

RAILWAY MAIL CATCHER AND DELIVERY DEVICES.

A subject which has been of much interest to inventors through many years, and in relation to which many patents have been issued, is that of delivering mail bags to and receiving them from moving railway trains. Numerous devices for this purpose have been tried with more or less success, but the greatly increased speed with which trains are now run, and the immense growth of the mail carrying business, with the necessity in all cases of securing the promptest possible service, render the attainment of practical success a more difficult matter than it was some years back. With the devices at present in use on many roads, it has occurred that mail bags have been run over and cut to pieces from the delivery arm of the mail car striking a switch stand or something else, the mail being partially destroyed, and even trains have been derailed from this cause, while persons have been killed by mail bags striking them when thrown off a train.

The Post Office Department at Washington, however, has been diligent in seeking for the best forms of practical devices among the many which have been brought forward, and insisting upon their adoption by the railroad companies. With this end in view the department has had many tests made, under the supervision of experts, and now gives its official approval to three different devices of this character, such approval having been withdrawn from a fourth device, "until certain defects which cropped out in the practical use of the device are remedied."

One of the devices thus expressly approved by the Post Office Department, and manufactured by the Fleming Mail Catcher and Deliverer Company, is shown in the accompanying illustrations, one of the larger views showing the mail car approaching the station, with its bag held out ready for delivery, while the mail bag at the station is held on an extended arm of the device, ready to be taken upon the car; the other view showing both of these operations completed, the car having delivered and received a mail bag.

The standard of the mail crane, at the side of the track, has at its top a pivoted, counterbalanced supporting bar, at whose outer end is a cross bar having at each end a dependent hook, and from one of the hooks the station mail bag is suspended by means of a ring. Lower down on the standard is a catch arm which assists in holding the bag in proper position, the catch arm being connected with the standard by a universal coupling which permits it to swing both horizontally and vertically. The catch arm has at its outer end a cross bar with notches adapted to engage the station mail bag ring, and with detent fingers to retain the car mail bag ring, when the latter bag has been delivered, as shown in the second view.

On the mail car a sleeve with inwardly extending handle turns on a supporting rod arranged across the doorway, and an outwardly extending arm of the sleeve carries at right angles to its length a needle-like catch arm adapted to hold on the rear end the bag which is to be delivered at the station, the bag being supported by means of a ring, as in the former case. There are also holding springs or catches, preventing the bag from becoming easily detached until engaged by the catch arm at the station. A retaining arm also bears against the mail bag ring to hold it at right angles to the car in proper position for engagement by the catch arm and prevent it from being shifted by the wind or the motion of the car.

As the mail car moves past the mail crane, the mail clerk or attendant on the car, by turning down the handle, holds the mail

bag extended, the arm on which it is carried entering the ring of the station mail bag, and taking the latter from its supporting arms, while the catch arm of the mail crane enters the ring of the car mail bag and removes the latter from its support. Owing to the speed of the train, the car mail bag is thrown against the catch arm with considerable force, and the arm is swung horizontally at the same time that it drops, by reason of its universal coupling connection with the standard, striking the chain by which the counterbalance weight is supported, whereby the blow is cushioned and the arm and the bag are brought to a state of rest with a minimum of jar or strain. At

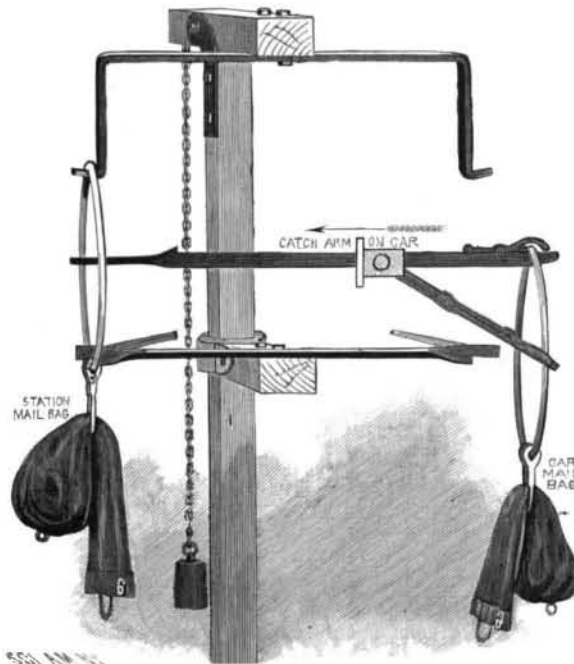


DIAGRAM SHOWING TRANSFER OF MAIL BAGS.

