Fuel Oil Tanks and Piping

Ques. In an underground installation, if the top of the tank be higher than the oil inlet to the burner, how should the oil intake line be run?
Ans. It should incline slightly to the point where it enters the basement, at which point an anti-siphoning valve should be provided and from this point the intake line can then continue its course to the burner.

Ques. How should the pipe not be run and why?
Ans. The pipe should not be run along the joists of a ceiling due to the vibration of the pipe being transmitted to the building.

Ques. What should be provided on any outside storage tank with lift feed?
Ans. A shut off valve and a foot valve, the latter being placed in the tank at the end of the intake line.

Ques. What is the purpose of the foot valve?
Ans. To maintain a column of oil in the intake line during the “off” period of the burner.

Ques. How should the bottom of the valve be placed and why?
Ans. It should be set four inches from the bottom of the tank to allow space for accumulation of water or sediment.

Classification of Burners

There is a great multiplicity of types of so-called oil burners. Of the numerous makes of house heating burners, there are basic features common to all, differing in minor details. It may be said that they are now pretty well standardized.

A classification to be comprehensive should be made from various points of view, as:

1. With respect to control, as:
   b. Semi-automatic.
   c. Fully automatic.

2. With respect to service, as:
   a. Domestic.
   b. Commercial.
   c. Industrial.

3. With respect to fuel, as:
   a. Gasoline.
   b. Kerosene.
   c. Oil
      - light domestic.
      - medium domestic.
      - heavy domestic.
      - light industrial.
      - medium industrial.
      - heavy industrial.
4. With respect to the preparation process, as:
   a. Vaporizers.
   b. Sprayers (alleged "atomizers").
   c. Combined sprayers and vaporizers.

5. With respect to spraying agent, as:
   a. Air.
   b. Steam.

6. With respect to the method of projecting the fuel, as:
   a. Gravity.
   b. Pressure on oil.
   c. Induction.
   d. Centrifugal force.

7. With respect to the method of mixing and spraying, as:
   a. Outside mixing
      i. drooling
      ii. projector
      iii. centrifugal
   b. Inside mixing
      i. chamber
      ii. injector
      iii. centrifugal

8. With respect to the force used to project the fuel, as:
   a. High pressure.
   b. Low pressure.
   c. Centrifugal force.

9. With respect to draught, as:
   a. Natural.
   b. Forced.

10. With respect to ignition, as:
    a. Electric
        i. intermittent
    b. Gas
    c. Gas-electric
    d. Oil pilot
    e. Manual

11. With respect to location of the burner, as:
   a. Inside of boiler
   b. Outside of boiler

12. With respect to operation, as:
   a. Continuous
   b. High and low
   c. Intermittent

13. With respect to burners introducing centrifugal force, as:
    a. Centrifugal vanes
       i. inside
       ii. outside
    b. Rotary
       i. vertical shaft
       ii. horizontal shaft
       iii. motor driven
       iv. fan driven

14. With respect to miscellaneous types, as:
    a. Pot
    b. Gun
    c. Multiple spray
    d. Venturi
       i. low pressure
       ii. high pressure
       iii. flat flame
Classification of Burners

e. Proportioning.
f. Variable capacity.
etc. etc.

Ques. Why isn’t an alleged “oil burner” an oil burner?
Ans. Simply because it doesn’t burn the oil but prepares the oil for burning, combustion taking place in a space not contained in the alleged burner.

Ques. How does it prepare the oil for burning?
Ans. By performing the following essential operations: 1. Spraying or breaking up the oil into minute globules; 2, mixing air with these globules in proper proportion; 3, giving turbulence to the mixture to thoroughly mix the air and oil.

Ques. What doesn’t the burner do?
Ans. It doesn’t atomize the oil.

The word “atomizer” as applied to burners is a ridiculous and misleading misnomer — simply hot air sales talk.

CHAPTER 12

Low Pressure Domestic Burners

The principle of vaporizing oil in a low pressure burner is shown in fig. 1. Air and oil are mixed within the nozzle, then sprayed in vapor form through an opening 30 to 40 times larger than the opening employed in high pressure nozzles.

The air-oil vapor is again mixed with secondary air produced by the fan as it leaves the nozzle. It is claimed that higher combustion efficiency with lower fuel costs and ultimately less gallonage consumption are the result of the mixing of air and oil twice.