

R. H. HUDSON.
MAIL BAG CATCHING AND DELIVERING APPARATUS.
APPLICATION FILED SEPT. 9, 1908.

930,964.

Patented Aug. 10, 1909.
3 SHEETS—SHEET 1.

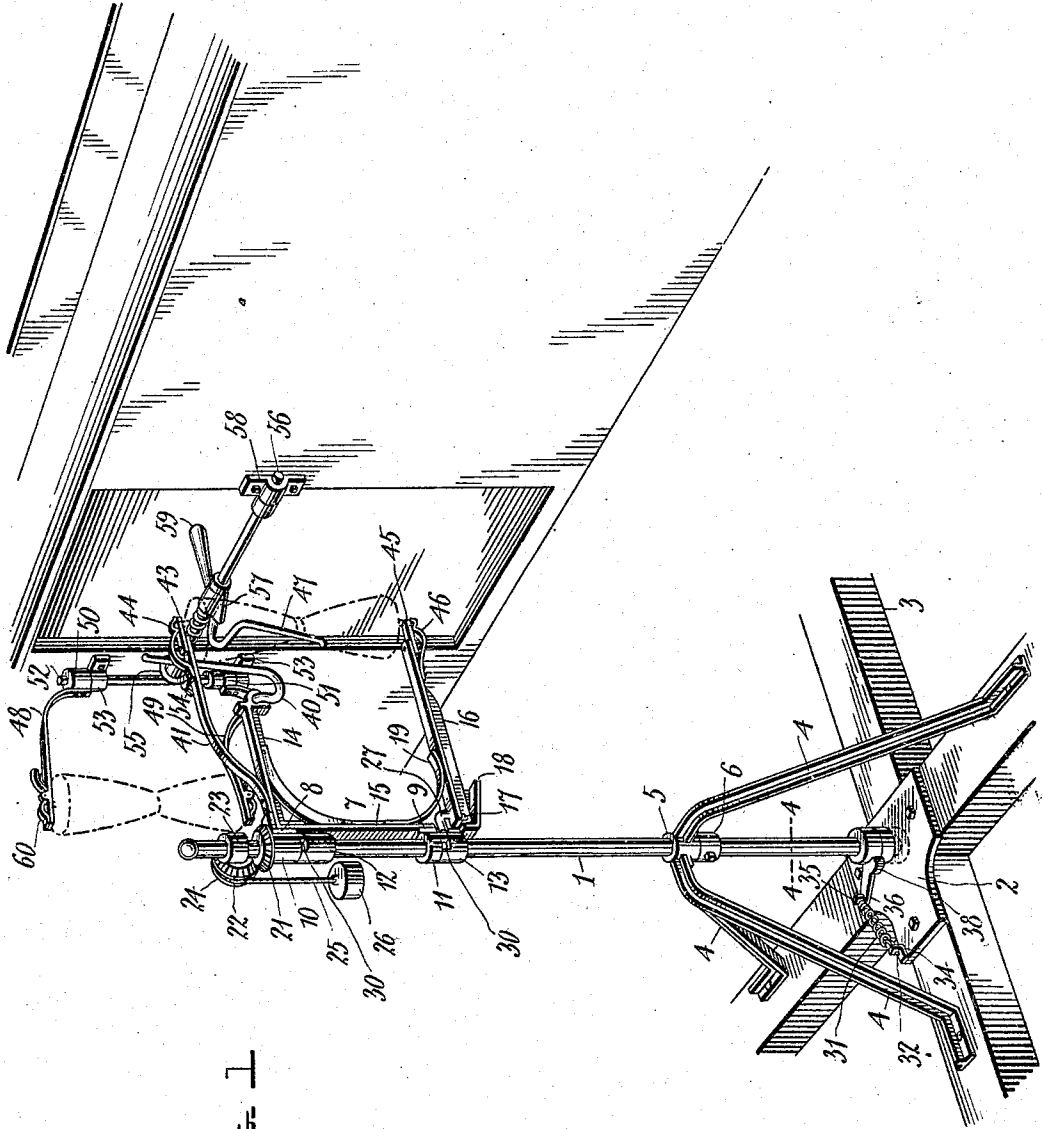


FIG. 1

Witnesses

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Inventor

