March 12, 1957 W. ZYDYCRYN 2,784,946

REFRIGERATING APPARATUS

Filed April 13, 1954 3 Sheets-Sheet 1

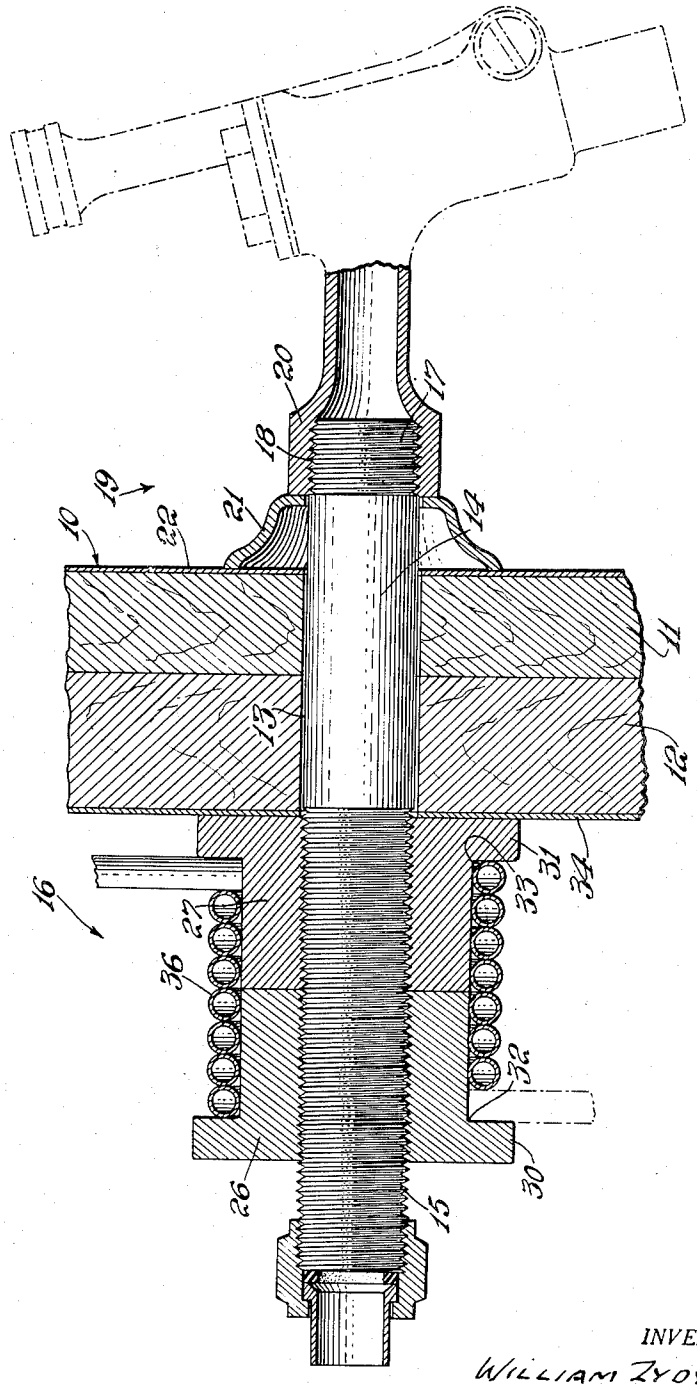


Fig. 1

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Filed April 13, 1954 3 Sheets-Sheet 2

