

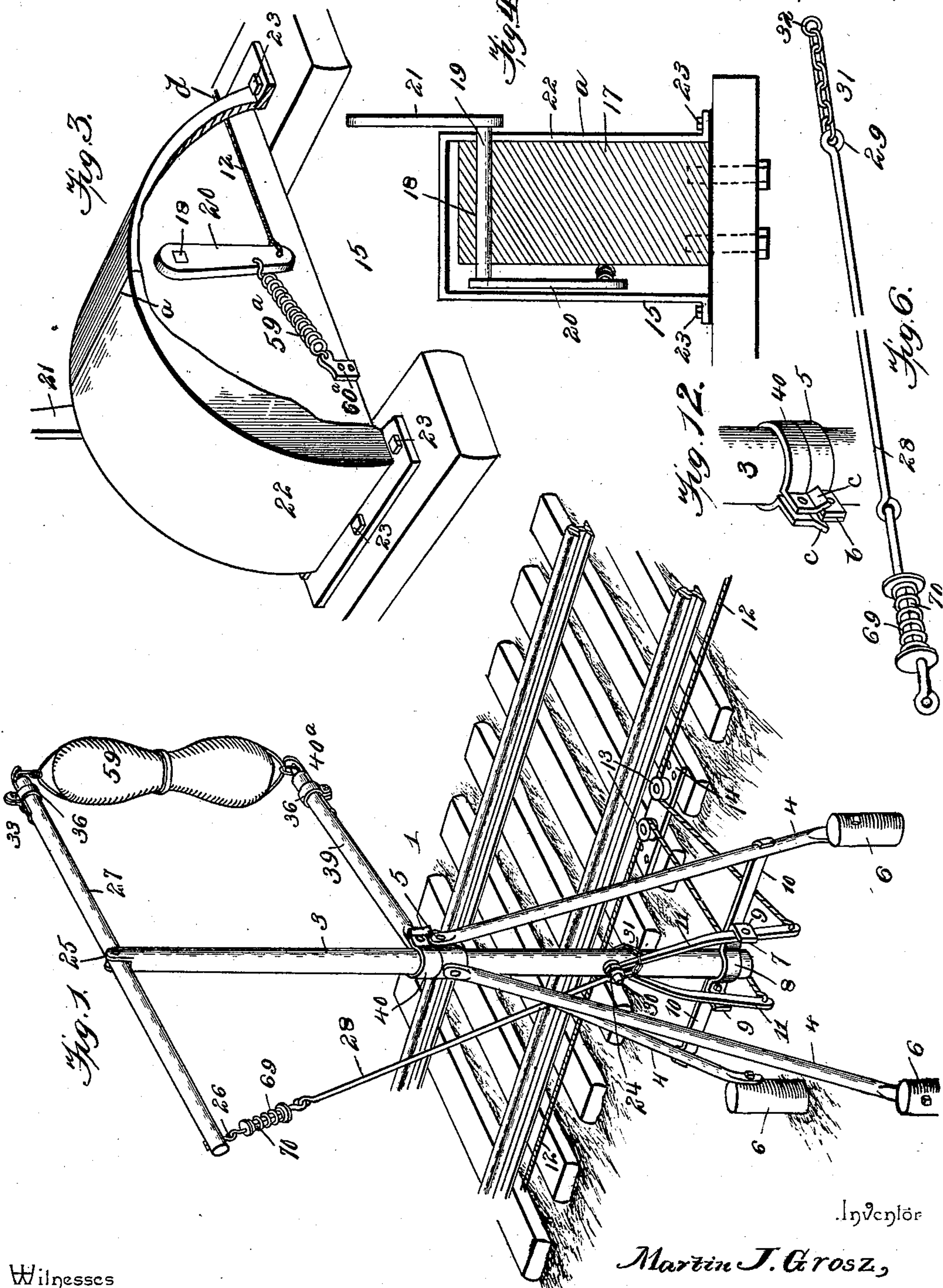
(No Model.)

2 Sheets—Sheet 1.

M. J. GROSZ.
MAIL CRANE.

No. 529,071.

Patented Nov. 13, 1894.



