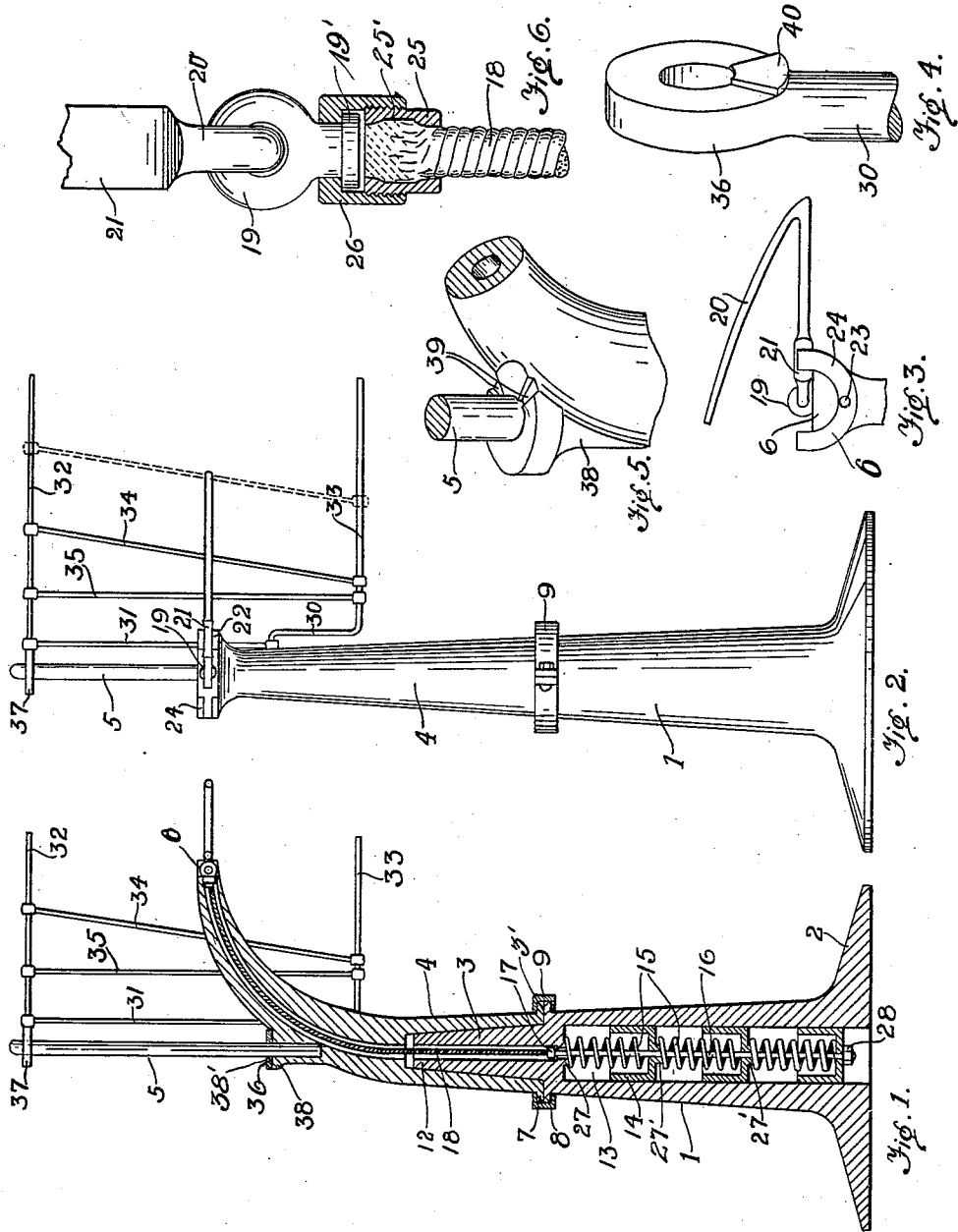


P. B. SOUTHWORTH.
MAIL BAG RECEIVING AND DELIVERING APPARATUS.
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1,008,213.

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WITNESSES:

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PRESTON B. SOUTHWORTH, OF SAN DIEGO, CALIFORNIA.

MAIL-BAG RECEIVING AND DELIVERING APPARATUS.

1,008,213.

Specification of Letters Patent.

Patented Nov. 7, 1911.