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By

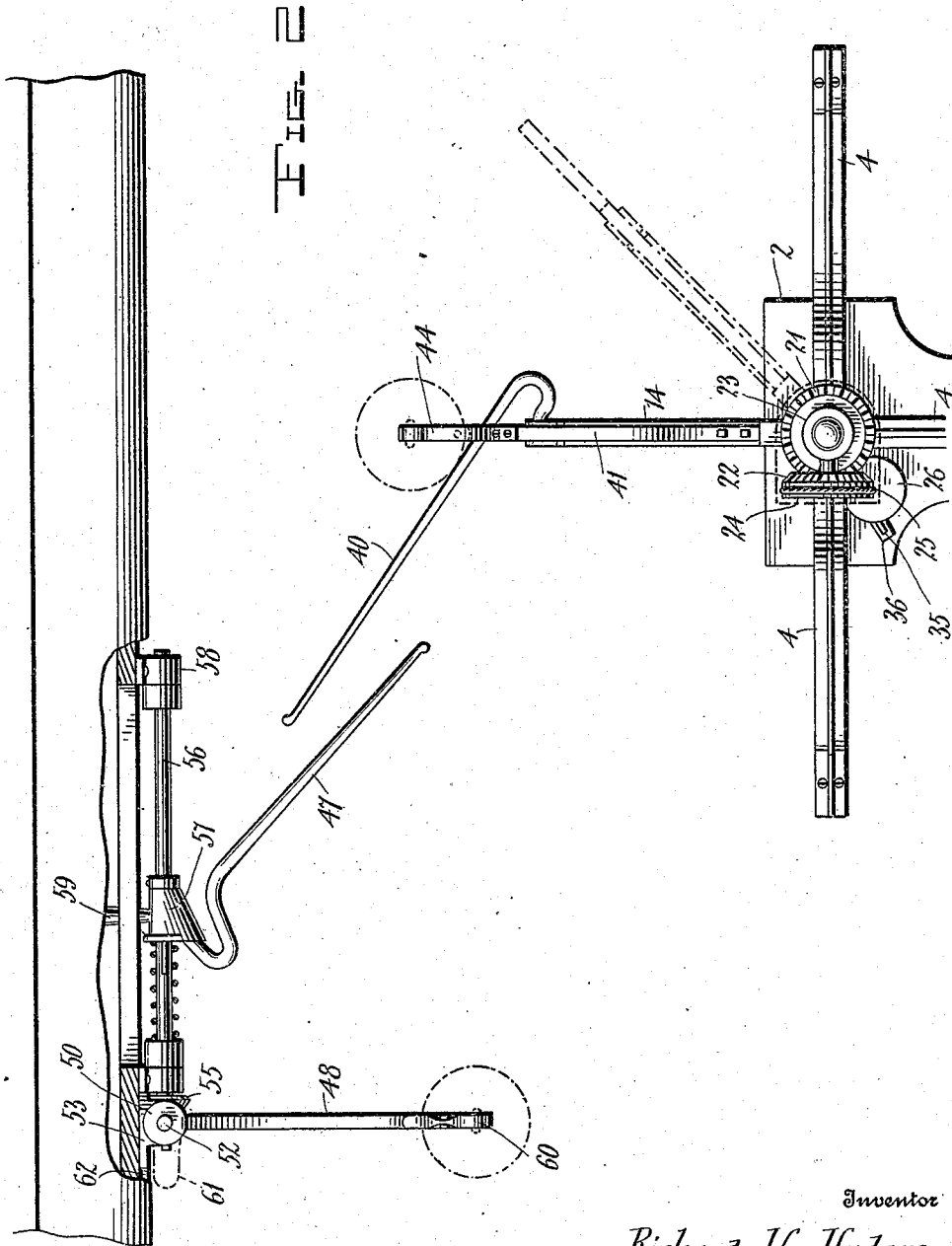
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Witnesses
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H. C. McCarty.

