

refractory material, which is placed around the hearth. These types of burners are further characterized by their installation within the ashpit of the boiler or furnace.

The pot type burner (Fig. 13) can be identified by the presence of a metal structure, called a pot or retort, in which combustion takes place.

When gun type (pressure atomizing) or horizontal rotary burners are used the combustion chamber is usually constructed of firebrick or other suitable refractory material, and is part of the installation procedure.

The 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 1 gal of oil per hour. The grade of oil burned ranges from No. 1 to No. 4. No. 4 oil is the heaviest and most viscous of the various grades mentioned. An oil burner satisfactory for No. 4 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. It has been found that while the heavier grades of oil have a smaller heat value per

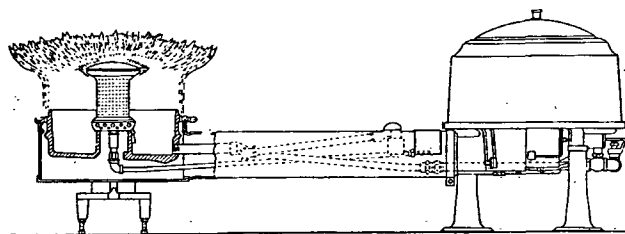


FIG. 13. POT TYPE VAPORIZING BURNER

pound, they have, due to greater density, a larger heat value per gallon. The relative economy of the various grades must be based upon price and the amount of excess air required for clean and efficient combustion.

Boiler-Burner Units

Boilers and air conditioners especially designed for oil burners are available to the purchaser of this type of equipment. They are used for replacements as well as for new installations. 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. All problems of combustion chamber design, capacities, efficiencies, etc., have been solved. The selection of the proper size of unit should be a simple process.

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 pro-

duction 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 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 producing a horizontal torch-like flame. (Fig. 14). As much

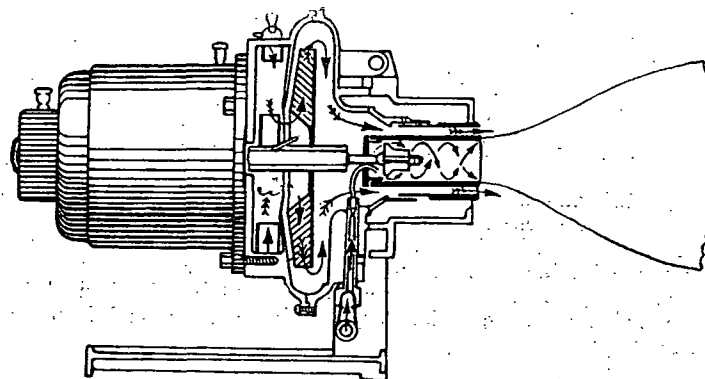


FIG. 14. HORIZONTAL ROTATING-CUP OIL BURNER

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, and completely automatic burners are now available to burn the two heaviest grades of oil. Nearly all of the smaller installations, in schools, churches, apartment houses and the like, are fully automatic.

Because of the viscosity of the heavier oils, it is customary to heat them before transferring by truck tank. It also has been common practice to preheat the oil between the storage tank and the burner, as an aid to movement of the oil as well as to atomization. This heating is accomplished by heat-transfer coils, using water or steam from the heating boiler, and heating the oil to within 30 deg of its flash point.

Unlike the domestic burner, units for large commercial applications frequently consist of atomizing nozzles or cups mounted on the boiler front with the necessary air regulators, the pumps for handling the oil