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To all whom it may concern:

Be it known that I, PRESTON B. SOUTHWORTH, a citizen of the United States, residing at San Diego, in the county of San Diego and State of California, have invented certain new and useful Improvements in Mail-Bag Receiving and Delivering Apparatus; and I do 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.

This invention relates to a mail bag delivering and receiving apparatus and is designed as an improvement on the mail bag catcher shown and described in the U. S. Patent No. 891,382, issued to me on June 23, 1908.

The principal object of the invention is to provide a device of simple construction having new and novel arrangements of parts whereby a mail bag may be received from a fast moving train without injury to the bag or its contents and at the same time a mail bag may be delivered to the train, both operations being performed by the device in an efficient manner.

The invention resides more broadly in a device in which a revolving arm carrying a bag catching hook is supported on a tubular standard and on which a bracket for supporting a mail bag to be delivered is also mounted to revolve independently of the arm carrying the bag catching hook whereby the operation of receiving and delivering a mail bag to and from a fast moving train is accomplished simultaneously and without injury to either bag.

Another object is the provision of an apparatus in which the operative parts are revoluble upon a common axis whereby the receiving and delivering mechanism may be reversed for receiving and delivering the bags from and to a fast moving train running in either direction, a small number of parts being an especial feature of the invention.

Another object is to provide an apparatus of this character which will occupy a minimum amount of space on a station platform and present a pleasing appearance to the eye. The heavy part of the apparatus which receives the bag having a graceful curved tapered form and the delivering de-

vice consisting of a light superstructure of metal rods.

These objects and advantages are attained by the device embodied in this invention comprising the combination and arrangement of parts substantially as hereinafter described and claimed and illustrated in the accompanying drawing in which:—

Figure 1 is a vertical sectional view of a mail bag delivering and receiving apparatus constructed in accordance with this invention, the delivering mechanism being placed in position at the rear of the bag receiving mechanism with the receiving hook extending toward the moving train; Fig. 2 is a front elevation of the apparatus with the parts in position to receive and deliver a mail bag and as it would appear to an observer on a train moving to the right of the device; Fig. 3 is a top plan view of the bag catching hook and the end of the arm which supports it; Fig. 4 is a detail view of the lower eye which forms the hinge joint of the supporting apparatus; Fig. 5 is a detail view of the supporting block for the delivering apparatus; Fig. 6 is a detail sectional view of the end connection of the cable showing in elevation the swiveled joint connection of the receiving hook to the upper end of the cable.

In the embodiment illustrated, a supporting structure or platform crane is shown in the form of a hollow standard 1 preferably constructed of a one-piece hollow cylindrical member tapering from its lower toward its upper end and provided at its lower end with a large heavy flange 2 preferably formed integral therewith and which constitutes a suitable base for the standard whereby the crane may be firmly secured to the station platform or other support. The upper end of the standard 1 has a tapered extension 3 with a shoulder 3' formed on its exterior at the base of said extension, said shoulder merging into an annular flange 8 for a purpose to be described. This extension 3 forms a shaft on which the operating parts may revolve and also acts as a brace for the revolving member to be described.

Revolubly mounted on the shaft or extension 3 is a hollow curved tapering arm 4, the bore of the lower end thereof being enlarged and telescopically engaged with said

extension 3, this arm 4 being curved sufficiently to dispose its free upper end in a plane substantially at right angles to the plane of the standard 1 and it is provided at said end with a broad flattened head 6 designed to support a bag catching hook to be described and which is provided on either side with lugs 22 above which are arranged the ends of a U-shaped spring metal hook holding plate 24 which is secured to the top of the head 6 by a bolt 23 which extends through the center of said plate and permits the free ends thereof to act as a clamp for the catching hook to hold it in operative position upon the lugs 22 as will be hereinafter more fully described. This arm 4 is provided on its outer face preferably at a point midway between the ends thereof with a boss 38 having a central socket 38' formed therein and two grooves or recesses 39 extending radially from said socket for a purpose to be described. An upwardly extending shaft 5 is fixedly mounted in said socket 38' and is designed to receive and support the bag delivery device as will be hereinafter described. The arm 4 is provided at its larger lower end with a radially projecting annular flange 7 which is adapted to be seated on the flange 8 formed at the base of the extension 3 and around said flange is arranged a collar 9 by means of which the arm 4 is revolvably connected to the upper end of the standard 1, the extension 3 which projects into said arm serving to brace said arm at its connecting point and to permit it to revolve thereon without sticking or binding.

