

No. 610,872.

Patented Sept. 13, 1898.

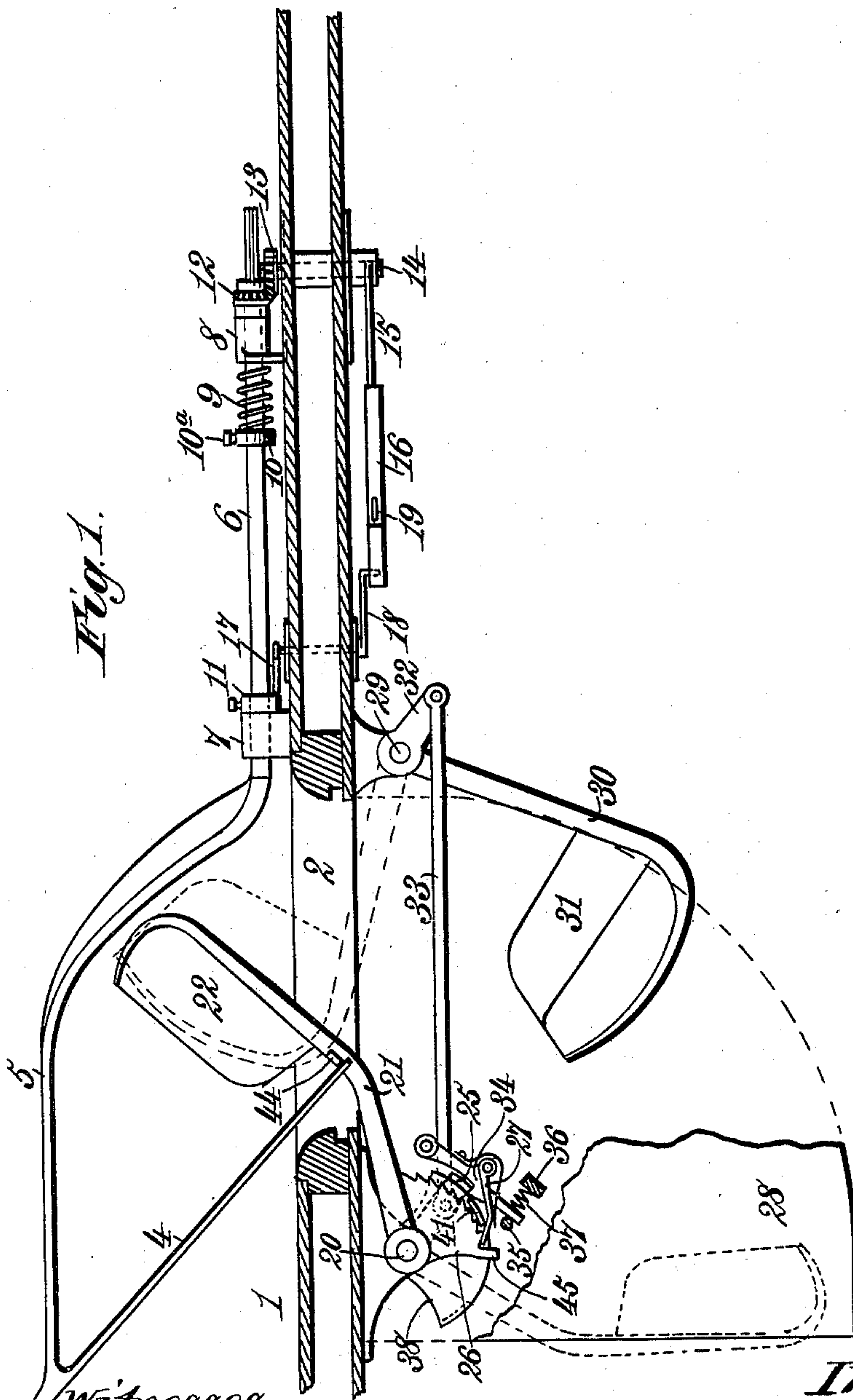
N. TINGLEY.

MAIL BAG CATCHING, RECEIVING, AND DELIVERING APPARATUS.

(Application filed Jan. 29, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses.
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R. D. Johnston, Jr.

