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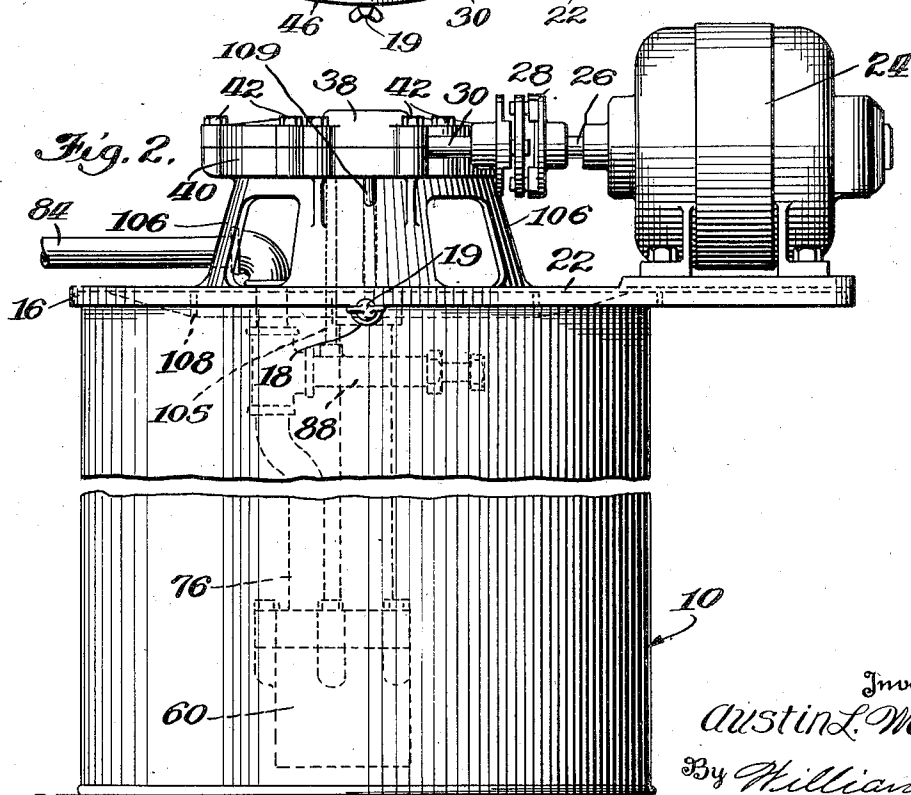
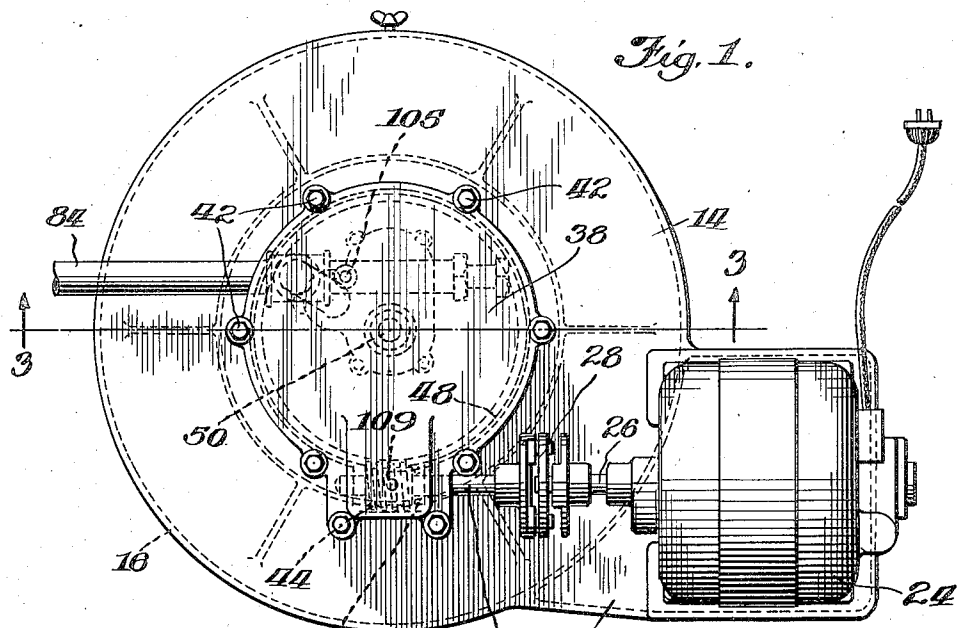
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1,800,333

