

A NEW LOCOMOTIVE THROTTLE-LEVER.

The throttle-levers ordinarily in use on locomotive engines are usually held in place by means of a dog engaging the teeth of a rack. In this form of lever the throttle can be locked in position only at those intervals which are provided by the teeth. In a throttle patented by Lorin W. Canady, of El Paso, Texas, means are provided for locking the lever in any desired position. Referring to our plan view of this new device, it will be observed that the throttle is fulcrumed to an arm projecting from the boiler. The throttle-stem is pivoted to the lever and slides in a gland rigid with the boiler. Extending through a slot in the throttle lever and connected with the boiler is an arc-shaped arm formed with an elongated aperture at its fast end. This elongated aperture permits the lateral movement essential to evenness of operation in connection with the lever. Mounted on a pivot in the slot of the lever is a cam which works against the arc-shaped arm and which is formed with an extension extending parallel with the lever. Connected with the cam extension, as shown in both our illustrations, is a rod pivoted to a hand-piece mounted on the lever. A strong expansive spiral spring adjusted in tension by a set screw and locked in place by a jam-nut, abuts against the cam-extension and causes the cam to bind firmly against the arc-shaped arm. By these means the throttle-lever is held at the proper adjustment.

By pressing the hand-piece, the cam-extension is drawn against the tension of the spring, thus releasing the cam from engagement with the arm and permitting the lever to be moved. Upon relaxing the pressure on the hand piece, the spring expands and causes the cam to lock the lever firmly in place.

With this throttle-lever the engine driver is enabled to regulate the speed of his engine with a nicety that cannot be obtained by means of the ordinary rack and dog device.

An Astronomical Discovery.

The European Union of Astronomers cabled on September 20 to Messrs. Chandler and Richie, of Boston, Mass., the discovery of a star-like condensation in the center of the Andromeda nebula by Dr. Seraphinioff, of the Russian observatory at Pulkowa. If the present supposition turns out to be true that a development is taking place in this notable nebula, Dr. Seraphinioff's discovery will be of considerable importance to astronomers.

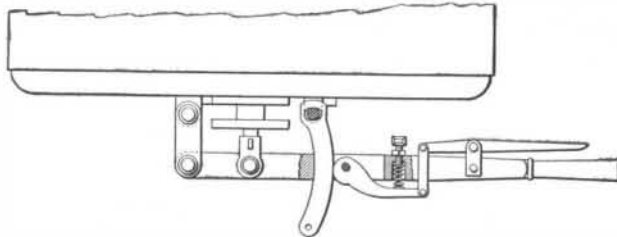
A LILLIPUTIAN LOCOMOTIVE AND TRAIN.

The diminutive train which forms the subject of this illustration was constructed by Thomas E. McGarigle, of Niagara Falls, who claims that it is the smallest train ever built for the conveyance of passengers in seated cars. It was built for use in the grounds of the Trans-Mississippi and International Exposition at Omaha, the space devoted to the miniature railroad being located in the main thoroughfare, where it extends for over 1,000 feet.

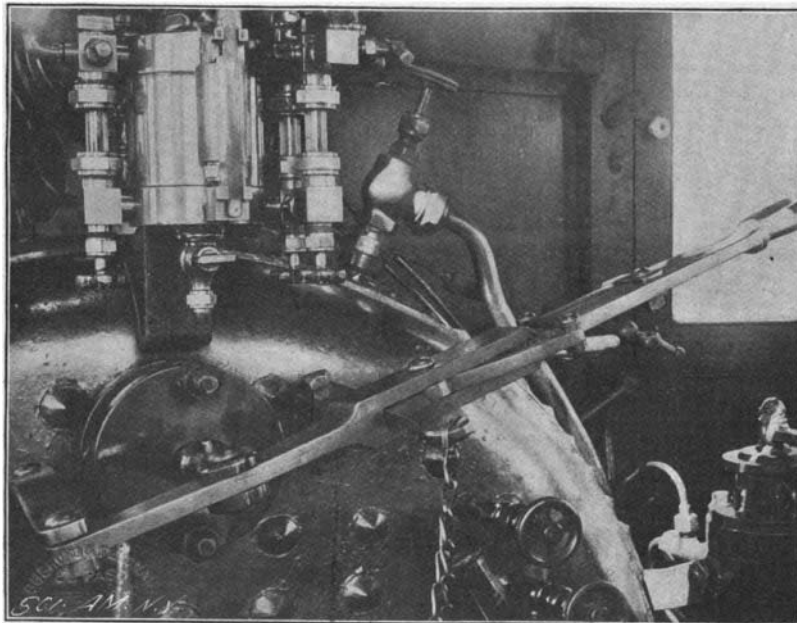
The greatest interest naturally centers in the locomotive, which is in every respect a faithful reproduction of the parts and working of a full-sized passenger locomotive. It is of the standard

