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OIL FILLING AND BREATHER PIPE MEANS
FOR INTERNAL-COMBUSTION ENGINES

2,644,430

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2 Sheets-Sheet 1

Fig. 1.

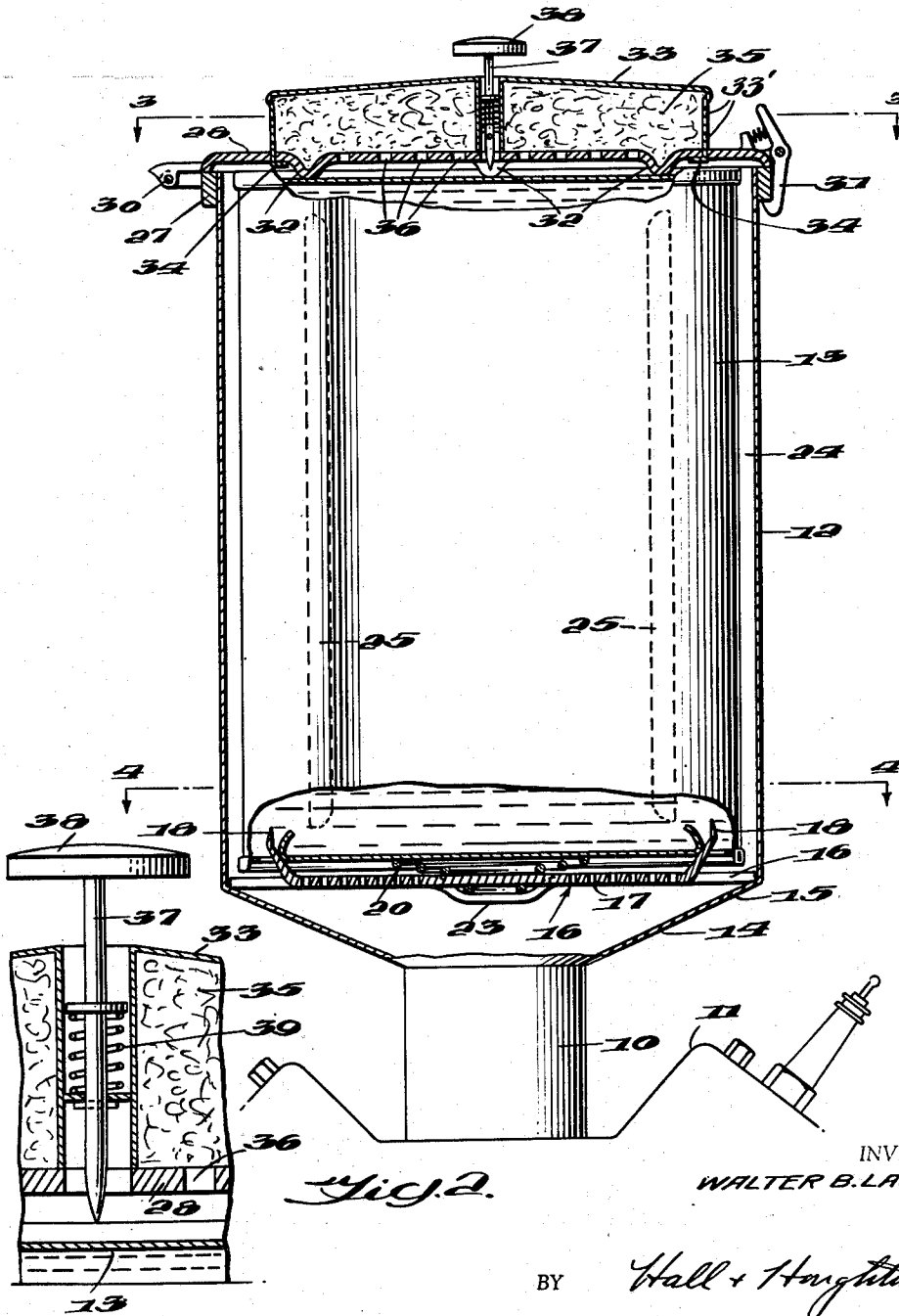


Fig. 2.

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Fig. 3.

