GIGANTIC PASSENGER ELEVATOR OF THE NORTH HUDSON COUNTY RAILWAY.

A passenger on one of the ferryboats leading to or from the upper portion of New York, or upon one of the numerous vessels passing up and down the Hudson, will notice on the Jersey shore, adjoining the West Shore Railroad station at Weehawken, a tall tower, communicating by a viaduct with the bluff, a few hundred feet distant. The tower is the passenger elevator of the North Hudson County Railway, and this, together with the viaduct communicating with the railway, will save the people living in Weehawken, Guttenberg, the town of Union, and the residents of the northern portion of Hudson County generally, the laborious ascent of the bluff by stage or on foot. The regular trains of the railway are to run out on the viaduct to the elevator landing so that there will be a direct transfer of passengers from the elevator cars to the trains. This great work adjoins the grounds of El Dorado—the magnificent spectacular summer show—and affords accommodation to the thousands who flock to this place of amusement in the summer season. Our view, by the way, shows the situation of the Roman amphitheater described and illustrated on another page.

The wrought iron work for the tower and viaduct is furnished by the Passaic Rolling Mills, and the elevator machinery and cars are supplied by Otis Brothers, of elevator fame, from designs furnished by Thomas E. Brown, Jr., engineer, under the specifications furnished by Mr. Edward A. Trapp, engineer of the North Hudson County Railroad Company.

The tower has a base of 45 feet 6 inches by 60 feet, measuring from the center of the columns; the top of the tower is 45 feet by 61. In the construction of the viaduct and tower, 2,000 tons of steel were used. The tower reaches to a height of 197 feet above the water level, and the lift of the elevators is 148 feet. There are three independent elevator cars, each 21 feet 6 inches, 12 feet 6 inches, and 10 feet high. Each car is suspended in a steel frame formed of angle and channel iron; the cables, eight in number, are attached to these frames, as are also the safety devices. Each car is provided with eight seven-eighths inch crucible steel cables, six of which are attached to the hoisting machinery and two to the counterbalance weights.

The hydraulic elevator cylinders are 38 inches in diameter and 2 inches thick, provided with flanges 50 inches in diameter, and made in sections of 9 feet in length. The pistons of the hydraulic cylinders are each provided with 2 steel rods 4¼ inches in diameter and 35 feet long. The pistons are geared by means of cables and sheaves in such a manner as to cause the car to move six feet for every foot of the travel of the piston. Each piston is provided with an automatic stopping device, which arrests the motion of the car independently of the conductor when the car has reached the end of its travel.

The car slides on wooden guide strips 6 x 8 inches, formed of three sections of yellow pine, and each car carries a safety device consisting of three pairs of cutters upon each side of the car, arranged to bite into the wooden guide when the car attains a speed above the normal. The arrangement of these cutters is shown in the annexed diagram. The lower cutters are serrated, producing grooves in the wood, and the upper cutters, which are straight, cut off the grooved surface as the car descends, the resistance of these two sets of cutters being sufficient to arrest the car very quickly, but not so suddenly as to cause any shock.

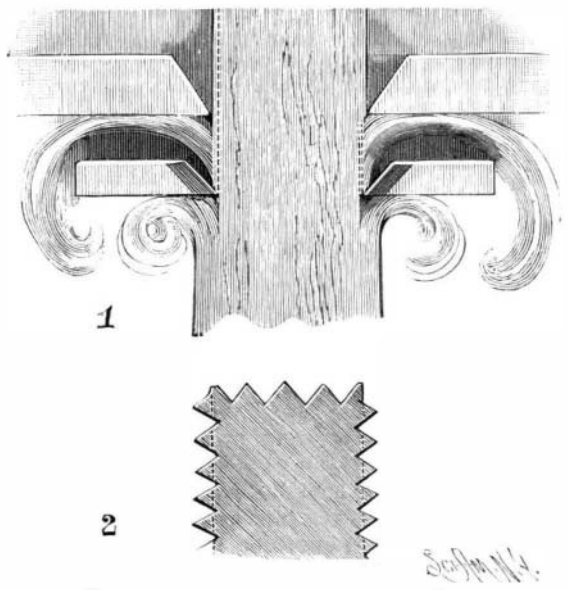
In the test of this safety device a car with a load of 36,000 pounds was released. The safety device arrested the motion of the car during a descent of 2⅞ inches. In another test, where the car was given a 12 inch headway, it was arrested by the safety device before it had fallen 19 inches.