eight-wheeled American type, with a leading truck, four coupled drivers, and a tender carried on two trucks. The gage of the track is $12\frac{1}{2}$ inches, the top of the smokestack is 25 inches above the rails, and the total length from the point of the pilot to the end of the tender is 7 feet 3 inches.

Steam to drive the little fellow is raised in a wagon-top boiler 10 inches in diameter, in which are 11 one-inch tubes 24 inches in length. The grate-surface is



PLAN VIEW OF THE THROTTLE-LEVER.



CANADY'S IMPROVED LOCOMOTIVE THROTTLE-LEVER.

54 square inches and the steam pressure is 125 pounds. The boiler is built of steel and was tested to 300 pounds pressure to the square inch. It is equipped with two injectors and holds 12 gallons of water.

The driving wheels are 10 inches and the wheels of the truck 5 inches in diameter. The cylinders are 2 inches in diameter, with a stroke of 4 inches. The weight of the engine is 600 pounds. The fire box is 10 inches in depth and 10 inches in width, and hard coal is used as fuel. The fittings of the locomotive are all complete, and include sand box, bell, whistle, and even

a steam brake between the drivers. The engineer has to utilize the whole tender as a foot plate, and he must, perforce, remain at all times seated in order to get at the throttle, reversing lever, etc. The tender is of the two-truck type. Its wheels are 5 inches in diameter and its capacity is 15 gallons of water.

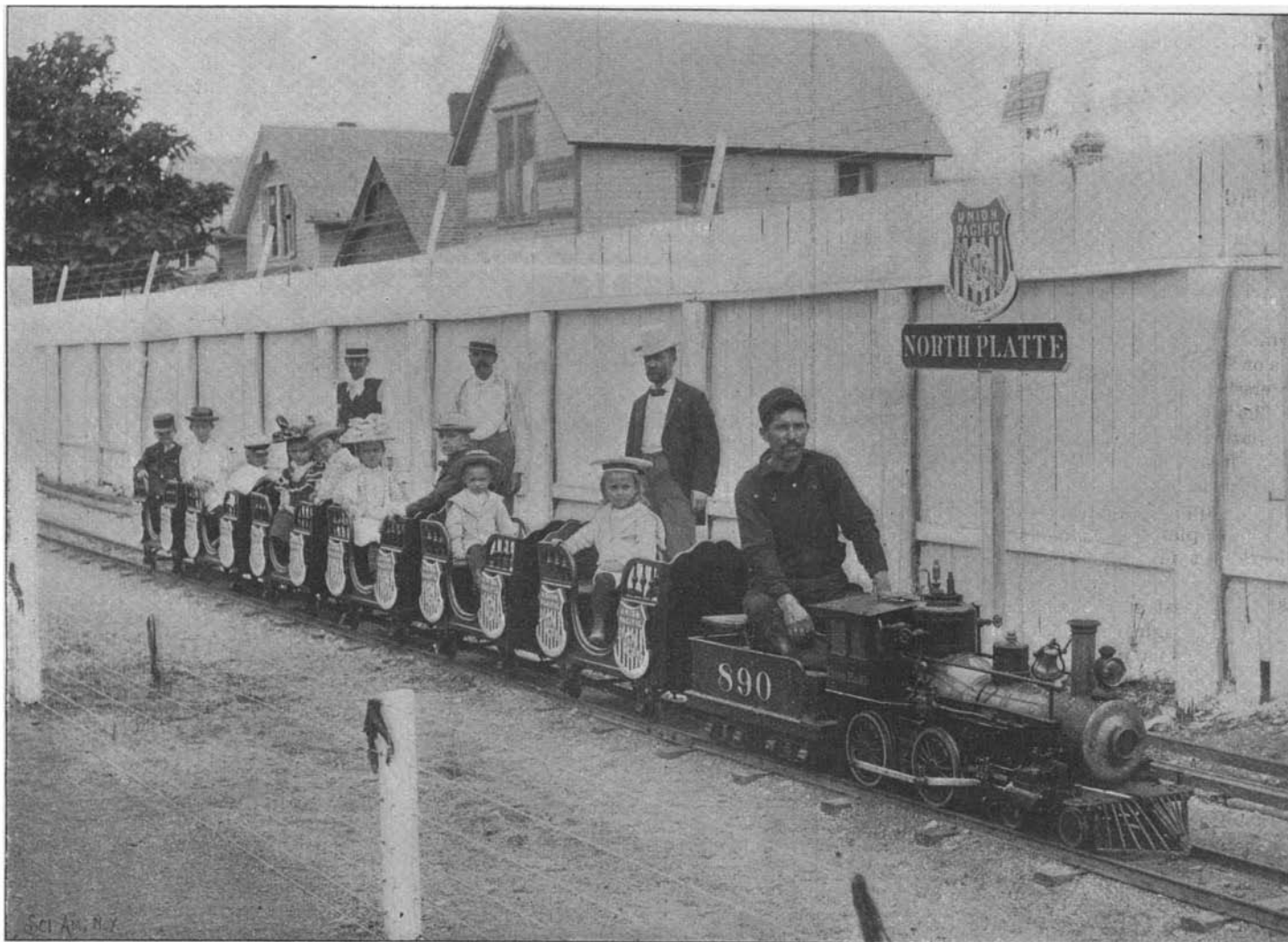
Passengers are carried in two-seated cars of the design shown in the illustration, and the hauling capacity of the locomotive is ten such cars, conveying twenty passengers, a total load of about 4,000 pounds. The scale on which the locomotive is built is about one-seventh of the size of one of the largest engines of the New York Central Railroad.

