

**A NEW PROJECTION SYSTEM FOR LECTURES.**

BY DR. ALFRED GRADENWITZ.

The usefulness of lantern slides for purposes of illustration in connection with lectures is generally appreciated. An improved projection system, illustrated herewith, has been designed by Prof. Eric Gérard, of Ghent, Belgium. The necessity for darkening the auditorium and employing an assistant who is liable to give rise to trouble by confusing the pictures has often been found to be a serious drawback. The Gérard system permits the projection of diapositives in full light and without the aid of an assistant.

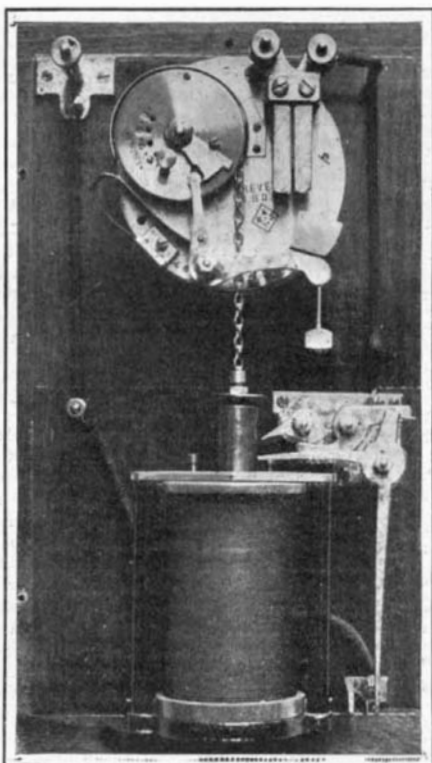
The projection screen is a sheet of plate glass, nearly 4 feet square, ground by means of a sandblast to provide a rougher surface than glass ground in the usual manner with acids. To avoid the necessity of darkening the room, a sheet-iron casing is provided which connects the screen with the projection lantern, thus inclosing the light beams and cutting off any side light. The projection lantern contains a continuous-current arc lamp with a regulator, adjusted for 15 amperes and located at a distance of about 7 feet from the screen. The beam of light obtained under these conditions is sufficiently strong to allow the projected image to be seen transparently through the ground glass throughout an auditorium containing 300 seats, while the room remains lighted up.

In order to dispense with the services of an assistant in bringing the slides successively before the lantern, all the slides to be used in a lecture are arranged beforehand at the periphery of a wheel resembling a bicycle wheel. By means of a special gearing the wheel is set rotating with a crank situated below the screen, so as to cause the slides successively to pass through the lantern. The wheel can be turned backward and forward at will, so that any given picture can be reproduced over again. A switch placed beside the controlling crank serves to light the projection lamp.

**A NEW APPARATUS FOR AUTOMATICALLY MAKING AND BREAKING AN ELECTRIC CIRCUIT.**

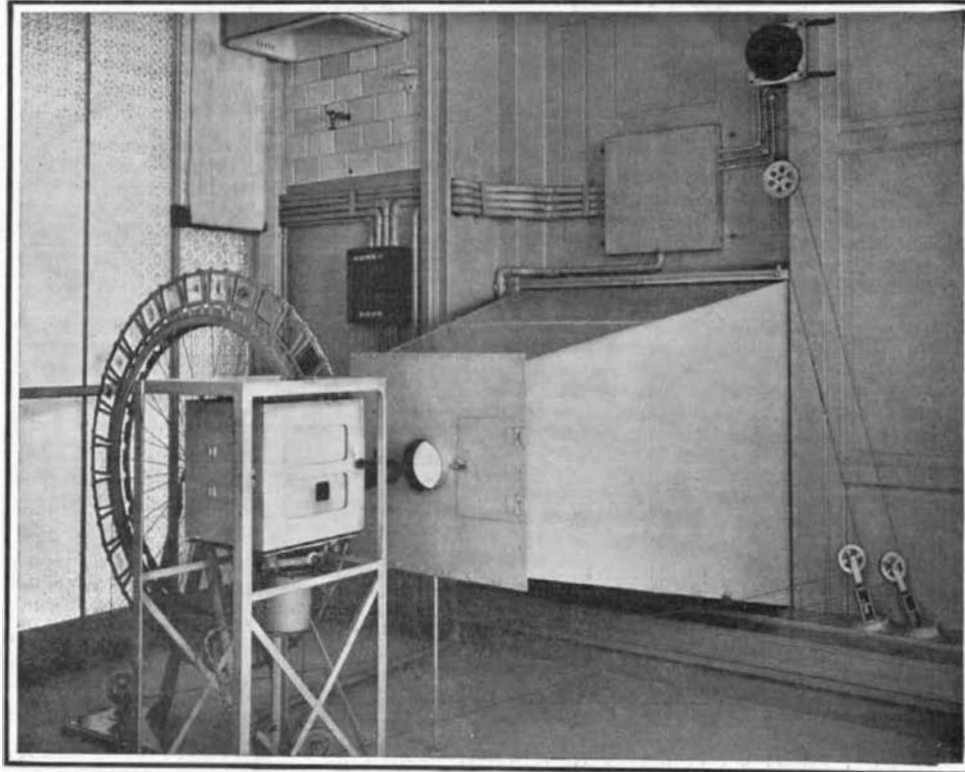
BY EMILE GUARINI.