LUBRICANT DISPENSING APPARATUS

Filed Aug. 19, 1929

3 Sheets-Sheet 1



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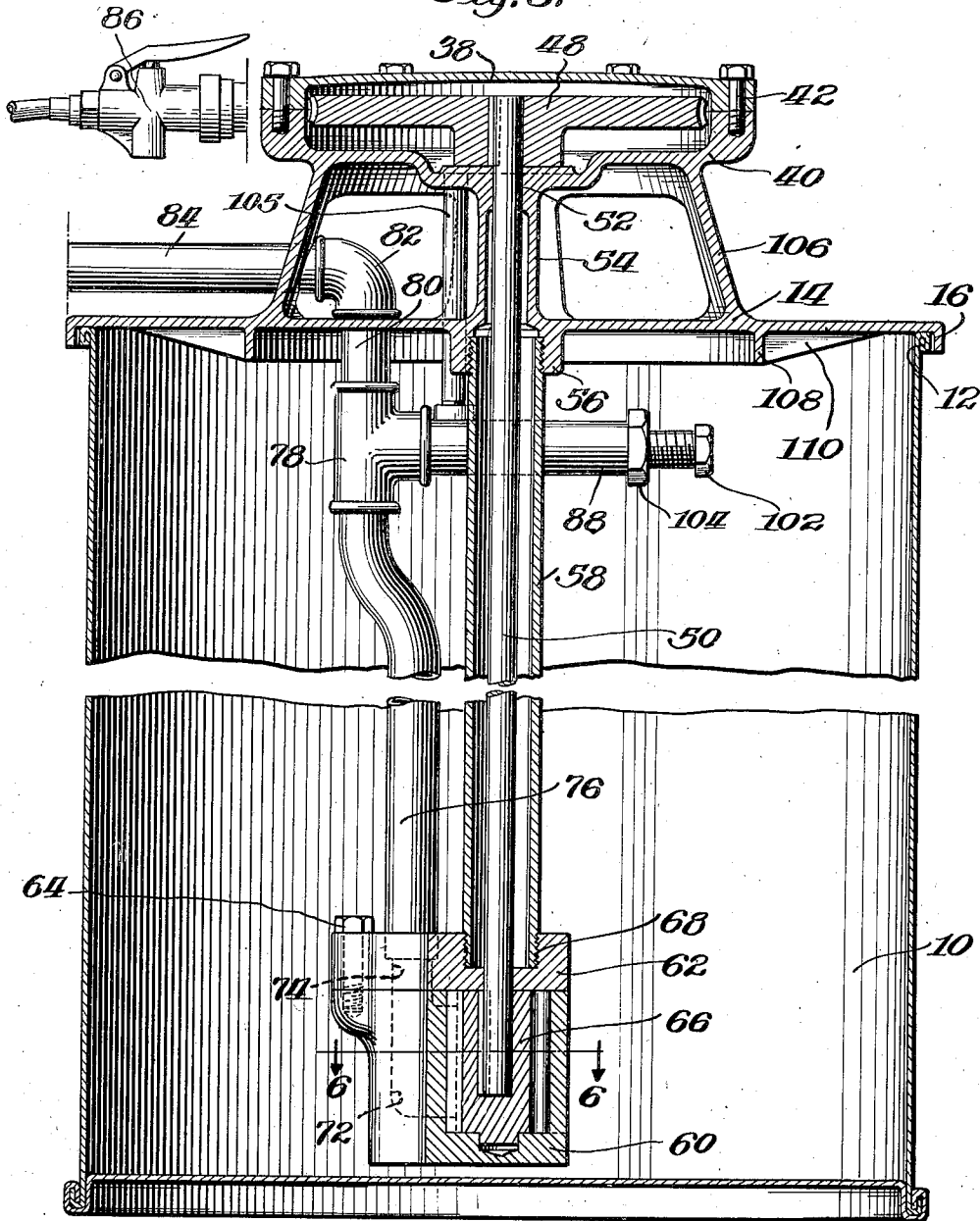
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Fig. 3.



