

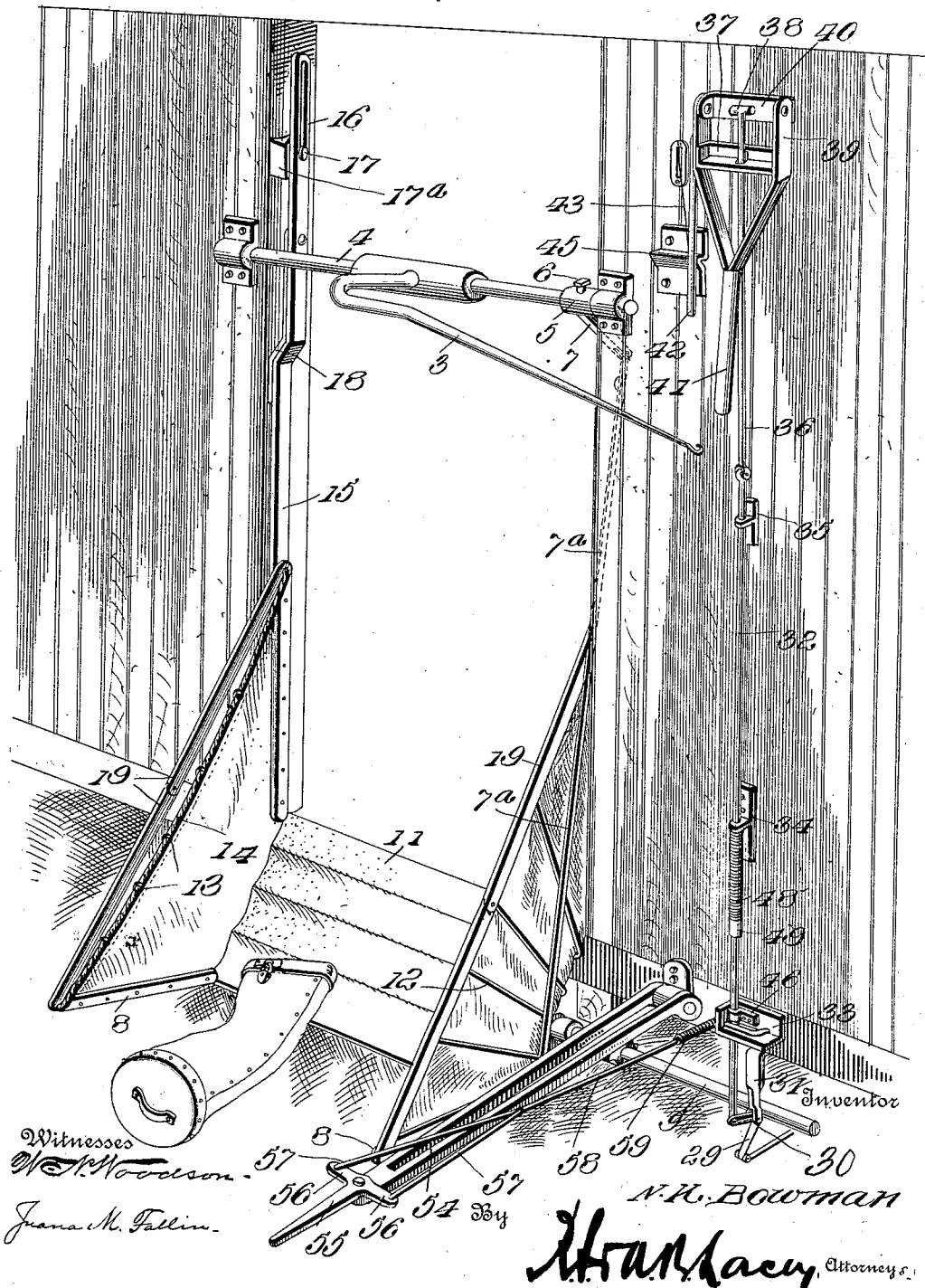
MAIL HANDLING APPARATUS.

APPLICATION FILED JULY 11, 1910. RENEWED OCT. 3, 1912.

Patented May 6, 1913.

4 SHEETS—SHEET 1.

Fig. 1.



