

### A RAILWAY MAIL CATCHER.

BY W. FRANK M'CLURE.

A new mail catching and delivering device for use in connection with fast trains is attracting no little attention at this time, and, it is understood, is soon to be thoroughly tested by the government. This invention provides for the receipt and delivery of the sacks at the same moment, after the manner illustrated in the photograph. Tests with bags weighing 60 pounds have been made with the train going at the following rates of speed: 6, 15, 20, 30, 35, 40, 50, 60, and 70 miles per hour. The present requirements of the government are that railway mail-catching devices shall work at a speed of 60 miles an hour. Those who witnessed the tests at the different rates of speed enumerated state that, while the machine did not fail to work at any time, the catch was more and more satisfactory as the speed increased.

The crane of this machine is suspended on a swivel post. Suspended from it is a sort of reversible cradle of steel wires. The hook in the crane catches the wire handle which holds the mail sack, and the sack is dropped into the cradle, whereupon the entire machine is swung on its axis by the impact, and it is thus carried out of the way. When another train comes along, even though a trainman may be leaning from the door of an express car or a passenger from a car step, there is no danger of his being struck by any part of the mail-catching and delivering device. This is a most important feature of the new invention. The machine is set anew each time when it is to receive and deliver mail. It will work either forward or backward.

The device in the car door is set by the clerk on the car and locked in place, and the exchange of the sacks takes place automatically without any further attention. The fact that in the exchange each sack is grasped and held securely is another important feature claimed for this machine. This avoids all possible danger of a sack being ground to pieces beneath the train wheels or being otherwise destroyed. M. D. Cummings, an Ohio man, is the inventor of the device. The tests here described were made on the Hocking Valley Road near Columbus.

### AN APPARATUS FOR RECORDING THE OSCILLATIONS OF LIGHTHOUSE TOWERS.

BY DR. ALFRED GRADENWITZ.

The oscillations of lighthouses, due to the pressure of the wind, are a serious drawback to their operation, interfering as they do with the regular working of the lighting outfit, and frequently causing fissures in the walls. In order to reduce these oscillations to a minimum, the weight proper of the lighthouse tower should be chosen as high as possible (by constructing the walls of heavy granite slabs or the like), so as to far outweigh the pressure due to the action of the wind.

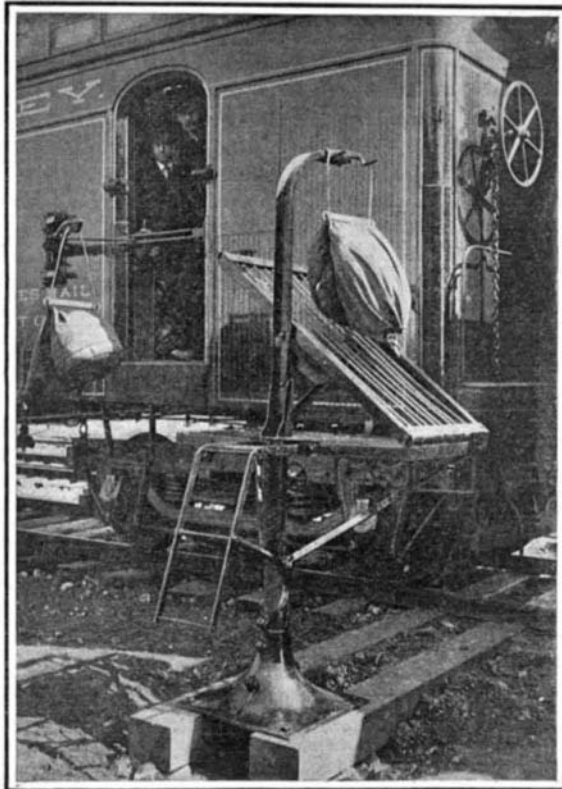
Special attention has been recently paid in France to this point in the construction of lighthouses, Mr. J. Richard, of Paris, the well-known instrument maker, having been intrusted by Mr. Ribière, chief engineer of the lighthouse service, with the design of a recording apparatus, by means of which the oscillations of lighthouse towers could be checked.

This apparatus, which has just been constructed, is installed at the top of the tower, and enables the amplitude of oscillations as well as their frequency to be ascertained with a high accuracy. As seen from the engraving, the apparatus consists of a cast-iron support having three level screws, and is installed on the summit of the tower of which the displacement is to be measured. On this support is placed a fixed glass plate, and bearing on the latter are four steel balls, on which is rested a smoked-glass plate free to move about. A recording pencil carried by a slide is driven by clockwork in a straight line over this smoked-glass plate at a rate of 2 millimeters (0.08 inch) per second.

The clockwork, slide, and drawing pencil are rigidly connected to the support of the apparatus. If the latter be caused rapidly to oscillate, the glass plate resting on the steel balls will remain immovable in virtue of its inertia, and the drawing pencil will record a series of undulations, representing both the frequency of the oscillations and their amplitude, which records may be readily compared with other similar ones.

It is obviously indispensable that the tower should not rock excessively, lest the gravity produce a displacement of the smoked-glass plate. In most cases the oscillations of lighthouse towers will, however, be found to be so slight as to fulfill this condition, their amplitude being far from reaching the figure of 0.6 millimeter (0.024 inch) ascribed to them by L. Fresnel for a period of 1 to 2½ seconds.

The above-described apparatus has been installed on a number



A NEW MAIL CATCHING AND DELIVERING DEVICE

of French lighthouse towers of recent construction, where it has borne out their safety of construction, the oscillations being always so weak as to exert no appreciable influence in the case of sufficient strength of the lighthouse.