Witnesses

John C. Shaw
J. R. O'Brien

By *W. S. Attorneys.*

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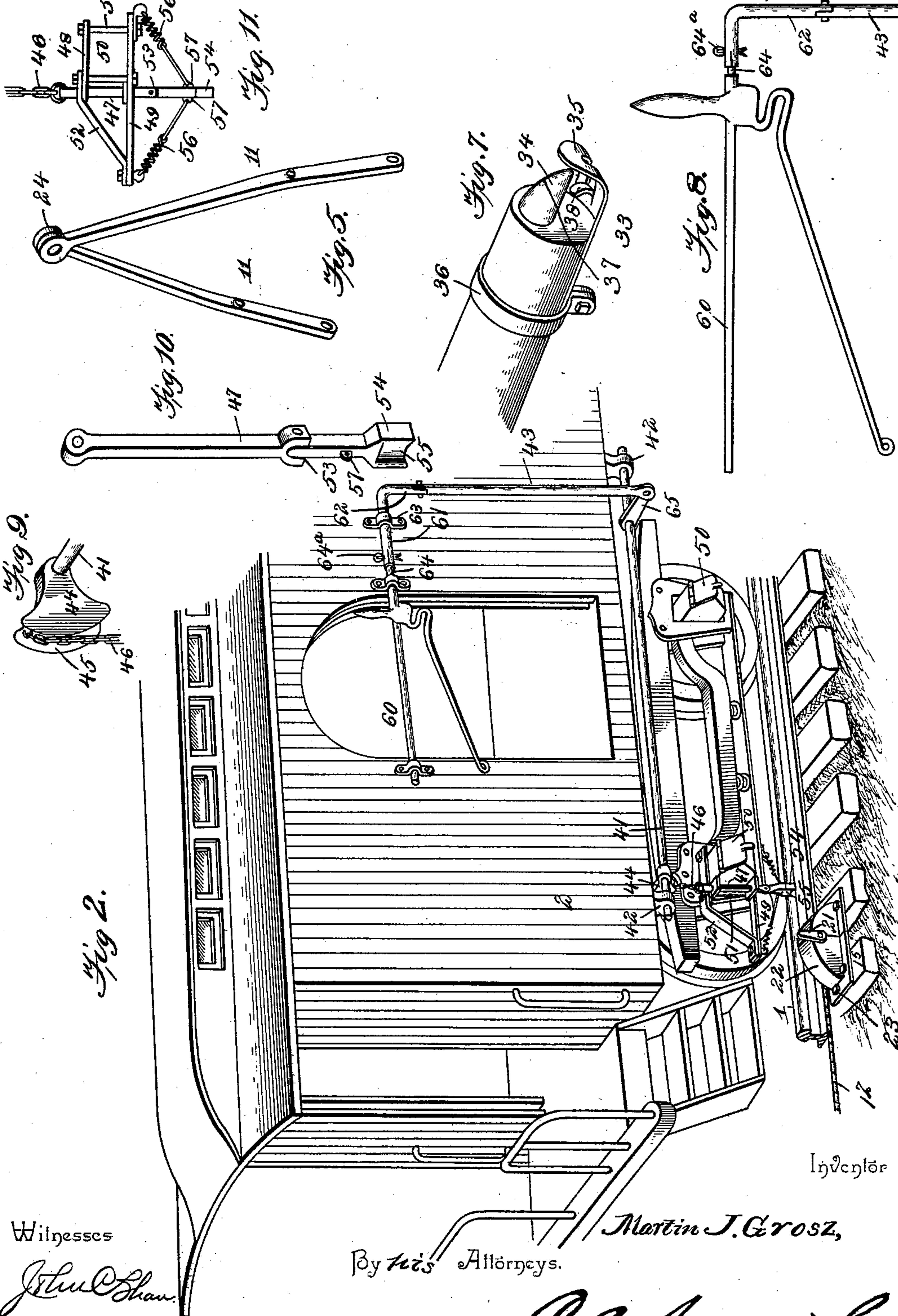
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UNITED STATES PATENT OFFICE

MARTIN J. GROSZ, OF EMPORIA, KANSAS.

