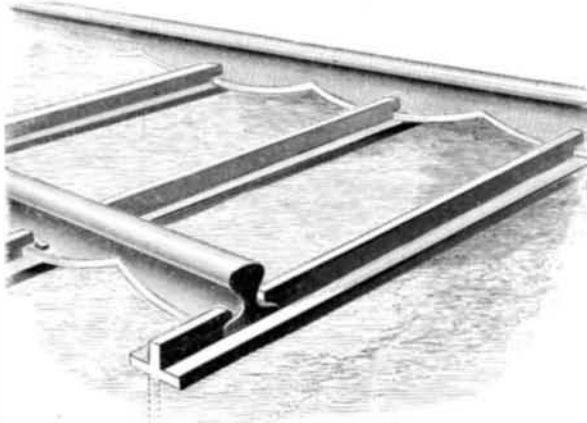


AN IMPROVED RAILROAD RAIL, SLEEPER AND RAIL FASTENER.

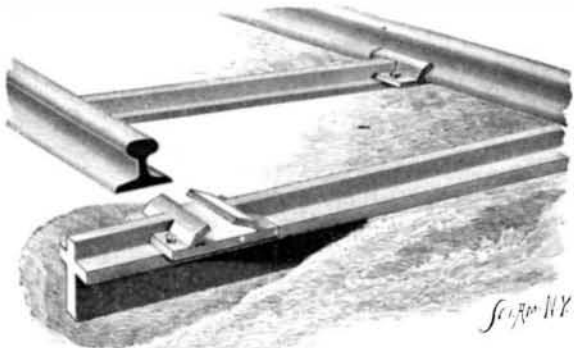
The novel form of railroad rail shown in the illustration is designed to be easily attached to a sleeper and be held in such a manner that it cannot work loose. The rail is like the ordinary rail, except that its flange has scalloped edges, the width of which, at the widest portions, corresponds to the width of slots in a raised longitudinal rib on the upper side of the sleepers, in combination with which this rail is designed to be used. When the wide portion of the rail flange is in the slot the rail cannot be moved laterally, and the ribs of the



GLYNN'S RAILROAD RAIL.

sleepers overlap the rail flange and prevent vertical motion. To prevent the rail from creeping, a spike may be passed through a perforation in the flange into a corresponding hole in the sleeper, at such intervals as may be desired.

This rail, and the sleeper and clamp for use with rails of the ordinary pattern, shown in another illustration, form the subject of two patents issued to Mr. Michael A. Glynn, of No. 8 Calle San Ignacio, Havana, Cuba. The sleeper has a depending tongue to be embedded in the earth, a broad portion to rest upon the surface, and a central longitudinal rib on its top, slotted near each



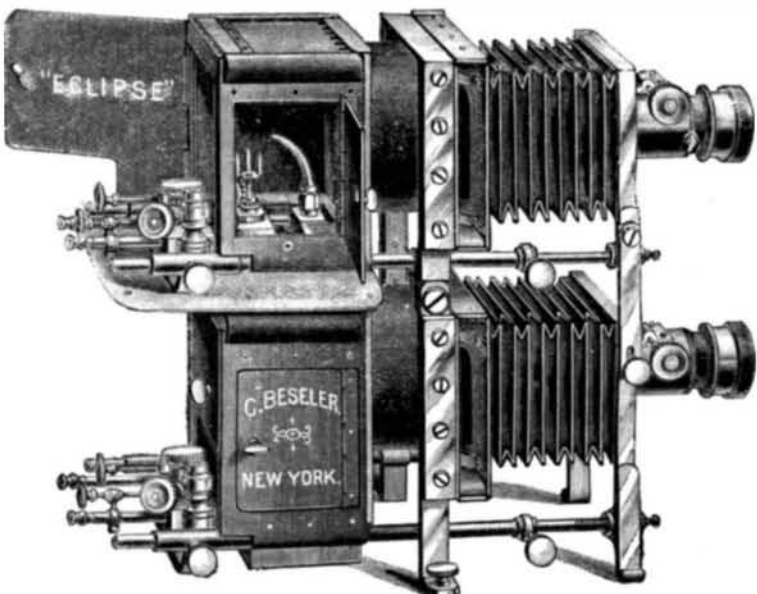
GLYNN'S RAILROAD SLEEPER AND CLAMP.

end to receive chairs which carry the rails. The shape of the slots corresponds to that of the chairs, and the latter fit closely upon the rails. The chairs are slipped into the slots from the side, so that the chairs and rails cannot have a vertical movement, and it will be impossible for the rails to have any lateral movement. The sleepers and chairs are of simple construction and may easily be placed in position.

