do away with all false lights which interfere in any way with the regulation lights considered necessary to the safe navigation of the river. The electric lights now on the bridge will, it is said, interfere with these lights, and will have to be removed unless they are arranged by shading or otherwise so that their rays shall not so interfere.

Providence, R. I.—The Narragansett Electric Lighting Company has begun the construction of a new station at the foot of Elm street on the river front, Providence, where a lot of land 200 by 300 feet has been bought with a wharf frontage of 200 feet. The contracts are not all concluded yet, but the foundations are in for the dynamo room, 60 by 200 feet, a single story structure to be built of brick with brown stone trimmings and an iron roof. The pile foundations are also down for the stack, which will be a 14-foot flue, octagon in section and 200 feet high. The boiler room will be in a separate building across a driveway, and coal pockets will be built over the boiler house into which coal may be delivered from vessels with but a single handling. The premises are arranged so as to allow of duplication of both the power and dynamo houses, if necessary, and the lot will afford opportunity for the establishment of one of the largest stations in the country if needed.

APPLICATIONS OF POWER.

The Love Electric Railway Company has been incorporated at Camden, N. J., with a capital stock of $500,000, by T. W. Thompson and others.

Adrian, Mich.—The Adrian City Electric Belt Railway Company has been incorporated by M. E. Chittenden and others with a capital stock of $50,000.

The Electric Car Company of America has recently issued a neat little pamphlet on its patents for storage cars. The list enumerates several patents of Anthony Reckenzaun, R. M. Hunter and G. H. Condict. The company is the sole and exclusive licensee of the Electrical Accumulator Company for storage cars applied to traction, except in California, Nevada, Oregon, Washington, Idaho and Arizona.

Worcester, Mass.—The Worcester Electric Power Company have put a new 10 horse-power Daft motor into the Wachusett mills at Wachusett. This is the second motor of the same size and pattern that this company have put into the mills. The orders for power are fast accumulating and a number of customers at the foot of Main street will be supplied as soon as the wires can be put in place. A small motor of from ⅓ to ¼ horse-power has been introduced by this company for light work.

PERSONALS.

Mr. Allan V. Garratt has been tendered the position of secretary and treasurer of the National Electric Light Association.

Mr. W. A. Giles has joined the forces of the Sawyer-Man Electric Company, and will devote his energies to the lamp end of the incandescent business.

Mr. G. W. Mansfield, the street railway expert of the Thomson-Houston Company, has been busily engaged in getting the plant and line at Washington in readiness. The iron poles have been set in the centre of the road, and at regular intervals carry groups of arc lights. The road will be ready next month.

Mr. R. M. Jones, of Laramie, Wyo., has in course of construction a central Edison station having over 1,000 lamps capacity, at Evanston, Wyo. He is personally conducting the construction, which will be completed about Nov. 1, using the Edison system, "3-wire," complete. The engines are by A. L. Ide & Son, of Springfield, Ill.

MISCELLANEOUS NOTES.

Possible Phonographs.—With regard to his recent article Mr. Oberlin Smith writes: "In my article upon 'Possible Phonographs' in your issue of Sept. 8, in the second paragraph, fourteenth line, the word 'short' should read 'soft.' In the cuts, Figs. 4 and 5, the helix should be shown very short, and possibly might consist of only one coil, as with the long helix represented it would be impossible to localize the magnetism in the way desired. These cuts, of course, are conventional, and are merely intended to show the principle involved. At the time I experimented I also tried drawing the cord across the corner of an electro-magnet around which the helix was wound, instead of allowing it to act directly upon the cord. This would probably be a better way, providing there was not too much magnetic inertia to prevent rapid action. This I feared at the time, but on further reflection it seemed as if such a magnet ought to work as quickly as the magnet of the telephone itself."

BUSINESS NOTICES.

OUR ILLUSTRATED RECORD OF ELECTRICAL PATENTS.

PATENTS DATED SEPT. 4, 1888.

388,836. Electric Bell; Moses G. Crane, Newton, Mass. Application filed April 9, 1888. By this invention the bell hammer is actuated by the strong current of a powerful battery which is normally in open circuit, but is controlled by the weaker current in the normally closed circuit, which is sufficient to hold the armature when near the poles of the magnet.

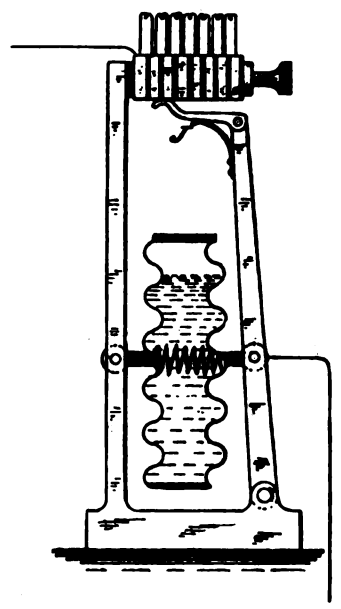
388,837. Electrical Annunciator; Charles H. Crockett and Chancellor C. Allen, Boston, Mass. Application filed Sept. 6, 1887. The object of the invention is to provide a simple, cheap and effective annunciator, that shall occupy but small space and be positive and sure in its operation.

