

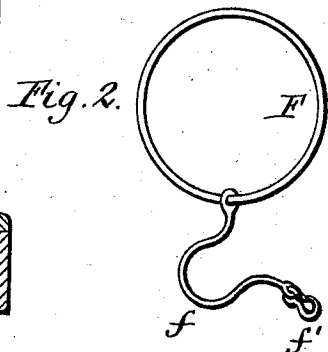
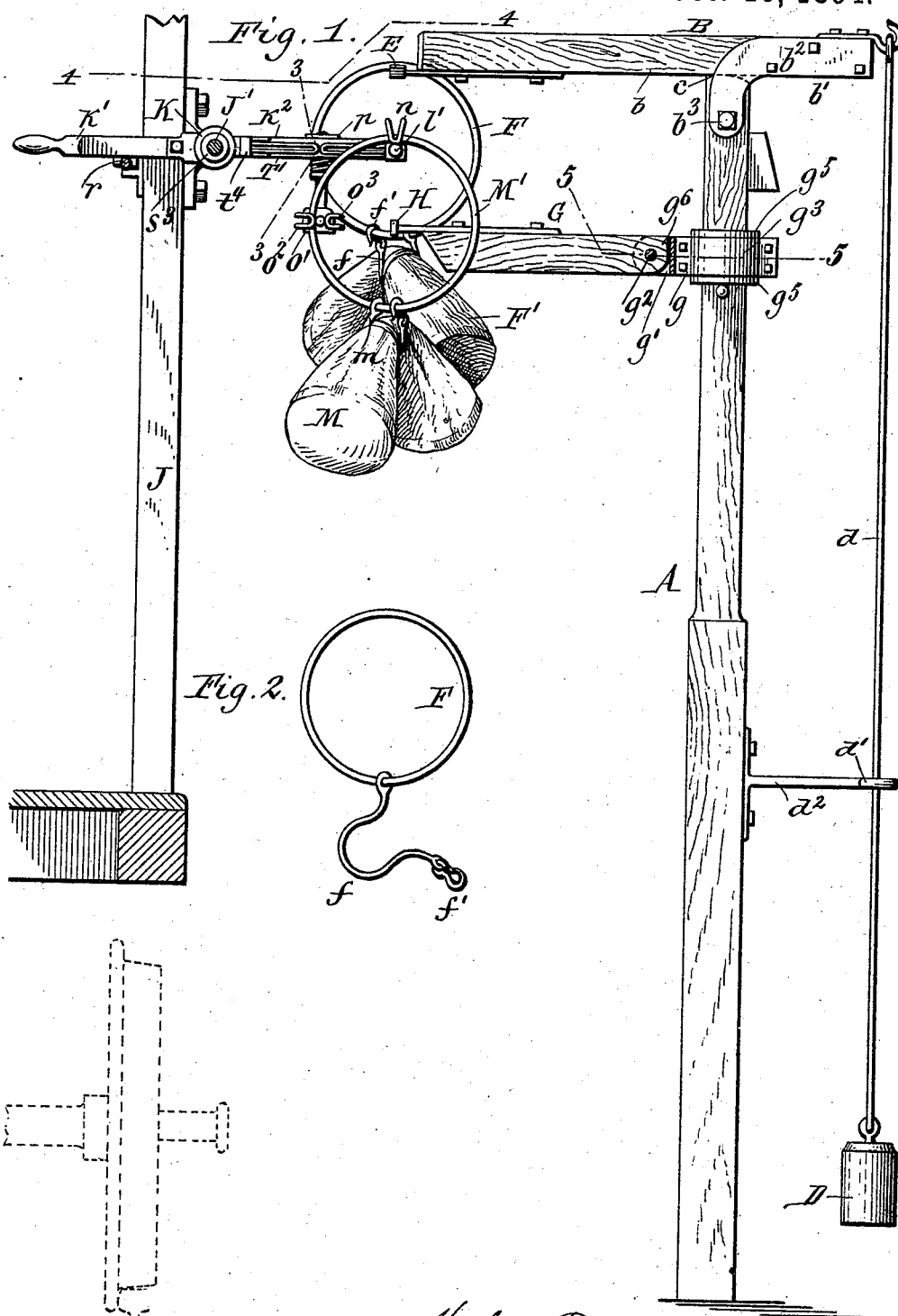
(No Model.)

