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CRANK CASE AND PIT DRAINER

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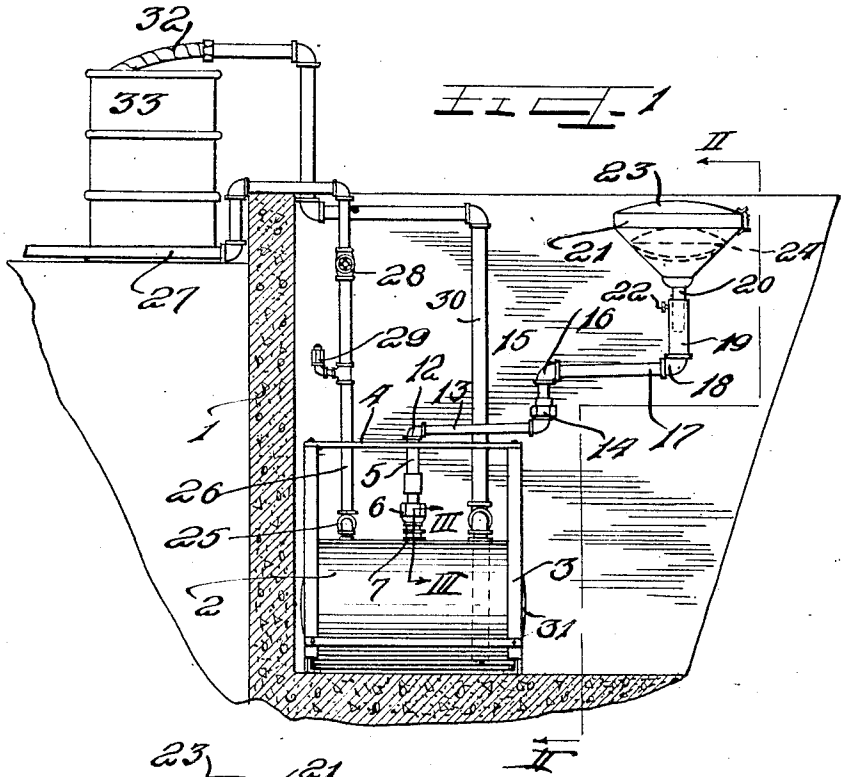


FIG. 1

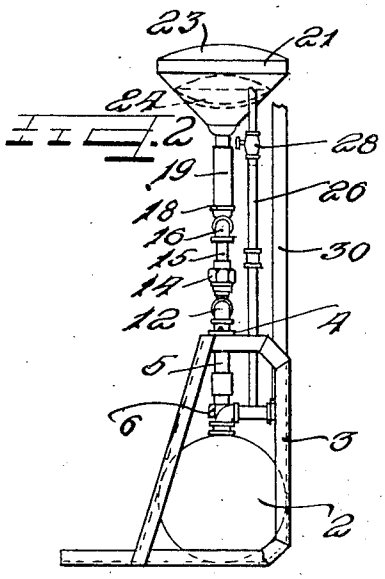


FIG. 2

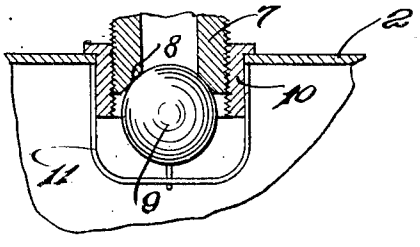


FIG. 3

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UNITED STATES PATENT OFFICE.

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CRANK-CASE AND PIT DRAINER.

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The majority of automobile service or filling stations have pits over which a car is adapted to be driven to permit the crank case oil to be drained therefrom. The attendant is required to climb down into the pit, unscrew the oil drain plug to permit the crank case oil to be released, allowing the oil to splash out but permitting most of said oil to drop into a pan or bucket at the bottom of the pit. This condition not only leaves the pit in a dirty, greasy condition, but necessitates lifting of the filled oil buckets from the pit by the attendant to permit the drained crank case oil to be dumped into a barrel or other receptacle. The entire draining operation is at the best a very obnoxious and dirty one and a considerable amount of energy must be expended by an attendant in carrying the filled oil cans or buckets out of the pit.

