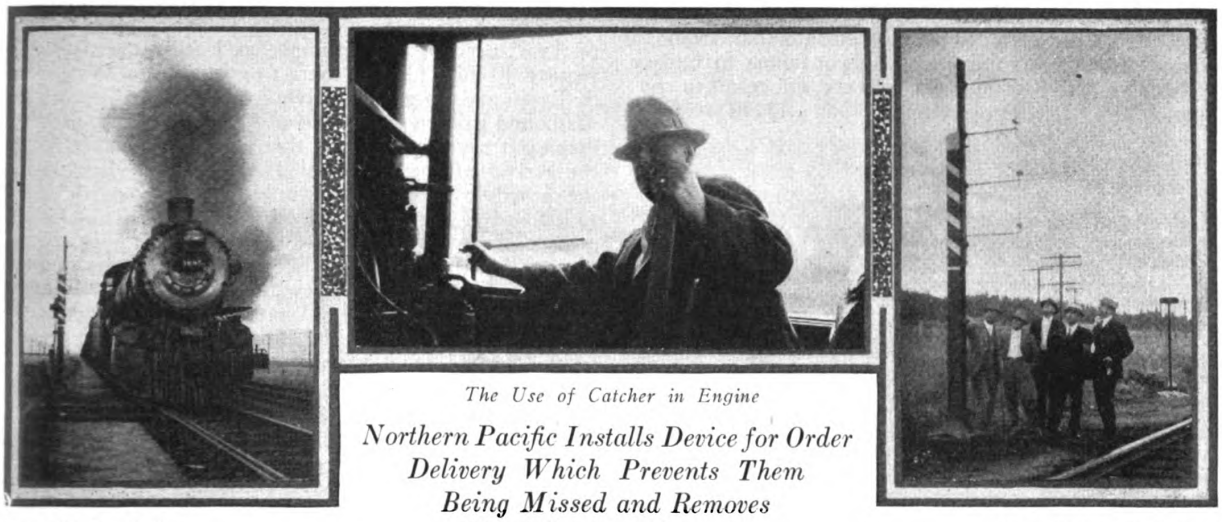
Train Order Deliverer Expedites Traffic



Drag Getting Order — *The Use of Catcher in Engine* — *The Deliverer Loaded*

Northern Pacific Installs Device for Order Delivery Which Prevents Them Being Missed and Removes ***Hand Delivery Hazards***

AS a further step in eliminating unnecessary stops and expediting traffic, the Northern Pacific has installed for test a train order deliverer device over the entire second subdivision of its Idaho division between Spokane, Wash., and Kootenai, Idaho, a distance of 78 miles. The device was designed to eliminate unnecessary stops, slowdowns and accidents, which arise out of the use of hoops in delivering "19" orders. Ten machines were erected and first placed in service on April 26, 1921, and all passenger and freight engines and train crews on the Second subdivision are equipped with the catcher. This subdivision consists of a single track line equipped with automatic signals over which an average of 12 scheduled trains and 4 extras each way operate daily and on which an average of 37 orders are issued every 24 hours.

How the Machine Operates

The deliverer at present in use consists of a square post 13 ft. 6 in. high and having 6 in. sides and is set 6 ft. 6 in. from gage. (It can be arranged to give any clearance desired.) Four angle irons are used on which a sheet metal covering is placed. A movable carrier 6 ft. long and to which the arms are attached between which the train orders are fastened, moving in a grooved guide, is raised and lowered by means of a ratchet and chain contained inside the post. The carrier is equipped with three sets of arms spaced 24 in. center to center, thus providing means for delivering three orders to a train when this is necessary in connection with double-heading. The carrier when in position for delivering orders places the center line of the top rope 12 ft. 2 in. above top of rail; the middle rope 10 ft. 2 in. and the lower rope 8 ft. 2 in. above top of rail. This height can be made to meet conditions on any system. The arms consists of ½ in. by ½ in. square steel, the top pair being 27 in. long; the intermediate set 28 in. and the bottom ones 29 in. This variation in length is to prevent interference after the rope containing the train order has been caught and the arms return to their normal position, the top ones being raised to a vertical position by means of a spring attached inside the post, while the bottom arm of a pair drops down by gravity. The movable carrier when not in use is lowered to the bottom of the post which brings the arms low enough for the operator to reach for loading, after which it is raised to the proper height for delivery of orders to trains and the operator can then remove the handle to prevent tampering and proceed about his other work. The illustration will show the principles of its operation.

