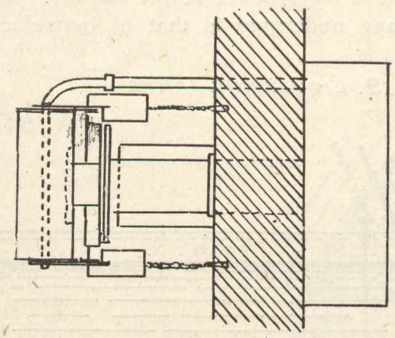
several contacts are obtained in the depth of a single contact bed, and practically on the same area. Constructional cost is thus reduced considerably when there is insufficient fall and great purification is required. The whole apparatus for working beds of the above character can be obtained of automatic construction by makers who make a specialty of such plant.

By the continuous system, the liquid sewage is not held back in contact for any quiescent period in the filter. It is supplied (uniformly) to the surface of the filter in small

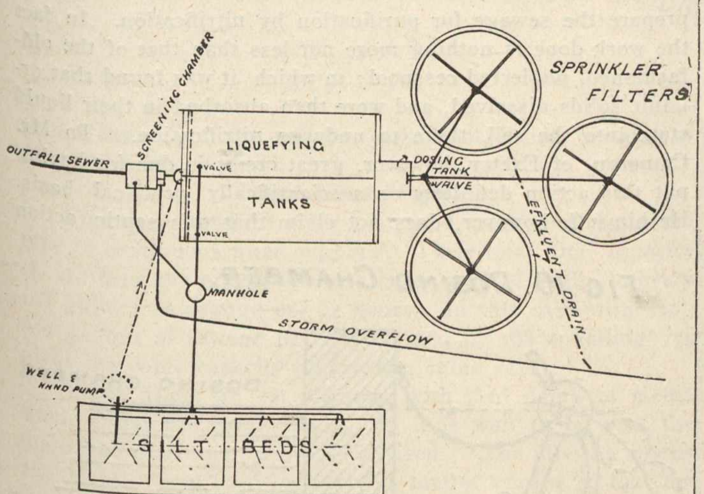


AUTOMATIC MEASURING VALVE

doses or discharges, and allowed to percolate slowly from one particle of media to the other by its own gravity, there never being a sufficiently large discharge allowed, which would cause any hydraulic head or weight of sewage in the filter. This system, both from practice and observation, the author claims as the best; although in dealing with certain forms of strong sewage, especially in manufacturing districts, he has found that a combination of both the contact and continuous systems are at times advisable.

The purpose of this article is, however, to describe in more detail a continuous filtration plant dealing with the

Fig. 4. Bacterial Disposal System.



P L A

domestic sewage of a small town on the most economical lines consistent with obtaining satisfaction.

A System for 2,000 Inhabitants.

We will deal with a town of 2,000 inhabitants with a supposed daily water consumption of 60 gallons per head; giving 120,000 gallons of sewage in dry weather every 24 hours. The system will be capable of taking this amount diluted to five times during rain periods, any overplus being treated as storm water.

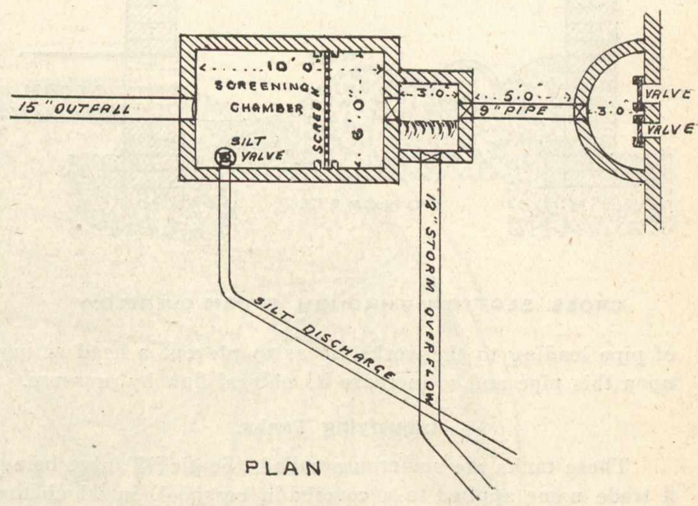
The system may be divided as follows:—

1. Outfall sewer.
2. Screening chamber.
3. Storm overflow.
4. Duplicate liquefying tanks.
5. Dosing chamber.
6. Continuous filters.
7. Effluent.
8. Silt beds, (Fig. 4 shows general arrangement).

Outfall Sewer.

We will take it that the sewage is carried to a plot of land by means of an outfall sewer capable of taking not only the dry weather flow but also storm water dilution. The size of this sewer is, of course, a sewerage question depending upon the amount of surface water taken. If not more than

Fig. 5. Screening Chamber.

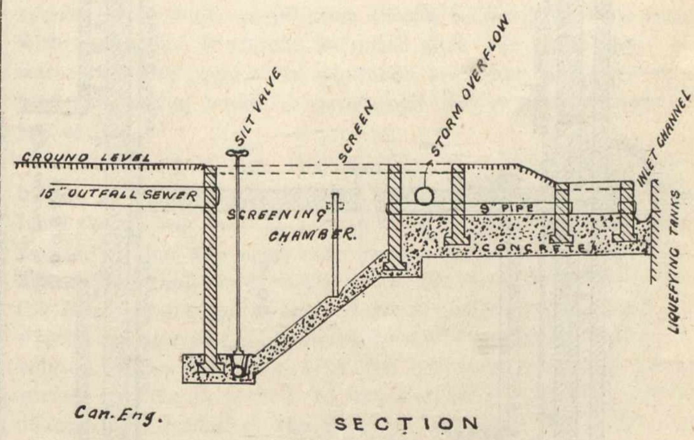


from ten times the dry weather flow, it will probably be represented by a 15-inch pipe at a gradient of not less than 1 in 500 capable of discharging running half full 530 gallons per minute. This sewer should enter the land at its highest level, and the land should at least present a fall of about 10 feet 6 inches for working purposes from inlet of sewage to outlet effluent.

Screening Chamber.

Figures 5 and 6 show plan and section of screening chamber with storm overflow arrangement attached. In this chamber 10′ 0″ × 6′ 0″ × 8′ 0″ deep, a wrought-iron screen is placed of ⅜-inch mesh. The purpose being to keep back such solids as tin cans, scrubbing brushes, etc., which are

Fig. 6. Screening Chamber



not easily digested by bacteria, but are often the accompaniment of domestic sewage. There is no standard size for this chamber; but in no case should it be larger than necessary, as it is desirous to produce a boiling or swirling action in the sewage, thus helping to break up the solids into finer particles.

Storm Overflow.

The storm overflow immediately following the screening apparatus is a simple but reliable arrangement, by which only five times the dry weather flow is allowed to enter the works. The overplus passing over a concrete weir, (see Fig 7), and into a separate sewer either direct to the stream or for partial treatment in a rough stone filter if necessary.

The pipe leading to the works is shown 9-inch diameter, and must only be capable of taking 600,000 gallons in 24 hours, or 416 gallons per minute, it must therefore have a gradient of not less than 1 in 290.