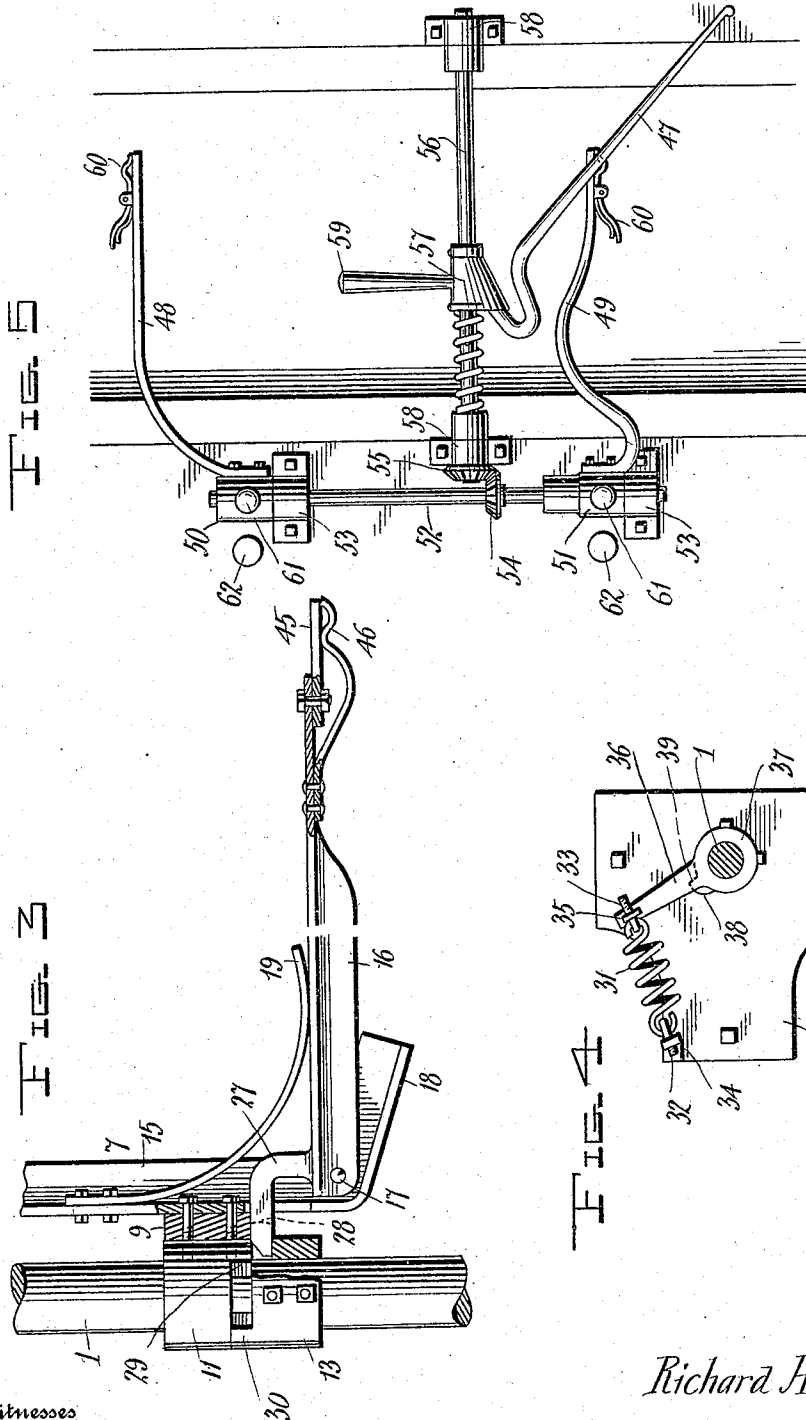
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Witnesses

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UNITED STATES PATENT OFFICE.

RICHARD H. HUDSON, OF MACDONALD, WEST VIRGINIA.

MAIL-BAG CATCHING AND DELIVERING APPARATUS.

No. 930,964.

Specification of Letters Patent.

Patented Aug. 10, 1909.

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To all whom it may concern:

Be it known that I, RICHARD H. HUDSON, a citizen of the United States, residing at Macdonald, in the county of Fayette, State of West Virginia, have invented certain new and useful Improvements in Mail-Bag Catching and Delivering Apparatus; and I 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.

The present invention has reference to improvements in mail-bag catching and delivering apparatus, and it aims, principally, to produce an exceedingly simple, inexpensive, and efficient apparatus by means of which the transfer of a mail-bag from a rapidly moving train to the receiving station, and from the latter to the train is effected automatically, and in the safest possible manner as the train passes the station.

More especially, the invention resides in the specific construction, as a whole, of the crane which is located at the receiving station and includes a swinging frame which carries the two bag-supporting arms, as well as the catcher, and is arranged to extend forwardly at right-angles to the track in its operative position, and to be swung into a position parallel with the track immediately upon the completion of the transfer, the particular devices employed for holding the frame against accidental displacement from its operative position, and for effecting the above-mentioned swinging movement presenting the most important features of the invention.