N. K. BOWMAN.

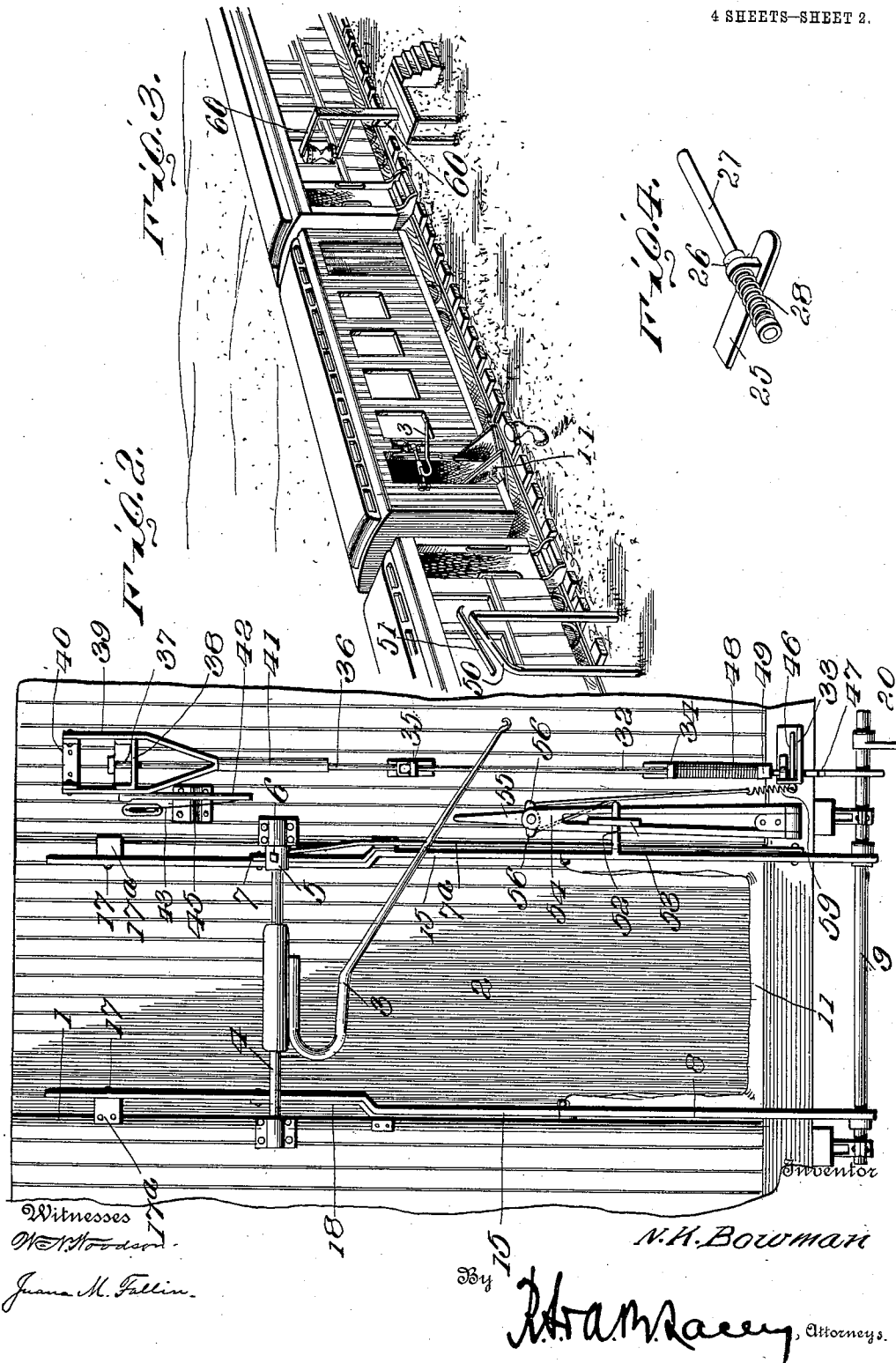
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1,060,888.

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4 SHEETS—SHEET 2.



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4 SHEETS-SHEET 3.

