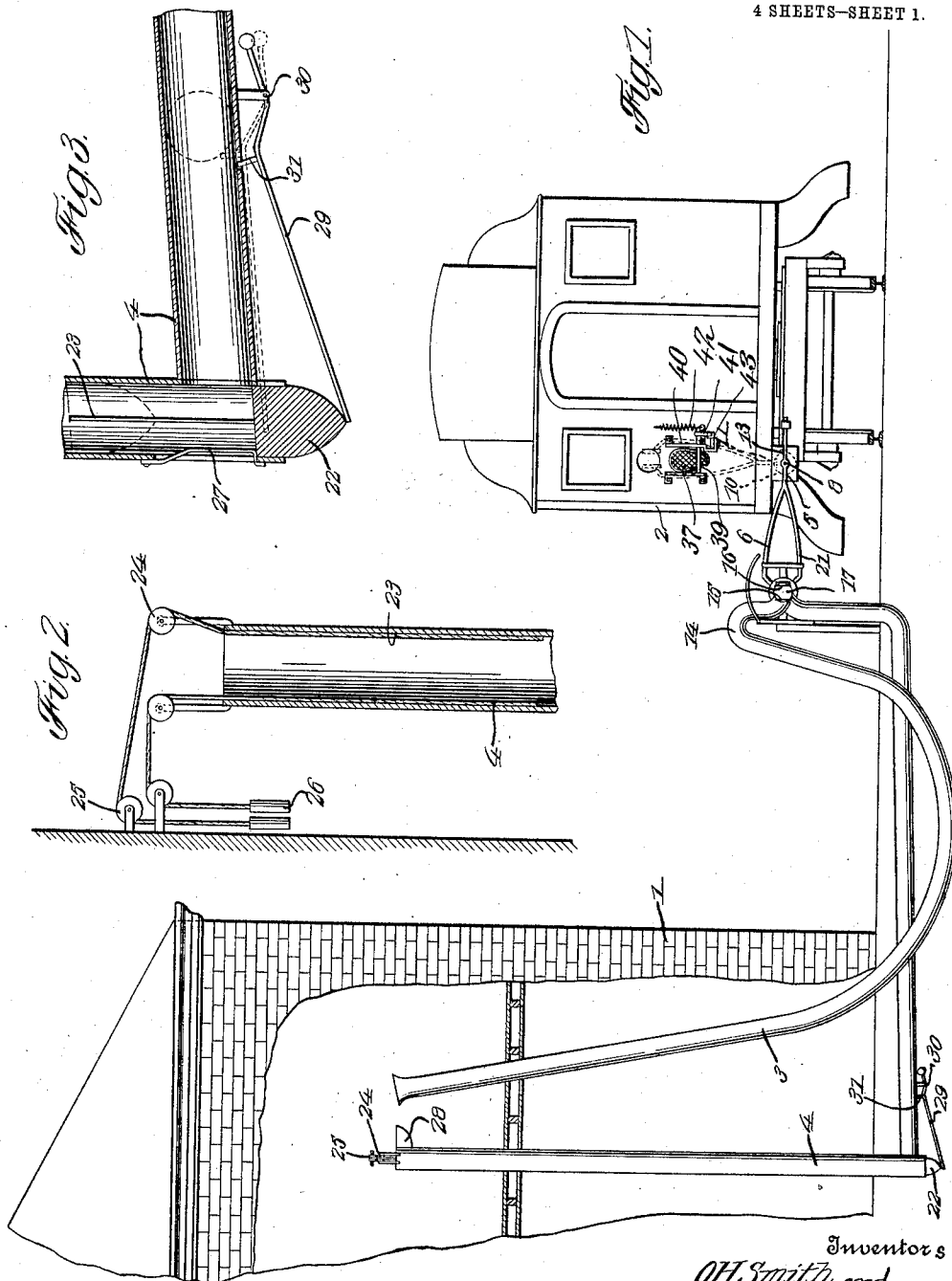


O. H. & J. L. SMITH.
 MEANS FOR THE INTERCHANGE OF MESSAGES BETWEEN A STATION AND A MOVING CAR.
 APPLICATION FILED AUG. 6, 1912.

1,042,983.

Patented Oct. 29, 1912.

4 SHEETS—SHEET 1.



Witnesses

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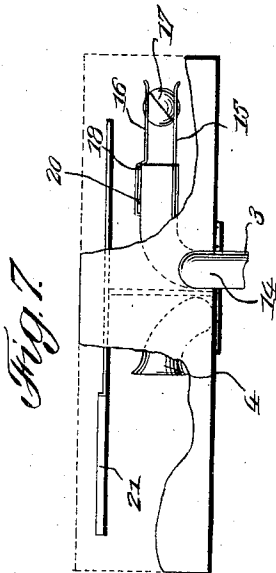


Fig. 7.