The hydraulic pistons are operated by the combined action of the gravity of water and pressure exerted upon the column of water by an air cushion in the tank at the top of the tower. This tank is cylindrical in form, 78 inches in diameter and 40 feet long. It is made of half inch steel, and has a capacity of 10,000 gallons.

There is an auxiliary tank at the base of the tower, having a capacity of 1,200 gallons, which is 42 inches in diameter and 15 feet long. The auxiliary tank is little more than a huge air chamber. The riser which conveys the water to and from the tank above is 15 inches in diameter. Two Worthington compound pumping engines supply water under pressure to these tanks. The high and low pressure steam cylinders are respectively 16 and 29 inches in diameter; the water cylinders are 12 inches in diameter, and the stroke is 18 inches. These pumping engines each have a capacity of 1,000 gallons a minute. As there is generally a leakage of air from tanks and pipes, an air-pumping attachment is provided for each pump to maintain the air required for the cushion in the tanks. The boilers which supply these pumps are three in number, of the type known as the "Scotch" boiler. They are, in fact, like the boilers used on the ocean steamships, except as to size. They are each 9 feet in diameter and 12 feet long, made of 11/16 inch steel, with 36 inch corrugated steel furnaces. Of the three boilers mentioned, one is a reserve.

The pressure maintained in the upper tank is 100 pounds per square inch; this, added to the pressure due to the height of the column of water, makes a total of about 186 pounds of pressure per square inch exerted on the hydraulic pistons.

Each elevator has a capacity of 20,000 pounds raised 200 feet per minute; each car will carry 135 passengers, or a total of 400 passengers for each trip of the three cars. The average is 100 passengers per minute,



SAFETY DEVICE OF THE ELEVATOR.

or of 60,000 per day of ten hours, almost 150,000 in twenty-four hours.

These elevators are the largest in the world. The Mersey Tunnel passenger elevators are next in size. They have a lift of 70 to 80 feet, and carry about half the number of passengers.

A HORSE SHOE TO BE CLAMPED ON THE HOOF.

A simple form of shoe, which can be quickly clamped upon the hoof of a horse and as quickly removed, without the use of nails, is shown in the accompanying illustration. It has been patented by Mr. Joseph Broonett, No. 369 Nineteenth Street, Brooklyn, N. Y. The shoe is composed of two similar parts each shaped substantially like one-half of a common shoe, the parts being hinged together at the front. Secured to the upper edges of the parts are thin metallic shields, their shape approximating that of a horse's hoof, and formed at their front edges into interlocking knuckles through which a pintle is thrust to form the hinge, the shoe being thus made in two hinged parts which may be easily opened when it is to be placed on the horse's hoof. Extending around the upper edges of the shields are bands, doubled inward at the rear to project behind the heel of a horse, and terminating in flanges adapted to receive a clamping bolt. One of the flanges is screw-threaded, and in attaching the shoe the bolt is passed through one flange and screwed into the opposite flange, the shoe being firmly clamped upon the hoof by tightening the bolt. The hoof should be pared in the ordinary way to bring it to the desired shape before clamping on the shoe, which cannot become accidentally detached.

BROONETT'S HORSE SHOE.

Military Shields.

A committee of the French war office have reported in favor of a buckler of aluminum and copper. They think that a shield could be made out of this combination light enough to be carried without serious difficulty, and strong enough to stop even the modern rifle bullet, except at very close quarters. From a shield to a coat of mail would be but a short step, but it is not likely to be taken just yet. However light the new shield or armor might be, it would either increase the soldier's burden or necessitate the omission of some other part of his equipment, already reduced to the narrowest limits compatible with sustenance and a proper supply of ammunition. Extra weight would result in slower marching, an alternative not to be thought of in these days of rapid evolutions.