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By James L. Norris,
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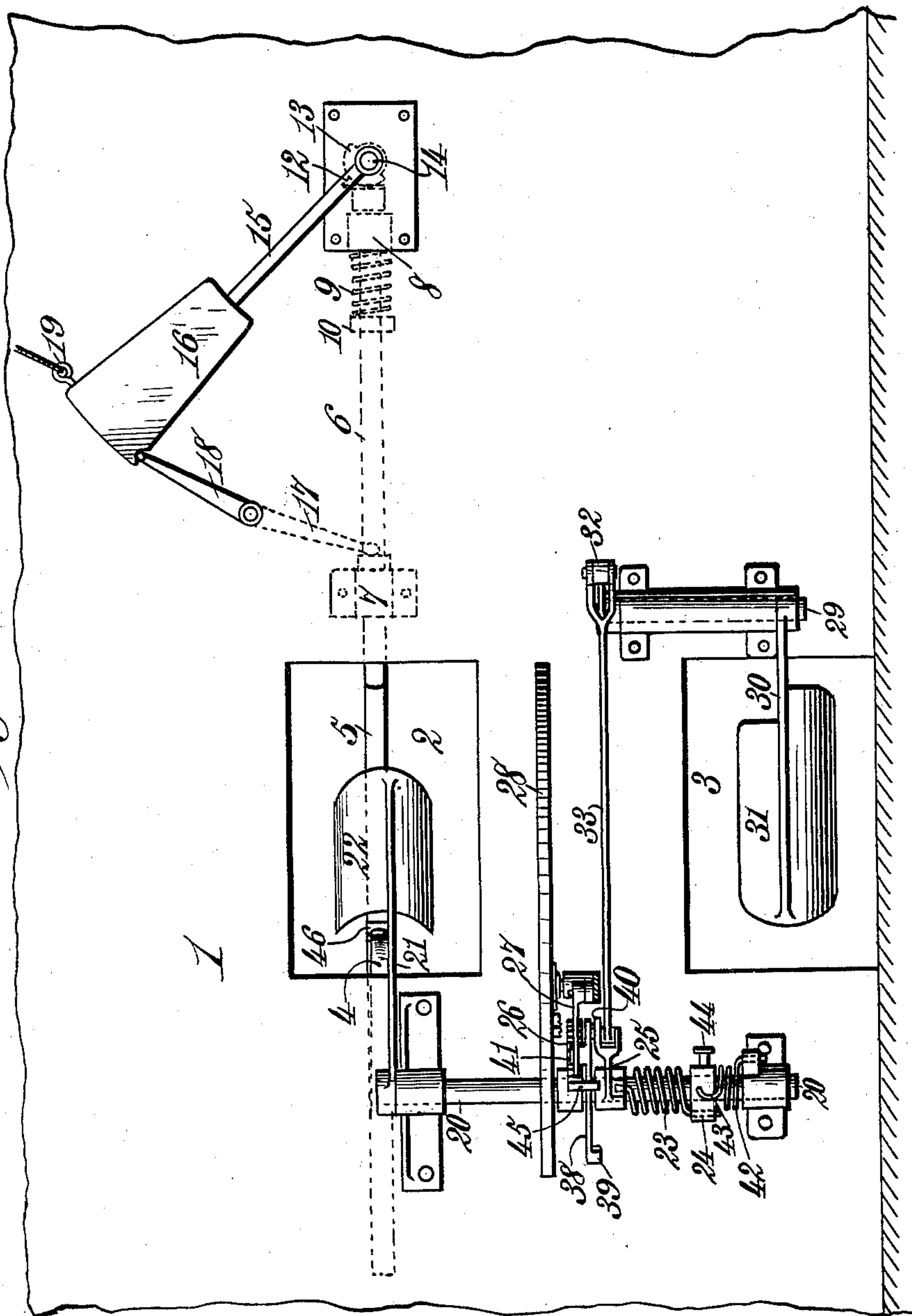
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2 Sheets—Sheet 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

NELSON TINGLEY, OF SCRANTON, PENNSYLVANIA, ASSIGNOR TO MELVIN TINGLEY, OF KINGSLEY, PENNSYLVANIA.

MAIL-BAG CATCHING, RECEIVING, AND DELIVERING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 610,872, dated September 13, 1898.