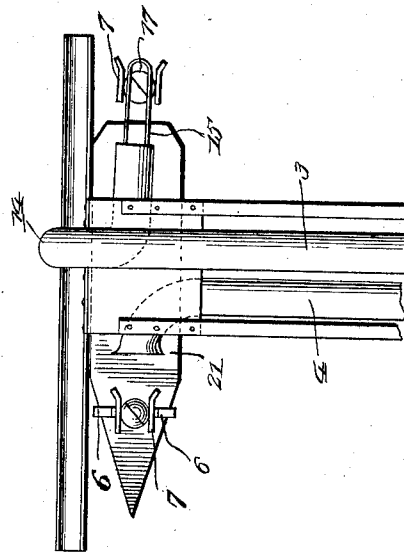


Fig. 8.

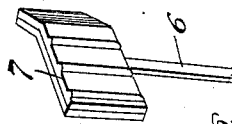


Fig. 9.

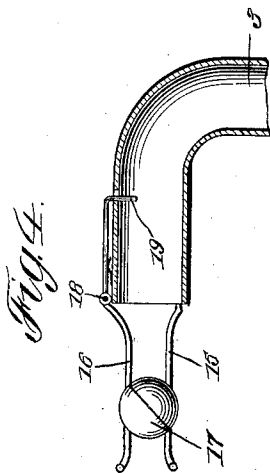


Fig. 10.

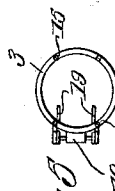
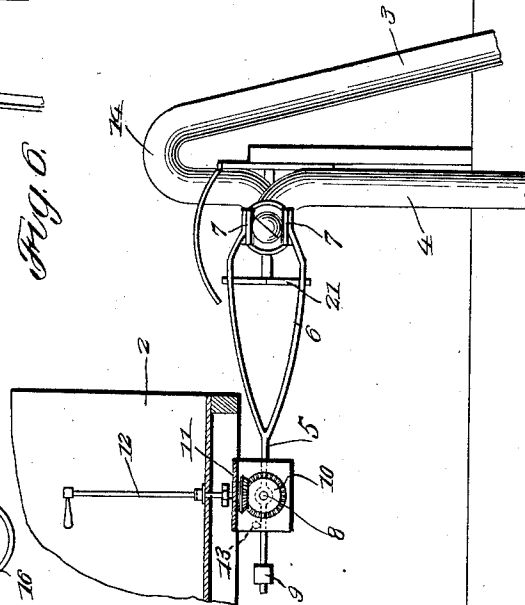


Fig. 11.