3 Sheets—Sheet 1.

H. N. FLEMING.
MAIL BAG CATCHER.

No. 527,548.

Patented Oct. 16, 1894.



Theo. L. Popp.
Chas. F. Burkhardt. } Wit

Hugh N. Fleming, Inventor.
 Witnesses. By Wilhelm Brönnel.
 Attorneys.

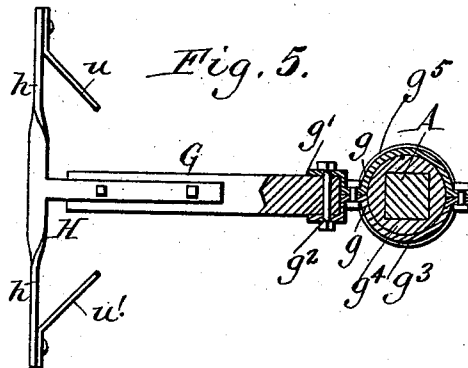
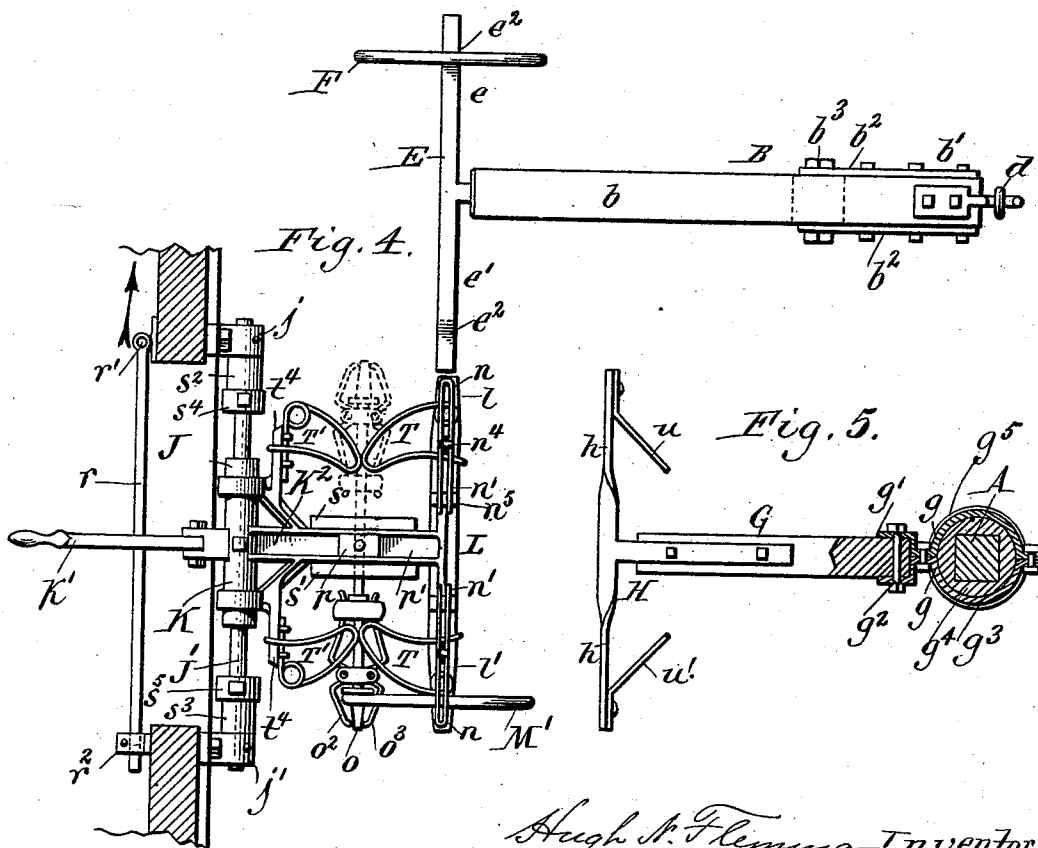
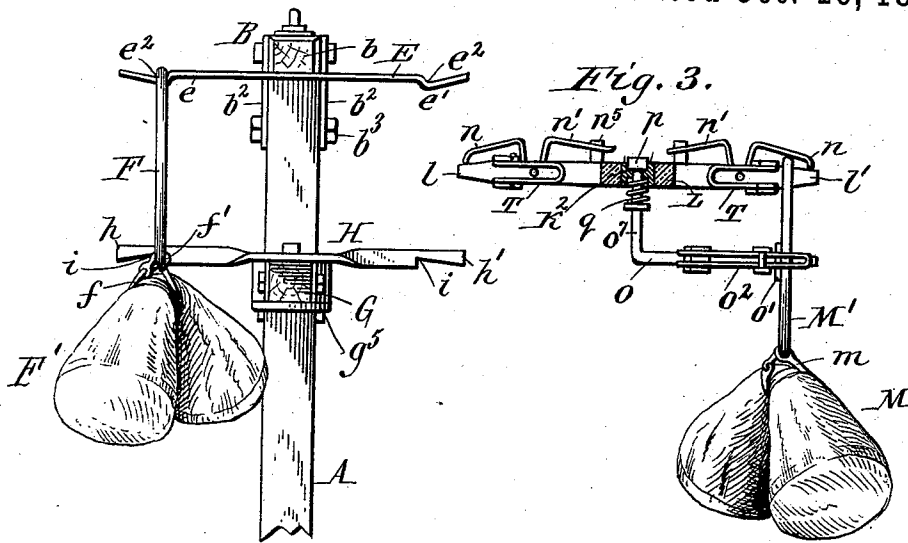
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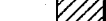
3 Sheets—Sheet 2.

