generally a metal sput or fitting, as for example, a bunghole fitting, for a barrel or drum, preferably made from a malleable metal as by forging. The bunghole fitting illustrated includes an annular ring body portion 2, it being understood that my invention may be applied to similar types of fittings without limitation as to dimension or form. A central bore 3 is provided of tapered form for receiving and frictionally retaining a bung or cork, not shown.

Extending beyond one face *a* of the fitting A and preferably forming an extension 3*a* of the bore of said fitting, I provide a cencentric thin annular lip or ring portion 4, the inner face of which is preferably tapered outwardly toward its terminal edge.

5 designates an annular concentric recess in the face *a* of the fitting, extending laterally inward of and preferably in parallelism with said face. A second concentric recess 6 is formed axially of the fitting, opening inwardly of the recess 5 and extending into said fitting substantially at right angles to said recess 5 and the face *a* of the fitting, the inner wall of said recess 6 being a continuation of the outer surface *b* of the lip 4.

Referring now to Figs. 3 to 5 inclusive, B designates a portion of the wall of a sheet metal barrel, drum or other container to which the fitting A is to be applied. The initial step in the method of my invention consists in forming a fitting-receiving opening in the sheet metal B.

Thus in Fig. 3, 7 and 8 designate a pair of punching and bending dies. As illustrated in dotted lines, the sheet B is placed over the rounded ring portion 9 of the stationary die 8, where it is engaged by the punch 10 of movable die 7 to remove a central disk stamping *c*.

Continued downward movement of the die 7 carries the sheet B over said rounded portion 9 to upset a ring portion or annular lip 11 concentric with the opening formed in said sheet, said lip preferably being finally disposed at right angles to the body of the sheet.

The diameter of the annular lip 11 thus formed is substantially equal to that of the axial recess 6 of the fitting A, and is designed to be entered therein in the manner of Fig. 4, the width of lip and recess being fashioned to provide a snug fit. When so positioned, the body of the sheet B contacts the face *a* of the fitting, and the lip 11 is spaced from the terminal wall of the recess 6. A string gasket 12 or other packing such as lead or cement may be placed between said lip and the terminal wall of the recess if desired.

The fitting and sheet assembled in the manner stated are next placed between a pair of forming dies 13 and 14 as in Fig. 4, with the fitting lip 4 positioned over the mandrel portion 15 of stationary die 14.

Downward motion of the die 13 causes the fitting lip 4 to be forced and rolled outward in a direction parallel to the face *a* of said fitting into contact with the under side of the sheet B, and overlapping the base portion of the container lip 11. Continued closing movement of said die 13 effects an off-setting of a portion 16 of the metal of the sheet B immediately over the recess 5 into the said recess, thereby displacing the lip 11 of the sheet into tight sealing engagement with the terminal wall of its recess 6, or with the contained packing 12 when employed.

The off-setting of the portion 16 of the sheet into its recess 6 is accomplished by the pressure exerted by the dies upon the fitting lip 4, resulting in a lip-receiving depression 17 being formed in the sheet B, conforming to and receiving the said lip 4.

Therefore, as may be seen in Fig. 4, the final closing movement of the dies 13 and 14, provides an off-set and interlocking engagement between the sput or fitting A and the sheet B of simple and efficient construction, the joint thereby provided being effectively clinched and sealed against leakage when subjected to severe hydraulic pressures.

It will be seen that the foregoing construction provides a joint which is disposed flush with the wall of the container or barrel, thereby preventing the trapping or clogging of its contents when emptying the same.

While the construction and method just described may be applied to various shapes and designs of containers, the fitting particularly referred to and illustrated in Fig. 1 is essentially for a single walled container, as for example, an oil drum or a metal beer barrel.

I have found, particularly in the construction and use of beer barrels, that it is desirable to provide additional reenforcing for the sput or bunghole fitting, due to the practice of employing a mechanical bung driving machine which seals the bungs with considerable force. Repeated application of such sealing force is apt to distort the metal of a single walled drum adjacent the bunghole, the resulting indentation causing a corresponding diminution of the gallonage or capacity of the barrel, or possible leakage rupture.

To obviate this condition, I have provided a modified form of fitting A', illustrated in Figs. 2 and 6, similar to that of Fig. 1 and including a second concentric thin annular lip 18 surrounding the bore 3 and extending from the face of the fitting opposite that having the protruding lip 4.

Cooperating with said lip 18 and the main shell B' is a conical reenforcing member 19 formed of sheet metal and having a plane flat upper flange 20 around a central contained opening 21, said flange being adapted to lie over and contact the face of the fitting A' about the lip 18.

The fitting is generally applied as before, with the exception that the upper die 13*a* is formed with an annular groove 22 for contacting and bending the lip 18 over and into holding engagement with the flange 20 of the member 19. As illustrated in Fig. 6, the entire bending and securing operation may be accomplished at the same time.

The base portion of the member 19 is preferably of such diameter as to extend annularly into close proximity with the annular hoops or ribs 23 generally formed in the wall of the barrel or drum B'.

Therefore, by spot welding the member 19 about its base to the barrel B', as at 26, I have provided a reenforcement against inward as well as lateral displacement of the fitting or metal of the drum, the downward and inward force of a bung sealing machine being transmitted to the reenforcing hoops or ribs 23 through the member 19.

The present sput or fitting and method of applying the same may be employed in connection with a double walled drum or container, such a container, for example, as that shown in my pending application, filed July 19, 1933, Serial No. 681,120.

