No. 803,426. PATENTED OCT. 31, 1905.

J. M. MATHES & J. E. BARBER.

MAIL CRANE.

APPLICATION FILED MAY 1, 1905.

3 SHEETS—SHEET 1.

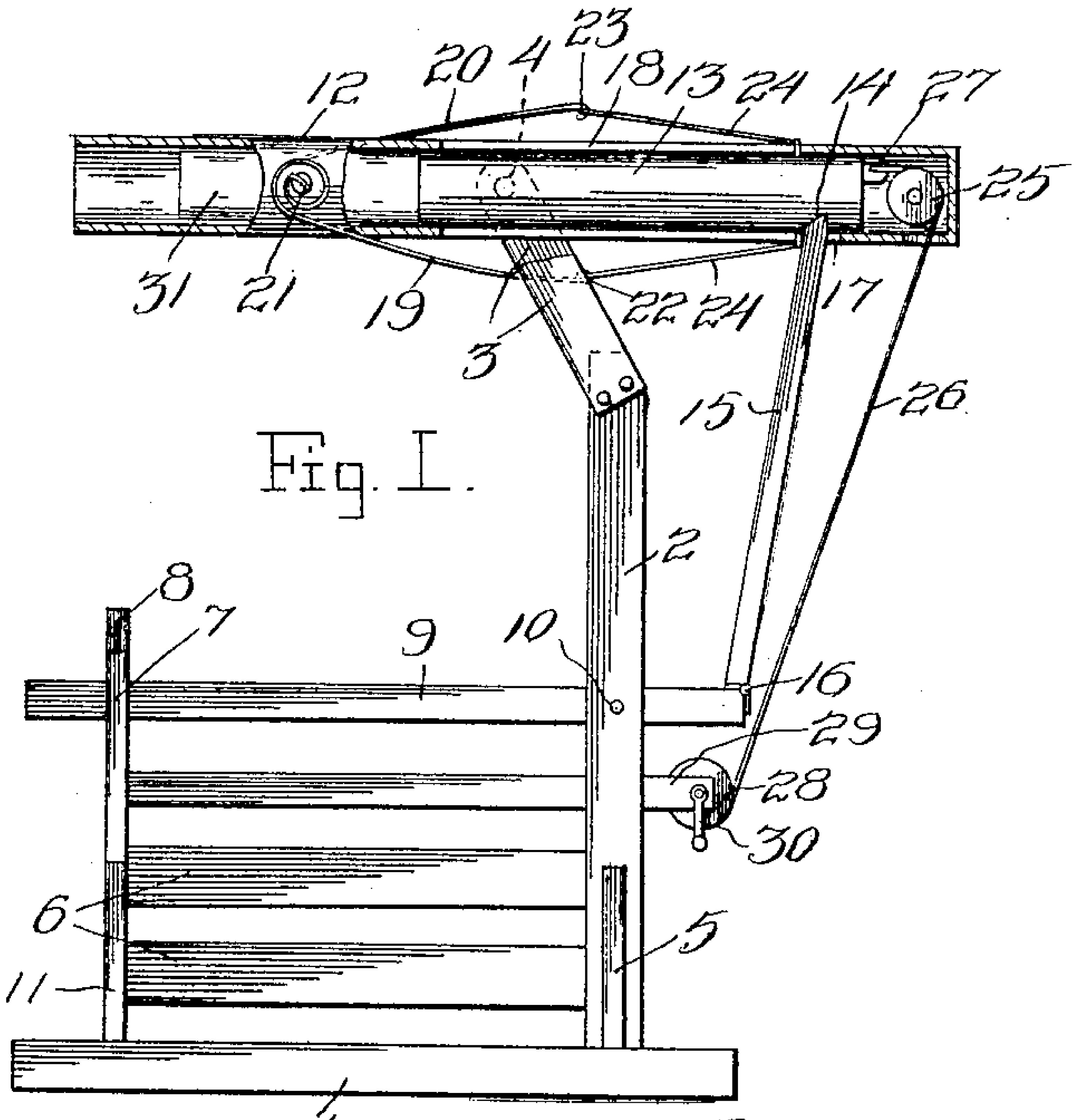

Fig. 1.

