March 7, 1944. H. C. TURNAU 2,343,717

BEVERAGE CONTAINER

Filed Nov. 6, 1940 2 Sheets-Sheet 1

Fig. 3

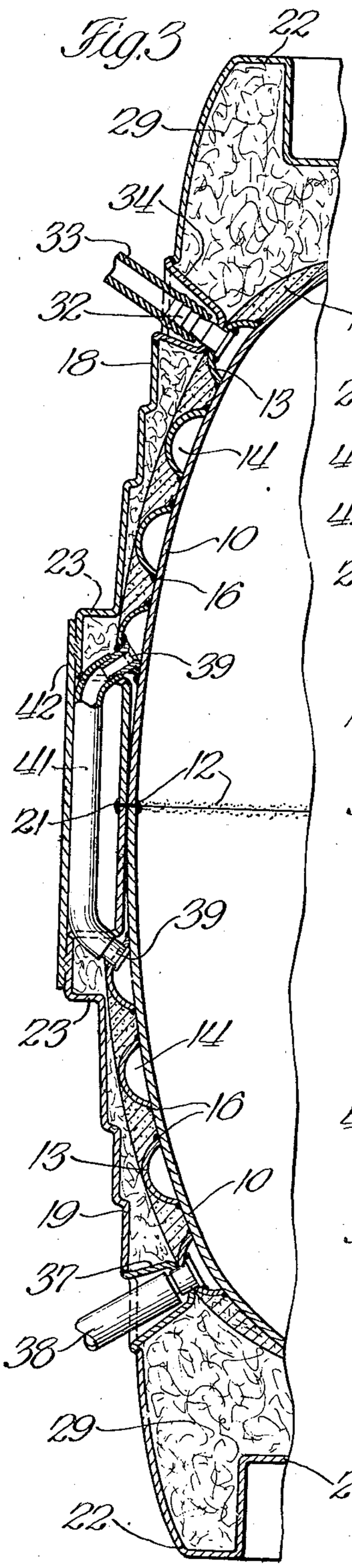


Fig. 1

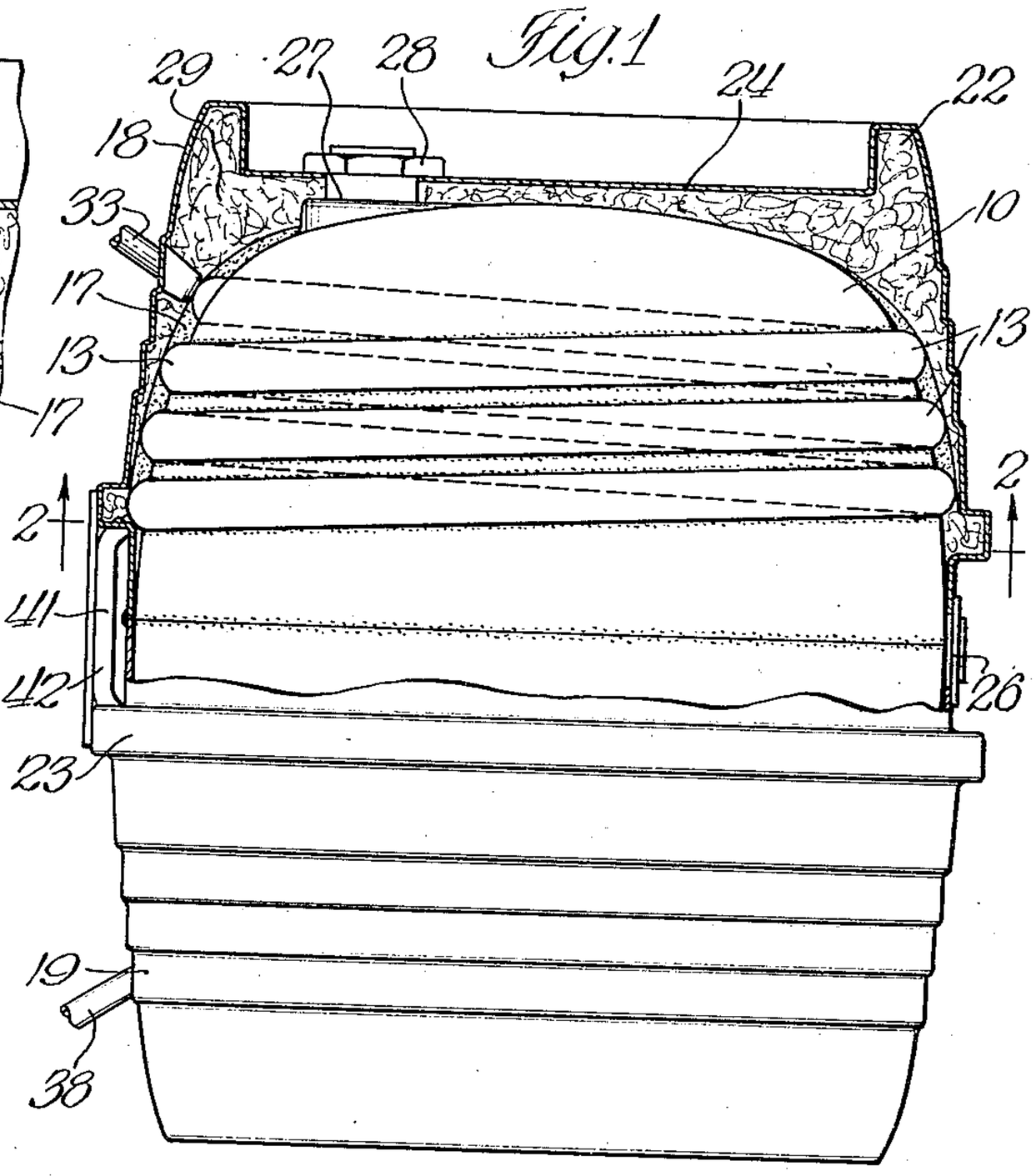
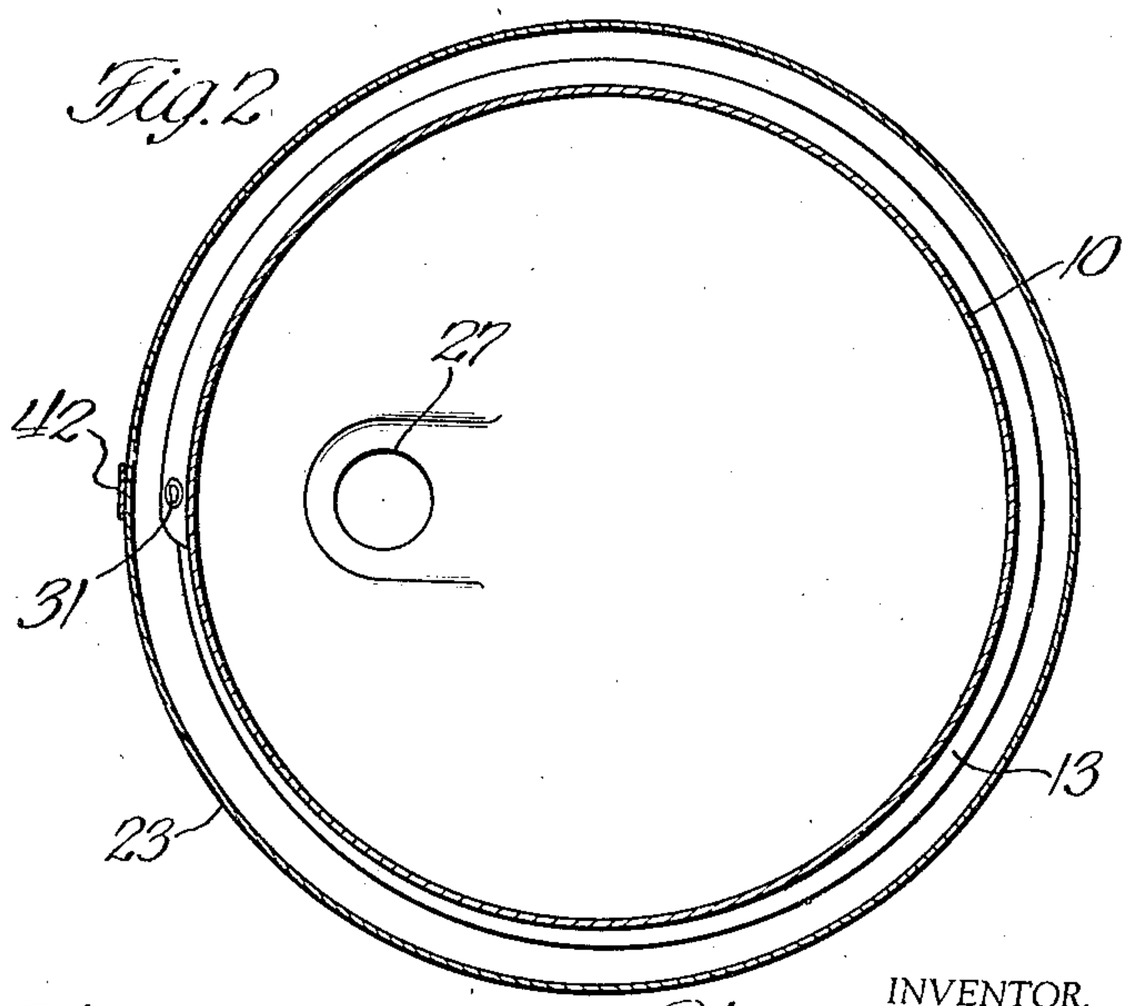


