pull is taken by four 8-inch x 6-inch angles to the top sides of the caisson.

The bottom of the caisson is stiffened by 24-inch @ 80 lbs. I's placed at 2-foot 10-inch centres and has also about 6 feet of solid concrete ballast which, of course, aids in distributing the loads delivered by the 6-inch x 9-inch steel rails.

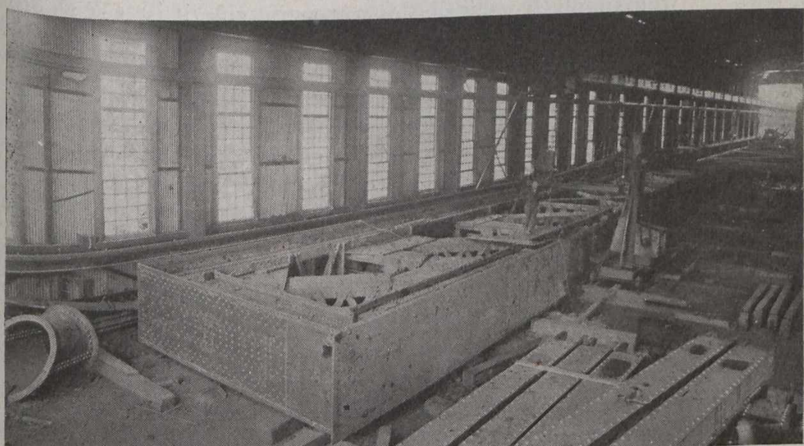

Fig. 5.—Truss "A" Assembled in Shops.

The rollers for this caisson are of solid steel 2 feet in diameter with a flange 3 inches x 3 inches, and a face width of 1 foot. The thickness along the bearing is 16 inches. Fitted on the inside of the rollers is a phosphor bronze bushing 16 inches long and ⅜ inch thick. This bears on a phosphor bronze sleeve 16¾ inches long and also ⅜ inch thick. This sleeve in turn fits over and bears upon the forged steel spindle 5 inches in diameter. One end of this spindle is forged square to prevent it turning in its bearing. The frame for the bearings (one frame per roller) is cast iron, of heavy design with its outer surface deeply indented to make an intimate bond with the concrete. These details are exhibited in Fig. 4, which shows a cross-section of one roller and frame.

The fabrication of this caisson proceeded along the usual lines for first-class bridge work. Complete detail drawings were prepared and wooden templates made.

As will be remembered, truss A and the girder were designed for 1 inch diameter rivets and truss B for ⅞ inch diameter rivets. In order to keep all punching the same it was decided to punch everything 15/16 inch. This would be, of course, sub-punching for truss A and the girder, and full size for truss B. In the former cases the holes would be reamed to 1 1/16 inches for the 1 inch rivets.

In order to be sure of accurate fitting, truss A with its skin plates, and parts of the girder were assembled in the yard and the reaming was then done. Fig. 5 shows the truss A being reamed. A good idea of the weight and size of the members may be obtained by comparing the depth of the chord with the man beside the reamer. The magnitude of the heavy gussets may also be noticed.

The hydraulic features consist of six main culverts used to flood the berth; four valves to let sea water into tidal chamber; two valves to let sea water into ballast chamber; valves to drain the superfluous water off the tidal and ballast chambers. The six main culverts are of 42-inch diameter steel lap riveted section, terminating in forged flanged ends riveted to the sides of the caisson and bolted to the flange of the main gate valves, whose vertical outer lines are located 3 feet 10¾ inches from the berth side of the caisson.

The inlets for sea water in the tidal and ballast chambers are operated simultaneously. To flood the tidal chamber there are four 10-inch valves with horizontal stems situated 3 feet ¼ inch below the girder deck. Two 10-inch valves with vertical stems are used to flood the ballast chamber. All the main culvert valves are electrically operated. To drain these chambers there are two 6-inch valves in each, which empty into the ship berth. It was decided that the rolling caisson should be erected first as it could be used as a gate to protect the ship berth during construction. The contractors gave the Dominion Bridge Company permission to use the excavated part of the mouth of the berth as an erection site.

The rolling caisson was erected lying transversely across the berth, with its longitudinal centre line coincident with the centre line of its recess chamber. The floating caisson was also built here. Between the two caissons a large timber erection trestle was built to carry the erection car.

Before the Dominion Bridge Company started steel erection the contractors had placed the rollers in the floor of the berth. As it was necessary to caulk the seams of the caisson it was propped up on jacks 3 feet 6 inches above the floor of the ship berth and assembling was completed up to truss A. No great difficulty was experienced beyond that caused by ice and snow getting in the rollers.

At the recent annual meeting of the Commission of Conservation, a resolution was passed requesting the various provincial governments to take steps to secure complete reports of all losses from fires occurring within their boundaries, and the extent, if any, to which the property was insured.

A new invention has been patented in the United States the object of which is the production of timber, particularly piles, which shall be fully preserved for a part only of their length, that is, at the part where they are subject to decay. The method consists in first removing the outer bark from the entire length of the stick, and removing the skin, or inner bark from only that part which it is desired to impregnate with the oil under the usual or any preferred conditions of heat, vacuum, pressure, etc. Wood does not decay in that part which is permanently in wet soil, but the part in salt water is subjected to the destructive action of marine borers, and the part above the water line, and also the part which is alternately wet and dry, is subject to decay and fungous growth, dry rot, etc. Wood constantly submerged in fresh water does not suffer much from decay or insect life. Accordingly it is necessary to creosote piling to be used in fresh water only in that part from say 2 ft. below low water mark up to the top of the pile, while in the case of piling to be used in salt water the wood should be impregnated from a point say 4 ft. below the mud line to the top of the pile. Heretofore all piling used in this country, which has been creosoted at all, has been treated the full length, and on account of the fact that the small end or top of the tree (as it grows) contains a much larger percentage of sapwood than the butt, the end of the pile which goes into the ground has a much greater amount of oil, per cubic foot, than the butt, or in other words, the part of the stick requiring no preservative gets the greatest amount of preservative fluid. By the above process substantially no oil is used to impregnate that part of the wood which does not require preservation, the small amount absorbed apparently entering through small breaks or cuts accidentally made in the inner bark or skin. It is preferable to remove all the skin from that part of the length which it is desired to fully impregnate, but small pieces, say not greater than an inch wide by 5 or 6 in. long will not prevent substantially complete impregnation at these points.