May 3, 1932. E. E. COOPER 1,856,747

CONTAINER WALL AND BUSHING FITTING IN COMBINATION THEREWITH

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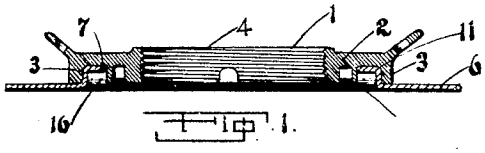

Fig. 1.

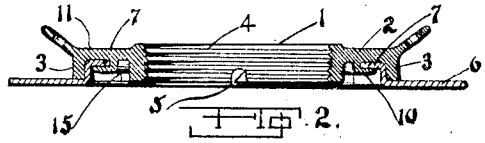

Fig. 2.

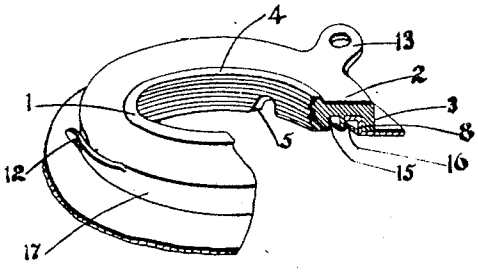

Fig. 3.

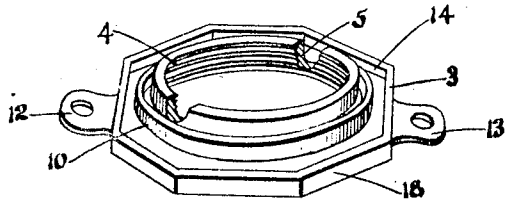

Fig. 4.

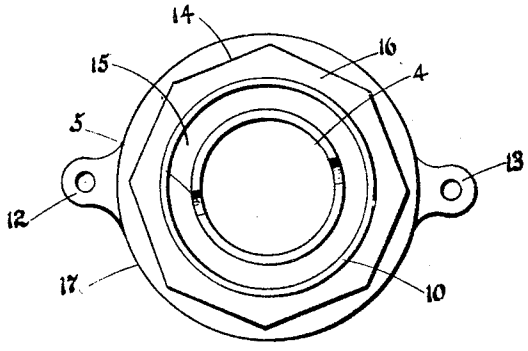

Fig. 5.

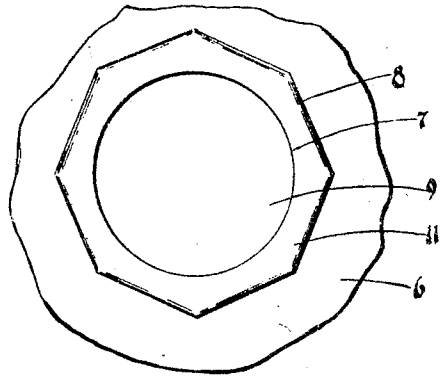

Fig. 8.

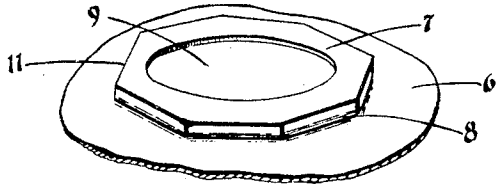

Fig. 6.

Fig. 7.

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UNITED STATES PATENT OFFICE

EARL E. COOPER, OF DECATUR, ILLINOIS, ASSIGNOR TO CHAMBERS, BERING, QUINLAN COMPANY, OF DECATUR, ILLINOIS, A CORPORATION

CONTAINER WALL AND BUSHING FITTING IN COMBINATION THEREWITH

Application filed February 27, 1931. Serial No. 518,772.

My invention relates to bushings fitted into supporting walls and more especially to container bung bushings in combination with metallic container walls and also includes the method of combining the wall and bushing.

The principal object of my invention is to provide a bung bushing in combination with a container wall of sheet material in a manner adapted to prevent turning of the bushing in the wall or undue leakages between the container wall and bushing.

A further object of my invention is to provide a novel and simple combination of container wall and bung bushing that is both practical to use and economical to manufacture.

A further object of my invention is to provide a bung bushing adapted to be made relatively shallow and formed by a forging operation and to provide as an integral part thereof not only means for preventing the forged bushing from turning in the container wall but means for holding the bushing in place when in use.

A further object of my invention is to provide a bung bushing for metallic containers adapted to be secured to the container wall in a substantial manner and by simple and economical manufacturing operations.

In order to understand the invention, reference will be had to the accompanying drawings illustrating the same, and the novel features thereof will be distinctly pointed out in the appending claims.

In the several views of the drawings, similar characters of reference are used to indicate corresponding parts.

In the drawings:

Figure 1 is a vertical half section of my invention, with the bushing merely seated, but not clamped on the container wall.

Figure 2 is a view similar to Figure 1 but showing how the bushing engages the container wall.

Figure 3 is a perspective of a cut-away view showing the details of what is shown in Figure 1.

Figure 4 is a perspective of a bottom view of my bushing member.

Figure 5 is a bottom view of my bushing as shown in Figure 4 except that the perimeter of the bushing as shown in this figure is round with the inner side of the outer wall portion shown to be non-circular.

Figure 6 is a perspective of a portion of the container wall including the raised boss part over which the bushing normally is secured.

