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LEVELING ATTACHMENT FOR EARTH CARS.

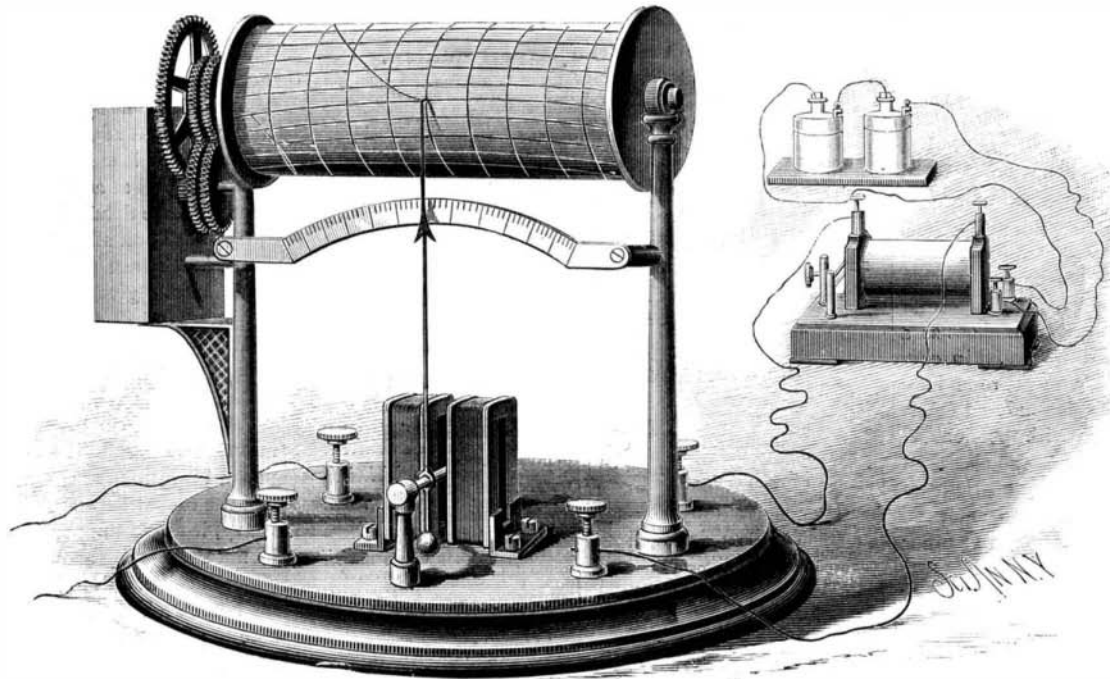
Our engraving represents a simple and effective attachment for leveling the earth dumped from the cars of a construction train. The car carrying the apparatus must of necessity be the last in the train, and as it is moved forward, all of the earth discharged by the train is very quickly leveled, saving a great deal of manual labor and doing the work more perfectly than it can be done in the ordinary way.

Fig. 1 is a perspective view of the apparatus in working order; Fig. 2 is a partial plan view; and Fig. 3 is a detail view of the pawl and ratchet which holds the parts in working position.

To the forward end of a platform car are attached two strong wings, A, which are constructed either entirely of iron or of wood iron clad. The pivots upon which these wings turn are made rigid by braces, and each wing is supported by two horizontal braces, B, carrying racks, which are engaged by pinions whose shafts, C, are journaled in the body of the car, and provided with a pawl and ratchet for holding them in any desired position. The forward braces, B, are each provided with a pinion, pawl, and ratchet, while the rear braces are operated by a pinion common to both. All of the pinion shafts are squared to receive a socket wrench provided with a wheel by which the shaft may be turned so as to spread the wings as much as may be required, when they will be held by the pawls and ratchets, and the earth on each side of the track will be spread out and leveled as the car is drawn forward after the discharging of the train. As soon as the leveling is completed the wings are drawn closely against the car,

and the wrenches are removed when the car is used like any other flat car.

The wings are arranged so that they may be readily removed from one end of the car and attached to the other. The forward end of the wing is inclined inward toward the middle of the track, so as to remove the earth from the vicinity of the track and from the ends of the ties.



RECORDING GALVANOMETER.

NEW RECORDING GALVANOMETER.

BY GEO. M. HOPKINS.