Fig. 2



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Filed Nov. 6, 1940 2 Sheets-Sheet 2

Fig. 4

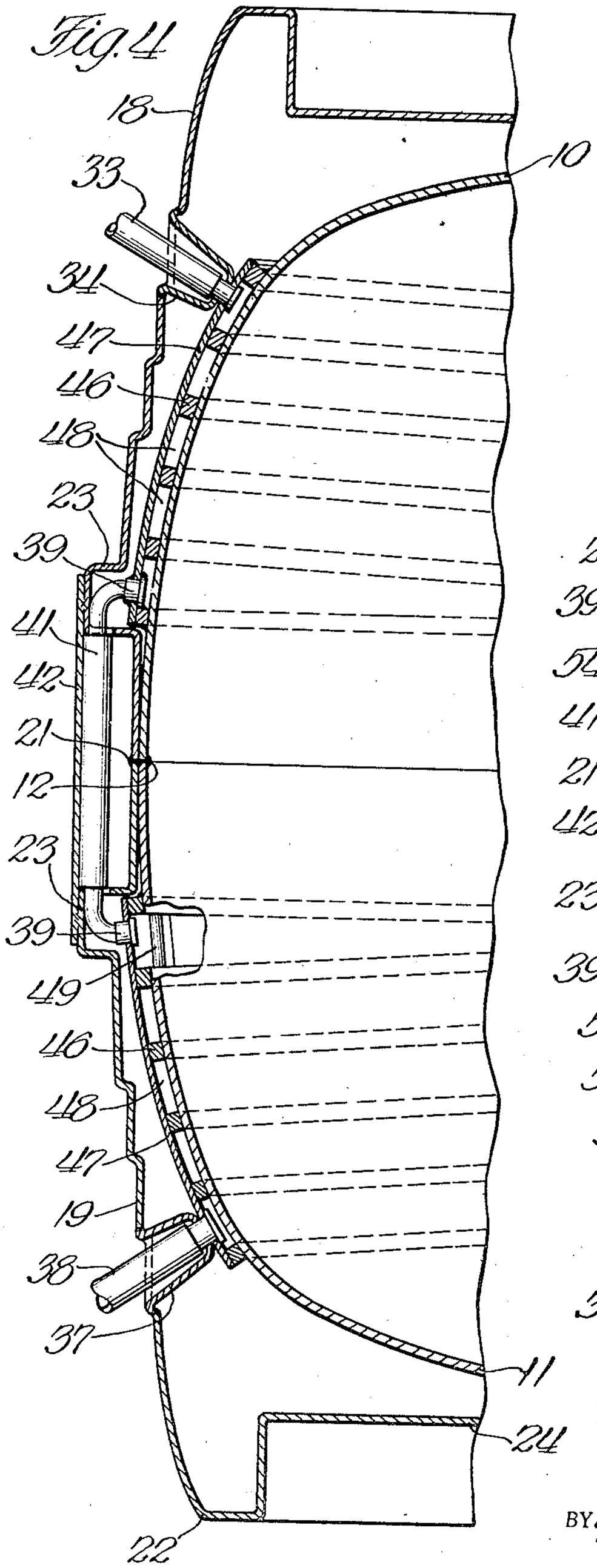
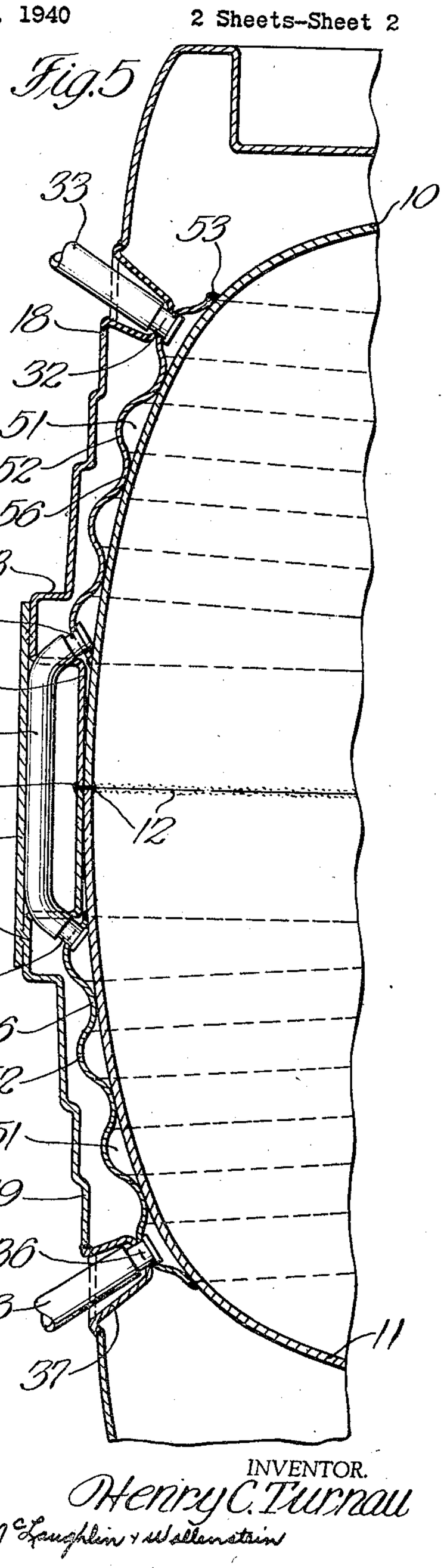


