

one, and this is the only essential difference apparent. The patent rights for the use of these sight feed injectors are in litigation, the priority of invention being disputed. Fig. 1 is called The Giant Boiler Scale Remover and Preventive, fig. 2 The Hercules Boiler Oil Injector. Fig. 1 may be more readily understood and more intelligently operated, because it is open to view. It consists of a cylindrical cistern filled with oil, the bottom of which is connected by $\frac{3}{4}$ in. pipe with the boiler feed pipe and the top of which is connected by a $\frac{3}{4}$ -in. pipe with the same feed pipe, but at a point nearer the boiler than is the $\frac{3}{4}$ -in. connection. In the $\frac{3}{4}$ -in. connection there is a glass tube in which the drops may be seen to follow one another. The instructions are to adjust the feed valve at the bottom of the glass so that a drop shall appear before the preceding drop shall have left the glass tube. The Hercules injector works on the same principle. In fact, the two machines and the instructions issued for their operations are significantly similar. The only practical difference is in their attachment, and that seems to be a matter only of cutting out a piece of feed pipe $1\frac{1}{2}$ in. or one of 8 in. in length and threading the end out, or of tapping one or two holes.

The injectors are filled and started same as the ordinary sight-feed lubricators. The globe valve is closed which shuts off the water connection, and the feed valve is also closed. The plug at top is opened and the pet-cock at the bottom of cistern opened to draw off water and oil. The pet-cock at bottom is then closed and the cistern filled through the plug or funnel at the top. The plug is then replaced and the injector started by opening the globe valve and the feed valve at the bottom of the glass tube.

Both companies offering these machines to the public not only claim, but guarantee, that they will clean and keep clean any boiler, no matter what kind of water is used, that they will not foam boilers or start joints, and that they will not injure the boiler or its connections and that they will stop pitting. The dangers, if there be such, have been pointed out under the effects, and the readers of the *Railroad Gazette* who adopt oil as a means to remove or prevent scale may do well to make such inspections as will satisfy them that no such injurious effects, as are suggested, result.

TECHNICAL.

Manufacturing and Business.

The Marble Coupler Company has filed articles of incorporation in New Jersey, with a capital stock of \$100,000. The directors are: James E. Marble, of New York; William H. Forsyth, of New Haven; James W. Fuller, of Albany, and DeWitt C. Morrell, of New York.

The Consolidated Car Heating Co., Albany, N. Y., has received World's Fair awards upon the following devices: (1) The Sewall steam coupler; (2) multiple circuit, hot water system; (3) improved commingler, hot water system, and (4) direct steam system.

The La Burt Automatic Car Coupler Company has removed its offices to Room 903, Havemeyer Building, New York.

At a meeting of the stockholders of the Northwestern Equipment Co. held Oct. 16 the following directors were elected: Edward J. Frost, Charles W. McCorkle and Heber R. Bishop, Jr. The directors elected E. J. Frost, previously Vice-President and General Manager, President of the company, and C. W. McCorkle, Secretary and Treasurer. The chief office is in the Monadnock Building, Chicago.

The Indiana Car & Foundry Co., of Indianapolis, is now fairly busy on repair work, and has been employing about 150 men. The company expects to soon be in the field for new freight car work, the growing importance of Indianapolis as a railroad center giving a good opportunity to secure profitable orders.

The Boies iron wrought center steel-tired wheels have been ordered for the 15 new passenger cars of the Jacksonville, St. Augustine & Indian River road, for which the contract was awarded this month to the Jackson & Sharpe Co., of Wilmington, Del.

Iron and Steel.

Work has been resumed in the south mill of the Lackawanna Iron & Steel Co., at Scranton, on an order for 700 tons rails. About 800 hands are employed.

The report that the Carnegie company has bought the control of the Lackawanna Iron & Steel Co. is emphatically denied by the officers of the latter company. No negotiations to that end are under way.

On Nov. 15 application will be made at Harrisburg, Pa., for a charter for the Emporium Steel Co., of Emporium. The officers are: President, J. Pitt Felt; Vice-President, Hon. S. S. Smith; Treasurer, John D. Logan; Secretary, L. K. Huntington; Superintendent, R. L. Watters.

New Stations and Sheds.