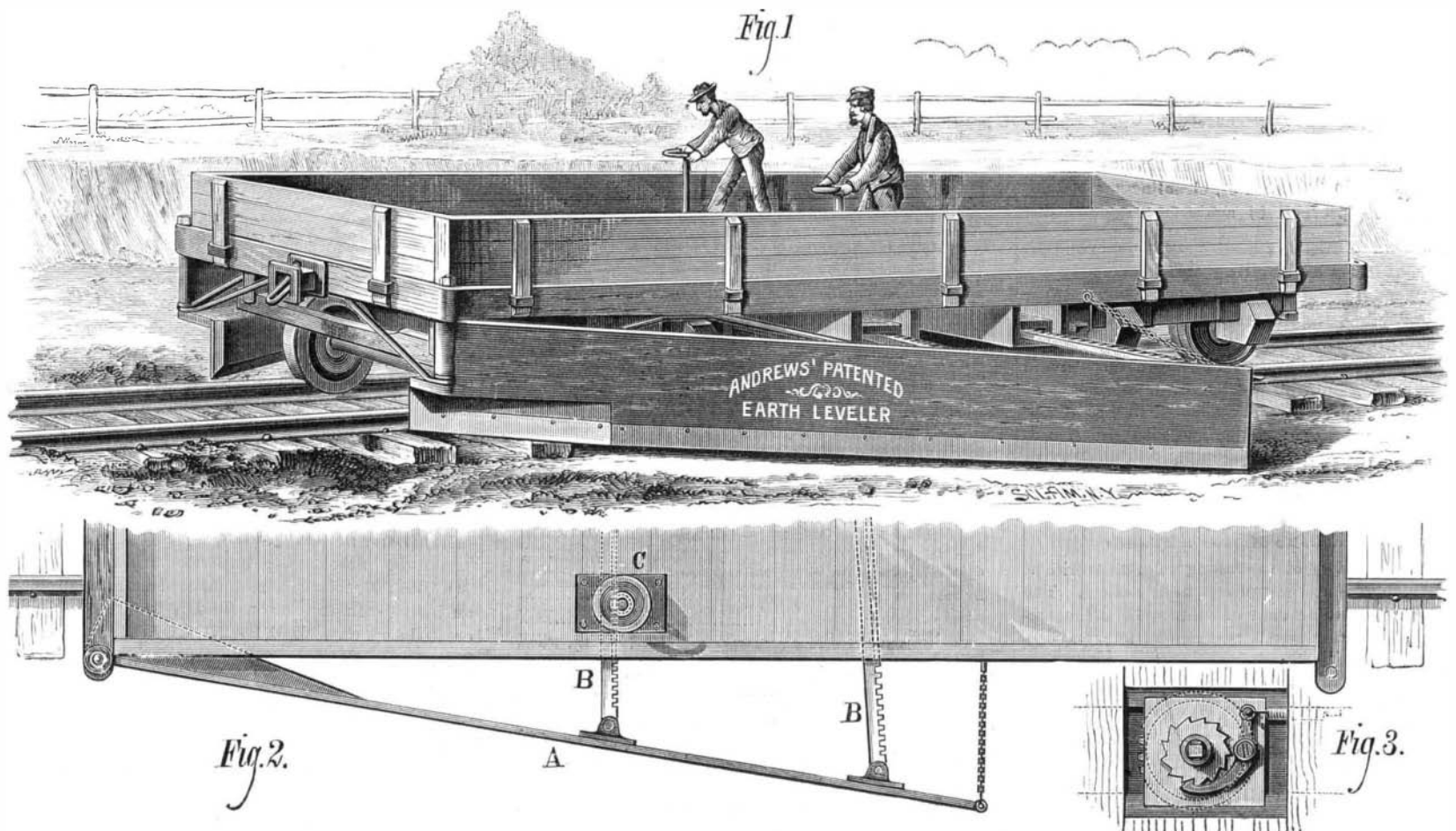
In making galvanometric tests it is often desirable to consider the element of time, but, as every electrician knows, to do this with the ordinary appliances is tiresome, and the result is liable to be inaccurate.

The extreme delicacy of the action of the galvanometer renders it difficult to apply to it any device capable of recording the movements of the needle without interfering more or less with its action. Only two methods of making the record have presented themselves to the writer—one contemplates the use of photography; the other, the application of a disruptive spark from an induction coil. The former is considered too slow; the latter has been adopted and applied to an ordinary vertical galvanometer in the manner indicated in the engraving. The helixes are wound with rather coarse wire (No. 22). The needle is astatic, the inner member swinging in the central opening in the helixes in the usual way, the outer member being located behind the helixes. The arbor supporting the needle has very delicate pivots, and carries a long aluminum index, which is counterpoised so that it assumes a vertical position when no current passes through the helixes, and the needle is unaffected by terrestrial magnetism.

This invention, in the construction and repair of railroads, must prove a valuable acquisition to the means already in use for facilitating the heavy work of railroad construction.

Further information may be obtained by addressing the patentee, Mr. James Andrews, of Biddeford, Me.