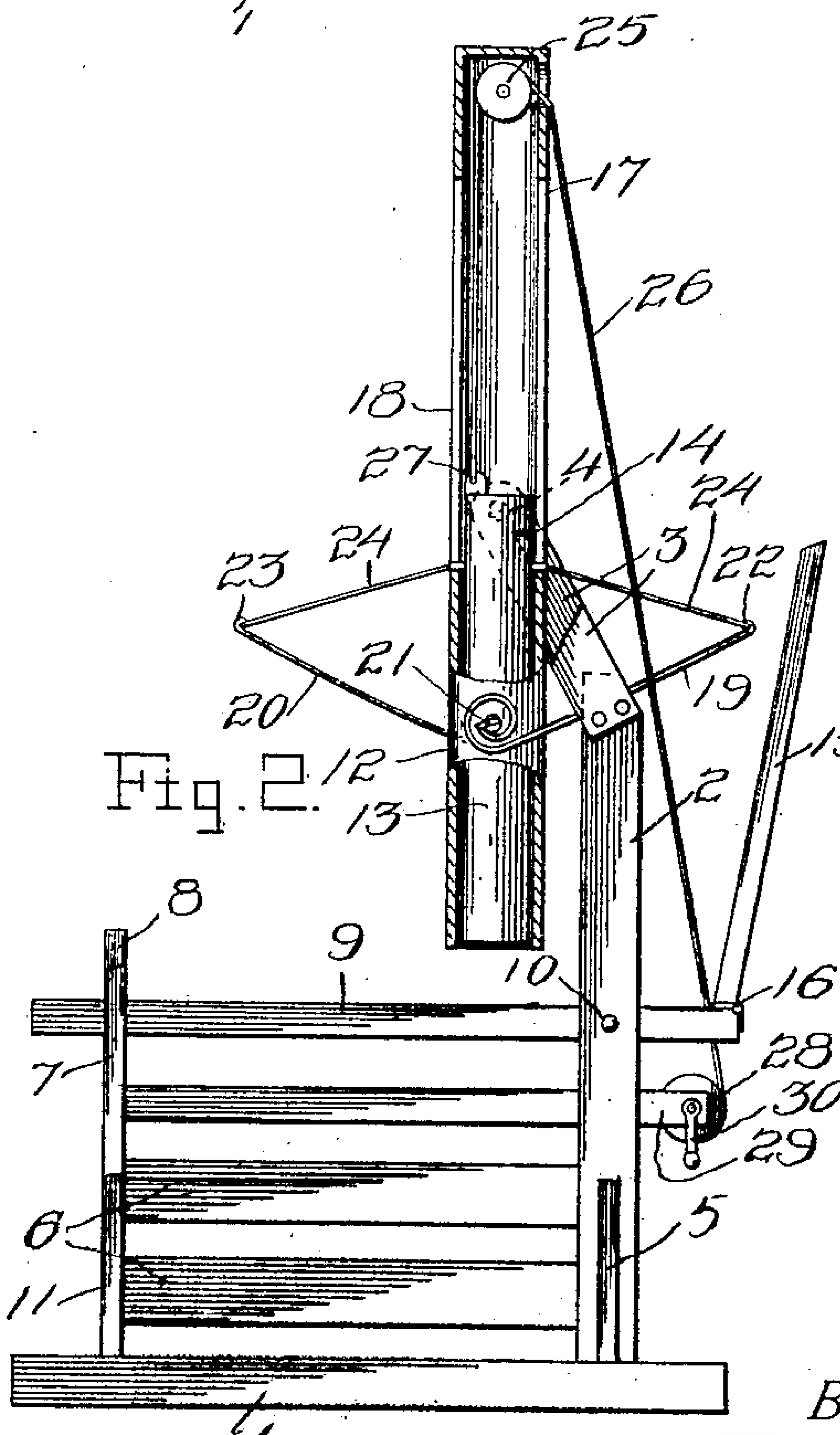

Fig. 2.