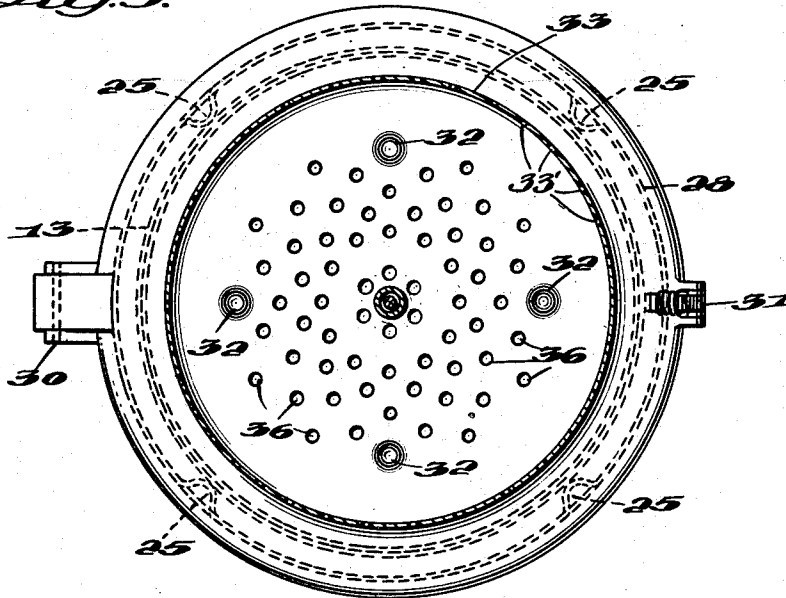
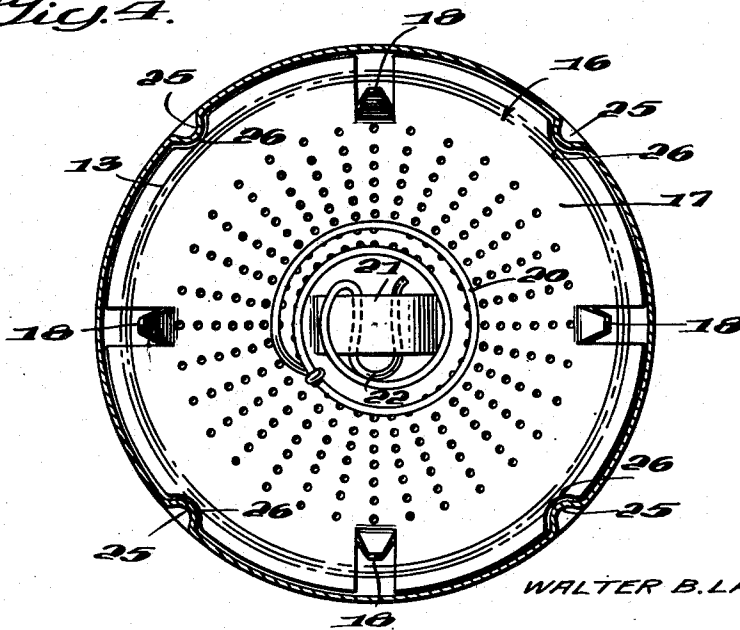


Fig. 4.



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OIL FILLING AND BREATHER PIPE MEANS FOR INTERNAL-COMBUSTION ENGINES

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12 Claims. (Cl. 121—194)

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This invention relates to combined oil filler and breather pipe means for automobiles and the like, and aims to provide a simple and effective arrangement for improving the oil filling of such vehicles.

In automobiles and the like as currently constructed an oil filler pipe is provided leading downwardly to, or inwardly through the side of, the engine through which lubricating oil is introduced into the crank case directly, or through the valve chamber. The oil filler pipe is usually provided with a so-called breather-cap or dust-cap removably engaged in its upper end and containing a filter element through which air may be drawn into the crank case for ventilating the same. The filler pipe is therefore frequently termed a breather pipe.

At the present time the better grades of lubricating oil are generally supplied in sealed one quart cans, and for oil servicing of the vehicles the cans are punctured and their contents poured into a funnel inserted into the filling pipe, or the cans are punctured by a portable funnel or spout which in turn is inserted into the breather pipe while the oil passes therethrough. After the delivery is made the funnel or spout is removed by the mechanic or person servicing the car.

