

by connecting the hose to an inch gas pipe, this being pushed up to the end of the drive pipe. The gas pipe had an iron guide on the end to keep the nozzle in the center of the large pipe. The face on the guide was large enough to keep rocks out of the end of the pipe, but had openings in it to allow free backward flow for puddled sand and mud. The nozzle was always kept rammed well up to the end of the drive pipe. In the drive of 95 ft. the pipe should not deflect more than one foot, and for this reason it was necessary to listen carefully for the metallic ring of the nozzle when it struck the rock. Whenever rock was struck, the hose was unscrewed, the inch pipe withdrawn, the nozzle unscrewed, and a dynamite cartridge tied to the end and carefully pushed back again. The jacks were then reversed and the large pipe drawn back 5 or 6 ft. The charge was then fired by electricity. The dynamite cartridges were made on the ground of 3/4 in. pine boxing about 16 in. long, and small enough to slip easily through the drive pipe. The box was packed with duoline and held from 1 1/2 to 3 lbs. Twelve days were consumed in driving the 95 ft., two 15 ton ratchet screw jacks being used for the work. The pipe appeared at the well end of the drive, but 10 in. from the point calculated. This work was done in April of 1898, since which time no trouble whatever has been experienced from slides.

We are indebted to Mr. E. Fisher, General Supt., T. H. & R., for the above information.

TECHNICAL

Manufacturing and Business.

The American Railway Supply Manufacturing Company, of Pittsburgh, was chartered in Delaware, July 21, to make and deal in railroad signals and supplies; capital, \$150,000.

W. P. Cosper, for the past eight years Western Representative of the Consolidated Car Heating & Lighting Co., of Albany, N. Y., has been appointed Sales Agent of the railroad department of Fairbanks, Morse & Co., Chicago.

John F. Harrigan has retired from the service of the Fulton Iron & Engine Works, of Detroit, Mich., to become Vice-President and General Manager of the National Brass Manufacturing Co., with headquarters at St. Louis, Mo.

The Mutton Hollow Fire Brick Co. has recently made some extensive additions to its plant at Woodbridge, N. J. The company is now in a position to produce, in large quantities, high grade fire brick, tile, slabs, cupola linings and special fireclay goods.

Thornburgh tandem coupler attachments will be placed on the 500 cars recently reported in our issues as being built at the shops of the Gulf & Ship Island; on 700 cars at the shops of the American Car & Foundry Co., and 500 to be built at the shops of the Nashville, Chattanooga & St. Louis.

The Standard Steel Car Company is equipping its new plant for electric driving throughout. A recent purchase from the Westinghouse Electric & Mfg. Co. comprises two 375 K.W., A. C. generators, one 400 K.W., D. C. generator, and a 300 K.W. rotary converter for use as a connecting link between the two. This company has, also, purchased about 50 induction motors, which will be used largely for direct connection to machine tools.

On July 17 the 25,000 h.p. water softening plant installed at Ensley, Ala., by the Pittsburgh Filter Mfg. Co., Pittsburgh, Pa., for the Tennessee Coal, Iron & Railroad Co., was started and is working satisfactorily. The plant will purify the water used by the boiler plants of the blast furnaces, steel works, mines, etc., of the Tennessee Coal, Iron & Railroad Co., and, we are informed by the builders, is the largest water softening plant in the world.

Walter D. Crosman has resigned as Western Representative of the Gold Car Heating & Lighting Co. to become Sales Manager of the railroad department of the Western Roofing & Supply Co., 195 Lake St., Chicago. The company handles a complete line of roofings, linings and coverings, including 85 per cent. magnesia locomotive laggings, roofing and insulating materials for cars and for all classes of railroad buildings, pipe coverings, cold water paints, asphalt paints for boiler fronts, etc.

Jones & Laughlins, of Pittsburgh, have recently ordered from the Westinghouse Electric & Mfg. Co. one 800 K. W., D. C. generator, two 150 K. W., motor-driven, two-phase alternators, and two 125-light, motor-driven generators. The Doylestown Electric Company, of Doylestown, Pa., has ordered from the Westinghouse Electric & Mfg. Co. two 100 K. W., engine-type, two-phase alternators with direct-connected exciters, complete with switchboard. The engineer for the work is Dr. W. A. Drysdale, of Philadelphia.

Iron and Steel.

Col. Charles James, who organized the Norway Iron & Steel Co., designed and equipped its plants and has been manager since it has been in operation, has resigned.

Colonel George D. Wick has retired as president of the Youngstown Iron, Sheet & Tube Co., on account of ill-health. The stockholders of the company will meet next week to elect a successor.