Application filed January 29, 1898. Serial No. 668,480. (No model.)

To all whom it may concern:

Be it known that I, NELSON TINGLEY, a citizen of the United States, residing at Scranton, in the county of Lackawanna and State of Pennsylvania, have invented new and useful Improvements in Mail-Bag Catching, Receiving, and Delivering Apparatus, of which the following is a specification.

This invention relates to mail-bag catching and delivering apparatus wherein a mail-bag suspended on a crane beside a railway-track is removed from the crane and landed in a moving car and another mail-bag is simultaneously discharged from the car.

It is the object of my invention to provide improved means for catching the mail-bag and landing it in the car.

It is a further object to provide improved means for receiving the mail-bag from the catcher and discharging the same onto a table in the car.

It is a still further object to provide improved means for ejecting a mail-bag from the car.

It is another object to so construct and combine the receiving and ejecting mechanism that the impact of the bag will automatically deliver the bag in the car and simultaneously eject a bag from the car.

Finally, the invention has for its object to simplify and improve the construction of this class of devices generally and to render more efficient the operation thereof.

To these ends my invention consists in the novel features and in the construction, arrangement, and combination of parts hereinafter described, and particularly pointed out in the claims following the description, reference being had to the accompanying drawings, forming a part of this specification, wherein—

Figure 1 is a top plan view of my improved apparatus, the parts being shown in full lines in readiness for receiving and ejecting the bags, the dotted lines showing the same parts in the positions they assume after the bags have been received and ejected. Fig. 2 is a side elevation of the apparatus as viewed from the inside of the car.

Referring to the drawings, the numeral 1 indicates the side of a mail-car, and 2 and 3,

respectively, the receiving and discharging doorways adapted to be closed by slides. Arranged upon the outside of the car and opposite the doorway 2 is the catcher, consisting of an inwardly and rearwardly inclined arm 4, the inner end of which terminates in the doorway 2, while its outer end is formed with or attached to a rearwardly-extending bracket-arm 5, the rear end of which is curved inward and is formed with or attached to a shaft 6. The shaft 6 is journaled in bearings 7 and 8 and has a limited longitudinal movement therein. A coiled spring 9 is arranged on the shaft between the bearing 8 and a collar 10, fixed on the shaft by a set-screw 10^a, the spring operating to force the catcher forward until a collar 11, fixed on the shaft in the same manner as collar 10, abuts the bearing 7 and arrests the further movement of the catcher. When, however, the catcher strikes a heavy mail-bag, the spring permits the catcher to yield slightly to absorb a portion of the impact. The bag to be caught is suspended from an ordinary mail-crane alongside the track in the usual manner and is engaged by the arm 4, which is preferably made elastic to lessen the destructive effects of the blow. The catcher-bar strikes the bag in the middle, and the bag instantly doubles over it, the ends coming together, while the middle portion glides off the bar and the bag is discharged into the car through the doorway 2, the construction of the bracket-arm 5 being such and extending outward so far that the movements of the bag in doubling up and gliding off are not impeded, being untouched by it. The catcher constructed as above described is thus complete and able to perform the single duty of catching and landing the bag without the assistance of other parts of the invention.

To render the catch automatic in operation, I spline a bevel-gear sector 12 on the shaft 6 and fix a like sector 13 on the outer end of a transverse shaft 14, journaled in a bearing fixed in the side of the car. The end of the shaft 14 engages the hub of the gear 12 and holds it to its seat against the bearing 8. The gear 12 being splined on the shaft 6, said gear and shaft must rotate with one another; but the shaft is free to move longitudinally

in the gear. On the inner end of the shaft 14 is fixed one end of a lever 15, carrying at its free end a weight 16, and journaled in the side of the car is a tripping-lever 17 18, the lower end 17 of the tripping-lever bearing against the collar 11 on the shaft 6 and the upper end 18 engaging and supporting the weight 16. Normally the catcher is turned upward until the outer parts rest against the side of the car, and it is turned down into position for use, as shown in Fig. 1, by raising the weight to the position shown either directly by hand or by means of a cord attached to an eye 19 on the weight and leading to any convenient point. When the weight is raised to the position shown, the bevel-gear sectors turn the shaft 6 and fold the catcher down into a horizontal position. When the catcher strikes a bag, it yields under the impact, and the collar 11 forces back the arm 17 of the tripping-lever, thus moving forward the arm 18 of the lever and releasing the weight 16, which then descends, rocking the lever 6 through the medium of the bevel-gear sectors and returning the catcher to its vertical or normal position.

