

SEWAGE PUMPING MACHINERY AND APPLIANCES.

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Various types of sewage pumping apparatus are in general use, each type being adapted to its own particular work and the selection in any one case must rest largely upon the decision of the engineer. The pumping of sewage differs from the pumping of water in that provision must be made when handling sewage, to take care of the solids, grit and

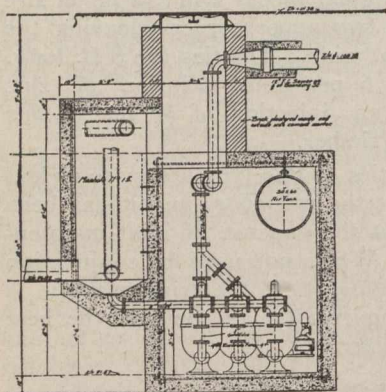


Fig. 1.

any foreign matter—rags, sticks, etc., which may enter the pump. In other words, the sewage pump or lifting apparatus must be entirely reliable. A shut-down may affect the health of a whole community.

Pneumatic Ejectors.—Since all rubbing surfaces or moving parts are eliminated and the sewage is lifted entirely by a piston of air, the pneumatic ejector is well adapted to pumping crude and unscreened sewage. Fig. 1 illustrates a typical isolated sewage pumping plant with three Priestman ejectors and air tanks installed complete in a pit below the street level. An installation of this kind would be made, for instance, to pump sewage from a low lying district of a sewerage system up to a main outfall sewer, saving the excavation and construction work necessary to lay the large main sewer at a deeper level so as to permit drainage by gravity.

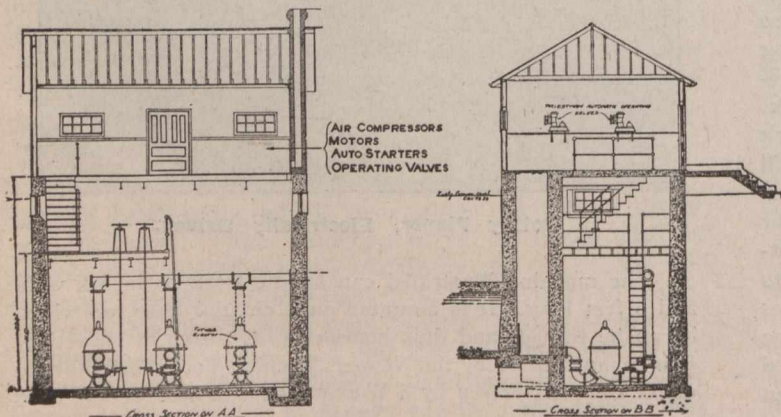


Fig. 3.

Air is supplied from a central compressor plant furnishing air to other similar ejector stations or else for other work. Besides the air tank and ejectors there is also installed in the pit, the ejector operating valve. With this type ejector, the air valves may be located at some convenient and accessible place near the top of the pit and are

independent of the ejector bodies themselves, being connected with them by small piping only. The operation is as follows: Sewage gravitates to the ejector bodies; as it rises to the top it entraps and compresses the air present in the small bell. This bell is connected by small piping to the operating valve. The slight compression acting on a diaphragm in the valve is sufficient to operate it so that the main air valve is opened and air is admitted to the ejector to displace and discharge the sewage. The valve is also designed and set so that the air supply is cut off after a predetermined interval before all the sewage has been displaced so that the remainder of the discharge takes

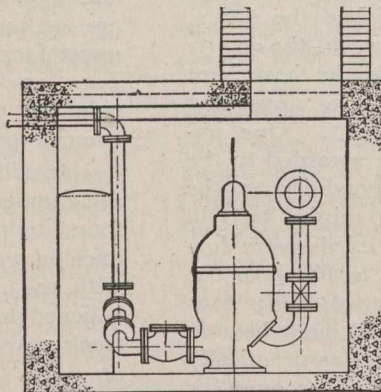


Fig. 2.

place while the air is expanding and the greatest economy is secured.

Fig. 2 shows another isolated compressor station of somewhat different arrangement and with only one ejector. Where there is only one pumping plant to be installed a complete ejector plant with motors, compressors and auxiliaries is installed in a suitable station, as shown in Figs. 3, 4 and 5. In Fig. 3 the ejector proper is in the pit below the street surface, while the air compressors, motors, auto starters and operating valves are in the house immediately above the pit. The advantage of operating valves which may be located at a distance from the ejectors, is apparent; the valves are located above the street level along with the compressors and auto-starters, where they can all be readily inspected and oiled by the engineer. Fig. 4 shows the operating valves located on the wall to the right of the small com-

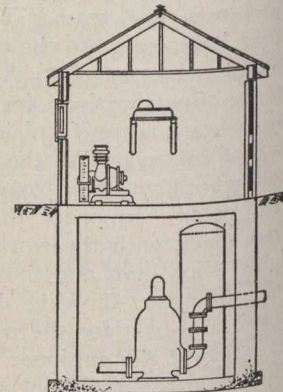


Fig. 4.

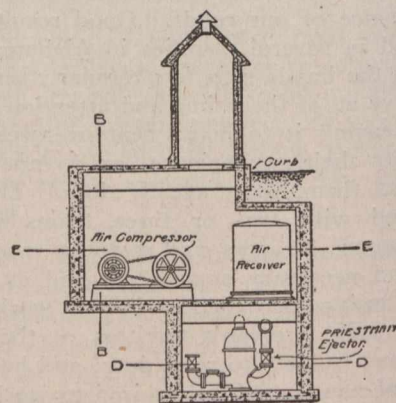


Fig. 5.

pressor, both above the street level, while the ejector and air tank are below in the pit. Fig. 5 shows a complete system below this street level in a very compact station.

The advantages of the pneumatic ejector have already been pointed out, namely, the absolute reliability of operation depending on the fact that the power is transmitted, not