The circuit maker and breaker recently invented by M. E. Salomon, of Vincennes (France) has the three following important characteristics: It is automatic, the duration of its operation may be regulated at will, and it is provided with a suitable switch. The main part of the apparatus is a solenoid which attracts a core connected by a chain with a grooved pulley mounted upon the axis of a barrel that forms part of a clockwork movement. The pulley is provided with a stop and with holes into which a setscrew can be inserted and which are numbered with figures that designate the number of minutes that the apparatus is to operate. Upon the axis of the pulley is mounted a cam, while a right-angled lever having the horizontal



**AUTOMATIC LIGHTER AND EXTINGUISHER.**

arm insulated, carries on the end of the latter a knife blade that engages two spring contact members below in order to close the circuit of the lights or other apparatus to be set in operation. When the switch thus formed is closed, a pin that holds the balance wheel of a clockwork movement is withdrawn, and the movement operates and turns the pulley. In order to actuate the apparatus it suffices to send a current through the solenoid from any point whatever, when the core will be attracted and will close the switch, thus releasing the pulley, as above described. As the pulley



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turns, the cam will move to the left of the vertical arm of the right-angled lever, while the knife blade on the other arm will engage with the two contact members and close the circuit. At the same time the clockwork will be set in motion. The clockwork rotates the pulley in the opposite direction until the pin set in one of the five holes strikes the notched cam, causing it to release the right-angled lever, which is returned to the position shown, by the flat U-shaped spring at its left. The lighting circuit is opened. A pin stops the balance wheel of the movement.

The current reaches the solenoid through one binding post and makes its exit through a second. In the operative state, the disk of the core is placed above the nose of a cam. When the core is attracted, the disk bears against the horizontal arm of a rectangular lever, causing the vertical arm to leave a contact and break the circuit of the solenoid. The lever is held by a pin fixed to the extremity of a detent. When the pulley turns, the core rises, the disk lifts the nose of the cam, the pin is disengaged, and the current is again set up. The interval of time between the releasing of the main lever (which opens the knife switch) and the releasing of the other lever (which again makes the circuit of the solenoid) is equal to the interval between the closing of the main switch and the opening of same; so that the electrical circuit controlling the lights or any other apparatus is made for a certain number of minutes and then broken again for the same number.

It is possible to cause the apparatus to operate automatically by utilizing the clockwork movement, or instantaneously by moving the switch by hand. A small handle is attached to the arm carrying the knife blade for this purpose.

