Most oil burners are operated by a small electric motor which pumps the oil and some or all of the air required. The smallest sizes can generally burn not much less than from 0.50 to 0.75 gal of oil per hour. The grade of oil burned ranges from No. 1 to No. 3. No. 3 oil is the heaviest and most viscous of the various grades mentioned. An oil burner satisfactory for No. 3 oil can burn any of the lighter grades easily but an oil burner recommended for No. 2 oil should never be supplied with the heavier grades. While the heavier grades of oil have a smaller heat value per pound, they have, due to greater density, a larger heat value per gallon.

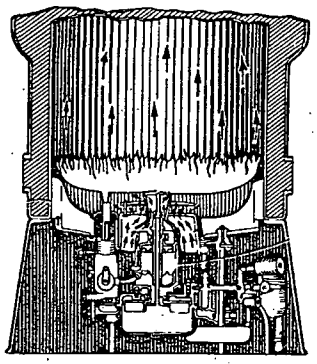


FIG. 13. CENTER FLAME VERTICAL ROTARY BURNER

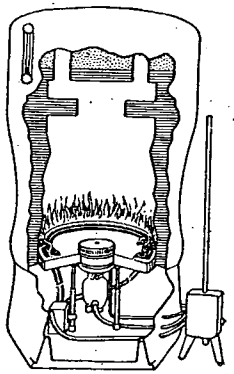


FIG. 14. WALL FLAME VERTICAL ROTARY BURNER

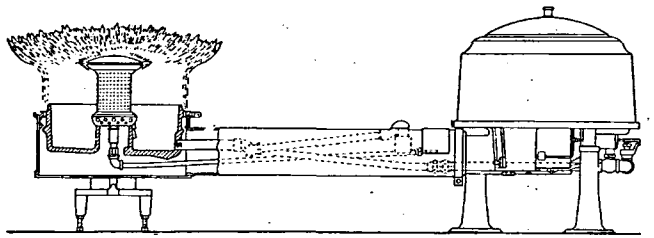


FIG. 15. POT TYPE VAPORIZING BURNER

The relative economy of the various grades must be based upon price and the amount of excess air required for clean and efficient combustion.

Operating Requirements for Mechanical Draft Oil Burners

The *U. S. Department of Commerce* in conjunction with the oil burner industry has established commercial standards for automatic mechanical draft oil burners for domestic installations which cover installation requirements and performance tests[3].

[3]Automatic Mechanical Draft Oil Burners Designed for Domestic Installations (*U. S. Department of Commerce, National Bureau of Standards*, Commercial Standard No. CS75-39).

Oil-Fired Boiler and Furnace Units

Boilers and furnaces especially designed for oil burners are available. This type of equipment usually has more heating surface than the older coal-burning designs. Flue proportions and gas travel have been changed with beneficial results.

COMMERCIAL OIL BURNERS

Liquid fuels are used for heating apartment buildings, hotels, public and office buildings, schools, churches, hospitals, department stores, as well as industrial plants of all kinds. Contrary to domestic heating, convenience seldom is a dominating factor, the actual net cost of heat production usually controlling the selection of fuel. Some of the largest office buildings have been using oil for many years. Many department stores have found that floor space in basements and sub-basements can be used

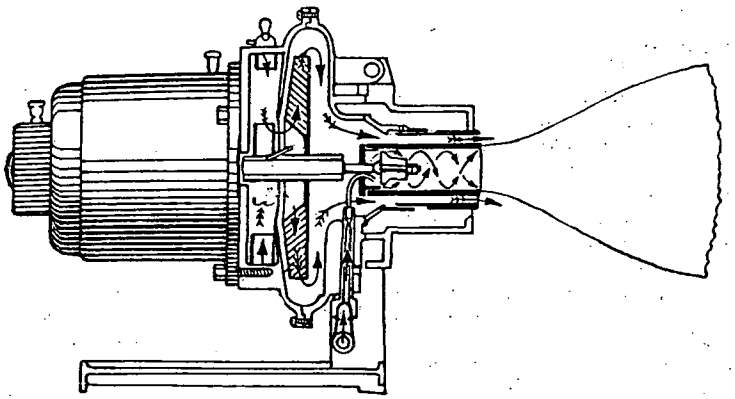


FIG. 16. HORIZONTAL ROTATING-CUP OIL BURNER

to better advantage for merchandising wares, and credit the heat producing department with this saving.

Wherever possible, the boiler plant should be so arranged that either oil or solid fuel can be used at will, permitting the management to take advantage of changes in fuel costs if any occur. Each case should be considered solely in the light of local conditions and prices.

Burners for commercial heating may be either large models of types used in domestic heating, or special types developed to meet the conditions imposed by the boilers involved. Generally speaking, such burners are of the mechanical or pressure atomizing types, the former using rotating cups which throw the oil from the edge of the cup at high velocity into the surrounding stream of air delivered by the blower (Fig. 16). As much as 350 gal of oil per hour can be burned in these units, and frequently they are arranged in multiple on the boiler face, from two to five burners to each boiler.

The larger installations are nearly always started with a hand torch, and are manually controlled, but the use of automatic control is increasing,