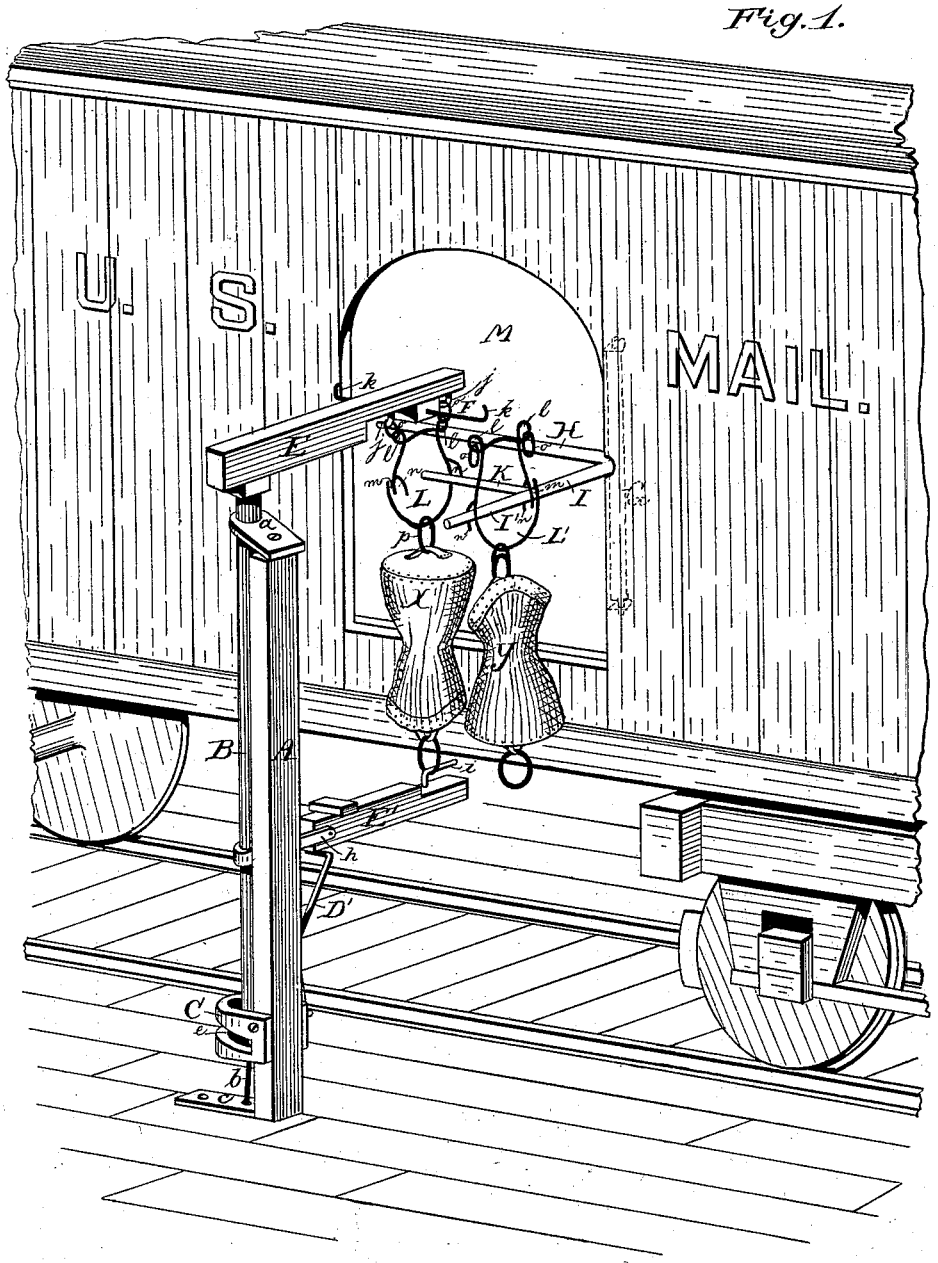
2 Sheets—Sheet 1.

J. A. BOALS.

Mail-Bag Catcher.

No. 199,499. Patented Jan. 22, 1878.

Fig. 1.



Attest:
Jno. P. Brooks.
August Petersohn.

Inventor:
James A. Boals,
by Louis Bagger & Co.
attys.

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Fig. 3.

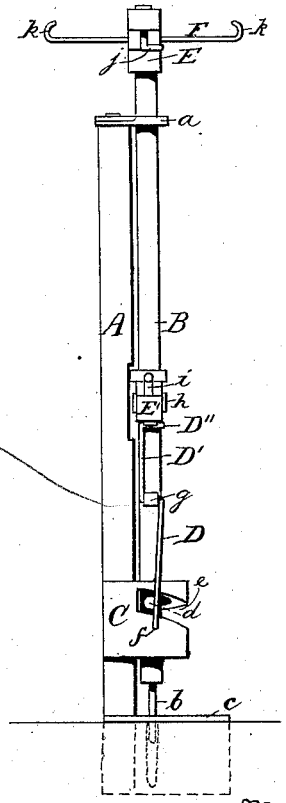


Fig. 2.