Witnesses

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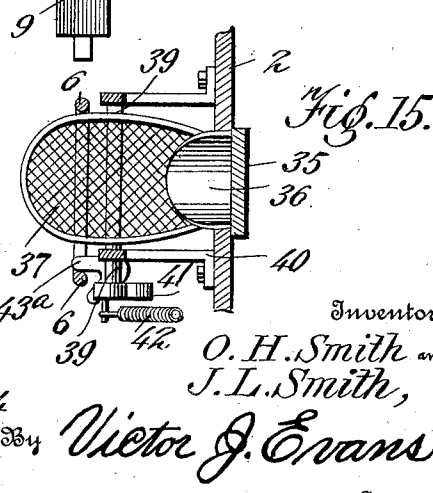
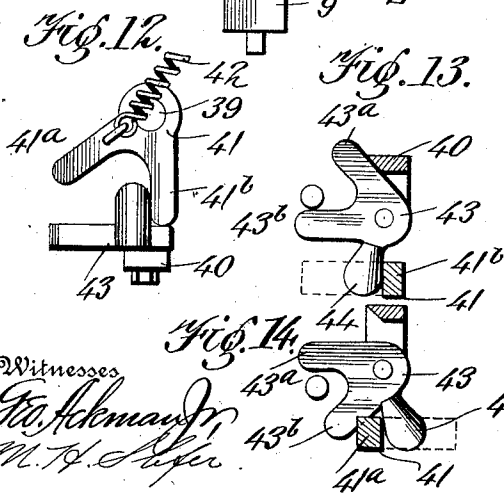
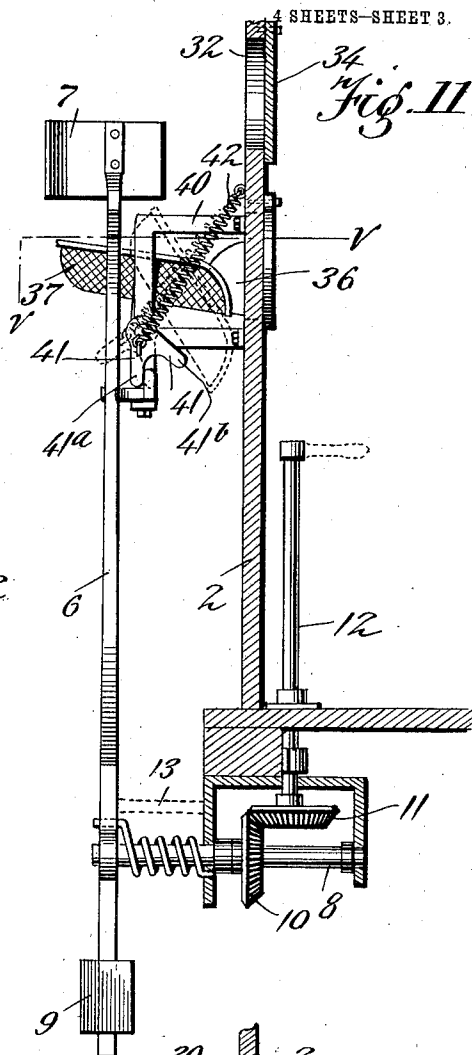
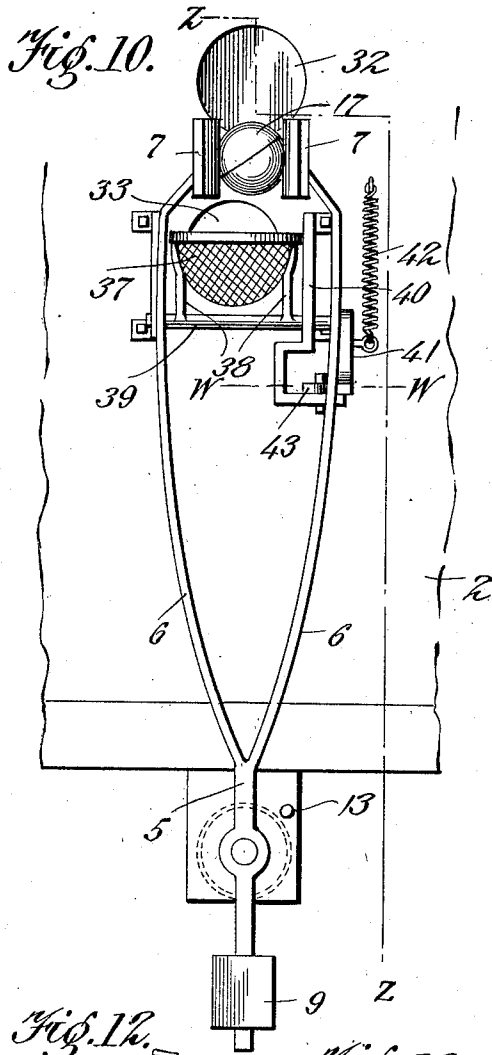
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SHEETS-SHEET 3.



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4 SHEETS—SHEET 4.

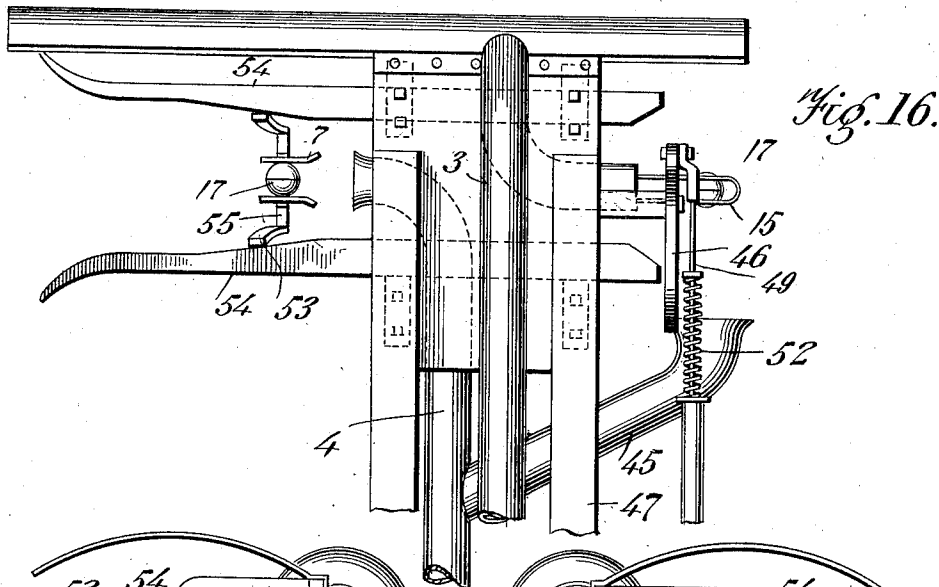


Fig. 16.