The Philadelphia Traction Co. has placed the order for a new power house with the Berlin Iron Bridge Co. The side walls will be of brick and the roof will be of iron. The building is 190 ft. in width and 108 ft. in length, divided into boiler-room, engine-room and dynamo-room.

Gratton & Jennings, of Buffalo, have completed the

work on the buildings for the Union car shops at Depew, the new railroad town near Buffalo, and have turned them over to the company, of which H. H. Hewitt is General Manager. J. J. Albright, President of the Depew Improvement Co., is President of the car company also.

The new works of the Gould Car Co., at Depew, have been completed, and on Oct. 23 the engines were started and the first iron poured, a number of the officers of the company being present to see this formal starting.

The building of the National Switch & Signal Co. at Odenweldertown, Pa., is now under roof.

The long projected removal of the car works of the Litchfield Car & Machine Co. to Memphis, Tenn., has been decided upon, and a new company called the Memphis Car & Foundry Works has been organized to build the new works at Memphis. The car company has secured a site of 50 acres at Binghamton, a suburb of Memphis, and the land company which gives the site also agrees to grant \$125,000 in cash and make sanitary improvements at a cost of \$25,000. The plans for the buildings are now being prepared. The car company agrees to establish a plant with a capacity for turning out 15 freight cars a day, the company to have a paid-in capital of at least \$600,000.

The New York & New Jersey Bridge.

Last week we announced that the New York & New Jersey Bridge bill had passed the House of Representatives. Tuesday of this week it passed the Senate. A synopsis of the bill will be found in last week's issue.

Frost Dry Carburetor Car Lighting System.

All the postal cars on the Pennsylvania railroad are being equipped with the Frost dry carburetor system of car lighting. This is in addition to all the passenger, baggage and express cars of the company.

Electric Heaters for Street Cars.

The electric heating of trolley street cars has become an important branch of the business of the Consolidated Car Heating Co., of Albany. Such electric heaters with regulating switch have been applied already to cars in 29 cities and towns throughout the United States and Canada. From the Union Railway, New York, has recently been received a third order, and from the Albany railway a fourth order for such equipments. The Union Railway, New York City, and the Albany railway have all their cars now equipped with electric heaters.

Tests of Projectiles.

A recent test of heavy armor-piercing shells was made at the Sandy Hook proving grounds, which should have been satisfactory to the Midvale Steel Company, who are under contract to furnish the Government 325 eight-inch and 450 ten-inch shells; these tests were of the second lot delivered. Two eight-inch and two 10-inch shells were selected and each one passed through the plate, 24 inches of oak planking and into or through the sand mound or backing. One was lost out at sea. The three projectiles secured were found to be uninjured, even retaining the sharp apex unblunted. The armor plates were 9-inch and $11\frac{1}{4}$ -inch, made of open hearth steel, oil tempered and annealed. An 8-inch shell, 28 inches long, weighing 300 pounds, costs \$140, and a 10-inch shell, 35 inches long, 575-pound weight costs \$287—nearly 50 cents a pound.

The Minnesota Canal.

The Minnesota Canal Co., organized to build a water power canal to supply the cities of Duluth and Superior with water power from the upper St. Louis River, has arranged for the needed machinery, and expects, unless plans miscarry, to do a large quantity of excavating this winter. It has one cut 70 ft. deep, and with 1,000,000 yards to be moved, and it hopes to put 10 steam excavators with the necessary locomotives and flat cars at work early in the winter on this cutting. The company claims to be able to furnish almost unlimited water power at a charge of \$10 per horse per year, and it has conditional contracts for 6,000 to 8,000 H. P. already. If its projects carry it will be one of the leading power distributors and manufacturing factors of the United States.

Mallet Duplex Compound Locomotives.

The six duplex compound locomotives built in 1891 by J. A. Maffei, of Munich, for the Swiss Central Railroad, and illustrated in the *Railroad Gazette* of May 5, 1893, have, as already noted, given such satisfaction as to warrant the company in giving an order for 10 more engines of the same type. The railroad company now reports that after two years' service no repairs have been found necessary on parts peculiar to the system, and no increase in repairs due to the greater number of parts. The engines were first used between Sissach and Otten on grades as high as 2.7 per cent., and through the Hanenstein tunnel, $1\frac{1}{2}$ miles long. The engines are no longer restricted to this section, but are used in general freight service on all lines of the company, and show a saving in fuel of 15 to 22 per cent. over engines of the ordinary type with three axles coupled.

