Sept. 30, 1958 F. F. JORDAN ET AL 2,854,017

SYPHON CAN

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Fig. 1

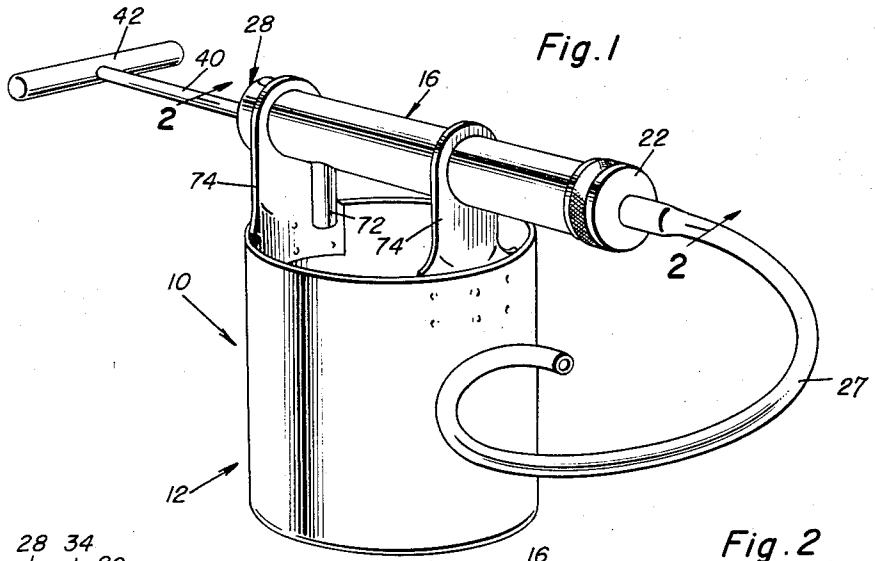


Fig. 2

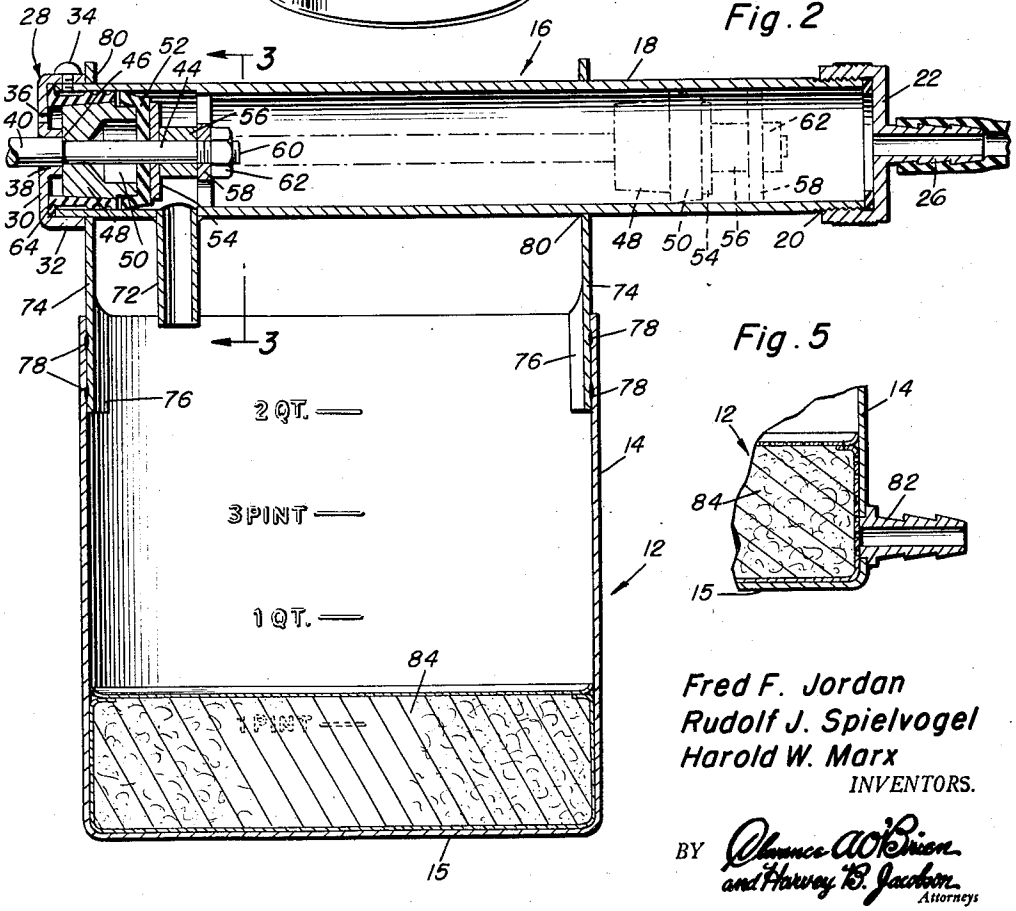


Fig. 5

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Fig. 3

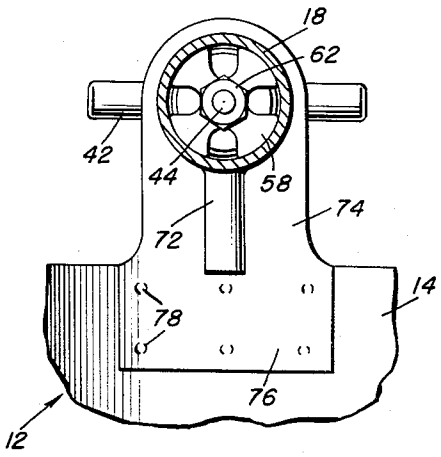


Fig. 4

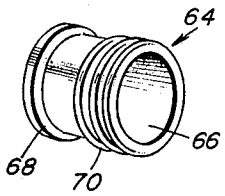


Fig. 6

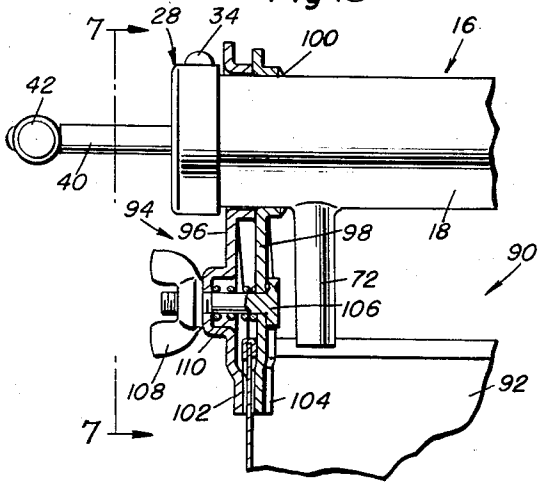
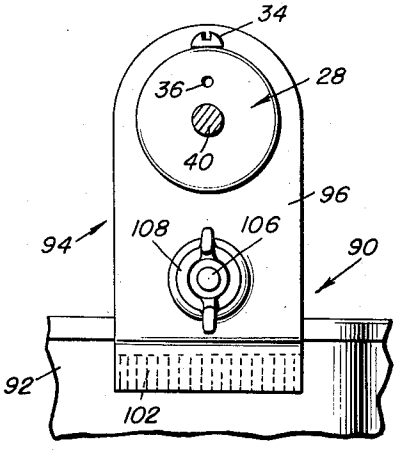


Fig. 7



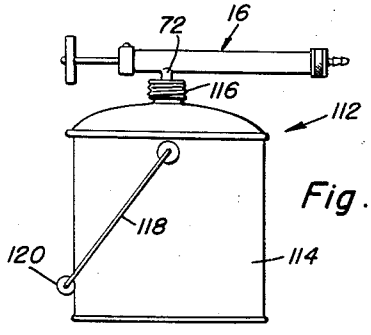


Fig. 8

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SYPHON CAN

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Application December 16, 1955, Serial No. 553,507

5 Claims. (Cl. 137—149)

This invention relates in general to new and useful improvements in pump structures, and more specifically to a syphon can.

In the operation of service stations and the like, there are many small jobs which requires the syphoning of liquids. For example, in checking the anti-freeze of a vehicle in the winter time, it is necessary that a relatively large quantity of anti-freeze be drawn from the radiator and returned thereto. Another required small job is to withdraw grease from transmissions, differentials and the like to check the metallic contents of such grease and oil and to remove the metallic content therefrom should there appear any. It is therefore the primary object of this invention to provide an improved syphon can which includes a pump so mounted with respect to a can whereby water, anti-freeze, grease, gasoline and the like may be syphoned from their respective receptacles, placed into a can for inspection, and then conveniently returned to their original receptacles.