the same time the operator on the car, by releasing or turning up the handle, withdraws the extended arm and brings the bag which has been taken up at the station to the door of the mail car. The ring holding, catching and cushioning devices are identical on both sides of the mail crane and the carrying arm of the car, so that mail bags may be exchanged when the car moves in either direction.

The system shown has been in successful use for more than two years on leading railway lines, without any throwing or kicking off of pouches, and without danger to the trainmen or mail clerks, while the delivered mail is positively and securely hung in a safe place. The extended arm of the catcher, also, is short, and not likely to strike an obstruction near the track. From the manner in which the mail sacks are suspended from rings, it is obvious that there must be a saving, under this device, in the cost of repairs for mail pouches, as compared with former methods, according to which the pouches were caught up by hooks. The expense to the

government on this account for the year 1894 was \$128,781.

Do Earthquakes Vary with the Time of Day?

Students of earthquake phenomena have for a long time believed that the violence of earthquake shocks was greater in the morning than in the afternoon; in other words, that the earthquake activity varies throughout the day in a manner similar to that of the barometer. Mr. C. Davidson examined the question very closely, and reached the following conclusions. The data which he used were the curves furnished by registering instruments, which were installed in Japan and in the Philippine Islands:

"1. The daily variation of the frequency of earthquakes finds support in the approximate agreement of observations during the entire year at Tokyo and Manila, and for the middle of summer and winter respectively, at Tokyo.

"2. In the course of ordinary earthquakes, there is almost always a marked daily period, whose maximum is generally between 10 A. M. and noon. The half-daily period, the less apparent, is just as clearly marked; its maximum is always between 9 A. M. and noon and between 9 P. M. and midnight. Other lesser agreements have also their own importance.

"3. Although there are not sufficient data to draw a complete conclusion, it seems that the daily periodicity of the feeblest shocks is the most marked.

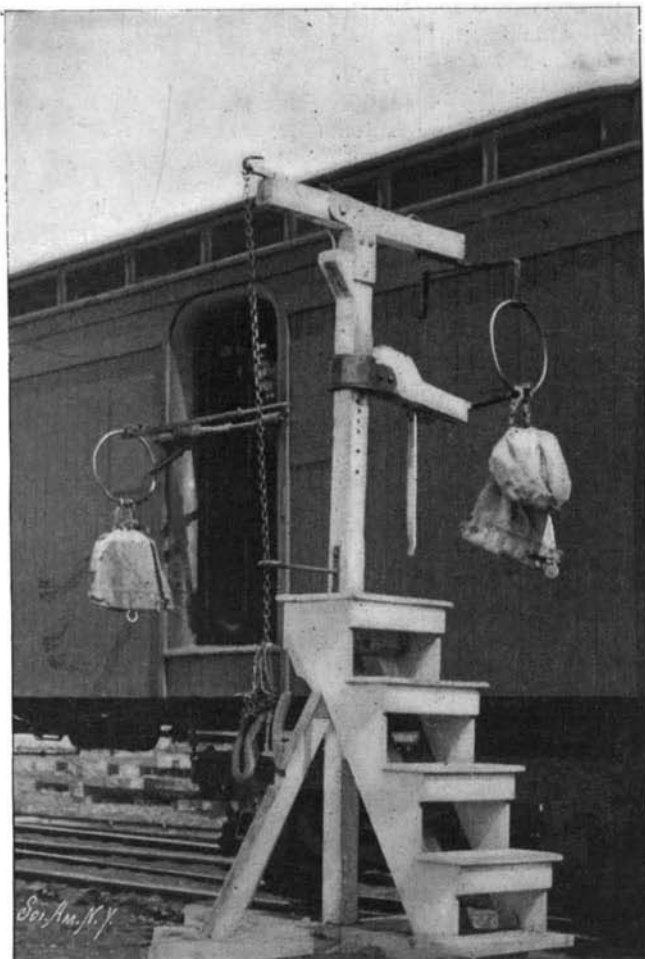
"4. In the case of the return shocks of great earthquakes, the diurnal periodicity is always strongly marked. The maximum of the daily period occurs several hours after midnight, but the epochs of the others are subject to great variations, due, no doubt, to the short intervals that separate the indications of the registering instruments. A peculiar feature of the return shocks is the more marked value of the eight hour and four hour components.