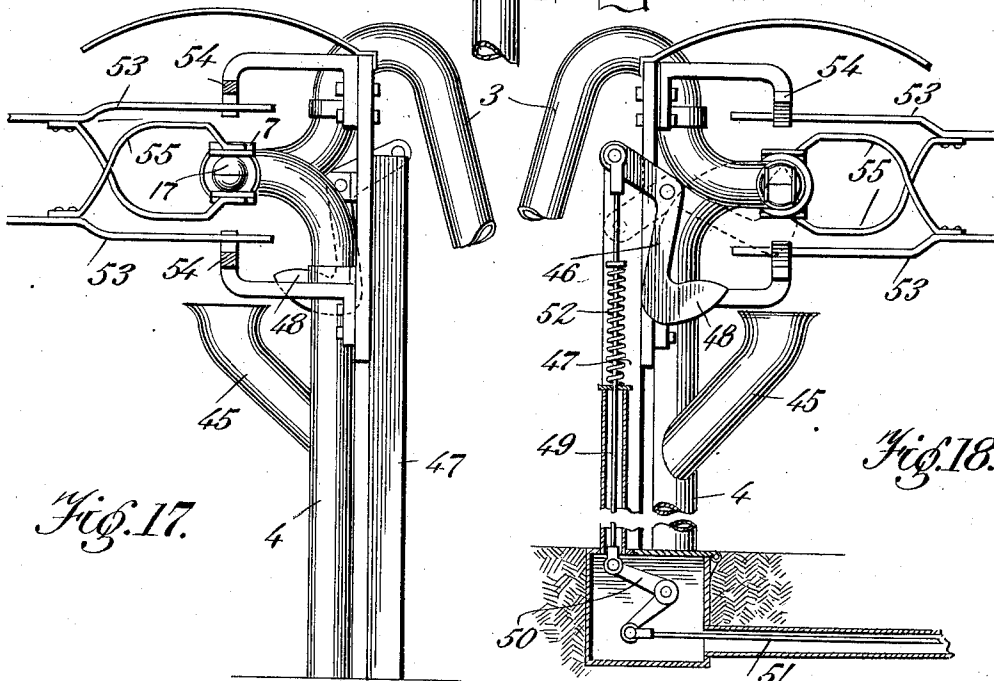


Fig. 17.

Fig. 18.

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UNITED STATES PATENT OFFICE.

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MEANS FOR THE INTERCHANGE OF MESSAGES BETWEEN A STATION AND A MOVING CAR.

1,042,983.

Specification of Letters Patent.

Patented Oct. 29, 1912.

Application filed August 6, 1912. Serial No. 713,593.

To all whom it may concern:

Be it known that we, OLIVER H. SMITH, a citizen of the United States, residing at Slateford, in the county of Northampton and State of Pennsylvania, and JOSIAH L. SMITH, a citizen of the United States, residing at Southern Pines, in the county of Moore and State of North Carolina, have invented new and useful Improvements in Means for the Interchange of Messages Between a Station and a Moving Car, of which the following is a specification.

While the primary object of the invention is to deliver a message to the operator of a train of cars and in turn to receive a communication from such operator it is to be understood that it is not restricted to such use and may be employed for the interchange of merchandise or matter of any kind.

The invention relates to special means, of peculiar construction, whereby a container may be placed in position at a station to be taken up by a moving train while at the same time a second container suitably positioned upon the train is delivered at the station and automatically transmitted to the agent or other person in charge of such station.

The invention further has relation to means mounted upon the train whereby the person may safely and conveniently receive and deliver a container, said means embodying a basket which is adapted to be tripped when the catcher approaches or moves away from a vertical position, said basket being designed to receive the container and direct it into the car.

The invention embodies tubular conveyers as part of the transmitting means, one of such conveyers delivering the container to a holder arranged in such position as to insure the catcher upon the train taking up such container and the other carrier being arranged to receive the container delivered at the station by the train and directing the same to convenient position to be obtained by the agent or other person in charge of the station.

The invention consists of the novel features, details of construction and combination of parts, which hereinafter will be more particularly set forth, illustrated in the accompanying drawings, and pointed out in the appended claims.