It is manifest that the foregoing-described apparatus may be used independently of any other mechanism for merely catching and landing a bag; but for the purpose of properly receiving the bag and bringing it to rest in the car without injurious shock I provide the following receiving apparatus.

Journaled in suitable bearings attached to the inner side of the car is a vertical shaft 20, to the upper end of which is fixed one end of an arm 21, provided at its outer or free end with a basket or scoop 22. The arm 21 is arranged in the same horizontal plane with the doorway 2, and is of such length as to permit the basket or scoop, when the arm is turned from the position shown in dotted lines to that shown by full lines, to project through the doorway, as shown. The reverse movement of the arm—that is to say, its movement from the position shown by full lines to the position shown by dotted lines—is resisted by a spiral spring 23, one end of which is attached to a collar 24, fixed on the shaft 20, and the other end is secured to an arm 25, which is loosely journaled on the shaft. Fixed on the shaft 20 is a ratchet-segment 26, which is engaged by a pawl 27, that operates to hold the arm 21 at the end of its inward movement irrespective of the point where such inward movement may cease and prevent the arm from recoiling, and thus throwing the bag back out of the car. When a heavy bag is caught, the arm will be turned back fully to the position shown by dotted lines in Fig. 1, while lighter bags will cause the arm to stop at intermediate positions. The arm 21 can be returned to operative position by disengaging the pawl 27 or by forcing back the hook to which said pawl is pivoted and which will hereinafter be described.

The lower side of the basket or scoop 22 is

inclined at such an angle that the bag will roll out by gravity as soon as the arm comes to a state of rest and will fall onto a table 28, attached to the side of the car beneath the doorway 2.

It is necessary that bags should be thrown off from the car as well as received into it, an exchange being usually made at each mail station. Therefore the catching and receiving mechanisms above described are combined with an ejecting mechanism, which I will now describe.

Journaled in suitable bearings fixed to the inner side of the car immediately in rear of the doorway 3 is a vertical shaft 29, to the lower end of which is fixed one end of an arm 30, carrying at its free end a scoop or basket 31, in which is to be placed the outgoing mail bag before the station at which it is to be thrown off is reached. On the upper end of the shaft 29 is fixed an arm 32, which is connected to the arm 25 on the shaft 20 by means of a connecting-rod 33. When the spring 23 before described is put under tension, its tendency is to turn arm 25 to the left and through the medium of the connecting-rod 33, arm 32, and shaft 29 swing the arm 30, carrying the ejector basket or scoop into the position shown by dotted lines. The arm 25, however, is held by the hook 34, pivoted to the under side of the table 28, which engages the end of the arm 25 and holds it stationary until the hook is released. The free end of the hook 34 has a limited oscillating movement between two stops 35 36, a coiled spring 37 being arranged between the stop 36 and the hook and operating to normally hold the hook in engagement with the arm 25. Loosely arranged on the shaft 20, immediately beneath the ratchet-segment 26, is a sector 38, having two lugs or stops 39 40 projecting from its under side and engaging the arm 25 at the opposite limits of its stroke and a similar lug 41 on its upper side adapted to run under the pawl 27, that is pivoted to the hook 34, and disengage it from the ratchet 26.

The operation of the receiving and ejecting mechanism is as follows: When the catcher throws a bag into the basket 22, the receiving-arm 21 is swung backward and inward until the spring 23 is placed under a sufficient tension to bring the arm to a stop. The spring is thus wound up, giving the arm 25 an equally strong tendency to turn from right to left. The pawl 27, however, is attached to a movable support (the hook 34) therefor. As soon as the arm 21 starts to recoil after having delivered the bag onto the table it forces back the pawl 27 and hook 34, compressing the spring 37 and detaching the hook 34 from the end of the arm 25. The actual recoil of the receiving-arm is limited by the stop 36 to the movement necessary to release the arm 25. As soon as the arm 25 is released the spring 23 drives it around to the left, thus swinging the ejector-arm 30 from the position shown in full lines to that shown

by dotted lines. This ejects the bag with sufficient force to clear the train properly. The power used in ejecting the bag is derived from the impact of the bag cast into the receiving-basket by the catcher, its momentum being absorbed and stored in the spring 23. This spring may be placed under any desired initial tension.

