No. 880,008. PATENTED FEB. 25, 1908.

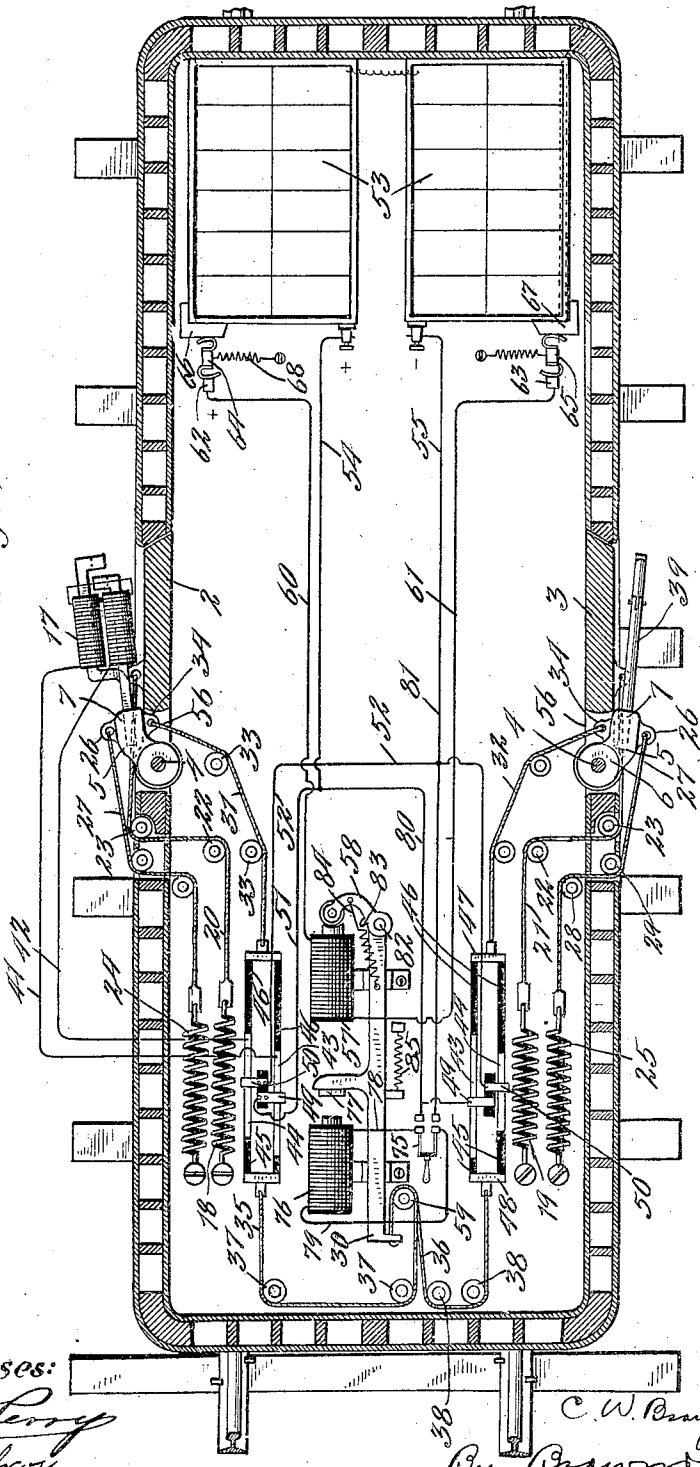
C. W. BROUGHTON.

MAIL POUCH RECEIVING AND DELIVERY APPARATUS FOR RAILWAY CARS.

APPLICATION FILED DEC. 6, 1907.

4 SHEETS—SHEET 1.

Fig. 1.



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4 SHEETS—SHEET 2.

Fig. 2.