Fig. 2

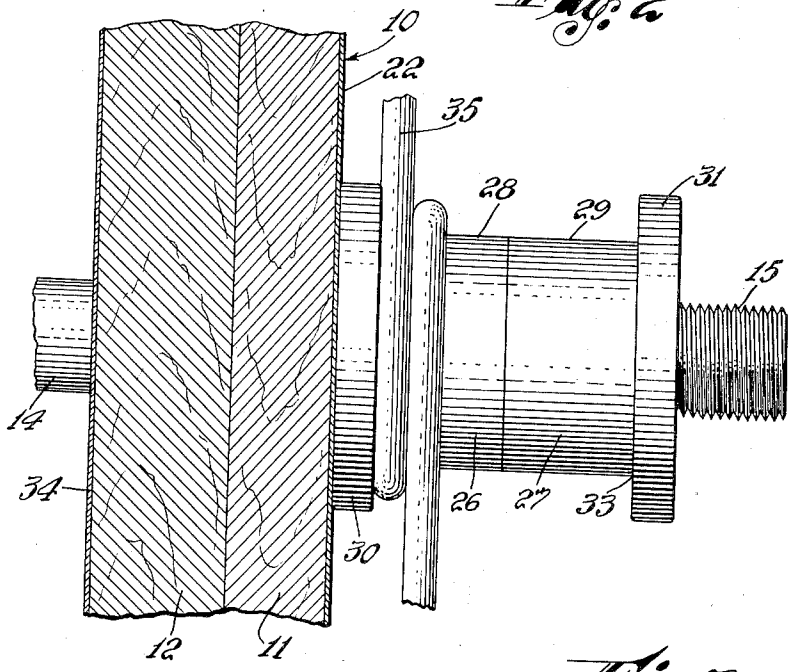
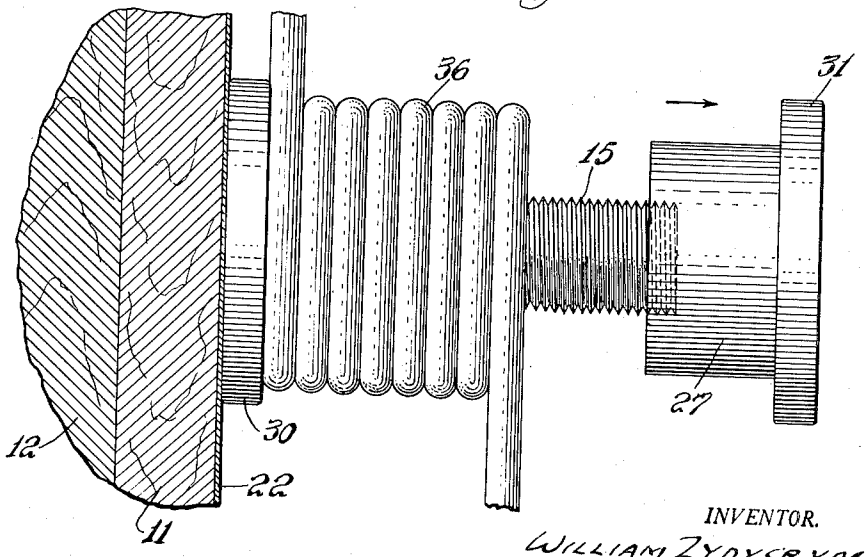


Fig. 3



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Filed April 13, 1954 3 Sheets-Sheet 3

Fig. 4

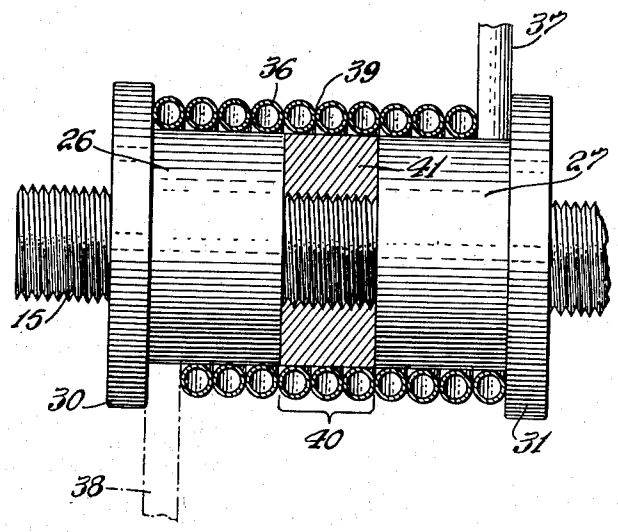
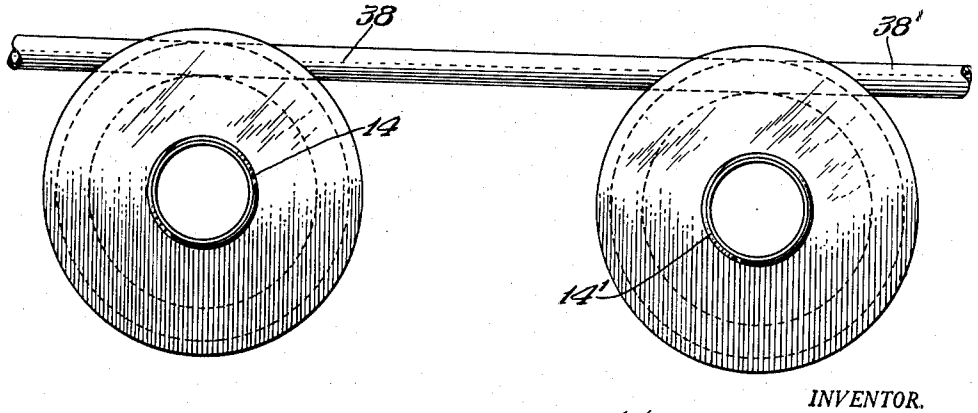


