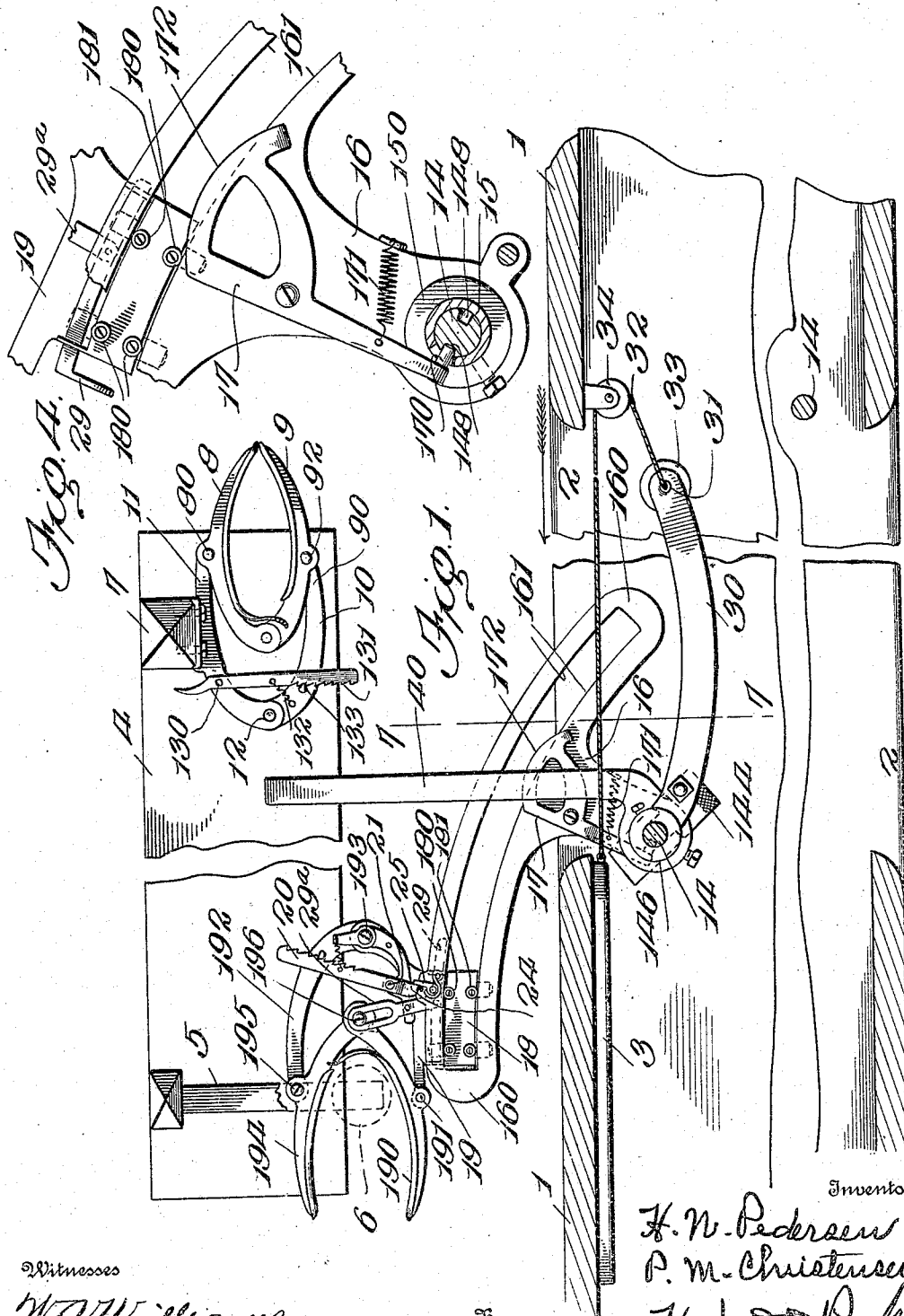


H. N. PEDERSEN & P. M. CHRISTENSEN.
MAIL BAG HANDLING APPARATUS.
APPLICATION FILED MAR. 19, 1909.

942,278.

Patented Dec. 7, 1909.