### A PNEUMATIC DECK-CALKING TOOL.

Numerous devices have been designed for supplanting the tedious, laborious, and protracted system of calking the decks of vessels by hand labor, but these efforts have not proved completely successful, since



PNEUMATIC DECK-CALKING TOOL IN OPERATION, SHOWING SEAM OPENER AND CALKING IRON WITH PNEUMATIC HAMMER.

the various appliances have not possessed a mechanical system of gathering the oakum so that it can be fed into the seams of the deck. An ingenious pneumatic tool for the accomplishment of this work, however, and which has been adopted by the British navy, has been placed on the market by the Pneumatic Engineering Appliances Company, of London, by means of which the whole task, including preparation of the

seams and calking, can be carried out without involving any handling of the oakum.

The appliance comprises three tools. In the first instance, the seam opener is employed to open the interstice to the desired width to receive the oakum. Then the first calking thread is inserted by the aid of the calking tool, and finally two threads of oakum are calked down on top of the first one by means of the calking iron. The oakum is laid down on the seam in lengths, and one end threaded through the nose of the feeder, as shown in the accompanying illustration. As the feeder is moved along, the oakum is gathered up and is hammered into the seam by a pneumatic hammer, which fits the tool.

The feeder is made of cast steel, and is arranged to fit the apparatus by means of a steel pin, which passes through a double eye-piece, through which the power of the hammer is transmitted. To protect the tool from injury, the bearings are fitted with rubber cushions, and the whole appliance is designed with a view to insuring a long life.

The operation is very simple, and does not call for any particular skill in its manipulation. At the same time, it enables the work of calking to be carried out very expeditiously, and at a speed with which hand work cannot be compared. Furthermore, experience has shown that the work can be carried out much more uniformly by its use. With two sets of tools 690 feet per day can be calked by two apprentice carpenters, while for drumming decks one similar workman can do 900 feet per nine hours. In use the tool has shown a saving of 300 per cent. The British Naval Department are employing the tool extensively for calking the decks of warships, while it is also in operation in numerous shipyards.

### Some Automobile Statistics.

Some statistics of unusual interest concerning the automobile industry in the United States have just been brought out in the course of the litigation now progressing against certain manufacturers, dealers, and users for infringement of the Selden patent. The plaintiff in all the suits pending is the Electric Vehicle Company, and in order to prove the extensive recognition which the Selden patent has been accorded by the industry, President H. J. Budlong was called to the stand to testify concerning the amount of business that has been transacted under licenses granted under the patent. A summary of Mr. Budlong's testimony shows the following records to have been kept by the licensors, all the figures having been furnished by manufacturers in depositions under oath. According to these official figures, as sworn to in the United States Circuit Court, the total number of vehicles manufactured and imported under license from January 1, 1903, to January 1, 1906, was 41,696. The valuation of these cars was \$63,141,437.22 and the royalties paid on them to the licensors was \$814,183.52. All of the figures given represent cars actually sold.

The increase of production in 1904 over 1903 amounted to 30 per cent in the number of vehicles, and the increase in the value of the gross sales was 58 per cent.

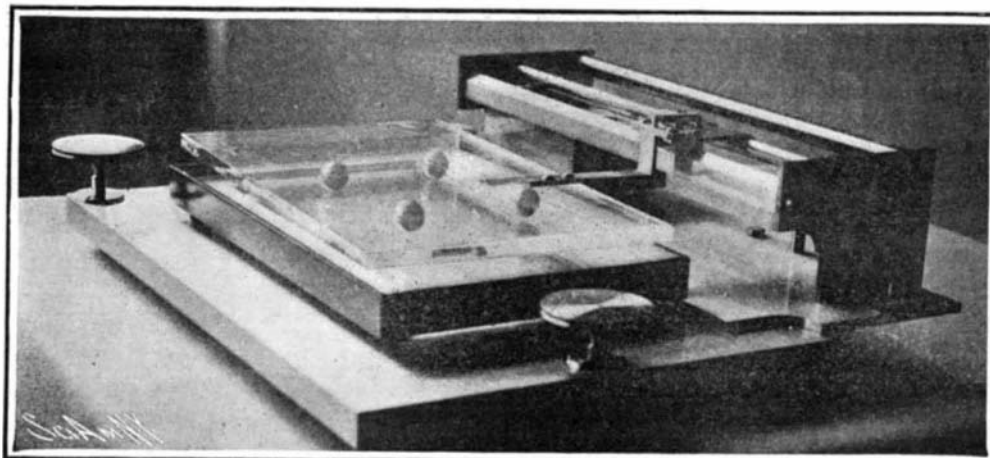
The increase of 1905 over 1904, in the number of vehicles, was 32.5 per cent, while the increase in the value of the product sold rose to 66.2 per cent.

The total business in 1905, according to the testimony, amounted to 17,840 vehicles, having a valuation of \$31,814,758.99.

These figures reveal some averages of peculiar interest. Taking the total number of cars produced by the licensed makers and their selling prices, it is shown that the average selling price for cars of all sorts in 1903 was approximately \$1,170. In 1904 the average price was \$1,422. In 1905 it was \$1,784. For the three years 1903, 1904, and 1905 the average selling price of domestic cars was \$1,429 and of imported cars \$6,710.

This is the first time that any such thing as reliable, official figures have been furnished; and as there are thirty-seven concerns now operating under the Selden patent, who handle the great majority of all the motor cars made and sold in this country, these statistics from the court testimony throw a broad light on the situation.

An important discovery has been made at Rushan Castle, in the Isle of Man, which dates from the tenth century, the foundations of a minting house having been unearthed. The sunken fireplace is almost perfect, and portions of the crucibles, some copper dross, and a large number of Derby coins were found. It is conjectured that here were minted the coins which the Stanleys made currency when kings of Man.



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