The upper end of the index swings in front of a graduated scale, and is prolonged so as to reach to the middle of the cylinder carrying a sheet of paper upon which the movements of the needle are to be recorded. This cylinder is of brass, and its journals are supported by metal columns projecting from the base upon which the other



ANDREWS' LEVELING ATTACHMENT FOR EARTH CARS.

parts of the instrument are mounted. The scale is supported by vulcanite studs projecting from the columns, and to one of the columns is attached a clock movement provided with three sets of spur wheels, by either of which it may be connected with the arbor of the cylinder.

This instrument is designed especially for making prolonged tests of different batteries in order to determine their characteristics. It is provided with four binding posts, two of which connect the wires of the batteries under test with the helixes.

The induction coil is kept continuously in action by two Bunsen elements, and a stream of sparks constantly pass between the elongated end of the index and the brass cylinder, perforating the intervening paper and making a permanent record of the movement of the needle.

The paper upon which the record is to be made is divided in one direction into degrees and in the other into hours and minutes. The hour and minute lines are curved to coincide with the path of the end of the index.

These records may be duplicated by using the sheet as a stencil and employing the method of printing used in connection with perforating pens.

This method of recording may be applied to the electrical dynamometer, to electric meters, and to the more delicate galvanometers; and substantially the same device may be applied to recording thermometers, barometers, and other delicate meteorological instruments.

A New Ferry House.

The Hoboken Ferry Company have in process of construction at the terminus of the Delaware, Lackawanna, and Western Railroad, at Hoboken, a new ferry house, which, from its quaint, Queen Anne style of architecture, attracts considerable attention.

M. DE LESSEPS does not believe in the efficacy of quarantines. He recalls that in 1834-5 in Egypt, although the foreign consuls managed the quarantine on the coast, they were unable by the most severe precautions to prevent the introduction and development of the worst plague that ever ravaged the Orient.

Dr. Holmes on Spelling Reform.

Dr. Oliver Wendell Holmes says, in a letter to a member of the English Spelling Reform Association: I should not care to be an obstructive (if I could be) in the way of any well organized, scholarly attempt to reform our English and American language.

The Schroon Lake Meteor a Fraud.

The circumstantial story of the falling of a meteorite at Schroon Lake a short time since proves to be a cheat. The alleged meteorite is simply a mass of white quartzite, somewhat weathered, inclosing small particles of mica, a common stone in the Adirondack region.

FOLLOWING the example of the Baldwin Locomotive Works, the first to introduce the Tanite Company's improved surface grinder for perfecting locomotive slide-bars, the Danforth Locomotive Works have recently ordered one of the same machines for their establishment.

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NEW YORK, SATURDAY, OCTOBER 30, 1880.

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THE TELEPHONE ON THE BATTLEFIELD.

The development of the telephone has been so rapid and so recent that it has not yet been extended to all the fields of usefulness for which it is destined. Thus we believe it has not only never been used in actual battle, but it has had few if any opportunities to show its capacity even upon the fields of mimic war, Grand Army reviews, and mock battles.

A means of conveying information, instructions, and orders rapidly and accurately during an engagement cannot be too highly regarded. The field telegraph was a long step in the right direction, but telegraphic messages are open to many objections which would be wholly avoided by the use of the telephone. Of course it may be taken for granted that the electric wire will hereafter be in general use on the battlefield, but the transmission of words letter by letter is necessarily slow and uncertain compared with the ease of communication by word of mouth; hence the telephone affords a great advantage to the general having it available for use.

Moreover, this instrument cannot fail to diminish the danger to the general in command. It will not be necessary for him to advance to points under fire in order to confer with his corps commanders. Of course no general would hesitate to expose himself wherever the necessity existed for so doing, but inasmuch as the fate of an army may depend upon the life of the commander, it is desirable to reduce to the minimum the possibility of his sudden taking-off. As an example of this the case of Gen. McPherson may be cited. When Gen. Hood relieved Gen. Johnston in the command of the Confederate Army before Atlanta, he made a sudden violent attack upon Gen. Sherman's left.

The important requisites of a telephone for army use are that it shall be simple, not easily deranged, and able to stand rough usage. There is no reason to doubt that these essentials can readily be obtained, and then the constant use of the telephone in all army operations will be assured.

WHAT WE BUY AND SELL ABROAD.

The official statement of United States exports and imports, in which the returns from all the custom houses are corrected to August 23, gives the total exports of domestic merchandise at \$823,946,353, for the year ending June 30, while the merchandise imports for the same time were \$667,954,746, showing, as compared with the previous year, an increase in exports amounting to \$125,605,563, and increased imports of \$222,176,971.