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Fig. 6.

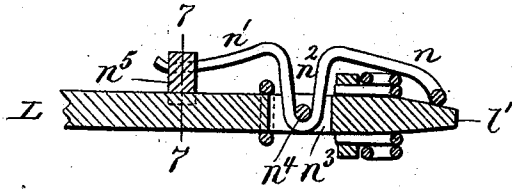


Fig. 7.



Fig. 8.

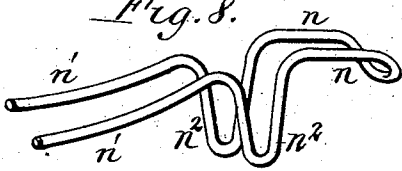


Fig. 9.

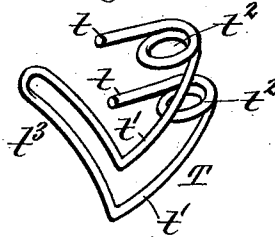


Fig. 10.

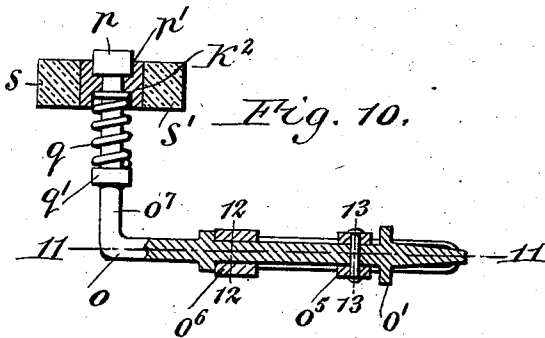


Fig. 12.

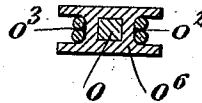


Fig. 11.

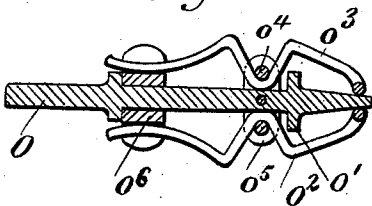
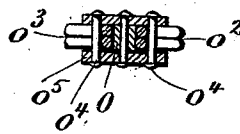


Fig. 13.



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Hugh N. Fleming Inventor.
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UNITED STATES PATENT OFFICE.

HUGH N. FLEMING, OF ERIE, PENNSYLVANIA.

MAIL-BAG CATCHER.

SPECIFICATION forming part of Letters Patent No. 527,548, dated October 16, 1894.

Application filed November 7, 1893. Serial No. 490,254. (No model.)

To all whom it may concern:

Be it known that I, HUGH N. FLEMING, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented new and useful Improvements in Mail-Bag Catchers, of which the following is a specification.

This invention relates to that class of mail catchers whereby mail bags are exchanged between moving mail cars and way stations at which the mail cars do not stop.

The object of this invention is to produce a mail catcher of this character which enables the mail to be positively exchanged, and whereby the jar upon the mail crane and the car is reduced to a minimum.

