

No. 896,946.

E. M. SPOTTS.

PATENTED AUG. 25, 1908.

MAIL BAG CATCHING AND DELIVERING DEVICE.

APPLICATION FILED JAN. 4, 1908.

2 SHEETS—SHEET 1.

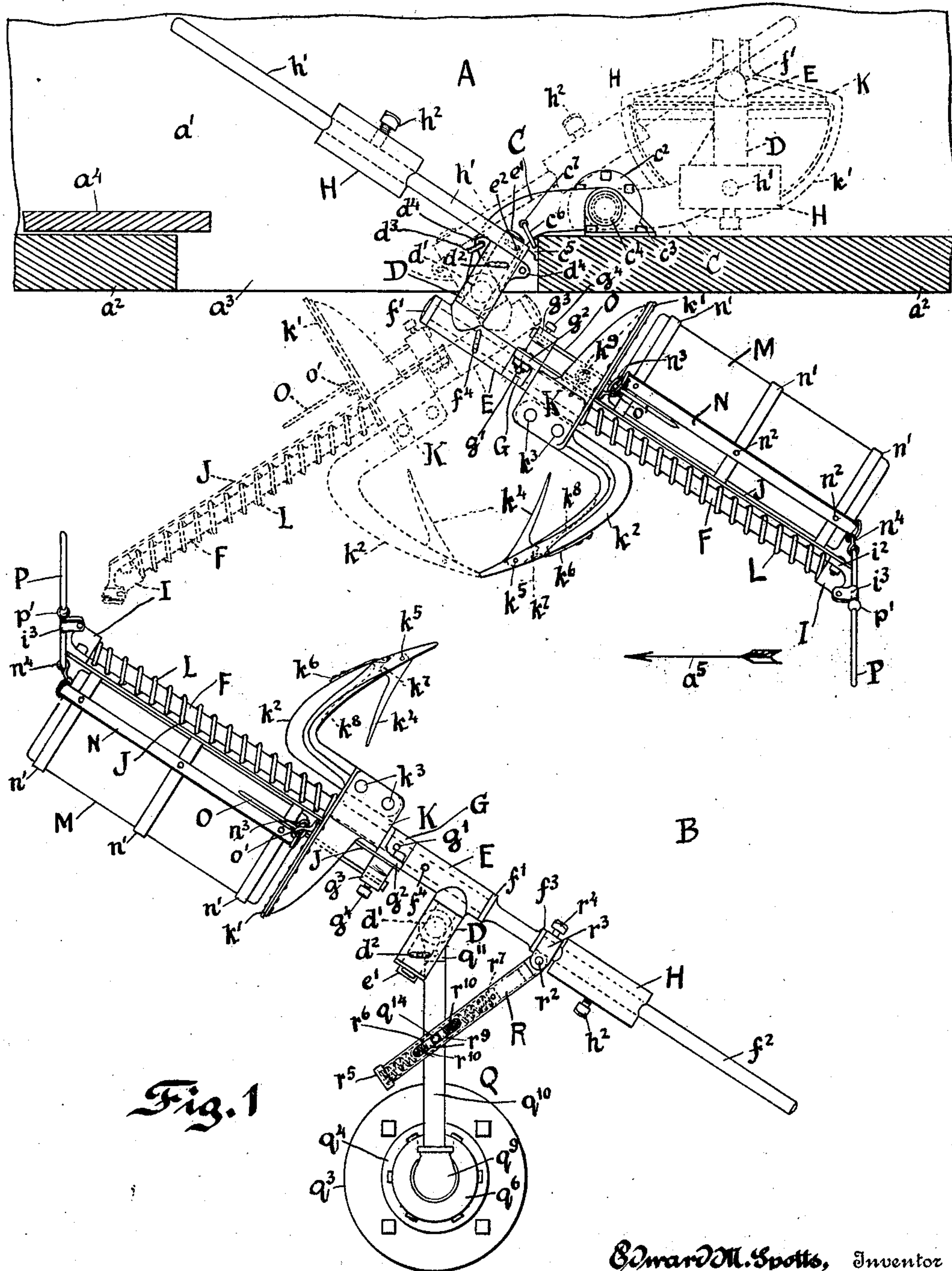


Fig. 1

Edward M. Spotts, Inventor

Witnesses

Joe M. Gruber.

