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MAIL CRANE.

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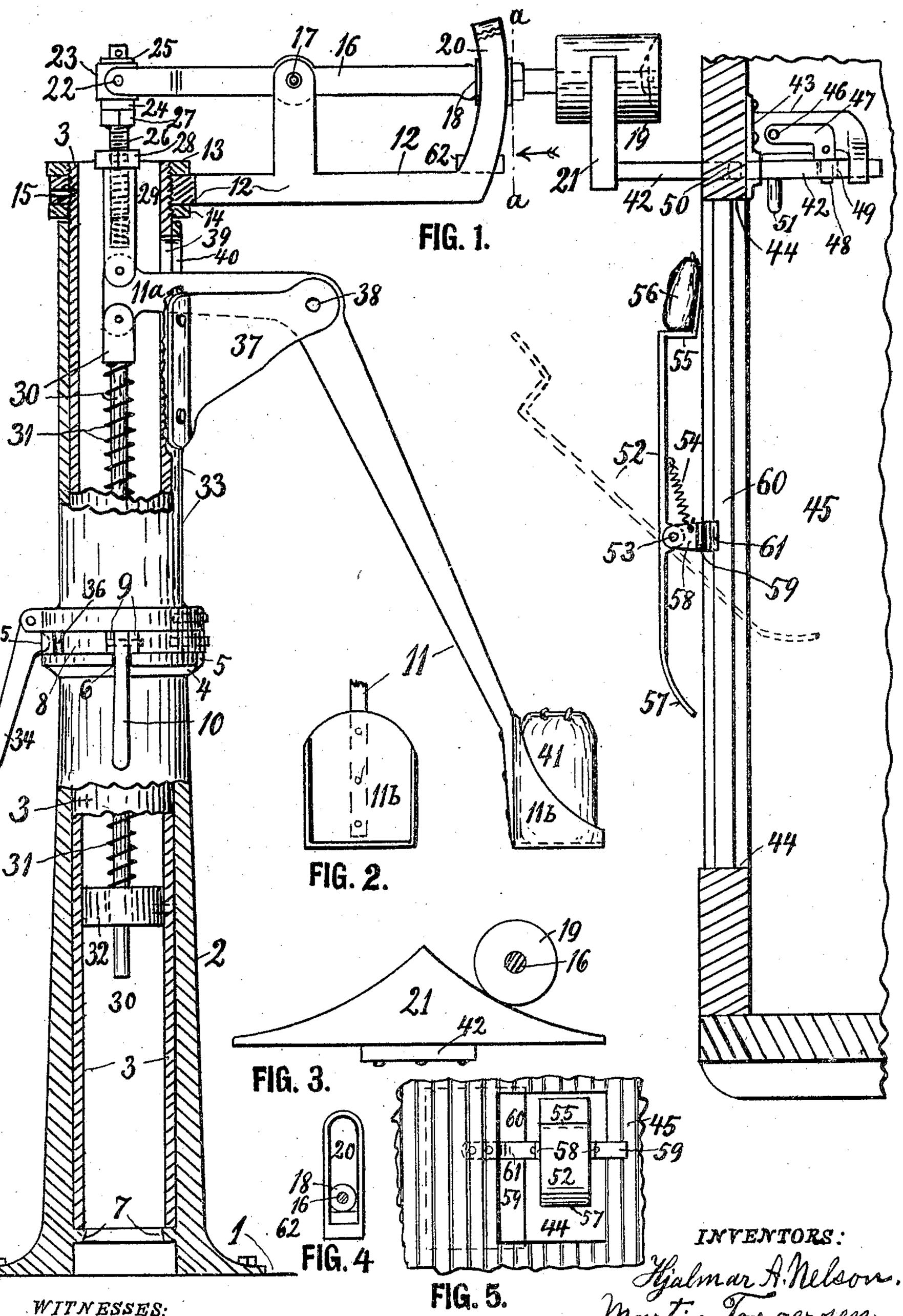

FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4

FIG. 5.

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MAIL-CRANE.

No. 798,363. Specification of Letters Patent. Patented Aug. 29, 1905.

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To all whom it may concern:

Be it known that we, HJALMAR A. NELSON and MARTIN TORGERSEN, citizens of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Mail-Cranes; and we 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to mail-cranes; and the object is to provide efficient and reliable means for the exchange of mail-bags between a moving train and the stations along the road. This object is attained by the novel construction, arrangement, and combination of parts illustrated in the accompanying drawings, in which—

Figure 1 is a partly-sectional side elevation of the mail-crane proper and a vertical cross-section of a moving mail-car in position to receive and deliver mail-bags. Fig. 2 is a front view of the mail-bag holding and throwing arm seen near by to the right in Fig. 1. Fig. 3 is a side view of the cam carried by the car and acting on the crane. Fig. 4 is a sectional view on the line *a a* in Fig. 1, and Fig. 5 is a reduced side view of a portion of the mail-car with a part of our device arranged in the door-opening.