MAIL-CRANE.

SPECIFICATION forming part of Letters Patent No. 529,071, dated November 13, 1894.

Application filed May 19, 1894. Serial No. 511,821. (No model.)

To all whom it may concern:

Be it known that I, MARTIN J. GROSZ, a citizen of the United States, residing at Emporia, in the county of Lyon and State of Kansas, have invented a new and useful Mail-Crane, of which the following is a specification.

My invention relates to an improvement in those mail cranes which are provided with means for holding the attached bag away from the track prior to the catching operation, and for moving it into the reach of the catcher directly prior to the operation of catching it; and the primary object of the invention is to provide superior means for so operating the bag, and means which will be operated by a detent on the approaching train.

A further object is to provide an improved hook for connecting the mail bag to the crane, and the attainment of both will be apparent upon an understanding of the invention.

A still further object is to so construct the detent on the train that it will be automatically put into position to engage the trip, upon the raising of the catching hook, and similarly set at rest when the hook is returned.

In the accompanying drawings: Figure 1 represents a perspective view of a section of a railroad having my improvements applied. Fig. 2 is a perspective view of a car supplied with my detent mechanism. Fig. 3 is an enlarged detail of the trip, the casing being broken away. Fig. 4 is a cross-section thereof. Fig. 5 is an enlarged view of the levers for releasing the upper arm or jib of the crane. Fig. 6 is a similar view of the rod for operating said upper arm, the chain of the rod being shown attached. Fig. 7 is a detail perspective of the hook for holding the bag, the device being shown upside down. Fig. 8 is a detail of the devices for connecting the catching hook and the detent. Fig. 9 is a detail of the quadrant for raising the detent. Fig. 10 is a similar view of the detent proper. Fig. 11 is a side elevation of the devices for supporting the detent. Fig. 12 is a detail perspective of the devices for revolvably mounting the mast.

The reference numeral 1 indicates the track, and 2 the car, both of which may be of any kind.

3 indicates the mast of the crane, which is

preferably formed of tubular metal and revolvably supported by the braces 4. These are attached at their upper ends to the mast, by the loose collar 5, and project outwardly and downwardly to the posts 6, to which they are secured by any suitable means. By these means the mast may be revolved in its bearings when it is struck by the train and is in danger of being broken.

40 indicates a second collar, which is fixed to the mast and bears upon the collar 5, whereby the said rotary movement is allowed. Formed on the collar 40 are the outwardly and downwardly inclined studs *c* which are adapted to lie one on each side of the arm *b* of the collar 5. By these means the mast is held incapable of rotary movement, except when great force is applied to it. Then the inclined studs will raise the mast so as to disengage the studs and arm *b*. The lower end of the mast 3 is braced by means of the yoke 7, which is formed with the semicircular portion 8 adapted to partially embrace the mast and secured thereto by bolting or otherwise, while its ends are bent to form the lugs 9. To this yoke the arms 10 are secured, and from here the arms extend to two of the braces 4, to which they are secured.

Pivoted one to each of the lugs 9 are the two levers 11, which extend downwardly to a point near the ground, where they are connected to the wires or cords 12. The wires or cords 12 extend toward the track and pass respectively over the pulleys 13, which are journaled to the plate 14, secured, in turn, to the cross-ties of the track 1. From the pulleys 13 the cords 12 extend in opposite directions along the track to the trips 15. These are shown in Figs. 3 and 4, and consist of the blocks 17, bolted to the cross-ties, and provided with the transversely-extending passage 18. In this passage the shaft 19 is arranged so as to be capable of oscillating therein, and provided with the arms 20 and 21.

The arms 20 extend downwardly from their respective blocks 17, and have two cords 12 attached to the lower ends, while the arms 21 extend upwardly from their shafts and from the trips proper.

59^a indicates a spring which is attached to the arms 20 and to the hook 60^a, which is, in

turn, secured to the block 17. By this means the arms 21 are given a tendency which will keep them from moving toward the line of ropes 12.