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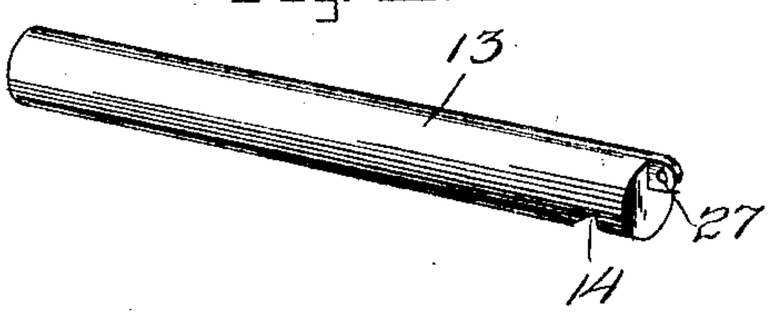
3 SHEETS—SHEET 2.

Fig. 3.



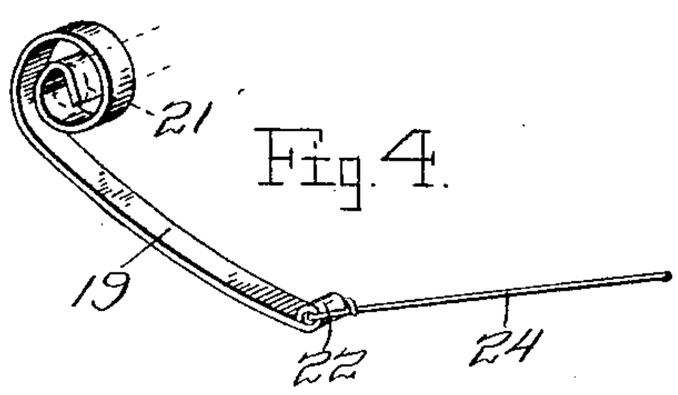


Fig. 4.

