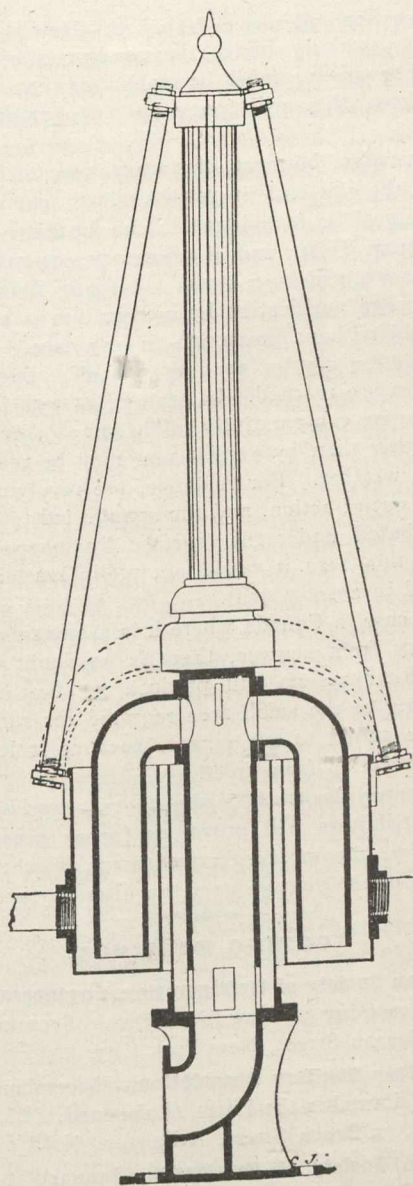


filters for winter work, may in the end be the practical method of construction and operation."

In the case of revolving distributors, the filters are constructed circular in shape. The sewage is generally fed by means of a dosing tank which is supplied with the sewage liquor after the solids have been settled out. There are many forms of distributors on the market, all of which, however, agree in certain general principles. The dosing tank is located about 1 ft. 6 in. above the distributing arms, providing the necessary power for the revolving action. The sewage is generally led by a syphon fixed at the outlet of the



**Circular Distributor.**—(Messrs. Jennings, Limited, London, S.E.)

dosing tank, ensuring intermittency of discharge, and passes to a central drum or cylinder fixed in the centre of the bed. To this drum are fixed four horizontal radiating pipe arms, perforated, to allow the sewage issuing in the form of a spray. The force and head exerted by the sewage, causes the distributing arms to slowly revolve around the filter, the sewage being sprayed evenly over the whole surface. They are made from comparatively small sizes to about 100 feet in diameter; when anything over this diameter is required, electric or other motor power is generally used to promote the revolving action

Owing to the fact that large size revolving distributors are clumsy and heavy, it is more usual to provide filter units of not more than 60 feet in diameter, this size worked with a 1 ft. 6 in. head from the dosing tank gives the best working results.

A filter 60 feet in diameter by 6 feet deep will provide a filter capacity of 628 cubic yards, or a surface area of 1-16th of an acre, and will treat per day 125,000 gallons of sewage at a rate of 200 gallons of sewage to each cubic yard of filtering material, or at a rate of 2,000,000 gallons of sewage per acre.

The dosing tank should be of a capacity equal to a discharge at each syphonage of not more than two gallons per super yard of filter area. In the above case with a 60-foot diameter sprinkler, we have 314 super yards of wetted area which represents 628 gallons for each intermittent discharge. With 125,000 gallons per day, this would allow of about 200 discharges per day, providing 7 minutes for each discharge. On the line of pipe supplying the sewage from the dosing tank to the filter it is usual to insert a regulating valve, so that the rate of supply to the distributor can be fixed for a given period of discharge. In the above case, if the valve be so fixed that the contents of the dosing tank are discharged in  $3\frac{1}{2}$  minutes, then  $3\frac{1}{2}$  minutes are allowed for rest between each discharge.

At first sight intermittency of supply to a percolating filter may not appear to be of great importance, as air at all times has free access to the body of the filter. In fact, it was the custom at first to work all percolating filters continuously, and they became known as continuous filters in contradistinction to contact beds. It was soon found, however, that greater efficiency attended the automatic dosing tank supply than the continuous supply.

In our issue of October 8th last, it will be noted that the main points to be observed in order to obtain the maximum efficiency in purification from percolating filters were enumerated, two of these points were as follows:—

(d) That the passage of the drops of sewage through the filter be sufficiently slow, to give ample time for the absorption film to extract from each drop of sewage, the organic impurities contained.

(e) That the liquid supplied to the filter never be under pressure, beyond the gravity inherent to each drop, so that there is no flushing of the filter.

The above intermittency of supply at a rate of discharge of 2 gallons per super yard of filter area, appears to provide conditions answering the demands of the above two paragraphs.

Each individual dose of sewage passes through the filter without being pressed forward by the succeeding dose. Revolving distributors supplying sewage to a filter intermittently will provide for twice the amount of sewage which can with equal results be passed through continuously.

Percolating filter beds worked continuously by revolving distributors will treat twice as much sewage per cubic yard of filter than can be treated by contact beds.

Percolating filter beds worked intermittently at doses not greater than equal to 2 gallons per super yard of filter will treat four times as much sewage per cubic yard of filter than can be treated by contact beds. The revolving perforated arms of the distributors are, as a rule, provided with terminal screw caps, to allow of cleaning. In some cases the distributing arms are open troughs provided with side perforations, in the latter case the power for revolving the apparatus is directed to a turbine placed in the central drum.