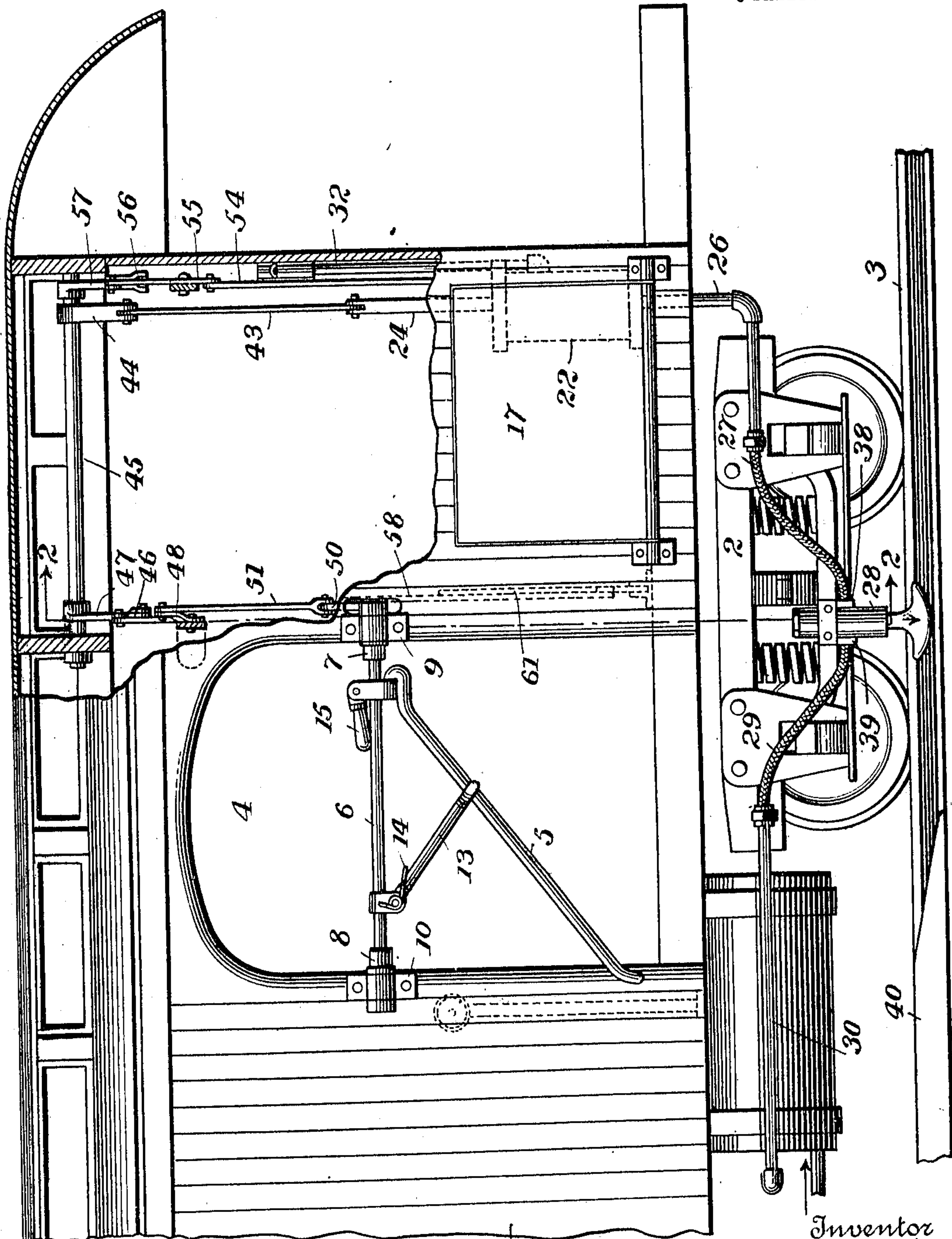


W. W. KILPATRICK.
MAIL BAG RECEIVING AND DELIVERING DEVICE.
APPLICATION FILED JAN. 20, 1910.

Patented Feb. 14, 1911.

3 SHEETS—SHEET 1.

984,378.



