Nov. 24, 1942. E. W. N. BOOSEY 2,303,109

GREASE AND OIL INTERCEPTORS

Filed May 15, 1940

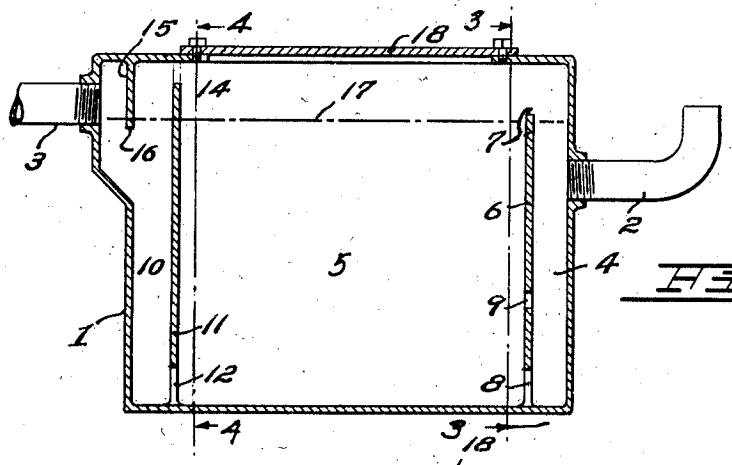


FIG. 1.

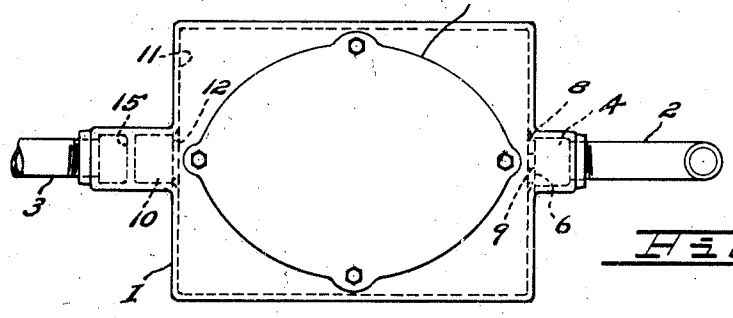


FIG. 2.

FIG. 3.

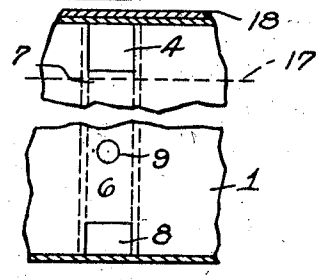
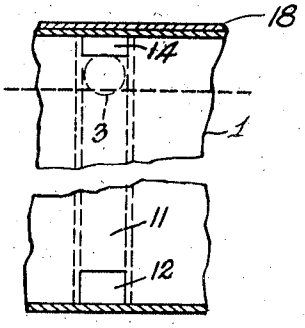


FIG. 4.



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UNITED STATES PATENT OFFICE

2,303,109

GREASE AND OIL INTERCEPTOR

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Application May 15, 1940, Serial No. 335,372

5 Claims. (Cl. 182—9)

This invention relates to grease interceptors, the object being to provide a new and improved construction wherein a permanent head pressure is provided within the body of the interceptor and when the liquid level rises in the interceptor by discharge of additional liquid thereto tending to increase head pressure, liquid will discharge to the outlet without decrease in volume of air at the top of the interceptor body.

In previous structures in which an air space is provided in the top of the body air may be discharged to the outlet as the liquid level rises and thus the head pressure will vary in the interceptor. In my improved construction a permanent head pressure is provided which prevents surge of liquid within the body and an air lock is provided to maintain a predetermined volume of air and gas in the interceptor and permits excess air and gas to pass to the outlet.

These and other objects and features of the invention are hereinafter more fully described and claimed and shown in preferred form in the accompanying drawing in which—

Fig. 1 is a vertical section of one form of my improved grease interceptor.

Fig. 2 is a plan view thereof.

Fig. 3 is a section taken on line 3—3 of Fig. 1.

Fig. 4 is a section taken on line 4—4 of Fig. 1.