In practice it is desirable that both the receiver and ejector be automatically released and returned to a neutral position just inside the car, so that the door-slides may be closed. This is accomplished by means of a spring 42 and the trip-sector 38. The spring 42 is coiled about the lower end of the shaft 20, one end being attached to the shaft-bearing and the other end bent to form a hook 43. When a bag is cast into the receiver by the catcher, the receiver-arm and ratchet-segment are swung back until stopped by the tension of the spring 23. They then immediately recoil until the pawl 27 forces the hook 34 against the stop 36. When the arm 25 approaches the end of its movement toward the left, it engages the lug 39 and turns the sector 38 until the lug 41 disengages the pawl from the ratchet. The sector remains in this position until the arm 25 is drawn back by the ejector-arm 30, when the latter is swung back into the position shown by full lines for loading. As the shaft 20 turns a pin 44 on the collar 24 engages the hooked end 43 of the spring 42. Consequently when the receiver is released by the pawl in the manner described the spring 42 turns the receiver part way back or to a position just inside the door. As the ratchet turns back the downward-projecting finger or lug 45 on the ratchet engages the arm 25 and turns it part way back, thus swinging the ejector back to a position just inside the door.

To operate the apparatus, the attendant has only to open the door-slides, draw back the ejector to the position shown in full lines, and place the outgoing bag in it, this movement bringing the receiver into position for receiving the bag from the catcher, and raise the weight 16 to the position shown, thus turning the catcher down into operative position. After the catcher strikes the bag to be taken into the car the apparatus is entirely automatic in operation, the incoming bag being received and discharged onto the table, the outgoing bag ejected, and the parts returned to their normal position.

If deemed necessary, the receiving-arm 21 may be provided with a pin or lug 46, adapted to loosely engage the end of the catcher-bar 4 to support the tongue and assist it to withstand the impact of extra heavy bags.

Having described my invention, what I claim is—

1. A mail-bag catcher consisting of a horizontal shaft mounted in bearings on the side of the car and provided at its forward end with an outwardly and forwardly projecting bracket-arm, and a catcher-arm projecting

inwardly and rearwardly from the end of the bracket-arm and having a free, unattached end projecting into the doorway of the car, substantially as described. 70

2. A mail-bag catcher consisting of a horizontal shaft mounted in bearings on the side of the car and provided at its forward end with an outwardly and forwardly projecting bracket-arm, and an elastic catcher-arm projecting inwardly and rearwardly from the end of the bracket-arm and terminating at its free end in the doorway of the car, substantially as described. 80

3. In a mail-bag catcher, the combination with a horizontal shaft longitudinally movable in bearings on the side of the car and provided at its forward end with an outwardly and forwardly projecting bracket-arm, and a catcher-arm projecting inwardly and rearwardly from the end of the bracket-arm, of a spring arranged to offer a yielding resistance to the rearward end thrust of the shaft, substantially as described. 90

4. In a mail-bag catcher, the combination with a horizontal shaft journaled in bearings on the side of the car and arranged to move longitudinally therein, said shaft being provided at its forward end with a catcher-arm for catching and guiding a mail-bag into the car, of a spring arranged to offer a yielding resistance to the rearward end thrust of the shaft and means for rotating the shaft to fold up and hold the catcher against the side of the car, substantially as described. 100

5. In a mail-bag catcher, the combination with a horizontal shaft journaled in bearings on the side of the car and arranged to move longitudinally therein, said shaft being provided at its forward end with a catcher-arm for catching and guiding a mail-bag into the car, of a spring arranged to offer a yielding resistance to the rearward end thrust of the shaft, a bevel-gear arranged on said shaft, a shaft arranged at a right angle to the first-named shaft and having fixed thereon a bevel-gear meshing with the first-named gear, a weighted lever fixed on the inner end of the transverse shaft, and a tripping-lever provided with two oppositely-projecting arms, one of said arms being adapted to engage a collar on the catcher-arm shaft, and the other arm being adapted to engage and hold raised the weighted lever, substantially as described and for the purpose specified. 110 115 120