388,859 Electrical Cash and Parcel Carrier; Geo. F. Green, Kalamazoo, Mich., Assignor of two-thirds to Oliver S. Kelley, of Springfield, Ohio. Application filed Oct. 1, 1887. A motor is arranged upon the carrier for driving the same.

388,862. Submarine Torpedo Boat; Horace P. Griswold, Providence, R. I. Application filed Aug. 27, 1886. A compass is mounted upon the torpedo and is revolved intermittently by suitable mechanism. The motions of the compass needle are transmitted to an electrical device which controls the rudder. By this invention a torpedo may be sent upon a predetermined course and return to starting point.

389,869. Electric Signal; Henry T. Hill, Manchester, N. H. Application filed Dec. 17, 1886. An electrical signaling apparatus consisting of an electrical circuit, including electric bells connected by a triple wire cable whose wires are attached to circuit closing switches, two of the wires being permanently connected with the batteries and bells, said circuit being normally open, but adapted to be closed to ring the bells by a pull upon the cable, which oscillates the switches and brings the third wire into circuit.

(1) **388,876.** (2) **388,877.** (3) **389,080. (1) Magnetic Annunciator**; (2) **Magneto-Electric Machine**; (3) **Electro-Magnetic Bell**; Wm. Humans, Cambridge, Mass., Assignor to the American Magnetic Electric Company of Jersey City, N. J. Application filed July 23, 1885. (1) An annunciator having a series of permanent magnets arranged with like pole to the like poles of the neighboring magnets, the magnets being substantially uniform in size and shape, and each magnet having its armature arranged within and supported by it. (2) A magneto machine whose body is formed of magnets arranged together, closed at the ends by covers and with the armature and pole-pieces within the case so formed. (3) A bell consisting of a permanent magnet, an armature with its pole surfaces cylindrical, its shaft coincident with the geometrical axis of the cylindrical surfaces of the armature and its coil between its poles.



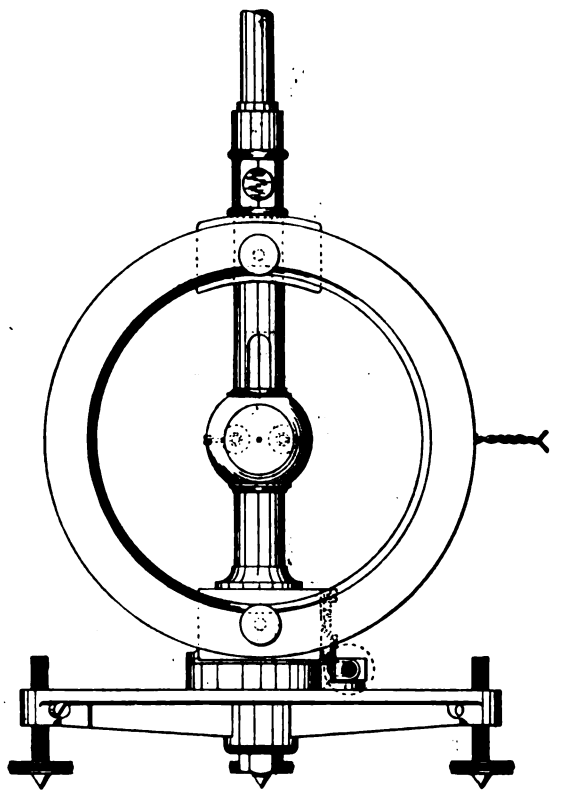
389,265. THERMAL RESISTANCE DEVICE.

388,922. Telegraph Exchange System; Robert J. Sheehy, New York, N. Y. Application filed Dec. 9, 1887. A central controlling device consisting of a source of intermittent electric impulses, is connected through all the several instruments of the system. Conductors lead from the recording devices of each instrument of the system to the central station.

388,955. Electrical Railway Conductor; Leo Daft, Plainfield, N. J. Application filed Oct. 16, 1885. A construction designed to better support and insulate the current conductor.

389,001. Switch Mechanism for Electric Batteries; Charles E. Ongley, New York, N. Y. Application filed Nov. 21, 1887. Where a plurality of batteries are to be used successively, in connection with a motor, for operating a vehicle such as an elevator, this switching device is geared to the vehicle in such a manner that at regular intervals the battery in use will be cut out and a new one switched in.

389,011. Dynamo-Electric Machine; Andrew L. Riker, New York, N. Y. Application filed Jan. 19, 1888. The invention relates to the form of the field magnets and frame. The field magnets have a connecting yoke of magnetic material cast on the ends of soft iron cores.