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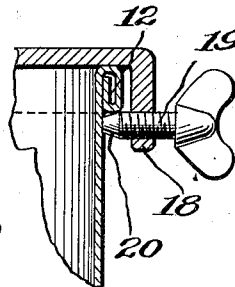
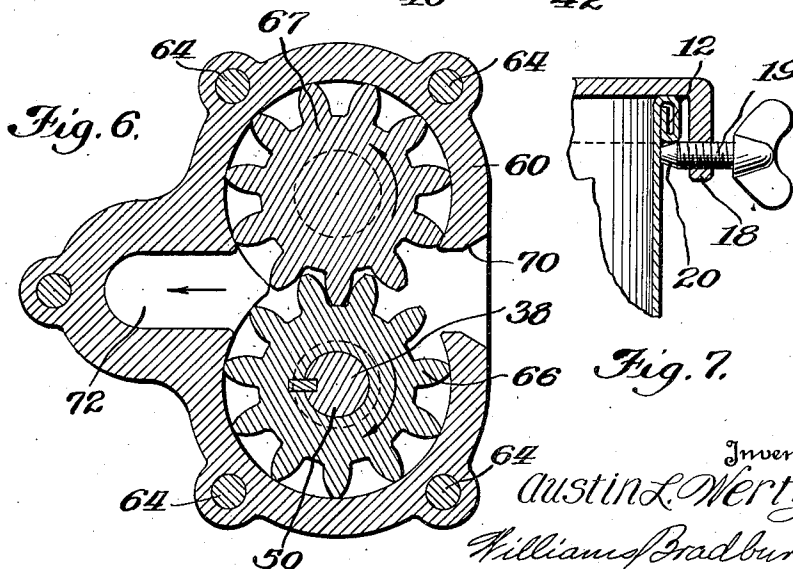
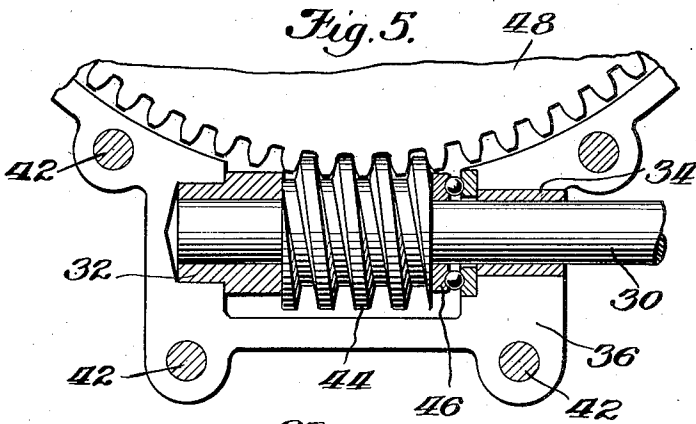
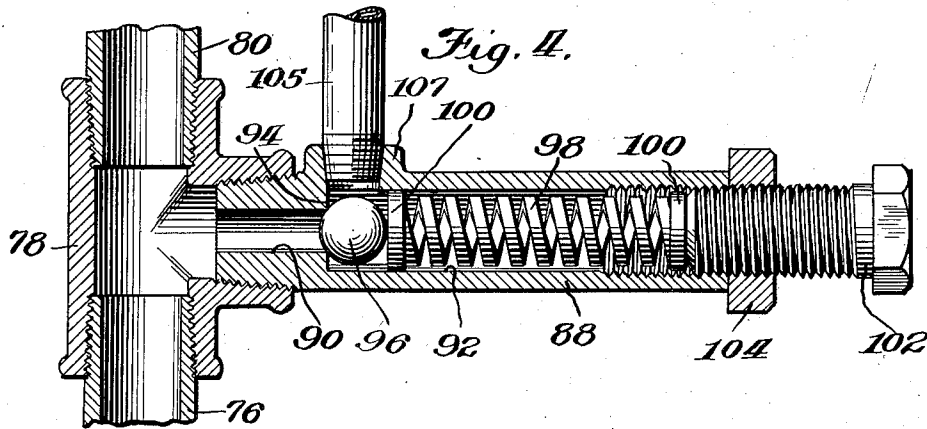
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LUBRICANT DISPENSING APPARATUS

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

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LUBRICANT-DISPENSING APPARATUS

Application filed August 19, 1929. Serial No. 386,793.

My invention relates generally to lubricant dispensers and more particularly to a device of this kind which may be conveniently attached to the usual lubricant shipping container.

It is an object of my invention to provide an improved unitary motor and pump device which may be conveniently secured to a lubricant containing drum to dispense the contents thereof.

A further object is to provide an improved unitary head casting and to provide an improved means for supporting and driving the pump.

Other objects will appear from the following description, reference being had to the accompanying drawings, in which

Fig. 1 is a plan view of my improved lubricant dispenser;

Fig. 2 is a side elevational view thereof.

