

NO. 999.

Of the many locomotives at the World's Columbian Exhibition, English, French, American, the towering form of No. 999 is particularly attractive by reason of the great exploit made therewith on the 10th of May last, when it was run at the wonderful rate of 112 miles per hour between Batavia and Buffalo.

We here give a photo-engraving of this remarkable machine. For the more full details of dimensions and particulars reference is made to the SCIENTIFIC AMERICAN of May 13 last, in which another engraving also appears. The machine weighs 124,000 pounds. There are four drivers. The cylinders are 19 inch diameter and 24 inch stroke. Built at the shops of the New York Central & Hudson River Railway, West Albany, New York.

**Presence of Mind in Applying an Antidote.**

An instance of rare presence of mind attended by success in the use of an antidote to poisoning occurred recently at Sag Harbor, N. Y.

Flora Sterling, the five-year-old daughter of Dr. Sterling, while playing about the house found a bottle which had formerly contained citrate of magnesia and still bore the label. The child put it up to her lips and took a long swallow.

With a scream she dropped the bottle, and began to clutch her little throat in an agony of pain. Her father, who had heard her screams, found that what the little one had taken for citrate of magnesia was oxalic acid. Seeing that not a moment was to be lost, if he wished to save the child's life, the doctor looked about for an alkaline antidote.

Seizing his penknife the doctor sprang to the white-washed wall and scraped some of the lime into his hand. This he threw into the glass partly filled with water, and poured the mixture down the almost dying child's throat. The antidote took effect at once. The intense pain caused by the burning acid was alleviated, and soothing, mucilaginous drinks to cool her blistered mouth and throat did the rest.

**HOISTING AND WINDING ENGINES.**

The accompanying illustration, representing Bacon's double cylinder "special" hoisting engine, is from the catalogue of Messrs. Copeland & Bacon, well-known builders of mining machinery and hoisting and winding engines, 85 Liberty Street, New York. The drum is driven by means of a V friction on its end, and the lowering of the load is controlled by a foot brake. An engine with 6½ inch cylinders, and occupying a floor space of but 3 by 4½ feet, will hoist 2,500 pounds 100 feet per minute. These engines are especially recommended for inside working of mines, steam lighters, coal yards, ice companies and other light hoisting.

**Welding the Ends of Railroad Rails.**

Tests have been made at Johnstown, Pa., it is said with great success, of an apparatus designed to weld the track rails together as they are laid in the roadbed, in place of fastening them with fish plates, bolts, chains, etc. The machine which produces the welding resembles somewhat a car, but is much more massive than the ordinary electric car. The current is taken from an overhead trolley wire. Inside the car is what is known as a "motor dynamo," which transforms and changes the direct current into a current of the desired kind for the electric welding process. A big crane of special construction extends through the open end of the car, and carries a peculiar apparatus, which is the welder proper. The interior of the car is lined with water tanks, which provide hydraulic motor power for some of the adjustments, and a circulation of water for cooling the copper contacts which are used in the welding. At various points are independent electric motors, which operate emery grinders for cleaning off the rail preparatory to the welding.