4 SHEETS—SHEET 1.



Witnesses

W. W. Williams
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By

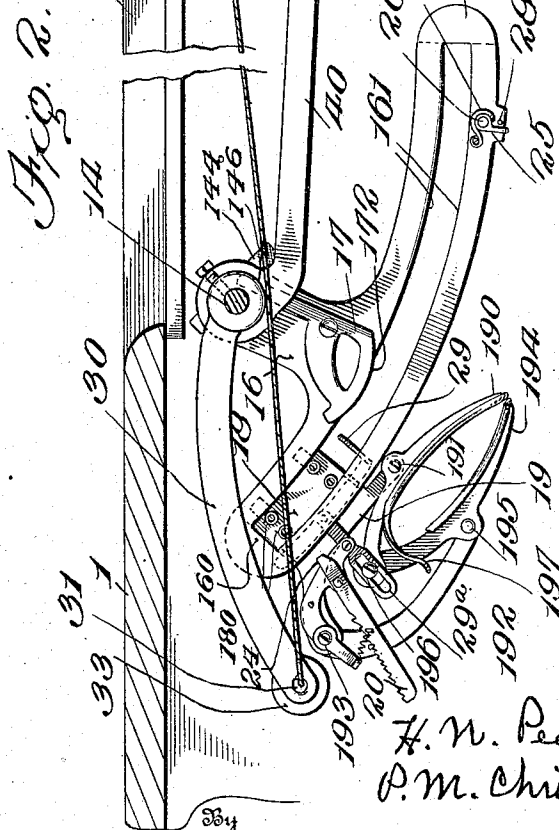
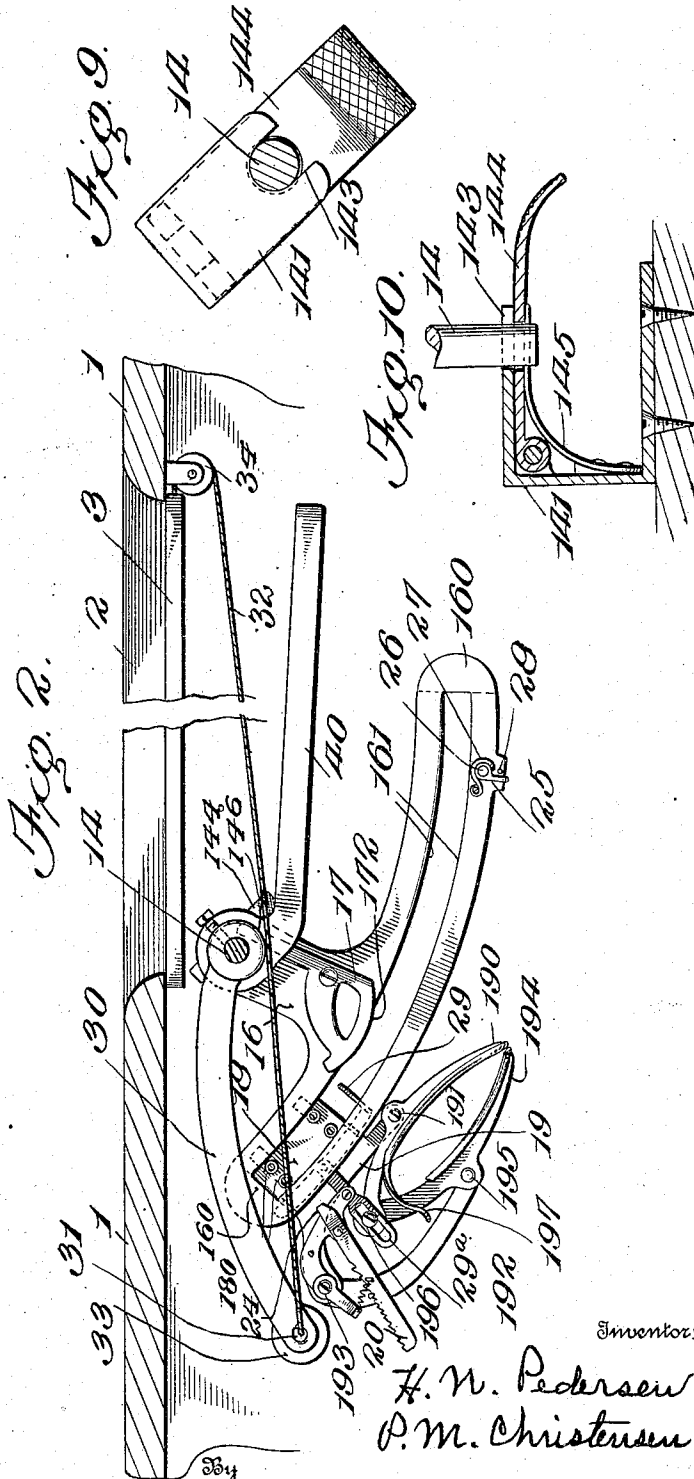
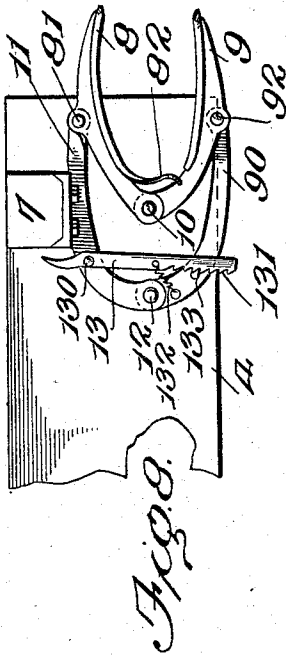
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4 SHEETS—SHEET 2.



Witnesses

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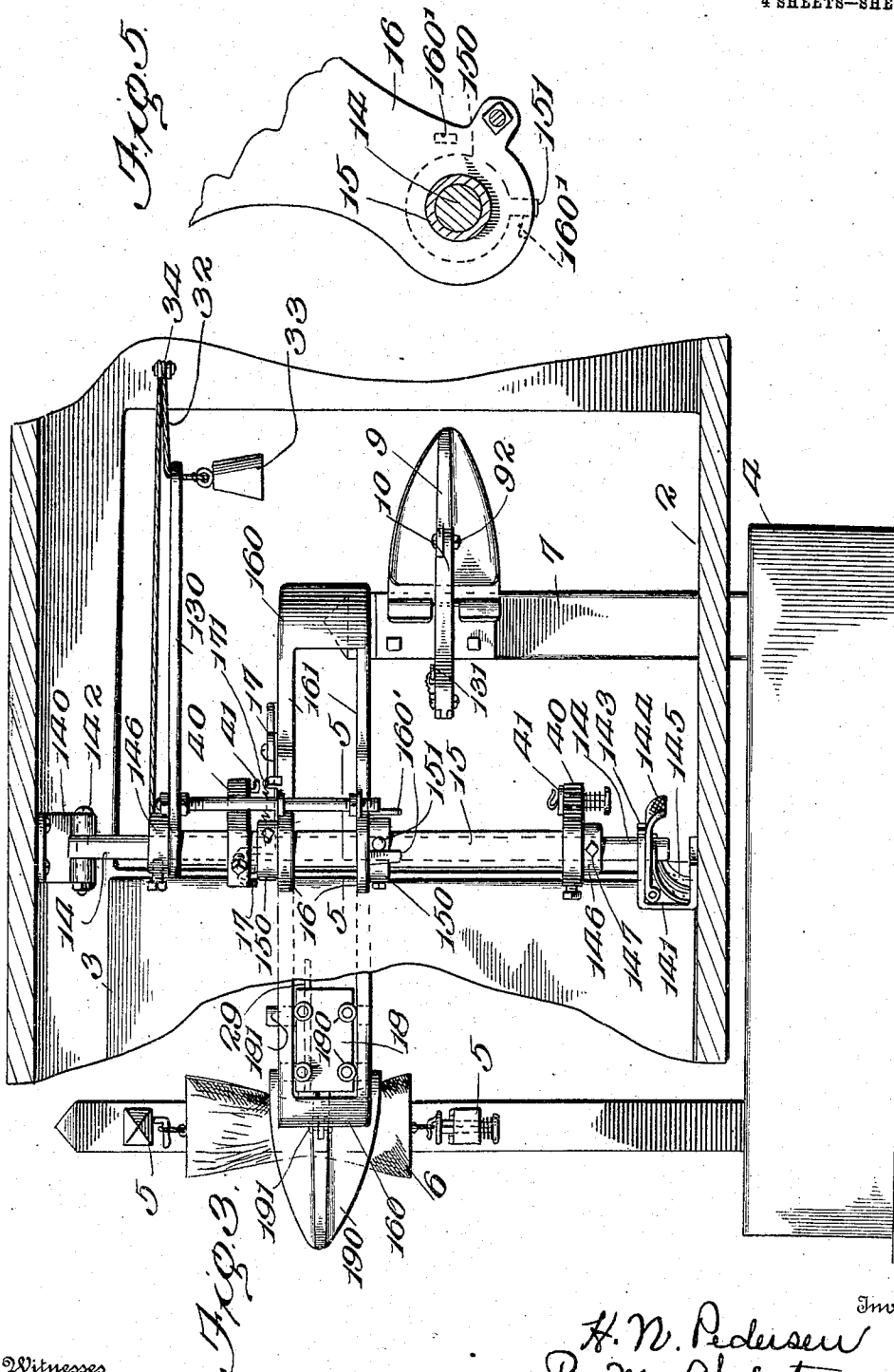
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4 SHEETS—SHEET 3.



