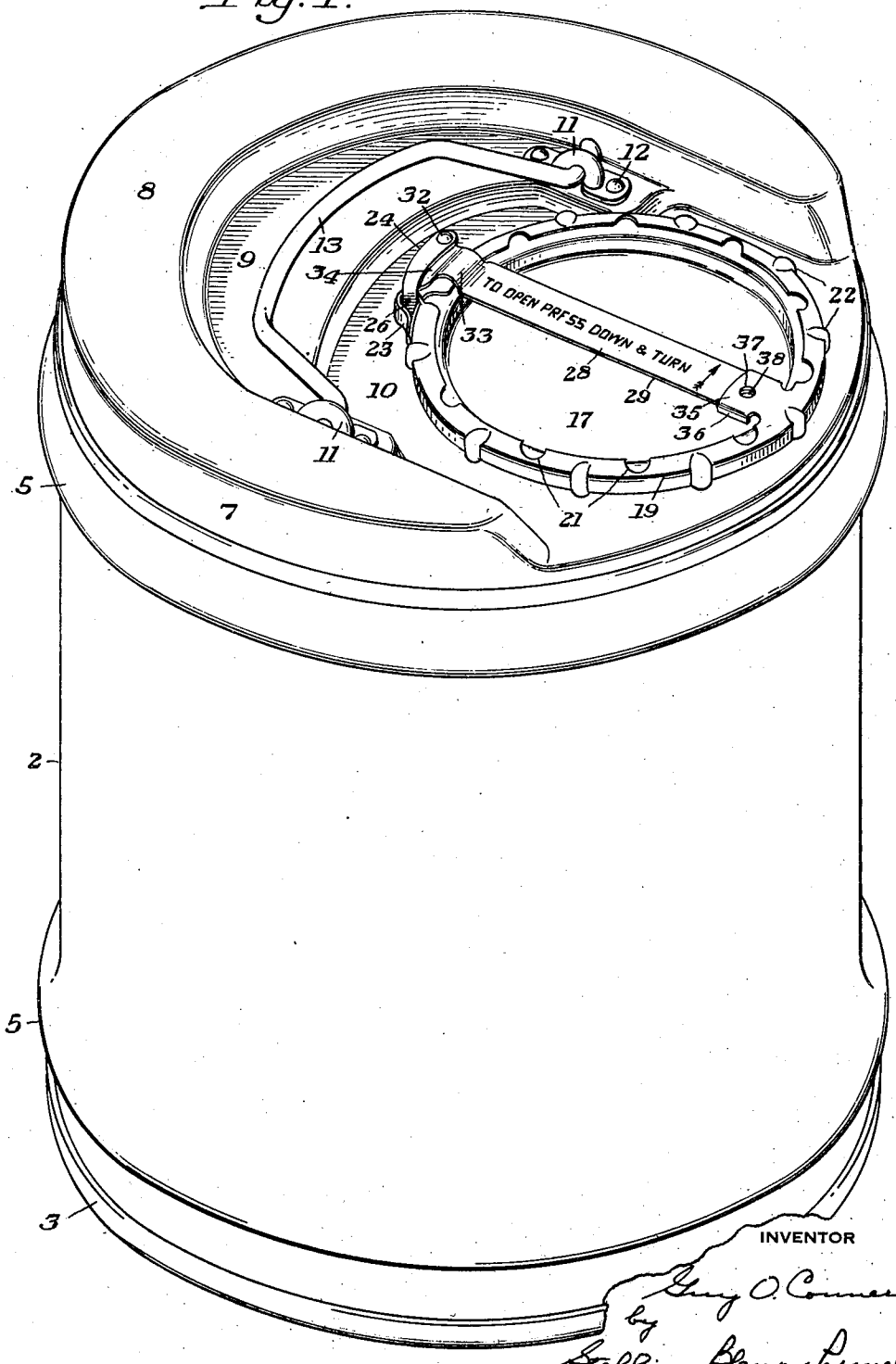
June 14, 1938. G. O. CONNER 2,120,487

CONTAINER

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Fig. 1.