**A NOVEL DEVICE FOR PREVENTING AUTOMOBILES FROM SKIDDING.**

Every automobilist is only too painfully aware of the ever-present liability of his vehicle to sideslip with its attendant dangers, especially when traveling over wet and greasy surfaces. An interesting device for the purpose of preventing such skidding has been invented by Messrs. Revill and Price, of London. As will be seen from the accompanying illustration, the contrivance is of simple construction. It is attached to the rear axle of the vehicle. There is a small trailing wheel carried at the lower extremity of the main vertical member attached to the axle. This wheel can be brought to bear upon the surface of the road and so maintained in contact therewith for as long as may be desired by the driver; and it is applied or released by the operation of a handle, pedal, or other suitable device operated from the driver's seat. As long as the trailing wheel is in contact with the ground, being supported as it is upon a vertical pivot, it is capable of rocking

this pivot whenever the car commences to slide sideways, with the result that this movement of the pivot applies to the ground a second toothed gripping wheel, or a set of toothed wheels, these being held to the ground as long as any sidewise impulse is received by the trailing wheel above mentioned. Immediately the trailing wheel assumes its usually direct line, that is, as soon as the pivoted arm carrying the trailing wheel again becomes parallel to the direction of motion of the car, the gripping wheels automatically rise from contact with the ground, as their work is completed. Directly another tendency to sideslip in either direction arises, the trailing wheel is again deflected, and again brings the gripping wheels into contact with the ground and so prevents any further skidding.

The device is thus entirely automatic in its action as long as the trailing wheel is in contact with the ground; and it provides a simple, strong, and efficient device, by which the dangers of side-slip may be entirely eliminated. The appliance shown in the accompanying illustration is designed for a 30-horse-power car. Its weight is 30 pounds. It can be easily and quickly connected to the axle, the connecting bearing being divided for this purpose and locked in position by two nuts and bolts.

**A Robert Fulton Centennial.**

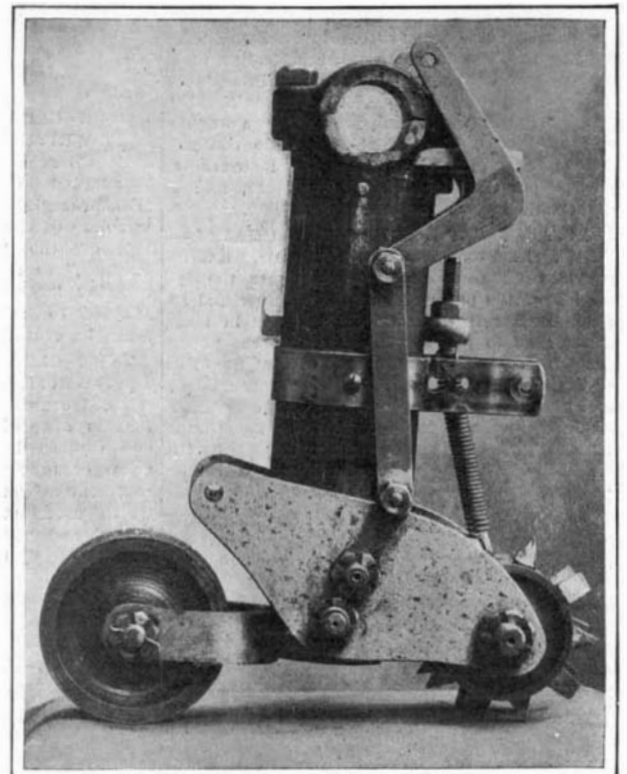
An excellent plan has been started for celebrating the centennial of steam navigation. The idea comes from the Fulton Centennial Commission.

Gustav H. Schwab was in favor of a permanent memorial. His idea of such a memorial is a

"magnificent water gate, the whole surmounted by an arch, with steps spreading down to the water at the Battery."

Mr. Louis T. Romaine indorsed Mr. Schwab's suggestion of a monumental arch and water gate, as did also Rear Admiral Melville.

Owing to the great success that has attended the Japanese naval department in regard to the use of large and formidable battleships, this unit is to be considerably developed. Contracts have been placed in England for two vessels, each displacing about 19,000 tons. One is already in hand at the dockyard of Messrs. Vickers, Sons & Maxim, while the second vessel will probably be constructed at the Elswick shipyard. These vessels are the largest that have yet been laid down by any navy, and exceed the "Connecticut" by 3,000 tons, and the latest battleship development of the British navy—the "Lord Nelson" class—by 2,500 tons. At the present time there are in course of building for the Japanese navy five battleships aggregating 88,350 tons, and two armored cruisers each of 13,500 tons, representing a total of 101,850 tons irrespective of the small type of war craft.



**A DEVICE FOR PREVENTING THE SKIDDING OF AUTOMOBILE TIRES.**