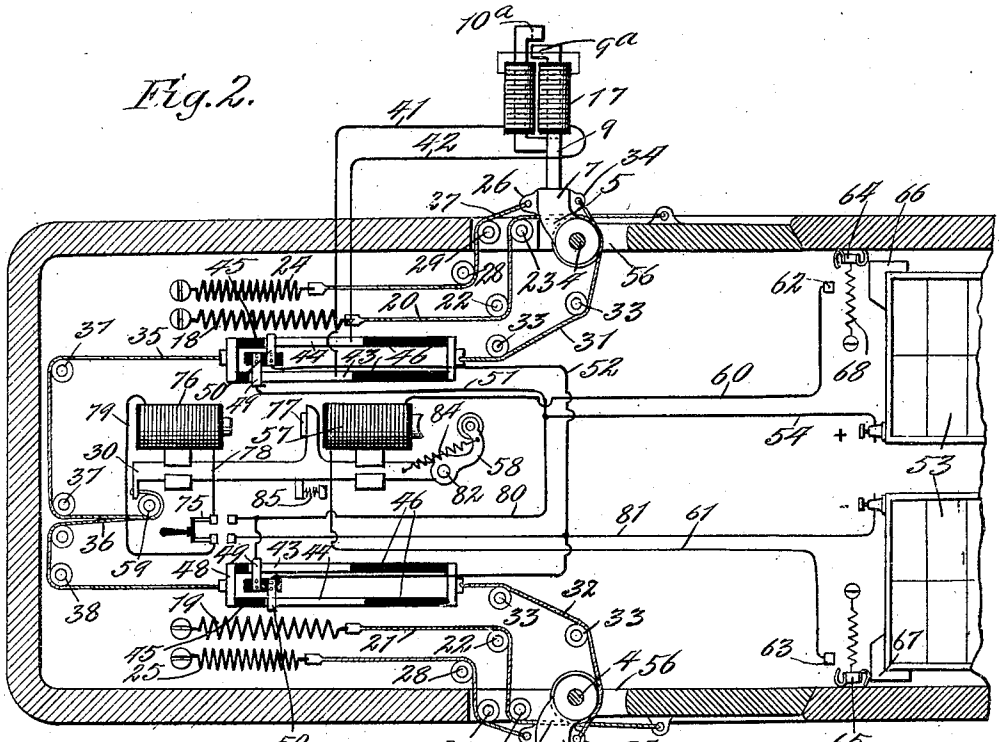
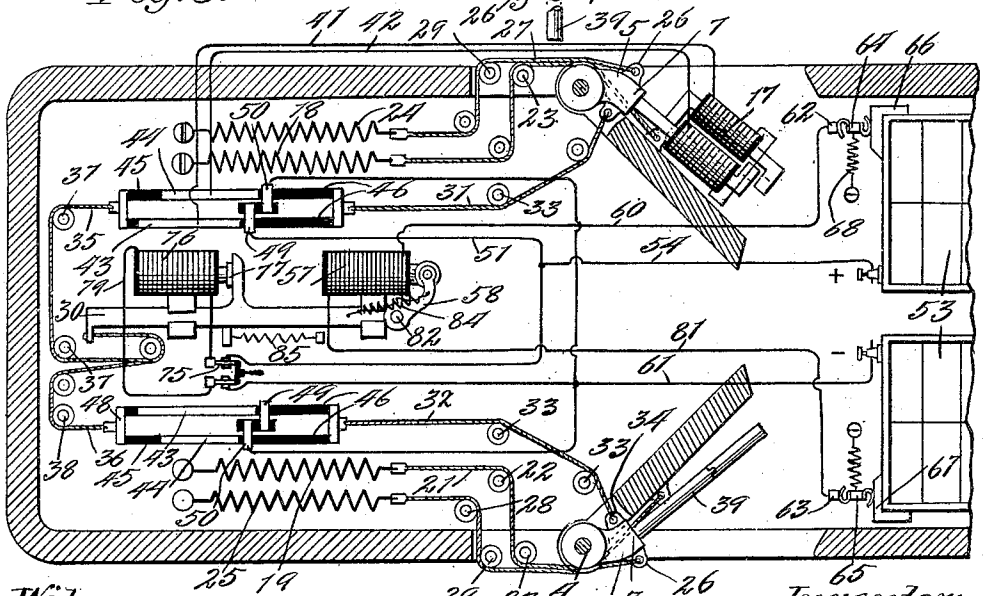


Fig. 3.



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4 SHEETS—SHEET 3.