Coincident with the axis of the standard 1 is formed a tubular bore 13 which registers with a smaller bore 12 in the shaft or extension 3, said smaller bore being designed to form a guideway for a cable to be described. In the large lower bore 13 is slidably mounted a series of spring holding buckets, as 14, in which are seated a series of coiled springs, as 15, said springs being of different tensions and ranging from a very heavy spring which is disposed in the lower bucket to a light spring in the upper bucket. The upper end of the bore 13 is provided with a depending annular flange 27 and on the bottom of each of the upper buckets is arranged a similar flange 27', which surrounds centrally disposed apertures formed in the bottoms of the buckets for the passage of a rod 16. These flanges 27 and 27' are designed to hold the upper ends of the springs 15 in concentric relation to the rod 16, the lower ends of the springs being held in place by the buckets in which they are seated. The rod 16 extends centrally through said buckets and springs and the upper end thereof is connected to a flexible element 18 by a coupling 17, and the lower end is secured by a nut 28 which

engages the bottom of the lower bucket of the series.

The flexible element 18 which may be in the form of a cable or chain has a swivel jointed eye 19 secured to one end and the other end is secured to the rod 16 by the coupling 17, as above described. This cable 18 extends upwardly through the arm 4 and a bag catching hook 20 is secured to its swivel jointed eye 19. In order that the hook 20 may be held in suitable position to engage and remove a bag from a train, it is provided near its pivoted end with flat surfaces 21 which are adapted to engage and rest on the lugs 22 which are provided on either side of the head 6 between which and the ends of the spring plate 24, said hook is securely held in position to receive the bag. The swiveled connection between the outer end of the cable 18 and the hook 20 avoids much wear on the cable as the twisted effect which would occur when the device is operated to receive a bag is taken up by the swiveled joint. This swivel joint is preferably formed by securing a thimble or sleeve 25 to the end of the cable, which sleeve is provided on its outer face with screw threads for engagement with a coupling 26. The inner face of this sleeve 25 is provided with an annular groove 25'. After the end of the cable is inserted in the sleeve 25, the filaments of which the cable is composed are spread apart and the outer end of the sleeve is filled with tin or a suitable solder which fills the interstices between the filaments and forms a firm connection. The shank of the eye 19 with which the hook 20 is connected has an annular flange 19' on its free end which is inserted within the coupling 26 whereby said eye 19 is swiveled to said coupling. When the hook 20 is engaged with a bag, the weight thereof draws the cable and the rod 16 connected therewith outwardly whereby the uppermost spring 15 will be compressed against the upper end of the bore 13 and each successive spring will be likewise compressed, the amount of compression of each spring being limited by the bucket within which it is seated.

The delivering mechanism which is mounted on top of the receiving arm 4 is adapted to rotate in unison with and also independently of said receiving arm and preferably consists of an upper arm 32 having an eye 37 at one end which is pivotally engaged with the upright rod 5 and a lower arm 33 connected at its rear end to a bracket 30 having an eye 36 which is engaged with the lower end of the arm 5 and is provided on its lower face with a cam 40 which is designed to engage one of the grooves or recesses 39 in the boss 38 and lock said bracket yieldably in adjusted position. A brace 31 is connected at its oppo-

site ends with the upper arm 32 and the bracket 30 and said arm and bracket are further supported by braces 34 and 35 connected at one end to the arm 32 and at their other ends to the arm 33, the brace 34 being inclined as shown in Figs. 1 and 2. This inclined brace 34 is connected and arranged to rigidly support the arm 32 and to provide a longer free end for the lower arm 33 which, being constructed of spring metal, is adapted to bend upward to permit a bag to be operatively engaged and held by the free ends of the arms 32 and 33 and to prevent said bag from slipping from said arms.

In the operation of the apparatus, to receive and deliver a mail bag, the hook 20 is arranged between the lugs 22 on the head of the arm 4 and the ends of the spring metal holding plate 24 with the free end of said hook projecting in the direction of the approaching train, said plate and lugs yieldably holding the hook in the proper position to engage a bag as the train passes. When the hook 20 is engaged with a bag, a forward pull is exerted thereon which disengages it from the spring plate 24 and the lugs 22 by the force or momentum of the moving bag which will cause the receiving arm to swing on the upper end of the standard in the direction of movement of the bag which will be gradually brought to a stop by the springs 15 in the lower end of the standard 1 which are connected to the hook by the flexible element 18 as hereinbefore described and thus prevents the bag or its contents from being injured which would be likely to occur should the bag be suddenly jerked from a fast moving train and then suddenly stopped.