5 Arranged to fit over the block 17, and to protect its attachments from the action of the weather, is the casing 22, which is constructed in two sections, so as to permit its easy adjustment, and is secured in place by
10 the bolts 23, which pass downwardly and into the cross-ties. This casing is formed of two sections joined at the line *a*, whereby they may be easily placed in position. The cable 12 passes out the casing by way of the opening *d*. It will be understood that it is neces-
15 sary to let the arm 21 project above the casing so as to engage the detent mechanism.

From the lugs 9 the levers 11 extend upwardly parallel with the mast, and are provided at their upper ends with the eyes 24.
20 Pivotaly mounted in the fork 25 of the upper extremity of the mast is the main arm or jib 27 of the crane, which arm extends at right angles to the track, and is provided at its rear end with the eye 26. This eye forms
25 the pivotal connection between the arm 27 and the rod 70, which extends through the spring 69 and is connected to its lower end. Passing through the spring and connected
30 thereto at the remaining end thereof is the rod 28, whereby the rod 28 is connected to the mast and provided with a cushioned connection. The rod 28 extends downwardly and inwardly toward the mast, and is provided at
35 its lower end with the eye 29. The eye 29 is adapted to engage the rear end of the pin 30, and is provided with a chain 31, terminating in an eye 32, which is adapted to engage with the front end of the pin 30.

40 The pin extends horizontally through the mast, so that one end will occur on each side. The eyes 24 of the levers 11 are adapted to embrace the chain 31, as shown in Fig. 1, so that when the upper ends of the levers swing
45 outwardly the eye 29 will be disengaged from the pin 30, leaving the eye 29 of the chain 31 engaged with the forward end of the pin 30. The front end of the arm 27 is provided with the bag supporting and retaining device 33,
50 which consists of a stud 34 projecting outwardly from the extremity of the arm and having the spring-finger 35 arranged above it. The finger 35 is secured to the arm by means of the band 36, which embraces the arm and
55 finger and holds the two together, while the free end of the finger is bent downwardly so as to project a slight distance past the end of the stud 34, and in engagement therewith. The lower face of the stud 34 is beveled or
60 inclined at 37, so as to permit the ring of the bag to be sprung over the end of the stud and under the finger.

Formed on the finger 35, and projecting downwardly therefrom, is the hook 38 which
65 operates to hold the ring of the bag when the arm 27 has been moved down. Thus it will be seen that the bag may be hung on the hook

38 when the arm 27 is lowered, and when the arm is raised the bag will drop upon the stud 34 and be held thereon by the spring-finger. 70 All of this will, however, be described more fully later on.

39 indicates the lower arm of the crane, which is pivoted to the mast by means of the aforesaid band 40. The arm 39 is of a length 75 equal to the length of the forward arm of the lever 27, and is provided with a bag-securing device 40^a, which is of a construction similar to the device 33, the only difference being that the spring-finger is disposed on the lower 80 side of the stud, and that the hook 38 is dispensed with, since the hook would be of no use.

The detent for operating the trips 15 is attached to the mail crane, and the detent mechanism consists of a horizontal and longitudinal shaft 41, extending along the lower side 85 of the car-door and to a point above the nearest wheel of one of the trucks. This shaft is journaled in the brackets 42, and provided with the operating rod 43, connected thereto 90 by the crank-arm 65. This rod 43 extends upwardly alongside the car-door frame to a point just below the catching hook 60.

The upper end of the rod 43 is provided with a transversely-extending opening, which 95 is adapted to permit pivotaly connecting the rod to the crank-arm 62 of the revoluble shaft 61. The shaft 61 is revolubly secured to the body of the car by means of the box 63, while it is connected to the hook 60 by means 100 of the spindle and socket device 64 and linch-pin 64^a. Thus it will be seen that the shaft 41 will be oscillated on its bearings in unison with the oscillations of the shaft which supports the hook 60, and all for a purpose here- 105 inafter described. Fixed to the shaft 41, just over the wheel to which it extends, is the quadrant 44, which is adapted to turn with the shaft and provided with the curved grooved face 45. The grooved face 45 is adapted to 110 receive the chain 46, and this chain 46 is, in turn, connected at its lower end to the rod 47. Thus it will be seen that upon rocking the shaft 41, the quadrant will cause the chain 46 to move upward, and consequently move 115 the parts attached thereto. The rod 47 is mounted so as to be capable of vertical movement in the bars 48 and 49, which are arranged on the upper and lower sides, respectively, of the oil-box 50, and held in place 120 by the vertical tie-rods 51, arranged on each side of the box and operating to hold the bars 48 and 49 rigid. The bar 49 is the lower one, and is extended on the left-hand side so as to make its length about twice that of the 125 bar 48, a brace 52 being provided and extended from the left-hand end of the bar 48, to the corresponding end of the bar 49. By this means the rod 47 is mounted in a secure way and allowed a vertical movement in its 130 mountings.