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CONTAINER

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Fig. 3.

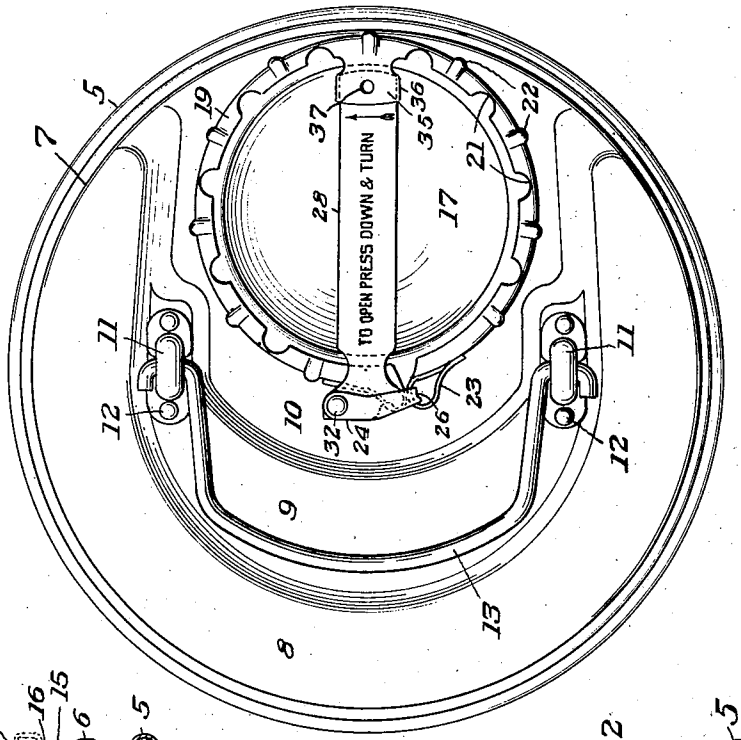
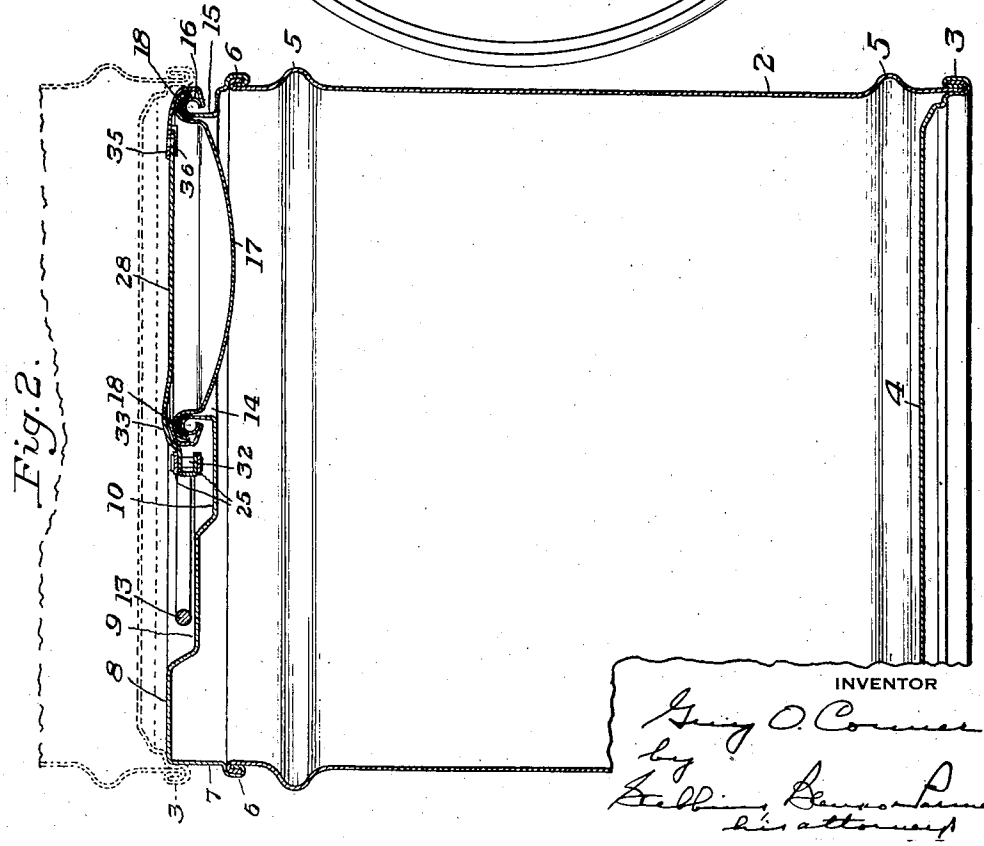