In the accompanying drawings consisting of three sheets:—Figure 1 is a sectional elevation of my improved mail catcher, showing the parts in position for exchanging mail bags between the mail car and the mail crane of a way station. Fig. 2 is a detached view of one of the rings, whereby the mail bags are supported. Fig. 3 is a vertical longitudinal section in line 3—3, Fig. 1. Figs. 4 and 5 are horizontal sections in lines 4—4 and 5—5, Fig. 1. Fig. 6 is a vertical longitudinal section, on an enlarged scale, of one of the arms and its holding spring or catch whereby the upper portion of the ring supporting the car mail bag is held in place. Fig. 7 is a vertical cross section in line 7—7, Fig. 6. Fig. 8 is a perspective view of one of the catches. Fig. 9 is a similar view of one of the detent springs. Fig. 10 is a vertical longitudinal section of the ring retaining arm and connecting parts. Fig. 11 is a horizontal section in line 11—11, Fig. 10. Figs. 12 and 13 are cross sections in lines 12—12 and 13—13, Fig. 10, respectively.

Like letters of reference refer to like parts in the several figures.

A represents the standard of the mail crane, which is arranged along side of the railway, and which carries the devices whereby the station mail bag is supported in the proper position to be transferred to the mail car while the latter is in motion.

B represents a supporting bar which is arranged above the upper end of the standard, at right angles to the railway, and which has its long arm *b* projecting forwardly toward

the railway and its short arm *b'* projecting rearwardly. The supporting bar is provided on opposite sides with metal plates *b*² which are pivoted to the upper portion of the standard, by a horizontal bolt *b*³ so that the supporting bar can swing in a vertical plane. When the supporting bar is in its normal or operative position, it is arranged horizontally, and the downward movement of its front arm is limited by a stop or shoulder *c*, formed at the upper front portion of the standard. When the supporting bar is free to move, its front arm is raised by a weight *D* arranged in rear of the standard and secured to the rear end of the bar by a depending rope or chain *d*, which latter is arranged in rear of the standard and extends nearly to the ground. The lower portion of the rope *d* is guided in an eye *d'* formed on an arm *d*² secured to the rear side of the standard. The front arm *b* of the supporting bar is provided with an upper cross bar *E*, arranged parallel, or nearly so, with the railway.

To promote clearness and convenience of description the mail car will be assumed to move in the direction of the arrow in Fig. 4, and the arms of the cross bar *E* will accordingly be referred to as front and rear arms *e e'*. Each of these arms is provided near its end with a depressed portion forming an offset or seat *e*² on its upper side.

F represents a ring, which supports the station mail bag *F'*, and hangs with its upper portion in the seat of the upper front arm *e*. The mail bag is secured to this ring by a cord or chain *f*, which is preferably wound around the middle portion of the bag, and permanently secured with one end to the ring, while its other end is detachably connected with the ring or with the fixed end of the cord by a hook *f'*, this hook being represented in the drawings as engaged with the ring.

G represents a catch arm which assists in retaining the station mail bag in the proper position to be transferred to the mail car, and which catches the mail bag of the car as the latter passes the station. This catch arm, when in its normal or operative position, is arranged horizontally underneath the front arm of the supporting bar, and is supported with its inner end on the standard by a uni-

versal coupling or connection, which permits the catch arm to swing both horizontally and vertically. This coupling consists of two metal straps g forming a bifurcation g' , which is attached to the inner end of the catch arm by a horizontal pivot bolt g^2 and a sleeve g^3 which embraces a collar g^4 secured to the standard. The coupling sleeve is capable of turning horizontally on this collar, but is held against vertical movement thereon by flanges g^5 formed on the same above and below the sleeve. The upward movement of the catch arm is limited by a stop g^6 , formed thereon adjacent to the pivot bolt g^2 and adapted to bear against the adjacent portion of the bifurcation g' .

The outer end of the catch arm carries a lower cross bar H arranged lengthwise underneath the upper cross bar E, and forming a front arm h and a rear arm h' . These arms are provided on the under sides of their end portions with notches i which are arranged vertically in line with the seats e^2 in the upper cross bar E.

After the supporting arm B has been drawn downwardly into its operative position and the ring F has been placed upon the front arm of the upper cross bar, the catch arm G is raised and the front arm of its cross bar H is placed inside of said ring with its notch engaging with the lower portion of the ring. By this means the ring is held steady and the supporting bar and catch arm are both held in a horizontal position, preparatory to exchanging mail bags with the mail car.