Referring to the drawings, forming a part of the specification, Figure 1 is a detail view, showing the application of the invention both for delivering matter from the station to a car and for receiving matter from the car at the station. Fig. 2 is a detail sectional view of the upper tube by means of which matter is received at the station from the car. Fig. 3 is a sectional detail of the branches of the station receiving tube. Fig. 4 is a detail view of the outer terminal of the station delivery tube, showing a container held in position for delivery to the car. Fig. 5 is an end view of the station delivery tube and holder. Fig. 6 is a detail view of a portion of the car, showing the combined catcher and deliverer and portions of the two station tubes. Fig. 7 is a top plan view of the terminals of the two tubes and the parts associated therewith. Fig. 8 is a front view of the parts shown in Fig. 7, illustrating the combined catcher and deliverer in coöperative relation therewith, the full lines showing the delivery of a container into the receiving tube and the dotted lines indicating the position of the combined catcher and deliverer when about to receive a container from the holder at the end of the delivery tube. Fig. 9 is a detail view of one of the jaws. Fig. 10 is a front view of the combined catcher and deliverer, showing the basket and operating means on a larger scale. Fig. 11 is a side view of the parts shown in Fig. 10, the end portion of the car being in section on the line $z-z$. Fig. 12 is an end view of the shaft carrying the basket, showing the trips coöperating therewith. Fig. 13 is a horizontal section on the line $w-w$ of Fig. 10, showing one position of the trip for throwing the basket into operative position. Fig. 14 is a view similar to Fig. 13, showing the position of the parts

after the basket has been thrown into operative position. Fig. 15 is a horizontal section on the line *v-v* of Fig. 11, looking in the direction of the arrows. Fig. 16 is a side view of a modification. Fig. 17 is a front view of the modification. Fig. 18 is a rear view of the parts illustrated in Fig. 16.

Corresponding and like parts are referred to in the following description, and indicated in all the views of the drawings, by the same reference characters.

The numeral 1 designates a station and 2 a car between which matter is to be interchanged while the car is in motion. The station has a delivery tube 3 and a receiving tube 4, these tubes leading from a convenient point within the station to a point near the track so as to deliver and receive matter from a passing train or car. The car has a device which performs the double office of delivering matter to the station and receiving matter from such station. This device is referred to as a combined catcher and deliverer and embodies a shank 5 and a spring fork 6, the members of the latter being supplied at their extremities with jaws 7, between which the container holding the message or other matter to be transmitted is held. The combined catcher and deliverer is mounted so as to be raised or lowered at its outer end, thereby enabling the operator on the car to conveniently place a container in position between the jaws 7 preliminary to lowering the same into position to be delivered to the station. As shown most clearly in Fig. 6 the combined catcher and deliverer is pivoted at 8 and the shank 5 is weighted at 9 opposite the forked end to counterbalance the device. A bevel gear wheel 10, having connection with the shank 5, is in mesh with a bevel pinion 11 secured to the lower end of a shaft 12, which latter extends within convenient reach of the operator and is provided with a manipulating handle. A stop 13 limits the movement of the part 5 when lowered into position for delivering matter to a passing car. As shown most clearly in Fig. 8 the jaws 7 flare in the direction of travel of the car so as to more readily effect delivery at the station and to take up matter to be delivered to the car.

The delivery tube 3 extends into the station and its receiving end is flared to facilitate the entrance of the container when placing the same within the tube. The tube 3 extends to a point without the station near the track and is provided at its delivery end with a holder which receives the container. A bend 14 is formed in the tube 3 near its delivery end to check the speed of the container, thereby preventing its clear-

ing the holder and dropping upon the ground. The nature of the bend 14 will depend upon the height of the receiving end of the tube 3 above the delivery end of said tube. The holder consists of two members 15 and 16 each being resilient so as to grip the container 17. Each of the members 15 and 16 is formed of stout wire possessing a spring action and said members being arranged to grip opposite sides of the container, thereby leaving the upper and lower sides of said container unobstructed to be gripped by the jaws 7 when the passing car takes up the matter at the station. The member 15 is fixed, whereas the member 16 is pivoted at 18 midway of its ends, the inner end of said member being bent, as indicated at 19, to form a stop which extends through an opening in a side of the tube 3 to arrest a container should one be placed in the tube 3 while one is held in position for delivery. A spring 20 throws the inner end of the member 16 outwardly and holds the bent end 19 thereof clear of the inner side of the tube when a container is not in position between the members 15 and 16 so that a container may pass freely through the tube to the holder.