Fig. 2.



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Fig. 4.

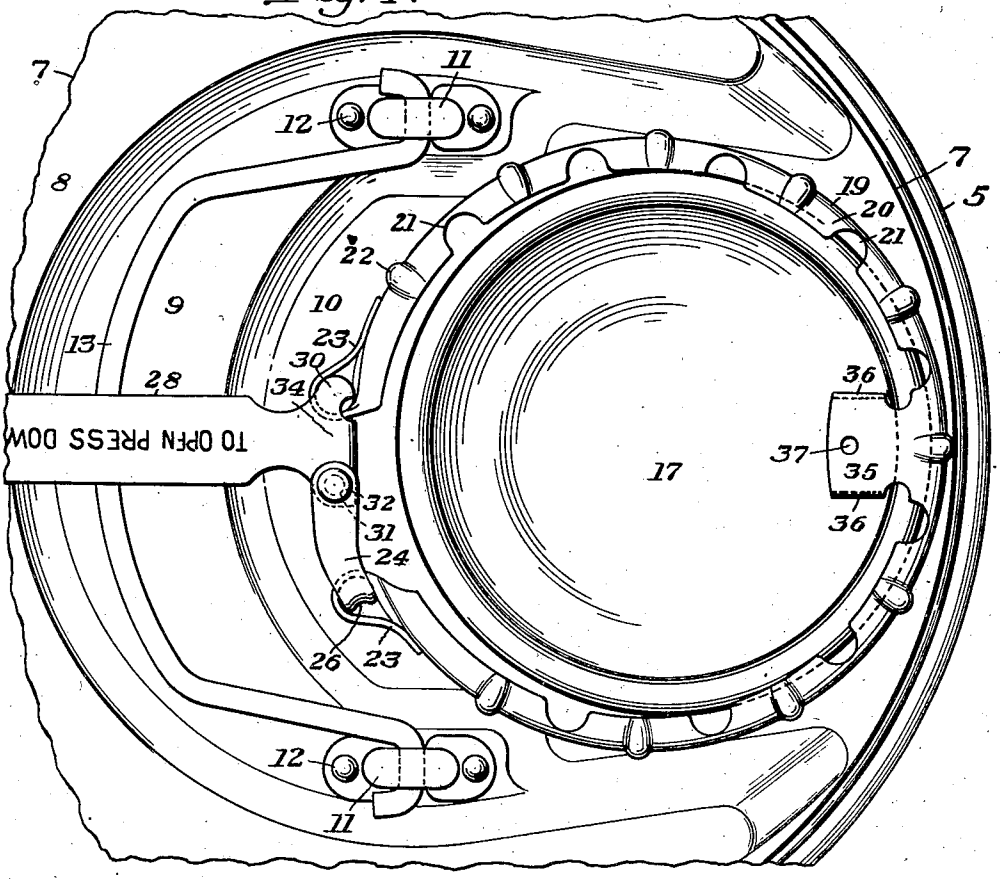


Fig. 6.