Witnesses
Jep. Hinkel
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Fig. 1.

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3 SHEETS—SHEET 2.

Fig. 2.

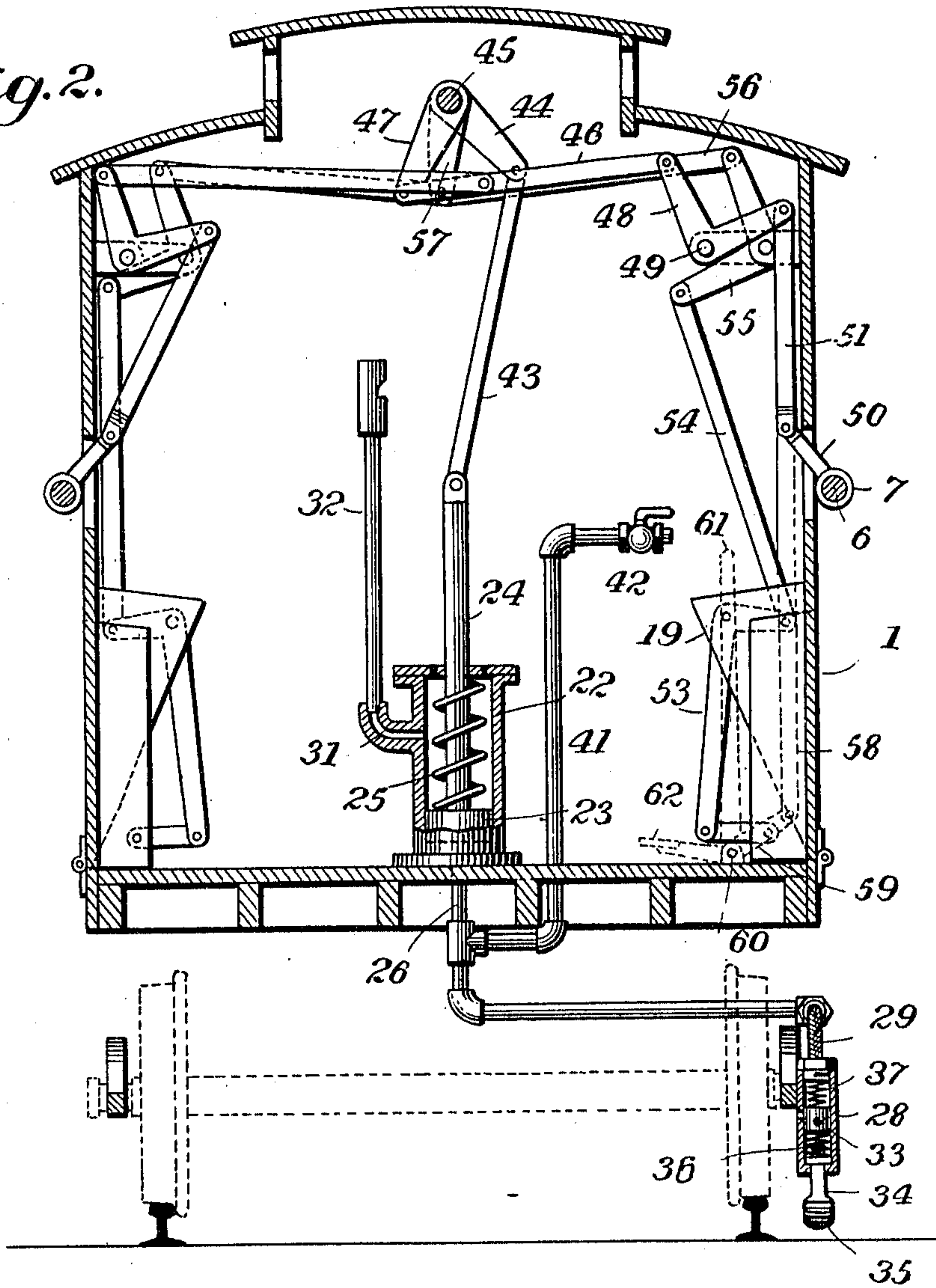
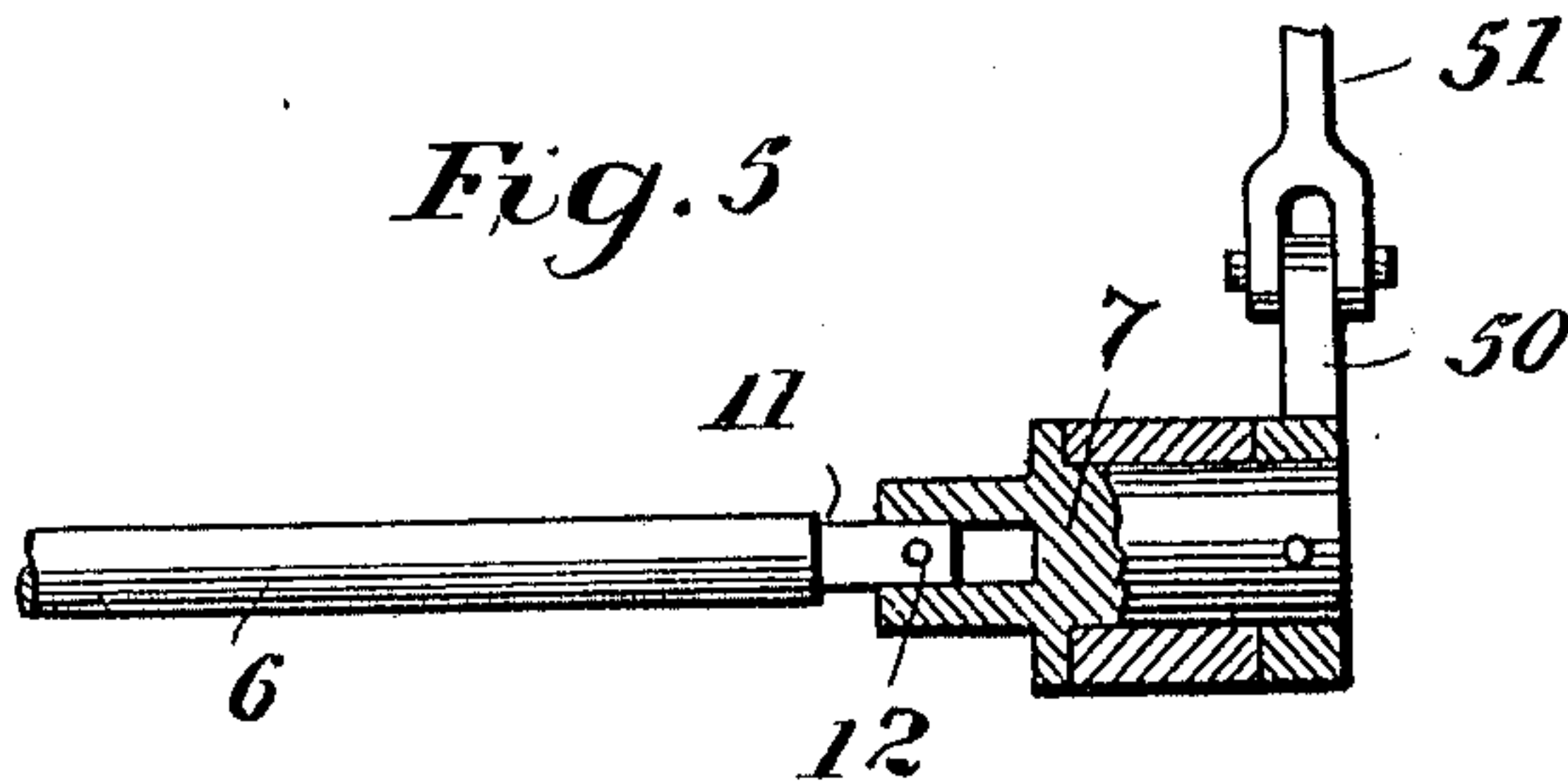