Gas Motors for Street Car Service.

The North Chicago Street Railway Company has been experimenting for some time with motors of different kinds to replace horses on street cars in that part of the north

side of the city of Chicago which is not served by cable lines. Gas motors have been in operation on Garfield and Racine avenues and Centre street until the property holders say the motors have proved themselves "intolerable nuisances," "constant menaces to life and limb," and as emitting an "unbearable stench." It is claimed that they frighten horses and that pedestrians are not safe on these streets. The property owners have filed a petition with the Council stating that the motors are a nuisance and asking that the Council take such action as will insure prompt abolition of the nuisance.

The "Brazil" Turnbuckle Decision.

The long litigation between the Central Iron & Steel Company, of Brazil, Ind., and the Cleveland City Forge & Iron Company *et al.* has finally been decided by the U. S. Circuit Court of Indiana in favor of the former company, and the Cleveland City Forge & Iron Company and all persons or corporations acting by their authority are restrained and enjoined from manufacturing or selling the celebrated "Brazil" wrought iron, open, hexagonal turnbuckle. This suit was begun in 1889, and the decision gives to the Central Iron & Steel Company the exclusive right and title to sell and manufacture this turnbuckle. The merits of the turnbuckle and its value in the eyes of the contestants could not be better exemplified than by the expensive litigation that these companies have resorted to and prosecuted to maintain their rights to manufacture it. It has also received the only award for turnbuckles at the World's Columbian Exposition.

New Contracts on the Chicago Canal.

In the last issue of the *Railroad Gazette* it was stated that the contracts of McArthur Bros., on Sections 2, 3 and 4 of the Chicago Main Drainage Canal, had been canceled, new specifications drawn up, and that the Drainage Board was receiving new bids for the work on these three sections. Since that writing the contracts for the three sections have been relet. Section 3 was awarded to Gilman & McNeil, of Marshalltown, Ia., at 56 cents for glacial drift and 70 cents per cubic yard for solid rock. The other two sections were relet to McArthur Bros. The rates per cubic yard on Section 2 will be 50 cents for glacial drift and 80 cents for rock, the first contract being at the rate of 23 cents and 91 cents respectively; and on Section 4 the rates will be 49 cents for glacial drift and 50 cents for rock, the first contract being at 27 cents and 86 cents respectively on this section. The new prices are greatly in favor of the contractors, for it is claimed that, instead of the hard clay representing 50 per cent. of the excavations, it represents only 25 per cent.; as the price for excavating glacial drift was greatly increased and that for solid rock decreased, the contractors are the ones benefited and it is expected they will now make a handsome profit. In regard to reimbursing McArthur Brothers for the work done by them on Section 3 and for extras on the three sections, the Committee on Engineering and Finance recommended that the contractors be allowed the extras and that they be paid for the work done by them in clearing and grubbing Section 3. Had this same course been pursued by the Drainage Board last June, when the differences with the contractors first occurred, a commission of experts might have been appointed and a fair price could have been determined upon for removing the hard clay. This cemented clay mixed with broken stone was mentioned in last week's issue of the *Railroad Gazette* as being too hard for excavation by steam shovels, and on this account the contractors claimed compensation at the rate allowed for excavating solid rock. On appointment of the commission of experts the contractors could have proceeded with the work and the entire summer would not have been wasted, as it has been.

Maddox Cotton and Wire Belting.

The Maddox Wire Belting Co. has lately introduced belting made of cotton, very closely woven, and containing, as a core, numerous strands of steel wire cable. Each cable is composed of six wires, twisted and they are placed in the body of the belt, about $\frac{1}{2}$ in. apart and completely covered, out of sight. The cables compose about $\frac{1}{3}$ of the warp and are interwoven with the cotton yarn composing the rest. It



is claimed that this belting is stronger and better than the best oak tanned double leather, is not affected by water, grease, dirt, etc., and is less liable to slip than leather. The prices are about the same as those of single leather belting. All sizes more than four inches wide are about as thick as double leather belting of the same width.

More Block Signaling.

The Hall Signal Co. on Oct. 27 closed a contract with the Chicago & Northwestern to equip 11 miles more of double track with the Hall automatic electric block signal. This will make over 100 miles of double track on this road with continuous blocking on the Hall system.