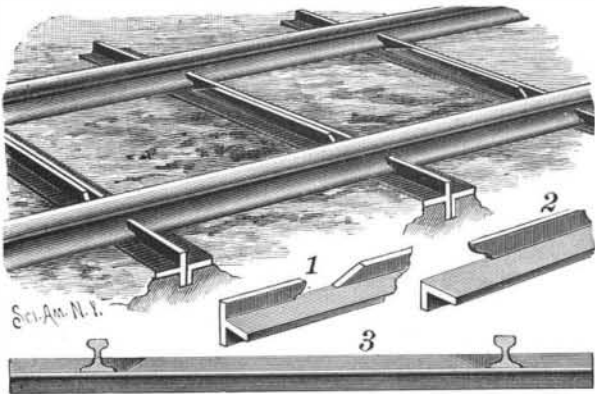


**AN IMPROVED METALLIC RAILWAY TIE.**

This tie, patented by Mr. Samuel McElfattrick, of Princeton, Ky., has but little metal, but the metal is so disposed as to make the tie very strong and yet admit of its being cheaply rolled. The tie may be quickly placed in position to support the rails and hold them firmly in place without the use of bolts or spikes.

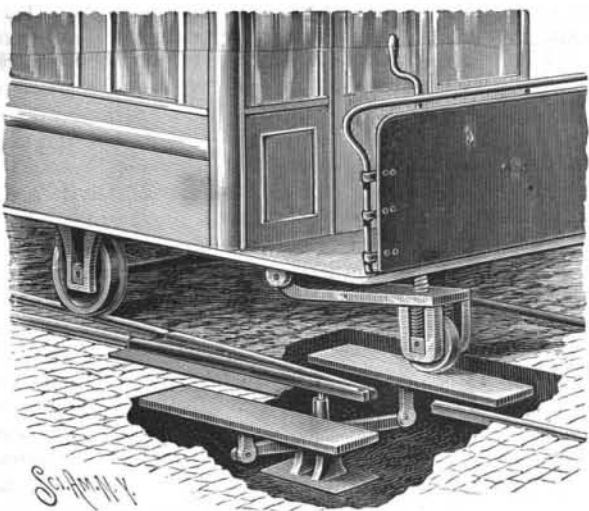


McELFATRICK'S METALLIC RAILWAY TIE.

It is composed of two substantially similar parts, of a general T shape in cross section, the flat or top portions of the parts fitting together, a flat web portion lying upon the ground, while a vertical web at right angles extends below and above the rail flanges. In one of the parts, as shown in Fig. 1, the upper vertical web portion is cut away near opposite ends to form a recess to receive the rail, over the outer flange of which a portion of the web is shaped to fit snugly. In the other part, which may be designated as a straining bar, the upper vertical web portion is sufficiently cut away at the ends and shaped, as shown in Fig. 2, to fit snugly over the inner flange of the rail. Fig. 3 shows how one part of the tie body is first placed beneath the rails, after which the other part, or straining bar, is applied, the latter being driven in ward to snug position, when the depending rib is embedded in the road-bed, the two parts of the tie being thus held so closely together that no fastening bolts are necessary.

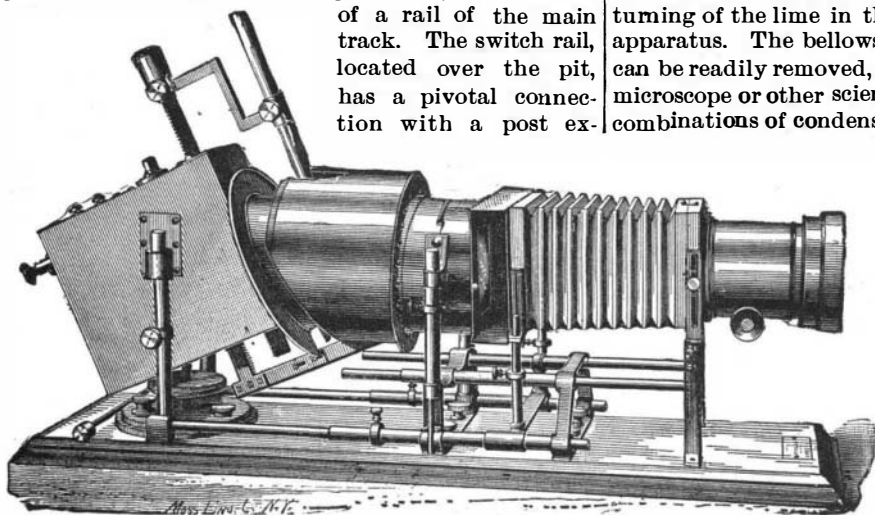
**A SWITCH OPERATING DEVICE.**

The improvement shown in the illustration is especially adapted for use on cars of cable railways,