J represents the side door way of a mail car and J' a horizontal supporting rod arranged across said doorway and detachably supported at its ends in brackets j, j' secured to the outer side of the car, adjacent to the door-way. K represents a sleeve arranged to turn on this supporting rod and provided with an inwardly extending handle k' and an outwardly extending carrying arm k^2 .

L represents a cross bar arranged at the outer end of the carrying arm k^2 , parallel with the upper and lower cross bars of the crane and at an elevation intermediate thereof, and forming a front or advancing arm l and a rear or trailing arm l' . The rear or trailing arm l' of this cross bar is adapted to support the car mail bag M, which is to be delivered to the way station, and its front or advancing arm is adapted to catch the mail bag F', which is to be delivered from the way station to the mail car.

M' represents a ring which supports the car mail bag and which hangs with its upper portion over the trailing arm l' of the intermediate cross bar L. The car mail bag is secured to this ring by a cord or chain m in the same manner as the station mail bag is secured to its supporting ring. The car mail bag is prevented from becoming easily detached from said cross bar by holding springs or catches which are secured to the ends of the arms of the intermediate cross bar. Each

of these holding springs consists preferably of two members which are formed of a single piece of spring wire each member consisting of a catch n , a handle n' and a pivot loop n^2 connecting the handle with the catch. The pivot loops are arranged in an opening n^3 formed in the intermediate cross bar and pivoted thereto by a transverse bolt n^4 . The catch embraces that portion of the ring M' resting upon the intermediate arm and rests with its front end on said arm when in its operative position.

n^5 represents a locking block whereby the catch is held in engagement with the intermediate cross bar and which slides lengthwise between the intermediate cross bar and the handles of the holding spring. The holding spring is inclined so that the space between the inner ends of the handle and the cross bar is greater than the space between the outer ends of the handle and said bar. When the locking block is arranged between the inner end of the handle and the cross bar the handle can be depressed for raising the catch and permitting the mail bag ring to be placed upon the end of the intermediate cross bar. Upon sliding the locking block outwardly between the outer end of the holding spring handle and the cross bar the handles are held against inward movement and the outer end of the catch is held against the cross bar. The holding springs are of such stiffness that the ring of the mail bag cannot deflect the same when the wind blows heavily against the mail bag but so that they yield sufficiently to permit the lower cross bar of the mail crane to strip the mail bag ring from the intermediate cross bar.

O represents a retaining arm whereby the ring of the car mail bag is held at right angles to the car so as to prevent the same from being shifted by the force of the wind or the motion of the car, thereby retaining it in the proper position for engagement with the devices whereby it is transferred to the mail crane at the station. This retaining arm is arranged with its rear end inside of the ring of the car mail bag and bears against the same about midway of its height on the side nearest the car.

o' represents a cross head which is formed on the retaining arm in front of the ring and against which the latter rests.

o^2, o^3 , represent holding springs which are secured to opposite sides of the retaining arm, near its rear end, and which yieldingly hold the ring of the car mail bag upon the retaining arm. Each of these holding springs is constructed similar to the holding springs of the intermediate cross bar and their pivot loops are pivoted by means of bolts o^4 to cross pieces o^5 arranged on the retaining arm in front of the cross head. The catches of both holding springs on the retaining arm are locked simultaneously by a double locking block o^6 which slides upon the retaining arm and locks the holding springs o^2, o^3 in the same

manner as the locking block of the holding springs on the intermediate cross bar. The ring of the car mail bag is detachably connected with the retaining arm by the catch of the inner holding spring o^2 , which latter embraces that portion of the ring resting against the retaining arm. The front end of the retaining arm is arranged underneath the carrying arm k^2 and is provided with an upwardly extending shank o^7 which is arranged to turn in a vertical opening formed in the carrying arm. The upper end of the shank is provided with a flat-sided head p which rests in a socket p' in the upper side of the carrying arm, said socket being preferably formed by two parallel ribs, arranged lengthwise on the upper side of the carrying arm on opposite sides of the head p , as shown in Fig. 4. The head of the shank is yieldingly held in said socket by a spiral spring q surrounding the shank and bearing with its ends against the under side of the carrying arm, and a collar q' formed on the lower portion of the shank.