Witnesses

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E. R. Peck

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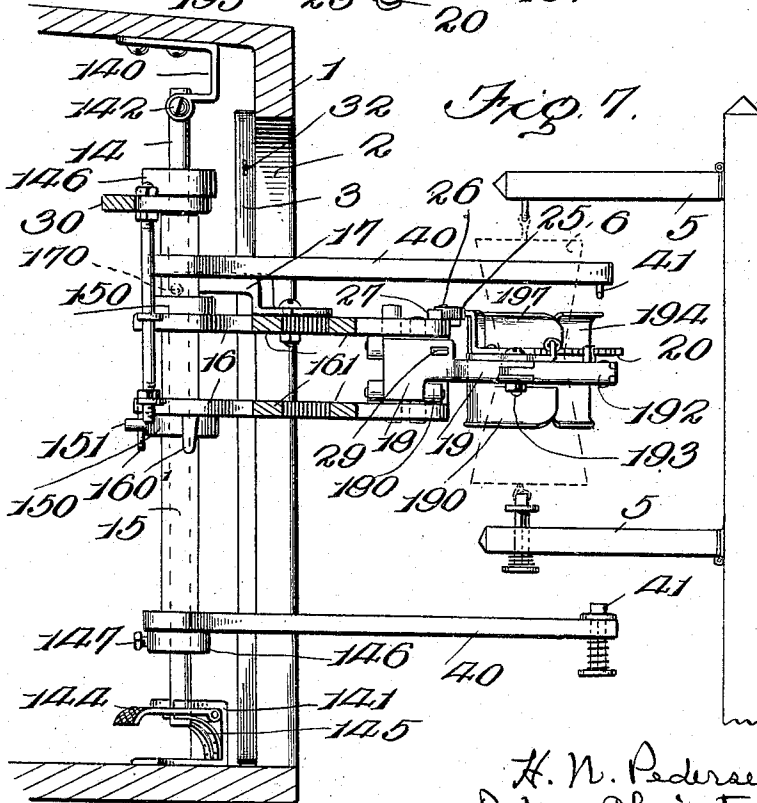
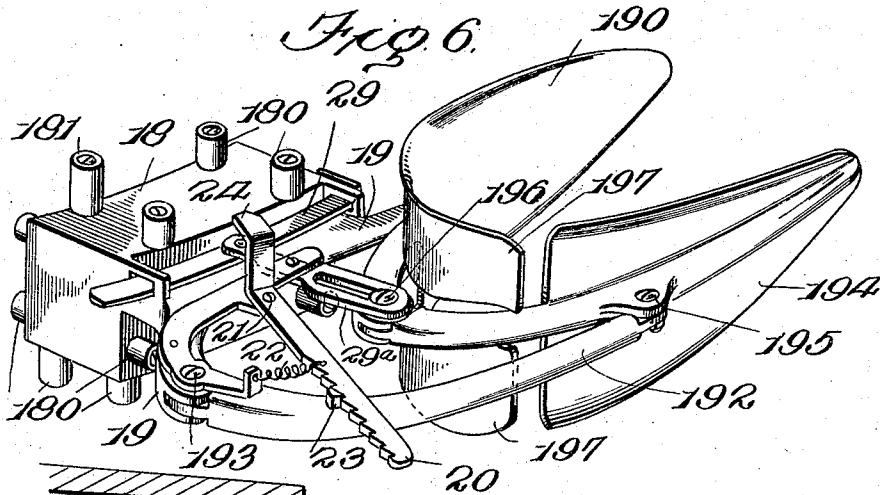
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4 SHEETS—SHEET 4.



Witnesses

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UNITED STATES PATENT OFFICE.

HAZEL NELSON PEDERSEN AND PETER MARTIN CHRISTENSEN, OF RACINE,
WISCONSIN.

MAIL-BAG-HANDLING APPARATUS.

942,278.

Specification of Letters Patent.

Patented Dec. 7, 1909.

Application filed March 19, 1909. Serial No. 434,476.

To all whom it may concern:

Be it known that we, HAZEL NELSON PEDERSEN, a citizen of the United States, and PETER MARTIN CHRISTENSEN, a subject of the King of Denmark, both residing at Racine, Racine county, Wisconsin, have invented certain new and useful Improvements in Mail-Bag-Handling Apparatus; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain improvements in railway mail handling apparatus; and the objects and nature of the invention will be readily understood by those skilled in the art in the light of the following explanation of the accompanying drawings illustrating what we now consider our preferred embodiments from among other formations and arrangements within the spirit and scope of our invention.

The invention consists in certain novel features in construction, and in combinations and arrangements of parts and elements as more fully and particularly explained hereinafter.