"It appears not improbable that the daily variation of ordinary earthquake shock is chiefly due to the velocity of the wind, and that of the return shocks principally to the barometric pressure."

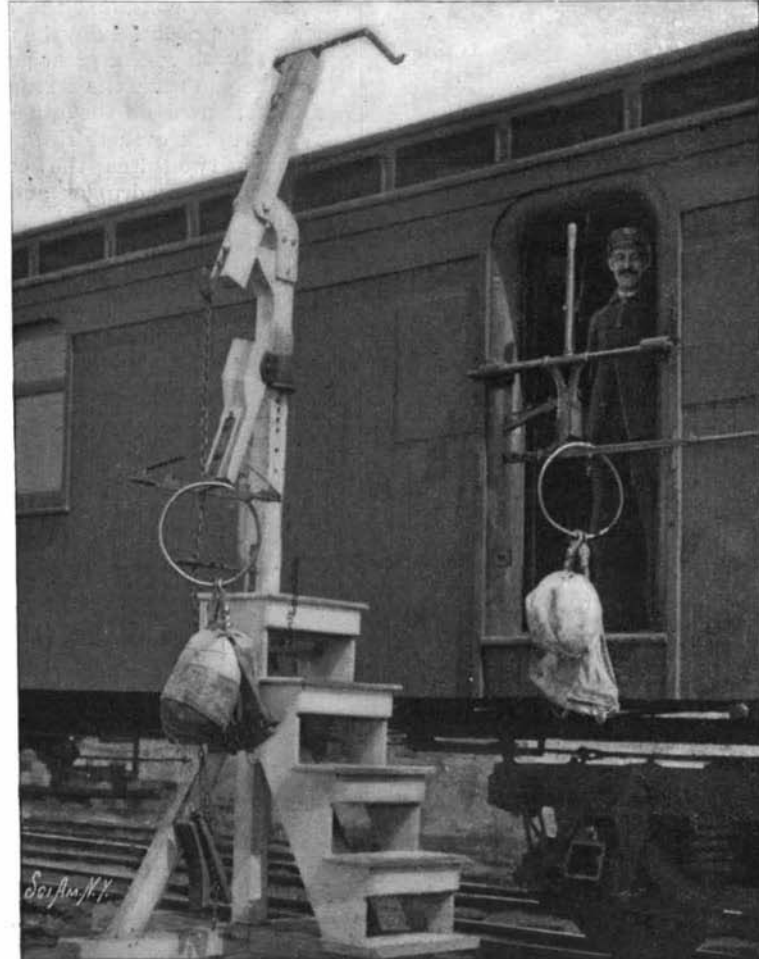
International Association for Testing Constructive Materials.

The following is the substance of the statutes adopted by the international congress. The object of the association is the development and unification of test methods for determining the quality of building and other materials, and improving apparatus for the purpose, by the deliberations of the association, by congresses, by the publication of a journal, and by any other measures that may be deemed advisable, the necessary funds being raised by the annual subscription of members, profits on the journal, and donations. Candidates for admission must be proposed by two members of the association, while authorities, constituted bodies and societies will be admitted on their application, which must be addressed to the president. The annual subscription is 5 fr. (4 marks or shillings). Each member, who must undertake (on being elected) to contribute to the success of the association's objects

to the extent of his ability, has the right of voting and also of receiving the journal at a reduced rate. The business of the association is carried on by (1) the managing committee, consisting of the president, vice president, three assessors, and members elected by the congress on the proposition of the council, their functions extending from one congress to another—generally a period of two years; (2) by the council, composed of delegates elected by members of the association in the different countries; and (3) by the congress.



BEFORE.



AFTER.

THE FLEMING MAIL CATCHER AND DELIVERER.