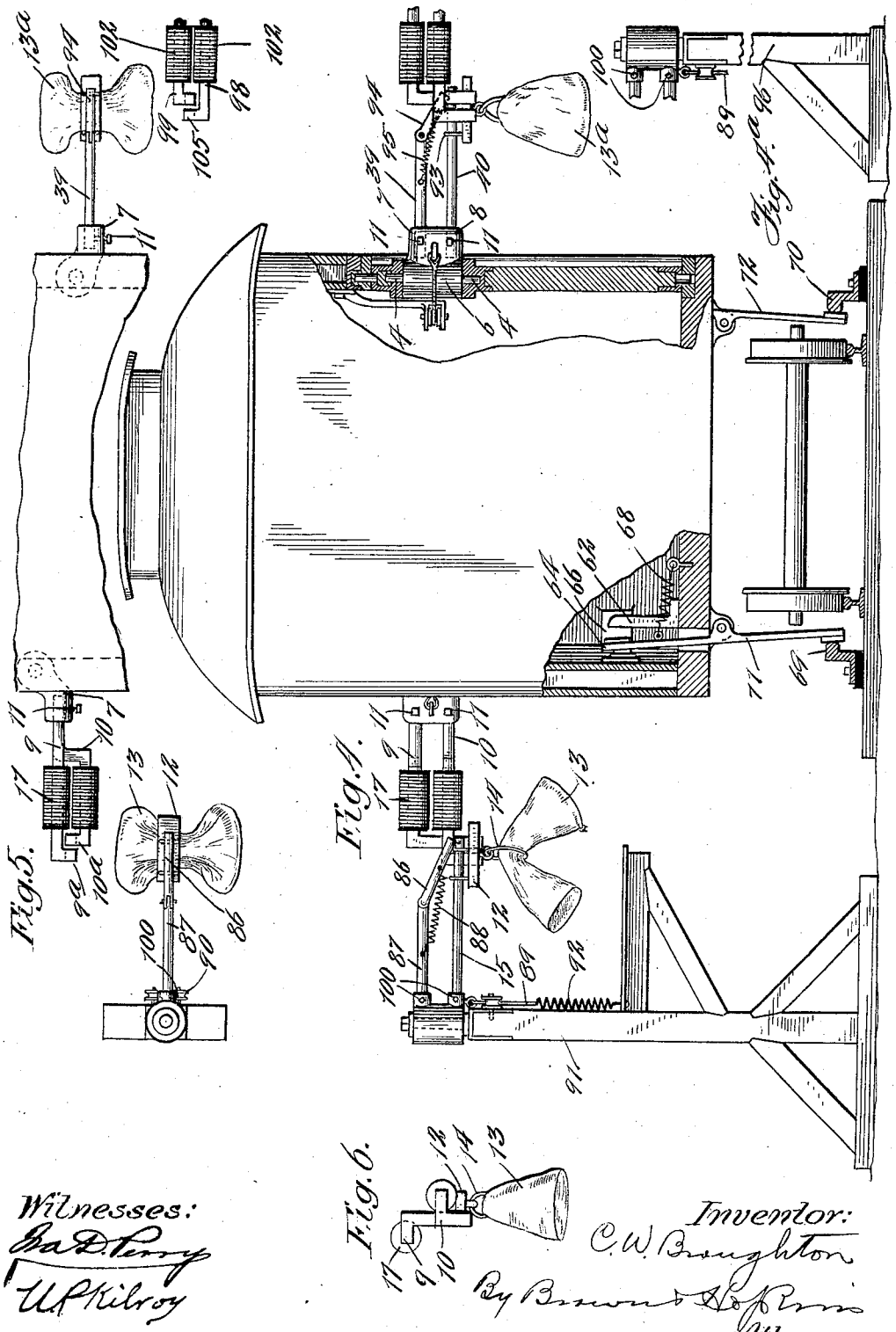


Fig. 5.

Fig. 4.

Fig. 6.