Fig. 5



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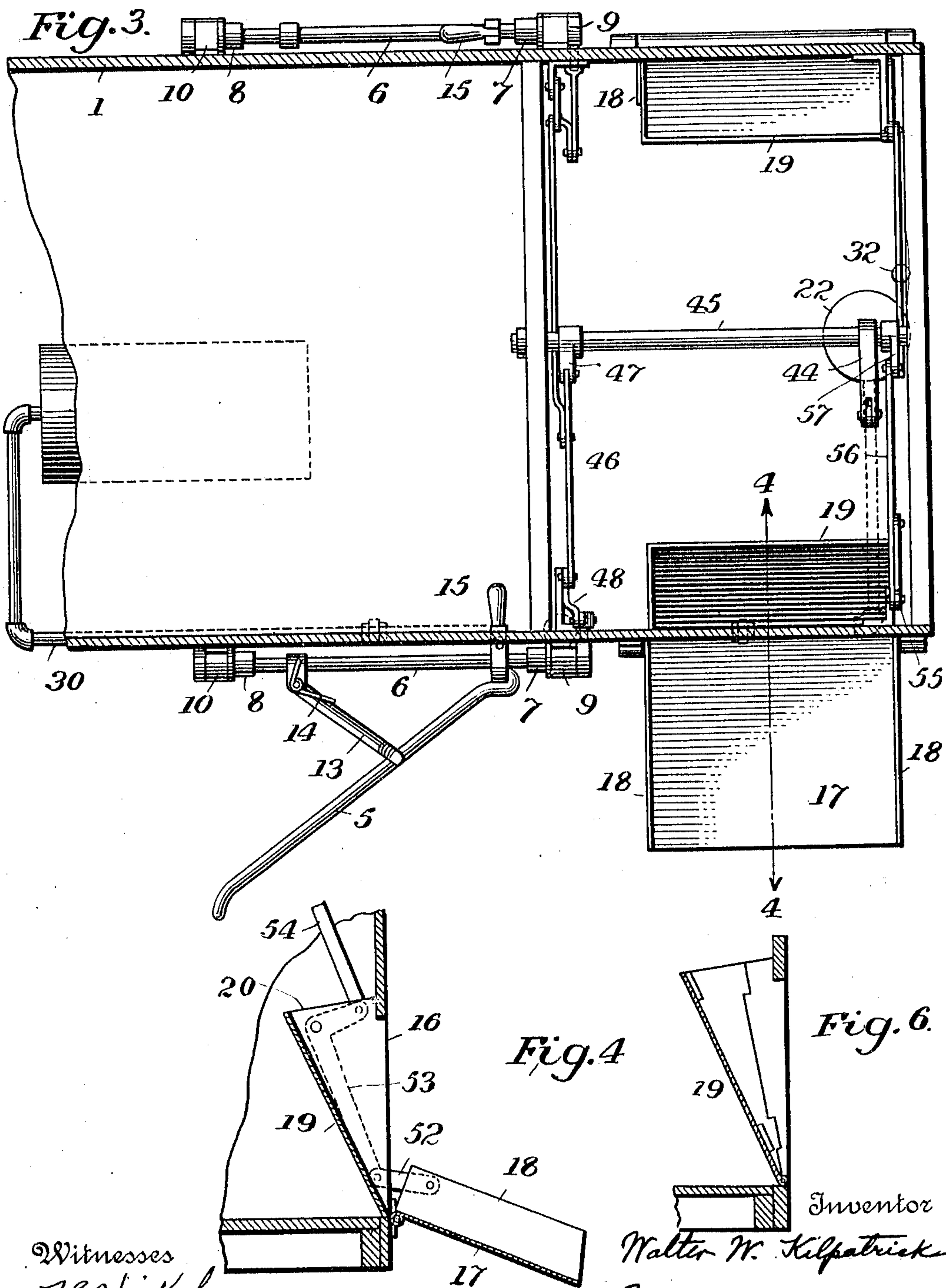
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3 SHEETS-SHEET 3.



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UNITED STATES PATENT OFFICE.

WALTER W. KILPATRICK, OF ATLANTA, GEORGIA.

MAIL-BAG RECEIVING AND DELIVERING DEVICE.

