TRAPS

Traps ordinarily used in connection with heating and ventilating engineering may be divided into the following three types: (1) steam traps, (2) oil traps, (3) air traps.

Steam traps may be sub-divided into: (*a*) high-pressure steam traps, (*b*) low-pressure steam traps, and each of these two sub-divisions may be further sub-divided into: (1) float traps, (2) bucket traps, (3) thermostatic traps, (4) return traps, (5) lifting traps, (6) alternating receiver traps, (7) tilt traps.

The fundamental principle upon which the operation of practically all traps depend is that the pressure within the trap at the time of discharge, shall be equal to, or slightly in excess of, the pressure against which the trap must discharge, including the friction head, velocity head and static head on the discharge side of the trap. If the static head is in favor of the trap discharge it is a minus quantity and may be deducted from the other factors of the discharge head.

The capacity of a trap depends upon the clear area through its discharge ports and the difference between the pressure within the trap and the total pressure against its discharge, at the time of discharge.

The opening of the ports of a trap may be a very variable quantity, depending upon the action of the mechanism in opening and closing the valves.

Float traps and thermostatic traps generally have gradual opening and closing of valves, although some of these are arranged with levers, weights, springs, etc., so as to snap open and close, thus giving a full opening of the valves and ports during the entire time of each discharge.

Bucket traps, tilt traps and alternating receiver traps have quick acting valves and therefore wide open ports during each discharge.

Uses of traps in connection with heating and ventilating apparatus are for; draining the condensate from all kinds of radiators, heaters, steam piping systems, kitchen equipment, laundry equipment, hospital equipment, drying equipment and many other kinds of steam heated apparatus. The usual function of a trap is to allow the passage of condensate and to prevent the passage of steam. In addition to these functions, traps are frequently required to allow the passage of air as well as condensate. Traps are also required to allow the passage of air and to prevent the passage of either water or steam, or both.

In addition traps are used for returning condensate either by gravity, by steam pressure, or by both to a boiler or other point of disposal. Also for lifting condensate from a lower to a higher elevation, or for handling condensate from a lower to a higher pressure.

By-passes are usually provided around traps with a valve and union on each side of the trap and one of each in the by-pass. Some traps are provided with integral by-passes for temporary relief in case of emergency, but these do not allow the removal of the trap for repairs without interrupting the service.

High-pressure float, and alternating traps are usually provided with glass water gages, drain cocks and air relief cocks or automatic air relief valves.

Tilt traps are not ordinarily equipped with glass water gages as the action of the trap shows when it is filling or emptying.

The air relief of tilt traps is taken care of by the valves of the trap. High-pressure traps for handling large volumes of condensate are usually

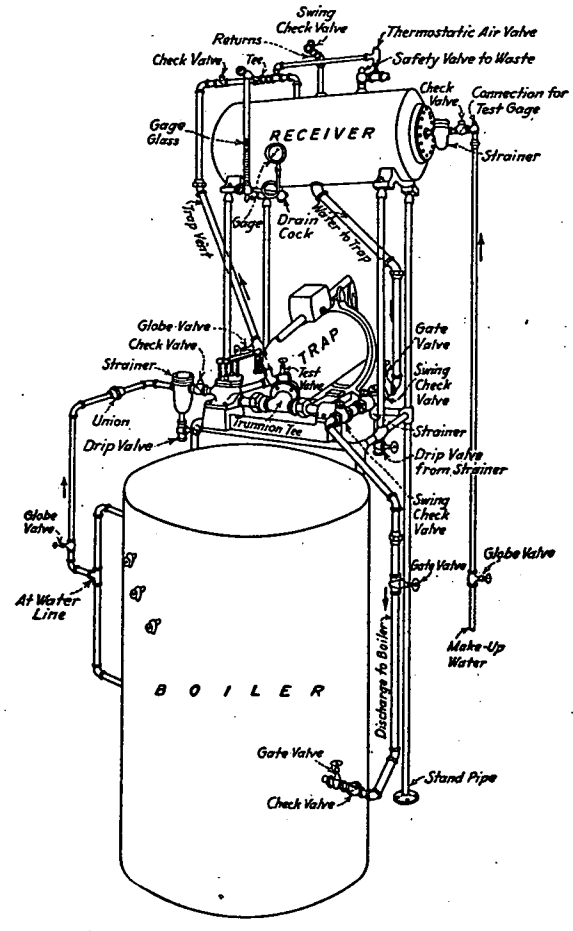

FIG. 10. RETURN TRAP AND RECEIVER FOR AUTOMATIC BOILER FEED

of the float, bucket, tilt or alternating types, although some forms of thermostatic traps are designed for this kind of service. For smaller high-pressure apparatus many types of thermostatic traps are very efficacious. Care should be taken to see that thermostatic traps of the bellows or diaphram type, when used for high-pressure service are