Referring to the accompanying drawings:—Figure 1, is a horizontal section through a mail car, portions being broken away, showing the bag catching and delivering devices of the car in operative positions, the catching clutch being about to remove a bag from the delivering crane, the catching and delivering devices of a station being shown in plan, the station catching clutch being shown closed as though having just received a bag from the delivering arms of the car. Fig. 2, is a horizontal section through part of a mail car showing the catching and delivering devices withdrawn into the car, the car door being shown closed. Fig. 3, is a vertical longitudinal section through part of a mail car, the catching and delivering devices being shown in operative position, the station catching and delivering devices being shown in elevation, the parts being in the positions as shown by Fig. 1. Fig. 4, is a detail horizontal section through the vertical supporting post in the car, the locking lever and a portion of the track-way frame and truck being shown in plan. Fig. 5, is a detail horizontal section taken on the line 5—5,

Fig. 3. Fig. 6, is a detail perspective of the catching clutch and its truck carried by the car. Fig. 7, is a vertical section taken on the line 7—7, Fig. 1. Fig. 8, is a detail plan view of the station clutch showing the same in opened position. Fig. 9, is a detail cross section through the lower portion of the track frame supporting post showing the catch for the lower end of the post in plan. Fig. 10, is a vertical section through said catch, the lower end of the post appearing in elevation.

In the drawings, we have indicated a side wall 1, of a mail car having the usual side opening 2, which can be closed by any suitable door, for instance, the common sliding door 3. At each station along the railroad track or way where mail bags are to be delivered to and received from mail cars, we can arrange a platform 4, provided with any suitable mail delivering crane 5, having arms, adapted to detachably and vertically hold one or more mail bags 6, by their ends and at the desired height so that the catcher on the moving car can engage the bag or bags at the central portion or portions and remove the same from the crane and deliver the same into the car. Usually in advance of said crane (in the direction of movement of the mail cars) we provide a clutch or catcher to receive the bag delivered from the mail car. This catcher can be carried in an elevated position by and is affixed to an upright post 7, rising above the station platform. In the specific example illustrated, said catcher consists of a horizontally disposed clutch or grip facing in a direction opposite to that in which the mail cars approach the station, and adapted to engage the central portion of the bag held by the delivering device of the moving mail car, and strip said bag from the car devices and grip and hold the same. The clutch consists of a pair of bowed or oppositely-curved horizontally rockable approximately-similar bag gripping jaws 8, 9, pivotally joined together at their forward ends by pivot pin 10, and free or disconnected at their rear ends. At about midway its length, each jaw is rockable horizontally on a vertical pivot. The jaw 8, at its outer side, about midway its length, is formed with a lateral ear 80, horizontally overlapping the rear projecting end of an arm 11, and pivotally united thereto by a vertical pivot pin 81. The horizontal arm

11, supports the bag clutch and is rigidly secured to the post 7. The forward ends of arm 11, and horizontally swingable lever 90, overlap and are hinged together by vertical pivot pin 12. The outer lateral ear from the central portion of jaw 9, overlaps and is hinged to the rear end of lever 90, by vertical pivot pin 92. The arrangement is such that the clutch can be opened by swinging the jaw 9, laterally to separate the free ends of the jaws, during which movement, the lever 90 swings outwardly, the jaws rock on their intermediate pivots 81, 92, and as their free ends separate their pivotally united ends move or draw rearwardly or toward the direction from which the bag to be gripped approaches.

Means are provided to hold the jaws, detachably, in opened and closed positions. For instance, we show a horizontally swingable ratchet bar or lever 13, extending across the upper faces of arm 11 and of lever 90, and pivoted at 130, to the arm and yieldingly held by spring 132, with the teeth 131, against vertical stop or tooth 133, rigid with the lever. We usually so incline said teeth 131, as to normally hold the lever against outward swing, thus normally holding the jaws locked in closed or gripping position, but permitting the tooth 133, to freely run over the teeth of the rack or locking lever when the lever is swung inwardly to bring the jaws to closed position. The clutch is opened to receive a mail bag, by swinging the lever 13, clear of the tooth 133, and swinging the jaw 9, outwardly, then releasing the locking lever 13.

The mail car is provided with means to hold the bag to be delivered so that its central portion will move into the clutch between the jaws thereof and strike the closed portion of the clutch, that is, the united ends of the jaws with sufficient force to force said ends of the jaws forwardly and thereby swing the lever 90, inwardly, bringing the jaws together gripping and clamping the bag between them and stripping it from the car devices. As the jaws thus close together, the tooth 133, will run over the ratchet 131, and thus lock the jaws in closed gripping position. The mail bag is thus held by the clutch until the operator removes the same by opening the jaws, while the lever 13 is pressed from the tooth 133. The jaws 8, 9, are preferably formed with wide flat or smooth inner faces to avoid injury to the mail bags, and usually one of the jaws is formed with curved faces or surfaces 82, at its hinged end bridging and arranged in advance of the hinge to protect the bag therefrom and to prevent the bag being cut by the hinged ends of the jaws as the jaws close together.

We provide a clutch or grip to strip the bags from the cranes 5, while the car is in

motion, and to deliver said bags into the moving car, and such clutch carried by the car is of a construction practically the same as that hereinbefore described for catching bags from the moving cars. Said clutch carried by the car is provided with and is carried by a movable truck or carriage carried by and movable longitudinally of a horizontally swingable frame provided with a runway for the truck, said frame being mounted in or on the car to swing on a vertical axis in such manner that the frame can swing to operative position at the exterior of the car with the truck at the forward end thereof and the clutch in opened or bag receiving position, so that the impact of the clutch with the bag upheld by the crane, will force the truck rearwardly of the frame, causing the frame to swing back into the car carrying therewith the truck, clutch and bag gripped thereby into the car. To this end, a vertical normally fixed shaft or rod 14, is supported in the car, usually a short distance within the car and about opposite the front end of the car side opening 2, through which the bags are to be received and delivered. This shaft is arranged a sufficient distance in the car to permit the passage of the sliding door 3, across the opening and between the shaft and the adjacent side wall of the car. Said shaft at its upper end is confined in a suitable bracket 140, fixed to the ceiling, and at its lower end by a suitable bracket 141, fixed to the floor. If so desired, the shaft can be so mounted as to be capable, when released, of swinging from its upper end, inwardly of the car to free its lower end from the bottom bracket 141, to permit the truck supporting frame to be removed from or placed on the shaft, as and for the purposes hereinafter set forth. To permit this adjustment the shaft can be suspended or supported from its upper end by and capable of swinging in a fixed vertical plane on the strong crosspin or pivot 142, carried by the upper bracket 140.