When the catch arm G is raised into its operative position, the level of the intermediate cross bar L is midway between the upper and lower cross bars of the crane, and in line, or nearly so, with the center of the ring supporting the station mail bag, and the lower cross bar of the mail crane is arranged in line, or nearly so, with the center of the ring supporting the car mail bag, as represented in Fig. 1. As the mail car moves past the mail crane, when the parts are in this position, the advancing arm of the intermediate cross bar L enters the ring of the station mail bag and strips the latter from the front arms of the upper and lower cross bars E and H of the crane and, at the same time, the rear arm of the lower cross bar H enters the ring of the car mail bag and strips the same from the trailing arm V' of the intermediate cross bar. The car mail bag suspended from the cross bar L is held in its elevated position by the operator or attendant on the car.

In order to insure the proper relative position of the parts, so that the mail bags are positively exchanged, a stop bar r is provided on the car, against which the handle k' is adapted to strike upon depressing the same, thereby arresting the upward movement of the carrying arm k^2 when the car mail bag is raised to the proper height. This stop bar is arranged lengthwise across the door-way and pivoted with one end to a bracket r^1 on one side of the door-way and detachably secured with its other end to a bracket r^2 on the opposite side of the door-way. The instant the station mail bag is removed from the upper and lower cross bars of the crane by the intermediate cross bar L , and the car mail bag is removed from the latter by the lower cross bar of the crane, the latter bar drops with the car mail bag and the supporting bar B is raised by the weight D .

Owing to the velocity with which the mail

car moves, the car mail bag is thrown against the catch arm of the mail crane with considerable force, which causes the catch arm G to swing horizontally at the same time that it drops and to strike the rope d which connects the supporting bar with the weight D . Upon striking the rope, the catch arm deflects the same between the eye d' and the supporting bar and slightly raises the weight attached thereto, thereby cushioning the blow of the catch arm and bringing it to a state of rest with the least amount of jar to the mail crane. By this arrangement of the rope d , the same serves the double function of raising the supporting bar B when the latter is free and cushioning the catch arm.

The carrying arm k^2 of the mail car is provided on its front and rear sides with cushioning blocks s s' of rubber or similar flexible material, as shown in Fig. 4. As the ring of the station mail bag is stripped from the crane by the front arm of the intermediate cross bar L , the ring strikes the front cushion block s and the latter relieves the carrying arm k^2 from the blow. s^2 s^3 represent rubber collars surrounding the supporting rod between the bracket j j' and collars s^4 s^5 secured to the supporting rod. When the front arm of the intermediate cross bar strips the station mail bag from the crane, the rear rubber collar s^3 strikes the rear bracket j' thereby cushioning the blow and avoiding jarring of the parts.

T T' represent outer and inner detent springs which are adapted to prevent the station mail bag from slipping off the intermediate cross bar. A pair of these detent springs is arranged in front and in rear of the carrying arm. Each of these detent springs consists of two attaching arms t , two curved guide arms t' connected with one of their ends to the attaching arms by coils, t^2 and a retaining loop t^3 connecting the opposite ends of the guide arms. The attaching arms of the outer detent spring T are secured to the intermediate cross bar, so that the guide arms extend toward the carrying arm and the retaining loop passes around the intermediate cross bar and serves to limit the outward movement of the guide arms. The inner detent spring is secured with its attaching arms to a bar t^4 formed on the supporting sleeve. Its guide arms extend toward the catch carrying arm and its loop passes around the bar t^4 and limits the outward movement of the guide arms. The guide arms of the detent springs on the same side of the carrying arm converge toward the latter. As the front arm of the intermediate cross bar passes through the ring of the station mail bag, the side of the ring nearest the car strikes one or the other of the guide arms and is directed by the latter against the rubber cushion of the carrying arm. The adjacent ends of the guide arms of each pair of detent springs are arranged sufficiently close to each other to prevent the ring from escaping after striking the

cushion, thereby retaining the ring upon the intermediate cross bar and preventing the mail bag from being lost.

The front and rear arms of the lower cross bar of the crane are provided with detent fingers *u u'* which incline from the end of said arms toward the catch arm *G* and retain the supporting ring of the car mail bag as the same drops with the catch arm.

When the mail car moves in the opposite direction from that indicated by the arrow in the drawings, the ring of the car mail bag is hung on the front arm of the intermediate cross bar, and the ring of the station mail bag is attached with its upper and lower portions to the rear arms of the upper and lower cross bars of the crane, when the operation of exchanging the mail bags is the same as before described.