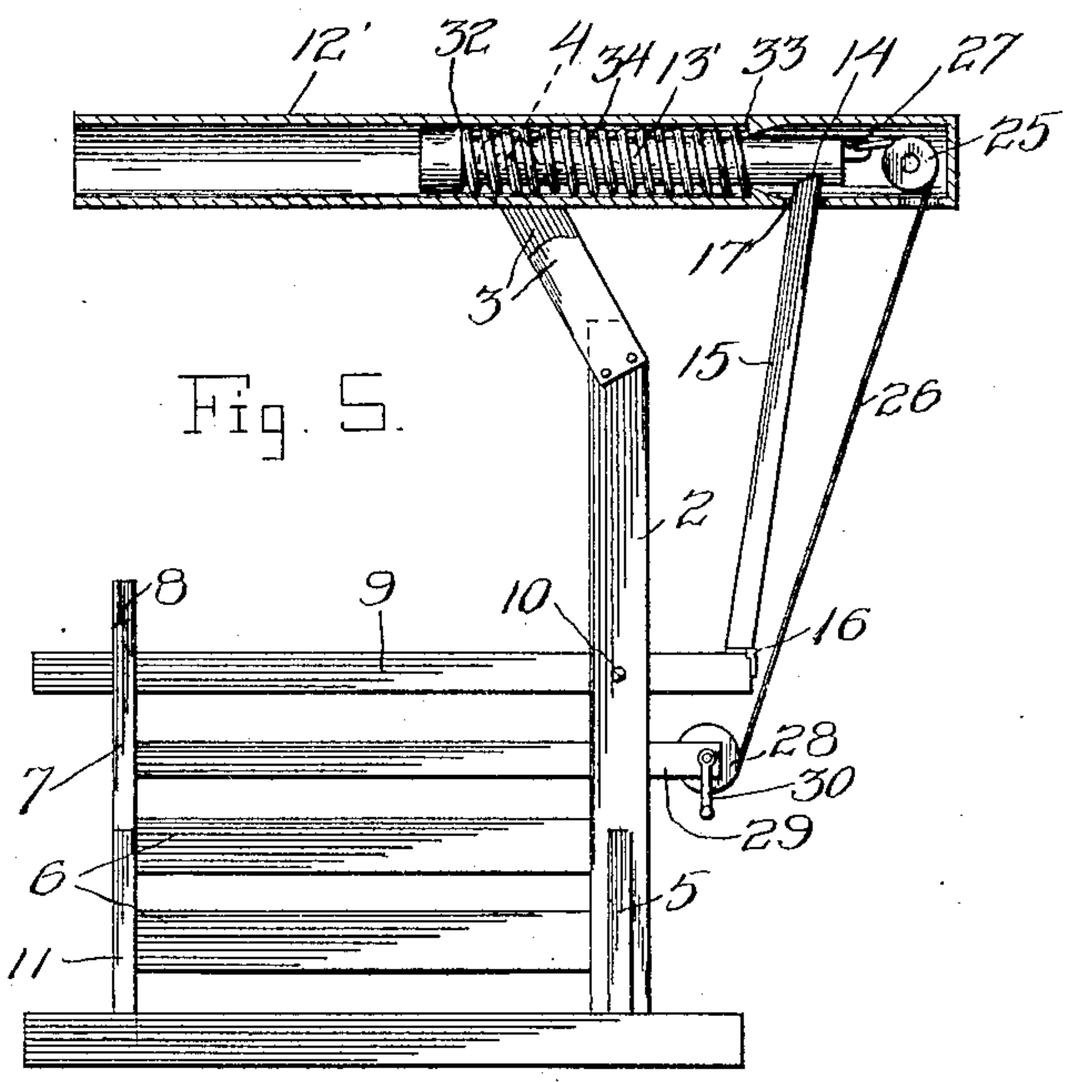


Fig. 5.

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3 SHEETS—SHEET 3.

Fig. 7.