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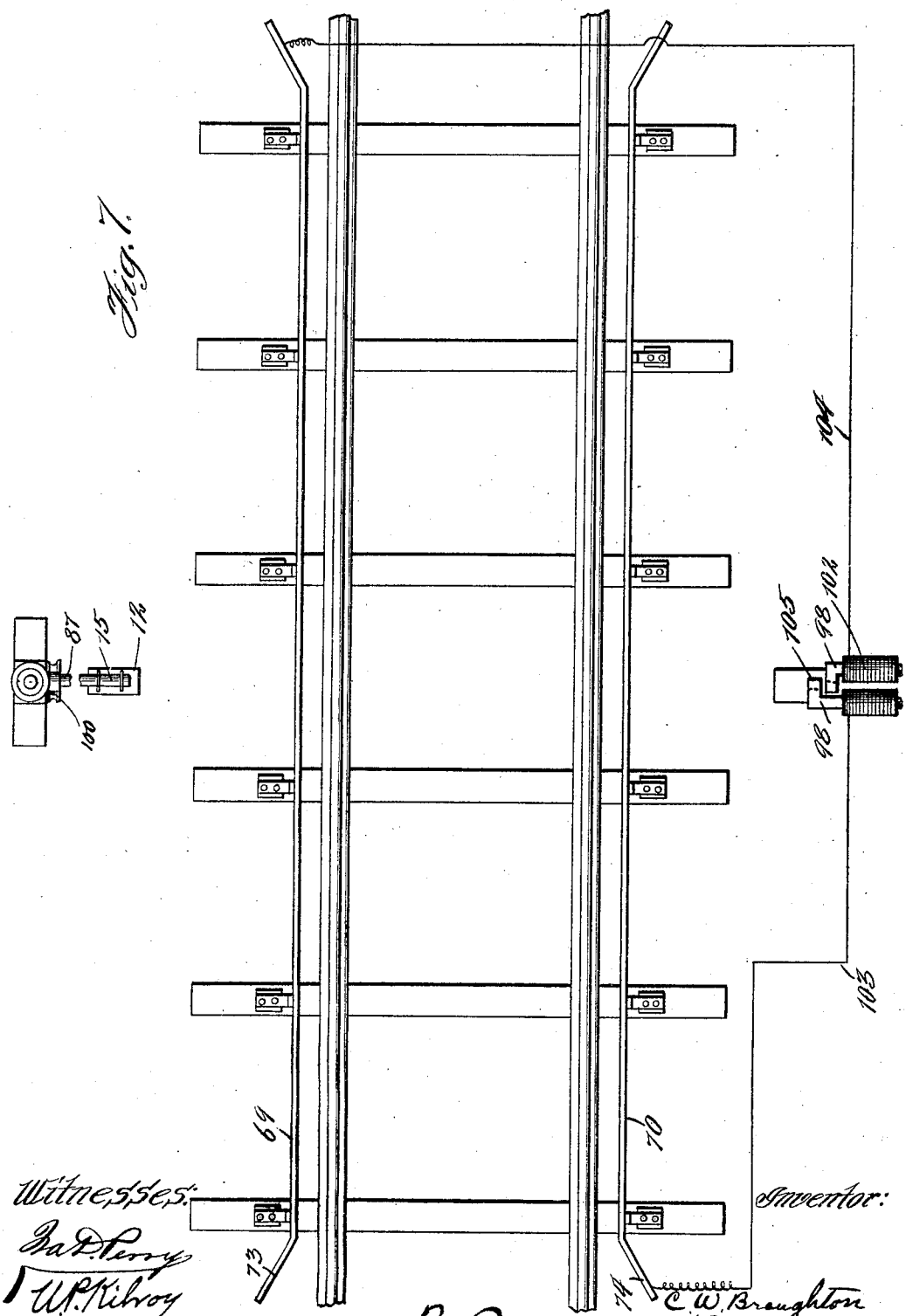
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4 SHEETS—SHEET 4.

Fig. 1.



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UNITED STATES PATENT OFFICE.

CHAUNCEY W. BROUGHTON, OF CARLTON, ILLINOIS.

MAIL-POUCH RECEIVING AND DELIVERY APPARATUS FOR RAILWAY-CARS.

No. 880,008. Specification of Letters Patent. Patented Feb. 25, 1908.

Application filed December 6, 1907. Serial No. 405,393.

To all whom it may concern:

Be it known that I, CHAUNCEY W. BROUGHTON, a citizen of the United States, residing at Carlton, in the county of Dekalb and State of Illinois, have invented certain new and useful Improvements in Mail-Pouch Receiving and Delivery Apparatus for Railway-Cars, of which the following is a full, clear, and exact specification.

This invention relates to apparatus for delivering a mail pouch from a mail car or receiving a mail pouch from a station while the car is passing, and it has for its primary object to provide improved and simple means whereby such pouch may be either received or delivered and held in place after its reception or delivery by the attraction of an electro magnet.

With a view to the attainment of these ends and the accomplishment of certain other objects which will hereinafter appear, the invention consists in the features of novelty which will now be described with reference to the accompanying drawings and more particularly pointed out in the claims.

In said drawings—Figure 1 is a plan view of my improved apparatus on the car, showing the car in plan section and illustrating both the receiving and delivery devices in their running position, that is, in the position they assume while passing all points excepting the station where the mail pouch is to be either delivered or received. Fig. 2 is a similar view of one end of the car showing the receiving and delivery devices in their receiving and delivery positions. Fig. 3 is a similar view showing the receiving and delivery devices drawn into the car. Fig. 4 is an end elevation of the car, partly in vertical section, showing its relation to the delivery and receiving devices at the station. Fig. 5 is a partial plan thereof, Fig. 6 is a detail side elevation of the mail pouch and its armature, showing its relation to the station receiving magnet, and Fig. 7 is a plan of the track circuits.

Like signs of reference indicate like parts throughout the several views.