Fig. 5



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Patented Mar. 7, 1944 2,343,717

UNITED STATES PATENT OFFICE

2,343,717

BEVERAGE CONTAINER

Henry C. Turnau, Chicago, Ill.

Application November 6, 1940, Serial No. 364,491

1 Claim. (Cl. 257—14)

My invention relates to barrels of the type employed for vending and dispensing beverages such as beer and the like. It relates more in particular to a barrel of substantially standard type of metal construction having included therein means for facilitating cooling the contents and maintaining the same in a cool condition during the period in which the contents are being stored or dispensed.

The principal object of my invention is the provision of an improved metal barrel for beer and the like.

Another object is the provision of a barrel of the character identified having, as a part of its structure, improved means for controlling the temperature of the contents of the barrel.

A further object is the provision of a barrel of the type identified which utilizes conventionally standard design and structural features and in no way affects adversely the desirable features so far as shipping, storage, and the like, are concerned of the beverage barrels now conventionally employed.

In accordance with the main features of my invention, I utilize an inner barrel or beverage container made in the usual form with two generally cup-shaped sections welded together at their edges, that is to say, at the bilge section of the barrel. In connection with the inner or beverage containing barrel, I utilize a generally standard from of outer casing also split on the circumferential center line and welded at this point to form a bond between the two halves of the outer casing and also a bond between the outer casing and the inner barrel. Other common expedients for supporting the inner barrel within the outer casing, such as by connecting and reinforcing ribs, flanges, and the like, may also be used. Conventional bung and draft openings with their fittings may also be employed. Using the side wall of the inner barrel as one defining member, I provide a circular spiralled passageway for a refrigerant for each of the two sections of the inner barrel, and connect these together by means of a by-pass or connection at the bilge portion of the barrel. By connecting the by-pass to the very ends of each of the two spiral passageways which it interconnects and providing fittings at the extreme ends of the passageways, and also by shaping these passageways in such a way that there is no large space in which refrigerant can collect and stagnate, I make it possible to pass a refrigerant in direct contact with the metal surface of the inner barrel substantially from top to bottom thereof. By this means, I provide a construction wherein there is only a very slight temperature gradient and that through the inner container itself, between the refrigerant and the contents of the barrel. Moreover, space is provided between the passageway described and the outer casing, such that the usual insulation may be employed. This insulation space not only provides for heat insulation of the barrel and its contents during transportation, thereby delaying the time required to deleteriously raise the temperature of the contents, but it further increases the efficiency of the refrigerant and facilitates greatly maintaining the exact temperature desired in the contents of the barrel during dispensing. The entire construction is such that the barrel may be made to have substantially the weight of the conventional barrel. The refrigerant, such as cooling brine, which passes through the cooling coils or passageways, may be drawn off entirely so that refrigerant itself will not add to the shipping weight when an empty barrel is returned to a brewery or other beverage producer. The construction also makes possible the storage of the barrels at a central distributing point or at a brewery or in storage space which is not cooled, the cooling coils or passageways being utilized as well during storage as during the period in which the contents are being dispensed in a retail establishment.