In the event of such use, as illustrated in Fig. 8, the inner wall or container B'' may be formed of relatively thin metal as aluminum, and the outer wall C of heavier sheet metal, spaced apart and having intervening insulation material D therebetween. The sput or fitting A'' employed may be formed of an aluminum forging and is altered as to dimension to receive the smaller gauge metal of the container B''.

In addition, the outer portion of the fitting A'' is threaded at 24 to receive a nut or threaded collar 25, thereby securing the outer container C and fitting A'' together.

I claim:

1. The herein described method of forming a connecting joint between a sheet metal container and a metal fitting, consisting in forming the fitting with an annular lip extending from one face thereof and a pair of recesses in said face, one of said recesses extending axially of the fitting and the other laterally of said face; forming an opening in the wall of the sheet metal container with an extending annular lip; entering said container lip in the axial recess of the fitting; forcing the fitting lip outwardly along and into contact with the container wall into overlapping relation with the base portion of said container lip; offsetting a portion of said container wall into the lateral recess of the fitting and forcing the container lip tightly into said axial recess; and forcing the fitting lip into said offset portion flush with the container wall.

2. The herein described method of forming a connecting joint between a sheet metal container and a metal fitting, consisting in forming the fitting with an annular lip extending from one face thereof and a pair of recesses in said face, one of said recesses extending laterally of said face and the other axially within the fitting at right angles to said lateral recess; forming an opening in the wall of the sheet metal container with an extending annular lip; entering said container lip in the axial recess of the fitting; forcing the fitting lip outwardly along and into contact with the container wall into overlapping relation with the base portion of said container lip; offsetting a portion of said container wall into the lateral recess of the fitting and forcing the container lip tightly into said axial recess; and forcing the fitting lip into said offset portion flush with the container wall.

3. The herein described method of forming a connecting joint between a sheet metal container and a metal fitting, consisting in forming the fitting with an annular lip extending from one face thereof and a pair of recesses in said face,

one of said recesses extending axially of the fitting and the other laterally of said face; forming an opening in the wall of the sheet metal container with an extending annular lip; entering said container lip in the axial recess of the fitting; forcing the fitting lip outwardly along and into contact with the container wall into overlapping relation with the base portion of said container lip and simultaneously forcing said container lip tightly into said axial recess by off-setting a portion of the container wall into the lateral recess of the fitting, and forcing the fitting lip into said offset portion flush with the container wall.

4. The combination with a sheet metal container having an opening in a wall thereof and an annular lip around said opening, of a metal sput having a face thereof engaging the container wall, said sput having an internal axially disposed annular recess receiving said lip, said sput also having a laterally disposed annular recess in said face extending outwardly from said axial recess, an off-set portion in the container wall entered within the lateral recess, and an extended annular lip on said sput entered in said container opening and disposed outwardly within said offset portion of the container wall at an angle to said container lip.

5. The combination with a sheet metal container having an opening in a wall thereof and an annular lip around said opening, of a metal sput having a face thereof engaging the container wall, said sput having an internal axially disposed annular recess receiving said lip, said sput also having a laterally disposed annular recess in said face extending outwardly from said axial recess, an offset portion in the container wall entered within the lateral recess, and an extended annular lip on said sput entered in said container opening and disposed outwardly within said offset portion flush with the container wall at an angle to said container lip.

6. The combination with a sheet metal container having an opening in a wall thereof and an annular lip around said opening, of a metal sput surrounding said lip and having a face thereof engaging the container wall, said sput having a laterally disposed annular recess in said face and an internal axially extending annular recess disposed at right angles to said lateral recess, said axial recess receiving said container lip, an offset portion in the container wall entered within the lateral recess, and an extended annular lip on said sput entered in the container opening and disposed outwardly within said offset portion of the container wall at right angles to said container lip.

7. The combination with a sheet metal container having an opening in a wall thereof and an annular lip around said opening, of a metal sput surrounding said lip and having a face thereof engaging the container wall, said sput having a laterally disposed annular recess in said face and an internal axially extending annular recess communicating with and disposed at right angles to said lateral recess, said axial recess receiving said container lip, an offset portion in the container wall entered within the lateral recess, and an extended annular lip on said sput entered in the container opening and disposed outwardly within said offset portion at right angles to said container lip flush with the container wall.

8. The combination with a sheet metal container having an opening in a wall thereof and an annular lip around said opening, of a metal sput entered within and extending outwardly beyond said opening, said sput having interlocking engagement with the container lip, a reenforcing member extending from the outer face of the sput and secured to the container wall at a point remote from said sput, and means on said sput for frictionally securing the reenforcing member thereto.

9. The combination with a sheet metal container having an opening in a wall thereof and an annular lip around said opening, of a metal sput entered within and extending outwardly beyond said opening, said sput having interlocking engagement with the container lip, a conical reenforcing member extending downwardly and outwardly from the outer face of the sput to the container wall, said member being secured to the container at a point remote from said sput, and an extended lip on said sput for frictionally securing the reenforcing member thereto.

10. A metal sput having a body portion formed with a flat face having a pair of internally formed annular recesses, one of said recesses extending axially within the body and the other recess disposed laterally within said face, and an annular lip extending outwardly beyond said body face for cooperation with the said recesses as and for the purpose described.

11. A one-piece metal sput having a body portion formed with a flat face having a pair of internally formed communicating annular recesses, one of said recesses extending axially within the body and the other recess disposed laterally within said face, and an annular lip extending outwardly beyond said body face for cooperation with the said recesses as and for the purpose described.

ALBERT E. JESSER.