March 25, 1941. L. W. HOYT 2,236,350

OIL AND DIRT ACCUMULATOR FOR LOW PRESSURE HEATING SYSTEMS

Filed Jan. 31, 1939

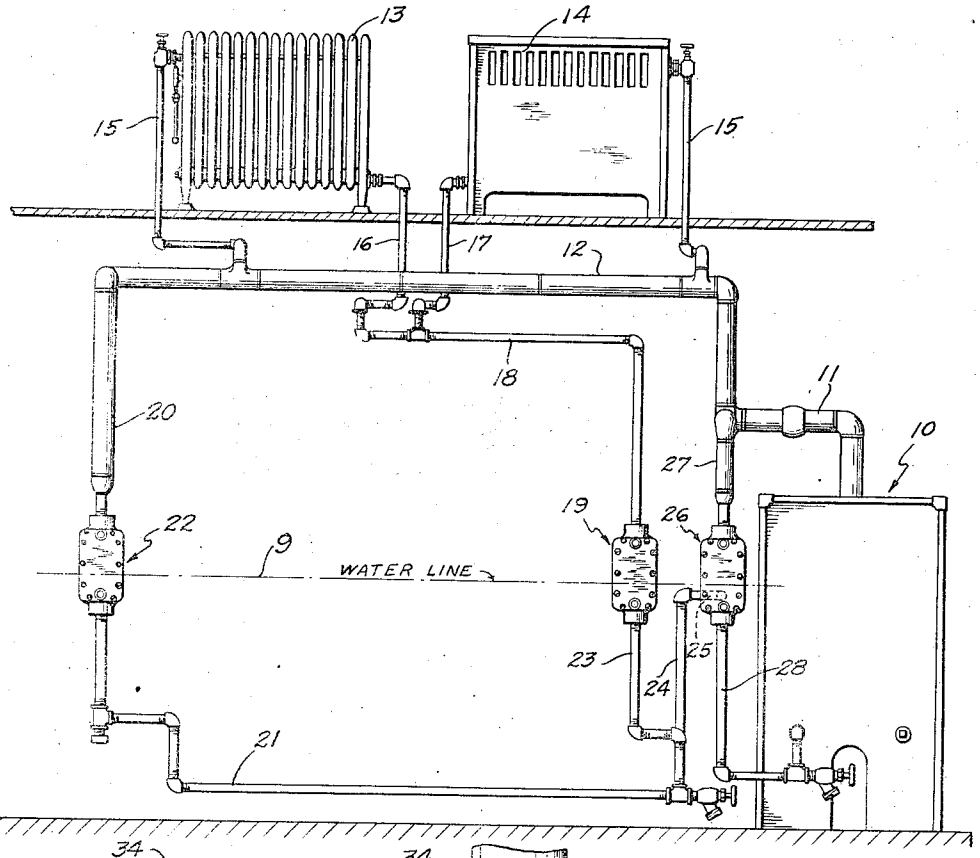


Fig. 1

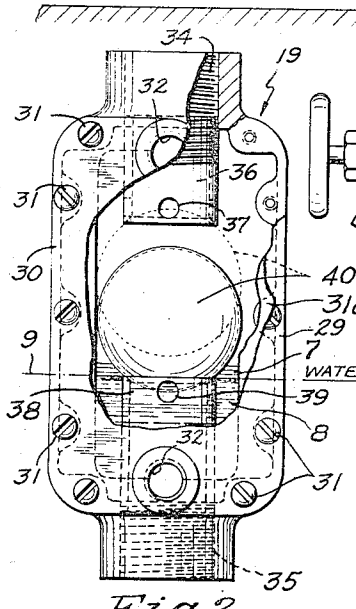


Fig. 2

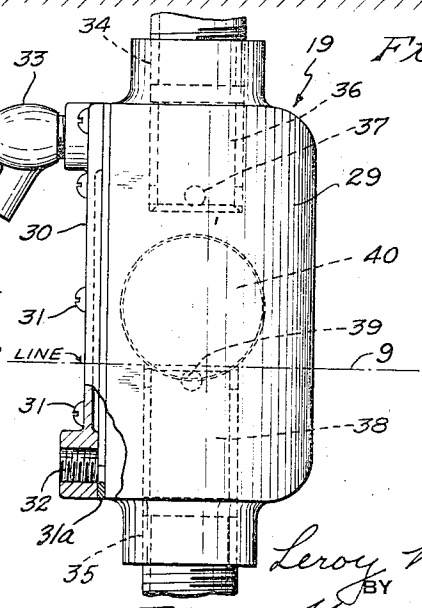


Fig. 3

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Patented Mar. 25, 1941 2,236,350

UNITED STATES PATENT OFFICE

2,236,350

OIL AND DIRT ACCUMULATOR FOR LOW PRESSURE HEATING SYSTEMS

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Application January 31, 1939, Serial No. 253,755

5 Claims. (Cl. 237—67)

This invention relates to new and useful improvements in heating apparatus, and has particular relation to an oil and dirt accumulator for heating systems.