Any desired number of stop springs may be provided and springs of various tensions may be used according to the speed of the train from which the bags are to be received, thus providing for the detaching and stopping of the bag without injury at whatever speed the train may be traveling.

The revolving arm 4 will travel about one-fourth of a turn and will point in the direction in which the train is moving before the weight of the bag is thrown on the stop springs. The weakest spring is the first to be compressed and when fully compressed is protected from being over-taxed by the bucket in which it is carried. The next weaker spring having been partly compressed while the first spring was being fully compressed will now be compressed to its fullest extent until the bucket in which it is seated engages the bucket above it and in this manner the momentum of the mail bag is finally overcome.

It will, hence, be obvious that this device will stop a heavy bag or light bag equally as well and the speed of the train or the

weight of the bag makes no difference whatever. To reverse the hook, is all that is necessary to receive the bag from either direction, the hook being secured to the cable by a swiveled joint for this purpose. After the springs have been compressed sufficiently to overcome the momentum of the bag they will begin to expand but in the reverse manner from which they are compressed, that is, the weak spring being light is compressed rapidly under the heavy pull of the mail bag and the heavier spring is compressed slightly, whereas, in the reverse movement of the springs, the more powerful spring acts immediately and quickly while the weaker spring acts last and with a slow effect, the bag being thus brought to a stop without disengaging it from the receiving hook.

The bag delivering apparatus is revolubly mounted on the shaft 5 which is secured to the arm 4 and is of sufficient length to cause the bag to be suspended from the arms thereof in position just beyond the bend of the receiving hook 20. When a bag is placed in position upon a moving train just beyond the bend of the receiving hook which is on the train, the free ends of the hooks will pass each other before engaging the bags on the delivering brackets. The cam 40 on the lower face of the bracket 30 normally holds the bracket against rotation but the sides of the depressions 39 are gradually inclined or flared outwardly to permit the bracket to yield when the bag is caught by the receiving hook on the train.

The inclined brace 34 is slidably mounted on the arms 32 and 33 to provide for varying the tension of the lower arm 33 by shortening or lengthening its free bag engaging end. The end of the inclined brace 34 which engages the frame 32 is arranged near the free end of said arm thus rendering said arm rigid for the purpose of holding the bag to be delivered in proper position.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention claimed.

I claim as my invention:—

1. A mail bag receiving and delivering apparatus comprising a standard, a curved revoluble arm mounted on said standard and forming a longitudinal extension thereof, a receiving hook on said arm, and a revoluble delivering bracket superposed on said receiving arm.

2. A mail bag delivering and receiving

apparatus comprising a supporting structure, a receiving arm revolubly mounted thereon, and a delivering device mounted to swing above the upper end thereof, and to revolve independently thereof.

3. A mail bag receiving and delivering apparatus comprising a standard, a revoluble receiving arm mounted thereon, and a delivering bracket revolubly mounted on said receiving arm to move independently of and in unison with said arm.

4. A mail bag receiving and delivering apparatus comprising a standard, a longitudinally curved receiving arm revolubly mounted on the standard, and a delivering device revolubly mounted on the bent or curved outer face of said receiving arm.

5. In a mail bag receiving and delivering apparatus, a receiving arm, an upright shaft disposed on said arm, a delivery device mounted to revolve on said shaft independently of said receiving arm, and a supporting structure upon which the receiving arm is revolubly mounted.

6. In a mail bag receiving and delivering apparatus, a tubular supporting standard, a tubular longitudinally curved receiving arm revolubly mounted on said standard, a head carried by the receiving arm, said arm and its supporting standard being connected to form a continuous tubular tapered member, a bag catcher normally engaged with said head, and a delivery device mounted on said receiving arm.

7. In a mail bag delivering and receiving apparatus, a standard having an internal bore of two diameters concentric with the axis thereof, the upper portion of said bore being reduced to form a cable passage, a series of stop springs arranged in the enlarged lower portion of the bore, a receiving arm carried by the standard and having a bore communicating with the cable passage of the standard, a catch hook, a flexible connection between said hook and springs, and means on the free end of said receiving arm for detachably engaging said hook.