984,378.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WALTER W. KILPATRICK, a citizen of the United States, residing at Atlanta, in the county of Fulton and State of Georgia, have invented certain new and useful Improvements in Mail-Bag Receiving and Delivering Devices, of which the following is a specification.

This invention relates to means on a mail car of a train for catching and discharging mail bags while the train is in motion.

It relates particularly to mechanism which will operate automatically without compelling the mail clerk to have the door of his car open when catching mail bags.

It has for its object the simplification of the construction and the arrangement of the mechanism whereby it will not only be automatic in operation, but will operate with ease, accuracy and certainty, and will not interfere with the action of the air brakes of the train.

A further object is to provide for the operation either automatically or manually, without holding any door of the car open, to have the automatic operation under control of the mail clerk, and to provide a signal to indicate when the operation takes place.

Some of the features of my invention are not limited to use with automatic mechanism.

The novel features will be apparent from the following description taken in connection with the accompanying drawings.

In the drawings,—Figure 1 is a side view partly in section of a portion of an ordinary mail car having my invention applied thereto; Fig. 2 is a cross section on the line 2—2 of Fig. 1; Fig. 3 is a plan view of what is shown in Fig. 1 with the roof of the car removed; Fig. 4 is a detail sectional view of the discharge chute for mail bags; Fig. 5 is a detail sectional view of the rotary bearing for the mail catching arm; and Fig. 6 is a detail view of the mail chute showing its hinged construction.

As will be seen by reference to these drawings, my invention may be applied to an ordinary mail car 1 mounted on the ordinary trucks 2, traveling on the track 3. The car is provided with the ordinary side door 4, at the outside of which there is mounted the mail bag catching arm 5. This

arm 5 is secured to a shaft 6 mounted in rotary bearings 7, 8, which bearings turn in the brackets 9, 10 secured to the outer edge of the door facing. The shaft 6 enters longitudinal openings in the bearings 7, 8, and as will appear from Fig. 5, the opening in bearing 7 is of a cross section other than circular, so that the shaft 6 will necessarily turn with the bearing. The shaft may be inserted in and removed from the bearings by longitudinal movement, but at the end entering the bearing 7 it preferably makes contact with some fixed part of the bearing as by the shoulder 11, since the force of the mail bag in being received will tend to carry the shaft in that direction. The shaft may be secured in place by a set screw 12 and it is preferably provided with the spring arm 13 to hold the bag after it is received by the arm 5.

It will be seen by reference to Fig. 1 that when the mail bag is caught by the arm 5 it will push the arm 13 inward against the tension of the spring 14 so as to permit the bag to pass, and the arm 13 will then turn to normal position holding the bag in place. I preferably use on the shaft 6 and connected to the arm a pivoted handle 15 by which the arm may be turned manually into operative position. The handle is made with the hinge as shown, so that it can be turned down parallel to the shaft 6, and out of the way of the closed door when the arm is to be operated automatically.

In order to discharge a mail bag from the car I make use of an opening 16 in the side wall terminating preferably at the floor which is normally closed by a door 17 hinged at the bottom edge of the opening and having the vertical side flanges 18 which enter the opening at its edges. Surrounding the opening 16 on the inside of the car I place a chute to receive the mail bag, this chute being composed of the inner wall 19 which is inclined from the lower edge of the opening upwardly and outwardly so as to form a tapering receptacle for the bag and the side walls 20, which are of V-shape. This forms a tapering chute into the upper end of which the mail bag may be thrown, and it is preferably of such height and so placed as to be within convenient reach of the mail clerk standing at his table. It may be provided

with a cover or it may be placed beneath the table used by the mail clerk, and it will be observed that when the bag is in this chute it will rest normally against the closed door 17, tending to push that door open. When the door 17, is open, as shown in Fig. 4, it constitutes a chute downwardly inclined from the bottom of the opening so that the bag will slide out through it and be discharged automatically at some distance from the edge of the car. The wall 19 is preferably hinged at its bottom and sides, and the side walls 20 are preferably hinged and formed in two sections divided on the line 21 so that the chute may be folded up against the side of the car out of the way, and so as to close the opening 16 when the chute is in use. In place of holding the chute as indicated it may of course simply be removed and it is fastened in place in such a way that this can be easily done.