The receiving tube 4 has its outer terminal portion facing in the direction of the approach of the car or train and is slightly flared to facilitate the entrance of the container therein. A spreader 21 is arranged in close proximity to the outer terminals of the tubes 3 and 4 and the end opposite the receiving terminal of the tube 4 is tapered, as shown most clearly in Fig. 8, said tapered end being positioned to pass between the members of the spring fork 6 and force them apart and separate the jaws 7 in a manner to release the container 17, which by its momentum passes into the tube 4 and is ultimately delivered automatically at the predetermined point. The holder at the delivery end of the tube 3 extends some distance in the rear of the spreader 21 and when the members of the spring fork 6 clear the upper and lower edges of the spreader 21 they come together and cause the jaws 7 to close upon the container held between the members 15 and 16, thereby taking up the same, after which the operator upon the car turns the shaft 12 to bring the outer end of the catcher in position to remove the container therefrom. The receiving tube comprises an upright portion and an inclined portion, the juncture of these two portions being shown most clearly in Fig. 3. An elevating device is fitted to the upright portion of the tube 4 and comprises a block 22 and cords or other suitable flexible connections 23. Guide pulleys 24 are located at the upper end of

the tube 4 and have the flexible connection 23 passing thereover and over other guide pulleys 25 attached to a convenient portion of the station or other structure, said cords or flexible connections being provided with weights 26. The block 22 acts as a car to receive the container when passing from the inclined portion of the tube into the upright portion. A spring catch 27 is located at the lower end of the upright portion of the tube 4 and engages the block 22 to hold it in lowered position against the action of the weights 26. The catch 27 is so positioned as to receive the impact of the container when entering the upright portion of the tube, thereby releasing the block 22 which ascends under the action of the weights 26, thereby delivering the container into a receptacle 28 at one side of the tube 4. The lower end of the block 22 is tapered so as to ride past the catch 27 when returning to its lowermost position. After the block 22 has moved to the upper end of the upright portion of the tube 4 and delivers the container said block is relieved of the action of the weights 26 so it may return to normal position to receive the next container, the operator lifting the weights 26 in any manner.

A retarder is located near the juncture of the two parts of the receiving tube to prevent a container passing from the inclined portion of the tube into the upright portion when the block or car 22 is elevated. This retarder consists of a bar 29 pivoted at 30 to a stud projecting from the tube, said bar having a projecting portion 31 to enter an opening formed in a side of the tube so as to obstruct the passage of the container when the part 22 is elevated. One end of the bar 29 extends across the lower end of the upright portion of the tube to be engaged by the block 22 when the latter is in its lowest position, thereby depressing such end of the bar and withdrawing the stop 31 from the path of the container in the inclined portion of the tube. This bar also serves to limit the downward movement of the block 22 and hold it in proper position when descending.

The container 17 best adapted for the purpose of the invention consists of a hollow ball which is separable to admit of the matter to be delivered being placed therein. This ball is of such a diameter to admit of its passing freely through either one of the tubes. The size of the ball and the diameter of the tubes will depend upon the specific purpose for which the appliance is designed. When the apparatus is intended solely for the interchange of messages between a station and a train the diameter of the ball and tubes may be comparatively small.

In the operation of the invention the operator at a station places a message or other matter in a container which is dropped into the delivery tube 3 and passes therethrough and is received between the members 15 and 16 of the holder. The operator upon the car desiring to deliver a message or other matter to the station places said matter in a container and operates the shaft 12 to bring the catcher in upright position, after which the container is placed between the jaws 7, the shaft 12 being again operated to lower the catcher into operative position. As the car passes the station the container held between the jaws 7 of the catcher is released and passes into the tube 4, thence along the inclined portion thereof to the elevator, which latter is automatically released and delivers the container in the station. A moment after the release of the container from the jaws 7 the latter close upon the container held between the members 15 and 16 and withdraw such container from between the members of the holder. The operator upon the car subsequently operates the shaft 12 to bring the catcher in position to remove the container from between the jaws 7 thereof.