To obviate the above conditions this invention has been devised for the purpose of simplifying and expediting the draining of automobile crank cases by providing a movable and adjustable drain funnel mechanism in the drain pit connected with a receiving tank for the oil, said tank having a pressure system connected therewith adapted when set in operation to transmit the oil from the drain pit tank upwardly into a barrel or receptacle mounted in a convenient position outside of the drain pit.

It is an object of this invention to provide an adjustable crank case draining mechanism for use in service station drain pits.

It is also an object of this invention to provide a service station drain pit having a crank case oil tank mounted therein to which an adjustable or swinging oil drain, and pressure system, is connected to permit oil delivered into the tank to be removed by pressure through suitable piping leading from said tank into a barrel positioned outside of the drain pit.

It is a further object of this invention to provide a service station drain pit with an adjustable swinging oil drain mechanism adapted to be readily adjusted to be positioned under the drain outlet of an automobile crank case regardless of the position of the automobile over the drain pit, so that oil drained from the crank case may be readily delivered to a receiving tank in the pit and then forced therefrom by pressure through suitable piping to a receiving container located in a convenient position outside of the pit.

It is an important object of this invention to provide a compact drain unit for use in service station drain pits, said unit being adjustable to obviate the exact positioning of an automobile over the main pit and furthermore affording a simplified and rapid method whereby the drained oil may be automatically transferred from a receiving tank in the pit into a receiving barrel or container outside of a pit relieving the attendant from the exertion of energy in carrying the drained crank case oil from the pit.

Other and further important objects of this invention will be apparent from the disclosures in the specification and the accompanying drawings.

This invention (in a preferred form) is illustrated in the drawings and hereinafter more fully described.

On the drawings:

Figure 1 is a fragmentary vertical sectional view of a filling station drain pit equipped with an improved crank case and pit drainer unit embodying the principles of this invention.

Figure 2 is a fragmentary end elevation of the drain unit taken on line II—II of Figure 1.

Figure 3 is an enlarged fragmentary detail section of the drain check valve taken on line III—III of Figure 1.

As shown on the drawings:

The reference numeral 1 indicates a service or filling station drain pit constructed of concrete or any other suitable material and having mounted therein an improved crank case and pit drainer embodying the principles of this invention and comprising a receiving tank or container 2 tested to a predetermined air pressure and positioned within a framework 3 which may be rigidly secured in position in the pit by retaining bolts or other suitable means. The framework 3 is provided with a longitudinally positioned top bar 4 having an aperture in substantially the middle portion thereof. Projecting vertically through the aperture in the top bar 4 is a vertical drain pipe 5 the lower end of which terminates in a swing joint 6. Connected to the lower end of the swing joint 6 is an externally threaded sleeve or pipe 7 the lower end of which is reamed out to form a valve seat 8 with which a ball

valve 9 is adapted to coact. The pipe 7 is threaded into an internally threaded flanged socket or collar 10 engaged in an opening in the top middle portion of the tank 2. A wire cage or guard 11 is supported on the inner end of the socket 10 to prevent the check valve ball 9 from being displaced. Under ordinary conditions the ball valve 9 is adapted to drop by gravity into the cage 11, thereby opening the drain inlet into the tank 2. The upper end of the vertical drain pipe 5 has an elbow 12 connected thereto to which one end of an inclined pipe 13 is connected. The other end of the pipe 13 is connected to a second or upper swing joint 14 which also supports a short vertical pipe 15. Attached to the upper end of the vertical pipe 15 is another elbow joint 16 in which one end of an upwardly inclined pipe 17 is secured. The pipe 17 has engaged on its upper end an elbow 18 in which a stand pipe or sleeve 19 is secured. Adjustably projecting into the upper end of the stand pipe 19 is a drain nozzle or spout 20 of an oil receiving funnel 21. The funnel is held in an adjusted position by means of a set screw 22 or other suitable means. Pivotally mounted on the funnel 21 is a cover 23 for normally closing the funnel when the drain unit is not in use. Mounted within the drain funnel 21 is a screen 24 of any desired type or construction. The two swing joints 6 and 14 in the piping between the funnel 21 and the tank 2 permit the funnel to be moved into different positions in the drain pit so that a driver may stop a car at any point over the pit and still be served.