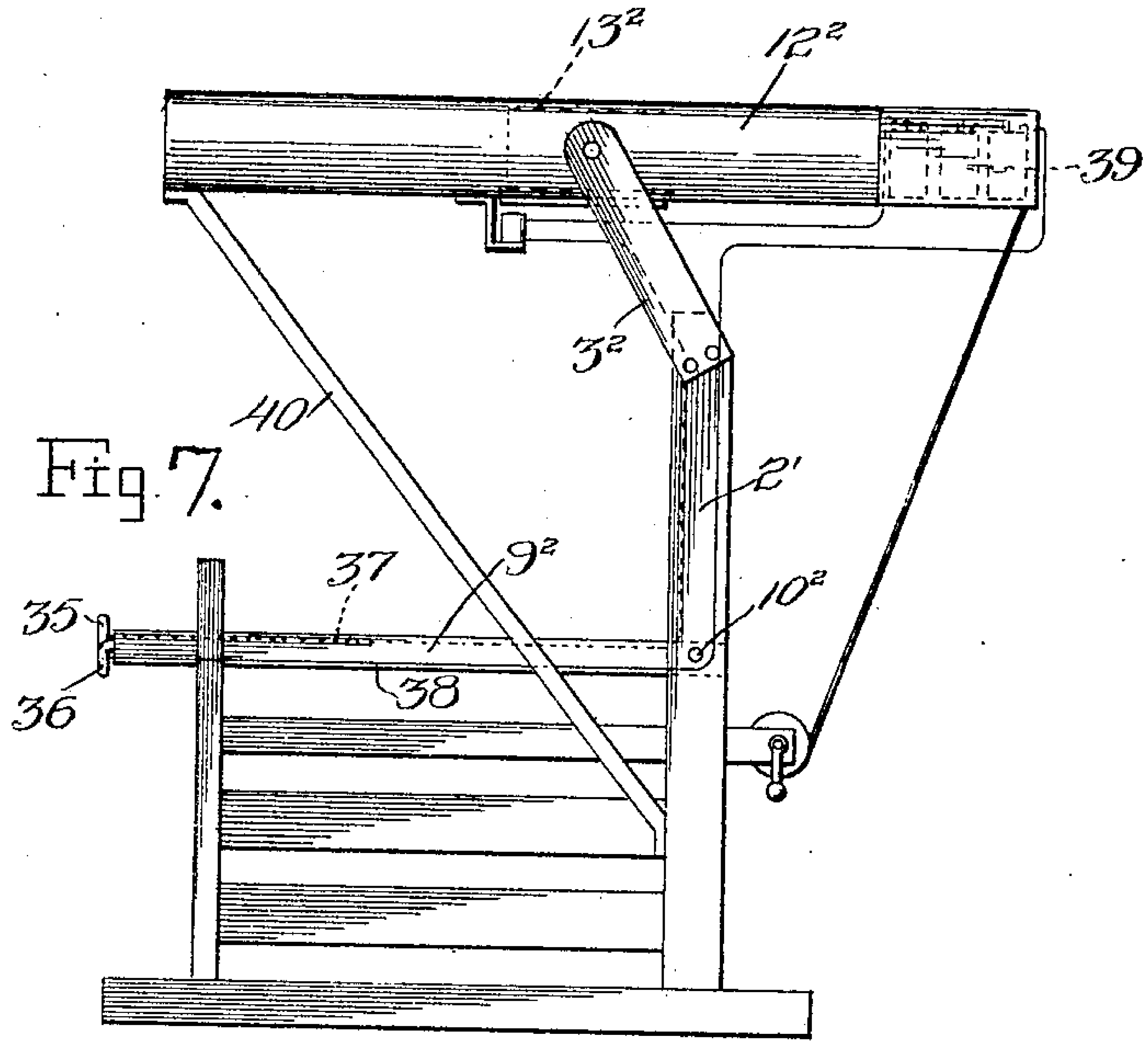


Fig. 6

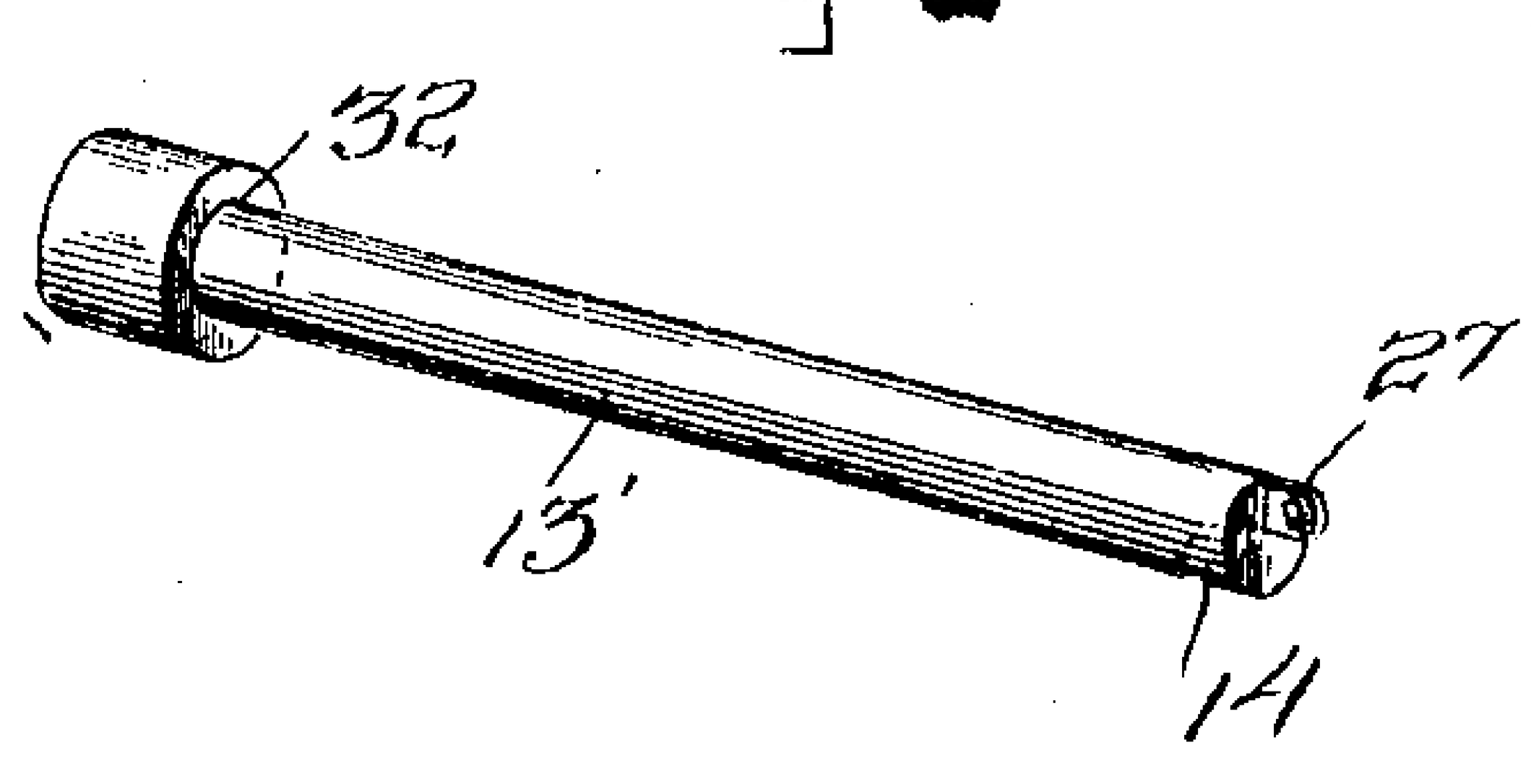
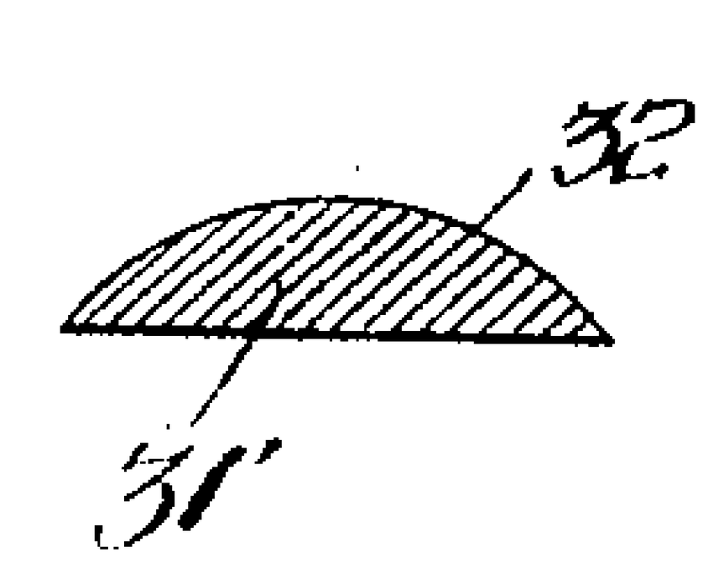


Fig. 8.



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UNITED STATES PATENT OFFICE.

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MAIL-CRANE.

No. 803,426. Specification of Letters Patent. Patented Oct. 31, 1905.

Application filed May 1, 1905. Serial No. 258,171.

To all whom it may concern:

Be it known that we, JOHN M. MATHES and JOHN E. BARBER, citizens of the United States, residing at Aurora, in the county of Lawrence, State of Missouri, have invented certain new and useful Improvements in Mail-Cranes; and we 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.

This invention relates to mail-discharging apparatus, and pertains more particularly to that class wherein a crane is provided with suitable mechanism for ejecting a mail-pouch therefrom onto or into a moving train, regardless of the speed of the latter.