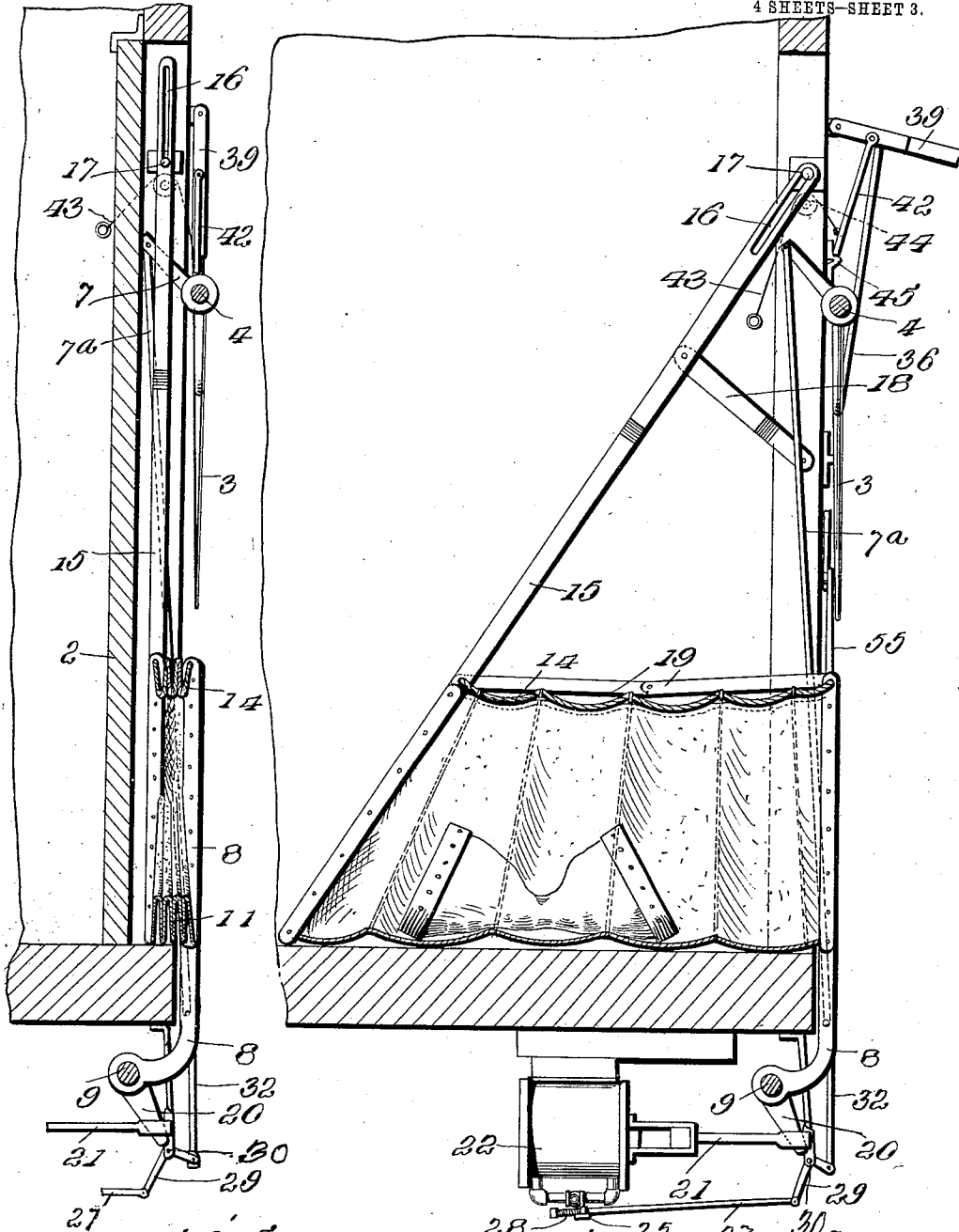


Fig. 5.

Fig. 6.

Inventor

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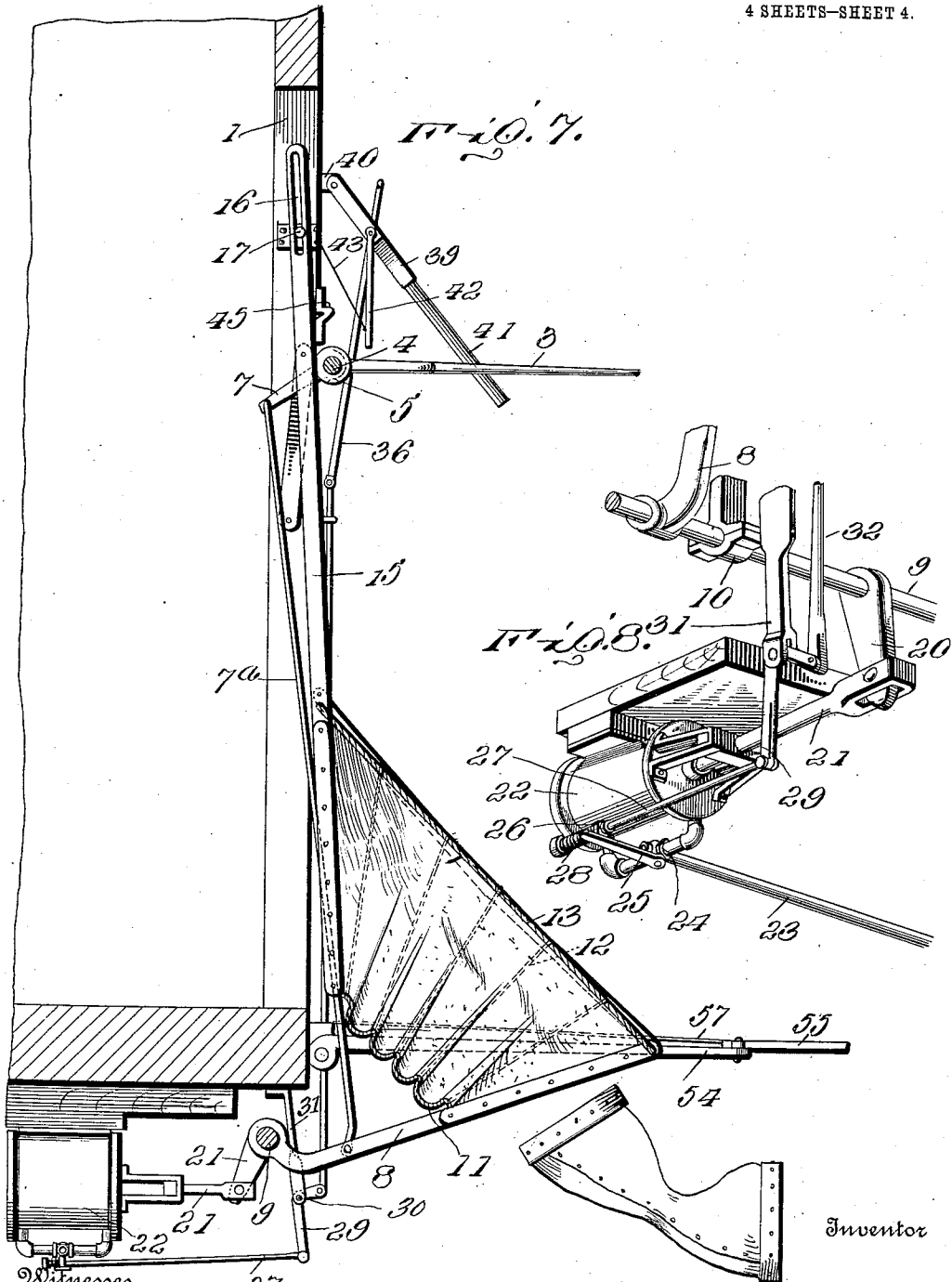
By *H. H. H. H.* Attorneys.

