and raises the bowl, which in turn closes the valve and the cycle begins again. Tilting traps are necessarily intermittent in operation. They 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 tilting traps is taken care of by the valves of the trap.

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.

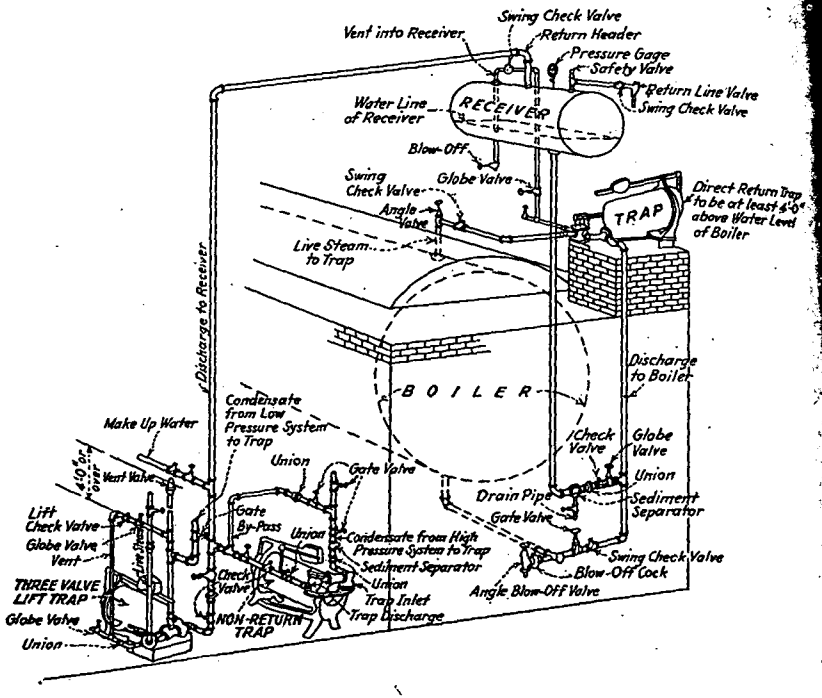

FIG. 7. TRAPS AND RECEIVER FOR RETURNING CONDENSATE FROM HIGH AND LOW PRESSURE SYSTEMS TO A BOILER

Thermostatic traps are generally used for draining radiators and heaters, except for very large capacities where bucket, float or blast-type thermostatic traps are used. Thermostatic traps for this service usually pass both condensate and air and in the case of float and upright bucket traps the air is usually relieved through an auxiliary thermostatic trap in a by-pass around the main trap. Sometimes this auxiliary air trap is an integral part of the trap.

Blast-type thermostatic traps are sometimes used on vacuum heating systems for connecting old one or two-pipe gravity systems in parallel with vacuum return line systems, in which case the blast-type thermo-

static traps should not be provided with auxiliary air by-pass, as the action of this will allow the vacuum to draw air into the old system through its air valves, especially when the steam is wholly or partially cut off. The air from the returns of such old systems should be relieved

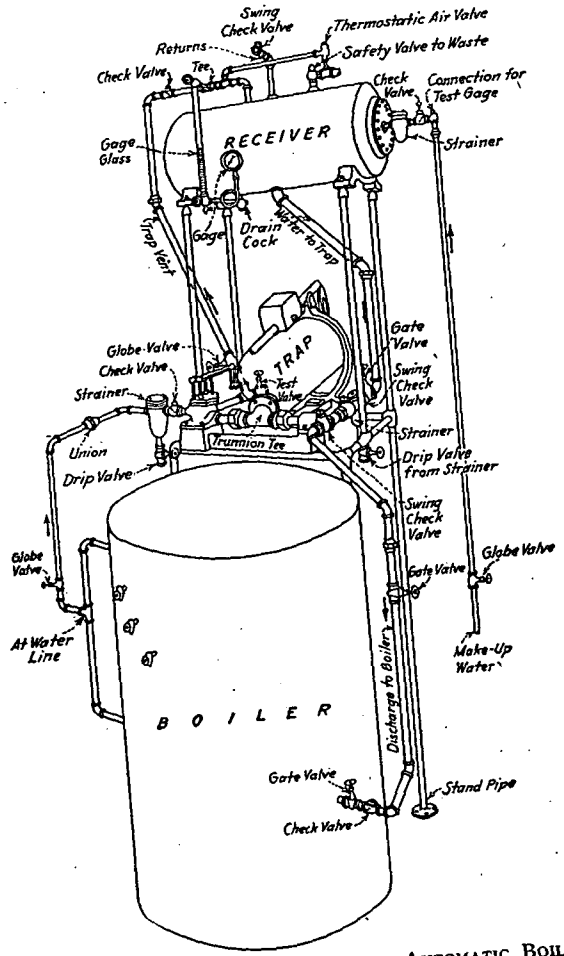

FIG. 8. RETURN TRAP AND RECEIVER FOR AUTOMATIC BOILER FEED

just ahead of the traps by means of quick-venting automatic air valves, preferably of the non-return type, especially if the other air valves on the old system are non-return valves.

Tilting traps used for discharging to a higher or a lower pressure are provided with two or three valves operated by the action of the trap. In the case of the two-valve tilting traps, one valve closes a steam inlet