The floor bracket 141, can be horizontally slotted or formed with a horizontal groove or step block or socket 143, open at one end to permit the lower end of the shaft to move laterally into or from the socket. The shaft is normally confined in the upright position and in said socket, by a lock consisting of a depressible plate 144, having a perforation to receive the shaft end and confine the same in operative position. The plate is normally upheld in locking position by spring 145, and has a projecting end which can be engaged and depressed by the foot to release the shaft end. However, we do not, as at present advised, wish to limit the invention to such specific arrangement, nor do we wish to limit the broad features of our invention to a movable or adjustable supporting shaft or axis for the movable truck carrying frame.

15, is a strong tube or sleeve embracing the shaft 14, and axially movable or rotatable thereon. The sleeve is confined on the shaft between upper and lower collars 146; the lower collar being normally clamped to the shaft by set screw 147, or other adjustable means, so that said lower collar can be removed from the shaft to permit longitudinal movement of the sleeve to or from the shaft, when the shaft is released at one end as hereinbefore described. This sleeve carries the mail bag delivering devices, and also the frame carrying the clutch truck.

The truck carrying frame is provided with one or more horizontally disposed about radially arranged supporting arms 16, rigid with said frame and centered on said sleeve. For instance, the sleeve passes loosely through the outer ends of said arms so that the arms can turn thereon, between collars 150, normally fixed on the exterior of the sleeve and upholding said arms and the frame in the desired adjustment. It is desirable, however, that the sleeve turn with said arms, although in some instances a limited independent movement of the arms on the sleeve is desirable for the purposes hereinafter described. To permit this limited independent movement and yet cause the sleeve to otherwise turn with the arms, one of the arms can be provided with a pair of spaced rigid stop lugs or shoulders 160, between which is arranged a radial projection 151, from one of the collars 150, thereby permitting movement of the arms independent of the sleeve, the distance between the two lugs 160. However, we do not wish to limit the invention to such specific arrangement.

A latch or lock is provided to lock the truck carrying frame and the sleeve to the shaft and against movement when in the operative and withdrawn positions. This function can be provided by arranging a swinging intermediately pivoted locking lever or latch 17, on one of the arms, and provided at its inner end with a locking bolt or end 170 projecting radially through a slot or opening in the sleeve and adapted to enter a radial socket or hole 148, in the shaft. A spring 171 is provided to yieldingly hold the latch in locking position. The outer end of the latch is provided with a cam surface 172, to be engaged by the clutch truck for swinging the latch against its spring to withdraw the bolt 170, from locking position, all as hereinafter set forth.

The truck carrying frame is horizontally arranged and elongated and is formed with a longitudinally curved and elongated runway having closed ends or heads 160, said runway being formed by four spaced parallel curved tracks 161, arranged to form a pair of parallel spaced upper tracks and a pair of parallel spaced lower tracks, the lower tracks being spaced from the upper tracks, said up-

per and lower tracks being fixed together and to each other at the ends by the heads 160, and the tracks being rigid with the radial or lateral supporting arms 16, if so desired, two parallel spaced arms 16, being employed rigid, respectively, with the upper and lower pairs of tracks, although we do not wish to so limit ourselves.

The supporting arms 16, extend inwardly from the frame between the ends, thereof, usually being arranged somewhat nearer the inner than the outer or forward end of said truck carrying frame. The arrangement and formation of the truck carrying frame is such that when the frame is swung outwardly on the shaft 14, as a center or axis, the frame will pass out through the car side opening 2, and will swing forwardly to operative position with the front end of the frame extending forwardly at the exterior of the car in advance of said side opening and a distance laterally from the side of the car and with the rear portion of the frame curving rearwardly and inwardly through the said side opening 2, and the frame is held locked in this operative position by the latch bolt 170, extending through sleeve 15 into the socket 148 in the shaft 14. When the frame swings to withdrawn position it moves on the shaft 14, as a center, rearwardly and inwardly through the car side opening until it has passed completely into the car and assumes a position the reverse of the operative position.

18, is the clutch carrying truck in the form of a slide, block or frame confined within the runway formed by the tracks 161, and movable longitudinally from end to end thereof. The truck or slide 18, is confined between the tracks against vertical and lateral displacement, and to permit it to slide or travel freely longitudinally within the frame; and it is supported by a series of vertical and horizontal rollers 180, mounted on studs 181, projecting from the horizontal and vertical sides or faces of the slide so that the rollers will travel in engagement with the various flat vertical and horizontal faces of the tracks.

The bag gripping and conveying clutch is arranged at the outer side of the truck or slide and outwardly beyond the truck carrying frame or runway. This clutch is carried by the horizontal arm 19, rigid with the truck and projecting outwardly and forwardly and rearwardly beyond the outer side thereof. The horizontally rockable inner jaw 190 about midway between its ends is pivotally joined, at 191, to the front end of and arranged at the outer side of said rigid arm 19, while the rear end of horizontally swinging forwardly extending lever 192, is pivoted to the rear end of arm 19, by vertical pivot 193. The outer horizontally rockable and outwardly movable clutch jaw 194, is arranged at the inner side of lever 192, and

about midway between its ends said jaw 194 is pivoted at 195 to the front end of lever 192. The two jaws 190, 194, are hinged together at their rear ends by vertical pivot 196, and said jaws are formed with broad flat inner bag engaging surfaces and guards 197, in advance of the hinge pivot 196, as hereinbefore described in connection with the station clutch.

Any suitable means can be provided for normally locking the clutch jaws against opening movement, yet permitting closing movement thereof. For instance, we show horizontally swingable toothed or ratchet lever or bar 20, arranged transversely of the arm 19, and lever 192 and fulcrumed at 21, and yieldingly held by spring 22, with the toothed edge against tooth or shoulder 23 rigid with lever 192. The toothed edge of the lever 20, is formed by teeth so inclined as to run freely over shoulder 23, when the outer jaw is swung inwardly but so as to engage said shoulder and prevent outward swing of said jaw. Hence, the clutch can be opened when in the car and the truck or slide can be moved to the outer or receiving end of the frame, and the frame can then be swung out to operative bag receiving position, the ratchet bar 20, holding the clutch in open position.