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4 SHEETS—SHEET 4.



Witnesses
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UNITED STATES PATENT OFFICE.

NEWTON K. BOWMAN, OF NORTH LAWRENCE, OHIO.

MAIL-HANDLING APPARATUS.

1,060,888.

Specification of Letters Patent.

Patented May 6, 1913.

Application filed July 11, 1910, Serial No. 571,534. Renewed October 3, 1912. Serial No. 723,814.

To all whom it may concern:

Be it known that I, NEWTON K. BOWMAN, citizen of the United States, residing at North Lawrence, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Mail-Handling Apparatus, of which the following is a specification.

In the operation of transferring mail matter to and from moving trains, and in the provision and maintenance of appliances for this purpose, there has long been a demand for mechanism which will do away with the manual control of the apparatus, and obviate the consequent necessity of the operator standing with his head out of the door-way of the mail coach as the train approaches the crane or other bag supporting device alongside of the track, and to this end, it has been proposed to provide mail handling mechanism which will act automatically, after having once been set by the operator within the car, to discharge a bag or bags positively at the proper point in the passage of the train, and to catch and swing within the car the bag which is intended for the train.

With a knowledge of these conditions, my present invention has for its primary object, an automatic mechanism for this purpose which will efficiently fulfil all of the conditions and requirements imposed upon an automatic mail handling apparatus for the successful introduction and installation, and operation thereof, which will be simple in its construction, and durable, and act accurately and positively and without fail to transfer the mail bags to and from rapidly moving trains without depending at all upon the skill or attention of the mail clerk, beyond the single operation of setting the apparatus prior to the arrival of the train at the point of transfer.

The invention also has for its object automatic mail handling mechanism all of the parts of which may be operated by fluid pressure both as regards the discharge of a bag or bags from the train and the operation of receiving the bag into the car, and the operation of subsequently moving the parts to a substantially inoperative position where they will be held out of the way.

The invention also has for its object an automatic mail handling mechanism which, after being set by the mail clerk for the automatic operation, will first discharge a

bag or bags from the car, subsequently receive a bag from a crane alongside of the track, and finally move the parts back again to an inoperative position ready for the next mail transferring operation.

A further object of the invention is a mechanism of this character which will operate automatically to raise the bag catching hook to an operative position at the same time the bag discharging mechanism is moved to an operative position so as to discharge a bag or bags from the car and hold the hook in readiness for a subsequent receiving operation. And a further object of the invention is a mail handling apparatus of the type herein specified which will economize space and interfere in no wise with any manual operation of moving the mail bags or the like into or out of the mail coach.

With these and other objects in view, the invention consists in certain constructions, arrangements and combinations of the parts that I shall hereinafter fully describe and claim.

For a full understanding of the invention, reference is to be had to the following description and accompanying drawings in which:

Figure 1 is a perspective view of an automatic mail handling apparatus constructed in accordance with my invention, the parts being shown in an operative position, discharging a mail bag from the car, and in readiness to subsequently receive a bag into the car; Fig. 2 is a front elevation of the apparatus, the parts being shown in an inoperative position out of the way; Fig. 3 is a perspective view in the nature of a diagram, illustrating conventionally the track accessories that may be used in connection with the car apparatus of my invention; Fig. 4 is a detail view of a portion of the fluid pressure actuating mechanism embodied in the apparatus; Fig. 5 is a transverse sectional view of the apparatus in its folded, inoperative position; Fig. 6 is a similar view with the bag discharging basket extended within the car in position for the mail clerk to deposit one or more sacks therein; Fig. 7 is also a transverse sectional view of the device, but showing the parts in the position which they will assume immediately after the discharging of a sack from the car; and, Fig. 8 is an underneath detail perspective view of a portion of the fluid pressure actuating devices.