In the mail bag receiving devices in most common use the mail clerk opens the door of his car before he reaches the station where he intends to collect mail, and he manually turns the mail bag receiving arm up into operative position and stands ready to take in the bag when it is caught. My device is intended among other things to avoid the necessity of thus opening the door and to provide effective means for operating the arm automatically without opening the door. I preferably use the same means for operating the arm and the mail bag discharging device so that they will work together. As shown, this means consists of a series of levers connected to be operated by a single motor which is in turn operated by air pressure. The motor shown is in the form of a cylinder 22 which may be placed in convenient position either beneath the car or at its end out of the way, and there is a piston 23 working in this cylinder and carrying on its upper side the piston rod 24. A spring 25 tends normally to hold the piston in its lowered position, while air pressure admitted through pipe 26 will raise the piston. The pipe 26 may be connected to any suitable source of air pressure, but I find that it is not well to connect it with the air brake system since this interferes with the operation of the air brakes. I preferably connect it with the signal system of the train since the operation of the signal at the time of collecting a mail bag would be understood by the engineer as due to the automatic mail bag catching device and as not the signal of the conductor.

The pipe 26 below the car is connected to a flexible section 37 which is in turn connected to the valve mechanism 28 hereinafter described. A similar flexible section 29 connects the valve chamber with the pipe 30 leading to the source of supply. The cylinder 22 has a side opening 31 which will be

exposed to the air pressure beneath the piston after the piston has been raised to a point near its upper or operative position, and there is a whistle 32 connected with the opening 31 so that a signal will be given to the mail clerk when the piston rod 24 is pushed up to operate the mail bag catching and delivering devices. The spring 25 is sufficiently strong to push the piston 23 back to its lower position when the air pressure beneath it is removed, so that the operating parts of the mail bag catching and delivering devices will be returned to their normal position after each operation.

In order to operate the above mentioned motor automatically I make use of a valve 33 moving up and down in a chamber in the casing 28, and having connected to its lower side the shaft 34 carrying the shoe 35. Springs 36 and 37 tend to hold the valve 33 in normal position, which position is opposite the pipe connections 38, 39 so that the pressure of the air pipe 20 cannot pass the valve and enter the pipe 27 or the cylinder 22. In order to open the valve 33 so as to permit air pressure to enter the cylinder the third rail 40 is placed by the side of the track so that it will be struck by the shoe 35, thus elevating the valve 33 and opening the connections 38, 39. The casing 28 being secured to the car truck 2 will have no motion in relation to the third rail and consequently the elevation of the valve 33 will open the passage for the air.

In order to prevent the accidental operation of the automatic mail bag discharging device by some obstruction which may strike the shoe 35 as does the third rail, and in order to prevent an intentional operation of the device between stations by a party intending to rob the mails, I make use of a by-pass 41 connected to the pipe 26 below the cylinder 22 and provide said by-pass with a valve 42 which is preferably placed in the car within convenient reach of the mail clerk. By opening the valve 42 the air pressure which may be admitted into the pipe 26 will escape through the pipe 41 and consequently will not raise the piston 23. Between stations therefore the mail clerk may leave the valve 42 open, and close it only as he is approaching the point where a mail bag is to be received or discharged.

The piston rod 24 of the motor is connected by a link 43 to an arm 44 on a shaft 45 which is preferably out of the way in the roof of the car, and each operation of the piston will therefore rotate the shaft 45. In order to operate the mail catching arm 5 from this shaft 45 I make use of the link 46 connected thereto by the arm 47 and connected at its opposite end to the elbow lever 48 pivoted at 49 and connect this elbow lever to an arm 50 on the rotary bearing 7 by a link 51. The rotation of the shaft 45 there-

fore through this link connection will turn the bearing 7 and consequently the shaft 6 and arm 5 until the arm 5 occupies a horizontal position projecting from the car ready to receive the mail bag. This mechanism is substantially the same on both sides of the car, and the levers and links are of such form that practically all of them may be within the wall of the car out of sight. The door 17 has secured thereto a link 52 connected to the rock shaft 53 which is connected to link 54 connected to an elbow lever 55 connected to the link 56, which is pivotally secured at one end to the arm 57 on the shaft 45. In normal operation with the piston in its lower position the link connection will hold the door 17 in closed position, even against the weight of the mail bag in the chute. When, however, the piston is elevated and the shaft 45 is turned, the door 17 will be turned to its lowered position, as shown in Fig. 4, whereby the mail bag will be discharged.