Also connected to the top of the tank 2 by means of a connector or union 25 is the lower end of an air pressure pipe 26 which projects upwardly out of the drain pit and is connected by means of suitable piping 27 with an air pressure pump, air line, or the like. Mounted in the upper portion of the air pressure pipe 26 is an air control valve 28 which controls the admission of air under pressure from the air pressure supply line 27 into the oil tank 2. Connected in the air pressure pipe 26 between the control valve 28 and the union 25 is an air relief and check valve 29 which serves to guard against the formation of an air pocket while the crank case oil is drained into the receiving tank 2.

To permit the oil delivered into the receiving tank 2 to be removed therefrom when air under pressure is in said tank a discharge pipe 30 extends downwardly in the pit and has the lower end thereof projecting downwardly through the tank to a point substantially adjacent the bottom of said tank, as shown in dotted lines at 31 in Figure 1. The discharge piping extends upwardly out of the drain pit and has connected to the upper end thereof a flexible hose or pipe 32 the discharge end of which is adapted to be connected with the top of an oil receiving barrel or container 33 positioned in any convenient location outside of the drain pit 1. The flexible discharge pipe 32 is releasably connected with the barrel 33 so that when said barrel is filled said flexible pipe 32 may be disconnected so that the barrel may be removed and closed and another barrel substituted in place thereof.

The operation is as follows:

With a service or filling station drain pit equipped with an improved crank case and pit drainer of the class described the draining of automobile crank cases is made more convenient for an attendant, reduces the amount of work, and is practically a clean job which may be performed in a very short time compared with old drain methods, and furthermore does not require a person driving an automobile to be particular as to just where the automobile is positioned over the drain pit.

When an automobile is to be drained it is only necessary for the driver to drive the car over the pit in any position after which the attendant descends into the pit and swings the drain piping around until the funnel 21 is positioned beneath the crank case drainer. The funnel cover 23 is then opened and, if necessary, the funnel is raised by releasing the set screw 22, permitting said funnel to be adjusted to a desired height after which the set screw may again be tightened to hold the funnel in its adjusted position. Ordinarily the height of the drain funnel 21 may be set at a position which will be convenient for the draining of average cars. With the drain funnel positioned beneath the drain outlet of the car the crank case drain plug is removed and the crank case oil is permitted to drain directly into the funnel through the drain piping into the receiving tank 2. After a draining operation the crank case drain plug is put back into position and the funnel cover 23 is closed. During the draining of a crank case the air relief and check valve mechanism 29 permits escape of air from the tank 2, thereby guarding against the formation of an air pocket in the tank while the crank case oil is being delivered thereto.

When the receiving tank 2 is filled with crank case drainings the air control valve 28 is opened, thereby permitting air under pressure to pass through the pipe 26 and into the tank 2. With the admission of air under pressure into the tank 2 the air relief check valve at 29 is closed as is also the ball check valve 9 which, due to the pressure in the tank 2, is moved to seat against the valve seat 8 (Figure 3). It will thus be noted that with the two check valves closed that the oil in the tank 2 is subjected directly to the air pressure which acts to cause the oil to pass upwardly through the outlet pipes 31 and 30

to be discharged from the discharge pipe 32 into the receiving barrel or container 33 which may be conveniently positioned in any desired location outside of the drain pit 1. When the tank 2 has been emptied by the action of the air pressure the air control valve 28 is again closed and the unit is ready for the next draining operation.

I am aware that many changes may be made, and numerous details of construction may be varied through a wide range without departing from the principles of this invention, and I therefore do not purpose limiting the patent granted hereon, otherwise than necessitated by the prior art.

I claim as my invention:

A crank case and pit drainer of the class described comprising an oil receiving tank, a remote oil receiving container, an adjustable drain mechanism connected with said tank, a control valve therein, a discharge piping leading from said tank to said remote container, and valve controlled pressure means connected with said tank adapted when in operation to close the drain mechanism control valve and force the oil from said tank by pressure outwardly through said discharge pipe into the remote container.

In testimony whereof I have hereunto subscribed my name at Dubuque, Dubuque County, Iowa.

ANDREW M. MORRISON.