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

5 It is to be understood that my invention can be easily applied to any ordinary conventional railway mail coach with side opening doors, without any material alteration in the car structure, and referring to the drawings 1 designates the doorway of a car of this type, and 2 the door thereof, the door being shown closed in Fig. 2 so as to illustrate how the parts of my apparatus are so arranged that they will project to no appreciable degree when the door is closed, and they are in their inoperative position.

3 designates the ordinary bag catching hook which may also be utilized as a part of my invention, it being only necessary to secure the shaft 4 of the hook 3 to a collar 5, as by a set screw 6 or similar fastening device, said collar 5 being provided with a crank 7. The crank 7 in the normal inoperative position of the parts projects upwardly and inwardly, say at an angle of about 45° as indicated in Fig. 5 and is of such a length that it will lie within the door frame, and not interfere with the closing of the door 2. The crank 7 is pivotally connected to the upper end of a link 7^a, and the lower end of said link is in turn pivotally connected to one of a pair of laterally swinging arms 8 which are secured to and project perpendicularly from a shaft 9 mounted to partially rotate about its longitudinal axis in the hangers 10 secured to the floor of the car and extending down underneath the door, the shaft 9 extending longitudinally of the car, as clearly illustrated in the drawing.

In the present embodiment of my invention, the bag discharging portion of the apparatus includes a basket 11 which in the extended condition is substantially of U-shape in cross section, consisting of a strip of canvas or the like riveted or otherwise secured to the U-shaped frame bars 12 that are provided with loops 13 at their upper ends by which they are drawn upon cords or other flexible members 14. The cords 14 at their forward ends are secured to the arms 8 as is also the foremost edge of the canvas basket, while the rear ends of the cords 14 and rear edge of the basket are secured in any desired way to the lower portion of levers 15. These levers are formed at their upper ends with slots 16 by which they are mounted to swing and move slightly in a longitudinal direction upon studs 17 projecting inwardly from the opposite sides of the door frame and forming portions of the castings 17^a secured by screws or other fastening devices to the door jambs. Intermediate of their ends, the levers 15 are pivotally connected to links 18 said links

being also pivotally connected to the door jambs preferably about mid-way thereof; and farther down the levers are pivotally connected to the outer or relatively free ends of the arms 8 by means of toggle members 19 that preferably have a rule joint connection with each other as best illustrated in Fig. 6. It will thus be understood that as the arms 8 are swung outwardly and downwardly by the partial rotation of the shaft 9, the connection between said arms and levers 15 through the instrumentality of the toggle members 19 and links 18, will impart an upwardly and forwardly swinging movement to the levers and tip the basket outwardly from the position illustrated in Fig. 6 to that illustrated in Fig. 7.

In order to turn the shaft 9 to accomplish this result, the shaft is provided with a crank 20 which is pivotally connected to a plunger 21 connected to a double acting piston (not shown) working in a cylinder 22 supported in any desired way underneath the floor of the car at the door-way thereof, the cylinder 22 being supplied with fluid pressure, preferably air, by means of a supply pipe 23 which may be connected to any suitable source of supply as for instance, the air brake system of the train. The passage of fluid pressure is controlled by means of a three way cock 24 embodying a handle 25. Preferably, the handle 25 is formed with an apertured ear 26 through which a rod 27 passes, the rod being provided with an abutment by which any independent movement of the rod in one direction relative to the handle is stopped, and a spring 28 is preferably coiled around the rod and bears against the end thereof and the ear 26 so as to permit a yielding movement of the rod in the opposite direction relative to the handle, that is, when the rod is pulled forwardly.

The automatic mechanism controlling the action of the fluid pressure cylinder 22 and its plunger 21 includes, in addition to the rod 27, a bell crank lever 29 to the downwardly extending arm of which the rod 27 is pivotally connected. The bell crank lever 29 is fulcrumed at its elbow as at 30 in the forked lower end of a hanger bar 31, and the other arm of said lever is connected to a vertically disposed main actuating rod 32.