Another object of this invention is to provide an improved syphoning can construction which includes a pump assembly having means for attaching the same to a can, the means being in the form of suitable mounting brackets which may be selectively utilized to either semi or permanently secure the pump to the can or for permanently securing the pump assembly to a can.

Still another object of this invention is to provide an improved syphon can which includes a pump assembly for syphoning liquids into the can and a suitable drain on the can, the drain including a filter whereby foreign matter may be filtered from the liquid syphoning to the can before the liquid is redeposited into its original container.

A further object of this invention is to provide an improved pump assembly for use in conjunction with syphoning cans, the pump assembly being primarily of the type intended for use as a vacuum pump, but readily convertible to a spray pump if necessary.

A still further object of this invention is to provide an improved pump assembly of the suction type, the pump assembly being provided with a seal system to retain the vacuum within a cylinder thereof so that the efficiency of the pump is maintained at a maximum.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a perspective view of a preferred form of syphoning can formed in accordance with the present invention and shows the general details thereof;

Figure 2 is an enlarged fragmentary vertical sectional view taken substantially upon the plane indicated by the section line 2—2 of Figure 1 and shows the specific details of the syphoning can including the details of the pump assembly and the manner in which it is secured to a can, the pump assembly being shown in a withdrawn position by solid lines and in an advanced position by broken lines;

Figure 3 is an enlarged fragmentary vertical sectional view taken substantially upon the plane indicated by the section line 3—3 of Figure 2 and shows both the details of the interior of the pump assembly and the manner in which a mounting bracket secured to the pump assembly is also secured to the can for supporting the pump assembly with respect to the can;

Figure 4 is an enlarged perspective view of a sealing bushing utilized to effect a perfect seal within the cylinder of the pump assembly;

Figure 5 is a fragmentary enlarged vertical sectional view taken through the lower part of the can and shows the details of a drain and the relationship thereof with respect to a filter mounted in the bottom of the can;

Figure 6 is an enlarged fragmentary sectional view taken through a modified form of mounting bracket and can and shows the pump assembly of Figure 2 mounted on a can for removal therefrom;

Figure 7 is an enlarged fragmentary sectional view taken substantially upon the plane indicated by the section line 7—7 of Figure 6 and shows further the details of the mounting bracket; and

Figure 8 is an elevational view on a reduced scale of still another modified form of syphon can.

Referring now to the drawings in detail, it will be seen that there is illustrated in Figure 1 a preferred form of syphon can, which is the subject of this invention, the syphon can being referred to in general by the reference numeral **10**. The syphon can **10** includes a can which is referred to in general by the reference numeral **12**. The can **12** is formed of a cylindrical body portion **14** and a bottom wall **15**. The upper part of the can **12** is open.

Suitably mounted on the can **12** is a pump assembly which is referred to in general by the reference numeral **16**. The pump assembly **16** includes an elongated cylinder **18** which is provided at one end with external threads **20**. Removably threaded over the threaded one end of the cylinder **18** and closing the same is a fluid fitting **22**. The fluid fitting **22** includes a tubular connecting member **26** which has a saw tooth external configuration. Removably telescoped over and interlocked with the fitting **22** is a flexible syphon hose **27**.

The opposite end of the cylinder **18** is closed by a cap which is referred to in general by the reference numeral **28**. The cap **28** includes a closure wall **30** which has formed integral therewith an annular flange **32**. The annular flange **32** is telescoped over the other end of the cylinder **18** and is secured in place by a suitable fastener **34** which passes through both the annular flange **32** and the cylinder **18**, as is best illustrated in Figure 2. The wall **30** has formed therein a vent opening **36** and the wall **30** has formed integral therewith an outwardly projecting sleeve **38**.

Slidably passing through the sleeve **38** and guided thereby is a pump rod **40**. The outer end of the pump rod **40** is provided with a suitable handle **42** to facilitate reciprocation thereof with respect to the cylinder **18**. The other end of the pump rod **40** is disposed within a cylinder **18** and includes an elongated reduced portion **44**, the juncture between the reduced portion **44** and the main portion of the pump rod forming a shoulder **46**.