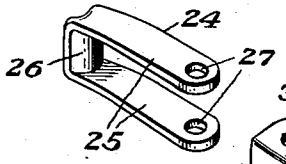


Fig. 5

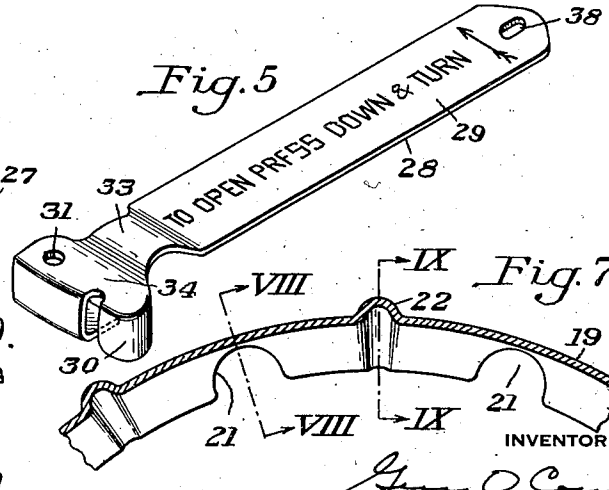


Fig. 7.

Fig. 8.

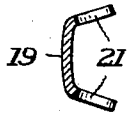
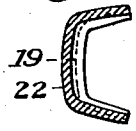


Fig. 9.



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2,120,487

UNITED STATES PATENT OFFICE

2,120,487

CONTAINER

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Application December 6, 1935, Serial No. 53,219

6 Claims. (Cl. 220—66)

This invention relates broadly to containers, and more particularly to shipping and dispensing containers of relatively light gauge and small size as distinguished from large heavy barrels and drums. It relates still more particularly to sheet metal shipping and dispensing containers of such size and shape as to be adapted when filled to be carried by one person.

Although the invention is not as to certain features thereof so limited, it is especially well adapted for sheet metal shipping and dispensing containers of the type which are adapted when filled to be carried by one person by a handle positioned when operative substantially in line with the axis of the container. Containers of this type are used in sizes ranging up to and above in the neighborhood of ten gallons, perhaps the most popular size being five gallons.

Such containers are made of relatively light gauge sheet metal as distinguished from the metal used for making large size barrels and drums of, say, 100 gallons capacity. The containers must be strong, particularly when used for shipping, not only to insure against damage in handling but also because of the extremely rigid shipping container specifications of the regulations of the Interstate Commerce Commission. Moreover, containers of this type must be relatively inexpensive to manufacture as they are in a highly competitive field.

Shipping and dispensing containers of the sizes with which the present invention is primarily concerned are ordinarily provided either with imperforate tops or covers which are removable as a whole or with tops or covers either removable or non-removable having small pouring openings. In order to have access to the contents of the container it has heretofore been necessary to remove the entire cover if the container is of the full open top type. With containers having non-removable tops the only possible communication with the interior has been through the relatively small opening designed solely for pouring out the liquid contents thereof.

Containers of the type in question are being used more and more widely for the shipping and dispensing of different substances, liquid, viscous, plastic and solid. In certain cases it is necessary in preliminarily treating the contents of the container before dispensing or in dispensing the contents to have access thereto such as is not afforded by the usual pouring opening, and yet in many cases it is undesirable to have to remove the entire cover. In certain cases it is not desirable to use a full open top container, and in such cases the only opening is the relatively small pouring opening.

For example, in the shipping and dispensing of products such as highly viscous cements and certain food products it is not possible to use a container having a non-removable top and a small pouring opening. It is undesirable to use a full open top container due to the great weight of the contents of the container and the inherent weakness of containers of this type. Yet it is necessary to have access to the contents of the container either for stirring or in order that the contents may be removed. Consequently the containers of the type above mentioned which have heretofore been available have not been adapted for the shipping and dispensing of products of the character mentioned.

I provide a container of the type above discussed which is adapted for the shipping and dispensing of products to which access must be had while in the container but which does not require removal of the entire top of the container. My container may be of the full open top type or it may be of the non-removable top type, the latter being preferred in most instances due to its superior strength. I make provision for access to the interior of the container, as for stirring, or for removal of the contents otherwise than by pouring, and at the same time I provide a structure which is strong and rugged and which meets the Interstate Commerce Commission regulations.