Openings 32 and 33 are formed in the end of the car about opposite the jaws 7 of the catcher when the same is turned to occupy an upright position. These openings are covered by means of closures 34 and 35. The opening 32 admits of the operator passing the hand therethrough holding the container to be placed in position between the jaws 7 when the catcher is moved into upright position. The opening 33 is for the reception of a container after the same has been disengaged from the jaws 7 after the catcher has assumed an upright position. A guide 36 extending outwardly from the opening 33 in line with the lower portion thereof serves to receive the container from the basket and direct such container into the car. The basket for receiving the container is indicated at 37 and is attached to arms 38 projecting from a shaft 39, which is mounted in a frame 40 attached to the outer side of the end of the car opposite the opening 33. The basket 37 may be of any light and substantial construction and in operative position comes beneath the jaws 7 of the catcher, as indicated most clearly in Figs. 10 and 11. The basket 37 is approximately of scoop shape, its outer end being closed and its inner end open and adapted to underlap the guide 36. The basket 37 inclines slightly to the horizontal so that when the container drops therein from the jaws 7 it will roll toward the car through the opening 33 and drop into a receptacle arranged to receive the same. A forked trip is secured to one end of the shaft 39. This forked

trip is indicated at 41 and comprises the members 41^a and 41^b. A spring 42 is attached at one end to the trip 41 and its opposite end is made fast to the car. This spring holds the basket in either one of its two extreme positions, as indicated by the full and dotted lines in Fig. 11. A second forked trip 43 is mounted upon a part of the frame 40 and is formed with a projection 44 which is adapted to engage the members 41^a and 41^b so as to throw the basket 37 into or out of operative position. The forked trip 43 has its members 43^a and 43^b arranged to be engaged by a member of the catcher, as indicated most clearly in Figs. 13 and 14, so as to throw the basket into or out of operative position. When the catcher is in the position indicated by the full lines in Figs. 1 and 6 the basket occupies a position indicated by dotted lines in Fig. 11 and upon operating the shaft 12 to throw the catcher into upright position one of the fork members 6 engages the member 43^b of the trip 43 and moves the same from the position indicated in Fig. 13 to the position shown in Fig. 14, whereby the basket is thrown from the dotted line position indicated in Fig. 11 to the full line position of such figure. As the trip 43 moves from the position indicated in Fig. 13 to that shown in Fig. 14 the projection 44 presses against the member 41^b of the trip 41 and moves said trip to throw the basket from the dotted line position of Fig. 11 into the full line position. The basket 37 comes between the members 6 of the catcher and engages with the member opposite that in engagement with the trip and upon moving the shaft 12 the fork members 6 are pressed apart, thereby releasing the container held between the jaws, the container dropping into the basket and passing into the car through the opening 33 in the manner stated. Should the person upon the car drop the container when placing the same between the jaws 7 it will enter the basket 37 and pass back into the car through the opening 33. After a container has been placed between the jaws 7 and it is required to move the catcher from an upright into a horizontal position the shaft 12 is turned in the reverse direction. The first movement of the catcher operates the trip 43 by engaging with the member 43^a, thereby moving said trip from the position shown in Fig. 14 to that indicated in Fig. 13. The projection 44 operating between the members of the trip 41 moves the latter from the position indicated in Fig. 14 to that indicated in Fig. 13, whereby the basket is moved from the full line position of Fig. 11 into the dotted line position so as to clear the catcher and admit of the same moving from the upright position into a horizontal

position either to deliver the container into the tube 4 or to receive a container from the holder at the end of the tube 3.

In the modification shown in Figs. 16, 17 and 18 the receiving tube 4 has a branch 45, which terminates in a flared end arranged below the holder at the delivery end of the tube 3, whereby in the event of the train missing the container the operator at the station may release the container from the holder, the container dropping into the branch 45 and passing into the receiving tube 4, thence back to the operator at the station or other predetermined point. To effect a release of the container from the jaws 15 and 16 of the holder the following means have been devised. A lever 46 of elbow form is pivoted at a point between its ends to a supporting framework 47 and one end, as 48, is made tapering and arranged to pass between the jaws 15 and 16 to effect separation thereof and a release of the container 17, which drops into the receiving end of the branch 45. A rod 49 is connected to the opposite end of the lever 46 and is attached to one arm of a bell crank 50, the other arm of said bell crank having a rod or other connection 51 attached thereto and extending to within convenient reach of the operator to be pulled upon when it is required to actuate the part 46 to effect a release of the container. A spring 52 is arranged to exert an upward pressure upon the rod 49 so as to hold the releaser 46 in normal position, as indicated most clearly by the full lines in Fig. 18, the dotted lines in said figure indicating the position of the releaser when moved to spread the jaws 15 and 16 of the holder. The modification also illustrates a different form of combined catcher and deliverer and spreader therefor. The catcher embodies two arms 53, which are adapted to pass between two bars 54, the latter being arranged upon the supporting structure 47 in such a position as to engage the projecting ends of the arms 53 and press the same together. Other arms 55 are attached at one of their ends to the arms 53 and cross at a point between their ends and have jaws 7 at their free ends to grip the container 17. By reason of the crossing of the arms 55 the jaws 7 carried thereby move in opposition to the extremities of the arms 53, that is when the ends of the arms 53 move apart the jaws 7 come together and vice versa. When the ends of the arms 53 pass between the bars 54 the arms 53 are pressed together, thereby opening the jaws 7 and releasing the container 17. When the arms 53 clear the rear ends of the bars 54 they spring apart, thereby causing the jaws to close upon the container held between the members or jaws 15 and 16 and take up the