The Value of Fresh Air.

The admitted advantage of an outdoor life in many morbid conditions, and notably in consumption, seems to point to the conclusion that there is something definitely injurious in the indoor life which is now the common mode of existence among civilized people. It is a striking and startling thing that the mere removal of a patient into the open air should lower his fever, should remove his night sweats, and take away his hectic flush, and it is difficult to avoid the conclusion that if these symptoms are removed by the purity of the air outside, they must have been largely caused by the impurity of the air within the house. Nor have we any right to assume that it is the consumptive only who suffers. Doubtless the healthy struggle against and overcome evil influences before which those who are tuberculous succumb, but that is not to say that in the struggle we do not suffer, and, indeed, the facts recently brought forward are sufficient to show that the stuffy life of warmth and comfort which civilized man now "enjoys" is bad for the health even of the healthiest. We make our windows fit, we pad our doors, we shiver at a draught, we surround ourselves with woolen curtains, dusty carpets, and fluffy, luxurious upholstery; we breathe the same air over and over again, and then we wonder that we are not strong and vigorous. The fact is we are daily using up the exuberant vitality which nature has provided us in struggling against artificial conditions. How powerful for evil, how deteriorating these conditions are, is shown by the fact that their mere removal gives back to the consumptive that vitality which enables him to overcome the seeds of disease within him. Fresh air is not a thing to be taken in little doses once a day, but a thing to live on.—London Hospital.

A FIRE CAUSED BY THE DROPPING OF A TOOL.—

The Street Railway Review states that on May 26 a workman on the South Side Elevated, Chicago, dropped a tool, which made electrical connection between the third rail and a large gas pipe carried on the structure. A hole was burned in the pipe, and the gas ignited. The fire department was called out, and traffic between the downtown terminus and Thirty-third Street was blocked for over two hours. The wiring in several cars was burned out and the cars set on fire. A few days previous to this another one of the cars was set on fire by arcing in a portion of the electrical equipment.



A LILLIPUTIAN LOCOMOTIVE.

Cylinders, 2x4 inches; drivers, 10 inches; steam pressure, 125 pounds; diameter of boiler, 10 inches; height of smokestack from rail, 25 inches; gage, $12\frac{1}{2}$ inches; total length, 7 feet 3 inches.