As the car moves forwardly the central portion of the mail bag 6, held by crane 5, will pass between the clutch jaws and strike the hinged or united ends thereof, thereby causing said jaws to automatically close together tightly gripping and holding the bag between them and stripping the bag from the crane, the ratchet bar 20, holding the jaws in gripping or clutching position. The impact of the clutch and bag will throw the clutch and its truck or slide rearwardly longitudinally of the runway or tracks 161, and as the truck moves rearwardly along the frame tracks, one of the rollers 180, (or if desired some other part moving with the truck) will engage the outer cam end 172 of the track frame lock, swinging said lock to release the sleeve 15 from shaft 14, and thereupon the impact of the truck with the closed rear end of the frame runway, will swing said frame inwardly into the car and forwardly therein to the completely reversed or withdrawn position. The mail clerks can then, in the car, open the clutch and remove the mail bag or bags carried thereby. If desired, the locking latch 17, can be so arranged as to automatically lock the sleeve 15, and consequently the track frame in withdrawn position as the truck when at the rear or inner end of the runway, has passed beyond and released the latch, permitting its spring 171, to act in holding the latch in locking position. If such arrangement is employed, the clerks can release the latch by hand when it is desired to swing the track

frame to operative position, or by pushing the truck along the tracks to operative position, it will automatically release the latch the same as it does when moving rearwardly under the impact of the mail bag.

If so desired, although it is not the intention to thereby limit all features of the invention, an operative connection can be established between the horizontally swingable track frame and the sliding car door 3 whereby the opened car door can be automatically closed by the inward or withdrawing movement of the track frame, and whereby the track frame can be swung out to operative position by the opening movement of the car door. As a means which can be employed for this purpose, we show a radial arm 30, arranged to swing within the car on the shaft 14, as a center and fixed to the frame arm 16, to swing therewith. At its free end this arm 30, is formed with a free opening 31 through which depends and freely passes a cable 32 at its lower end carrying counterweight 33. The cable passes from the counter weight upwardly through the perforation 31, and from thence horizontally and rearwardly within the car to the pulley 34, mounted at the rear edge wall of the car opening 2, and from thence the cable passes forwardly across the car opening to the rear edge of the car door to which it is affixed.

When the track frame is in operative position at the exterior of the car, the arm 30 extends rearwardly from the shaft 14 toward the pulley 34, and the car door is open. When the track frame swings inwardly, the arm 30, swings forwardly and inwardly, thereby carrying the weighted end of the cable 32, forwardly and drawing the door rearwardly to close the car opening, but by employing the counterweight and allowing the cable to pass freely through the arm 30 until the counterweight engages the arm, the parts can be so arranged that the door 3, will not start across the side opening 2, until the outer ends of the track frame and of the clutch have passed inwardly beyond the range of movement of the door. This connection between the track frame and the door will also serve as a brake on the track frame to reduce the speed thereof in completing or during the completion of its retracting or withdrawing stroke.

If so desired, means can be employed, to yieldingly hold the clutch carrying truck in operative position at the forward end of the track frame. For instance, the inner end of ratchet bar 20, can be extended inwardly so as to move above the outer top track 161, and said end of bar 20 can be beveled rearwardly and inwardly as shown at 24 to engage and slip past pivoted toe 25 pivoted at 26 to said upper outer track, and yieldingly held forwardly by comparatively strong

spring 27 against a stop 28. This toe 25 is arranged near the front end of the track frame so that beveled edge 24 will engage the outer end of the toe as the truck is moving forwardly causing the ratchet bar 20, to swing away from the shoulder 23, in order to let said bar slip past the toe and drop back to normal position in front of the toe as the truck reaches its limit or forward position. In order to move rearwardly the square rear edge of the inner end of ratchet bar 20, must engage toe 25 and swing the toe rearwardly against the tension of its spring 27 to enable the ratchet bar end to slip past the toe. The truck will hence be yieldingly held by the spring actuated toe, in operative position to grasp the mail bag, and against being jarred from operative position by the vibration and movement of the rapidly traveling car. Also, if so desired, means can be employed to automatically open the clutch or swing the outer jaw outwardly when the clutch carrying truck is moved to operative position. For instance, we show the truck provided with a longitudinal movable push bar 29 independently movable longitudinally of the truck and projecting in advance thereof and adapted to engage the closed front end 160 of the track frame as the truck about reaches its limit of forward movement, whereby the push bar will be forced rearwardly, thereby swinging forwardly the outer end of an intermediately pivoted lever 29^a, at its inner end pivotally attached to the push bar and at its outer end longitudinally slotted and receiving the pivot pin 196 joining together the rear ends of the clutch jaws. While the push bar is thus being forced rearwardly, the ratchet bar 20 is held away from shoulder 23, by the engagement of beveled edge 24 with the toe 25. The forward swing of the outer end of said lever 29^a presses the rear ends of the clutch jaws forwardly, and consequently opens the clutch, and by the time the clutch has been opened the ratchet bar has slipped past the toe and is thus restored to locking position. We wish it understood however, that our invention is not limited to the specific constructions and arrangements thus described, nor in fact do we wish to limit the broad features of our invention to means for automatically opening the clutch.

If so desired, bag delivering means can be provided operating in conjunction with the track frame and swinging into and out of the car and from and to operative position. For instance, we provide a pair of parallel horizontal radial bag delivering arms 40, at the rear ends normally fixed to the sleeve 15, usually to the opposite end portions thereof and above and below the track frame and extending transversely of and outwardly beyond the rear portion of the track frame. At their outer ends these arms are provided

with suitable devices such as spring guarded hooks 41 opening rearwardly to receive the end handles or loops of mail bags and to hold the mail bag stretched vertically between the outer ends of the arms and in such position that the bag catching clutch arranged at the station will receive the central portion of the bag and strip the same from the hooks 41. The arms 40, are arranged behind or in rear of the track frame clutch when the parts are in operative position and are usually so arranged with respect to the station clutch coöperating therewith, that as the car moves forwardly, the track frame clutch will pass above the station clutch, and the station clutch will receive the bag from the delivering arms before the track frame clutch reaches the bag held by the station crane 5. The delivering arms 40, are arranged sufficient distances above and below the track frame so as not to interfere with the free rearward passage of the track frame clutch and the bag carried thereby. The delivering arms swing into the car with the track frame, but by reason of the limited independent movement between the track frame and sleeve 15, said delivering arms can when the track frame is in withdrawn position, be swung rearwardly and inwardly so as not to obstruct the interior of the car by extending directly inwardly thereof across the track frame. This independent movement is permitted, as hereinbefore described, by having the track frame radial arms loosely mounted on the sleeve 15 and coupled to swing therewith through the medium of the radial projection 150 interposed between the spaced lugs 160.