Other specific objects and features of the invention will be apparent from a consideration of the following detailed description taken with the accompanying drawings, wherein

Fig. 1 is an elevational view showing one embodiment of my invention, a part of the outside casing being broken away and shown in section to illustrate structural features;

Fig. 2 is a transverse sectional view taken on the line 2—2 of Fig. 1 looking in the direction of the arrows;

Fig. 3 is an enlarged fragmentary vertical section taken through one side of the barrel and showing the remaining structural features of the present invention;

Fig. 4 is a sectional view similar to that shown in Fig. 3 but showing a modification; and

Fig. 5 is a similar section showing still another modification.

Referring now to Figs. 1 to 3, inclusive, showing the preferred embodiment of my invention, I utilize cup-shaped inner casings 10 and 11 welded together along the line 12 to produce the inner beverage containing barrel. Welded in the form of a spiral to the outer surface of each of the sections 10 and 11 is a generally semi-circular strip 13. This strip, it will be noted, is of a type readily formed by a simple tooling operation on a flat strip and, while it may take various cross-sectional shapes, preferably is arranged to provide a relatively large area of the formed passageway 14 in contact with the inner barrel; that is to say, the surface to volume relationship of this passageway (considering only the surface of the inner barrel) is relatively high and the heat

transfer from a given volume of cooling refrigerant is relatively high. At 16 I indicate the welded portion, and it is to be understood that along both edges of this strip, this weld 16 is such as to form a watertight passageway 14. A layer 17 of pitch or the like is preferably provided over the coil strip 13, thus having the effect of not only providing insulation but also protecting the strip comprising the passageway and tending to offset the effect of any small leaks which may occur during continued handling of the barrel. Any relatively light weight material having the desirable properties of relatively permanent adherence, heat insulation characteristics and the like may be employed for the purpose.

The outer casing also comprises two halves 18 and 19 welded together at 21. The weld at this point may include, and, in the form of construction shown, does include, a welding of the inner container and outer casing together to facilitate supporting one within the other. In the drawings, for clarity in bringing out the features of the present invention, I do not show any other points at which the inner barrel and outer casing are supported together, but it is to be understood that any usual additional supporting means may be provided for the purpose should additional support be required. The outer casing is shaped to provide the usual chime portions 22, bilge rings 23, and heads 24. The usual bung opening and bung fixture is provided at 26, it being noted that the inner barrel and outer casing are contiguous at the bilge section so that it is merely necessary in the conventional way to provide for the usual bung opening. A usual type of draft fixture 27 is also provided, this comprising, as shown, a structure carried by the inner barrel projecting through an opening in the head of the outer casing and having a suitably carried nut or flange 28 which is brought down tight against the head 24. This may be any usual construction and my invention is not primarily concerned therewith. The numeral 29 indicates insulation between the inner barrel and the outer casing, and it will be understood that any usual insulation may be employed for the purpose, or dead air space may be depended upon.