same. However, should the catcher fail to take up the container the operator or station master may cause the container to return to the starting point by operating the releaser 46 in the manner stated.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while we have described the principle of operation of the invention, together with the device which we now consider to be the best embodiment thereof, we desire to have it understood that the device shown is merely illustrative, and that such changes may be made when desired as are within the scope of the claims appended hereto.

Having thus described the invention what is claimed as new, is:—

1. Apparatus for the interchange of matter between a station and a car, the same comprising receiving and delivery tubes leading from the station to a point near the track, a holder at the outer end of the delivery tube for receiving a container inclosing the matter to be delivered to the car, and means upon the car to deliver a container into the receiving tube and to take up the container held in position for delivery by the before mentioned holder.

2. Apparatus for the interchange of matter between a station and a moving car, the same comprising a receiving and a delivery tube leading from the station to a point near the track, a holder at the outer end of the delivery tube to receive the container passing therethrough, and a combined catcher and deliverer mounted upon the car to deliver a container therefrom to the receiving tube and to take up the container from the holder of the delivery tube.

3. Apparatus for the interchange of matter between a station and a moving car, the same comprising a receiving and a delivery tube leading from the station to a point near the track, a holder at the outer end of the delivery tube for receiving a container passing therethrough, a spreader arranged near and opposite the outer ends of the two tubes, and a combined catcher and deliverer mounted upon the car and comprising two jaws for receiving the container between them, said jaws being separated by the spreader to release the container which is delivered to the receiving tube and said jaws closing upon the container held in place for delivery by the beforementioned holder after clearing the spreader.

4. In apparatus for the interchange of matter between a station and a moving car, a delivery tube having a bend near its outer

terminal for retarding the speed of the container passing therethrough, and a holder at the outer end of such tube to receive the container passing therethrough.

5. In apparatus for the interchange of matter between a station and a moving car, the combination of a delivery tube adapted to have a container passing therethrough, and a holder at the end of the delivery tube to receive the container, said holder comprising a pivoted member having a portion forming a stop which is adapted to extend across the path of the tube to arrest the delivery of a container during the time that a container is gripped between the members of the holder.

6. In apparatus for the interchange of matter between a station and a moving car, the combination of a receiving tube comprising an upright portion, an elevator arranged to operate in said upright portion of the tube, and a catch for holding the elevator in lowered position and adapted to be tripped by the impact of the container when entering the upright portion of the tube, thereby admitting of the elevator moving the container through the upright portion of the tube.

7. In apparatus for the interchange of matter between a station and a moving car, the combination of a receiving tube comprising an inclined and an upright portion, an elevator for moving the container through the upright portion of the tube, and a retarder having a stop to prevent the delivery of a container into the upright portion of the tube when the elevator is raised, said retarder being held out of the way when the elevator is at its lowest position.

8. In combination a catcher for transferring a container, a basket adapted to receive the container from the catcher and direct the same in its travel, a trip mechanism arranged to be operated by the catcher for throwing the basket into or out of the path of the catcher.

9. In combination a catcher for transferring a container, a basket adapted to receive the container from the catcher, a trip mechanism adapted to be operated by the catcher for throwing the basket into or out of operative position, and a spring having connection with the basket for moving the same in each direction and holding it at the limit of its movements.

10. In combination a catcher, provided with jaws for gripping a container, a basket adapted to be thrown between the jaw-carrying members of the catcher to engage with one of said members and effect a release of the container from the jaws, and a trip mechanism adapted to be operated by means of the catcher.

11. In apparatus for the interchange of matter between a station and a train, the combination of a receiving tube, a delivery tube provided at its discharge end with a holder, and a releaser adapted to be actuated by the station operator to effect release of the container from the holder to admit of its return to the operator.

12. In apparatus of the character described, the combination of two arms, supplementary arms attached at one of their ends to the first mentioned arms and crossing between their ends and terminating in jaws to grasp a container, and means for

pressing the first mentioned arms together to effect a separation of the jaws of the supplementary arms to release the container.

In testimony whereof we affix our signatures in the presence of two witnesses.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."