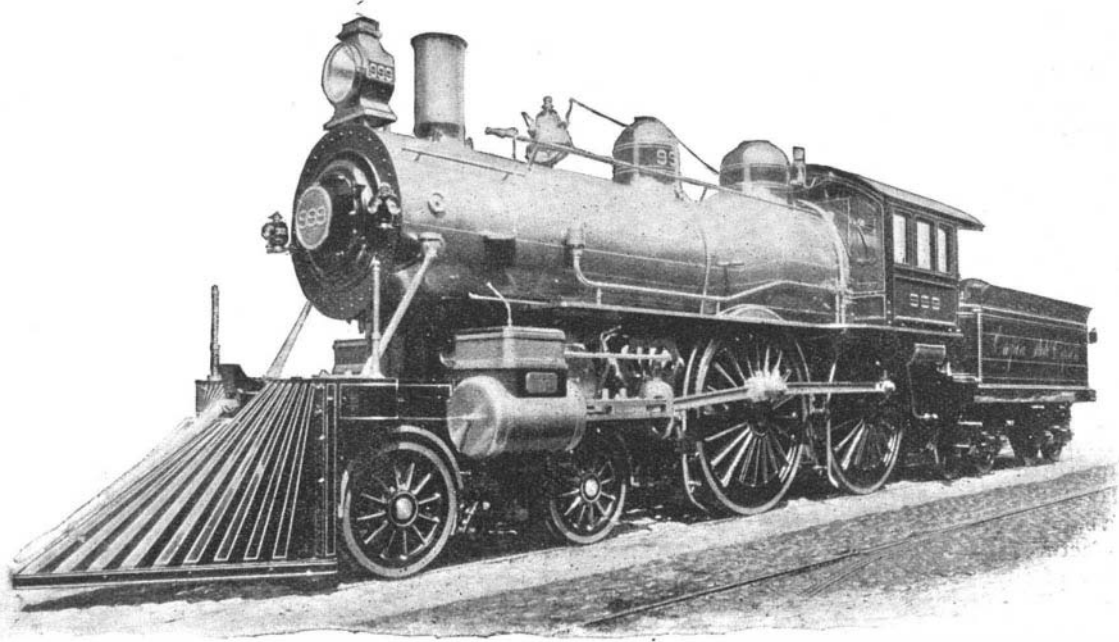
The machine was stopped over a joint, where the ends of two rails rested on the same sleeper, and after

the necessary connections were made a powerful electric current was turned on. In less than a minute the rails at the ends began to change color, and inside of three minutes the metal was raised to a white heat. Then the ends of the rails were brought together under pressure and a perfect weld was made in all cases where the conditions were favorable.

The advantages which will arise from the success of this machine are that as the rails wear off speedily at

wrenched from the car and passed under the preceding trains and damaged several grips. The result was that the whole loop was blocked until the next morning. As soon as it was discovered that the train could not be stopped, some of the employes of the road ran ahead of the train warning people to get out of the way; and had it not been that the accident occurred when the streets were comparatively free from traffic, the damage would have been much greater.

The seriousness of this accident can hardly be realized until one sees an unmanageable train of four cars running through the streets of a crowded city. Most of the streets of Chicago are very wide, being from 60 to 80 feet between curb lines, with room for a double-track railroad, with space sufficient for two trains abreast on each side between the tracks and the curb lines. Had there been a blockade in the street with teams going in both directions, the loss of life would have been considerable. The possibility of such accidents is one of the defects of the cable system, and although there have been many attempts to design a grip that will not get tangled up with a loose strand, yet cable men as-



THE WORLD'S COLUMBIAN EXPOSITION—THE FAMOUS 999.

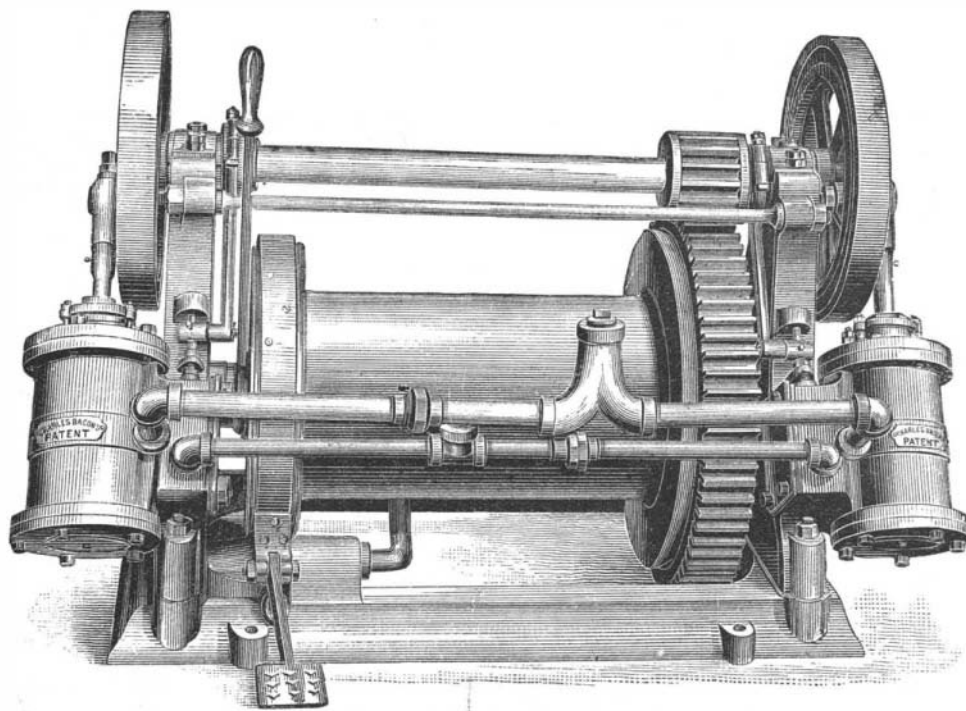
the joints, the life of the rail is increased; the increase of the life of the motors attached to each car, in the running of electric street cars, the comfort of the passengers, by relief from the constant jar now experienced in passing over the joints, the great decrease in the noise of the electric cars, and—what may be considered the greatest advantage—the fact that these continuous rails will carry back the current to the dynamo, so that the wastage of electricity, which has in many cases seriously affected the gas and water pipes, will be prevented.

