By definition, a rotary burner is one which employs a rotating element to generate centrifugal force to project the fuel oil. The oil is introduced under low pressure (gravity feed) instead of high pressure, which is typical of high pressure burners.
pressure as with the high pressure sprayer burners.

There are two basic types:
1. Rotary nozzle.
2. Rotary cup.

The essentials of the rotary nozzle type are shown in fig. 1.

Air pressure acting on the propeller causes the nozzle assembly to rotate at a very high speed. Oil is supplied through the hollow shaft to the nozzles and the rotary motion causes the oil to be thrown off in a fine spray by centrifugal force.

The rim being surrounded by a concentric opening of the casing, the oil is met by the surrounding blast of primary air with which it mixes giving the proper mixture for combustion.

The action of the fast rotating cup is shown in detail in fig. 3. Here, the oil is shown coming out of the feed tip in drops. One drop at a time is illustrated. The oil is flattened into a film and projected toward and off the rim of the cup.

In operation, drops of oil, issuing from the oil feed tip contact with the cup as shown and by centrifugal force the drops are both flattened into a film and projected toward and off the rim of the cup.

The flame from this fine spray heats up the metal vaporizing rim hot enough to vaporize the oil spray as it comes in contact with it. Being thoroughly mixed with air a blue flame is produced. On some designs the spray vaporized by the vaporizing rim is superheated by passing through grills.

The essentials of the rotary cup type are shown in fig. 2.

The cup is cone shaped and rotates on ball bearings carried by a central tube through which the fuel is supplied to the cup.

In operation, drops of oil, issuing from the oil feed tip contact with the cup as shown and by centrifugal force the drops are both flattened into a film and projected toward and off the rim of the cup.
Rotary Oil Burners

Rotary Oil Burner Construction

The construction of this type burner whose basic principles and essential elements were presented in the preceding chapter are here given by showing various details of both the nozzle and cup forms as actually made.

Nozzle Type Burner Construction.—This type of rotary burner is sometimes called a wall flame burner. The burner employs a vertical motor that rotates an oil nozzle or distributor and fan, the oil being projected radially by centrifugal force.

In place of motor drive, some designs have a propeller energized by a blast of air from the draught fan. In either type air and oil are propelled radially from the center of the fire box.

The mixture of air and oil is thrown outward against a target of refractory material which gets red hot and vaporizes the fuel.

Rotary Cup Burner Construction.—An example of cup burner construction is here given in fig. 1 with names of parts in text under the cut. In construction upon a hollow alloy steel shaft, there are assembled the rotor, annular ball bearings, pump driving worm gear, fan and atomizing cup of a type to give flame shape desired to fit the boiler combustion chamber.