

1. Hand patrol.
2. Machine broom cleaning.
3. Squeegeeing.
4. Flushing.
5. Alley cleaning.

Hand Patrol.—The blockmen are assigned to sections designated by the chief of the Bureau of Highways and Street Cleaning, the area to be covered depending upon the character and amount of traffic. The duties of the blockmen consist of patrolling these areas, gathering all paper or other refuse, and sweeping street dirt as fast as it accumulates and placing it in dust-proof bags or metal cans, after which these bags or cans are collected and loaded into special wagons and hauled to a collection station or dump.

The equipment used in the hand patrol work consists of hand machines, bag carriers, burlap sacks, push brooms, pan scrapers, sprinkling cans and shovels. The dirt collected is placed in sacks and left at convenient points to be collected by special wagons and taken to the dump in sacks, these being returned by the drivers. Sacks are used in preference to cans because of the weight, bulk and noisiness of the latter.

Machine Broom Cleaning.—All machine broom cleaning is done in batteries of two or three, preceded by sprinklers, the number of brooms in each battery depending upon the width and character of the streets to be cleaned, the average gang consisting of two machine brooms, one sprinkler, four to seven broomers, and a sufficient supply of carts or wagons to remove the sweepings, the number depending upon the haul to the dumps and the season of the year, together with the amount and character of traffic.

Squeegee Cleaning.—Squeegee cleaning is used on smooth pavements. The operation consists of batteries of two and three squeegee machines preceded by sprinklers to soften and loosen the material on the streets, the sprinklers using as much water as possible without flooding the pavement; the squeegees using just enough water to create a wash. The idea of sprinkling is to soften the surface and enable the squeegees to cleanse the streets of all slime as well as the coarser materials. The squeegees are followed by two men, who immediately sweep up the windrows of dirt into piles, and a sufficient number of carts follow to remove the dirt from the streets.

Flushing.—Flushing machines are used only on the poorly paved streets and block pavements. The high-pressure flushing machines are usually operated singly, as most of the districts have but one flusher.

Alley Cleaning.—All alleys and streets whose width between curbs is too narrow to permit the use of machine brooms, are cleaned once each week with a hose. When such streets or alleys are required by schedule to be cleaned more than once a week, the additional cleaning is done by hand brooms.

All inlets on paved streets and alleys are cleaned as often as necessary to keep them at all times free from obstructions, this work being done by special inlet gangs consisting of three men and a sufficient number of carts.

Collection of Ashes.—The collection of ashes in the City of Philadelphia is done by contract, as is also the collection of rubbish and garbage.

Ashes from household fires are removed once each week from all buildings, two-horse wooden wagons of about 4 cu. yds. capacity being used for this purpose, and provided with canvas covers. All ashes are hauled

to authorized dumps, mostly low-lands and streets requiring filling.

Waste is collected weekly throughout the entire city when a card is displayed in the window or some conspicuous place notifying the contractor that waste is on the premises. Two-horse wagons with latticed sides, holding $7\frac{1}{2}$ cu. yds., are used for this purpose. The waste is hauled to dumps.

Collection of Garbage.—Collections are made daily, except Sunday, in all sections of the city, from residences. Garbage from retail groceries and fish dealers is collected daily in quantities not exceeding one bushel from each store or stand. Dead animals are also removed by the garbage contractor. The wagons used for the collection of garbage are one- and two-horse metal-bodied wagons, water-tight, and of a capacity of $1\frac{1}{2}$ to $2\frac{1}{2}$ cu. yds. The garbage is hauled to the plant of the contractor and disposed of by the reduction method.

Snow Removal.—The street cleaning specifications also provide, in case of snow, for the entire force of the contractor not engaged in the collection of ashes and rubbish, to be used in removing the snow, when and where directed. In order to remove the snow quickly from the central and business portion of the city, separate contracts are also entered into, in which removal of snow is paid for on the cubic yard basis and in most cases it is dumped into sewer manholes at convenient locations or in the rivers.

The following is a description of the equipment used in street cleaning work in Philadelphia:—

Hand Machine Broom.—A revolving broom encased in a sheet iron box, so constructed as to receive the materials swept up by the machine. The broom is approximately three feet in length.

Squeegee Machines.—These consist of a tank for water with a capacity of 500 gallons, a cleaning roller set obliquely, geared or chain-belted to the rear axle, having a steel axis and rubber spiral fins.

High-Pressure Flushing Machines.—A machine having a tank for water with a capacity of 500 to 700 gallons, with a gasoline pump by which the water is discharged from the nozzles, with a pressure of at least 35 pounds per square inch. The nozzles are elongated and so constructed that their direction may be readily changed and adjusted as required.

Machine Brooms.—Machine brooms consist of a roller set obliquely and geared or chain-belted to the rear axle, the roller having a wooden axis and split bamboo bristles, whose length when new shall not exceed fourteen inches from the axis. These machines are provided with dust and mud guards.

Sprinkling Machines.—Consist of a tank for water with a capacity of 500 to 700 gallons, with adjustable valves, the water being delivered by gravity pressure.

There are other appliances, such as mechanical pick-up sweepers, which, however, are not in general use. The methods of cleaning and the equipment in use today are more or less crude and capable of very great improvement, and there is ample opportunity for engineers to show their ingenuity and initiative in devising improvements over the present methods used in this country and abroad, as street cleaning is still in the experimental stage.

The following comparison closely approximates the cost of street cleaning, collection of ashes, rubbish and garbage in Philadelphia, New York and Chicago for the year 1912:—