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SELF CLEANING OIL STRAINER

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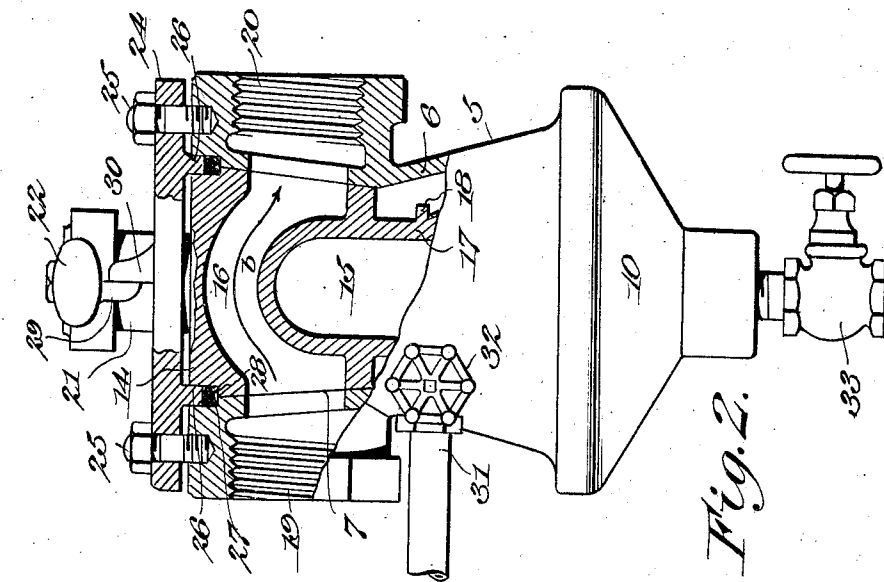


Fig. 2.

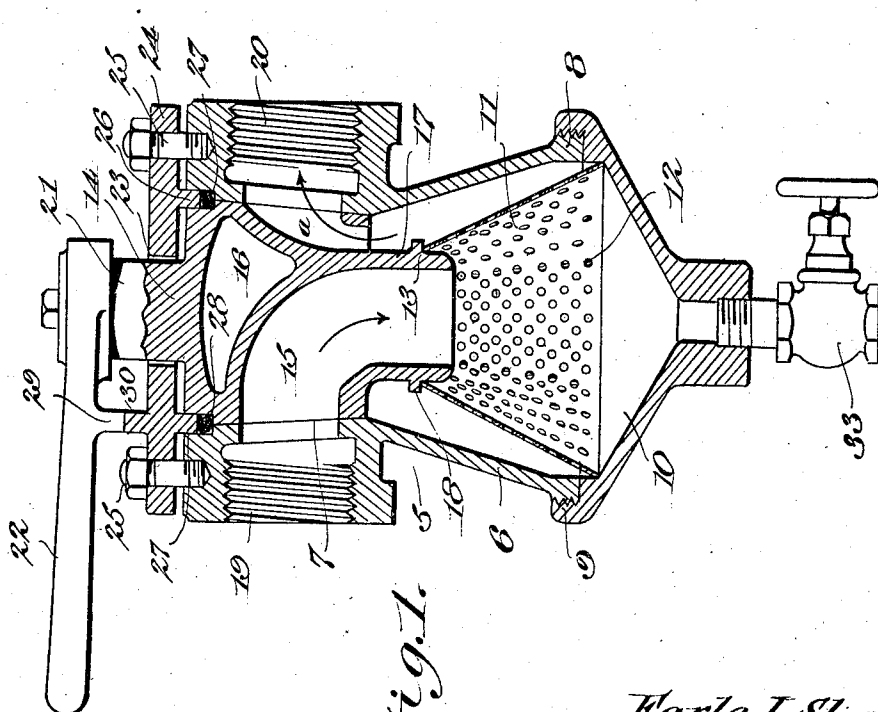


Fig. 1.

WITNESS:  
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## UNITED STATES PATENT OFFICE.

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## SELF-CLEANING OIL STRAINER.

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This invention relates to self cleaning oil strainers for use in connection with oil heating and burning systems and has for its primary object the provision of a strainer of this character which shall be simple of construction, inexpensive of manufacture and highly efficient for the purpose intended.

A further object of the invention is to provide a strainer of this character which will be self cleaning whereby and which will include means for expelling the collected dirt and sediment from the strainer as desired and without interrupting operations of the heating and burning system.

A still further object of the invention is to provide a strainer which is relatively small and yet adapted to effectively handle a relatively large volume of oil.

A still further object of the invention is to provide a strainer including a double ported rotary plug valve for respectively opening the intake and outlet connections to each other and which said valve is associated with means to seal the valve with the body of the strainer and adjustably accommodate itself to said body to render the valve easy moving.

A further object of the invention is to provide a strainer having means for diverting the course of the oil in its passage to the heating system and for causing the separated dirt to be deposited at a point beyond and out of the path of the course taken by the strained oil as it leaves the device.

A further object of the invention is to provide a strainer consisting of few parts which are readily separable to permit the active straining element to be removed as desired.

Another object of the invention is to provide a strainer adapted for use in connection with heating plants and which is equipped with means whereby the suction valve of the pump may be closed and the steam admitted to the strainer blown back toward the oil tank to instantly clean the line, shows leaks, etc., and which will be particularly effective when oil is cold or thick, or pumps of the plant too small or suction pipe is too long, etc.