In the form of the invention shown in Fig. 1 the body of the interceptor is indicated at 1 and has an inlet 2 on one side below the liquid level and an outlet 3 on the opposite side the lowermost point of which is above the liquid level.

The inlet 2 opens to a vertical chamber 4 provided on the inlet side of the body and is separated from the interior 5 of the body by the vertical wall 6 which terminates below the top of the body and above the normal liquid level at the point 7. The wall 6 is integral with the inlet end wall of the body and has an aperture 8 opening to the bottom of the vertical chamber 4 and is also provided with an aperture 9 above the aperture 8 the purpose of which aperture 9 is to permit greases to pass from the interior 5 of the body to the vertical chamber 4 when grease accumulates within the interior of the body to a depth to pass through the aperture 9. This grease may flow upward to the inlet 2 and clog the same thereby requiring the grease to be withdrawn to permit the interceptor to function. In this manner the interceptor is prevented from becoming overloaded.

The opposite end of the body is provided with a conduit-like portion 10 extending outwardly from the body as shown in Fig. 2 and to the upper end of which the outlet conduit 3 is connected. There is an integral wall 11 at the outlet having an opening 12 therein at the bottom of the interceptor and extends at the upper end to above the liquid level in the chamber and is spaced from the top of the body to provide an air passageway 14. There is also a depending baffle plate 15 extending from the top downwardly to below the top 7 of the wall 6 adjacent the outlet. The bottom 16 of the wall 15 extends a short distance below the lowermost point of the outlet 3. The normal water level, indicated by the dotted line 17, is thus slightly above the lowermost point of the outlet 3 and slightly below the upper end 7 of the wall 6.

With this described arrangement of parts the device operates as follows: Assuming that the interceptor contains liquid indicated at the level 17, inflow of additional liquids through the inlet 2 discharges into the passageway 4 and tends to raise the water level and, as the level rises, air is compressed in the upper part of the chamber until the liquid begins to flow to the outlet the lowermost point of which is the flow level in the interceptor body. It will be noted that increase in air pressure in the top of the interceptor will cause the same to by-pass to the outlet below the edge 16 of the baffle plate 15. Thus there will be no accumulation of gases above the liquid level in the normal operation of the device inasmuch as an accumulation would tend to increase the volume of air and gas on the top of the liquid and thus tend to increase the pressure of gases causing discharge of excess air and gas to the outlet. In other words to provide a substantially permanent head pressure in the body.

It will be further noted that the upper end 7 of the wall 6 is a little above the normal liquid level and that greases and oils in the liquid discharging into the vertical chamber 4 at each flushing will to a major extent pass over the top 7 of the wall 6 to the top of the liquid between the walls 6 and 11 and, as grease accumulates on the liquid between the said walls, water will tend to flow from the inlet through the apertures 8 and 12 to the outlet. The distance between the walls 6 and 11 is sufficient to permit the greases and oils passing through the aperture 8 to rise to the liquid level and any air discharging with the liquid passing through the inlet 2 may rise to the top of the body.

When sufficient depth of grease has accumulated in the body it may pass to the inlet through the aperture 9 in the wall 6 and finally tend to stop the inlet thus requiring the grease to be removed from the body to enable the interceptor to again properly function.

In the form of the invention shown in Fig. 1 there is provided a removable cover 18, shown in Fig. 2. This cover is sealed to the top of the interceptor to prevent escape of gases and air through the top.

The described apparatus is particularly adaptable for use in retaining the liquid greases and oils flowing thereinto through the inlet 2 and

while the term "grease" is used the principal purpose of the invention is to prevent oil from passing to the sewer. In either event, however, the oils and greases are held within the interceptor body.

Having thus briefly described my invention, its utility and mode of operation, what I claim and desire to secure by Letters Patent of the United States is:

1. An oil and grease interceptor comprising a chambered body having an inlet conduit discharging thereto below the normal liquid level therein, an outlet conduit connected to the body near the top and determining the normal liquid level therewithin, means providing a vertical passageway at the outlet side of the body, said passageway having an opening to the body adjacent the top and an opening to the body adjacent the bottom, and further being in communication at its upper end with the outlet conduit, a baffle extending from the top of the body into the vertical passageway to a point below the normal liquid level in the body whereby an accumulation of gases and air in the top of the body in volume sufficient to lower the liquid level approximately to the lower edge of the baffle permits air and gases to pass beneath the baffle to the outlet conduit, the arrangement maintaining a substantially constant volume of air and gas in the body at a substantially constant head pressure.