According to this invention, the mail pouch to be delivered from the mail car to a station is carried on a suitable delivery arm mounted upon the car and suspended therefrom by rings or other suitable devices which will permit the pouch to readily slip off when engaged by a superior force. This delivery arm may be hinged or pivoted on the car so as to be thrown out into position to bring an armature on the mail pouch into engagement with an electro magnet mounted at the station so that when the armature strikes the magnet, the impact will release it from the delivery arm and it will remain in the grasp of the magnet at the station. On the other hand, should it be desired to deliver a pouch from the station to the car, it will be held by a delivery arm at the station similar to the delivery arm on the car, and will be engaged and picked up by an electro magnet carried on the car.

The invention also contemplates automatic means whereby the electro magnet on the car will be energized when it is in its outer position for receiving and carrying the pouch, and will be deënergized when turned into the car, so as to automatically permit the pouch to drop.

The invention further includes automatic means for energizing the electro magnets both on the car and at the station by the current of the storage batteries usually carried on the car for lighting purposes.

In the side walls 1 of a car are mounted doors 2, 3, which are adapted to open inwardly in the manner shown in Fig. 3. In each of these doors, on the hinge bar or pintle 4 thereof is mounted a pivoted support or head. In the door 2 this head is shown at 5, and in the door 3 it is shown at 6, and each consists of a member rotatable a limited distance independently of the door, provided with two sockets 7, 8 arranged one above the other. In these sockets of the head or support 5 are arranged the cores or pole pieces 9, 10 of an electro magnet, which are held removably in the sockets by set screws 11 or other suitable means so that they may be readily removed for the purposes which will be presently described, the head 5 constituting a magnetic connection between the pole pieces or cores 9, 10.

The outer ends of the pole pieces or cores 9, 10 are designed to receive the mail pouch and carry it preparatory to its delivery into the car, and in order that they may be better adapted for this purpose, they are bent downwardly and arranged in substantially the same vertical plane at right angles to the side of the car, when the cores or pole pieces 9, 10 are in the extended position shown in Figs. 2 and 4, so that an armature 12 at-

tached to the mail pouch 13 by ring or support 14 may engage both of the pole pieces 9^a and 10^a and be attracted thereby as the armature hangs on an arm or support 15 at the station in a position at right angles to the line of travel of the car. When the armature is struck by the pole pieces 9^a, 10^a, it is slipped from the end of the arm 15, which is supported by a vertical pivoted head 16, permitting the arm to swing in a horizontal plane. This gives the magnetic pole pieces an opportunity to attract the armature 12 with sufficient force to hold it after it slips from the arm 15 and is thus carried by the pole pieces until they are eventually turned within the car in the position shown in Fig. 3, where the circuit through the winding 17 of the magnet is automatically broken and the pouch allowed to drop within the car, as will be presently explained. As soon as the car passes the station where the pouch was received, the magnetic bars 9, 10 spring automatically to the position shown in Fig. 1, so as not to strike against objects along the road. The means for accomplishing this will now be explained. When the doors 2, 3, are not otherwise restrained, they are closed by means of springs 18, 19 respectively secured thereto by means of cables 20, 21 passing around pulleys 22, 23, or by any other suitable means, and the heads 5, 6, when not otherwise restrained, are turned outwardly into the position shown in Fig. 2 by means of springs 24, 25 respectively attached to lugs 26 thereon, by means of cables 27 passing around pulleys 28, 29. Both of the heads 5, 6, are also attached to one end of a bar 30 by means of cables 31, 32 passing around guide pulleys 33 and attached to lugs 34 on the sides of the heads opposite the lugs 26, so that the cables 31, 32 will pull the heads 5, 6 inwardly against the resistance of the springs 24, 25. The cables 31, 32 are attached to two automatic switches respectively which are also connected to the bar 30 by cables 35, 36 passing around suitable guide pulleys 37, 38, and which automatic switches serve to close and energize the circuit through the car magnet coils 17 when supported by either of the heads 5, 6, as long as the car magnet occupies a position outside the car, but to break such circuit, as soon as the car magnet comes within the car to the position shown in Fig. 3. It might be here stated that the heads 5, 6 are capable of supporting and operating either the magnetic bars 9, 10, or a pair of plain arms 39, 40, which serve merely to support the pouch as shown on the right in Fig. 4, preparatory to delivery from the car to the station. Consequently, the mechanism of the two sides of the car are substantially duplicates of one another with the exception of these arms 39, 40 and the magnetic bars 9, 10, but for the sake of simplicity, the circuit wires 41, 42 for the coils 17 have been shown on one side only.