It may sometimes happen that the automatic mechanism above described for operating the receiving and discharging means may be out of fix or the supply of compressed air may fail, and in such cases it is desirable to have some means of operating the device manually. In order to accomplish this I connect a link 58 to the upper end of the rock shaft 53, and to a lever 59 pivotally mounted at 60 near the floor of the car. This lever 59 may be operated by the handle 61 or by the pedal 62 near the floor. The mechanism is such that even when operating the device by hand or by foot it is not necessary for the mail clerk to open the door of his car except after the mail bag has been caught, and he then opens it only long enough to pull in the bag.

It will be understood that ordinarily the mail clerk may be required to use only one side of his car for collecting mail as in the case of double track roads, and in that case he may disconnect the mechanism on one side of the car by simply removing one of the pivot pins in the link connection which operates the mail receiving arm and the mail delivering door.

Where the cylinder for operating my device receives its supply of compressed air from the signal pipe of the train, I preferably make use of a special air chamber or drum on the car for the storage of sufficient air under pressure to operate my device, and I place a check valve in the cross-over pipe which supplies this chamber from the signal pipe, so that the operation of my device will not so reduce the pressure in the signal system as to prevent operation of the signals immediately after my device has operated.

Having thus described the invention, what is claimed is:

1. In a device of the class described, the

combination with a car having an opening in the side wall thereof, of a door hinged at the bottom normally closing said opening, means for supporting a mail bag within the car resting against said door, and means for releasing said door to discharge said bag. 70

2. In a device of the class described, the combination with a car having an opening in the side wall thereof, of a door hinged at the bottom normally closing said opening, means for supporting a mail bag within the car resting against said door, means for releasing said door, allowing it to fall open, and means for supporting the door in its open position at a downwardly inclined angle to discharge the mail bag. 80

3. In a device of the class described, the combination with a car having an opening in the side wall thereof, of a door hinged at the bottom normally closing said opening, means for supporting a mail bag within the car resting against said door, means for releasing said door allowing it to fall open, means for supporting the door in its open position at a downwardly inclined angle to discharge the mail bag, and vertical side flanges on said door constituting a chute. 90

4. In a device of the class described, the combination with a car having an opening in the side wall thereof, of a door hinged at the bottom normally closing said opening, a downwardly tapering chute within the car for supporting a mail bag resting against said door, and means for releasing the door to discharge the bag. 100

5. In a device of the class described, the combination with a car having an opening in the side wall thereof, of a door hinged at the bottom normally closing said opening, a casing or chute closely surrounding said opening and having its inner wall within the car extending inwardly and upwardly from the bottom of said opening, the said chute being adapted to admit a mail bag at its upper end, and means for releasing said door to discharge the bag. 110

6. In a device of the class described, the combination with a car having an opening in the side wall thereof, of a door hinged at the bottom normally closing said opening, a cylinder on said car, a piston therein having a rod extending therefrom, connections between said rod and door for turning said door on its hinge to its open or closed position, a compressed air supply, valve mechanism for controlling the supply of compressed air to said cylinder, and means operated by a trip on the track for operating said valve mechanism. 120

7. In a device of the class described, the combination with a car having an opening in the side wall thereof, of a door hinged at the bottom normally closing said opening, mechanism connected to said door for turning it to closed or open position, a spring 130

for operating said mechanism to close the door, a compressed air supply, and means for operating said mechanism by said compressed air to open said door.

5 8. In a device of the class described, the combination with a car, of means for catching a mail bag, means for discharging a mail bag, mechanism for simultaneously and positively operating said catching and dis-
10 charging means, connections whereby said mechanism may be set in operation by a third rail, and means within the car under the control of the operator to render said connections inoperative to discharge a mail
15 bag.