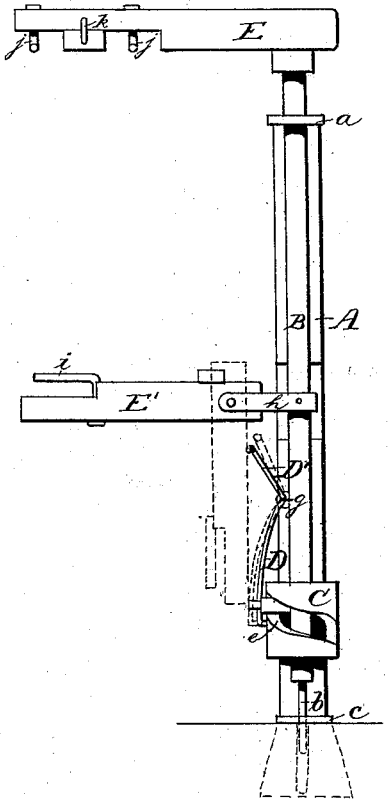


Fig. 4.

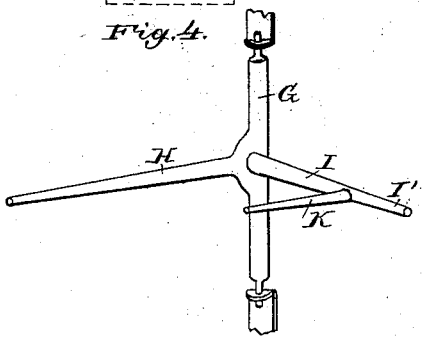
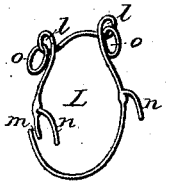


Fig. 5.



Attest:
Jno. R. Brooks.
August Petersohn.

Inventor:
James A. Boals,
by Louis Bagger & Co.
Attys.

UNITED STATES PATENT OFFICE.

JAMES A. BOALS, OF DINSMORE, ASSIGNOR TO D. M. BAILEY & BROTHERS, OF CARDVILLE, PENNSYLVANIA.

IMPROVEMENT IN MAIL-BAG CATCHERS.

Specification forming part of Letters Patent No. **199,499**, dated January 22, 1878; application filed November 19, 1877.

To all whom it may concern:

Be it known that I, JAMES A. BOALS, of Dinsmore, in the county of Washington and State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Exchanging Mail-Bags with Mail-Trains while in Motion; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to apparatus or mechanism for exchanging mail-bags between a fast-going mail-train and mail-stations along the road where the train does not stop; and it consists, first, in the construction of a swinging crane, which carries the mail bag or pouch to be received on board of the passing train; second, in the construction of the "catcher" in the mail-car, which receives the bag from the crane; and, third, in the construction, and their combination with the crane and catcher, of rings of peculiar construction for suspending the bags to be received and delivered.

The object of my invention is to provide a means for exchanging mail matter during the passage of the train, in a safe and expeditious way, and this I accomplish by making the crane and catcher both serve the double purpose of delivering and receiving (in other words, exchanging) a mail-bag, substantially as I shall now proceed to point out more fully.

On the two sheets of drawings hereto annexed, Figure 1 represents a perspective view of a mail-car passing the crane, in the act of exchanging mail-bags. Fig. 2 is a side view of the crane. Fig. 3 is a front elevation of the same. Fig. 4 is a perspective view of the catcher detached, and Fig. 5 is a similar view of one of the "exchange-rings" which forms a part of my invention.

I shall first describe my improved crane and its construction. This consists of a post, A, secured firmly in the ground in a perpendicular position, a short distance to one side of the track. On top of post A is bolted a projecting perforated arm or bracket, *a*, through which passes a shaft, B, the lower end of which passes through a sleeve or keeper, C, secured upon post A a little distance above the ground.

In the end of shaft B is inserted a guide-pin, *b*, which fits into a socket in a guide-block, *c*, sunk into the ground alongside of post A, or projecting from one side of the latter, so as to form a part of it. Into the front side of shaft B is inserted a pin, *d*, which slides in a spiral groove, *e*, in the sleeve C. The front part of said sleeve, below the groove *e*, has a depression or perforation, *f*, into which fits the lower hooked end of a latch, D. The latter is pivoted upon shaft B at *g*, its upper arm D′ projecting out from the shaft, and terminating in a bent arm, D″, Fig. 3.

The upper crane-arm E is secured rigidly to, and projects at right angles from, the top of shaft B.

The lower arm E′ is hinged in a bracket, *h*, which projects from shaft B, parallel to arm E, so as to have a free up-and-down swinging motion.

Upon the end of arm E′ is the pivoted key *i*, which is inserted through the ring in the bottom of the mail-bag, so as to keep this in a perpendicular position, as shown in the drawing.