2. An oil interceptor comprising a chambered body having an inlet conduit discharging thereto on one side below the normal liquid level therein, a partition within the body adjacent the inlet side thereof, the upper end of the partition terminating below the top and above the normal liquid level within the body and the lower end of said partition being spaced from the bottom of the body, said partition providing a vertical passageway into which the inlet discharges, said partition having an aperture at a distance below the point of discharge of the inlet conduit to the inlet passageway through which oils may pass to the inlet upon accumulation of oils and greases in the body to the level of the said opening, means providing an outlet passageway on another side of the body, said outlet passageway having an opening to the body near the bottom, baffle means within the said outlet passageway for maintaining a normal liquid level within the body, said outlet passageway having an opening to the body above the flow level in the body, and said baffle means being between the said last named opening and the opening of said outlet conduit to the body.

3. In a grease and oil interceptor, a chambered body having an inlet and an outlet on opposite sides of the body, a vertical passageway on the exterior of each of the opposite sides of the body, each of said vertical passageways having an opening to the body through the respective side walls at the bottom and an opening through the respective side walls at the top of the body above the normal liquid level therein, an inlet conduit discharging to the passageway on the inlet side of the body below the normal liquid level in the body, and an outlet conduit for the passageway on the opposite side of the body opening thereto at the upper end and determining the normal liquid level within the body, a baffle depending from the top of the body to between the point of connection of the outlet conduit to the passageway and the opening of the said passageway to the top of the body, said baffle terminating at a point below the normal liquid level in the body and providing for discharge of air and gases from the top of the body to the outlet upon accumulation of sufficient volume of gases in the top of the body to lower the liquid level to below the lower edge of the baffle, said body being otherwise sealed to atmosphere.

4. A grease and oil interceptor comprising a chambered body having an inlet conduit discharging thereto below the normal liquid level therein, an outlet conduit connected to the body near the top, the inlet conduit being on the opposite side of the body from the outlet conduit, means providing a vertical passageway on the exterior of the inlet side of the body into which the inflowing liquid discharges, said vertical passageway terminating at the top above the normal liquid level in the body and arranged at the bottom to permit liquid to pass into the interior of the body, means providing a vertical passageway on the exterior of the outlet side of the body, the outlet conduit opening to near the top of the body, means associated with the outlet for determining the normal liquid level in the body above the lowermost point of the outlet and below the uppermost point of the said inlet passageway and providing an air space in the top of the body, a baffle at the outlet depending from the top of the body and extending to below the liquid level in the body and normally sealing the air space in the body from the outlet, the arrangement providing that as the liquid level is lowered by increase in volume of gas and air in said air space to below the lower edge of the baffle gases are permitted to pass to the outlet and thus reestablish the liquid level under normal head pressure within the interceptor.

5. In an oil and grease interceptor, a chambered body having a top and bottom, an inlet on one side of the body and an outlet on the opposite side, the inlet providing for discharge of liquid to the body below the liquid level therein, and the outlet opening to the body at a point above the inlet and below the top determining the normal liquid level in the body and providing an air and gas space thereabove at normal head pressure within the body, means providing a vertical passageway at the inlet in which air and lighter liquid such as oil and greases may rise to the top of the liquid body and permitting the heavier liquid to fall to the bottom of the interceptor, means providing a vertical passageway adjacent the outlet open at its top to the top of the body and open at the bottom to the bottom of the interceptor, a baffle at the top of the passageway at the outlet extending from the top of the body to below the liquid level therein and normally sealing the outlet from the said air space above the liquid level, said baffle providing a means whereby increase in volume of air and gases in the body lowers the liquid level to below the lower edge of the baffle thereby opening the said air and gas space to the outlet to permit discharge of excess gases to the outlet and restoring the normal liquid level to again seal the said air space from the outlet.

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