Fig. 3 is a central vertical sectional view thereof taken on the line 3—3 of Fig. 1;

Fig. 4 is a central vertical sectional view of the pressure relief valve;

Fig. 5 is a detail view, partly in section, showing the worm drive mounting;

Fig. 6 is a horizontal sectional view of the gear pump taken on the line 6—6 of Fig. 3; and

Fig. 7 is a detail view showing the means for clamping the pump unit to the drum.

The apparatus of my invention is adapted to be used in connection with an ordinary lubricant drum or container 10, the upper end of which has a folded bead 12 about its brim.

The motor and pump assembly are mounted upon a unitary base casting 14 which also serves as a cover for the drum. This casting has a peripheral downwardly extending flange 16 which is adapted to fit around the bead 12 of the drum. This flange has a plurality of downwardly extending lugs 18 (Fig. 7) which are threaded to receive thumb screws 19, the inner ends 20 of which are frusto-conical in shape so as cammingly to engage beneath the lower end of the folded bead 12.

The casting 14 has an outwardly extending portion 22 upon which a motor 24 is mounted. The armature shaft 26 of the motor is con-

nected through a flexible coupling 28 with a worm shaft 30. The shaft 30 bears in bushings 32 and 34 which are held between a bracket portion 36 formed integrally with the casting 14 and a cap 38 which is secured to the upper portion 40 of the casting 14 by cap screws 42. A worm 44 which is keyed to or formed integrally with the shaft 30 has its right-hand end (Fig. 5) abutting against a ball thrust bearing 46 which is mounted between the worm and the bracket portion 36. The worm 44 engages in a worm wheel 48 which is keyed at the upper end of a shaft 50 and has a bearing 52 in a central ribbed post 54 formed as an integral part of the casting 14. The casting 14 has an internally threaded boss 56 formed in alignment with the post 54 into which a tubular pump support 58 is screwed.

The pump, which may be a more or less conventional gear pump, comprises a housing 60 having a head 62 secured thereto by a plurality of cap screws 64. A pair of gears 66, 67 are mounted for free rotation within the housing 60, the gear 66 being keyed to the lower end of shaft 50. The gear pump is secured to the lower end of the tubular support 58, its head 62 having a suitable internally threaded recess 68 into which the end of the support 58 is screwed.

The pump has an inlet aperture 70 which extends the full width of the gears, and an outlet passageway 72 which communicates with a registering passageway 74 formed in the head 62. A discharge pipe 76 has its lower end threaded into the head 62 and has a T 78 threaded at its upper end.

A nipple 80 passes through a suitable aperture in the casting 14 and connects the T 78 to an elbow 82 to which the discharge conduit 84 is secured. The discharge conduit is provided with any suitable control valve and nozzle 86.

A pressure relief valve is threaded in the T 78 and comprises a body 88 having a bore 90 in communication with the T and a larger bore 92 formed therein. A shoulder 94 between the ends of the bores 90 and 92 forms a seat for a ball valve 96 which is pressed against the shoulder by a compression coil

spring 98, the ends of which are preferably secured to discs 100, one of the discs 100 bearing against the ball 96 and the other against the end of an adjusting screw 102 which is threaded in the end of the bore 92 and is adapted to be held in adjusted position by a lock-nut 104. A suitable pipe 105 is screw-threaded into a boss 107 formed on body 88 beyond ball 96, and through which the lubricant that flows past the valve 96 may pass into the gear housing casting 40 and serve to lubricate worm wheel 48 and worm 44. An overflow pipe 109 extends from this housing down into the container.

It will be noted that the plate portion of the casting 14 is connected to the upper portion 40 thereof by sloping legs 106. This spider-like connection between the two portions of the casting 40 makes the casting extremely rigid and yet light in weight. An annular reinforcing rib 108 projects downwardly from the lower surface of the plate portion of the casting 14 at a point beyond the place where the legs 106 join the plate portion of the casting and thus serve to take up the stresses which might otherwise be set up in the plate by the legs 106. The rib 108 has suitable triangular shaped fins 110 connecting it with the plate portion of the casting 14.