Preserving Autumn Leaves.

A few absolutely perfect leaves are better than the scores of common ones that we are tempted to collect. The leaves of the hard maple are always gorgeous in hue and delicate in outline. Those that wear the deepest tints of crimson or yellow are best for our purpose. Oak leaves are shiny and firm, and easily preserved. Nature has always been prodigal to the beech tree, scattering on her boughs the richest, brightest colors. The sumac glows with vivid crimson, and a clear amber shines through the dainty larch and chestnut leaves. Then there are the dull chocolate and mottled red of the blackberry vines, while the poplar and aspen shine out with a silvery white, all speckled over with touches of green. Gather these wild wood beauties, says *Good Housekeeping*, with as much care as would be bestowed upon a bouquet of garden blossoms, and hasten home with them before they begin to dry and curl. Upon reaching home let the first care be to have two hot irons ready. Cover the kitchen table with three or four layers of newspapers, over which fasten smoothly a soft cotton cloth. Have at hand a lump of beeswax, tied in a small bag, and a similar package of resin. Now smooth out a leaf with the hand, rub the beeswax lightly over the iron, letting the hot, smooth surface glide quickly over the leaf, first on the upper and then on the lower side, pressing a little more firmly a third and fourth time, until the leaf is thoroughly dry. The glowing colors will be firmly fixed, and will never fade, unless exposed to the sunshine. Having treated all the leaves in a similar manner, they are ready for the resin, or "the finishing process." With a moderately hot iron, which must be lightly and rapidly rubbed over the bag of resin, go over every leaf, first on the upper and then on the lower side. This gives them a brilliant, hard, glossy finish that makes them almost indestructible. Many persons complain that the glossy appearance is unnatural. While this is true, to some extent, yet the protection given by the coat of resin could be obtained in no other way. To preserve small branches, and boughs with leaves, one must proceed in the same manner, pressing the limbs and twigs with the iron until dry, being careful to avoid the point where the leaf is attached, as too much heat just there will cause it to drop off instantly. To achieve perfect success, be sure to take the leaves when freshly gathered. When the work has been finished, spread a number of newspapers upon the floor of some unused room, and there place the treasures. Give them plenty of space, so that they will not touch, or stick to each other. Cover them entirely with more papers, and let them remain in this cool, dark seclusion until ready to decorate the rooms, or otherwise use them as things of beauty and joy. Reserve a few of the brightest and more perfect specimens for the holiday times, when they will come out of their darkness so beautiful that they who see them will have no longing for summer flowers, but will revel in the unfading glories of the autumn leaves.—*Popular Gardening.*

Pathological Anatomy of Insanity.

Luys (*Jour. de Med. de Paris*, March 1) calls attention to an alteration that he has found in the brains of patients who had for many years been in an excited condition, viz., the hypertrophy of certain special regions of the paracentral lobules. The paracentral lobe is, as is well known, the point of confluence of the psycho-motor convolution of the cortex and one of the special regions where the psycho-motor innervations are specially accumulated. This hypertrophy therefore indicates a focus of continued excitation, absorbing to itself the vitality of the other cerebral regions, which are found more or less notably atrophied. In the extreme cases of excitement, with dementia, in which this condition was observed, he claims the subjects are completely absorbed in the hallucination or delusion connected with this hypertrophied region of the brain. The hypertrophy is usually symmetrical in the two hemispheres, but he presented the brain of a patient in whom there was a visceral hallucination that she was inhabited by a tape worm, which completely possessed her, that it became almost her sole idea. She dwelt constantly upon the coming and going of this parasite in her internal organs. Aside from this idea, when she could be induced to speak of other matters, she was perfectly lucid in her mind. The brain of this patient exhibited very marked hypertrophy of the paracentral lobe in one hemisphere, that of the other remaining perfectly normal. M. Luys explains by this anatomical arrangement the patient's clearness of mind coexisting with the delusion—she was insane with one hemisphere of her brain and rational with the other.—*Am. Jour. of Insanity.*