The preferred embodiment of the invention is illustrated in the accompanying drawings, in which corresponding parts are designated by the same reference characters throughout the several views.

Of the said drawings, Figure 1 is a perspective view of the complete invention. Fig. 2 is a plan view thereof. Fig. 3 is an enlarged detail view, illustrating the locking devices for retaining the swinging frame in its operative position. Fig. 4 is a horizontal section taken on the line 4—4 of Fig. 1. Fig. 5 is a side elevation of the apparatus carried by the car, the several arms being shown in inoperative position.

In the following detailed description, reference will first be had to the crane which, as originally stated, is located at the receiving

station and presents the more important features of the invention.

As shown in Fig. 1, the frame includes a vertical shaft 1 whose lower end is seated loosely in a socket formed in a metal base plate 2 bolted to a tie or other support 3 located adjacent the tracks over which the train travels. The shaft is held in upright position by means of a series of three converging braces 4, whose out-turned lower ends are bolted to the tie 3, while their upper ends are secured to flanges formed upon a collar 5, through which the shaft loosely passes, below which collar is disposed a second collar 6 rigidly secured to the shaft. At its upper end, the shaft carries a swinging frame generally designated by the numeral 7, said frame being approximately C-shaped. The corners of this frame are bolted to laterally-projecting flanges 8 and 9 formed upon upper and lower collars 10 and 11 which are likewise loosely fitted upon the shaft, the collar 10 being disposed above a stationary collar 12, and the collar 11 above a similar collar 13, the two last-mentioned collars being bolted to the shaft.

The upper arm 14 of the frame 7 and the vertical member 15 are rigidly connected together as shown, while the lower arm 16 is pivoted at its inner end to the foot of the member 15, as indicated by the numeral 17 and is therefore capable of a slight swinging movement in a vertical plane, such movement being limited by the provision of a downwardly-inclined foot 18 formed upon the lower end of said member 15, the foot being arranged to extend beneath the inner end of the pivoted arm, which latter is normally forced toward said foot by a leaf spring 19, whose upper end is bolted to the central portion of the member 15 of the frame.

The upper collar 10 is formed with a beveled gear 21 arranged to mesh with a similar gear 22 rotatably mounted upon a stub shaft carried by a collar 23 bolted to the upper end of the shaft 1, the latter gear being compounded with a grooved pulley 24 to which the upper end of a cable 25 is secured, the lower end of the cable being fastened to a weight 26. When the frame is in its operative position, *i. e.*, at right angles to the tracks, this cable is wound around the pulley, displacement of the frame being prevented by means of an upstanding L-shaped finger 27, formed upon the inner end of the pivoted arm 16, the free end of said finger being de-

signed to fit in the seat provided between a pair of spaced ears 28 formed upon the collar 13. When, however, the finger is released from engagement from its seat, as hereinafter described, the cable will unwind under the influence of the weight, effecting the rotation of the gears, and, in consequence, swinging the frame from operative to inoperative position. Owing to the fact that the collars 10 and 11 fit loosely upon the shaft, the latter will be unaffected by the initial swinging movement of the frame until the depending fingers 29 formed upon said collars strike against a pair of upstanding fingers 30 with which the collars 12 and 13 are provided, whereupon the continued movement of the frame will effect the rotation of the shaft, as will be apparent, the two sets of fingers being maintained normally out of contact with each other by reason of the provision of a retractile coil-spring 31 which is secured at its ends to eyebolts 32 and 33 which are in turn adjustably secured to swiveled eye-bolts 34 and 35, the bolt 34 being carried by the base plate 2 and the bolt 35 by a laterally-projecting arm 36, formed upon a collar 27 bolted to the lower end of the shaft and arranged to rest upon a boss or enlargement with which said plate is provided, the shaft socket being formed in said boss. The arm above referred to is provided with a lug 38 arranged to contact normally under the influence of the spring 31 with a similar lug 39 formed upon the boss, the first mentioned lug moving away from the last mentioned lug when the frame is swung into inoperative position by the rotation of the intermeshing gears 21 and 22, in which instance, the spring 31 becomes tensioned and thus serves to gradually check the movement of the frame, as well as to prevent said frame from swinging too far beyond its normal inoperative position, *i. e.*, parallel with the tracks.