The lower end of the rod 47 is bifurcated, at 53, and has the detent hammer 54 pivoted therein. The hammer 54 is formed with the

concave faces 55 on each side and adapted to engage the arms 21 of the trips 15, while the hammer is held yielding in a perpendicular position by means of the coiled springs 56, which are secured to the hammer at 57 and to each end of the bar 49.

By reference to the drawings, the operation of my invention may be traced as follows: To set the appliance the rod 28 and its chain are released from the pin 30, and the forward end of the arm 27 drawn downward, whereupon the bag 59 is connected to the hook 33. When this has been done the rod 28 is drawn down and the eye in its lower end connected to the rear end of the pin 30, and the eye on its chain connected to the front end of such pin. This will place the arm at an angle of about forty-five degrees from a perpendicular line and lift the bag up and back and out of the way of passing trains. The lower arm of the crane is now connected to the lower ring of the bag, as shown in Fig. 1. The normal position of the car detent exists when the hammer 54 is raised, and this is assumed when the rod 47 is raised until its lower end engages the bar 49, and the rod 47 is given a tendency to this position by the springs 56, as may be understood. Upon raising the hook 60 the rod 43, which is connected thereto, will be operated to oscillate the shaft 41 and allow the rod 47 to drop by gravity, which will be followed by a similar movement of the hammer 54, throwing it into engagement with the arm 21 of the detent 15 which lies in the path of the hammer. When the detent 15 is operated the lever 11, which is connected thereto, will be operated to swing on its fulcrum and consequently disengage the eye 29 and pin 30. This will be followed by a falling of the bag and arms of the crane, as far as the chain 31 will permit, and the length of this chain is so gaged that it will allow the arms of the crane to lie horizontally and in position to permit the bag to be caught by the hook 60, which, it will be remembered, was previously raised. As the car passes the crane, the hook 60 is operated to take the bag, and after this has been done, the arms will fall vertically, as usual, the arm 27 being arranged with its rear end heavier than the front end, so as to effect this operation. In this position the parts remain until reset for a second operation. It will be seen that the hooks 33 and 40 operate to hold the bag securely, and to permit it to be easily taken by the car, for the studs 34 support the bag whatever be its weight, while the fingers 35 operate to retain it in place until overcome by the superior force of the hook on the car.

I have shown my invention applied to a single track, and when so used it will be necessary to have two levers 11, and corresponding cords and trips, so that the crane may be operated by cars coming either way. When the appliance is used on a double track, however, it will be understood that but one lever

and attachments will be necessary for each crane.

When the bag has been caught, the hook 60 is, as usual, allowed to drop, which will be followed by a downward movement of the arms 65, and a consequent retraction of the shaft 41, whereupon the chain 46 will be wound over the quadrant 44, and the detent thereby raised. By means of this construction the detent is automatically operated, and this in perfect unison with the movements of the hook 60. This, however, can be accomplished by a bolt and nut or equivalent device.

It will be understood that the rod 47 and hammer 54 are attended by a normal tendency to drop, owing to their weight, and that this is overcome by the chain 46 which holds it up, and drops to allow the hammer to descend.

In attaching the bag to the crane it will be more convenient, and therefore preferable, to connect both arms before the rod 28 is drawn down. This is so, since if the arm 27 was raised with the bag attached thereto the lower end of the bag would be out of the operator's reach. It will be understood, however, that both ways may be employed with the same result.

