

night schools. His foremen told him they could make better workmen out of boys who knew nothing of the work than those who thought they knew something about it. Theoretically, the foremen express belief in technical education, but he found difficulty in getting them to express practical opinions. Most of them were anxious to help the employes, and he believed they would be willing to give a couple of nights to teaching night classes. He mentioned the case of a boy who had entered lately who adapted himself more readily than usual to the work because of manual training he had received. He thought the boy who entered the works at fourteen was likely to make a better workman than a graduate of the High School. The latter usually forgot more than the elements of their education in a short time. He found the great difficulty was not lack of education, but lack of "gumption." The boy who wished to secure special education could do so by use of public libraries and correspondence courses.

Mr. James Pender was next called. He said he was the business manager of Jas. Pender & Co., Limited, manufacturers of nails, employing about 100 men. Few employes took correspondence courses, but he believed night classes would be of benefit to them. The company's product was distributed as far as freight rates allowed.

DIGGING TILE DITCHES BY GASOLINE MOTOR POWER.

The single wheel tile ditcher, noted in the accompanying illustration, Fig. 1, as well as the double wheel machine, are operated by gasoline engines, thereby eliminating the use of a caoston, horses or a team to haul fuel. The former illustration shows the tile spout and the canopy top over the traction outfit, while the latter shows the method of operating the double wheel ditcher providing for the laying of 24 inch to 30 inch tile.



Fig. 1.

The accompanying illustration, Fig. 2, shows a tile ditcher of this type operated by a gasoline motor in operation in Iowa, in remarkable surroundings, the slough grass 8 feet or 10 feet high, indicating the soil below. The tractor that propels or drags the ditcher along is of the caterpillar type. Practically all of the weight of the equipment is 25 to 35 feet away from the bottom of the ditch.

The accompanying drawing, Fig. 3, shows how the tile is laid by gravity, also the shield that prevents the side from falling in after the tile is laid. The bottom shoe of the shield is curved and adjusted up and down so as to be always on the same angle as the ditch and tile.

The gasoline engine used for traction for pulling the ditcher and furnishing power for digging the ditch is of the double cylinder type, having a capacity of 20 horse power. The

weight of the tractor with the engine, water and gasoline tank is about 4,000 pounds, the weight of the ditcher being about the same. The conveyer consists of a steel plate apron fastened to a link chain running over four sprockets and has a cleaning device to scrape off any sticky mud that will not fall off of itself. This conveyer is adjustable so as to carry off the dirt excavated at different distances according to the width and depth of the ditch dug.

In laying small tile from 4 inches to 12 inches in diameter the gasoline motor driven ditcher works automatically, laying the tile by gravity so that if any dirt falls back it must fall



Fig. 2.

on the top of the tile and in case of "cave in" the same occurs after the tile is in place helping to fill the trench, rather than where the tile ought to be laid.

For large ditches a double wheel machine is provided with two wheels, chain and beam, that cut a ditch from 12 to 24 inches wide. It is stated, however, that on account of the great weight it is not practical to lay tile larger than 12 inches in diameter automatically, but for smaller tile it can be laid automatically by the machine, allowing ground to be ditched and tiled that would be practically impossible to tile by hand.

The grade or angle can be surveyed and proven before the tile is covered, and the grade stakes are left intact so that the work may be easily proven before the tile is covered.

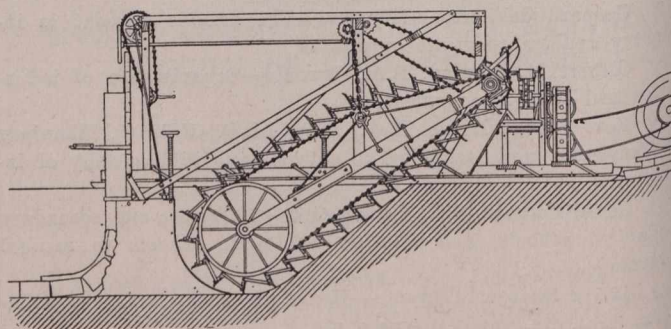


Fig. 3.

It is maintained that tiling by gasoline engines of this type may be done at one-third of the cost of tiling by hand. One may be required to raise and lower the wheel and steer the traction outfit, and another to keep the tiles filled. The speed of operation is said to be 150 feet per hour for a trench 4 feet deep, and 100 feet per hour for ditch 7 feet deep, while a depth of 10 feet can be dug and the tile laid, automatically, at the rate of 50 feet per hour.

It will readily be seen what a great convenience and wonderful labor-saving device a gasoline ditching and tiling machine of this type would prove in laying tile in wet, swampy and boggy farm lands.