The upper arm 14 of the frame has secured to its free end a curved receiving arm or catcher 40 of the ordinary type, and in addition to said catcher, is further provided with a bag-supporting arm 41, which as shown, is disposed directly above said arm 14 and is curved upwardly and forwardly so as to project toward the tracks when the frame is in its operative position. The inner end of the arm 41 is bolted to that of the arm 14, while its outer end carries a finger 43 arranged to engage the ring upon the upper end of the mail bag, displacement of the ring from the finger being prevented by a leaf spring 44, which is likewise secured to the arm 42. The pivoted arm 16 of the frame which likewise serves as a bag supporting arm is provided at its outer end with a finger 45 and a leaf spring 46 similar to those above mentioned, the finger 45 being adapted for engagement with the lower ring of the mail bag.

From the foregoing, it will be understood

that when the swinging frame has been moved into operative position, the attachment of the mail bag to be delivered to the train, to the fingers 43 and 45, will have the effect of holding the pivoted arm 16 in horizontal position, and of maintaining the finger 27 engaged in the seat between the ears 28, thus locking the frame against movement under the action of the weight 26 whose cable has been partly wound around the pulley 24 during the initial movement of the frame.

The apparatus complementary to that above described, is carried by the car and consists primarily of a catcher 47 and a pair of bag-supporting arms 48 and 49, which latter are fastened respectively to collars 50 and 51 bolted to the upper and lower ends of a vertical shaft 52 located adjacent the doorway formed in the side of the car. This shaft which is journaled in bearings 53, carries intermediate its ends, a beveled gear 54, which meshes with a similar gear 55, secured to the adjacent end of a horizontal shaft 56, provided intermediate its ends with a collar 57 formed upon the inner end of the catcher 47, the weight of which latter is such as to cause it to extend normally toward the floor of the car. The shaft 56 has its ends journaled in bearings 58 secured to the door frame, as shown, rotation of said shaft being effected by means of a handle 59 with which the collar 57 is provided, movement of said handle in the proper direction raising the catcher 47 into horizontal position and at the same time, effecting the rotation of the shaft 52, so as to swing the arms 48 and 49 into position at right angles to the car side. Each of these arms is provided at its outer end with a spring-pressed locking lever 60 arranged for engagement with the corresponding ring of the mail bag to be delivered to the crane. The movement of the arms 48 and 49 into operative position is checked by means of a pair of buffers 61 formed of rubber or other suitable yielding material secured to the car side, against which buffers the lugs 62 formed upon the collars 50 and 51 are arranged to strike, thus preventing said arms from swinging past their proper position, *i. e.*, at right angles to the car side.

In the operation of the invention, it being understood that both the swinging frame and the car-carried mechanism have been moved into operative position and the mail-bag is engaged therewith, the passage of the train past the station will cause the catcher 47, which as shown, is located in advance of the supporting arms 48 and 49, to remove the bag from the crane arms 40 and 16. As soon as this is effected, the pivoted arm 16 is free to swing downwardly of its own weight, as a result of which movement, the finger 27 will be withdrawn from engagement in the seat formed between the ears 28, whereupon the frame will be swung toward the right under

the action of the weight 26. Simultaneously with the removal of the bag from the crane arms, the crane-carried catcher 40 will engage the bag carried by the arms 48 and 49, thus completing the transfer.

What is claimed is:

1. A mail-crane, comprising in combination, a vertical shaft; a swinging frame carried by the shaft and including fixed arms and a pivoted arm; means provided upon the pivoted arm and arranged for engagement with said shaft, to retain the frame in operative position; and means for swinging said frame into inoperative position when said retaining means are released from such engagement.

2. A mail-crane comprising, in combination, a vertical shaft; a swinging frame carried by the shaft and including fixed arms and a pivoted arm; a seated member secured to the shaft adjacent the pivoted arm; means provided upon the pivoted arm and arranged for engagement in the seat in said member, to retain the frame in operative position; and means for swinging said frame into inoperative position when said retaining means are released from such engagement.

3. A mail crane, comprising in combination, a vertical shaft; a swinging frame carried by the shaft and including fixed arms and a pivoted arm; a seated member secured to the shaft adjacent the pivoted arm; a finger provided upon said pivoted arm and arranged for engagement in the seat in said member, to retain the frame in operative position; and means for swinging said frame into inoperative position when said finger is released from such engagement.