I provide a container of such size and capacity as to be adapted when filled to be carried by one person, as, for example, by a handle positioned when operative substantially in line with the axis of the container and having an opening of relatively large size which may be opened and closed at will, the whole structure being so designed as to withstand very rough usage. The diameter of the opening is preferably equal to at least about one-fourth of the greatest transverse dimension of the top portion of the container. For certain purposes an opening having a diameter equal to at least about one-third of the greatest transverse dimension of the top portion of the container is desirable. Ordinarily the diameter of the opening will not be greater than about one-half of the greatest transverse dimension of the top portion, as if it is substantially greater than this the container begins to have the disadvantages of a full open top container.

In the ordinary sizes of my container, as, for example, in the 5-gallon size, the opening is large enough to admit a human hand of average size. Preferably the opening is large enough to admit

a man's hand with sufficient clearance to enable working within the container, as in stirring or mixing the contents thereof or removing such contents as by the use of an implement such as a large spoon or the like.

I also preferably provide for pouring out of the container, in case this should be possible or desirable, by providing the opening eccentric with respect to the top portion thereof and extending to a point close to one edge of the top portion. I further preferably provide for stacking of the container by providing a top stacking surface which extends at least substantially as high as the opening and the closure means therefor, an outage space being provided thereunder. The opening is preferably formed in a sunken portion of the top and such sunken portion preferably communicates with an edge of the top so that liquid will not accumulate therein but will drain off. The handle by which the container is carried is preferably fastened to the top within the sunken portion containing the opening and adapted to extend upwardly not substantially higher than the upper surface of the top when not in use. The handle is preferably adapted for movement relative to the top of the container, being movable to a position when not in use in which it extends upwardly not substantially higher than the upper surface of the top.

The opening is preferably closed by a separate closure member of exceptional strength. The opening may be formed with an upwardly projecting beaded neck and in such case the closure member has a portion overlying such neck, a gasket being provided therebetween, and the neck and closure member are preferably maintained in assembly by a clamping ring. The closure member is preferably convexly formed inwardly of the container which adapts it to withstand the shocks to which the container is subjected in use and also does not interfere with stacking. The clamping ring has a number of novel features which adapt it for use particularly with a container of the type in question, the opening in which is much smaller than the usual opening whose closure member is held in place by a clamping ring.

My invention also comprises other subsidiary features contributing toward the usefulness thereof for the purpose intended and which, together with further details, objects and advantages thereof, will become apparent as the following description of a present preferred embodiment of the invention proceeds.

In the accompanying drawings I have shown a certain present preferred embodiment of the invention, in which

Figure 1 is a perspective view of a shipping and dispensing container;

Figure 2 is a central vertical cross-sectional view through the container shown in Figure 1, such view also being taken centrally through the opening in the container top;

Figure 3 is a top plan view of the container shown in Figures 1 and 2;

Figure 4 is a partial top plan view of the container to enlarged scale and showing the clamping ring in open position;

Figure 5 is a perspective view of one of the operating members for opening and closing the clamping ring;

Figure 6 is a perspective view of another of such operating members;

Figure 7 is a central cross-sectional view through a portion of the clamping ring to enlarged scale;

Figure 8 is a transverse cross-sectional view taken on the line VIII—VIII of Figure 7; and

Figure 9 is a transverse cross-sectional view taken on the line IX—IX of Figure 7.

Referring now more particularly to the drawings, there is shown therein a 5-gallon shipping and dispensing container made out of light gauge sheet metal. The container comprises a substantially cylindrical body portion **2** having seamed thereto at **3** a raised bottom **4**. The container body is provided near its top and bottom with raised annular strengthening and protective portions **5** which may, if desired, be used as rolling rings. Seamed to the upper extremity of the body at **6** is a cover or top designated generally by reference numeral **7**. The container as thus illustrated is of the non-removable top type, although the top may be made removable if desired. For example, a cover provided with the conventional attaching lugs may be used, the container body in such case having at its top a portion for reception of the cover and attachment of the lugs, a suitable gasket being used between the body and cover.