Fig. 5



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REFRIGERATING APPARATUS

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Application April 13, 1954, Serial No. 422,830

2 Claims. (Cl. 257—241)

This invention relates to the art of refrigeration, and is more particularly directed to a method of and apparatus for refrigerating a fluid conduit, such as for example, is used for the dispensing of beer and other popular beverages, through a conduit connected at one end interiorly of the housing with the source of supply and at the other end thereof exteriorly of the housing to a dispenser faucet. Such fixtures are usually interiorly small and cramped. An object of this invention is to provide a method of and means for refrigeration of such fluid conduits which will provide the person installing the same with ample room for making the installation in a convenient and highly effective manner. The invention is further adaptable to the provision of a refrigeration coil of a predetermined number of convolutions or of a greater number depending upon the individual requirements of a specific application at hand, and for attaining the maximum transfer of the refrigerant temperature differential to the fluid passed through the conduit. A further advantage of the invention is the provision of a method and apparatus which will enable a custom installation to be attained in each case so as to adapt the invention to an infinite variety of different refrigeration parts and requirements, and installation on a single conduit or on a plurality of adjacent conduits.

These and other advantageous objects, which will appear from the drawings and from the description hereinafter, are accomplished by the structure of my invention, of which an embodiment is illustrated in the drawings. It will be apparent, from a consideration of said drawings and the following description, that the invention may be embodied in other forms suggested thereby, and such other forms as come within the scope of the appended claims are to be considered within the scope and purview of the instant invention.

In the drawings:

Fig. 1 is a horizontal fragmentary sectional view of an apparatus illustrating the first step in the performance of the method of this invention,

Fig. 2 is a fragmentary view similar to that of Fig. 1 but showing the reversed position of the fluid conduit pipe in the initial formation of the refrigeration coil pursuant to the invention,

Fig. 3 shows a further step of the invention wherein the coil is fully formed pursuant to the invention and one of the T-shaped members is being removed from the fluid conduit for the removal of the coil therefrom,

Fig. 4 is a similar view showing the coil reassembled on the pair of T-shaped members embodying the invention disposed interiorly of the fixture housing, the T-shaped members being separated to permit the building up of the coil to a larger number of convolutions, and

Fig. 5 is an elevational view showing the application of the invention to a pair of adjacent fluid conduits.

As shown in the drawings, the device of the invention is adapted to be used in association with a fixture housing such as is generally indicated by the reference character **10** in Fig. 1, comprising external and internal in-

sulation walls **11** and **12** having an opening **13** therethrough for reception of a fluid conduit. The fluid conduit **14**, pursuant to this invention, is provided with an elongated threaded section **15** at one end thereof for normal disposition interiorly of the fixture, as indicated by the reference character **16** in Fig. 1 and is provided with a second end portion **17** which has a short threaded part **18** normally disposed exteriorly of the fixture housing **10** as shown at **19** in Fig. 1, for connection with a discharge faucet **20** or the like. A spacer ferrule **21** may be interposed between the faucet **20** and outer face **22** of the fixture housing **10**. In the initial step of this invention, the fluid conduit **14** is disposed in the fixture housing **10** as shown in Figs. 2 and 3 in a position opposite to that of the normal disposition of said conduit in use (Fig. 1). In the reversed position of the conduit, for the first step of this invention, it is disposed in said fixture housing **10** so that the normally internally disposed end **15** of the conduit projects from the outer face **22** of the fixture **10**. A pair of T-shaped members **26, 27** which are internally threaded to complement the first outwardly disposed threaded portion **15** of the conduit **14** (Fig. 1) are disposed on said first portion **15** of the conduit as shown in Fig. 2 outwardly of the fixture housing **10**, thus providing ample room for manipulation of the length of tubing to be formed into coil **36**. The T-shaped members **26, 27** comprise main ring portions **28, 29** having flanges at one end thereof (**30, 31**) defining, with the ring portions **28, 29**, shoulder portions **32, 33** (Fig. 1) for a purpose presently explained.