4. A mail crane comprising, in combination, a vertical shaft; a swinging vertically-disposed frame carried by the shaft and including fixed arms and a pivoted arm; a bag-supporting arm and a catcher arm secured to the fixed arm; a bag-supporting member secured to the pivoted arm; means provided upon the pivoted arm and arranged for engagement with said shaft, to retain the frame in operative position; and means for swinging said frame into inoperative position when said retaining means are released from such engagement.

5. A mail-crane comprising, in combination, a vertical shaft; a pair of collars loosely fitted upon the shaft, one of said collars being provided with a gear; a frame carried by said collars and including a pair of bag-supporting arms and a catcher arm; means carried by one of said supporting arms and arranged for engagement with the shaft, to retain the frame in operative position; a gear connected with the shaft and arranged to mesh with the first-mentioned gear; a pulley connected to the last-mentioned gear; a collar secured at one end to said last-mentioned gear; and a weight secured to the

other end of the cable, for swinging the frame into operative position when said retaining means are released from engagement with said shaft.

6. A mail-crane comprising in combination, a vertical shaft; a swinging frame carried by the shaft; a pair of collars secured to said shaft; means carried by the frame and arranged for engagement with one of said collars, to retain the frame in operative position; means for swinging said frame into inoperative position when said retaining means are released from such engagement; and separate means for checking such swinging movement.

7. A mail-crane comprising in combination, a vertical shaft; a pair of collars loosely fitted upon the shaft; a pair of collars rigidly secured to said shaft adjacent said loose collars; a swinging frame secured to said loose collars; means carried by the frame and arranged for engagement with one of said fixed collars, to retain the frame in operative position; means for swinging said frame into inoperative position when said retaining means are released from such engagement; and separate means for checking such swinging movement.

8. A mail-crane comprising in combination, a rotatable vertical shaft; a pair of collars rigidly secured to said shaft and provided with vertical fingers; a pair of collars loosely fitted upon said shaft adjacent said fixed collars and provided with vertical fingers; a swinging frame carried by said loose collars; means carried by said frame and arranged for engagement with one of said collars, to retain the frame in operative position; and means for swinging said frame into inoperative position when said retaining means are released from such engagement, the fingers on said loose collars being arranged for movement into contact with the fingers on said fixed collars, to effect the rotation of said shaft during such swinging movement.

9. A mail-crane comprising in combination, a rotatable vertical shaft; a pair of collars rigidly secured to said shaft; a pair of collars loosely fitted upon said shaft and located adjacent said fixed collars; a swinging frame secured to said loose collars and including fixed arms and a pivoted arm; means provided upon the pivoted arm and arranged for engagement with one of said fixed collars, to retain the frame in operative position; means for swinging said frame into inoperative position when said retaining means are released from such engagement; and separate means provided upon said loose collars and arranged for engagement with said fixed collars, to effect the rotation of said shaft during such swinging movement.

10. A mail-crane comprising in combination, a rotatable vertical shaft; a pair of collars rigidly secured to said shaft, one of said

collars being provided with a seat; a pair of
collars loosely fitted upon said shaft and lo-
cated adjacent said fixed collars; a swinging
frame carried by said loose collars and in-
cluding fixed arms and a pivoted arm;
5 means provided upon the pivoted arm and ar-
ranged for engagement in said seat, to retain
the frame in operative position; means for
swinging said frame into inoperative position
10 when said retaining means are released from
such engagement; and separate means pro-
vided upon said loose collars and arranged
for engagement with said fixed collars, to ro-
tate said shaft during said swinging move-
15 ment.

11. A mail-crane comprising in combina-
tion, a vertical shaft; a pair of collars rig-
idly secured to the shaft, one of said collars
being provided with a seat; a pair of collars
20 loosely fitted upon said shaft, and located

adjacent said fixed collars; a swinging frame
carried by said loose collars and including
fixed arms and a pivoted arm; a finger pro-
vided upon said pivoted arm and arranged
for engagement in said seat, to retain the 25
frame in operative position; means for
swinging said frame into inoperative position
when said finger is released from such en-
gagement in said seat; and separate means
provided upon said loose collars and ar- 30
ranged for engagement with said fixed col-
lars, to rotate said shaft during such swinging
movement.

In testimony whereof, I affix my signa-
ture, in presence of two witnesses.

RICHARD H. HUDSON.

Witnesses:

J. F. Fox,
C. H. Jones.