An object of the invention is to provide in a heating system including one or more condensation return or drip pipes, means providing an expanded or enlarged surface in the said condensation return or drip piping at the water line of the system.

Another object is to provide for use in a heating system including condensation return piping, means for accumulating oil, grease, dirt and the like from the condensation and for retaining such accumulated matter until manually removed from the means.

Other objects and advantages will become apparent from a consideration of the following detailed description taken in connection with the accompanying drawing wherein a satisfactory embodiment of the invention is shown. However, it is to be understood that the invention is not limited to the details disclosed but includes all such variations and modifications as fall within the scope of the invention and of the appended claims.

In the drawing,

Fig. 1 is a schematic view showing a heating system equipped with the accumulator means of the invention;

Fig. 2 is a front elevational view of such accumulator, parts being broken away to show interior construction; and

Fig. 3 is a side elevational view of the accumulator.

Referring in detail to the drawing, at **10** is shown a boiler of a vapor or low pressure steam heating system, and the outlet **11** from the boiler is connected with a distributing pipe **12** in turn connected with the individual radiators **13** and **14** by the branches **15**. The condensation or return drip pipes from the radiators are shown at **16** and **17**, and they are connected with a common return pipe **18** in which is located one of my accumulators **19**. Distributing pipe **12** is provided with a condensation or drip return including sections **20** and **21**, and connected in such return is another of my accumulators designated **22**.

Below the accumulator **19**, the radiator condensation return line is designated **23**, and it as well as the return line **21** discharges into a return pipe **24** having its discharge end **25** located within another accumulator designated **26** below the normal water level therein. Accumulator **26** at its upper end is connected with the lower end of a return section **27** of the distributing system, and at its lower end the accumulator **26** discharges into a return pipe **28** which in turn discharges into the boiler **10**. It is to be understood, however, that the particular system shown is merely illustrative and that my improvement may be used in various other systems.

The accumulators **19**, **22** and **26** are duplicates of one another and the structure of such accumulators is fully disclosed in Figs. 2 and 3 wherein the accumulator **19** is shown in detail. It is preferred to use an accumulator in each return or drip pipe. Accumulator **19** includes an elongated hollow body **29** one side of which is normally closed by removable wall **30** secured in place as by screws **31**. A gasket **31***a* will be provided between this wall and the body to prevent leakage. This wall **30** is provided with tapped openings **32** giving access to the interior of the body and arranged respectively at the upper and lower ends of the wall and each equipped with a test cock or the like **33**. These test cocks provide means for testing the height of the water within the body when the accumulator is in place in a heating system. That is, they indicate whether the water level is between the levels of these cocks.

Screw-threaded inlet and outlet openings **34** and **35** are provided in the upper and lower ends respectively of the body **29** and such openings are adapted to have threaded into them sections of a condensation return or drip pipe of a heating system. Threaded into the inner end of the inlet opening **34** is a nipple **36** extending downwardly within the body **29** and adjacent its lower end provided with one or more spaced openings **37** in its side walls. Such openings are relatively small in diameter as in the neighborhood of one-half inch.

Threaded into the inner end portion of the outlet **35** is a nipple **38** extending upwardly an appreciable distance above the bottom wall of the body and immediately inwardly of its upper end having one or more small openings **39** in its side walls corresponding with the openings **37** in the nipple **36**. The nipples **36** and **38** project toward one another, and located between the open ends of such nipples is a float **40**, adapted to close the upper end of nipple **38** (as shown in full lines Fig. 2) or the lower end of nipple **36** (as shown in dotted lines Fig. 2) depending upon the level of the water within the body **29**.

The accumulator is mounted in a drip or condensation return pipe in such position as to locate

the upper end of the nipple **38** at the normal level of the water in the boiler **10** as indicated by the broken line **9**. Therefore the float **40** is normally seated in a position closing the upper end of nipple **38**, and nipples **36** and **38** being in alignment condensation passing into the accumulator through the nipple **36** will fall onto the float and be deflected thereby outwardly, laterally of the nipple **38**. The interior of the body is of greater diameter than that of any other portion of the condensation return line so that the surface of the water indicated at **8** within the accumulator is relatively large whereby in the condensation return line there is an expanded surface at the normal level of the water in such line.