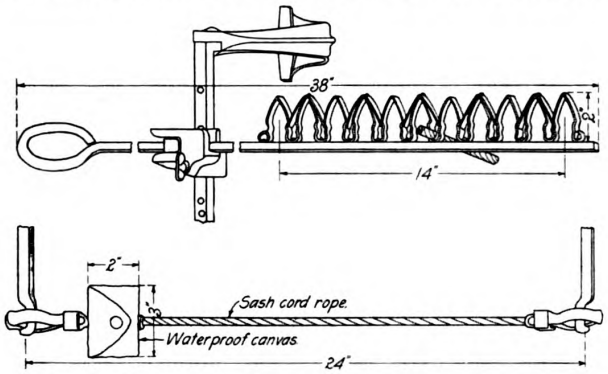
The cord to which the train order is attached consists of a 2-ft. piece of sash cord to the ends of which are attached spring clips for fastening over the hooks of the carrier arms. At one end of the rope carrier is attached a waterproof canvas bag 2 in. by 3 in. in size, somewhat similar to a tobacco pouch, in which the order is placed.

The catcher which is carried on the engines and as part of the way car or flagman's equipment consists of a ⅜ in. by ⅜ in. cold rolled steel bar 38 in. long, having a handle and guide stop on one end. At the other end for a distance of 14 in. is attached by means of rivets, the rope catching apparatus, which consists of a flat piece of medium hard steel 3/32 in. by ⅜ in. formed in the shape of a number of inverted Vs, the points projecting outward. Over these points is fastened a V-shaped spring which acts as a guard to prevent the rope from dropping out after once having passed into the space provided for it between the adjacent teeth. The catcher device is light enough not to be cumbersome or unwieldy and at the same time strong enough to operate properly. The guide casting used on the engines is attached to a square piece of steel of about ½ in. by ½ in. section, mounted vertically but a few inches from the front end of the side window of the cab and can be moved up to a point for catching the order on the top carrier arm (in case of double-heading), or it can be left in the lower position just above the window sill, which corresponds to the position of the middle set of carrier arms. This guide casting can be fastened in position by a set screw and is arranged with a slot on top into which the catcher device is placed which, when being pushed out to the proper operative position has a stop which fits in a slot on the back side of the guide casting. The construction is such that it takes but an instant to drop the catcher device in place or to remove it. In double-heading, should a small

engine be used, it would pick up the order at the 10 ft. 2 in. level, while a large engine would use the 12 ft. 2 in. level and the train crew would catch the order at the 8 ft. 2 in. level.

Operating Results

Results so far obtained would indicate that from an economic standpoint the use of this machine to replace the hoop system of train order delivery will result in considerable savings. For example, from a check made of



