THE RENO INCLINED ELEVATOR.

The accompanying engraving shows the working of a new style of elevator which is being put to a practical test by the trustees of the Brooklyn Bridge. It is the invention of Mr. Jesse W. Reno, who, by way of introducing it to public and official notice, erected this same machine at Coney Island last September, where it carried over 75,000 people. The present test is being made at the New York end of the bridge, and, as will be seen from the engraving, the elevator is placed to the right of one of the stairways that lead to the station platform. The belt, or movable flooring, has an inclination of 25 degrees, the vertical lift being 7 feet, and it travels at the speed of 80 feet per minute.

Broadly stated, the device is an inclined belt conveyor, similar in its action to those which are used for raising baggage from a steamer's deck to the dock level. It consists of an endless belt, made up of transverse cast iron slats, which are 4 inches wide and 20 inches long, or sufficient to extend across the full width of the elevator. The top surface of the slats is provided with thin projecting parallel ribs, one inch in depth, which are spaced 1¼ inches apart and extend across the full width of the slat. When the slats are linked together to form a continuous belt, these ribs form continuous parallel lines, and as they are dished on their upper edges, they present a good foothold for the passengers. The slats are linked together at their ends, where they are provided with small wheels which roll upon the top flanges of two parallel inclined I beams. The weight of the passengers is thus carried directly by these beams, which serve to keep the flooring in true level. At each end the belt passes over a pair of sprocket wheels, the upper of which is carried on a driving shaft which is operated through worm gearing by the four horse power electric motor shown below the elevator.

Perhaps the most novel and ingenious feature is the provision which is made for connecting the movable with the stationary flooring. This is accomplished by finishing off the stationary floor line with steel comb shaped landings, which will be seen in the engraving at the foot of the elevator. The teeth of the comb project forward and upward between the above-mentioned ribs on the slats just where the belt leaves the lower sprocket wheels. These ribs keep rising between the teeth of the comb and so tend to lift the foot of the passenger and carry him along. As a matter of fact, the passenger naturally takes a step over the comb onto the moving floor. At the top of the elevator the ribs disappear below the comb landing, leaving the foot resting upon the stationary floor. How cleanly this transfer is effected is shown by the fact that a bundle of waste thrown upon the elevator is carried up and deposited upon the top landing.

The present elevator is of single width and is provided with one hand rail, which consists of an endless chain, which is driven by a sprocket wheel on the main driving shaft, at the same speed as the moving floor. It passes over two sprockets placed at a suitable height at each end of the elevator. The chain slides on a flat bar carried on stanchions, and it is kept in place by projecting pins at each link, which slide beneath projecting flanges formed on each side of the bar. A strip of leather covers the chain, and upon this is placed a thick rubber covering, which is riveted to the chain and extends down on each side of it, thus forming a good hand rail.

The capacity of an elevator 20 inches wide is 3,000 persons per hour; and every 20 inches additional width will accommodate another 3,000. It is estimated that ten to twelve feet width would accommodate the 15,000 people per hour that cross the bridge in the busiest hours of travel.

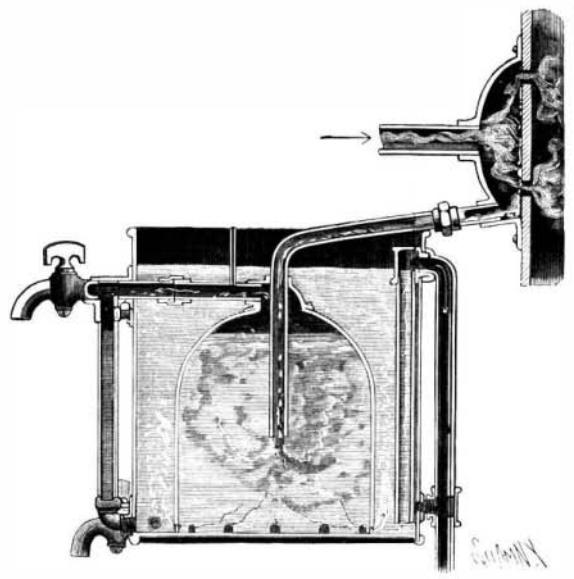
RENO INCLINED ELEVATOR AT THE BROOKLYN BRIDGE.

Nobel's Gift to Science.

A dispatch from Stockholm, dated January 2, states that under the terms of his will the property left by Alfred Nobel, the Swedish engineer and chemist, for a fund for the advancement of science will be realized upon, and the interest on the money will be divided equally into five prizes, to be awarded annually. Three of the prizes will be for the greatest discovery in physics, the greatest discovery in chemistry, and the greatest discovery in physiology or medicine. The fourth prize will be for the most notable literary contribution on physiology or medicine, and the fifth for the greatest achievement for the promotion of peace. The competition for these prizes will be open to the world. It is estimated that the fund will amount to nearly $10,000,000.