With this arrangement the oil and grease entering the accumulator is permitted to spread over a relatively large surface and form a relatively thin coating on the water in the accumulator. The condensed water may pass through the openings **39** as the height of the water in the system permits and the grease and oil will be floating on the surface of the water as indicated at **7** and will remain in the accumulator as the float **40** will prevent it moving into the nipple **38** through the upper end thereof. Heavier particles of dirt as for example, scale, will drop downwardly at the outer sides of the nipple **38** and accumulate on the bottom wall of the body **29**.

At any desired time the system may be shut off and then the water drained from the accumulator as through the lower cock **33** after which the side **30** of the body may be removed and the accumulated oil, grease, dirt and the like removed therefrom. The openings **39** permit of the escape of water from the accumulator and thus eliminate any danger that might arise due to the float **40** becoming water-logged.

Should the water level within the accumulator rise any appreciable distance above normal for any reason as for example where there is a sudden rise of pressure in the boiler and the resistance in the distributor pipes is greater than in the return pipes, the float **40** will seat against the inner end of nipple **36**, and at least retard movement of water to the radiators and prevent flooding of the radiators. In connection with the discharge end **25** of the return pipe section **24** it is noted that such end **25** is usually located approximately one inch below the water line in the accumulator **26**.

From the foregoing it will be noted that the accumulator is arranged vertically in the drip or condensation return piping of a heating system in position to provide an expanded surface at the water line of such condensation return or drip piping, and that there is one of these accumulators provided in each return pipe. With the means disclosed any lighter than water material such as oil, grease, vegetable matter or the like, will accumulate on the upper surface of the water in the accumulator, and the float will occupy space in this accumulation thereby eliminating movement of oil and grease in the tubes and preventing its return to the boiler. The heavier than water matter, such as scale, will collect on the bottom wall of the accumulator about the lower portion of the nipple **38**. The float in the unit is arranged to rise and fall with change of water level in drip piping due to varying pressures, or other reasons. It is of such a size as to always properly seat on the ends of the nipples and will find these seats automatically.

Having thus set forth the nature of my invention, what I claim is:

1. In a heating system including a condensation return line, a hollow body in said line and of greater internal diameter than the remainder of the line, said body having an inlet in its upper wall and an outlet in its lower wall, a nipple in said body and closing said outlet whereby to dispose the opening to said outlet above the bottom wall of the body, said nipple having its upper end at the water level of the heating system, a float in said body for closing the upper end of said outlet or the lower end of said inlet depending on the level of water in said body, said nipple having an opening in a wall thereof slightly below the upper edge thereof, and said body including a wall portion adapted to be removed to give access to the interior of the body for the cleaning of the same.

2. An accumulator of the class described comprising a hollow body having a threaded opening at each of its upper and lower ends for connection in a return pipe, nipples within said body connected with said threaded openings and extending toward one another, a float within said body and adapted to selectively seat on and close the ends of said nipples depending on the level of water in the body, and each of said nipples having small openings in its side walls slightly inwardly of its open end.

3. An accumulator comprising a hollow body forming a chamber having an opening at each of its upper and lower ends for connection in a return pipe, a nipple in said chamber and at one end connecting with and closing the opening in the lower wall of the body and having its other end disposed above said lower wall whereby dirt, grit and the like will collect on said lower wall at the sides of said nipple, a second nipple connected at one end to the opening in the upper end of the chamber and depending therefrom in alignment with the first nipple, said nipples each having an opening in its side wall adjacent its inner end, a float between the nipples adapted to close the free end of either one depending on the water level in the chamber, and said body including means to permit removal of any accumulation from the interior of the body.

4. In a heating system including a condensation return line, a hollow body in said line and of greater internal diameter than the remainder of the line, said body having an inlet in its upper wall and an outlet in its lower wall, a nipple in said body and closing said outlet whereby to dispose the opening to said outlet above the bottom wall of the body, said nipple having its upper end at the water level of the heating system and having an outlet opening in a side wall thereof a short distance below its upper end, and a float in said body for closing the upper end of said nipple depending on the level of water in the body.

5. In a heating system including a condensation return line, a hollow body in said line forming a chamber of greater diameter than the remainder of the line and having an opening at each of its upper and lower ends for connection in the return line, nipples within said chamber and connected one with each of said openings and extending toward one another with their inner ends spaced from each other and from the ends of the chamber and with the upper end of the lower nipple at the water level of the heating system, and a float within said chamber and adapted to selectively seat on and close the inner ends of said nipples depending on the level of water in the body.

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