389,274. STANDARD TANGENT GALVANOMETER.

389,062. Telegraphy; P. B. Delany, New York, N. Y. Application filed May 26, 1888. In order to free the line from static disturbances or extra currents it is automatically grounded at one or more points or way stations each time that the battery is taken from the line.

389,097. Cock or Faucet; Edwin A. Newman, of Washington, D. C., Assignor to the Newman Anti-Freezing Water Pipe Company, of Chicago, Ill. Application filed Nov. 5, 1887. There is combined with the faucet an electric switch which is turned simultaneously with the turning of the faucet, to operate at a distance other valves or faucets.

389,122. Device for Actuating Street or Station Indicators; Wm. A. Turner, San Francisco, Cal. Application filed Jan. 31, 1888. Two circuit closing levers are connected with the vehicle. It requires the operation of both simultaneously to manipulate the indicator. By this arrangement the indicator cannot be operated by the accidental movement of one of the levers.

(1) **389,124,** (2) **389,125. Apparatus and Art of Utilizing Solar Radiant Energy**; Edward Weston, Newark, N. J. Application filed Oct. 17, 1887. For discription see THE ELECTRICAL WORLD, Sept. 22.

389,140. Galvanic Battery; Asahel K. Eaton, Brooklyn, N. Y., Assignor of one-third to Colin M. Thompson, of same place. Application filed Oct. 7, 1887. In order to prevent disintegration of the porous cup, caustic lime is added to the solution.

389,142. Printing Telegraph; Bradley A. Fiske, of the United States Navy, Assignor to the Western Union Telegraph Company, of New York, N. Y. Application filed Aug. 13, 1888. Claim 1 indicates the structure. In a printing telegraph, the combination of a shaft, a type-wheel mounted loosely upon said shaft, independent motors respectively tending to rotate the type-wheel and shaft continuously in the same direction, an escapement for controlling the step-by step rotation of the shaft, and a second escapement for the type-wheel, the releasing mechanism of which is affixed to and rotated by said shaft.

389,151. Electrical Gas Lighter and Extinguisher; George L. Hogan, Olmstead, Ky. Application filed Feb. 18, 1888. The gas is turned on and off from the effect of the heating action of the current. The gas is ignited by an incandescent wire.

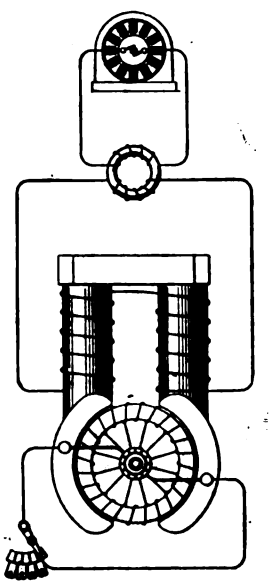
389,184. Commutator for Electric Generators; Otto Zech, Detroit, Mich., Assignor of one half to Gustave A. Winemann, of same place. Application filed Sept. 6, 1887. A single cylinder of insulating material is provided with collars formed integrally therewith. A series of metal rods having feathers or keys are secured in a corresponding series of longitudinal perforations formed in the cylinder and collars.

PATENTS ISSUED SEPTEMBER 11, 1888

389,186. Secondary Battery; C. B. Askew and J. K. Pumpelly, Chicago, Ill. Application filed July 18, 1888. To prevent the falling out of the plugs in the plates of a secondary battery, the sides of the plates are covered with a sheet of porous material, such as asbestos.

(1) **389,189.** (2) **389,281.** (3) **389,282. Electric Railway Trolleys**; Josiah L. Blackwell, New York, N. Y. Applications filed respectively, July 8, 1888; May 24, 1888, and Aug. 9, 1888. These inventions relate to the construction of a trolley which will not cause the unpleasant noise usually heard when the vehicle is passing. The wheels of the trolley are made of non-resonant material, and supplemental collecting devices, such as brushes, are carried by the trucks.

389,187. Voltaic Armor; J. W. Baldwin, Boston, Mass., Assignor to Geo. A. Fullerton, of same place. Application filed May 28, 1888. To a suitable support is secured the elements alternately arranged, one element overlapping a tongue on the next adjacent one.



389,352. ALTERNATE CURRENT MOTOR.

(1) **389,196.** (2) **389,197. Electric Motor; Electro-Magnetic Device**; H. A. Chase, Stoneham, Mass. Application filed April 3, 1888. An electro-magnetic device, comprising a spool having a tubular shank, around which successive coils of wire are wound, a portion only of said shank being of magnetic material, combined with an armature placed within the tubular shank, one end of which lies in the field of force of the magnetic material. (2) The same device working double, with the necessary attachments.

389,207. Electric Motor; A. E. Eastwick, Detroit, Mich., Assignor by direct and mesne assignments of two-thirds to John T. Liggitt and Alva T. Hill, of same place. Application