When the said T-shaped members **26, 27** are disposed in contact with each other as in Figs. 1 and 3, they will define essentially an elongated H in cross-section. Pursuant to the method of this invention, a continuous length of tubing **35**, which may initially be of relatively flat form and of circular or other cross-section, is wound upon the members **26, 27** intermediate the flanges **30, 31** thereof so as to define an accurately formed refrigeration coil **36** (Fig. 3) comprising a plurality of convolutions, whose internal diameter is just slightly greater than the diameter of the ring portions **28, 29** of T-shaped members **26, 27** and the end convolutions of said coils will be disposed against the shoulder portions **32, 33** defined by the flanges **30, 31** of said members **26, 27** (Fig. 1).

The initially flat tubing **35** may be readily bent by the worker upon the ring portions **28, 29** of the members **26, 27** disposed exteriorly of the fixture **10** as in Fig. 2 in the first step of the method of this invention to provide ample room for bending the tubing thereon. After this has been attained, the member (**26** or **27**) remote from the outer face **22** of fixture housing **10** is removed from the conduit **14** (as in Fig. 3) and then the coil may be slipped off the remaining T-shaped member. The conduit **14** is then re-inserted into the fixture **10** with the first threaded section **15** thereof disposed interiorly of said fixture as shown in Fig. 1 and then one of the T-shaped members **26, 27** is first positioned on the conduit **14** and threaded against the inner face **34** of the fixture **10**. Coil **36** is disposed on the ring and then the second of the T-shaped members (**26** and **27**) may be positioned on conduit **14** and brought against its opposite member, thus completely assembling the device (Fig. 1). It will be understood that the faucet **20** and the spacer ferrule **21** likewise may have been first secured to the conduit **14** exteriorly of the fixture **10**, or may be secured thereto at a later time. The T-shaped member (**26** or **27**) disposed on the conduit **14** first—that is, closer to the inner face **34** of the fixture **10**, secures faucet and conduit in the housing in operative position.

The convolutions of the coil **36** may be wound on the T-shaped members **26, 27** directly at the point of instal-

lation if desired pursuant to the inventon and will provide an accurate custom fit therewith. The free ends **37**, **38** of said coil (Fig. 4) may be connected to a system for pumping a suitable refrigerant through said coil so that there will be a direct transfer of the cooling effect of the refrigerant circulated through the coil **36** to the conduit **14** and fluid passed therethrough.

The invention may be used for forming a coil of greater length than the combined length of ring portions **28**, **29** on the members **26**, **27** (Fig. 4) by securing the said members **26**, **27** to the fluid conduit **14** with a space **39** therebetween sufficient to allow for the winding of additional convolutions of said coil **36**, as indicated, for example, at **40** in Fig. 4. This may be done for the purpose of providing a greater degree of cooling surface on the conduit **14**. If desired, a spacer ring **41** may be inserted intermediate the T-shaped members **26**, **27** as shown in Fig. 4, in that form of the invention.

As shown in Fig. 5, the invention may be utilized for the refrigeration of a pair of adjacent conduits **14**, **14'** etc.; the end convolution of the coil, which might correspond with the end **38** of said coil shown in Fig. 4, would be continued toward and around a second pair of members which correspond with the members **26**, **27** on the conduit **14** as shown in Fig. 5, the free end **38'** of the second coil being connected to the refrigeration circulating pump or system, and third and further units may thus be additionally formed.

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

1. In a refrigeration system a fluid discharge conduit having an elongated threaded section at one end to be passed through the insulated wall of a housing interiorly thereof for connection with the fluid supply source and having a second end for projection through the wall, said second end being threaded for short distance for connection with a discharge nozzle, a pair of members each comprising a cylindrical portion terminating at one end thereof in an outwardly directed flange adapted to rest in contact with the insulated wall, said members being internally threaded throughout the lengths thereof and in engagement with said elongated threaded section with the flanged ends thereof disposed remote from each other so that said members define essentially a relatively long spool surrounding said threaded section and positioned in contact with the insulated wall, a length of flexible tubing wound around the cylindrical portions of said members and intermediate the flanged ends thereof so as to form a coil consisting of a plurality of convolutions, said coil being adapted for connection to a source of refrigerating fluid.

2. The apparatus of claim 1 wherein a cylindrical internally threaded spacer element is disposed between the two flanged members to form an elongated spool shaped member for supporting said coil.

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