

from the upper reach of the canal. The accumulator differs from the regular type by having its ballast box directly on top of the ram instead of the usual annular form, the advantage so gained being an efficient bracing of the accumulator press to the surrounding walls of the tower.

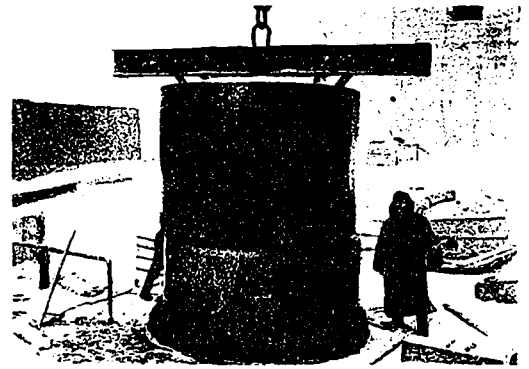
The pressure pumps are of the three-throw type, single acting, having 4½ in. bronze plungers, and are geared down from the turbine. Two pumps are provided, either of which may be used under ordinary circumstances, or, if necessary, both may be connected. The accumulator automatically regulates its motive power.

One three-cylinder hydraulic engine operates the lower gates, and a similar one works the upper gates. One hydraulic capstan is on the lower level and the other on the upper. The gate engines and capstans are all actuated by the accumulator.

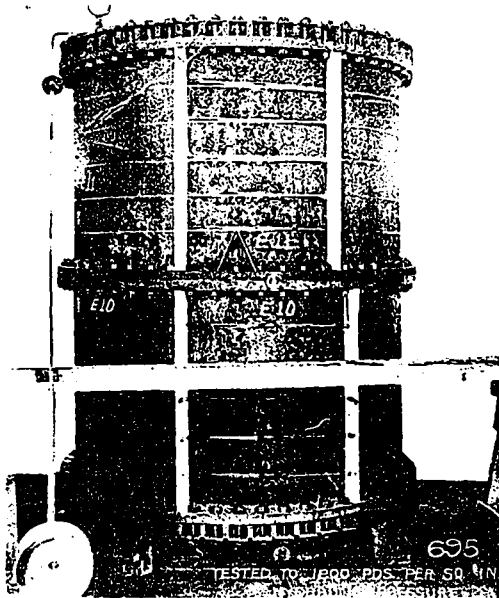
The air compressor, built under the patents of the Taylor Hydraulic Air Compressing Company of Montreal, is in a void in the breast wall. It gets its supply of

line within the tank to the point of escape, which in this case is about 28 lbs. per square inch. From the collecting tank the air is conveyed by pipes to the pump room, and from there to the seal tubes to be used for inflation, and for pumping. The capacity of the compressor is 300 cubic feet of air per minute.

The air lift, which is entirely automatic in its oper-



ERECTION OF LARGE RAMS—PLACING A SECTION.



HYDRAULIC TEST OF PRESS AND RAM SECTIONS. DOUBLE TEST TO PROVE NORMAL LEAD AND COPPER GASKETS AT MIDDLE JOINTS.

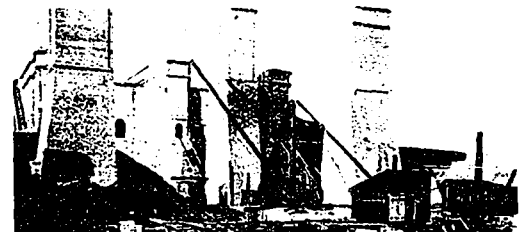
water from the upper reach. The air to be compressed becomes entangled with the water passing through a peculiarly constructed headpiece at the point of inlet, and is then dragged down by the water to a depth considerably below the elevation at which the water escapes, being collected at the lowest level and thence delivered for use. The bottom of the headpiece is about 10 ft. below the surface of the water, and is connected by an 18 in. down-pipe, with a collecting tank 85 ft. below it. The down-pipe descends in a 42 in. shaft, and the tank, 11 ft. in diameter, is in a chamber 14 ft. in diameter. As the collecting tank is bottomless, and on legs raising it 6 in. clear of the floor, the water, after leaving the air bubbles collected in the top of the tank, rises in the 42 in. shaft and escapes through an outlet about 17 ft. below the inlet level. The imprisoned air in the collecting tank is under the pressure due to the column of water from the water

ation, and receives its air from the Taylor air compressor, is somewhat of a novelty, and in connection with the compressor it is very economical and convenient under the existing circumstances. Its duty is to keep the lock chamber pits free from water, which it does by pumping from one of the wells in which the drainage is collected. The device consists of a simple pipe submerged in the water at the suction end, where compressed air is admitted to it. The discharge pipe is 4 in. in diameter. At the inlet it is 3½ in., and extends 35 ft. below the surface of the water in the well. The suction or inlet is in the form of an inverted funnel, 16 in. diameter at the large end. At this point a small quantity of compressed air is admitted, and becoming mixed with the water in the pipe, makes a column of air and water, which rises by virtue of its being lighter than the water surrounding the pipe. The actual lift is 29 ft. from the water line in the well to the water line at the discharge in the lower reach.

MATERIALS AND GENERAL APPEARANCE.

A summary of the amounts and various kinds of metal used in the superstructure is as follows: Rolled steel, in plates and shapes for the lock chambers and gates, 1,640,000 lbs.; cast iron, in rams, accumulator, guides, and various machines, 495,000 lbs.; steel castings for the main presses and accumulator, 668,000 lbs.

Care has been taken throughout to make the general appearance of the work as attractive as possible. All the



FIFTEEN-TON STIFF-LEG DERRICK HANDLING PRESS SECTION.

walls and stairways are protected by suitably designed railings, and the windows and doorways are closed by ornamental grille-work. The lockmaster's cabin on the top of the centre tower is constructed of concrete as high as the window sills. Above this the steel framework is furred with wood, and the whole of the exterior covered