8. In a mail bag delivering and receiving apparatus, a standard having an internal bore of two diameters concentric with the axis thereof, the upper portion of said bore being reduced to form a cable passage, a series of stop springs arranged in the enlarged lower portion of the bore, a receiving arm carried by the standard and having a bore communicating with the cable passage of the standard, a catch hook, a flexible connection between said hook and springs, and means on the free end of said receiving arm for yieldably engaging said hook.

9. In a mail bag receiving and delivering apparatus, a standard having an internal bore of two diameters concentric with the axis thereof, the upper portion of said bore

being reduced to form a cable passage, a series of stop springs arranged in the enlarged lower portion of the bore, a receiving arm carried by the standard and having a bore communicating with the cable passage of the standard, a catch hook, a flexible connection between said hook and springs, a head on the free end of said receiving arm having laterally spaced lugs arranged in transverse alinement thereon, and yieldable members arranged above said lugs for detachably engaging said hook and yieldably holding it in engagement with said lugs.

10. In a device of the class described, a standard having a reduced tapered shank on its upper end with an exterior shoulder at the base of said shank, a receiving arm telescopically engaged with said shank with its end abutting against said shoulder, and catching and delivering members mounted on said receiving arm.

11. In a mail bag delivering and receiving apparatus, a supporting structure, a delivering bracket mounted thereon comprising a shank extending upwardly, upper and lower arms engaged with said shaft, said supporting structure having a boss on which said shaft is mounted, said boss having spaced depressions in its face, a cam on the lower face of said lower arm for engagement with one of said depressions, whereby the lower arm may be normally held in operative adjusted position to yield to the impact of the receiving hook carried by a passing train.

12. In a mail bag receiving and delivering apparatus including upper and lower arms arranged to support a mail bag for delivery to a train, said arms being provided with an inclined brace whereby the upper arm is held rigid to secure the mail bag in normal position and the lower arm provided with a proportionately longer free end adapted to bend upward when in engagement with the bag to hold said bag under a slight tension.

13. In a mail bag receiving and delivering apparatus, a delivering device having a pivotally mounted upper arm and a lower bracket member, a vertical brace connecting the upper arm and the lower bracket near their pivoted ends, an arm secured to said lower bracket, and an inclined brace connecting and extending from near the outer end of the upper arm to a point near the center of the lower arm, whereby the upper arm is adapted to hold the mail bag rigidly in normal position.

14. A mail bag receiving and delivering apparatus including a receiving arm carried by a suitable support, a head on the end of the receiving arm, a bag catching hook carried by said arm, lugs on the head for supporting the hook in operative position, and

a spring plate on said head adapted to clamp the hook normally in operative position on the lugs.

15 In a mail bag delivering and receiving apparatus in combination, a superstructure for delivering mail bags having an upper arm and a lower bracket member, a lower arm extending from said bracket member parallel with said upper arm, a
10 brace rigidly connecting the upper arm and lower bracket, and an inclined brace connecting said arms and slidably mounted thereon for varying the tension of said lower arm.

15 16. In a mail bag delivering and receiving apparatus, a standard, a receiving arm revolubly mounted thereon, stop springs arranged within said standard, a cable passing from said stop springs through said
20 receiving arm, a catch hook at the head of the receiving arm, a swiveled hook connecting said catch hook and cable to provide for the reversal of the catch hook for receiving a bag in either direction in combination with a reversible delivery apparatus.

25 17. In a mail bag receiving and delivering apparatus, a supporting standard hav-

ing a tubular bore of two diameters, the upper portion being of smaller diameter, a series of buckets slidably mounted in the
30 lower portion of the bore, springs of graduated flexibility and strength interposed between the said buckets, the depth of the buckets and the length of the springs being so proportioned that each spring upon being compressed a certain amount is incased
35 within its retaining bucket and protected from injury and further compression, flanges upon the bottom of each bucket to hold the stop springs in concentric relation
40 with the axis of the buckets, a connecting rod slidably arranged in said buckets and springs, means for securing the buckets and springs to the rod, a receiving hook, and a
45 flexible connection between the hook and rod.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

PRESTON B. SOUTHWORTH.

Witnesses:

SHELLEY J. HIGGINS,

FRANK WILLIS.