The top of the container has a substantially flat upper surface portion designated by reference numeral **8**, an intermediate portion **9** and a lower portion **10**. The lower portion **10** communicates with the edge of the container, as clearly shown in Figure 1, to allow drainage of liquid therefrom. Connected with the intermediate portion **9** of the top by means of bearings **11** riveted or bolted to the top at **12** is a handle **13** by which the container is adapted to be carried. Due to the size, shape and capacity of the container it may be carried by a man by the handle **13** held in one hand. The handle is swingable about the bearings **11** to an upward or operative position in which it is substantially in line with the axis of the container. The bearings **11** are centered substantially on a diameter of the container but equidistant from the axis thereof. When the handle **13** is not in use it may be turned down to the position shown in the drawings in which its upper portion is not substantially higher than the portion **8** of the top. In the embodiment shown in the drawings the handle lies below the portion **8** of the top.

In the lower portion **10** of the top **7** is an opening **14** surrounded by an upwardly drawn neck **15**, the upper extremity of which is reversely turned as shown at **16** to provide a rim in the form of a bead or lip. In the embodiment shown the rim **16** is below the level of the surface portion **8** of the container top. The opening **14** is eccentric with respect to the top of the container and is positioned adjacent the edge thereof as shown in the drawings, so that if desired it may conveniently be used for pouring out the contents of the container.

The diameter of the opening **14** is preferably equal to at least about one-fourth of the diameter of the top **7**. The diameter of the opening is preferably not substantially greater than about one-half of the diameter of the top. For certain purposes I find it desirable to provide an opening whose diameter is equal to in the neighborhood of one-third the diameter of the top. In the embodiment shown in the drawings the diameter of the opening **14** is equal to between one-half and one-third the diameter of the top of the container. The opening is preferably made large enough to admit a man's hand and, particularly

in sizes commensurate with that shown in the drawings, I prefer that the diameter of the opening shall be at least about 4'' and not greater than about 7''. The opening is of such size as to permit ready access to the interior of the container, as for mixing or stirring the contents thereof, or for removing the contents otherwise than by pouring.

The outwardly drawn neck **15** is made strong enough to withstand the stresses to which it is subjected in use. It is further strengthened, as is the top of the container as a whole, by a closure member **17** which cooperates with the rim **16** to close the opening **14**. The closure member **17** is preferably made of metal of at least as heavy gauge as the metal of the container and in some cases I prefer to use heavier metal for the closure member. The body of the closure member is preferably curved and I find it desirable to curve the same inwardly of the container as shown in Figure 2, preferably spherically. This imparts great strength and rigidity to the closure member, as well as to the container top when the closure member is in position, and avoids an upward projection which would prevent stacking. Moreover, the convex curvature of the closure member inwardly of the container better withstands pressures which may be built up within the container.

The rim of the closure member **17** is downwardly cupped as shown in Figure 2 so as to cooperate with and lie over the rim **16**. The central portion of the closure member extends downwardly within the opening **14**. A gasket **18** is interposed between the rim **16** of the container and the rim of the closure member to effect a seal therebetween.

The closure member **17** is maintained in place with respect to the neck **15** and rim **16** by a retaining device, preferably in the form of a clamping ring designated generally by reference numeral **19**, and which is described and claimed in my copending application Serial No. 111,896, filed November 20, 1936, which application is a division of this application. The clamping ring comprises a body portion **20** which is expansible and contractible and arranged substantially in the arc of a circle. The clamping ring as a whole is of substantially U-shaped cross section. However, at intervals therealong recesses **21** are cut into the leg portions of the U to provide for sufficient flexibility of the ring substantially in its plane for expansion and contraction thereof necessary in applying and removing it. The upper and lower legs of the ring are preferably recessed complementarily. Intermediate the recessed portions of the ring are outwardly pressed stiffening and strengthening ribs **22** for imparting to the ring a desired strength and rigidity substantially normal to the plane thereof and to insure proper and sustained cooperation between the container neck and the closure member to hold the closure member in place with the desired pressure. A transverse cross section through the ring at a recessed portion thereof is shown in Figure 8, and a transverse cross section at a strengthened portion thereof is shown in Figure 9.