The automatic switches to which the cables 31, 32 are connected, and which have just been referred to, each consists of two sliding contacts 43, 44, and at each end of each of these contacts is a strip of insulation 45, 46. These sliding contacts and strips of insulation are shown as secured together in the form of parallel bars whose ends are connected by cross-heads 47, 48, to the cables 31, 32 at one end and 35, 36 at the other end. Arranged to be engaged by the sliding contacts 43, 44 and the insulations 45, 46 are two stationary contacts 49, 50, which are insulated from each other and respectively connected to conductors 51, 52 having connection with the positive and negative poles of storage battery 53 by conductors 54, 55. With this arrangement it will be seen that when the head 5 is pulled outwardly into the position shown in Fig. 2 by the spring 24, or when pulled to the running position or partially into the car, as shown in Fig. 1, the magnetic windings 17 will be energized by the current passing from the positive pole to the contact 49 and from the contact 49 to the contact bar 43, and thence into contact wire 41, which is connected to contact 43, thence to one of the windings 17, whence it passes into the other winding 17 and returns to contact bar 44 by the wire 42, thence into contact 50 and back to the negative pole of the storage battery 53 along the conductors 52, 55. Should the contact bars 43, 44 be pulled into the position shown in Fig. 3, which results from pulling the magnet and door 2 into the car, as shown in that figure, the circuit through the conductors 41, 42, leading to the windings 17, would be broken by carrying the contact bars 43, 44 away from the contacts 49, 50, which would then be engaged by the insulations 46 alone, thus breaking the circuit through the magnetic windings and permitting the pouch to fall into the car. The car doors 2, 3 remain in their closed position until the magnetic arms or bars 9, 10 attempt to move inwardly beyond the position shown in Fig. 1, when parts of the heads, 5, 6, come against the doors 2, 3, and open them inwardly against the resistance of their springs 18, 19, the heads 5, 6, being mounted in recesses 56 in the doors, which permit the heads to have a limited movement independently of the doors.

The inward movement of the heads 5, 6 from their extreme outer positions shown in Fig. 2 to their intermediate position shown in Fig. 1 is effected automatically by a magnet 57 or other suitable electro responsive device mounted upon the car, as soon as the car passes the station where the mail pouch is to be received. The magnet 57 is ar-

ranged to influence or attract an armature 58 secured to the end of the bar 30, so that when the bar 30 moves towards the left, or is attracted by the magnet 57, the two cables 35, 36 will be pulled in a direction to pull the heads 5, 6, inwardly, the cables being passed around a pulley 59. The terminals of the magnet 57 are connected by conductors 60, 61 to insulated contacts 62, 63. When the car is between stations, these contacts 62, 63 are held in communication with the positive and negative poles of the battery by movable switches or contacts 64, 65, which are permanently in engagement with the battery contacts 66, 67 to engage the contacts 62, 63 only when the movable contacts 64, 65 are pulled back by springs 68, 69 after the station is passed. While passing a station, the movable contacts or switches 64, 65 are thrown out of engagement with the contacts 62, 63 by rails 69, 70 arranged on the road bed, or other convenient place at the station and adapted to engage the lower ends of the pivoted levers 71, 72 carried by the car and projecting upwardly thereinto and carrying the movable contacts 64, 65, the rails 69, 70 being provided with outturned ends 73, 74 to insure the engagement thereof of the levers 71, 72. Consequently, it will be seen that when the car is not at a station, the movable contacts 64, 65 will be in engagement with the contacts 62, 63, and the circuit will be closed through conductors 60, 61 and the magnet 57, thereby causing the latter to attract the armature 58 and pull the sliding bar 30 down to the position shown in Fig. 1, holding the magnetic arms 9, 10 out of the way of objects along the road, and at the same time keeping the same energized through the connections and circuits before described. As soon as a station is reached, however, the levers 71, 72 engage the rails 69, 70 and the circuit through the magnet 57 is broken, whereupon the springs 24, 25 at once return the parts to the position shown in Fig. 2, where they remain until the station is passed and the magnet 57 again becomes energized, pulling the parts back to the position shown in Fig. 1. Should a mail pouch have been received by the pole pieces 9^a, 10^a, the attendant within the car may now move the parts into the position shown in Fig. 3 for delivering the pouch into the car by closing a hand switch 75 and energizing the magnet 76, or other suitable electro responsive device arranged to impart a still further pull to the sliding bar 30, which has an armature 77 arranged to come within the magnetic field of magnet 76 after the bar 30 has been pulled to the position shown in Fig. 1 by the magnet 57.