When the mail car is run in such reverse direction, the ring retaining arm *O* is also reversed, as represented by dotted lines in Fig. 4. The reversal of this retaining arm is effected by moving the same upwardly against the pressure of the spring *q* until the head of the shank clears the ribs and giving it a half turn, and then releasing the same, which causes the head to again seat itself in its socket, in the proper position for holding the retaining arm against turning.

The ring holding, catching and cushioning devices are identical on both sides of the mail crane and the carrying arm of the car, so that mail bags can be exchanged between the station and the mail car when the latter moves in either direction.

I claim as my invention—

1. The combination with the standard, of a supporting bar pivoted to swing vertically upward and provided with a cross bar having front and rear arms arranged on opposite sides of the supporting bar, a ring adapted to hang on one arm of said cross bar and support a mail bag, a catch arm arranged below the supporting bar, pivoted to swing vertically downward and provided with a cross bar having front and rear arms arranged on opposite sides of the catch arms, one arm of the latter cross bar being adapted to rest in said ring for steadying the latter, while the other arm thereof is held in the proper position for engaging with the mail-bag ring of the car, substantially as set forth.

2. The combination with the standard, of a supporting bar pivoted to the standard, a cross bar arranged on the supporting bar and provided with seats in its end portions, a catch arm pivoted to the standard below the supporting bar, a cross bar arranged on the catch arm and provided with notches in its end portions, and a ring adapted to rest with its upper and lower portions in the notches and seats of said cross bars and support a mail bag, substantially as set forth.

3. The combination with the standard, of a supporting bar arranged on the standard and provided with a cross bar, a catch arm piv-

oted on the standard to swing horizontally, a cross bar arranged on the catch arm and provided with a detent finger, and a ring detachably connecting said cross bars and adapted to support a mail bag, substantially as set forth.

4. The combination with the standard, of a supporting bar arranged on the standard, a weighted rope or chain arranged adjacent to the standard, and a catch arm pivoted on the standard to swing horizontally and adapted to strike said rope or chain, substantially as set forth.

5. The combination with the standard, of a supporting bar pivoted to the standard to swing vertically, a weighted rope or chain arranged vertically adjacent to the standard and attached with its upper end to the supporting bar, an eye or guide in which the lower portion of the rope or chain is arranged, and a horizontally swinging catch arm pivoted to the standard and adapted to strike against said rope or chain, substantially as set forth.

6. The combination with the bag-carrying arm of the car provided with a cross bar, of a ring hung on the cross bar and adapted to support a mail bag, a retaining arm arranged on the carrying arm and provided with a cross head which bears against the ring about midway of its height, and a holding spring arranged on the retaining arm and adapted to embrace the ring, substantially as set forth.

7. The combination with the bag carrying arm of the car provided with a cross bar, of a ring adapted to be hung on either end of said cross bar and support a mail bag, and a reversible retaining arm pivoted on said carrying arm, whereby the same can be swung on either side of the catch arm for engaging with said ring when hung upon either end of the cross bar, substantially as set forth.

8. The combination with the bag-carrying arm of the car provided with a cross bar and a flat sided socket, of a ring supported on said cross bar, a reversible retaining arm pivoted at one end to the carrying arm and provided with a flat sided head arranged in said socket, a holding device arranged on the other end of the retaining arm and adapted to grasp the ring, and a spring whereby the head of the retaining arm is yieldingly held in said socket, substantially as set forth.

9. The combination with an arm adapted to support a ring attached to a mail bag, of a holding spring consisting of a catch adapted to embrace said ring, a handle and a loop pivoted on said arm and a locking block arranged to slide lengthwise between the handle and the arm and adapted to hold the catch in its operative position, substantially as set forth.

10. The combination with the bag-carrying arm of the car provided with a cross bar adapted to carry a ring supporting a mail bag, of two detent springs supported on the carrying arm and having guide arms which converge toward said carrying arm, substantially as set forth.

11. The combination with the bag-carrying arm of the car provided with a bar, of a detent spring consisting of a guide arm attached at one end to the bar and having a retaining
5 loop at its other end which passes around said bar, substantially as set forth.

12. The combination with the bag carrying arm of the car provided with a bar, of a detent spring consisting of attaching arms se-
10 cured to said bar, guide arms, coils connect-

ing one end of both guide arms with the attaching arms, and a retaining loop connecting the other ends of the guide arms and passing around said bar, substantially as set forth.

Witness my hand this 31st day of October, 15
1893.

HUGH N. FLEMING.

Witnesses:

THEO. L. POPP,
ELLA R. DEAN.