9. In a device of the class described, the combination with a car, of means for catching a mail bag, means for discharging a mail bag, mechanism for simultaneously and
20 positively operating said catching and discharging means, a compressed air supply, a single compressed air motor for operating said mechanism, connections for automatically setting such motor in operation from
25 a third rail, and means within the car under the control of the operator to render the motor inoperative under the action of said automatic means.

10. In a device of the class described, the combination with a car, of means for catching a mail bag, means for discharging a mail bag, mechanism for simultaneously and posi-
30 tively operating said catching and discharging means, a single compressed air motor for operating said mechanism, and connections for supplying said motor with compressed
35 air independent of the train air brake pipe.

11. In a device of the class described, the combination with a car, of means for catch-
40 ing a mail bag, means for discharging a mail bag, mechanism for simultaneously and positively operating said catching and discharging means, a single compressed air motor for operating said mechanism, and connections
45 for supplying said motor with compressed air from the excess auxiliary air pipe independent of the train air brake pipe.

12. In a device of the class described, the combination with a car, of means for catch-
50 ing a mail bag, means for discharging a mail bag, mechanism for simultaneously and positively operating said catching and discharging means, a compressed air supply, means for operating said mechanism by said com-
55 pressed air, automatic means for controlling the supply of compressed air to said mechanism, and manually controlled means for operating said mechanism when the supply of air fails.

60 13. In a device of the class described, the combination with mail bag operating mechanism, of a compressed air supply, a cylinder, automatic means for connecting said supply to one end of said cylinder, a piston in said
65 cylinder connected to operate said mail bag

operating mechanism, and a manually controlled exhaust for said cylinder for preventing operative air pressure in said cylinder.

14. In a device of the class described, the combination with the car having a door, of a mail bag receiving arm pivotally mounted at the outer edge of the door facing, means on said arm for retaining the mail bag when caught, means for turning said arm to opera-
75 tive position from within the car while the door is shut, and a handle on said arm for turning said arm manually through the open door, the said handle being adapted to fold so that it will not hit the door in turning
80 when the door is closed.

15. In a device of the class described, the combination with the car having a door, of rotary bearings mounted at the outer edge of said door facing, means for turning one of
85 said bearings from within the car without opening the door, a shaft carrying a mail bag catching arm adapted to removably engage said bearings, and means for making it rotate with said bearing.
90

16. In a device of the class described, the combination with the car having a door, of rotary bearings having longitudinal openings mounted in said door opening, and a mail bag catching arm mounted on a shaft
95 adapted to be inserted in and removed from the openings in said bearings by longitudinal movement, and means for securing said shaft in the bearings.

17. In a device of the class described, the combination with a car, of means on each side of the car for simultaneously catching and discharging mail bags, a set of levers on each side of the car connected together to
100 operate said catching and discharging means, a single motor for operating both sets of levers, and means for disconnecting either set of levers from said motor.
105

18. In a device of the class described, the combination with a car, of mail bag mechanism, means for operating said mechanism
110 by compressed air, pipes for conveying said air, a valve carried by the car truck comprising a casing having a vertical chamber provided on its sides with inlet and outlet pipe
115 connections, a vertically movable valve plug fitting said chamber adapted to normally close said connections, a valve stem extending downwardly from said plug and adapted to be raised by contact with a third rail to
120 open communication between said connections and flexible pipes joining said connections on the casing to the air pipes on the car.

19. In a device of the class described, the combination with a mail car, of a downwardly and outwardly inclined mail bag chute discharging through the wall near the floor of the car at one side, the top of said
125 chute being of convenient height to receive

the bags from the hands of the mail clerk, and means for releasing said bags from said chute.

20. In a device of the class described, the
5 combination with a mail car, of a downwardly and outwardly inclined mail bag chute discharging through the wall near the floor of the car at one side, the said chute be-

ing made in sections adapted to be removed or folded against the side of the car. 10

In testimony whereof I affix my signature in presence of two witnesses.

WALTER W. KILPATRICK.

Witnesses:

LOWRY ARNOLD,
HARVEY HILL.