Telescoped over the reduced portion **44** of the pump rod **40** is a plug **48** whose inner end is provided with a counterbore **50**. Carried by the reduced portion **44** and telescoped over the inner end of the plug **48** is a packing cup **52** which may be in the form of a brake cylinder cup. The packing cup **52** engages the interior surfaces of the cylinder **18** and forms a seal therewith.

The plug 48 and the packing cup 52 are retained on the reduced portion 44 by means of a spacing washer 54 which bears against the packing cup 52. A spacer 56 carried by the reduced portion 44 engages the spacing washer 54. Next there is provided on the reduced portion 44 a rod guide 58 which is perforated, as is best illustrated in Figure 3 to permit the passage of fluid. The rod guide 58 engages the interior surface of the cylinder 18 to guide the various movable components of the pump assembly 16 therethrough. The inner end of the reduced portion 44 is provided with external threads 60 on which there is removably threaded a nut 62 which retains all of the above mentioned components on the reduced portion 44.

In addition to the sealing cup 52, there is provided a sealing bushing which is referred to in general by the reference numeral 64. As is best illustrated in Figure 4, the sealing bushing 64 is tubular and has an internal bore 66 therethrough. The outer end of the sealing bushing 64 is provided with an external annular flange 68 which is clamped between the cap 28 and one end of the cylinder 18. The opposite end of the sealing bushing 64 is provided with a corrugated projecting portion 70 which resiliently engages the interior surface of the cylinder 18 to prevent the passage of fluid between the packing bushing 64 and the cylinder 18.

Referring once again to Figure 2 in particular, it will be seen that the bore 66 in the packing bushing 64 is slightly tapered. Further, the external surface of the plug 48 is complementary tapered. As a result, as the plug 48 moves into the sealing bushing 64, a tight sealing fit between the two is formed thereby further preventing passage of fluid out of the cylinder 18 through the cap 28.

In order that fluid which is syphoned into the cylinder 18 may pass into the can 12, there is carried by the lower part of the cylinder 18 adjacent the cap 28 a discharge tube or pipe 72. The discharge tube 72 is communicated with the interior of the cylinder 18 and is positioned whereby it is disposed between the packing cup 52 and the rod guide 58 when the elements of the pump assembly 16 are in their fully retracted position.

In order that the pump assembly 16 may be mounted on the can 12, there is provided mounting bracket means in the form of a pair of spaced bracket members 74. The bracket members 74 are generally of flat sheet material and have lower portions 76 which are disposed within the confines of the body portion 14 and suitably secured thereto by welding 78. The upper portions of the bracket members 74 are provided with aligned openings 80 through which the cylinder 18 passes. The cylinder 18 may have a drive fit in the openings 80 or may be otherwise secured to the bracket members 74.

Referring now to Figure 5 in particular, it will be seen that the can 12 has a drain fitting 82 which communicates with the interior thereof adjacent the bottom wall 15. The drain fitting 82 is similar to the fitting 22 and is configurated to receive a hose, such as the hose 27. If desired, the hose 27 may be removed from the fitting 22 and secured on the fitting 82 for use in conjunction therewith at the proper time.

Positioned in the lower part of the can 12 and resting upon the bottom wall 15 thereof is a filter 84. The filter is removable from the can 12 and is utilized to strain liquids passing into the can 12 prior to the return of such liquids to their original containers.

An example of the use of the syphoning can 10 is in the removal of metal from transmissions and differential housings. The hose 27 is placed in the convenient opening in such housings and by utilizing the pump assembly 16, the oil is syphoned therefrom. The oil passes down into the can 12 and through the filter 84. The fitting 82 will be closed at this time either by placing one's finger over the end thereof or by a suitable stop member. If desired, a valve may be incorporated in the fitting 82 to

prevent the loss of fluid, such as the oil. After the oil has been pumped from the housing into the can 12, it may then be drained back into the housing by either placing the hose 27 on the fitting 82 or by providing a similar hose. The filter 84 will permit the passage of the oil, but not the metal substance carried thereby. Thus the oil returned to the transmission or differential housing will be clean.