The rod 32 extends upwardly along the outside of the car at one side of the doorway, and passes through an angular bracket 33, and an intermediate guide bracket 34 thereabove to an upper guide bracket 35. The rod 32 is provided at its upper end with a pivotally connected section 36, the upper end of which passes freely upward through a slot formed in a cross bar 37 which is formed in its upper end with a T-head 38. The cross bar 37 forms a part of the frame

like body portion of a trip arm 39. This trip arm is pivotally connected at one end to a bracket 40 secured to the outer side of the car as shown, said trip arm being mounted to swing laterally in a vertical plane so as to assume a position out from the car or hang down against the side thereof. The trip arm 39 is formed at its free end with a shank or stem 41. In order to raise the trip arm 39 to a nearly horizontal position, as will be hereinafter more specifically set forth, the trip arm carries a pivoted strut 42, and a cord 43 is connected to said strut and passes upwardly and inwardly into the car over a pulley 44; by this means, the operator without the necessity of reaching outside of the car, may, by pulling downwardly upon the inner end of the cord 43 raise the trip arm to an operative position, the strut 42 finally coming to rest on a ledge 45 and thus maintaining the trip arm in readiness to be engaged by the track device. Upon the engagement of said track device with the trip arm 39, the latter will be raised or swung upwardly so that the cross bar 37 will engage with the T-head 38 of the main actuating rod 32, causing the latter to be pulled upwardly whereupon a spring latch 46 will snap into a notch 47 formed on the rod 32 near the lower end thereof, and hold the rod in an upper position. This upward movement of the rod will manifestly, by means of the bell-crank or angle lever 29 and rod 27 swing the handle 25 of the controlling cock 24 in one direction, this direction being that necessary to open the valve and admit the fluid pressure in that side of the piston which will cause the plunger rod 21 to move rearwardly. Consequently, this movement of the plunger rod will turn the shaft 9 in a direction to swing the arms 8 outwardly and hence tip the basket 11 to discharge a bag or bags previously placed therein, while at the same time, the turning of the shaft will effect the moving of the bag catching hook 3 to an outer operative position. In the subsequent downward movement of the rod 32, to turn the handle 25 in the opposite direction and effect the reverse partial rotation of the shaft 9, and the collapsing of the basket, and downward movement of the bag catching hook, gravity alone may be depended upon, but I prefer to also use a spring 48 which encircles the rod 32 and which bears downwardly upon a collar 49 secured to the rod and to the intermediate guide bracket 44.

It is to be understood that any track device may be employed that will be found suitable to raise the trip arm 39 and then pull upwardly upon the main actuating rod 32. For the purpose of illustration (as shown in Fig. 3) I have employed for this purpose an inclined elevated rail 50 arranged alongside of the track and of a length and inclination to raise the trip arm

41 sufficiently without any sudden shock or jar; and to provide against undue shocks owing to any unusual speed of the train or the rocking of the mail coach, I employ in connection with the rail 50, a guard rail 51, the rear end of the guard rail being preferably curved downwardly so that as soon as the trip arm has been raised up to pull upwardly upon the rod 32 by the engagement of the stem 41 of the arm with the rail 50, the curved rear end of the guard rail 51 will serve to positively move the trip arm downwardly, while at the same time of course, the rod 32 will not move downwardly, but will be held in its upper position through the instrumentality of the spring latch 46.

In order to release the latch from the rod 32 and permit the rod to move downwardly so as to move the parts to an inoperative position, one of the arms 8 is provided with a laterally extending finger 52 which works within an elongated loop 53 formed on a bar 54. This bar is pivotally connected at its lower end to a bracket secured to the outer side of the car next to the lower corner of the door-way and is mounted to swing from an erect position as illustrated in Fig. 2, to a substantially horizontal inoperative position such as illustrated in Figs. 1 and 7. This swinging of the bar 54 is accomplished by and simultaneously with the swinging of the arms 8 owing to the connection of the finger 52 with the elongated loop 53. The bar 54 carries a preferably T-shaped trip finger 55 which normally projects straight out from the bar and which is provided with two side lugs 56 that are connected to branch chains 57, connected to a common chain or connecting member 58 so that the trip finger may work equally well when struck from one side or the other according to the direction in which the car happens to be traveling. The connecting member 58 is preferably connected by a spring 59 with the free end of the latch 46. It will thus be understood that after the bar 54 has been swung outwardly to substantially horizontal position at the same time the bag discharging basket is tipped or tilted and the hook 3 extended, the finger 55 of the bar will be held in the path of movement of some projection along the track so that after a bag or bags have been discharged and a bag caught by the hook 3, said projection such as a portion 60 of a bag holding crane 61 will strike the finger 55 and thereby release the latch from the actuating rod 32, permitting the latter to move downwardly and thereby effecting the collapsing of the basket, and the lowering of the bag catching hook 3.