BARTELMES' SWITCH OPERATING DEVICE.

where the road is intersected by lines on which cars are drawn by horses, and the switching of the latter cars from and to the cable track may be the cause of accidents from the leaving open of switches from the cable road to the divergent side tracks. The improvement has been patented by Mr. Benjamin Bartelmes, No. 89 Graham Avenue, Brooklyn, N. Y. Upon a standard in a pit below the track is pivoted a transverse beam having at its ends upwardly extending pivoted arms, each supporting a table or platform on a level with the pavement, at either side of a rail of the main track. The switch rail, located over the pit, has a pivotal connection with a post extending upwardly from the center of the transverse beam, so that the alternate depression of the tables will vibrate the tongue, swinging its front pointed end toward either side, to align its edges with either a main cable track rail or a side rail. Should a street car horse, guided by the driver, step on the outside table to align the cable track with a diverging side track, the cable road would thus be left open at the switch. To close the switch in such case a heavy presser bar is pivoted upon the lower side of the car, its front end near the edge of the platform, and carrying two bracket arms in which a presser wheel is held upon a spring-pressed shaft. The presser bar is moved up or down by an adjusting shaft on which is a coarse-threaded screw engaging a nut in the car platform, the shaft being operated by a crank on its upper end. The gripman of a cable car, to close an open switch in front of the car, adjusts the screw shaft to cause the presser wheel to bear forcibly upon the central table, and thus moves the switch rail to close the switch and render the line intact for the cable car. By reason of the spring pressure upon the wheel, no harm is done when it strikes the solid road-bed, and sufficient time is afforded the gripman to lift the presser bar and wheel by turning the crank of the adjusting shaft.



THE "CRITERION" ELECTRIC LIGHT LANTERN.

**Contagiousness of Consumption.**

Dr. J. G. Hopkins, of Thomasville, Ga., read a paper on this subject which is reported in part in the *Medical Record*. The speaker said he had joined the growing army which placed tuberculosis in the category of contagious diseases, and his experience with this disease during nineteen years of investigation in Thomasville—which place is a resort for consumptives—bore him out in his opinion, and made a willing subject of the great and erudite Koch. He does not doubt but that all men, women, and children, at some time or times, receive into their air passages the tubercle bacilli, but fortunately the great majority possessed the power of repelling them and throwing them off—they did not find that soil, so to speak, which is adapted to their growth. Indians in a state of nativity seemed impervious to the germs of consumption, but were now dying by thousands on the reservations. The whites and the blacks in prisons all over the world labored under similar conditions. A report from the Illinois State Prison, at Joliet, says that there are 1,400 convicts within the walls, and fully one-third of them have consumption in a light or bad form. Nearly all deaths of persons in the penitentiary have been caused by consumption.

Dr. Hopkins emphasized the danger that lurks in sleeping cars, in carpets, bedding, clothing, and in the walls of apartments occupied by consumptives, which have not been properly renovated and rendered harmless by antiseptic measures. Consumptives should be forced to provide for the destruction of sputa. Whenever situated so as not to expectorate directly into a germicide or the fire, they should use some means of conveying the sputa to the germicide or the flames. If handkerchiefs or clothes are used, they should not be sent to the laundry, as human happiness and life are jeopardized through the probability of inoculation through abrasions upon the hands. These bacilli should never be allowed to dry up and impregnate the air, as is now done through ignorance of possible result. Numerous experiments by leading medical authorities have proved beyond doubt that consumption is an inoculable disease, and so rapidly is the throng of converts growing that the speaker would not be surprised if even in his day resorts now soliciting the patronage of the consumptive will be quarantining against him.