**An Accident on a Chicago Cable Road.**

Recently Chicago people had an illustration of the dangers of running cable roads in narrow and crowded streets. The down-town loop of the Northside cable road commences at the mouth of the La Salle Street tunnel, runs south three blocks to Monroe Street, east two blocks to Dearborn Street, north four blocks to Randolph Street, and west two blocks to the mouth of the tunnel. A cable train consisting of three large passenger cars and one large grip came out of the tunnel, and the gripman attempted to stop just south of Randolph. The grip refused to let go the cable, and the train could not be stopped. This cable runs at about six miles an hour, and, in spite of the efforts of

sert that nothing has been designed that will prevent such accidents with any certainty. If such an accident as this should take place in the vicinity of the World's Fair grounds during the coming summer, the cable roads, on which many people will have to rely for transportation to the World's Fair grounds, would be blocked for hours. On the section of the cable road nearest the Fair grounds the cable travels at a speed of 13.8 miles an hour. The increased speed would make an accident of this kind all the more dangerous. One of the advantages of a cable road in crowded streets lies in the fact that the cable has a fixed speed and it is impossible for a car to run faster than the cable; hence there is no danger of racing in the streets, such is common with the electric railroad in Boston; but the possibility of such an accident as a cable getting entangled in a grip offsets considerably the advantage obtained by a fixed maximum speed.

Chicago people are accustomed to the most dangerous conditions of street transportation existing in the world. This is apparent from the fact that trains of four cars each, moving quite rapidly, pass each other going in opposite directions at intervals of about 15 to 20 seconds, giving just time for teams and foot passengers to dodge the trains. Crossing the cable lines are numerous street car lines in the down-town section, all of which render the heart of the city a place to be avoided by all but active people. The city authorities realize this, and have detailed policemen to watch the crossing points; but it is needless to say that one policeman has but little power over traffic so important and heavy as that just described. Practically in Chicago, the cable roads have the right of way, and the public feel that they must look out for themselves. In no other city in the world is it customary to run four-car trains in opposite directions through the principal streets; and if it were not for the fact that the cable companies give to their cables the most rigid inspection every night after the cars have stopped running at 12 o'clock, the troubles would be greater than they are. The inspection of the cable is much more thorough than the inspection of the grips; but a broken grip will only cause a delay of an hour or an hour and a half, while a broken or stranded cable



BACON'S DOUBLE CYLINDER HOISTING ENGINE.

the gripman to stop the train, it ran all the way around the loop and down into the tunnel at the speed of the cable, causing considerable damage on the trip. Horse cars were overturned and vehicles damaged, and the train was only finally stopped by a collision with the preceding train when part way down the grade into the tunnel. Several persons were injured in the collision. On an examination it was found that one of the strands of the cable had become loosened and had caught in the grip. At the collision the grip wa-

may cause a delay of from four to six hours. If such an accident as this one in Chicago should occur on Broadway, New York, where there is little room for teams, the result would be very expensive for the cable company, and would, very likely, cause loss of life.—*Railroad Gazette.*

THE Languedoc ship canal, in France, by a short passage of 148 miles, saves a sea voyage of 2,000 miles by the Straits of Gibraltar.