The Tennessee Coal & Iron Co., the largest producer of

pig iron in the South, has opened its books for orders for pig iron for delivery in 1903 on a basis of \$17 a ton. No. 2 foundry, Birmingham.

An effort is being made to consolidate the blast furnace interests of the Shenango and Mahoning valleys. The project contemplates, it is said, the formation of a company to take over 30 furnaces.

E. A. C. Lohmann, a steel expert, died on July 20, in Bethlehem, Pa., where he was employed by the Bethlehem Steel Co. He invented the process for hardening steel used by the Carpenter Steel Co., makers of the navy's projectiles, and was with the Carpenter Co. for many years, up to a short time ago.

The International Foundry Company was incorporated in New Jersey, July 16, with a capital of \$5,000,000, to manufacture brake-shoes under the patent of Charles Svelkey and to manufacture iron castings. The incorporators are Claude L. Stillman, of Newark; Nathan Divader, Nathan Boehm, Charles Svelkey, New York; Frederick Parsons, of Tarrytown, N. Y.

Contracts have been let by the Baltimore & Ohio for 40,000 tons of rails, to be delivered next year. A year ago the company ordered 60,000 tons for delivery during 1902. The distribution of the contracts to the various mills in the United States Steel Corporation has not been made. The Maryland Steel Co. and the Cambria Steel Co. have been awarded a part of the order.

Extension of Block System on B. & O.

The Baltimore & Ohio has established the telegraph block system on the Pittsburgh Division, between Pittsburgh and Cumberland, 150 miles. At the switches of outlying side tracks telephones have been put in, to enable trainmen to report to the block signalman when they have cleared the main track.

More Disk Signals on the North Western.

The Chicago & North Western has ordered from the Hall Signal Company 87 disk signals to equip the line of the road, double track, from Rochelle, Ill., to East Clinton, 64 miles. The signals will stand normally in the clear position, and overlap circuits will be used, there being no distant signals. The total number of electric circuits in the rails of the track will be 287. Besides the 87 new signals there are 20 signals which will be controlled by electric slots. There are 64 switches in the line to be equipped. These will have the usual protection, with visual indicators. This installation completes the automatic block-signaling of the North Western from Chicago to the Mississippi River, 137 miles.

A New Rail-Joint.

A solid rail-joint of the form shown in the accompanying engraving has recently been patented and placed upon



the market by Mr. John Gillen, Fort Worth, Texas. As will be seen this joint or chair is formed of one piece of metal, of a shape to conform to, and closely embrace the base, web, and underside of the crown of the rail. It is provided near its extremities with recesses to be engaged by the spikes, and intermediate of the ends is a transverse recess to permit application of the fish-plates to the rails. The form of the chair is such as to procure great stiffness and give a smooth joint to the rails.

Decision in Canda Draft-Gear Patent.

In the case of Canda Bros., of New York, against the Michigan Malleable Iron Co., of Detroit, District Judge Henry H. Swan, in the United States District Court, at Detroit, has decided in favor of the defendant, and the bill is dismissed with costs. The defendant was charged with having infringed certain claims of patent No. 460,426 granted Ferdinand E. Canda, Sept. 29, 1901. The infringement charged was based upon the manufacture by the defendant, under contract then existing with the Thornburgh Coupler Attachments Co., Ltd., of draft apparatus, shown in patent 588,722 granted to William Thornburgh, Aug. 24, 1897. The decision sustains the validity of the Thornburgh patents.

Disappearing Gun Carriages.

The Secretary of War has appointed a board to report upon the disappearing gun carriage for seacoast fortifications, in accordance with a provision by Congress that a test of the disappearing carriage shall be made before more are ordered. The members of the Board are Col. Wallace F. Randolph, Chief of Artillery, U. S. Army; Capt. E. H. C. Leutze, U. S. Navy; Maj. J. G. D. Knight, Corps of Engineers, U. S. Army; Maj. Charles Shaler, Ordnance Department U. S. Army; Maj. A. D. Cummins, Artillery Corps; Maj. B. H. Randolph, Artillery Corps, and Mr. John R. Freeman, of Providence, R. I. The board met in Washington July 22, and will meet at such other times as may be necessary.

Naval Docks.

Plans and specifications for the new stone dry dock at the Norfolk Navy Yard, recently authorized by Congress, have been completed and are being issued by the Navy Department. The dock is to cost \$1,200,000.

The floating dry dock which was brought from Spain will be left at Havana until the question of coaling stations is settled, when the Navy Department will decide whether to keep the dock at one of them or to bring it to the United States. The plan of towing the dock to the Philippines which was considered was given up, as an appropriation was made by Congress for a new steel

floating dock for the naval station at Cavite, P. I., to cost not over \$1,225,000.

The Niles Car & Manufacturing Company.