At the extreme upper end of the upper passageway 14, as shown particularly in Fig. 2, I provide an opening 31 into which a hose or similar fitting 32 is connected, the fitting 32 extending not quite to the outer surface of the outer casing so that, during the handling of the barrel, the fitting 32 is not apt to be injured or broken off. An opening is provided in the outer casing at this point to facilitate attachment of a hose 33, and an annular inner projection 34 from the casing extends close to the fitting 32 or may, if desired, be welded to it. This annular projection 34 may be drawn from the material of the outer casing, but preferably is a separate piece, as will be explained in connection with the manner of producing and assembling the barrel. At the lower end, a similar fitting 36 is provided with an annular inner projection 37 from the casing defining an annular opening through which the fitting projects, to facilitate attachment of a hose 38. At the extreme inner ends of each of the passageways 14, I provide openings in which fittings 39 are secured, and between these fittings I secure a tubular member 41, shaped generally as shown in Figs. 1 and 3, to interconnect the lowermost end of the upper spiral passageway and the uppermost end of the lower spiral passageway. The resulting by-pass or connecting passageway, it will be seen, is protected by the bilge rings 23 so that, during rolling or handling of the barrel, the member 41 will not be broken off. I may, however, provide an additional protecting plate 42, as shown, and, while for convenience the drawings show this plate 42 merely welded to the extreme outer surface of the bilge rings, I may form a recessed portion in the bilge rings so that the outer surface of the plate 42 is continuous with the outer surface of the bilge rings. This, however, is only a matter of choice and is not essential so far as the main features of the invention are concerned.

In constructing the barrel of my invention, conventional manufacturing procedures may be employed. The two sections 10 and 11 comprising the beverage containing barrel may be produced by the usual drawing operation, and the two sections of the outer casing may be produced in like manner, using, where necessary, a spinning or similar operation to form recessed rings, punching operations to provide for the necessary openings, and the usual types of operations for placing the draft fixture 27 in position on the upper half of the inner barrel. The strip 13 is then formed to the shape shown by the use of usual type of equipment which in the same operation from flat strip will produce a generally semi-circular cross-section and shape the strip into the form of a spiral of the length desired. This spiral then has its ends finished as shown in Fig. 2 and is subjecting to a punching operation to provide holes for attachment of the fittings 32, 36 and 39. The fittings are then secured in position and the two strips forming the passageways are welded or otherwise secured in position on the outside surface of the inner barrel. The material 17, if employed, is then applied. The members 34 and 37 will then be placed in position loose on the fittings 32 and 36, respectively, the barrel and the outer casing assembled together and welded in the usual manner. The fittings 32 and 36 obviously will pass to the positions they occupy since they do not project beyond the outer casing. The members 34 and 37 may then be welded to the outer casing, the tube 41 is placed in position and welded or otherwise secured to the fittings 39, the plate 42, if employed, is secured in its intended position, the member 28 is applied, and the bung structure is completed. The insulation 29 is introduced in the usual manner.

The manner of employing the barrel by the brewery need be no different than the manner of employing the present conventional barrels. Ordinarily the barrel with its contents will be delivered to retail establishments with the contents relatively cool. The dispenser of the beverage, however, being provided with refrigerating equipment wherein brine or other cooling liquid is made available, will connect the fittings 32 and 36 to the inlet and outlet sides of a brine circulating machine and quickly bring the contents of the barrel to the exact temperature desired. This may be done by the retail dispenser not only during the period in which the beverage is actually being employed, that is, after the barrel is tapped, but he may have possibly several barrels in storage and very little expense is involved in maintaining them at a proper storage temperature. This makes it possible to make less frequent deliveries to the retail establishment. The barrel is tapped in the usual way, but it may be placed in position immediately below the draft spigot so that the contents are drawn

substantially directly into a glass and there will be very little change in temperature at any time during the storage and handling of the beverage. The cooling is provided in such a manner that the actual contents of the barrel may be served with very little if any loss. When the barrel has been emptied, it is readily drained of the refrigerant and can be shipped back for refilling in the usual way and with substantially no increase in shipping rate, it being kept in mind that the strip **13** may be relatively very thin stock as the construction is such that this particular portion of the barrel is not required to withstand any significant mechanical strain.