Referring to the drawings by reference-numerals, it will be understood that near the railroad-track at the station is secured to a suitable base 1 a hollow mast made up of two sections 2 and 3, of which the section 2 has a top collar 4, provided with two notches 5 and 6, and the section 3 revolves inside the first section, resting upon an internal collar 7 thereof and having a fixed collar 8 with radial lips 9, between which is pivoted a latch-lever 10, which when dropped into the notch 6 holds the mail-bag-throwing arm 11 of the lever 11 11^a 11^b and the upper arm 12 in the normal or operative position shown in Fig. 1, and when dropped into the notch 5 said arms are held at right angles to the normal position, and thus out of the way from contact with passing trains.

To the upper end of the section 3 is secured between the nuts 13 14 and by a pin 15 the frame-arm 12, which carries a two-armed lever 16, pivoted at 17, and carrying on its outer arm two antifriction-rollers 18 and 19, of which 18 guides the lever-arm in the yoke 20 of the frame-arm and the roller 19 is actuated upward by a cam 21, carried by the mail-car, as will presently be more fully described. The other lever-arm is pivoted at 22 to a block 23, journaled between the shoulder 24 and the washer 25 of a screw 26, having a polygonal part 27 to be engaged by a wrench in turning it, and a jam-nut 28 to be screwed against the upper end of the sleeve 29, in which the screw is threaded. Said sleeve 29 has its lower end pivoted to the inner end 11^a of the lever 11, and to said inner end is also pivoted a rod 30, which is impelled upward by a helical spring 31, acting between the head of the rod and a guiding-block 32, fixed in the lower part of the section 3 of the mast.

Upon the upper part of the section 3 is journaled a sleeve 33, resting upon the collar 8 and carrying a latch-lever 34, adapted to engage alternately in the two notches 35 36 in the collar. Said sleeve 33 carries in a bifurcated bracket 37, on a pivot 38, the lever 11, of which the short arm 11^a swings vertically in slots 39 and 40 in the section 3 and sleeve 33, respectively. The slot 39 is wide enough to permit sufficient turning of the sleeve to let the lever 34 interlock with either one of the notches 35 36, and thereby hold the arm 11 slightly turned in the direction the train is moving, so that the cam 21 will operate the roller 19 and have the mail-bag 41 in motion toward the open door of the car the moment the latter gets into position to receive the bag. The turned position of the arm 11, which may approximate ten degrees to either side of right angle with the side of the car, also facilitates the delivery of the bag into the car by throwing it to some extent in the same direction that the car is moving.

The cam 21, which is of about the shape shown in Fig. 3, is fixed on an arm 42, sliding in a bracket 43, fixed above the door-opening 44 of the mail-car 45. To the bracket is pivoted at 46 a dog 47, whose tooth 48 may engage either of the two holes 49 and 50 in the arm, and thus hold the cam either in operative position or withdrawn close to the car. 51 is a handle by which to slide the arm or bar 42 to either of said positions.

In the door-opening of the car we arrange

a vertically-oscillating two-armed broad lever 52, pivoted at 53 and normally held in a vertical position by a spring 54. The upper arm of the lever is formed into a support 55 for the mail-bag 56, which is to be delivered from the car, and is thrown from its support the moment the mail-bag 41, by being thrown into the car, tilts the lower arm 57 into the car, as shown in dotted lines. In the present instance the lever 52 is shown as mounted in brackets or lugs 58, projecting outward from a bar 59, secured upon the sliding door 60 of the car, so that when the door is open the bar 59 crosses the opening and holds the lever 52 in it, and when the door is shut the bar, which is offset outward at 61, lies outside the wall of the car and there supports the lever 52; but it is obvious that while this form represents the principle it will in most cases be best to have the bar 59 and lever 52 arranged upon the inner side of the door and let them pass inside the car when the door is shut, or the door may be independent of the bar 59, which may be permanently or detachably secured across the door-opening.

From the foregoing description it will readily be understood that in the operation of the invention the mail-bags to be exchanged are placed like the bags 41 and 56, and when the car 45 is moving at a fairly fast speed—the faster the better—the cam 21 raises the roller 19 so suddenly against the resistance of the spring 31 that the sack 41 is thrown with a jerk into the car and the bag 56 is thrown outward and dropped a short distance beyond the arm 11, and as the spring 31 restores the roller 19 downward to its normal position a rubber cushion 62 meets the roller 18 and deadens the rebounding blow of the lever 16.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. A mail-crane comprising a mast made up of a lower stationary section and a horizontally-rotary section, two laterally-extending arms pivotally supported on the upper section, one of said arms being adapted to support and throw a mail-bag into a passing car, and the other arm being connected with the former arm and adapted to receive an impulse from a cam or member carried by the car, and means for holding the upper section interlocked with the lower section when the arms are in operative relation to the car and when turned into an idle position longitudinal with the car.

2. A mail-crane comprising a hollow mast with a vertical slot near its top, a rotary sleeve around the upper part of the mast, the same having a slot registering with the slot in the mast and a lateral bracket, the lever 11 pivoted in the bracket and having a long arm adapted to hold and throw a mail-bag, and a short arm extending loosely through said slots into the mast, a horizontally-disposed frame-arm extending from the upper end of the mast, a two-armed lever pivoted thereto and having its outer arm adapted to receive an impulse from a cam carried by the car and its inner arm pivotally connected to a block, a link extending from the short end of the lever 11 and having its upper end revolubly retained in said block, and means for turning and holding the sleeve with the arm 11 to either side of a transverse position to the car.