Referring now to Figures 6 and 7 in particular, it will be seen that there is illustrated a slightly modified form of syphon can which is referred to in general by the reference numeral 90. The syphon can 90 includes a can 92 which is very similar to the can 12 and the pump assembly 16. However, in lieu of being permanently secured to the can 92 by mounting brackets such as the bracket members 74, there is provided a modified form of mounting bracket assembly which is referred to in general by the reference numeral 94. The mounting bracket assembly 94 includes a pair of bracket members 96 and 98 which are telescoped over the cylinder 18 between the pipe 72 and the cap 28. The bracket member 98 is welded or otherwise secured to the cylinder 18 as at 100. The bracket member 96 is slidable on the cylinder 18, but abuts against the upper portion of the bracket member 98 to prevent movement.

The lower ends of the bracket members 96 and 98 are in the form of clamping jaws 102 and 104. The clamping jaws 102 and 104 are selectively pulled together by a bolt 106 carried by the bracket member 98 and passing through the bracket member 96. The bolt 106 is in the form of a clamp bolt and is provided with a wing nut 108 for urging the lower portions of the bracket members 96 and 98 together to effect clamping of the can 92 by the jaws 102 and 104. The jaws 102 and 104 are normally urged apart by a coil spring 110 carried by the bolt 106 between the lower portions of the bracket members 96 and 98 above the jaws 102 and 104.

From the foregoing description of the mounting bracket assembly 94, it will be readily apparent that the pump assembly 16 may be quickly and easily secured and removed from a conventional can 92, the can being in the form of the conventional five quart oil can or similar cans found around service stations.

Referring now to Figure 8 in particular, it will be seen that there is illustrated still another modified form of syphon can which is referred to in general by the reference numeral 112. The syphon can 112 includes a conventional five gallon can 114 of the type which includes a closure cap 116. The five gallon can 114 also includes a suitable bail 118 and a handle 120 to facilitate the carrying thereof.

The syphon can 112 also includes one of the pump assemblies 16. The pump assembly 16 is secured to the closure cap 116 by means of the pipe 72, the pipe 72 passing through the closure cap 116 and suitably secured thereto. By unscrewing the closure cap 116 from the can 114, the pump assembly 16 may be easily disconnected therefrom whereby the contents of the can 114 may be easily emptied.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A pump assembly for use in conjunction with a vacuum can, said pump assembly comprising an elongated cylinder, a fluid fitting at one end of said cylinder, a cap at the opposite end of said cylinder, a plunger assembly including an actuating rod, a plug carried by said rod within said cylinder, a packing cup carried by said plug, and a rod guide carried by said rod in guided engagement

with said cylinder, a fitting on said cylinder adjacent said cap for communicating said cylinder with a can, mounting bracket means on said cylinder for mounting said cylinder on a can, a sealing bushing clamped in said opposite end of said cylinder by said cap, said sealing bushing cooperating with said plug to seal said opposite end, said sealing bushing and said plug having complementary tapered mating surfaces, said mounting bracket means including a pair of bracket members having upper portions telescoped over said cylinder, and lower portions having means for attachment to a can.

2. A pump assembly for use in conjunction with a vacuum can, said pump assembly comprising an elongated cylinder, a fluid fitting at one end of said cylinder, a cap at the opposite end of said cylinder, a plunger assembly including an actuating rod, a plug carried by said rod within said cylinder, a packing cup carried by said plug, and a rod guide carried by said rod in guided engagement with said cylinder, a fitting on said cylinder adjacent said cap for communicating said cylinder with a can, mounting means for mounting said cylinder on a can, a sealing bushing clamped in said opposite end of said cylinder by said cap, said sealing bushing cooperating with said plug to seal said opposite end, said sealing bushing and said plug having complementary tapered mating surfaces.

3. The pump assembly of claim 2 wherein said mounting means is in the form of a closure for a can.

4. The pump assembly of claim 2 wherein said mounting means includes a pair of bracket members having upper portions telescoped over said cylinder, and lower portions having means for attachment to a can, said bracket members being widely spaced longitudinally of said cylinder.

5. The pump assembly of claim 2 wherein said mounting means includes a pair of bracket members having upper portions telescoped over said cylinder, and lower portions having means for attachment to a can, said bracket members being closely spaced, said last mentioned means being in the form of clamp means interconnecting said bracket members.

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