The embodiment shown in Fig. 4 is substantially identical with the embodiment shown in Figs. 1 to 3, inclusive, with the exception of the mechanical means for providing the passageway for refrigerating liquid. To conserve space, the reference characters employed in Figs. 1 to 3, inclusive, are applied to Fig. 4 to identify substantially identical parts and these substantially identical parts need not again be referred to in detail. On the outside of barrel sections **10** and **11**, I provide a spiraled piece of metal **46** and over this a relatively thin section **47** shaped to have substantially the same contour as the contiguous barrel section, the parts all being welded or brazed together, with the result that a spiral passageway **48** is provided adapted to have the same function as the passageway **14** described in connection with the previous embodiment. In general, the arrangement of the fittings, etc., as well as the means for by-passing the bilge portion of the barrel, are the same as described in connection with the previous embodiment. I wish to point out, however, that, at each terminus of the passageway **48**, the member **46** is turned upon itself so as to close the end of the passageway, thus allowing no appreciable amount of dead space in which non-circulating cooling fluid may accumulate. The numeral **49** identifies one such turned portion of the member **46**, a similar arrangement being employed, as pointed out, at each terminus, but the structure not appearing in the section which comprises Fig. 4.

The form of barrel shown in Fig. 4 is produced and used in substantially the same manner as described in connection with the first embodiment, except for slightly different operations in shaping the member **46**, a procedure which it is believe will be readily understood by those skilled in the art of metal fabrication.

The embodiment shown in Fig. 5 is again similar to the two preceding embodiments and like references are employed to identify identical parts. To provide spiral passageways **51**, however, I utilize a piece of sheet material **52** which is preformed with an inner spiral recess but generally has the same configuration as the contiguous outer portion of the barrel. By forcing the member **52** so formed down over the barrel and welding its top and bottom edges **53** and **54**, a substantially leakproof spiral passageway **51** is formed. The member **52** may be welded to the barrel around the area between the spiral sections of the passageway **51** where the member **52** engages the barrel. I have found, however, that, if the member **52** is properly formed to have the general contour of the barrel, it may be forced into position and, when welded around the top and bottom edges **53** and **54**, as shown, there will be little if any leakage across the point **56**; that is to say, the cooling liquid will be directed around the spiral passageway. It may be noted that, should there be a very slight movement of liquid at various points corresponding to the point **56**, it will not be sufficient to cause enough loss in cooling to be significant. I may, therefore, dispense with the necessity of welding the member **52** to the barrel at all points where this member contacts the barrel.

It will be seen that in each of the embodiments described, one wall of the beverage containing barrel comprises a part of a spiral passageway through which a refrigerating liquid moves, with the result that all of the cooling liquid introduced flows in a spiral manner in contact with a major portion of the surface of the barrel and only a slight temperature gradient will exist across the relatively thin wall which incidentally in the drawings is relatively heavier considering the scale of the drawing than the metal actually used for the purpose. In each of the embodiments of Figs. 4 and 5, I may employ the same type of material **17** for coating the portion of the structure comprising the passageway for the refrigerant. I may also employ the same type of insulation between the outer casing of the barrel and the inner barrel section carrying the beverage.

My present invention is a continuation-in-part of my prior application, Serial No. 355,503, filed September 5, 1940, the prior embodiment being directed primarily to the structure shown in Fig. 4. While I have described my invention in detail in order that those skilled in the art may understand and practice the same, the invention is limited only by the scope of the appended claim.

What I claim as new and desire to protect by Letters Patent of the United States is:

In a metal beverage barrel, an inner container comprising two generally cup-shaped members welded together at their edges, an outer shell comprising two generally cup-shaped sections welded together and to the inner container at their edges to form a welded bilge point, the said inner container having its maximum diameter at the welded joint, said outer shell being formed above and below the said welded joint to form a pair of outwardly projecting bilge rings with an annular recess at the bilge between said rings, said inner container and outer shell being spaced above and below said bilge rings, means spaced from the outer shell above and below the bilge to form with said inner container two spiral passageways of which the inner container forms a part, whereby a refrigerant, if passed through said passageways, will be in direct contact with a substantial portion of the wall of the said inner container, said spiral passageways having contiguous termini near the bilge, a connection between said termini across said bilge and disposed in said annular passageway, whereby to form a continuous substantially spiral passageway from top to bottom of the barrel, fittings connected into top and bottom termini of said continuous passageway and extending toward openings in the shell for attachment of intake and outlet refrigerant lines, and depressions in the outer shell at said openings to protect said fittings during normal handling of the barrel.

HENRY C. TURNAU.