The plant of the Niles Car & Mfg. Company, at Niles, Ohio, has been finished and opened. There are three large brick buildings, work on which was begun last March. The office building, boiler rooms and blacksmith shops are connected with a large building, 202 x 120 ft. The second and third buildings are both 130 x 202 ft. The officers of the company: George B. Robbins, President; A. G. McCorkle, Vice-President; William Herbert, Treasurer; A. L. Jacobs, Superintendent; C. P. Souder, Secretary and General Manager; George E. Pratt, Assistant Manager and Contracting Agent. The product of the works will be street cars. The first shipment will be made to the Aurora, Elgin & Chicago Street. There are 10 cars in this order, and each car is built to run 70 miles an hour. These cars are not supplied with a trolley pole, but will be run on the third-rail system. Whistles are used in place of bells.

Coke On the Boston & Maine.

For the last three years the Boston & Maine has been using coke as a regular practice on local passenger trains and in much of its switching service. The company uses 600 tons a day, all that it can procure.

A New Explosive.

"Masurite" is the name of a new explosive made by the Masurite Explosive Company, of New York. The company claims that this compound cannot be exploded except by means of double strength electric fuses. In order to substantiate these claims some tests were made last week in the presence of a number of railroad men, fire underwriters and others. To show the effect of concussion upon a cartridge made of this compound, a 75-lb. hammer was allowed to fall from a height of 25 ft. The cartridge was not exploded. Other tests were made by firing four shots from a Government rifle into a large case of the explosive, similar results ensuing. A cartridge placed in a blacksmith's forge was entirely consumed without exploding. Ordinary explosives are rendered non-explosive by low temperatures. One of these cartridges was subjected to a temperature of 10 deg. Fahr. for a period of four hours, after which it was placed in a hole bored in a large rock and exploded, shattering it into fragments. In all the tests there was no perceptible flame accompanying the explosion, nor were any disagreeable odors detected. Dr. Charles B. Dudley, of the Pennsylvania Railroad, witnessed the tests and is reported to have been highly pleased with the results.

A Decision in a Pneumatic Tool Case.

At a Special Term of the United States Circuit Court, Northern District of New York, at Utica, July 15, a decision was rendered by Judge Cox in the case of J. G. Timolat and the Chicago Pneumatic Tool Company against the Franklin Boiler Works Company and the Philadelphia Pneumatic Tool Company. From the finding and order we make the following brief extract, endeavoring to present the matter precisely as it comes from the Court so far as the essential meaning goes.

The case was a motion for a preliminary injunction to enjoin the defendants from the further manufacture, sale, purchase or use of the Keller-Philadelphia pneumatic drill, made by the Philadelphia Pneumatic Tool Co. Infringement was claimed of a patent granted to John Moffet, Aug. 30, 1887, for a portable drilling machine. The Court finds that the tool in question, made and sold by the Philadelphia Pneumatic Tool Co., and purchased and used by the Franklin Boiler Works Co., is an infringement of this patent No. 369,120. It is ordered that a preliminary injunction be granted restraining the Franklin Boiler Works Co. from making, selling, buying or using any portable drilling machine violating this patent and especially "from the further manufacture, sale, purchase or use in any manner or way whatsoever, of the so-called Keller-Philadelphia pneumatic drill." We are informed that an appeal will be heard, possibly as early as next September.

The Philadelphia Public Works Bonds.

Mayor Ashbridge, of Philadelphia, is about to make allotments of \$6,400,000 of bonds for which proposals have just been received. The most important work for which the funds will be used are for the abolition of grade crossings on the line of the Philadelphia & Trenton R. R., for the extension, improvement and filtration of water supply, extension of Fairmount Park, repaving streets, building new bridges and repairing old ones, building police station houses and for electrical and underground construction.

New York's Harbors and Rivers.

Col. S. M. Mansfield, Corps of Engineers, U. S. A., has made his annual report to the Chief of Engineers on the improvements of the rivers and harbors in and about New York city. The following are the estimates: East River and Hell Gate, to complete the project, \$963,840; for the fiscal year of 1904, \$400,000; Harlem River, to complete the project, \$1,380,000; for the fiscal year 1904, \$500,000; Hudson River, to complete the project, \$1,040,350; for the fiscal year, 1904, \$425,000; Peekskill harbor, for the fiscal year 1904, \$33,000.

The Plattsburgh Bridge of the Burlington.

The Chicago, Burlington & Quincy is rebuilding the bridge over the Missouri River near Plattsburgh. The present bridge consists of two 400-ft. through spans, and three 200-ft. deck spans, with an iron trestle approach at the west end. It was built in 1880-81. The company decided to replace all of the superstructure with a new single-track bridge. There has been built a pier in the