Especially in cold weather the drainage of the oil from the punctured cans and funnels used is apt to be very slow and incomplete. The car driver and the serviceman are delayed by the necessity to wait for the slow draining to occur. As a rule the draining is not conducted for a sufficient length of time to scavenge substantially all of the oil, and an amount which may range up to several ounces out of each quart is left in the can. Indeed many service stations invert the cans from which oil has been delivered in troughs or barrels for the purpose of recovering the residual oil, paid for by the customer, but which was not delivered to him. It is safe to say that in the automotive field in connection with oil additions frequently 10% or more of the oil purchased by the customer fails of delivery.

Principal objects of the present invention are to provide a new structure of oil filler and breather pipe, formed to insure full delivery to the customer of oil purchased in refinery sealed cans, and which affects a marked saving in time of delivery of the oil at the service stop. Other objects reside in the particular arrangements and combinations of parts and in subsidiary elements contributing to the attainment of the principal objects. The invention resides in the novel structural features hereinafter described by example,

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and is more particularly pointed out in the appended claims.

In the accompanying drawings of illustrative embodiments of the invention

Fig. 1 is a sectional elevation of one embodiment in association with an automotive engine indicated diagrammatically.

Fig. 2 is a sectional detail to an enlarged scale.

Fig. 3 is a horizontal section taken on the line 3—3, Fig. 1, in the direction indicated by the arrows.

Fig. 4 is a horizontal section taken on the line 4—4 of Fig. 1 looking in the direction of the arrows but illustrating a modified spring mounting.

In the illustrative embodiments the oil filler or breather pipe 10 (Fig. 1) is shown mounted in a conventional manner on a V-type engine generally indicated at 11. The filler and breather structure in the form shown in Fig. 1 comprises a chamber 12, preferably of generally cylindrical form and of a size to freely receive, with clearance for the purposes hereinafter described, a standard one quart can of oil exemplified at 13. The bottom of the chamber 12 in the form shown is tapered downwardly funnelwise, as at 14, for funneling the lubricant into the filler pipe 10. An abutment 15, herein afforded by the peripheral portion of the bottom 14, is provided for supporting a sub-assembly 16.

The sub-assembly 16 in the form shown in Fig. 4 comprises a strainer plate 17 which rests against the abutment 15, Fig. 1, and serves to prevent any foreign objects that may be dropped into the chamber 12 from passing therefrom through the pipe 10 and into the engine. As shown in Figs. 1 and 4 can opening means 18, preferably struck up from and integral with the strainer plate 17 is also provided, preferably in the sub-assembly. In addition an ejector means in the form of a spiral spring element 20 is provided for lifting the can from which the oil has been discharged from the can-opening means and raising it out of the chamber 12 sufficiently to facilitate its ready removal. The ejector means may take any suitable form, and when formed as a spiral spring may be secured in any suitable way, but preferably is carried by the sub-assembly 16, being shown as mounted on the strainer plate 17 in Fig. 4 and in Fig. 1. In the arrangement of Fig. 4 there is provided centrally of the plate 17 an up-struck portion or strip 21, and the lower smaller end of the spiral spring 20 is bent upon itself to form a bight 22 which is inserted under the strip 21. If desired the strip 21 may thereafter be deformed,

as by depressing of its central portion into the bight 22, to firmly retain the spring in its mounted position. In the form of Fig. 1 a similar but modified arrangement is shown in which the strip 23 is downwardly displaced so that the bight 5 overlies the same with its respective ends underlying the main portion of the plate 17 and retained thereby. In this case the strip 23 may be upwardly deformed at its central portion to secure the spring against accidental removal. 10