**AN ELECTRIC LIGHT LANTERN.**

The illustration represents one of the best forms of electrical lanterns for exhibition purposes, such as used at the Metropolitan Art Museum, New York, and other places where the best effects have been obtained. It is very simple in its operation, and the adjustment of the carbons is no more difficult than the occasional turning of the lime in the well known oxy-hydrogen apparatus. The bellows, front and objective supports, can be readily removed, admitting of the use of the microscope or other scientific attachment, and various combinations of condensing lenses may be used as desired. This lantern is made by Messrs J. B. Colt & Co., of No. 16 Beekman Street, New York City.

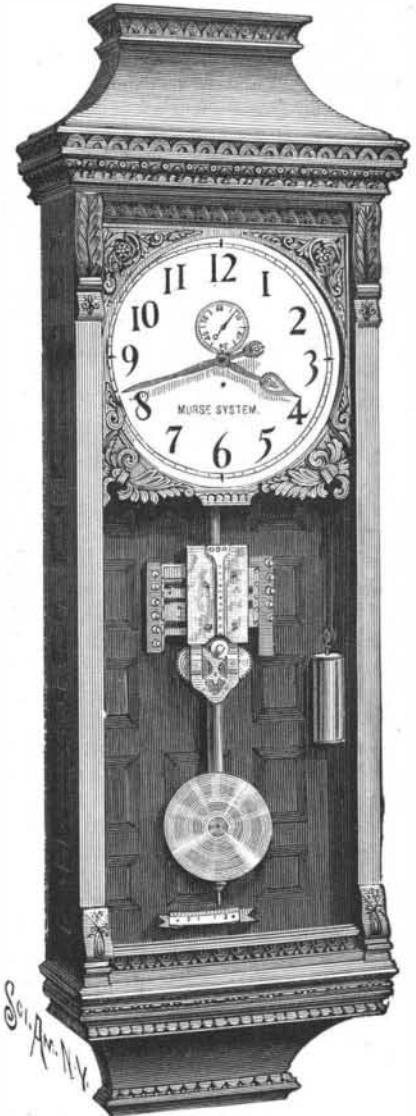
**Success of the New Orleans Jetties.**

By the survey just completed by the government engineer, Major Quin, it appears the pass has more water than was required by the contract of the Eads Jetty Improvement Company, and is in the condition required by the

act of Congress, being over 26 feet through all its length and 30 feet on the bar.

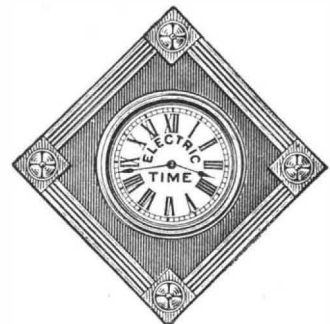
**AN ELECTRICALLY REGULATED TIME SYSTEM.**

One of the most satisfactory of all the systems which have been devised for the regulation and maintenance of uniform time throughout the various rooms and buildings of a factory, or in different departments of



ELECTRIC TIME SYSTEM—SELF-WINDING REGULATOR.

any extended business, is that which has been perfected by the "American Watchman's Time Detector Company," J. S. Morse, Superintendent, No. 234-5 Broadway, New York. The system comprises a self-winding regulator, as shown in our illustration, to be placed in the main office or some central and conspicuous position, and any desired number of secondary clock dials placed in the various rooms and departments and electrically connected with the central regulator. There is no winding to be done to the secondary clocks, neither do they require setting or cleaning, as the driving and setting is all done from the regulator, and there is nothing to clean, there being only two wheels in the secondary. These secondary dials are made in sizes varying from ten to thirty inches in dia-



ELECTRIC TIME SYSTEM—SECONDARY DIAL.

meter, and the hands move only once a minute, but with a certainty that they are in exact accord with the time of the regulator. The regulator has a full length pendulum, which beats seconds, and it is wound by electricity; that is, it is self-winding. The circuits are so connected that every dial can be set by means of a key in the regulator. A gauge is also connected in circuit, showing the state of the battery and so adjusted that when the battery becomes at all weakened through use or otherwise, the bell will tap every minute until the battery is put in order. It is said that there are hundreds of instances where the dials have been in use for years without ever giving inaccurate time. The advantages of such a time system are obvious for any extended business, embracing numerous departments where a uniform standard is not easily obtainable from a number of separate timepieces, even if these be of the best class.