6. The combination with the catcher-arm, of an oscillating receiver arranged to receive the bag as it is discharged from the catcher and be swung inward by the impact, of an oscillating ejector constructed to receive the bag to be discharged from the car, and mechanism operated by the movement of the receiver for swinging the ejector outward to discharge the bag, substantially as described. 130

7. The combination with the catcher-arm, of an oscillating receiver arranged to receive the bag as it is discharged from the catcher and be swung inward by the impact, of an

oscillating ejector constructed to receive the bag to be discharged from the car, mechanism operated by the movement of the receiver for swinging the ejector outward to discharge the bag, and a spring for returning the receiver and ejector to normal position just within the car, substantially as described.

8. In a mail-bag-catching apparatus, the combination with the catcher-arm, of the receiver consisting of a vertical shaft journaled to the inner side of the car, an arm fixed on said shaft and provided at its end with a basket, a coiled spring arranged on the shaft and operating to resist the inward movement of the receiver-arm, a ratchet fixed on the shaft, a pivoted pawl in engagement with the ratchet for preventing the recoil of the receiver-arm, means for engaging the pawl and a spring operating in opposition to the said coiled spring for returning the receiver-arm to normal position just within the car when the pawl is released, substantially as described.

9. In a mail-bag-catching apparatus, the combination with the catcher-arm, of the receiver consisting of a vertical shaft journaled to the inner side of the car, an arm fixed on said shaft and provided at its end with an open-sided basket having an inclined bottom, a coiled spring arranged on the shaft and operating to resist the inward movement of the receiver-arm, a ratchet fixed on the shaft, a pivoted pawl in engagement with the ratchet for preventing the recoil of the receiver-arm, the construction of the receiver-basket being such that when the basket is brought to a state of rest the bag will drop out by gravity, substantially as described.

10. In a mail-bag catching and delivering apparatus, the combination with the catcher-arm, of the vertical shaft journaled in bearings on the inner side of the car, an arm fixed on said shaft and provided at its end with a basket, an oscillating ejector, an arm loosely arranged on the shaft and connected with the ejector, a coiled spring on the shaft connected at one end to the said arm and at its other end to a collar fixed on the shaft, a ratchet fixed on the shaft, a pivoted hook arranged to engage the loose arm and hold the ejector against movement, and a pawl carried by the hook and engaging the ratchet to prevent the receiver-arm from rebounding, the construction being such that the impact of the bag swings the receiver-arm inward and discharges the bag and winds up the spring, and then forces the hook back out of engagement with the loose arm and the spring then oscillates said arm to swing the ejector outward to discharge a bag, substantially as described.

11. In a mail-bag catching and delivering apparatus, the combination with the catcher-arm, of the vertical shaft 20, an arm 21 fixed on the shaft and provided at its end with a basket 22, an oscillating ejector-arm 30 provided at its end with a basket 31, an arm 25 loosely journaled on the shaft and connected at its end with an arm on the axis of the

ejector-arm, a coiled spring 23 on the shaft, one end connected to the arm 25 and the other end to a collar fixed on the shaft, a ratchet fixed on the shaft a pivoted hook 34 arranged to engage the arm 25 and hold the ejector against movement, a spring arranged to force said hook into engagement with the arm, and a pawl 27 pivoted to the hook and engaging the ratchet to prevent the receiver-arm from rebounding, substantially as described and for the purpose specified.

12. In a mail-bag catching and delivering apparatus, the combination with the catcher-arm, of the vertical shaft 20, an arm 21 fixed on the shaft and provided at its end with a basket 22, an oscillating ejector-arm 30 provided at its end with a basket 31, an arm 25 loosely journaled on the shaft and connected at its end with an arm on the axis of the ejector-arm, a coiled spring 23 on the shaft, one end connected to the arm 25 and the other end to a collar fixed on the shaft, a ratchet fixed on the shaft, a pivoted hook 34 arranged to engage the arm 25 and hold the ejector against movement, a pawl 27 pivoted to the hook and engaging the ratchet to prevent the receiver-arm from rebounding, a spring arranged to force the hook into engagement with the arm, and stops for limiting the movement of the hook and pawl, substantially as described.