3. A mail-crane comprising a mast having two frame-arms one above the other, an upper and a lower vertically-swinging pivoted lever supported by said arms, a link connecting said levers, a spring holding the levers in normal position, a cam carried by the mail-car and adapted to actuate the upper lever and thereby jerk the lower lever toward the door of the car, and means for supporting a mail-bag on the end of the lower lever.

4. A mail-crane comprising a mast having two frame-arms one above the other, an upper and a lower vertically-swinging pivoted lever supported by said arms, a link connecting said levers, a spring holding the levers in normal position, a cam carried by the mail-car and adapted to actuate the upper lever and thereby jerk the lower lever toward the door of the car, and means for supporting a mail-bag on the end of the lower lever, the link between said levers being extensible.

5. A mail-crane comprising a mast having two frame-arms one above the other, an upper and a lower vertically-swinging pivoted lever supported by said arms, a link connecting said levers, a spring holding the levers in normal position, a cam carried by the mail-car and adapted to actuate the upper lever and thereby jerk the lower lever toward the door of the car, and means for supporting a mail-bag on the end of the lower lever, and means for guiding the spring that returns the levers, substantially as shown and described.

6. A mail-crane comprising a mast having two frame-arms one above the other, an upper and a lower vertically-swinging pivoted lever supported by said arms, a link connecting said levers, a spring holding the levers in normal position, a cam carried by the mail-car and adapted to actuate the upper lever and thereby jerk the lower lever toward the door of the car, and means for supporting a mail-bag on the end of the lower lever, and an antifriction-roller on the upper lever to engage the cam.

7. A mail-crane comprising a mast having two frame-arms one above the other, an upper and a lower vertically-swinging pivoted lever supported by said arms, a link connecting said levers, a spring holding the levers in normal position, a cam carried by the mail-car and adapted to actuate the upper lever and thereby jerk the lower lever toward the door of the car, and means for supporting a mail-bag on

the end of the lower lever, a yoke on the upper frame-arm and an antifriction-roller on the upper lever guided in said yoke.

8. A mail-crane comprising a mast having two frame-arms one above the other, an upper and a lower vertically-swinging pivoted lever supported by said arms, a link connecting said levers, a spring holding the levers in normal position, a cam carried by the mail-car and adapted to actuate the upper lever and thereby jerk the lower lever toward the door of the car, and means for supporting a mail-bag on the end of the lower lever, a yoke on the upper frame-arm and an antifriction-roller on the upper lever guided in said yoke, and a cushion to receive the rebounding blow of the levers.

9. A mail-crane comprising a mast having two frame-arms one above the other, an upper and a lower vertically-swinging pivoted lever supported by said arms, a link connecting said levers, a spring holding the levers in normal position, a cam carried by the mail-car and adapted to actuate the upper lever and thereby jerk the lower lever toward the door of the car, and means for supporting a mail-bag on the end of the lower lever, and means for holding the cam in operative and inoperative position.

10. A mail-crane comprising a mast having two frame-arms one above the other, an upper and a lower vertically-swinging pivoted lever supported by said arms, a link connecting said levers, a spring holding the levers in normal position, a cam carried by the mail-car and adapted to actuate the upper lever and thereby jerk the lower lever toward the door of the car, and means for supporting a mail-bag on the end of the lower lever, a tilting mail-bag support mounted in the door-opening of the car and adapted to tilt outward and drop the bag when its lower end is tilted inward by the mail-bag received by the car.

11. A mail-crane comprising a mast having two frame-arms one above the other, an upper and a lower vertically-swinging pivoted lever supported by said arms, a link connecting said levers, a spring holding the levers in normal position, a cam carried by the mail-car and adapted to actuate the upper lever and thereby jerk the lower lever toward the door of the car, and means for supporting a mail-bag on the end of the lower lever, a tilting mail-bag support mounted in the door-opening of the car and adapted to tilt outward and drop the bag when its lower end is tilted inward by the mail-bag received by the car, and means for restoring said support to its normal position.

12. A mail-crane comprising a mast having two frame-arms one above the other, an upper and a lower vertically-swinging pivoted lever supported by said arms, a link connecting said levers, a spring holding the levers in normal position, a cam carried by the mail-car and adapted to actuate the upper lever and thereby jerk the lower lever toward the door of the car, and means for supporting a mail-bag on the end of the lower lever, a tilting mail-bag support mounted in the door-opening of the car and adapted to tilt outward and drop the bag when its lower end is tilted inward by the mail-bag received by the car, and means for restoring said support to its normal position, said tilting bag-support being secured to the door of the car in such a manner that when the door is open the support appears in the door-opening and when the door is shut the support extends along the side of the car.

In testimony whereof we affix our signatures in presence of two witnesses.

HJALMAR A. NELSON.
MARTIN TORGERSEN.

Witnesses:
A. M. CARLSEN,
F. M. FISH.