A 7/8-in. bar is inserted horizontally into a tube and fed automatically until it hits a stop, and this determines the length required. It is held there until the chuck, by means of a cam, closes firmly on the iron. Then the head, containing five spindle attachments, begins to revolve, making five stops before effecting the complete revolution; and at the end of the series of automatic movements performs the following operations on the piece of iron already cut to length: (1) rough-turned and necked if necessary; (2) finished to proper size; (3) die takes roughing cut off thread; (4) finishes thread, cuts off, and drops into receptacle below. The whole of these operations—from the rough bar to the finished screw—are performed in 1½ minutes, whereas in the old time it took six minutes. At the time of our visit 1,200 = ½-in. by 1½-in. set screws in a ten-hour day, while a No. 1 machine was producing 2,400 = ¼-in. by 7/8-in. screws in 13 hours, or four times as many as by the old single-spindle machines.

In another section are machines with four spindles for automatically heading screws and bolts; but these are used only in the execution of large orders, hand machines being used in the production of small quantities.

Every evening the day's work is gathered up, delivered to the inspecting-room, and next day the whole of the work is carefully scrutinized, gauged as to length, etc., and stored.

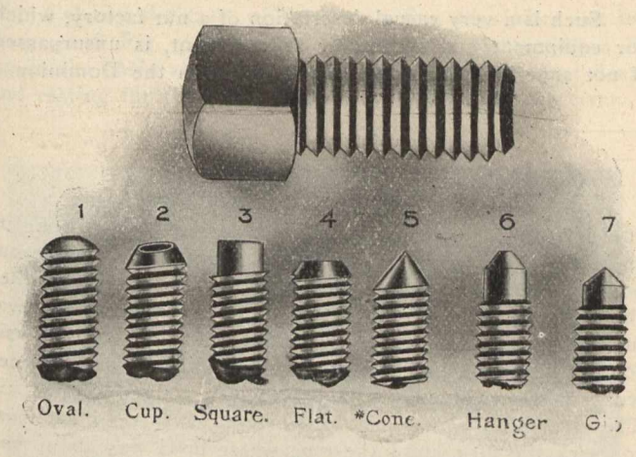

Fig. 4.
Case-hardened Steel Set Screws.

In the stock-room we were somewhat surprised to find eighty-seven tons of wrought iron to fifty-seven tons of soft steel, and glean that they use 500 tons of wrought iron per year. The general impression is, that the open-hearth, low carbon steel has practically driven wrought iron out of the market. It appears, however, that there is a strong reaction in favor of the old reliable wrought iron, such as the "Best Yorkshire," made from special (cold blast) pig iron, which has undergone a refining process before being puddled in small charges. We understood that the high-grade iron used in the manufacture of screws in this factory is imported from the United States. The reversion from steel to wrought iron is due to the erratic quality of much of the low carbon steel, which is being placed on the market by "tonnage" and "get-rich-quick" methods in vogue. The brand of the steel used by the John Morrow Company is selected for its special suitability in the manufacture of screws. That customers can be supplied with screws made of either iron or steel is a proof of this company's wise adaptability and modern spirit of enterprise.

The upper floor of the factory is divided into departments for the manufacture of adjusting screws for organ and piano stools, 28-in. Dunlop bicycle tyre spring wires, automobile tyres, loose-leaf ledger devices, etc.; all contributing factors to the making up of a successful specialized hardware business.

Ingersoll Nut Company's New Factory.

When we started out on our journey to Ingersoll it was not with the intention of describing the screw works—worthy of special mention though they are—but to inspect and give our impressions in these columns of the Ingersoll Nut Company's new factory, built in 1905, and now in full swing. We found it conveniently situated on a knoll alongside the Grand Trunk Railway, about 200 yards east of the station. It is an artistically designed and substantially built red brick building, 144 feet long by 50 feet wide A notice-

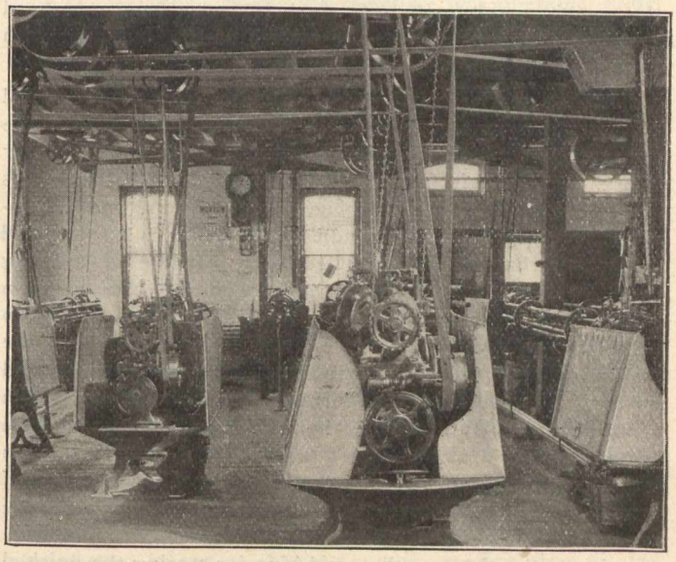

Fig. 5.

able feature is the excellent provision for light—the side walls seem all windows. Ventilation has not been neglected, for an 18-foot louvre crowns and extends the whole length of the corrugated iron roof, which is supported on wooden trusses, laid with lumber sheathing, and coated throughout with fire-proof paint. Adequate fire protection apparatus has been provided; altogether, this provincial nut factory building gives one an impression of being admirably adapted to its purpose.

The power house, 38 feet by 32 feet, is located at the eastern end of the main building, and is equipped with one 80 h.p. 60-in. by 14 ft. tubular boiler, with 26-in. by 60 ft. stack; and provided with vertical steam dome. It is hand fired, and supplies steam to a 60 h.p. Hardiel compound engine, 9 in. by 16 in. by 10 in., operating at 90 lbs. steam

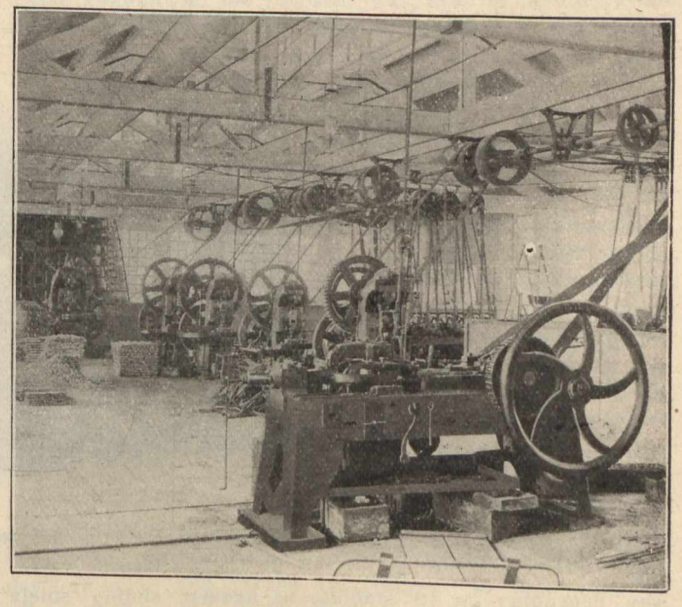

Fig. 6.

and 175 r.p.m. (furnished by A. R. Williams Machinery Co., Limited, Toronto.) A Moffatt water heater, connected Marsh pump, and coal storage compartment completes the power house installation.

Entering the factory from the power house, the scene pictured in Fig. 6 meets our view. On the left (not shown) is a fan blower installation, by Sheldon & Sheldon, of Galt,