In operation the motor is started and through the flexible coupling 28 rotates the worm 44 which, in turn, through the worm wheel 48, rotates the shaft 50 and thus the gear pump. The pump continuously draws in lubricant through the port 70 and discharges it through the pipe 76. When it is desired to dispense lubricant the valve in the nozzle 86 is opened, permitting the lubricant to be discharged from the nozzle. When this valve is closed the pump will continue to discharge the lubricant through the pipe 76 until the pressure therein is built up sufficiently to unseat the ball valve 96, whereupon the lubricant discharged by the pump will flow from the pipe 76 through the bore 90, past the unseated valve 96 and through the pipe 105 up to the gear housing casting 40 and serves to lubricate worm wheel 48 and worm 44, from whence, through pipe 109, it flows back to the container. The compression of the spring 98 may be readily adjusted so that the pressure at which the valve 96 will open may be accurately predetermined. The motor may thus run continuously and will constantly maintain pressure in the discharge line sufficient quickly and efficiently to dispense the lubricant.

The apparatus may be quickly and easily set upon a drum and secured thereto by means of the thumb screws 19 which will serve tightly to clamp the apparatus to the drum. It will be observed that the apparatus, aside from the pump, requires only two castings, and these castings are so

formed as to have a plurality of functions. The apparatus may therefore be very economically manufactured, since, due to its construction, a minimum number of machining and assembly operations are required.

The invention is capable of wide variation within equivalent limits and I contemplate such variation as may be desirable or useful in the particular adaptation of the invention shown, or in its adaptation to other apparatus.

I do not restrict myself in any unessential particulars, but what I claim and desire to secure by Letters Patent is:

1. In a lubricant dispensing apparatus, the combination of a unitary casting forming a cover plate, a motor mounting, and a half of a worm and gear housing; a cap closing the top of said casting, means for securing said casting to the top of a lubricant containing drum, a motor mounted on said casting, a worm connected to said motor, a worm gear meshing with said worm, a shaft secured to said worm gear and extending downwardly therefrom, a gear pump driven by said shaft, a tubular support surrounding said shaft and secured at its ends to said casting and to said pump, a discharge conduit connected to said pump, means for controlling the discharge from said conduit, lubricant pressure relief means connected to said conduit at a point beneath said casting, and a conduit connecting the discharge of said relief means with said casting whereby the discharge from said pressure relief means will flow into the interior of the housing formed by said casting and said cap.

2. In a lubricant dispensing apparatus, the combination of a casting adapted to form a detachable cover for a lubricant drum, a motor mounted on said casting, a vertical shaft extending through said casting and bearing therein, gear means connecting said motor and said shaft, a pump adapted to be driven by and connected to the lower end of said shaft, and a tubular support having its upper end secured to said casting and its lower end secured to said pump, said tubular support surrounding and protecting said shaft, whereby said parts may be utilized as a unit to empty lubricant drums.

3. A unitary lubricant dispensing apparatus for emptying lubricant containing drums, comprising a casting adapted to be placed upon and to cover a lubricant containing drum, means for detachably securing said casting to a drum, a vertical shaft mounted and bearing in said casting and extending downwardly therefrom, motor drive means for rotating said shaft, a tubular support secured to said casting and surrounding said shaft, a gear pump secured at the lower end of said support and having one of its gears connected to the lower end of said shaft,

and a discharge conduit connected to said pump and extending through said casting.

4. In a lubricant dispensing apparatus, the combination of a unitary casting forming
5 a cover plate, a motor mounting, and a half
of a worm and gear housing; a cap for said
housing means for detachably securing said
casting to the top of a lubricant containing
10 drum, a motor mounted on said casting, a
worm connected to said motor, a worm gear
meshing with said worm, a shaft secured to
said worm gear and extending downwardly
therefrom, a gear pump driven by said shaft,
15 a tubular support surrounding said shaft and
secured at its ends to said casting and to
said pump, a discharge conduit connected
to said pump, means for controlling the dis-
charge from said conduit, and lubricant pres-
20 sure relief means connected to said conduit
at a point beneath said casting, means con-
ducting the discharge from said pressure re-
lief means to said housing, and a drain con-
duit connecting said housing with said drum.

5. In a lubricant dispensing apparatus,
25 the combination of a lubricant containing
drum, a motor driven pump unit secured to
said drum, said unit having a lubricant in-
let positioned adjacent the bottom of said
drum and comprising a gear housing, a dis-
30 charge conduit connected to the pump of
said unit, a pressure relief valve in communi-
cation with said conduit, a pipe extending
from said valve to the gear housing of said
motor driven pump unit for lubricating said
35 unit with the overflow through said valve
and a return discharge pipe from said hous-
ing to said drum.

In witness whereof, I hereunto subscribe
my name this 15th day of August, 1929.

40 AUSTIN L. WERTZ.

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