Figure 7 is a vertical half section of the boss portion of the container wall.

Figure 8 is a top view of the raised boss on the container wall which is illustrated in perspective in Figure 6.

Referring to the drawings and the details of construction of my invention which the drawings disclose, I provide a threaded bung bushing 1 having a horizontally disposed integral encompassing flange 2 having an outer portion 3 projecting down with its inner wall surfaces polygonal or non-circular in form with portions thereof at different distances from the center of the bushing.

Bushing threads 4 are adapted to accommodate a container bung while notches 5 in the lower end of the bushing are for permitting the container to be more completely drained of its contents.

The outer down projecting rim part 3 of flange 2 has its inner wall surfaces 14 non-circular in shape to prevent turning of the bushing in the container wall as the bushing fits down over a non-circular raised portion of the container wall.

In constructing my invention the container wall 6 is formed into a raised boss 11 defining an annular flat ring portion 7 and a polygonal or otherwise non-circular perimeter 8 about a hole 9 in the top surface 7 of boss 11.

In the manufacture of my bushing by a forging operation I have formed not only recesses 15 and 16 beneath flange 2 but have formed also a ring 10 extending down from the under side of flange 2 as well as the outer wall portion 3 of flange 2.

The outer diameter of this ring 10 is slightly less than the inner diameter of the flat inner ring portion 7 of the raised boss in container wall 6 and is adapted, when fastening the bushing to the container wall, to substan-

tially clinch the under side of the flat ring portion 7 of boss 11 as is shown in Figure 2; while at the same time that this clinching is done, the inner sides of the outer wall portion 3 of flange 2 are pressed down over the non-circular perimeter 8 of the boss 11 so as to firmly encompass and engage the same to prevent the bushing from turning in the container wall, and to prevent leakages of the fluid contents of the container from between the bushing and container wall.

It will be observed that the outer perimeter 17 of this wall portion 3 of flange 2 may be made round or non-circular as desired without effecting the efficiency of the bushing, since it is the non-circular inner sides 14 thereof which encompass and engage the non-circular perimeter 8 of boss 11.

A recess 15 is provided between the central threaded sleeve portion of bushing 1 and ring 10. This recess provides room enough for the die operation required in clinching ring 10 without injuring the sleeve portion of bushing 1.

Recess 16 is provided by this construction and is used for the insertion of the boss portion 11 of container wall 6 so that clinching ring 10 may be firmly clinched up against the flat portion 7 of boss 11 as shown in Figure 2 while the outer wall portion 3 encompasses and engages the perimeter of boss 11.

Thus it will be seen that a method and means is provided for securing a bung bushing to a container wall which will prevent the bushing from turning in the wall and prevent undue leakages between the container wall and bushing.

Integral ears 12 and 13 may be provided on bushing 1 for facilitating the sealing of the bung to the bushing when desired.

It will thus be seen that my forged bushing and supporting wall therefor are substantially secured together in a manner that is economical, practical, novel and simple.

Having thus described the nature of my invention what I claim is:

1. A bushing having a flange provided with a recess on its under side and having an outer wall whose inner side is non-circular defining a non-circular outer limit to said recess, in combination with a sheet metal container wall having an opening through which the bushing extends and which is formed with a raised boss portion whose outside wall is non-circular and encompassed and engaged by said non-circular inner side of said outer wall about the recess to hold said bushing from rotation; and an integral annular flange clinched about the wall defining said opening for securing said bushing in place on said container wall.

2. A bushing having a flange, an outer wall of which is formed non-circular on its inner side so as to define a non-circular recess on the under side of said flange, in combination with a container wall of sheet material having an opening through which the bushing extends, the edge about said opening being deformed to provide a raised boss with its outside edge non-circular and encompassed and engaged by said inner side of said outer wall of the bushing flange to keep the bushing from turning, and an integral annular flange clinched about the wall defining the opening for holding the bushing in place.

3. A bushing having a flange provided with a recess on its under side and with an outer wall whose inner side is polygonal in shape defining a polygonal outer limit to said recess, in combination with a sheet material container wall through which the bushing extends and which is formed with a raised portion whose outside edges are polygonal and engaged by said polygonal inner side of said outer wall portion about the recess of the bushing to hold said bushing from rotation; and an intermediate integral clinching ring on said bushing securing said bushing in place on said container wall.

4. A bushing adapted to be secured to the sheet material wall of a container and provided with a flange having a recess on its under side and with an outer wall whose inner side is non-circular in shape defining a non-circular outer limit to said recess and adapted to engage a non-circular raised portion of said container wall to hold the bushing from turning, and an intermediate clinching flange on said bushing for securing the bushing in place on said raised portion of the container wall.

5. A container wall having a boss raised therein and having a central hole therethrough, the outer edge portions of the boss disposed at different distances from its axis and a centrally threaded cap bushing seated down over and about said boss with a boss-encompassing outer rim shaped on its inner wall surfaces in a manner co-registering with and fitting about said outer edge portions of the boss, an annular clinching ring on the lower side of said cap bushing clinched up against said boss on the bottom surface about said hole therein; said clinching ring intermediately spaced between said central threaded portion of the bushing and said outer boss-encompassing rim of the bushing.

In witness whereof I hereunto set my hand this 24th day of February, A. D. 1931.

EARL E. COOPER.