As mentioned, the chamber 12 is preferably sized to receive and house a standard one quart receptacle 13 of lubricant with clearance space 24 about its sides, which space preferably has a cross sectional area approximately equal to that of the discharge end of the breather pipe indicated at 10 in Fig. 1. Guide means illustrated as comprising ribs 25 struck inwardly from the side walls of the chamber are provided for guiding a standard one quart receptacle approximately centrally in said chamber to align its bottom wall with the can opening means 18 which preferably puncture the receptacle close to the outer edges of its bottom and turn the cut flaps inwardly, as in Fig. 1. As best shown in Fig. 1 the ribs 25 are preferably terminated in spaced relation to the abutment 15, and the sub-assembly 16 or strainer plate 17, see Fig. 4, is preferably notched, as at 26, so that it may be slid down along the ribs or grooves 25 and may be rotated below the lower ends thereof, if desired, to displace the notches 26 relative to the ribs 25. 15 20 25 30

Referring to Figs. 1 and 3 the upper end of the chamber 12, which is desirably reinforced by a ring or collar 27, is provided with a cover 28. In the form shown the said cover is hinged to the reinforcing member 27 in spaced relation to the chamber 12, as at 30, so that the cover may be moved to a position in which it does not interfere with the placing or removal of the container 13. Latch means 31 of any suitable form, shown as of the spring pressed type and carried by the cover 28 and engaging with the ring 27, is provided for retaining the cover in closed position. 35 40

Container depressing means 32 which may be formed by downward displacement of spaced portions of the cover 28, is provided to hold the container 13 in spaced relation to the cover plate when the latter is in place within the closed chamber 12. 45 50

The breather pipe is ventilated in the form shown by suitable air filter means illustrated as carried by the cover 28. Such filter means comprises a filter housing 33, having perforations 33', secured in any suitable way to the top of the cover, as by employment of bendable tabs 34 passing through cooperating slots in the cover. The filter housing is filled with metal wool or other appropriate air filtering medium 35 (not shown in Fig. 3). The portion of the cover 23 underlying the filter element is perforated as shown at 36, and these perforations enable clean, cool air to be drawn through the filter element 35 and the perforations 36, through the space above the can 13 and between the depresser elements 32 and through the clearance space 24 and the filler pipe delivery end 10 into the crank case of the internal combustion engine for ventilating the same. 55 60 65

As shown in Figs. 1 and 2, if desired, means may be provided for puncturing the upper portion of the oil receptacle to enable air to enter the same for expediting drainage of oil therefrom. This means may be of any suitable form. For example, as shown in the drawings it may 70 75

comprise a spring raised puncturing member 37 having a striker head 38 on its upper end. As will be obvious from Fig. 2 with the receptacle 13 in place and the cover closed, a sharp blow against the striker head 38 will drive the pointed tip of the puncturing member 37 through the container 13, and the spring 39 will then retract the puncturing member 27 leaving an open puncture in the container top. As used herein, the terms "can," "container" and "receptacle" are to be considered applicable to refinery sealed packages, regardless of the material of which they are constructed. While "refinery sealed cans" of oil are customarily of metal, it is contemplated that paper, fiber, or plastic receptacles may be employed. 5 10 15

From the foregoing description it will be apparent that when it is desired to add a quart of oil at a service stop, this may be effected without delay by simply opening cover 28, and dropping a fresh can of oil, which does not even have to be opened manually, into the chamber or housing 12. The cover 28 may then be closed and the motorist may proceed upon his way without waiting for drainage of the container 13 even in the coldest weather. Moreover by employment of the present invention full delivery of all the contents of the container 13 to the crank case of the engine is assured and loss of up to 10% or more of the oil purchased is avoided. When the cover 28 is closed it assures full puncture of the bottom of the receptacle 13 and compression of the ejector spring 20. When the cover is opened the ejector 20 elevates the empty receptacle 13 sufficiently through the top of the housing 12 to enable it to be quickly grasped and removed for replacement with a fresh refinery sealed oil package. 20 25 30 35 40 45 50

During oil changes the device afforded by this invention is also highly useful. The capacity of the chamber 12 is relatively large and even if five quarts or more of oil dispensed in bulk or from a can of a gallon or more capacity is being poured through the filler pipe, the breadth of the top of the receptacle 12 aids in avoiding spilling of the oil upon the engine and its capacity allows the rate of pouring of the oil to be varied within wide limits without spilling. In addition the presence of the strainer 17 guards against the introduction of foreign matter, such as can seals, can caps, nuts, bolts, washers, etc. into the crank case, as sometimes occurs during the bulk dispensing of oil by careless service attendants. 55 60 65

In addition, the present invention is extremely useful to an owner who services his own car with factory sealed oil, either for reasons of economy, or because remote from a service station, or during long trips, as it avoids delays for him and also enables the addition of oil with minimum chance of soiling the hands or clothing. 70 75

It will be understood that the exemplary embodiment herein described is illustrative and not restrictive of the invention, the scope of which is defined in the appended claims, and that all modifications coming within the meaning and range of equivalency of the claims are intended to be included therein.