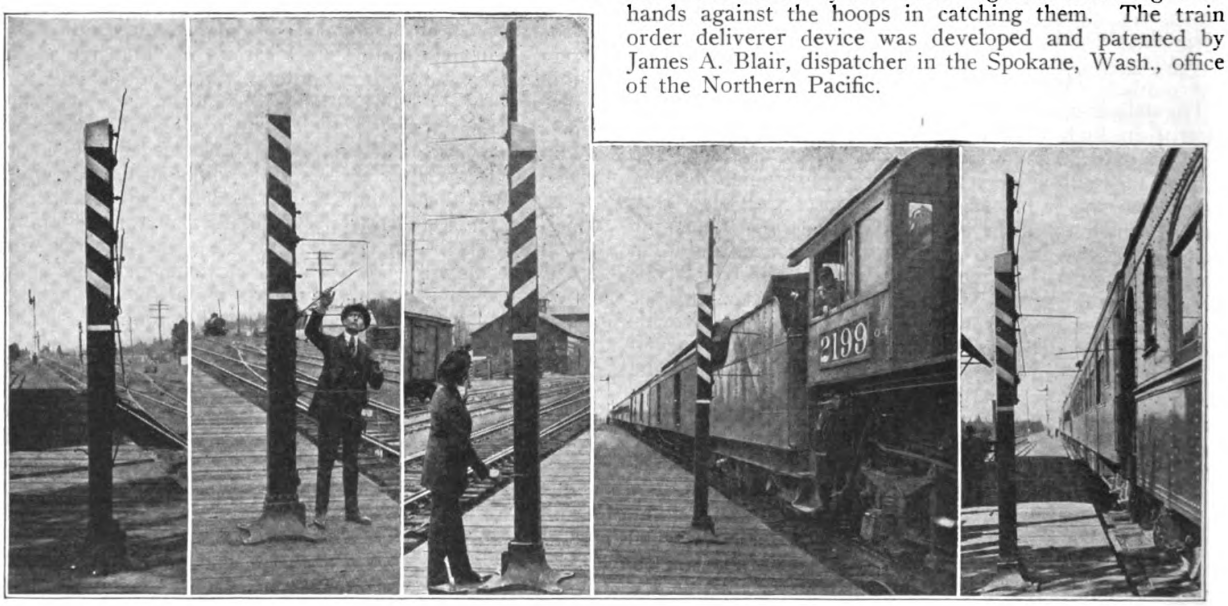
Catcher and Rope with Message Attached

the train sheets over a 90 day period, it was found that in the Idaho division 33 unnecessary stops were made because orders were missed under the hoop system. With this as a basis it was estimated that approximately 1,800 unnecessary stops under the hoop system were being made on the Northern Pacific system. These stops work a hardship on motive power and efficiency of train operation and if the enginemen fail to get the order the train is stopped and backed up, the conductor uses the emergency air valve, which causes severe shocks to the equipment and not infrequently a break in two—especially on long drags with consequent serious delays. These unnecessary stops also increase the fuel bill.

Better running time is made because it is unnecessary for a train to slow down in picking up the orders, and as an example of facilitating traffic, Yakima and Pasco are 90 miles apart and it is down grade to Pasco. It frequently happened under the hoop system that an extra west out of Pasco would run to Kennewick, a distance of 3 mi., arriving, for example, at 1:30 p. m. It would require 40 min. for this extra to go to Vesta, 9 mi. west of Pasco and up grade, arriving there at 2:10 p. m. An eastbound passenger was due at Vesta at 2:00 p. m., thus making it necessary to hold the extra at Kennewick until the arrival of the passenger at 2:06 p. m. Because of the schedule, dispatchers would not put out an order ("19" orders only are used on the Northern Pacific) to an eastbound passenger east of Yakima because of the chance that the train crew might miss it. Consequently, should the passenger be a few minutes late in arriving at Vesta, the extra west would have to wait at Kennewick. Since the installation of the train order deliverer service on the Second subdivision, the dispatchers are now putting out orders at points similar to the example cited above to the trains should they be a few minutes late, with the assurance that the order will be picked up, and thus saving from 50 min. to an hour and a half on the running time. Actual tests have proved that the use of the device will shorten the running time.

Another item of economy is in connection with the saving on hoops and the assurance that an order or important message may not go under the train instead of being caught. The Northern Pacific uses 20,000 hoops a year, and from the test to date it would appear that one rope carrier will outlast about 200 hoops, or the equivalent of 10 cents against $44.

From a safety standpoint it is expected that this device will eliminate many of the minor and fatal injuries due to the use of the hoop system, particularly those which occur in cold climates, which makes the footing on station platforms and on engine and car steps insecure because of ice and snow. It removes the danger of an operator being struck by falling coal or by projecting stakes or timbers or swinging car doors. Minor accidents are caused by train and enginemen striking their hands against the hoops in catching them. The train order deliverer device was developed and patented by James A. Blair, dispatcher in the Spokane, Wash., office of the Northern Pacific.



The five illustrations show the use of the device from its loading to the delivery of train orders. The pictures in order from the left show the deliverer in normal position; attaching the orders; elevating the movable carrier; engineman catching the orders and the train crew getting the orders