With these and other objects in view, the invention resides in certain novel construction and combination and arrangement of parts, the essential features of which are hereinafter fully described, are particularly pointed out in the appended claim, and are

illustrated in the accompanying drawing, in which:—

Figure 1 is a vertical section through the strainer showing parts in elevation and indicating a position of adjustment of the valve to cause the oil as it enters the intake to pass through the foraminated surface of the strainer.

Figure 2 is a side elevation with parts in section showing a second adjustment of the valve to cause the oil to pass directly from the oil line through ported valve to burner.

In carrying the invention into practice, I provide a body 5 having a substantially inverted frusto-conical chamber section 6 and an upper valve seat section 7. The lower end of the chamber section 6 is provided with an annular thread or equivalent means 8 which is engaged by a corresponding thread or co-acting means 9 on a frusto-conical trap 10. Supported within the trap 10 is a foraminated strainer cone or surface 11. The maximum diameter of this cone approximately conforms with the maximum internal diameter of the trap 10 at the joinder of the latter with the chamber 6. This cone is axially positioned in the chamber 6 and same is open at its base 12 and correspondingly open at its upper end as shown at 13. The base of the cone opens directly to the trap 10.

Mounted to rotate in the valve seat 7 is a tapered plug valve 14 having ports 15 and 16 respectively, the former terminating in a depending vertical nozzle 17 which freely passes through the opening 13 in the cone 12 so as to revolve therein. The nozzle extremity of the port 15 has its walls formed with an annular stop flange 18 which is superposed with respect to the restricted end of the cone and which serves to centrally position the cone and hold it against endwise movement in one direction. The body 5 is provided with a threaded intake opening 19 and a corresponding outlet opening 20 adapted to be connected in a burner oil pipe line or the suction line of a heating plant or system. These openings 19 and 20 are respectively arranged to co-act with the aforesaid ports 15 and 16 as will be referred to presently.

The plug valve 14 is provided with a stem 21 carrying a controlling lever 22 preferably arranged in juxtaposition with the opening 19 or intake to the strainer. This stem freely passes through an opening 23 in a gland plate 24 adjustably secured to the

body 5 by bolts or the equivalent thereof as indicated at 25. This gland plate is provided with an annular rib 26 which extends into a groove 27 formed by mating channels in the body 5 and upper portion of the plug 14. In this groove is a suitable packing material 28. This construction normally seals the valve against leakage and permits the valve to be adjusted with respect to its seat 7 to allow for freedom of movement when the handle 22 is actuated. The handle 22 is provided with a stop 29 adapted to co-act with means 30 on the gland plate 24 to limit rotation of the plug in its seat and cause operative registration of the respective ports 15 and 16 with the oil intake side 19 of aforesaid body 5.

At one side of the chamber 6 the body is provided with a steam intake connection 31 and a controlling valve 32 by means of which steam may be permitted to enter the chamber and to flow around and through the cone 11. The trap 10 is provided with a drain valve 33 disposed at the apex of the trap as clearly shown in Figure 1.

In operation, the plug valve 14 is turned to the position shown in Figure 1. Oil enters the port 15 and passes through the nozzle portion thereof into the cone 11. The oil discharges in a downward direction through the strainer 11 and axially of the trap 10. The course of the oil is deflected through the arrangement of parts and by the action of pressure of suction induced at the end 20 of the structure. In so doing the unstrained oil passes through the openings in the strainer body, thence into the chamber member 6 around the cone and is finally led to the opening 20 as indicated by the arrow *a* in Figure 1. In causing the oil to be deflected from its course as described the oil is thoroughly filtered and any sediment is left in the trap 10 below the large end of the strainer cone 11. Oil in a perfectly clean state is thereby permitted to flow to the pump or oil burner line of the heating plant or system.

When it is desired to clean the strainer and expel accumulated sediment from the trap 10, the plug valve 14 is turned so as to throw the chamber member 6 out of communication with the openings 19 and cause the port 16 to directly open the oil line to the pump or burner line, the oil taking the course indicated by the arrow *b* in Figure

2. The steam is then permitted to enter the chamber member 6 by way of the valve 32 and its connection 31. At this time the drain valve 33 is open and by the action of the inflowing steam under pressure all sediment in the trap 10 may be quickly expelled therefrom as will be understood. If the oil employed is thick and heavy, the customary suction valve at the pump of the heating plant or system can be closed for a few seconds and the steam valve 32 open to the position shown in Figure 2, thereby causing steam to be blown through the port 15 in the direction of the tank. This clears the line and further is a means whereby leaks may be readily indicated as desired.

All parts of the strainer structure are separable and may be quickly knocked down or disassembled and new parts made to replace worn parts as the occasion necessitates.

While I have described what I deem to be the most desirable embodiment of my invention, it is obvious that many of the details may be varied without in any way departing from the spirit of my invention and I therefore do not limit myself to the exact details of construction herein set forth nor to anything less than the whole of my invention limited only by the appended claim.

What is claimed as new is:—

A strainer structure comprising a body having a chamber therein formed with a valve seat and inlet and outlet openings aligned above and disposed laterally of said chamber, a valve mounted for rotary movement in said seat, a gland plate adjustable with respect to said valve, an annular rim depending from said gland plate and being received in mating grooves formed in the body and valve respectively, a packing material between said rims and the bottom of the grooves, the valve having a port terminating into a nozzle opening into said chamber to connect the aforesaid inlet and outlet openings, a foraminated frusto-conical shaped strainer element connected with said nozzle and arranged in said chamber to strain oil passing from the inlet opening to the outlet opening, and said valve being also formed with a second port to provide a direct communication between said inlet and outlet openings.

In testimony whereof I have affixed my signature.

EARLE I. STAPLES.