Another object of the invention resides in the provision of an apparatus of the character stated wherein the device will be of a comparatively simple and inexpensive nature and one wherein accuracy may be depended upon in the discharge of the mail into the moving train.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the present invention.

In the drawings, Figure 1 is a side elevation of the invention, illustrating the ejector-casing in section to disclose interior parts, the illustration showing the mechanism in position for the delivery of the mail therefrom to the train. Fig. 2 is a view similar to Fig. 1, illustrating the invention in collapsed position. Fig. 3 is a detail perspective view of the plunger shown in Fig. 1. Fig. 4 is a detail perspective view of the flat bow-shaped springs with their connecting-wires. Fig. 5 is a side elevation illustrating the ejector-casing in section to expose a different form of arrangement therein for ejecting the mail. Fig. 6 is a detail perspective view of the plunger used in the construction illustrated in Fig. 6. Fig. 7 is a side elevation of a third arrangement of apparatus operated through the instrumentality of electricity. Fig. 8 is a sectional view of a projection arranged upon the side of the train for operating the mechanism illustrated in the first two forms of the invention.

Referring now more particularly to the accompanying drawings, the reference character 1 designates a suitable base, which is disposed adjacent the tracks (not shown) at any desired point in close proximity to a mail or other station.

Mounted upon the base 1 is an upright 2, having brackets 3, arranged upon opposite sides at its upper end and provided with alining perforations 4 at their free ends for a purpose presently understood. This upright 2 is firmly supported upon the base 1 through the instrumentality of the braces 5, which are connected thereto and to the base and also through the instrumentality of the horizontal braces 6, which connect the upright and one of the vertical guide-rails 7, there being a second guide-rail 8 arranged opposite and in parallel relation with the aforesaid guide-rail, which is designed to guide the upward and downward movement of the arm 9, pivoted at 10 to the upright 2 and extending slightly rearwardly of the latter. The guide-rails are also provided each with an inclined brace 11.

Pivotally supported between the brackets 3 is a horizontal casing 12, there being pivot-bearings or other suitable elements associated with the perforations 4 of the brackets 3 and the exterior of the casing 12, whereby the latter may have a pivotal movement, as will be more fully hereinafter explained.

Arranged for sliding movement within the casing 12 is a plunger 13, having its rear end notched, as at 14, for the reception of the trip-arm 15, which is connected, as at 16, to the rear end of the pivoted lever 9 and which extends through the slot 17 of the casing 12 to engage the notch 14 of the plunger. The slot 17 extends along the bottom of the casing 12 nearly its entire length, and there is another slot 18 in the top of the casing 12, arranged for alinement with the aforesaid slot.

Connected with the forward end of the casing 12 are two flat springs 19 and 20, there being ears 21 connected upon opposite sides of the casing 12, to which the flat springs 19 and 20 are secured, the latter being so formed and arranged to have their free ends 22 and 23, respectively, arranged for alinement with the slots 17 and 18, there being wire or other connections 24 secured at one of their ends to the ends 22 and 23, respectively, of the springs 19 and 20 and which have their free ends extended through the slots 18 and 17 into engagement with the upper and lower faces of the plunger 13.

Mounted in the inner end of the casing 12 is a pulley-wheel 25, over which is passed a cable 26, which has its upper end connected directly to the inner end of the plunger, as at 27, with its opposite end connected with a windlass 28, mounted in a bracket 29, secured to the rear face of the crane or upright 2, there being a lever 30 for operating the windlass when desired.

As shown in Fig. 1 the apparatus is arranged for the discharge of a mail-pouch 31, it being understood that the usual mail-receiving door of a mail-car (not shown) is open for the reception of the mail-pouch after its discharge from the apparatus. The mail-train is provided with any suitable form of trip-arm, (not shown,) which contacts with the free end of the arm 9, forcing it upwardly, thereby throwing trigger 15 downwardly from engagement with the notch 14 of the plunger 13. The plunger being thus released will, by reason of the springs 19 and 20, be shot forward toward the end of the casing, thereby discharging the mail-pouch from the same, as will be readily understood.

