

## MUNICIPAL ENGINEERS, CONTRACTORS AND MATERIALS

scarcely come under the head of contractors' pumps, they are useful when clean water has to be forced to a considerable height. They should be of a massive construction, with long stroke and heavy flywheel, and the valves should be of ample area and of simple design, and both these and their seats should be removable for adjusting and repairs. An ordinary slide valve can be recommended for the steam-cylinder, and should be designed to cut off steam at a certain proportion of the stroke, so as to use steam expansively. The exact point of cut-off depends on the water pressure the pump has to work against. Fly-wheel pumps are sometimes constructed so as to be reversible; this is useful for freeing a checked suction pipe.

**ROTARY PUMPS.**—Another pump used to a limited extent by contractors is the rotary. It has the advantage of extremely simple construction, and has no valves except the usual ones in the suction and delivery pipes. One of the most suitable types of rotary pumps for contractors' use consists of an outer cast-iron casing, of which the interior is shaped to contain two circular cams with corresponding projections and indentations gearing together. These cams are mounted on spindles and driven in opposite directions, so as to approach each other from the top. The projections sweep round the circular face of the casing, creating a vacuum, which draws the water through an opening at the bottom; as the revolution continues, opposite cams come into action and force the water through the delivery opening at the top of the casing; the action is therefore continuous, and a constant stream of water is ejected. Unlike the centrifugal, the rotary pump does not require priming, and consequently is always ready for use. In the larger sizes the long teeth, or cams, should be packed with pieces of metal pressed outwards by springs, so that when worn a good vacuum may still be obtained. These pumps will pick up water up to 25ft. or 28ft. and force it to a considerable height, say 100ft.; a lower suction is, however, to be preferred, as the loss through "slip" is thereby lessened, and a greater discharge obtained. Plugs should be provided at convenient points of the case to drain off the water when not in use, to prevent freezing. The pump may also be emptied by turning it backwards a few times, providing the water is all out of the delivery pipe or held by the delivery valve.

(Concluded in next issue.)

John Burns & Co., plumbers, Montreal, have opened a branch store in Ottawa.

Charles T. W. and Sarah E. Piper have registered partnership under the name of C. W. T. Piper & Co., contractors, Montreal.

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