A COMPACT STEREOPTICON.

The popularity of the dissolving stereopticon has led inventors to devise various forms capable of being stored in a small space, and at the same time light, portable and adapted to quick and easy adjustment.

In a double lantern where one is placed above the other, as shown in our illustration, the difficulty has been to so arrange the ventilation as to prevent the



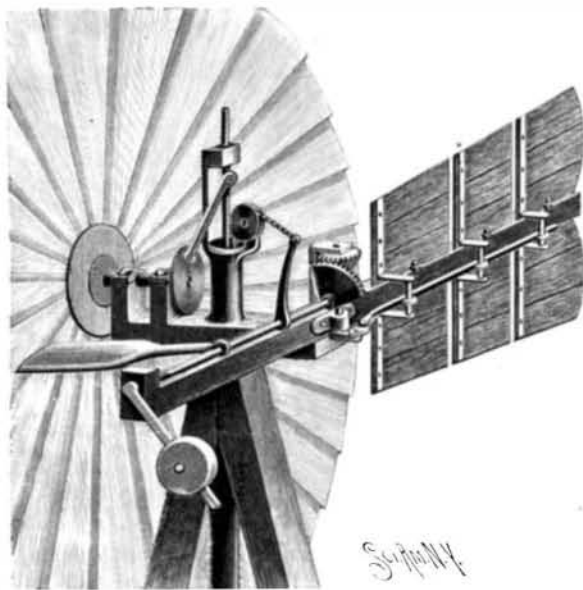
BESELER'S STEREOPTICON LIGHT CASING.

overheating of the upper lantern and yet have it very compact, and comparatively light-tight.

In the case of the present invention, this is accomplished by a simple yet ingenious way of protecting the heat outlets arranged around the top and sides of the casing, by peculiar shaped angle plates, so formed as to direct the escaping heat and reflected light rearward. Any extraneous light is thus prevented from striking the ceiling, the screen, or emerging from the side to the annoyance of the operator. A sheet of asbestos felting is placed between the two lanterns, but does not affect the easy ventilation of the lower one. The light-tight casing is movable on the rods, and when the lantern is set up, is drawn back as shown in the engraving, which exposes the condenser and places it outside of the casing, thereby preventing it from sweating or becoming overheated. There are simple but convenient adjustments of the lime carrier, and jets and extra flange rings are provided for the quick replacing of lenses of different foci, according to the size of picture desired. A bellows in front of the slide carrier prevents the escape of light. The whole apparatus is packed in a neat leather-covered box and weighs but a little over thirty pounds. The light-tight casing has been recently patented by Mr. Charles Beseler, the manufacturer, No. 218 Center Street, New York, from whom further particulars may be obtained.

AN IMPROVED WINDMILL.

The illustration represents a windmill in which the vane is designed to throw the wheel out in a moderate wind or in a gale, as desired, the turn table being carefully balanced upon the tower and the parts of the mill made so light and perfect in action that it can be



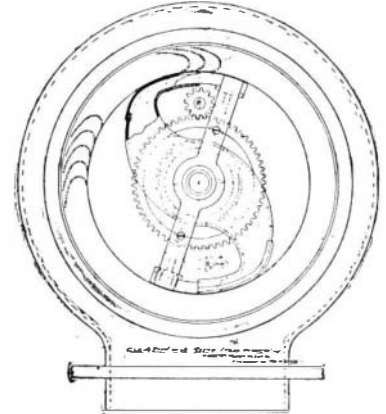
EVARTS' WINDMILL.