At the ends of the ring body **20** are outwardly and reversely turned straps **23**, the ends of which may be welded, riveted or otherwise connected with the ring body whereby to provide bearings, preferably offset outwardly from the ring body as shown in Figure 4. Pivotally connected with one of the bearings is a link **24** (see Figure 6) which is hollow, comprising two legs **25** and an end bearing portion **26** adapted to lie within the strap bearing on the ring body. Each of the legs **25** is provided with a hole **27** for reception of a pivot pin.

There is provided an operating member designated generally by reference numeral **28** (see Figure 5) which is elongated to provide a handle portion **29** by which the clamping ring is operated. At the opposite end of the member **28** the material thereof is laterally and then reversely turned as shown in Figure 5, and a pivot **30** is provided between the opposed portions of the operating member which passes through the strap bearing **23** opposite that engaged by the link **24**. Substantially in transverse alignment with the pivot **30** the member **28** has opposed holes **31** through which and through the holes **27** of the link **24** passes a pin or rivet **32**. Intermediate the handle portion of the member **28** and the portion having the pivotal connections just described the material of such member is bent upwardly as shown at **33** to allow the member properly to cooperate with the ring in opening and closing movements.

The clamping ring is shown in open or inoperative position in Figure 4. When in such position it may be removed from the closure member and container neck and replaced thereon at will. When the clamping ring is being applied it is put in place as shown in Figure 4. The handle **29** is then turned in the clockwise direction about the pivot **30**, viewing Figure 4, through substantially 180°. During such rotative movement of the handle the pivot **32** moves around the pivot **30**, the portion **34** of the member **28** which lies between the pivots **30** and **32** passing within the hollow link **24** as shown in Figure 3. The axis of the pivot **30** moves to a position somewhat beyond a straight line between the axis of the pivot **32** and the axis of the lower bearing **23**, viewing Figure 1, to conteract the tendency of the ring to open.

The member **29** acts somewhat in the nature of a bell crank lever, the pivot of which is at **30**, the long arm being the handle **29** and the short arm being the portion between the pivot **30** and the pivot **32**. When the clamping ring is in closed or operative position the handle **29** extends transversely of the ring and preferably substantially diametrically thereacross as shown in Figure 3. Connected with the body of the ring intermediate the extremities thereof is an integral inwardly projecting lug **35** having at opposite sides downward projections **36** (see Figures 1 and 4). When the handle **29** approaches the lug **35** it is pressed lightly downwardly, or toward the container, and the outer end of the handle springs under the lug **35**. When the outer end of the handle is positioned intermediate the projections **36** it is released and resiliently moves upwardly so as to lie against the under surface of the lug **35** and between the projections **36** where it is latched in place. The upwardly bent portion **33** of the member **28** allows the handle **29** to move into latched position under the lug **35** as above explained, a portion of the ring lying below the portion **33** being received thereby. The member **28** is sufficiently flexible that no difficulty is encountered in operating it over the ring and into latched position with the end of the handle under the lug **35**. The lug **35** has a hole **37** therethrough and the end of the handle has a hole **38** therethrough, which holes assume superposed relation when the handle is in latched

position and are adapted to receive any suitable sealing means such as a sealing wire or padlock.

The container is ideally suited for shipping, being exceptionally strong and rugged, easy to handle and capable of being stacked, as indicated in Figure 2. Access may be had to its interior through the relatively large opening 14 and the exceptionally strong closure member and clamping ring structure materially assist when applied in strengthening the top of the container. The container is suitable for uses which similar shipping containers of like size heretofore available are totally unsuited.

