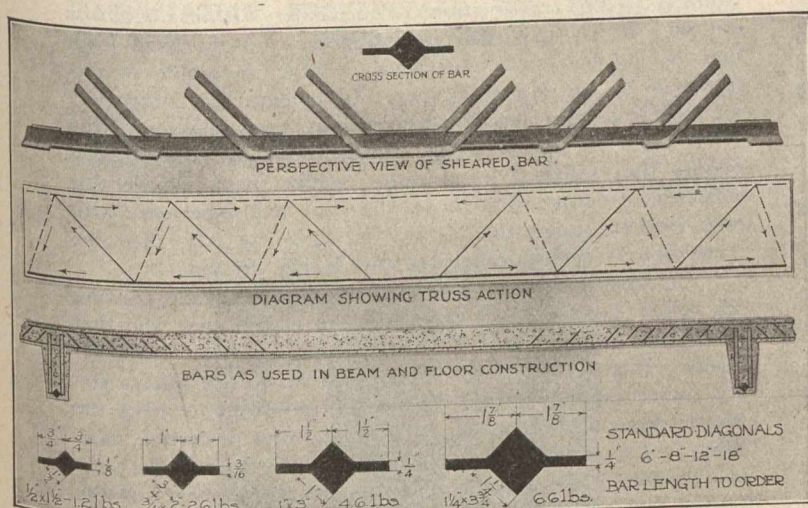


## THE KAHN TRUSSED BAR IN REINFORCED CONCRETE.

As thoughtful architects and engineers are giving the subject of reinforced concrete a great deal of attention, a description of the Kahn system of reinforced concrete will be of interest. Julius Kahn, a civil engineer of Detroit, Michigan, realizing that the forms of reinforcement used did not provide for all possible loads, has invented a trussed bar, patents for which have been turned over to the Trussed Concrete Steel Company, of Detroit, Michigan. The Kahn trussed bar consists of a half truss struck up from a single rolled section, providing the tensional members of a truss. Concrete is an excellent material for compression, but is comparatively weak in tension. When the Kahn bar is imbedded in a mass of concrete, forming an independent, self-contained beam or truss, the concrete supplies the missing compression members of the truss. A beam when built in this manner, when tested to destruction, invariably fails at the point of greatest bending moment by pulling in two the



steel reinforcement which is imbedded within the concrete. The Kahn trussed bar, not only provides horizontal reinforcement, but also vertical reinforcement, which European engineers have found so necessary to provide for shear at the ends of the beams. These engineers endeavored to overcome the shearing strains by using U-shaped stirrups of iron around the horizontal rods, which have been used largely for reinforcement heretofore. The advantage of the Kahn trussed bar lies in the fact that the sheared up members are rigidly attached to the main horizontal bar, being, in fact, a part of the bar, and they therefore carry all strains directly into the main tensional member. It has been found by tests where twisted or deformed rods were used for reinforcement, that when tested to destruction, they failed by shear either at the ends or along the main horizontal member, and the concrete would open up at an angle of about 45 per cent. with the horizontal. The inclined members of the Kahn bar cross these lines of rupture at practically a right angle, and they therefore hold the material together. Another advantage claimed for this bar is that at the centre of the beam, where bending moment is greatest, the full cross-section is left unsheared, whereas, at the ends where maximum shear occurs, and bending moment is the least, the members are struck up to provide for shearing stresses.

An illustration of this form of construction can be seen in Toronto, where the roof of a fur vault for the Gillespie Estate has been designed in accordance with the Kahn system by Gordon & Helliwell, architects, and is now under construction. The Trussed Concrete Steel Co. has offices in the leading cities in the United States, and has now extended its business to Canada, having appointed A. J. Stevens, C.E., Canada Permanent Bldg., Toronto, as general agent for the Dominion.

The Eugene F. Phillips Co. will build their large new factory, at St. Louis du Mile End, a suburb of Montreal.

## THE TORONTO FIRE.

The following industries were burned out in the great Toronto fire of April 19th: M. McLaughlin & Co., Dominion Flour Mill, Toronto Coffee and Spice Mills, Henderson Roller Bearing Mfg. Co., Dominion Fence Co., A. Dunlop, elevator manufacturer, Pugsley, Dingman & Co., soap and blue manufacturers, Eckardt Casket and Eckardt Silver Plate Co., Wm. Jessop & Sons, dealers in steel; W. A. Rogers, Limited, silver plate manufacturers. The wholesale stationers, who suffered heavily, nearly all carried on manufacturing or printing on their premises and many of the wholesale dry goods dealers had manufacturing departments.

When it was seen that the fire would reach large dimensions, outside aid was asked by telephone, and Hamilton, Brantford, London, Peterboro and Buffalo sent detachments of their fire brigades, which rendered efficient help.

R. G. Black, chief electrical engineer Toronto Electric Light Company, gave an interesting talk to the Canadian Association of Stationary Engineers, in the Engineers' Hall, Toronto, April 20th, on "Alternating Current and How to Handle It."

E. H. McHenry, chief engineer of the Canadian Pacific Railway, has resigned the position which he assumed two years ago, succeeding P. A. Peterson. For some time he has not been in the best of health. The name of a prominent engineer, understood to be W. F. Fye, assistant chief engineer of the C.P.R., is mentioned as Mr. McHenry's successor, but nothing has been decided. Mr. McHenry was at one time receiver of the Northern Pacific, and is reported to be a man of means. It is rumoured that he will join the staff of the Grand Trunk Pacific.

The first of twenty new locomotives, which are being built for the C.P.R. at the Saxon Engine Works, Chemnitz, Germany, is being tested at Montreal. They are made to a design furnished by the C.P.R. The diameter of the cylinders is 23 inches; diameter of driving wheels, 63 inches; total wheel base, 25 feet 2 inches; weight, 168,335 pounds; water capacity, 5,000 gallons; coal, 10 tons; weight of tender, 127,000 pounds; total wheel base of engine and tender, 53 feet; total weight of engine and tender, 295,355 pounds. They are ten-wheeler compound, and will haul large trains with freight cars of sixty tons each—the solution, in fact, of the problem, how to make profits at present rates. They will cost about \$20,000 each. While twenty will complete this particular order, the C.P.R. really need something like one hundred and fifty new locomotives, which are being supplied as fast as the local shops and foreign firms can turn them out. As far as tested the German engine gives satisfaction.

## NEW CATALOGUES.

Copies of the following catalogues and bulletins received may be had on writing to any of the firms named, mentioning The Canadian Engineer:

The Westinghouse Electrical Manufacturing Co., Pittsburgh, Pa., "Westinghouse Auxiliary Apparatus for Railway Equipments"; "Electric Locomotives for Surface Haulage"; "Westinghouse Automobile Charging Outfits"; "Type Motors"; and "Westinghouse No. 91 Single-Phase Railway Motor and Car Equipment."

The Brown & Sharpe Manufacturing Co., Providence, R.I.: Milling and grinding machines, automatic gear-cutting machines, screw machines, cutters, accurate test-tools, and machinists' tools, gauges, etc.

The Trussed Concrete Steel Co., Detroit, Mich.: "The Kahn System of Reinforced Concrete."

The Bullock Electric Manufacturing Co., Cincinnati, Ohio: "Methods of Speed Control," a treatise on the electrical control of speeds.