The terminal wires 78, 79 of the magnet 76 are connected to the knives of the switch 75, and the clips of this switch are connected to the battery wires 54, 55 by conductors 80, 81, so that when the knives of the switch 75 engage their clips, the magnet 76 will be energized and the bar 30 will be pulled still further towards the left, causing the doors 2, 3 and the heads, 5, 6 to move into the car, as shown in Fig. 3, and at the same time break the circuit through the magnet windings 17 by carrying the contact bars 43, 44 out of contact with the stationary contacts 49, 50. In order that the bar 30 may be thus still further attracted and moved towards the left by the magnet 76 after the armature 58 has been attracted by the magnet 57, the armature 58 is pivoted at 82 to said bar 30, and in order that the attraction of the armature 58 by the magnet 57 may be effective on the bar 30, the armature 58 is provided with a shoulder 83 arranged to engage the bar 30 when the armature is pulled in one direction, the armature being held in position to be attracted, when the magnet 57 is influenced, by a spring 84, permitting the armature 58 to yield when the armature 77 is attracted by the magnet 76. The parts remain in the position shown in Fig. 3 as long as the hand switch 75 is maintained closed, but as soon as the hand switch is opened, the magnet 76 becoming energized, the springs 18, 24 and 19, 25 connected with the heads 5, 6, and doors 2, 3, pull the parts back to the position shown in Fig. 1 and the spring 85 returns the sliding bar 30 to the position shown in that figure, where the armature 58, under the influence of the magnet 57, will hold it until the circuit through the magnet 57 is again broken automatically as a station is approached.

In order that the mail pouch 13 may not be accidentally displaced from the station arm 15, it is preferable to provide a guard finger 86, which is pivoted to the arm 87 carried on the head 16 with the arm 15, and held down against the arm 15 by a spring 88 or other suitable means. The arms 15 and 87 are held in a position at right angles to the line of travel of the car, so as to present the armature 12 to the pole pieces 9^a, 10^a, by any suitable means which will yield when the pole pieces strike the armature. The head 16 being mounted on a vertical pivot, the desired end may be accomplished by attaching the head to a cord 89 which passes downwardly between a pair of pulleys 90 on post 91, and is attached to a spring 92 which serves to return the arms 15, 87 to their position shown in Figs. 4 and 5.

As it cannot always be determined in advance which side of the car shall be utilized as the delivery side for delivering the pouch from the car to the station, it is desirable, as before suggested, to make the magnetic core pieces 9, 10 interchangeable with the plain arms 39, 40, so that either head 5, 6 may be used for carrying the core pieces on the arms 39, 40. These arms 39, 40 are or may be

counterparts of the arms 15, 87, the lower arm 40 being adapted to support the mail pouch 13[a] to be delivered by rings or hooks 93, like the rings or hooks employed on the armature 12 of the mail pouch 13, and the arm 39 being provided with a guard finger 94 pivoted thereto and held against the arm 40 by a spring 95 to prevent the mail pouch 13[a] which is about to be delivered to a magnet at the station, from being accidentally displaced.

The magnet at the station for receiving the pouch from the car may be inserted on either side of the track or road, and may be a counterpart of the magnet carried on the car and interchangeable with the arms 15, 87, if desired. To that end a post 96, like the post 91, is mounted at the side of the track opposite that on which post 91 is mounted, and this post 96 may be provided with a head 97, like the head 16, for supporting either the arms 15, 87, or a pair of magnetic core pieces 98, 99. It will be seen that the heads 16, 97 are provided with sockets 100, into which either the plain arms 15, 87, or these core pieces, 98, 99, may be inserted and secured by set screws 101, or other suitable means. The core pieces 98, 99 are provided with spools or windings 102, and these are in circuit with the rails 69, 70 by means of wires or conductors 103, 104. Consequently, when the car reaches a station, the lower ends of the levers 71, 72, which will act as brushes, contact with the rails 69, 70 and communicate the current of the storage battery 53 on the car to the magnet windings 102 at the station, because at this time the contacts 64, 65 carried by the upper ends of the levers 71, 72 are shifted out of engagement with the contacts 62, 63, and consequently cut out the magnet 57 and direct the current of the battery 53 to the windings 102, thereby energizing pole pieces 105 of the cores 98 and enabling the magnet at the station to attract the armature carried by the arm 40 on the passing car and to hold the pouch suspended until the car passes, when the interruption of the current allows it to fall to the ground.

In order that the invention may be understood by those skilled in the art, the details of an exemplification thereof have been thus specifically described, but

What I claim is:

1. In an apparatus for the purpose described the combination of means upon a railway car for supporting a mail pouch magnetically, and means arranged at the side of the line of movement of the car for holding the mail pouch preparatory to being engaged by said magnetic supporting means.