While I have shown and described a present preferred embodiment of the invention, it is to be distinctly understood that the same is not limited thereto but may be otherwise variously embodied within the scope of the following claims.

I claim:

1. A sheet metal container comprising a round body portion, a round generally flat head having a downwardly projecting flange having a seam connection with the top of the body portion and having a generally U-shaped raised portion extending around the greater part of the margin of the head and a depressed portion between the legs of the U open laterally to one side of the head, a handle located centrally of the head and having pivotal bearings at the sides of and within the depressed portion and adapted to be folded flat against the head at and within the inner end of the depressed portion of the head, the head having at the outer end of the depressed portion adjacent the edge of the head a round opening whose diameter is equal to at least about one-third of the diameter of the head and having an upstanding flange with an outwardly projecting rim surrounding the opening, a stiff closure of metal of at least as heavy gauge as that of the head having a downwardly projecting flange adapted to overlie the rim, and a clamping ring surrounding the flanged edge of the closure and the rim and adapted to be contracted to clamp the flange and ring together to secure the closure rigidly in place and thereby strengthen the head to compensate for the large opening therein.

2. A sheet metal container comprising a body portion and a generally flat head having a generally U-shaped raised marginal portion and a depressed portion within the legs of the U open laterally to one edge of the head, the head having at the outer end of the depressed portion adjacent the edge of the head an opening whose diameter is equal to at least about one-third of the greatest transverse dimension of the head, and means for strengthening the head to compensate for the large opening therein comprising an upstanding flange surrounding the opening, a stiff closure of curved cross-section of metal of at least as heavy gauge as that of the head, and means for rigidly clamping the closure member to the flange which surrounds the opening.

3. A sheet metal container comprising a body portion and a generally flat head having a generally U-shaped raised marginal portion and a depressed portion between the legs of the U open laterally to one edge of the head, a handle located centrally of the head and within the inner end of the depressed portion, the head having at the outer end of the depressed portion adjacent the edge of the head a relatively large opening, and means for strengthening the head to compensate for the large opening therein comprising an upstanding flange surrounding the opening and a stiff closure member, and means for rigidly clamping the closure member to the flange which surrounds the opening.

4. A sheet metal container comprising a body portion and a generally flat head having raised marginal portions and a depressed portion between the marginal portions open laterally to one edge of the head, a handle located within the depressed portion centrally of the head, the head having at the outer end of the depressed portion adjacent the edge of the head a relatively large opening, and means for strengthening the head to compensate for the large opening therein comprising an upstanding flange surrounding the opening and a stiff closure member, and means for rigidly clamping the closure member to the flange which surrounds the opening.

5. A sheet metal container comprising a body portion and a generally flat head having raised marginal portions and a depressed portion between the marginal portions open laterally to one edge of the head, a handle located within the depressed portion centrally of the head and below the top of the raised portions, the head having at the outer end of the depressed portion adjacent the edge of the head a relatively large opening, and means for strengthening the head to compensate for the large opening therein comprising an upstanding flange surrounding the opening and a stiff closure member, and means for rigidly clamping the closure member to the flange which surrounds the opening, the top of the flange and closure member lying below the top of the raised marginal portions.

6. A sheet metal container comprising a body portion, a generally flat head having a downwardly projecting flange having a seam connection with the top of the body portion and having a generally U-shaped raised marginal portion and a depressed portion between the legs of the U open laterally to one edge of the head, a handle having pivotal bearings located at the sides of and within the depressed portion and adapted to be folded flat against the head at and within the inner end of the depressed portion of the head, and the head having at the outer end of the depressed portion adjacent to the edge of the head a relatively large opening and having an upstanding flange with an outwardly projecting rim surrounding the opening, a closure having a downwardly projecting flange adapted to overlie the rim, and a clamping ring surrounding the flanged edge of the closure and the rim and adapted to be contracted to clamp the flange and rim together to secure the closure in place.

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