I claim:

1. A device of the class described comprising a breather and oil filler pipe for an internal combustion engine, said breather and oil filler pipe comprising a chamber sized to receive and completely house a sealed can of oil with clearance about its sides, can opening means within said chamber for engaging, piercing, and opening the 70 75

sealed can as it is forced downwardly against the same, a cover for closing said chamber, and can depressing means for positioning the can in spaced relation thereto, air filtering means carried by said cover, said chamber being vented through said air filtering means, and means for securing said vented cover in chamber closing position.

2. A device according to claim 1 further comprising a grill or strainer within and removably supported in spaced relation to the bottom of said chamber, an ejector means for elevating the empty can when said cover means is open to facilitate removal thereof from said chamber, said ejector means being carried by and removable with said grill or strainer and projecting upwardly therefrom.

3. A device according to claim 1 in which the can opening means is formed integral with and struck upwardly from said grill or strainer, and is removable therewith.

4. A device of the class described comprising a breather and oil filler pipe for an internal combustion engine, said breather pipe comprising a chamber sized to receive and completely house a sealed can of oil with clearance about its sides, can opening means within said chamber for engaging, piercing and opening the sealed can as it is forced downwardly against the same, a cover for said chamber, said cover comprising can depressing means for positioning the can in spaced relation thereto, air filtering means carried by said cover, said chamber being vented through said air filtering means, means for securing said cover in chamber closing position, and ejector means for elevating the empty can when said cover means is opened to facilitate removal thereof from said chamber.

5. A device according to claim 4, said can depressing means comprising spaced projections extending from said cover.

6. A device according to claim 4 in which the side walls of the chamber are ribbed for guiding the can approximately centrally of the chamber.

7. A device according to claim 6, said ribs terminating above the bottom of the chamber, and said device further comprising a strainer in the form of a perforated plate notched to slide along said ribs and rotatable in the bottom of said chamber to misalign its notches with said ribs.

8. A device according to claim 7, said ejector

means comprising a spiral spring secured to the central portion of said perforated plate and removable therewith and compressible theretoward by the can as the latter is depressed by said can depressing means.

9. A device according to claim 8, said plate comprising a centrally struck-out strip and said spring having a reversely bent bight engaged between said strip and plate for securing said spring to the central portion of said plate.

10. A breather and oil filler pipe for a vehicle employing an internal combustion engine, said pipe having a perforated cover with an air filter associated therewith and having a discharge end for delivering oil to the engine, said pipe comprising between said air filter and said discharge end a chamber for bodily receiving and completely housing a sealed can of oil, and means within said chamber for bottom puncturing such can of oil to permit draining of the oil therefrom through said discharge end and into the engine while the vehicle is in motion with its engine breathing through said air filter.

11. A sub-assembly for a device of the class described comprising a perforated strainer plate having can-opening elements struck-out therefrom and turned upwardly out of the plane of the plate and having a spiral spring secured centrally of the plate and extending from the upper side thereof and compressible theretoward.

12. A sub-assembly according to claim 11 in which said spiral spring is formed with a reversely bent bight and in which said plate has a centrally positioned strip partially severed therefrom and embracing said bight for securing said spring to said plate.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,635,563	Sanford	July 12, 1927
1,741,339	Sager	Dec. 31, 1929
1,887,592	Goodfellow	Nov. 15, 1932
2,024,898	Weltner	Dec. 17, 1935
2,034,958	Plaster	Mar. 24, 1936
2,114,459	Wiswell	Apr. 19, 1938
2,130,085	Harks	Sept. 13, 1938
2,135,378	Allen	Nov. 1, 1938