At one end of the bridge a wall of rock formed a strong natural protection and prevents any damage being done by the water to the abutments; at the other end of the bridge this protection is obtained by reinforced concrete sheet piling, connected together by tongue and groove joints. These piles were sunk in position by the use of a water jet, the water being brought to the end of the piles under a head of 70 ft.

In the reinforcement of the bridge only two sizes of bars were used,* the unusual section of these bars is shown in Fig. 5, and is the design of Mr. Porchedder, (Turin), the head of the contracting firm who undertook the work.

The whole design is based on a live load of 100 lbs. per sq. ft., or 3 steam rollers weighing 33,000 lbs. each, placed in the most dangerous position.

A remarkable feature in connection with this bridge was the use of reinforced concrete scaffolding, (Fig. 6 and 7). This was of such a nature, that very little resistance was offered to the flow of the water, and at the same time great strength was obtained. The resistance power was brought out by the fact that a steamer in trying to pass under the bridge at high tide inadvertently struck two of the piles and broke them off, (Fig. 8). Notwithstanding this accident the scaffolding was still able to support the recently placed concrete.

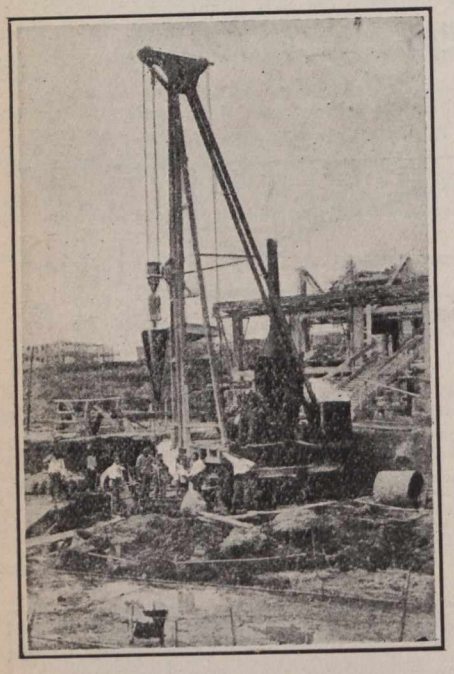

Fig. 4.

The scaffolding was built up so that each row of columns rested on 16 concrete piles placed in two rows and connected above the water-line by a beam, (Fig. 9); each group of piles constitutes a support for reinforced concrete columns, which are again framed together by a second cross beam, on which were laid wedges and wood beams for the forms.

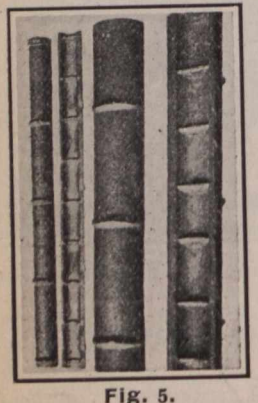

Fig. 5.

The columns and beams for this scaffolding were constructed separately, floated to the bridge and joined together by the reinforcement, filled out with cement mortar. The erection thus occupied a very short space of time.

*With sectional areas of .175 and .61 sq. in. respectively.

A concrete mixture of 500 lbs. of cement per cubic yard was used, and the consistency was very wet.

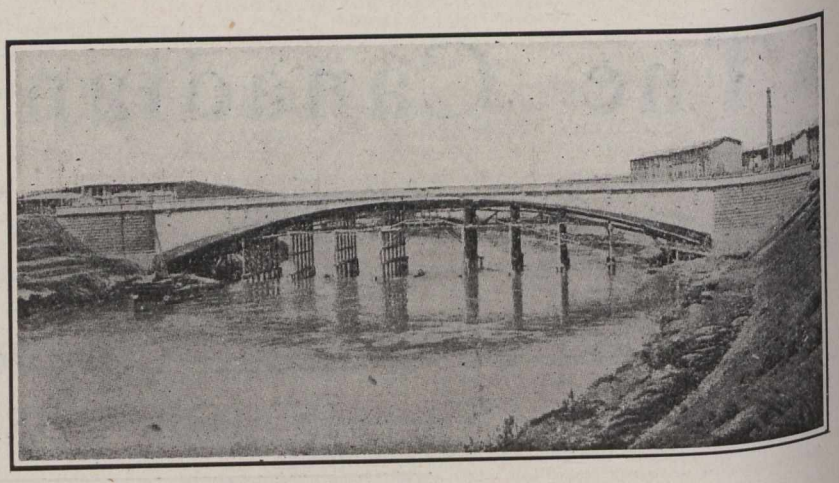

Fig. 6.

The contract price for the bridge was about $200,000.

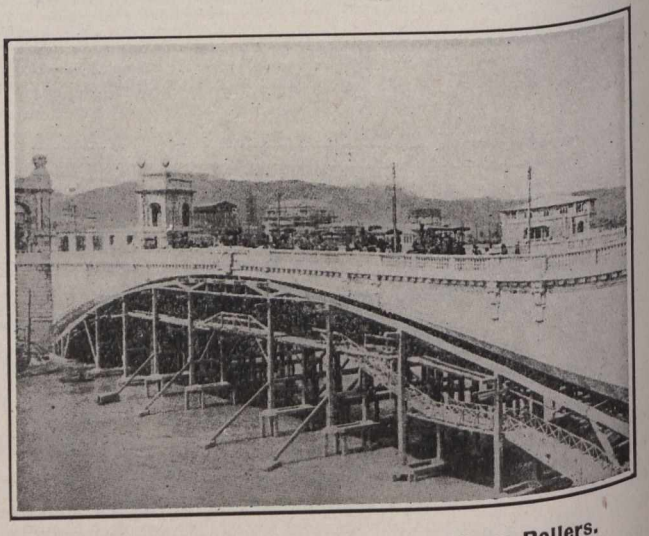

Fig. 7.—Testing Bridge by Seven Steam Rollers.

For purposes of comparison a list of the principal dimensions of some other large arch bridges is given in the table on the following page.

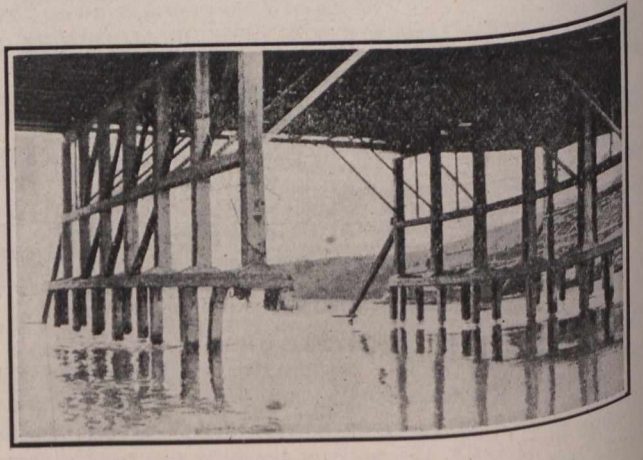

Fig. 8.

On page 847 of this issue of *The Canadian Engineer* will be found an article by Mr. Henry G. Tyrrell entitled "American Impressions of the Risorgimento Bridge at