2. In an apparatus for the purpose described the combination of a car or vehicle, means arranged at the side of the line of movement of the car or vehicle for supporting a mail pouch preparatory to being delivered to the car, magnetic means upon the car for receiving and supporting said mail pouch, and means for moving said magnetic means into and out of position for engaging the mail pouch while on said supporting means.

3. In an apparatus for the purpose described the combination of a car, an electro magnet supported thereon and embodying an electric circuit for energizing the same, means at the side of the line of movement of the car for supporting a mail pouch preparatory to being delivered to the car, means for throwing said electro magnet into position to receive the mail pouch while on said supporting means, and means for drawing the electro magnet into the car and breaking the electric circuit therethrough.

4. In an apparatus for the purpose described the combination of a mail pouch provided with an armature, means for supporting said pouch and armature, a car, a magnet mounted on the car, and means for moving said magnet into position to engage the armature of the mail pouch while the car is in motion.

5. In an apparatus for the purpose described the combination of a mail pouch, an armature secured thereto, means for supporting said pouch and armature, a car, an electro magnet mounted upon the car and adapted to engage said armature while the car is in motion, said electro magnet embodying a circuit whereby it is energized, means for turning said electro magnet outwardly into position to engage said armature, means for turning said electro magnet inwardly from said outward position, means for keeping the circuit closed through the electro magnet when in said two positions, and means for turning the electro magnet still further inward and simultaneously breaking the circuit therethrough whereby the mail pouch will be delivered and dropped into the car.

6. In an apparatus for the purpose described the combination of a mail pouch, an armature thereon, means for supporting said pouch and armature, a car, an inwardly opening door on said car, an electro magnet pivotally mounted in operative relation to said door, said magnet having a limited movement independently of the door and adapted to stand outwardly at an angle to the car for engaging the armature of said mail pouch, and means for turning said magnet inwardly into the car and simultaneously opening the door.

7. In an apparatus for the purpose described the combination of a mail pouch provided with an armature, means for supporting the pouch and armature, a car, an electro magnet mounted thereon and adapted to be turned outwardly into position for engaging

the armature of the mail pouch while the car is in motion, means for automatically pulling the electro magnet into said outward position, said electro magnet embodying an electric circuit whereby it is energized, an electro responsive apparatus mounted upon the car and operatively connected with the electro magnet for pulling it inwardly with relation to the car, and means arranged along the line of movement of the car for automatically breaking the circuit through said electro responsive device whereby the magnet when the car is passing the mail pouch will be thrown into its outward position for engaging said armature.

8. In an apparatus for the purpose described the combination of a mail pouch provided with an armature, means for supporting the pouch and armature, a car, an electro magnet mounted upon the car and adapted to be turned outwardly therefrom into position to engage said armature while the car is in motion, said electro magnet embodying an electric circuit whereby the same is energized and said electric circuit embodying a switch mechanically connected with the electro magnet whereby the inward and outward movements of the electro magnet open and close said switch, an electro responsive device mounted upon the car and operatively connected with the magnet for pulling it inwardly to an intermediate position, means arranged adjacent the said mail pouch supporting means for automatically breaking the circuit through the said electro responsive device when the car is passing the pouch supporting means, and a second electro responsive device mounted upon the car for pulling said magnet into the car, said second electro responsive device being connected with the said switch for opening the same and breaking the circuit through the electro magnet when the latter moves into the car.

9. In an apparatus for the purpose described the combination of a car, an electro magnetic mail pouch receiving device mounted upon one side of the car, a mail pouch delivery device mounted upon the other side of the car, said receiving and delivery device being interchangeable and transposable whereby either side of the car may be used for receiving or delivering a mail pouch, a mail pouch provided with an armature, station delivery means at one side of the line of movement of the car for supporting said pouch and armature preparatory to delivery to the magnet on the car, and electro magnetic station pouch receiving means mounted at the other side of the line of movement of the car for receiving a mail pouch from the car, said station receiving and delivery means being interchangeable and transposable.

10. In an apparatus for the purpose described the combination of a railway car, a source of electric energy carried thereby, an electro magnetic device arranged at the side of the line of movement of the car, a mail pouch provided with an armature adapted to be received and supported by said electro magnetic device, means on the car for delivering the pouch and armature to said magnetic device, and means for energizing said electro magnetic device from the source of electric energy carried by the car.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 29th day of November, A. D. 1907.

CHAUNCEY W. BROUGHTON.

Witnesses:

CHAS. H. SEEM,

FRANCIS A. HOPKINS.