From the foregoing description in connection with the accompanying drawings, the operation of my improved automatic mail handling apparatus will be apparent. In

the practical use of the apparatus, when the train is about to approach the point where the transfer of mails is to take place, the mail clerk will open the door 2 and swing the levers 15 inwardly so as to extend the basket 11 within and on the floor of the car, as illustrated in Fig. 6, and will deposit the bag or bags to be delivered; and will also pull downwardly on the inner end of the cord 43 which will raise the trip arm 39 to the position illustrated in Fig. 6, the strut 42 then resting upon the ledge 45 and holding the trip arm in this position with the cross bar 37 just in engagement with the T-head 38 of the main actuating rod 32. But the rod 32 will up to this time remain in its lower position. The parts are now in readiness to be automatically actuated, and as the train approaches the point for the transference of the mail matter, the stem 41 of the trip arm 49 will finally ride upwardly upon the inclined elevated rail 50, the trip arm being thereby swung upwardly and carrying the rod 32 with it, until finally the latch 46 will engage the notch of the rod 32 and hold it in its upper position while the trip arm 39 will be permitted to be discharged and a bag caught by the hook 3, said projection such as a portion 60 of a bag holding crane 61 will strike the finger 55 and thereby release the latch from the actuating rod 32, permitting the latter to move downwardly and thereby effecting the collapsing of the basket, and the lowering of the bag catching hook 3.

From the foregoing description in connection with the accompanying drawings, the operation of my improved automatic mail handling apparatus will be apparent. In the practical use of the apparatus, when the train is about to approach the point where the transfer of mail is to take place, the mail clerk will open the door 2 and swing the levers 15 inwardly so as to extend the basket 11 within and on the floor of the car, as illustrated in Fig. 6, and will deposit the bag or bags to be delivered; and will also pull downwardly on the inner end of the cord 43 which will raise the trip arm 39 to the position illustrated in Fig. 6, the strut 42 then resting upon the ledge 45 and holding the trip arm in this position with the cross bar 37 just in engagement with the T-head 38 of the main actuating rod 32. But the rod 32 will up to this time remain in its lower position. The parts are now in readiness to be automatically actuated, and as the train approaches the point for the transference of the mail matter, the stem 41 of the trip arm 49 will finally ride upwardly upon the inclined elevated rail 50, the trip arm being thereby swung upwardly and carrying the rod 32 with it, until finally the latch 46 will engage the notch of the rod 32 and hold it in its upper position while

the trip arm 39 will be permitted to drop downwardly after it has ridden off the rail 51 and this upward movement of the rod 32 will rock the bell crank lever 29 and turn the handle of the fluid pressure controlling cock in a direction to admit the fluid pressure in front of the piston in the air cylinder, so as to move the plunger of said cylinder rearwardly to turn the shaft 9. The shaft 9 will be turned in a direction to swing the arms 8 outwardly so as to tip the basket 11 and discharge the mail bag or bags, while at the same time, the connection between one of the arms 8 and the shaft 4 of the bag catching hook 3 will turn the shaft 4 in a direction to swing the bag catching hook outwardly to its operative position for subsequently catching the bag from a crane or similar device farther along the track. As soon as the bag has been caught, the trip or projection such as the part 60 of the crane 61 will engage the trip finger 55 of the bar 54 which has been moved outwardly and downwardly with the arms 8 and the latch 46 will thereupon be released from the rod 32, the rod being thus permitted to move downwardly. This last named movement of the rod will of course move the handle of the fluid pressure controlling cock in the opposite direction and cause the plunger to move outwardly, in a direction to turn the shaft 9 so as to again raise the arms 8, and collapse the basket 11, and at the same time swing the bag catching arms 3 downwardly to an inoperative position. The bar 54 will simultaneously be moved to its upper and inoperative position, and the parts will all remain close to the side of the car and within the door-frame, and without interfering with the closing of the door and the door remaining closed until the next point for the transference of mail has been reached.

While the accompanying drawings and the foregoing description disclose what I believe to be the preferred embodiment of my invention, it is to be understood that the invention is not limited to the details of construction, and arrangement of parts shown, but that various changes may be made in the construction, arrangement and proportions of the various devices without departing from the scope of the invention as defined in the appended claims.

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

1. Mail handling mechanism, including a collapsible bag discharging basket, means for automatically extending the basket to discharge a bag therefrom, and means for automatically collapsing the basket again and returning it to its normal position after the discharge of the bag.

2. Mail handling mechanism, including a collapsible bag discharging basket, and au-

automatic means for extending and tipping said basket.

3. Mail handling mechanism including a collapsible bag discharging basket, and means for simultaneously distending and tipping said basket to discharge a bag therefrom.

4. Mail handling mechanism including a collapsible bag discharging basket arranged to be extended within the doorway of a car to receive a bag, and means for automatically tipping said basket out of the doorway of the car and for subsequently collapsing the basket into the door-way.

5. Mail handling mechanism including a bag discharging apparatus, fluid pressure means for operating said bag discharging apparatus, and means arranged along a track adapted to start the fluid pressure means in operation for first actuating the bag discharging apparatus and for subsequently returning the same to its normal inoperative position.