A mail car after making a trip, often returns in the opposite direction without being first turned or reversed on a loop or turn table. To avoid providing both sides of each mail car with duplicate sets of catching and delivering devices, arranged to operate in opposite directions, we propose to provide one catching and delivering set for each mail car and render the same applicable to both sides of the car and to operate in opposite directions according to the direction of movement of the car. To this end, we provide the opposite sides of the car with shafts 14, movably or adjustably mounted as hereinbefore described and arranged at correspondingly opposite ends of the respective car side openings. The track frame and its attached sleeve and the parts carried thereby, can hence be applied to either shaft 14 as hereinbefore described, and when the car starts on the return trip in the opposite direction, the sleeve and its attached parts can be removed from one shaft 14 and applied to the other shaft 14 so that the track frame and its clutch will face and operate in the proper direction and from the proper side of the car.

The devices herein set forth are designed to avoid damage and injury to the mail bags and to permit the delivery of mail bags from and to mail cars while traveling at great speed. Clutches about such as described can be employed for handling mail bags without danger to the operators and with minimum danger of injury to the bags. By employing a clutch carried by a traveling truck, mail bags can be successfully delivered to rapidly moving cars without danger to the occupants of the car, reducing to the minimum liability of injury to the bags and their contents, and the shock and severity of the impact between the clutch and the possibly heavily laden bag or bags will be reduced to the minimum by the swingable track frame and the truck traveling along said frame.

It is obvious that various changes and modifications might be resorted to in the forms, constructions and arrangements of the parts described, that elements might be omitted, and that features might be added without departing from the spirit and scope of our invention, and hence we do not wish to limit ourselves to the exact constructions shown.

What we claim is:—

1. In a railway mail bag handling apparatus, a mail bag clutch or catcher comprising rockable jaws having forward free ends and pivotally united rear ends, and means pivotally supporting and controlling said jaws whereby the clutch can be opened and whereby the same will be automatically closed to grip one or more mail bags by the engagement of the bag or bags with the connected ends of the jaws.

2. In apparatus of the character substantially as set forth, a receiving or catching clutch comprising pivotally mounted jaws hinged together at their rear ends and having free front ends, and supporting means pivotally applied to said jaws at points intermediate their ends and whereby the same are capable of opening and closing.

3. In mail bag handling apparatus, a bag catcher consisting of a clutch adapted to open and close and comprising jaws having free front ends and flexibly connected at their rear ends, and means pivotally supporting said jaws and applied thereto intermediate their ends and comprising a swingable supporting member.

4. A mail bag catcher consisting of a clutch comprising movable jaws adapted to receive and automatically close on and clutch a bag, supporting means for said jaws comprising a swinging member pivotally applied to an intermediate portion of one of said jaws, and means whereby said clutch is caused to close on and grip the bag by the meeting impact between the bag and clutch.

5. In mail bag handling apparatus, a bag

catcher consisting of a clutch comprising pivotally mounted members adapted to be swung to open the clutch to receive a bag, supporting means for said members comprising arms pivotally united at their rear ends to open and close with said members, means whereby the meeting impact of the bag and clutch will cause the clutch to automatically close on and hold the bag, and locking means holding the clutch in closed bag holding position.

6. In mail bag handling apparatus, a bag catcher consisting of a bag receiving and gripping clutch comprising bag gripping jaws, flexibly joined at their rear ends and pivotally supported from points intermediate their ends, relatively-movable supporting means whereby said jaws can open to receive the bag and close to grip the bag, and means permitting free closing movement of the clutch and normally holding the same against opening movement.

7. Mail bag handling apparatus comprising a bag catcher and holder consisting of a bag clutch comprising a pair of cooperating bag engaging jaws flexibly joined at their inner ends and pivotally mounted intermediate their ends, and supporting and controlling means for said jaws, substantially as described.

8. Mail bag handling apparatus comprising a bag catcher and grip consisting of a clutch having horizontally rockable cooperating bag gripping jaws flexibly connected at their rear portions, and supporting and controlling means for said jaws comprising an arm applied to one of said jaws and swingable therewith from a point in rear of said jaws.

9. Mail bag handling apparatus comprising a pair of transversely rockable cooperating bag gripping jaws hinged together at their rear ends and provided with means for guarding the bag against injurious engagement with the hinge joint, and means for supporting said jaws.

10. Mail bag handling apparatus comprising a bag catcher and clutch having a pair of cooperating oppositely bowed rockable bag gripping jaws flexibly united at their rear portions and supporting and controlling means for said jaws to which intermediate portions of said jaws are pivotally mounted.

11. Mail bag handling apparatus comprising a pair of cooperating bag gripping jaws flexibly joined at their rear portions, means supporting one jaw, a swingable arm supporting the other jaw whereby they can open, and close, and means automatically holding said jaws against opening movement and permitting free closing movement thereof.

12. Mail bag handling apparatus comprising a pivotally mounted bag gripping

jaw, a forwardly extending lever swingable toward and from said jaw, a cooperating bag gripping jaw arranged opposite said first mentioned jaw and pivotally joined to said lever and at its rear end movably joined to the rear end of said first mentioned jaw, and controlling means.

13. In mail bag handling apparatus a horizontally disposed arm fixed to a support, a horizontally swingable lever fulcrumed to said arm and extending forwardly from its fulcrum point, a pair of horizontally rockable cooperating bag gripping jaws pivotally united at their rear ends and free at their front ends and arranged between said arm and said lever and pivotally joined thereto respectively at points about midway the length of the jaws, and means permitting free closing movement of the jaws and adapted to hold the same in gripping position.

14. Mail bag catching means comprising a movable support provided with a bag catching and gripping clutch carried thereby and movable therewith, and a swingable frame having an elongated track-way for said support, whereby the meeting impact between the bag and the clutch will cause an operative stroke of said support to reduce the shock of the impact and to swing the frame to deliver the bag at the point desired.