To the under side of the upper arm E, and projecting on both sides thereof at right angles, is secured a rod, F, the ends of which are bent upward to form hooks *k k*. On each side of this rod are the pivoted top keys *j j*, from which the exchanging-rings are suspended, as hereinafter described.

The catcher consists of a vertical rod, G, tenoned at both ends, so as to swing in bearings which are bolted onto the side of the mail-car. Projecting from about the middle of this rod, at right angles, are two arms, H and I, and projecting from arm I, parallel to H, is another shorter arm, K. Arm H is the lever or handle for operating the catcher. K is the arm which receives the mail-bag with its ring from the crane, and upon the projecting part I′ of arm I the bag and ring to be delivered by the train to the crane are suspended.

At each operation of exchanging bags two exchanging-rings, L L′, are used. Each of these rings consists of a piece of heavy wire, or a thin iron rod, bent into the shape represented more clearly in Fig. 5, so as to have two eyes, *l l*, and a slot or opening, *m*, on one side. Firmly secured about midway on the ring, one on each side, are two downward-projecting hooks, *n n*, of such a gap or width that they will fit over arm I′. *o* and *o* are rings inserted into the loops or eyes *l l*, by means of which rings L are suspended upon the swiveled keys *j j* of the upper crane-arm E.

From the foregoing description, taken in connection with the drawings, the operation of my invention will be readily understood.

The mail-bag (denoted by H in the drawing) to be deposited on board of the train is suspended between arms E and E′ of the crane by means of ring L, the upper ring *p* of the bag being slid onto L through the slot or opening *m*. The exchange-bag Y is, a short time before the train will reach the crane where the exchange is to take place, suspended upon another ring, L′, which is deposited upon arm I by means of the projecting hooks *n*, the weight of the bag serving to keep it in a perpendicular position. Just before the crane is reached arm I with its projections I′ K is swung out of the open door (denoted by M) by turning the handle or lever H inside the mail-car, and as the car passes the crane arm K will pass through ring L and carry it, with its bag, off the crane, while simultaneously the ring L′, which carries the exchange-bag Y, will be deposited, by arm I′, upon the hooked projecting receiving-rod F of the crane.

The moment bag X leaves the crane, arm E′ will, of its own weight, fall down, and, striking the latch D′, will disengage its lower hooked end from the perforation *f* in sleeve C. The pin *d*, being no longer retained at the top of the spiral groove *e* by latch D, permits shaft B to turn round and lower itself through the sleeve (by its own gravity, with that of its attachments) until it occupies the reversed position indicated by dotted lines in Fig. 2. This rotation of the shaft B swings its upper arm E out of the way, with the bag Y suspended from it, so that this is not liable to be blown off the hook by the current of air caused by the passing train. After the mail-car has passed the crane, the arms of the catcher with the bag suspended on them are turned into the car by swinging lever H back in the opposite direction, when the bag with its ring is detached from the catcher, which is charged with another bag for delivery at the next station.

The usual way of delivering mail matter from trains while in motion is to throw the pouches out of the door, to be picked up by an attendant.

It frequently happens that the mail-pouches are blown in under the wheels of the train, and their contents seriously damaged or completely destroyed, and another drawback to this method is the danger which it involves. The mail-clerk, whose duty it is to throw the bag overboard, has to stand at the very edge of the open door and throw the bag with all his force up against the wind in the direction in which the train is moving. Hence he is apt to overbalance himself and to fall out. Such accidents have frequently happened to the *personnel* of the railway mail-service intrusted with this duty. But by my invention all danger to the mail matter, as well as to life and limb, is entirely overcome. There is no missing either the catch or the throw by miscalculating the distance, and the mail matter is delivered and received at the same instant in perfect condition, and without the possibility of failure or accident.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. The combined receiving and delivering crane herein described, consisting of the stationary post A, rotating shaft B, arm E, having receiving-hook F and swiveled keys *j j*, swinging arm E′, having swiveled key *i* or its equivalent, latch D, and spirally-grooved sleeve C, all constructed and combined to operate substantially as and for the purpose hereinbefore set forth.

2. As an improvement in mail-bag cranes, the rod F, having hooked ends *k k*, for receiving the exchange-bag from a passing mail-train, substantially as and for the purpose hereinbefore set forth.

3. The combined delivering and receiving catcher herein described, consisting of the vertical pivoted rod G, having horizontal arms H I at right angles to each other, the latter provided with a projecting arm, K, parallel to H, substantially as and for the purpose hereinbefore set forth.

4. The rings L for suspending the mail-bags while these are being exchanged, consisting of a rod or wire bent into an annular shape, and having an opening, *m*, loops or eyes *l l*, and hooks *n n*, substantially as and for the purpose hereinbefore set forth.

5. The device herein described for delivering and receiving mail-bags, consisting of the crane, constructed as herein described, in combination with the combined delivering and receiving catcher G H I K and the exchanging-rings L, all arranged and operating substantially as herein described, for the purposes shown and specified.

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

JAMES A. BOALS.

Witnesses:

GEO. M. YENAN,

T. H. PURVIANCE, M. D.