stopped or started with very slight effort. The improvement has been patented by Mr. Frank H. Evarts, of Arlington, Kansas. The turn table has two opposite horizontal arms and a vertical tubular extension, above which is supported a guide strap in which the pump rod moves, connected with the wheel shaft by the usual crank disk and pitman. Upon the other end of the turn table arm, opposite the wind wheel, is secured the body bar of the vane, the end of which extends beyond the edge of the wind wheel, and on this portion of the vane are pivoted vertical plates, which may be separated and made to stand at a right angle to the axis of the stem, or closed, to stand parallel with it. Each blade has on its outer face a yoke, all of the yokes being connected with a pitman, and the latter is connected by a link with a horizontal crank arm on the lower end of a short shaft, journaled in the body bar, the upper end of this shaft having a bevel pinion meshing with a segmental bevel gear on a line shaft journaled on the stem or body bar. On the outer end of this shaft is an arm, on which is held an adjustable weight, a fan being also secured to the shaft, and a curved arm, a chain or cable attached to the upper end of the latter leading over a guide pulley and down through the tubular casing of the turn table, to within convenient reach of the operator, affording means for stopping or starting the windmill, or throwing the wheel into or out of the wind. When the blades on the vane are closed, the fan assumes a position at one side of the wheel shaft, as shown, and presents its full face to the wind when the edge of the wheel is so presented; but when the blades are open, the fan is in a vertical position. When the cable is loosened at its lower end, the weight turns the line shaft and brings the fan to vertical position, and the wheel is swung into position to be driven by

the wind. The weight may be so adjusted as to require a moderate or a high wind to blow the fan down to a horizontal position, when the wheel will be swung around so as to present its edge, and the mill will be stopped. If the wind has not sufficient force to blow the fan entirely down, only partially closing the blades, the speed of the wheel will be slackened, but it will not be stopped.

AN IMPROVED WATER MOTOR.

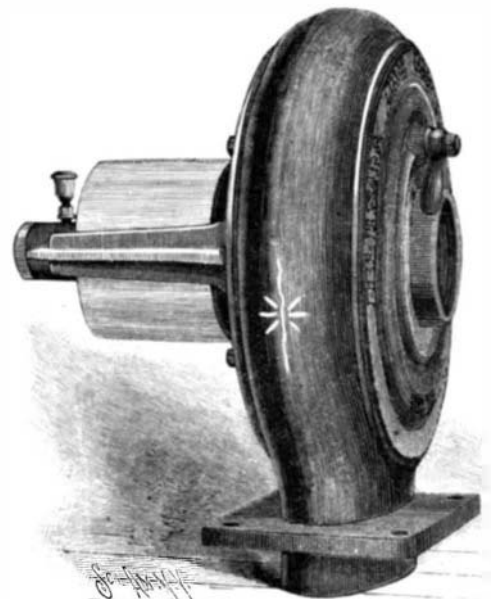
Some important improvements have recently been embodied in the construction of the well known Little Giant water motor, a simple, serviceable, and powerful machine, of which large numbers are in use. It is built on the principle of the turbine, and therefore gives a high degree of efficiency, and the pinion gear is extended to the outside to be operated by a lever for



WATER MOTOR—SECTIONAL VIEW.

the adjustment of the water jets, which are opened and closed at will, the lever being operated by cog gears, as shown in the sectional view. The wheels are made of brass, securely riveted together, the water chute being of composition and the shaft of steel, while the motors have only two bearings, babbitted, to run with the least possible friction.

These motors are used in all sections, and for an almost unlimited variety of purposes. In Mobile, Ala., the Craft & Co. roller mill is using one for grinding corn, making 27 bushels of meal per hour with 85 pounds of water pressure, and two are in use in the Mobile foundry. In Galveston, Texas, 24 of these motors are in use. At Defiance, Ohio, several large size machines are in use, and the Franklin, Ohio, water works light their pumping station with a combined motor and dynamo, the high speed of the motors specially adapting them for running dynamos. The Joliet, Ill., and Independence, Iowa, water works also use it for lighting stations, for which purpose it is likewise used at Pawtucket, R. I., Boston, Lynn, and many other water works stations, a kind of service for which the most efficient machinery is always sought. Many printing offices throughout the country use the



THE BELKNAP LITTLE GIANT WATER MOTOR.

motor to run presses, and it is employed for almost every purpose, from running machine shops, elevators, pumps, etc., to the operating of fans, blowers, and church organs. Further particulars in reference to this efficient motor may be obtained of the Belknap Motor Co., Portland, Me.

Coal from an Artesian Well.

J. H. Baldwin, State Engineer of Irrigation of South Dakota, reports that for the last week the artesian well at Springfield has been throwing up quantities of soft coal and hundreds of pounds of slate. When he left it there had been gathered a ton and a half of soft coal which had been scattered around the well by the force of the stream. The Springfield well is one of the largest in the State, and has a pressure of 200 pounds and throws a stream thirty feet high.