In the use of the mail catcher on railways the hook 60 is changed or reversed as the direction in which the car is moving changes, and to facilitate connecting the shaft 61 to either end of the hook 60, the left-hand end may be adapted to fit into the socket 64, as the remaining end is shown in the drawings. This result may also be attained by duplicating shafts 61 and 43 and arranging the duplicated shafts at the opposite side of the door so that they may operate with the same end of the hook when it is reversed.

Having described my invention, what I claim is—

1. A crane for supporting mail bags preparatory to catching, and consisting of an arm or jib pivoted to the crane and adapted to have the mail bag attached to one end, a chain connected to the remaining end of the arm and having two eyes therein at different points throughout its length, both of which eyes are adapted to removably engage the mast, a lever connected to one eye, and trip mechanism adapted to be operated by a passing car, whereby one of the eyes of the chain is disengaged and the bag allowed to fall until stopped by the second eye, substantially as and for the purpose described.

2. A crane for supporting mail bags preparatory to catching, and consisting of an arm pivoted to the mast and adapted to have the mail bag attached to one of its arms, a chain connected to the remaining arm and having two eyes therein arranged at different points along its length, a pin passing horizontally through the mast and having its ends projected beyond each side thereof, the eyes being adapted to engage the respective ends of

the pin, a lever pivoted to the mast and connected to one of the eyes of the chain whereby upon operating the lever the eye to which it is connected is disengaged from the pin and trip mechanism connected to the lever, and adapted to be operated by a passing car, whereby upon operating the lever one of the eyes is released and the bag allowed to drop until stopped by the second eye, substantially as and for the purpose described.

3. A device for supporting mail bags preparatory to catching, and consisting of a mast, an arm pivoted thereto and adapted to have the bag connected to one end thereof, said arm being capable of normally holding the bag out of the way of passing trains, and of dropping so as to place the bag within the reach of said trains, and trip mechanism connected to the arm and adapted to be engaged by the trains, whereby the arm is operated, substantially as specified.

4. A crane for supporting mail bags preparatory to catching, and consisting of a mast, an arm pivoted thereto and adapted to have the mail-bag attached to one end, a chain connected to the remaining end and having two eyes thereon arranged at different points throughout its length and adapted to engage a stud on the mast, a lever connected to one of the eyes, a cord connected to the lever, and trip mechanism on the track and connected to the cord and adapted to be operated by a passing car, whereby the lever is made to release one of the eyes on the chain and the bag allowed to drop until stopped by the second eye, substantially as specified.

5. A detent adapted to be attached to a car and to operate a trip arranged on the track, said detent consisting of a vertically reciprocating bar, and a hammer section pivoted to the lower end of the bar and a spring located at each side of the hammer and operating to hold the hammer yieldingly in position, the hammer being adapted to engage

the trip and effect the operation thereof, substantially as described.

6. Detent mechanism adapted to be applied to a mail car and to operate a trip arranged on the track, said mechanism comprising the combination of a vertically reciprocating bar, a horizontal shaft connected thereto, a mail catching hook, a crank arm on the horizontal shaft, and a connecting rod pivotally connected to the horizontal shaft and to the hook, whereby the shaft is rocked as the hook is moved and the vertically reciprocating bar moved in its characteristic lines, substantially as described.

7. Detent mechanism adapted to be applied to a mail car and to operate a trip arranged on the track, said mechanism comprising the combination of a vertically reciprocating bar, and a mail catching hook pivotally connected to the bar, whereby as the hook is rocked the bar is raised or lowered, substantially as described.

8. In a mail crane, the combination of a mast, a collar rigidly mounted off the mast and loosely embracing the same, whereby the mast is allowed a rotary movement, the said collar having a stud projecting radially therefrom, a second collar fixed to the mast and engaging the first collar, whereby it is supported, the said second collar having two inclined arms adapted to lie one on each side of the stud whereby the mast is held stationary against ordinary strain and whereby it is allowed to revolve under the influence of undue strain, and bag-supporting arms secured to the mast, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

MARTIN J. GROSZ.

Witnesses

M. G. STARR,
CASPER ELISON.