6. Mail handling mechanism including a bag discharging basket, and a support therefor including swinging arms, a shaft to which the arms are connected, and fluid pressure apparatus arranged to be automatically operated for swinging the arms first in a direction to distend the bag and subsequently in a direction to collapse the same.

7. Mail handling mechanism including a collapsible bag discharging basket, levers connected thereto, a support for said levers, links pivotally connecting said levers with their supports, swinging arms connected to the basket, means for swinging said arms, and toggle links pivotally connecting the free ends of the arms with the levers, substantially as shown and described.

8. Mail handling mechanism including, in combination with a car and the door thereof, of studs projecting inwardly from opposite sides of the door-way, levers having slotted upper ends by which they are mounted for a swinging and sliding movement on said studs, links pivotally connecting the levers with the sides of the door-way intermediate of the ends of the levers, the lower ends of the levers being free, a bag discharging basket connected to the levers at the lower ends thereof, swinging arms connected to the basket, means for swinging the arms, and toggle links pivotally connecting the arms with the levers.

9. Mail handling mechanism, including a bag discharging apparatus, means for operating the apparatus, said operating means including a swinging arm, a bag catching hook, a shaft on which the hook is mounted, a crank secured to said shaft, and a link connecting said crank with said arm.

10. Mail handling mechanism including a bag discharging apparatus, means for operating the same, said means including a shaft,

a fluid pressure plunger operatively connected to said shaft, a valve handle controlling the movements of the plunger, an actuating rod operatively connected to said handle to move the same, means for automatically actuating said rod, means for temporarily holding said rod in one position after the actuation thereof, and means for subsequently and automatically returning the rod to its normal position.

11. Mail handling mechanism, including a bag discharging apparatus, a bag catching hook, automatic means including an actuating rod for operating the bag discharging apparatus to discharge a bag and for moving the bag catching hook to an extended position, and means for holding said rod stationary after the bag discharging operation and preparatory to the bag catching operation, and means for automatically returning the rod to its normal position and the bag discharging apparatus and hook to their normal positions, after the bag catching operation.

12. Mail handling mechanism, including a bag discharging apparatus, automatic means for operating the same and returning said apparatus to an inoperative position, said means including a main actuating rod movable in one direction, to effect the operation of the bag discharging apparatus, and movable in the opposite direction to return said apparatus to its normal position, means for automatically moving said rod in the first named direction, means for automatically holding said rod stationary after said movement, and means for automatically releasing said rod from its holding means and for returning it to its normal position.

13. Mail handling mechanism, including a bag discharging apparatus, automatic means for operating the same, said means including an actuating rod, a trip arm having a limited independent movement from the rod, means for moving the trip arm in such independent movement to set the same, means for automatically moving said trip arm to move the rod with it, in a direction to operate the bag discharging apparatus, and means for holding the rod stationary after being moved by the trip arm without holding the trip arm, and means for automatically releasing the rod from the holding means and for returning it to its normal position.

14. In combination with a car having a door-way, mail handling mechanism, including a bag discharging apparatus arranged to operate in the door-way, means for automatically operating said bag discharging apparatus and for subsequently returning it to an inoperative position in the door-way, said means including a main actuating rod, a latch arranged to hold the rod stationary after it has been moved in a di-

rection to operate the bag discharging apparatus, a bar pivotally connected to the car and arranged to be swung out automatically in the operation of the bag discharging apparatus, the door being provided with a trip finger operatively connected with the latch and means for striking said trip finger to cause the same to release the latch from the rod and permit the same to move in a direction to carry the bag discharging apparatus back to its normal position.

15. Mail handling apparatus including a bag discharging apparatus, means for operating said apparatus, said means including a swinging arm, the arm being provided with a laterally extending finger, a pivoted bar formed with a loop receiving said finger, whereby the swinging of the arm will effect a swinging movement of the bar, a pivoted trip finger carried by the bar, automatic means for swinging said arm, said means including a main actuating rod, means for moving said rod in one direction to swing the arm outwardly, a latch adapted to hold the rod in this position, means for automatically engaging the trip finger to release the latch from the rod, and means for automati-

ically returning the rod to its normal position whereby to move the arm and bar also back to an inoperative position. 30

16. Mail handling mechanism, including bag handling devices and means for automatically operating the same, said means including a trip arm adapted to be raised to an operative position, a strut carried by said arm, a cord operatively connected to the strut whereby a pull upon the cord will draw upwardly on the strut to move the trip arm, and a ledge upon which the strut is adapted to rest so as to hold the trip arm in an operative position. 40

17. In mail handling mechanism of the character described, bag handling devices, fluid pressure means for controlling said devices automatically, said means including a controlling valve having a handle and a rod having a yielding connection with said handle, for movement in one direction, for the purpose specified. 50

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

NEWTON K. BOWMAN.

Witnesses:

LENA B. BOWMAN,

FREDERICK S. STITT.