A NEW OIL SEPARATOR.

A recently patented device for separating the oil from the water of the exhaust steam of an engine is shown in the accompanying illustration, as it may be used in connection with the heater or condenser ordinarily employed. The exhaust pipe from the engine is tapped



SEPARATING THE OIL AND WATER OF THE EXHAUST.

into an external chamber of the heater, as shown at the right in the engraving, there being upper and lower openings into the heater from the chamber, and a pipe leading from the lower part of the chamber to the separator. The exhaust, striking the outer surface of the heater casing, will be somewhat condensed, and the water of condensation and the oil it contains will pass through the lower pipe to the separator. The latter consists of a flat bottomed tank, in the center of which rests a bottomless cone-shaped can, there being small notches in the lower edge of the wall of the can, affording passageways from its interior to the outside, and by means of an elbow pipe connection, the water of condensation is discharged at about the center of the can. A pipe in which is an upwardly projecting air vent leads from the top of the can to a faucet at the outside of the tank, and the interior of this pipe is connected with a glass gage whose lower end is connected with the interior of the tank near the bottom. Secured within the tank at the opposite side is a vertical, open-ended pipe, whose lower end reaches nearly to the bottom of the tank, and this pipe is connected near its upper end with an elbow pipe leading to a discharge connection. As may be readily seen, the oil in the water of condensation will naturally rise from the point of discharge within the cone-shaped can, more or less filling the top portion of the can, from which it may be drawn off by means of the faucet, while the water will pass downwardly and into the space surrounding the can, rising in the tank and in the pipe at one side until it reaches the level of the discharge connection near the top, the pressure of water within the tank, outside of the can, being always sufficient to force out the oil when the oil delivery faucet is opened. The relative height of the oil and water is always indicated by the gage, and the tank may be at any time emptied by means of a faucet near its bottom.

Vegetarianism—Its Effect Upon Nations.

In a recent communication to the Société d'Ethnographie, in Paris, M. Verrier treated of vegetarianism from the point of view of its moral and intellectual effect upon the nations who, either from choice or necessity, are to be classed as abstainers from animal food. While fully recognizing the dangers of a too abundant meat diet, as well as the advantages of purely vegetable nourishment, the speaker nevertheless felt constrained to come to the conclusion that nature intended man to be carnivorous. The physical constitution of the human race is so ordered that to insure the development of their higher qualities its members are of necessity compelled to become to a certain extent meat eaters. The attributes that make for dominion and progress are but imperfectly present among the eschewers of animal food, and hence vegetarianism causes the downfall of dynasties and leads to the enslavement of peoples. If, continued M. Verrier, the Hindoos, instead of following an absolutely vegetable regimen, had made use of meat in a rational manner, perhaps the British might not have found their subjugation such an easy matter. His argument was equally applicable to the Irish, who lived exclusively upon potatoes. As for the Japanese, with whom rice was formerly the staple food, the energetic nature of this people could not be cited in subversion of the rule laid down in his thesis. The reawakening of the conquerors at Port Arthur and the Yalu River was coincident with the establishment of a trade in butcher's meat throughout their archipelago.—Lancet.

Danger from Steel Buildings.

The true danger to be apprehended in regard to the modern office buildings of mixed steel and masonry construction is from rust. No one knows exactly how the metal in such structures is going to behave, for the reason that such combinations have never before been exposed in the same manner to the action of the elements. We know that iron buried in the heart of thick stone walls, laid in lime mortar, has remained unchanged for seven or eight centuries, presumably through the alkalinity of the lime, which has been known for ages as a powerful preventive of rust. Our high buildings are, however, built with cement instead of lime, and not much is known in regard to the action of cement on iron. Chemically, cement is much less alkaline than lime, and as it is insoluble in water, what alkalinity it possesses can hardly have much chemical effect on the metal. Its insolubility, however, makes walls built with it more impervious to water than those built with lime, and, if the steel structure is well grouted with cement, as is customary, there is reason to suppose that the metal, guarded from moisture by its impervious sheath, which, if it does not contribute alkali, at least contains no acid, may last uninjured for a very long period. Such experience as is available confirms this view, and although architects will watch with great anxiety for any signs of deterioration of metallic structures used in the new manner, as an indication which may assist in devising precautions against such action in future, they have certainly neither forgotten nor neglected anything that the present condition of knowledge affords in the way of information on the subject.—American Architect.