15. Mail bag handling apparatus comprising a frame carried by and mounted in to move into and out of a car and provided with an elongated runway, means for normally holding said frame in projected and withdrawn positions, a truck movable back and forth in said runway, and a mail bag catching and gripping clutch carried by and movable with said truck, as and for the purposes substantially as described.

16. In mail bag handling apparatus, a movable frame provided with means confining the same to a definite path of movement, a truck confined to and freely movable longitudinally of said frame and adapted on its operative stroke to drive said frame on its operative stroke, and a mail bag receiving and gripping catcher carried by and movable with said truck and adapted to propel the same on an operative stroke by the force of the impact between the clutch and a bag.

17. In mail bag handling apparatus a swinging frame having an operative stroke to and from withdrawn position in the car and operative position at the exterior of a car, and a mail bag catcher consisting of a clutch adapted to receive and grip mail bags, said clutch being carried by and freely movable longitudinally of said frame and so arranged with respect thereto that the force of the impact between the clutch and a mail bag caught while the car is in motion will force

the clutch longitudinally of the frame and cause an operative stroke of said frame to its withdrawn position within the car.

18. In mail bag handling apparatus, the combination of a horizontally swingable frame carried by a car, said frame swinging on a vertical axis to and from withdrawn position within the car and operative bag catching position at the exterior of the car, a truck confined to and movable longitudinally of said frame, and a bag catching and holding clutch carried by said truck.

19. In combination, an elongated horizontally swingable frame carried by a car and movable to and from withdrawn position within the car and bag catching position at the exterior of the car, and a bag catching and gripping clutch carried by said frame and having a relative movement independent of the frame, said frame adapted to be swung from bag catching position to withdrawn position by the force of the impact between a bag and the clutch when the bag is caught while the car is in motion.

20. In combination, a frame carried by a car and swingable forwardly to bag catching position at the exterior of the car and swingable rearwardly to withdrawn position within the car, said frame formed with a longitudinally elongated curved runway, a truck confined to travel in said runway, and a bag catching and gripping clutch arranged outwardly beyond said frame and said truck and fixed to and carried by said truck, substantially as described.

21. In combination, a movable frame carried by a car and movable to and from bag catching position at the exterior of the car and withdrawn position within the car, means for locking said frame in bag catching position, a truck carried by and independently movable with respect to said frame and adapted on its operative stroke to release said lock and propel the frame to withdrawn position, and a bag catching and holding clutch carried by said truck.

22. In combination, a movable frame carried by a car and provided with an elongated runway, a truck carried by said frame and freely movable along said runway, a bag catching and gripping clutch carried by and movable with said truck, and means for yieldingly holding said truck in operative bag catching position in said runway.

23. In combination, a frame carried by a car, a truck carried by said frame and movable independently thereof to and from bag catching position, a bag catching and holding clutch carried by and movable with said truck and provided with a lock for holding said clutch in bag gripping position, and mechanisms for automatically releasing said lock and opening said clutch on the movement of the truck to operative bag catching position.

24. In combination, a vertical supporting axis arranged in a car adjacent an opening thereto, and an elongated horizontally disposed frame intermediate its ends having a lateral support rigid therewith and centered to swing with said frame on said vertical axis, said frame having a horizontally elongated longitudinally curved runway with end abutments, a truck confined to and movable longitudinally of said runway and adapted to be stopped at each end thereof by said abutments, and a bag catching and gripping clutch carried by said truck.

25. In combination, a frame carried by a car and having an elongated runway, a truck carried by said frame and movable longitudinally thereof along said runway from operative bag catching position to withdrawn position, a bag catching and gripping clutch carried by and movable with said truck and comprising movable members adapted to open to receive the bag and closed to grip the bag, and means for automatically opening said members when the truck is moved to operative bag catching position.

26. In combination, an elongated frame carried by a car and swingable on a vertical axis to and from withdrawn position within the car and bag catching position at the exterior of the car and formed with parallel spaced curved tracks forming a runway longitudinally of the frame, a truck confined between said tracks to reciprocate longitudinally thereof and having vertical and horizontal rollers engaging said tracks and confining the truck in the runway formed thereby, and a bag catcher carried by and moving with the truck.

27. In combination, a vertical supporting axis arranged within the car, means for detachably mounting said axis whereby the same can be moved to free one end thereof so that supporting means can be slipped on or removed from said axis, a swinging frame provided with and carrying a bag catcher and having supporting means removably arranged and centered on said axis on which said frame swings as a center, substantially as described.

28. In combination, a car having an opening, a door to close said opening, a swinging frame mounted on a vertical axis within the car, a door-closing flexible operative connection

between said frame and said door whereby the movement of the frame in one direction will close the door and opening movement of the door will swing said frame in the opposite direction, and a bag catcher carried by said frame and adapted by impact with a mail bag to swing said frame to a position within the car and through said connection pull the door closed.

29. In combination, a frame carried by a car and swingable on a vertical axis to and from withdrawn position within the car and bag catching position at the exterior of the car, a bag catcher carried by and movable with said frame, and radial bag delivering arms carried by and swingable with said frame and having a limited movement independently of said frame.

30. In combination, a frame swingable on a vertical axis in a car to and from bag catching position at the exterior of the car and withdrawn position within the car, a truck movable longitudinally of said frame and provided with a bag catcher, and bag delivering arms swingable with said frame to withdrawn and operative positions, said arms having a limited movement independent of said frame whereby said arms can be folded when in withdrawn position, substantially as described.

31. In combination, a car having a side opening, a sliding door to close said opening, a swinging frame carried by and mounted within the car and adapted to swing from operative bag catching position at the exterior of the car to withdrawn position within the car and provided with a bag catcher, and a door-closing flexible connection between said door and said frame and having loose connection with the frame to permit independent movement of the frame with respect to the connection and provided with means whereby the inward swing of the frame beyond a certain point in its movement will cause closing of the door through the medium of said connection.

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

HAZEL NELSON PEDERSEN.
PETER MARTIN CHRISTENSEN.

Witnesses:

CHRISTIAN JOHNSON,
VICTOR THEOKELSEN.