While a train or the tracks upon which it runs has not been shown in the accompanying illustrations, the same being entirely unnecessary, it will be understood that there is mounted upon the side of the train a projection—such, for instance, as a block 31′—having a beveled outer face 32, which passes under the arm 9 to raise the same to effect the quick operation hereinbefore described. It is obvious, however, that any other form of inclined projection may be employed as a substitute for the projection 31.

In Fig. 5 there is shown a very similar construction and arrangement to that illustrated in the other figures of the drawings hereinbefore described, the only difference residing in the fact that it is unnecessary to employ the upper and lower slots 17 and 18 of the casing 12, for the reason that instead of the bow-and-arrow arrangement of ejector hereinbefore described a portion of the plunger 13′ is reduced intermediate its ends to form shoulders 32 and 33, between which and around the plunger 13′ encircles a helical spring 34, which when the plunger is forced backwardly toward the inner end of the casing 12′ is by reason of the shoulder 32 compressed, placing the plunger under tension, as well understood. It is obvious from this explanation of the arrangement that since the other parts of the apparatus are the same the mail is ejected, as hereinbefore described, as soon as the trigger 15 is released from engagement with the plunger 13′.

In Fig. 7 there is illustrated still another form of apparatus. In this arrangement the ejection of the mail is accomplished through the instrumentality of electricity. By reference to the drawings it will be seen that 9^2 designates a lever pivoted at 10^2 to the standard 2′ and has contact-points 35 and 36 connected to its free end, to which are connected wires 37 and 38, respectively, leading to a battery 39, disposed in the rear end of the casing 12^2, which latter is pivoted between suitable brackets 3^2, as should be well understood after a consideration of the mounting of the casing in the other forms of the invention. In this latest arrangement there is a plunger 13^2, which is operated to eject the mail. Connected to the outer end of the casing 12^2 is a brace 40, having its opposite end connected with the upright 2′ in such a manner as to hold or support the casing 12^2 in horizontal position. In the use of this particular arrangement of the invention it is obvious that a battery and other electrical connections must of necessity be carried by the train, the train, which is not shown, having a projection provided with contact-points for contact with the contact-points 35 and 36 of the arm 9^2 to actuate the mechanism for ejecting the mail from the outer end of the casing 12^2 as it moves along.

It will be understood from the foregoing that the cables of the first and second forms of the invention serve to prevent the plungers slidably arranged therein from leaving the casing.

What is claimed is—

1. An apparatus of the class described comprising an upright having brackets secured to its upper end, a cylindrical casing pivotally mounted in said brackets, a plunger slidably arranged within said casing, a spring associated with the plunger, guides spaced from the upright, a lever pivoted to the upright and having its free end arranged between said guides, and a trigger connected to one end of the lever and to the plunger.

2. In an apparatus of the class described, an upright having brackets secured to its upper end, a casing pivoted in said brackets, a plunger slidably mounted within the casing, a lever pivoted to the upright, a trigger associated with the lever and plunger, a windlass mounted upon the upright, and a cable connecting the windlass and the plunger.

3. In an apparatus of the class described, an upright, a casing pivotally mounted at the upper end of the upright, a plunger slidably mounted within the casing, a spring associated with the plunger, guides spaced from the upright, a lever pivoted to the upright and having its free end disposed between the guides, a trigger connected at one of its ends and the rear end of said lever, and projecting through said casing for contact with the plunger, a windlass, and a cable connecting the plunger and the windlass.

4. In a device of the class described, an up-

right, a casing pivotally mounted at the upper end of the upright, a plunger arranged for sliding movement within the casing, a lever pivoted to the upright, a connection between the lever and the plunger, and means for quickly forcing the plunger from one end of the casing to the other end thereof to discharge the mail from the casing.

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

JOHN M. MATHES.
JOHN E. BARBER.

Witnesses:
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