

APPARATUS FOR FLUSHING SMALL SEWERS.

For flushing the smaller sewers of New Haven, Conn., an apparatus has been devised by Mr. Dillon, formerly Superintendent of Sewers, and Mr. Chas. A. Ferry, C. E., of that city, which may be briefly described as follows:

A skeleton frame of wood with a circular hole in it is first placed at the bottom of a manhole. Through the hole is inserted the curved end of a

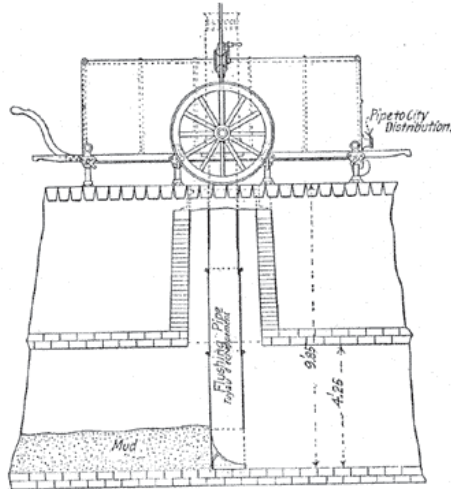


Fig. 1.—A Belgian System of Sewer Flushing.

sheet iron pipe which is made in two sections. The purpose of the wooden frame is merely to hold the pipe in position. The lower section of the pipe, which includes its curve, is slightly smaller than the diameter of the sewer, and the upper portion is telescopic, so as to admit of adjustment to the depth of the manhole.

The latter pipe is directly connected with a watering-cart placed over the manhole. In oper-

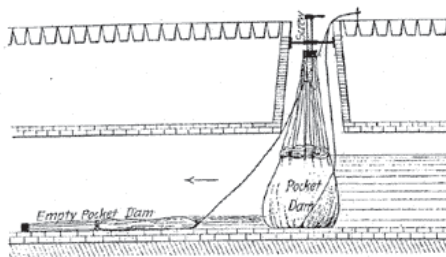


Fig. 2.—Bag for Flushing Large Sewers.

ating this flushing apparatus, a wooden float of ellipsoidal shape and having a shorter diameter somewhat less than that of the sewer-pipe, is passed down the flushing-pipe and is held a few feet in advance of the mouth of this pipe by a cord passing up the pipe and attached to a reel. The tank in the cart has a capacity of about 105 cu. ft. and can be emptied in 7 seconds. The ball forms a temporary dam which moves forward as the cord is paid out from the reel until another manhole is reached. At this next manhole a man is stationed to shovel away the sand, etc., cut out by the current coming from under the ball and carried down by the water. This apparatus works well and cheaply.

In describing this American device "Le Genie Civil" claims that the same principle has been in use in Belgian cities since 1888, and it describes what is a somewhat analogous process, as follows:

The Belgian movable dam was devised by M. G. Wittevronghel, City Engineer of Antwerp, and it was exhibited at the Brussels Exposition of 1888 and at the Antwerp exhibition in 1894. This apparatus includes an iron reservoir carried on two side wheels (see Fig. 1) and provided with adjustable feet for fixing it in position over a manhole. In the bottom of this tank is a circular opening, into which fits a telescopic pipe which is let down the manhole and has a vertical opening in the side pointing in the direction of the down grade of the sewer. This iron tank is easily transported and carries with it all the pipes and accessories. It weighs about 1,320 lbs.

In operating this device it is placed over the mouth of the manhole, the telescopic pipe is lowered until it touches the bottom of the sewer, and the top opening in the pipe is closed by a horizontal gate, and the tank is then filled by a hose connecting with the nearest city hydrant. When the tank is full, the gate is opened and the entire contents, about 105 cu. ft. of water descends the pipe in about 5 seconds. The resultant flush is very powerful and drives all obstructing material towards the next manhole. The Antwerp smaller sewers, having diameters varying from 1.64 to 2.46 ft. and a total length of about 66 miles, with very light grades, are cleaned by this process solely. Four men can operate the apparatus and the total cost of the tank and its pipe is about \$400.

For cleaning sewers of larger diameter, Mr. Wittevronghel uses what he calls a "pocket-dam." This device (see Fig. 2) consists of a tarred canvas bag with dimension varying with the diameter of the sewer and of the manhole. The mouth of this bag is held by a number of small wire ropes attached to a nut which in turn has passing through it a strong screw, held in the mouth of the manhole by an adjustable clamp. The bag, lowered into the manhole and held in position as described, is then filled with water from the city mains. The sides of the bag are thus pressed firmly against the sides of the sewer and form a dam; when the water has been thus raised sufficiently in the sewer, the screw is released as quickly as possible and the bag falls to the bottom of the sewer under the pressure of the water. A cord attached to the bottom of the bag enables it to be withdrawn through the manhole.

This device has been found to be very economical in sewers which have a sufficient water supply for the purpose. By this process a sewer, 6½ ft. in diameter, 11,480 ft. long, and having in it a mean depth of mud of 1.64 ft., was cleaned out at a cost of 0.07 francs per lineal metre, or less than ½-cent. per lin. ft.

*1850, though not very high at Cairo, was a great flood below the mouth of the Arkansas.