13. In a mail-bag catching and delivering apparatus, the combination with the catcher-arm, of the vertical shaft 20, an arm 21 fixed on the shaft and provided at its end with a basket 22, an arm 25 loosely journaled on the shaft, a vertical shaft 29, an ejector-arm 30 fixed thereon and provided at its end with a basket for the reception of the bag to be discharged, an arm 32 fixed on the shaft 29, a rod 33 connecting the arm 32 to the arm 25, a coiled spring 23 on the shaft 20, one end connected to the arm 25 and the other end to a collar fixed to the shaft, a ratchet fixed on the shaft a pivoted hook 34 arranged to engage the arm 25 and hold the ejector against movement, a pawl 27 pivoted to said hook and engaging the ratchet to prevent the receiver-arm from rebounding, and a spring arranged to force the hook into engagement with the arm, substantially as described.

14. In a mail-bag catching and delivering apparatus, the combination with the catcher-arm, of the vertical shaft 20, an arm 21 fixed on the shaft and provided at its end with a basket 22, an arm 25 loosely journaled on the shaft, a vertical shaft 29, an ejector-arm 30 fixed thereon and provided at its end with a basket for the reception of the bag to be discharged, an arm 32 fixed on the shaft 29, a rod 33 connecting the arm 32 to the arm 25, a coiled spring 23 on the shaft 20, one end connected to the arm 25 and the other end to a collar fixed on the shaft, a ratchet 26 fixed on the shaft, a pivoted hook 34 arranged to engage the arm 25 and hold the ejector against movement, a pawl 27 pivoted to said hook

and engaging the ratchet to prevent the receiver-arm from rebounding, a sector 38 fixed on the shaft 20 beneath the ratchet and provided with lugs 39 40 projecting in the path of the arm 25 and having a lug 41 operating to release the pawl 27, substantially as described.

15. In a mail-bag catching and delivering apparatus, the combination with the catcher-arm, of the vertical shaft 20, an arm 21 fixed on the shaft and provided at its end with a basket 22, an arm 25 loosely journaled on the shaft, a vertical shaft 29, an ejector-arm 30 fixed thereon and provided at its end with a basket for the reception of the bag to be discharged, an arm 32 fixed on the shaft 29, a rod 33 connecting the arm 32 to the arm 25, a coiled spring 23 on the shaft 20, one end connected to the arm 25 and the other end to a collar fixed on the shaft, a ratchet 26 fixed on the shaft, a pivoted hook 34 arranged to engage the arm 25 and hold the ejector against movement, a pawl 27 pivoted to the hook and engaging the ratchet to prevent the receiver-arm from rebounding, a sector 38 fixed on the shaft 20 beneath the ratchet and provided with lugs 39 40 projecting in the path of the arm 25, a lug 41 formed on the sector and operating to release the pawl 27, and a lug 45 carried by the ratchet and arranged to contact with the arm 25, substantially as described and for the purpose specified.

16. In a mail-bag catching and delivering apparatus, the combination with the catcher-

arm, of the vertical shaft 20, an arm 21 fixed on the shaft and provided at its end with a basket 22, an arm 25 loosely journaled on the shaft, a vertical shaft 29, an ejector-arm 30 fixed thereon and provided at its end with a basket for the reception of the bag to be discharged, an arm 32 fixed on the shaft 29, a rod 33 connecting the arm 32 to the arm 25, a coiled spring 23 on the shaft 20, one end connected to the arm 25 and the other end to a collar 24 fixed on the shaft, a ratchet 26 fixed on the shaft, a pivoted hook 34 arranged to engage the arm 25 and hold the ejector against movement, a pawl 27 pivoted to the hook and engaging the ratchet to prevent the receiver-arm from rebounding, a sector 38 fixed on the shaft 20 beneath the ratchet and provided with lugs 39 40 projecting in the path of the arm 25, a lug 41 formed on the sector and operating to release the pawl 27, a lug 45 carried by the ratchet and arranged to contact with the arm 25, a pin 44 on the collar 24, and a spring 42 attached at one end to a fixed support and provided at its other end with a hook 43 arranged to be engaged by the pin 44, substantially as described and for the purpose specified.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

NELSON TINGLEY.

Witnesses:

CALVIN W. PARSONS,
D. B. REPLOGLE.