Minnie D. Schenkein

By *George W. Hume* *Attorney*

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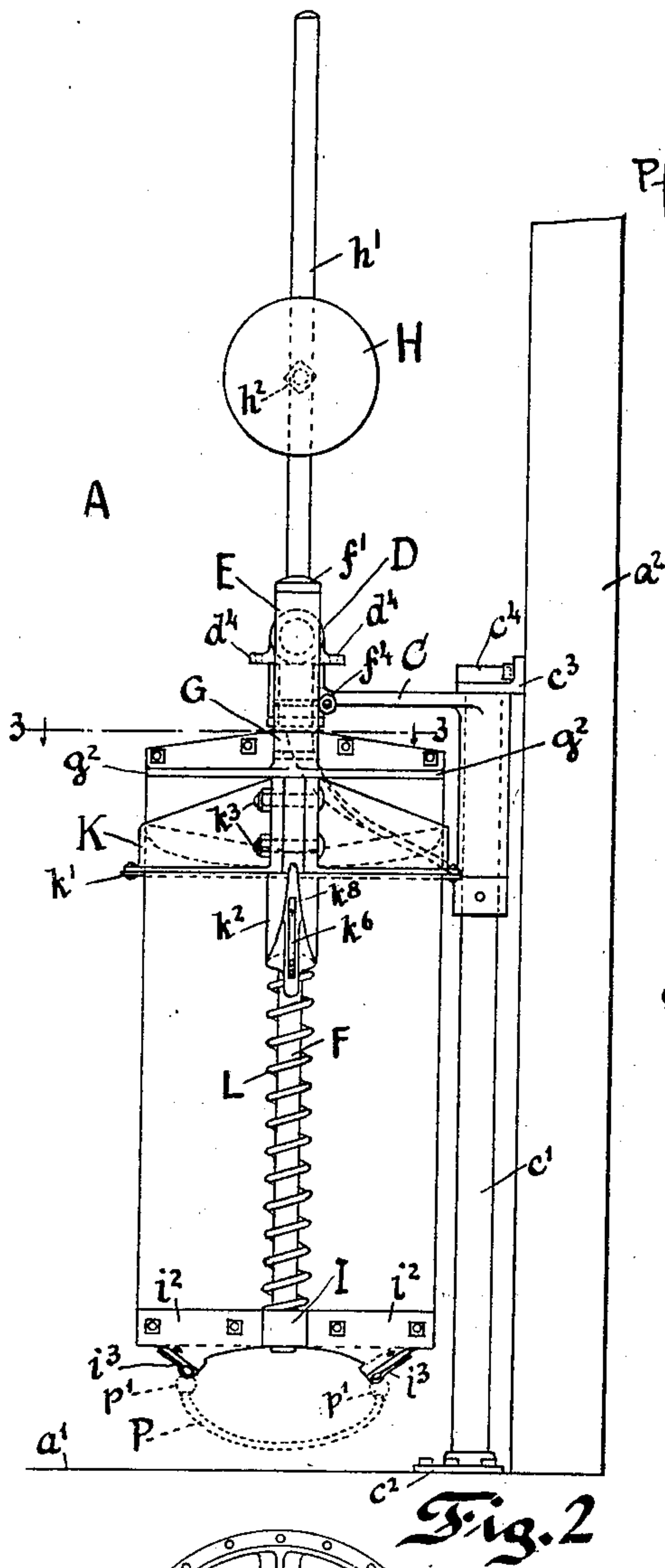


Fig. 2

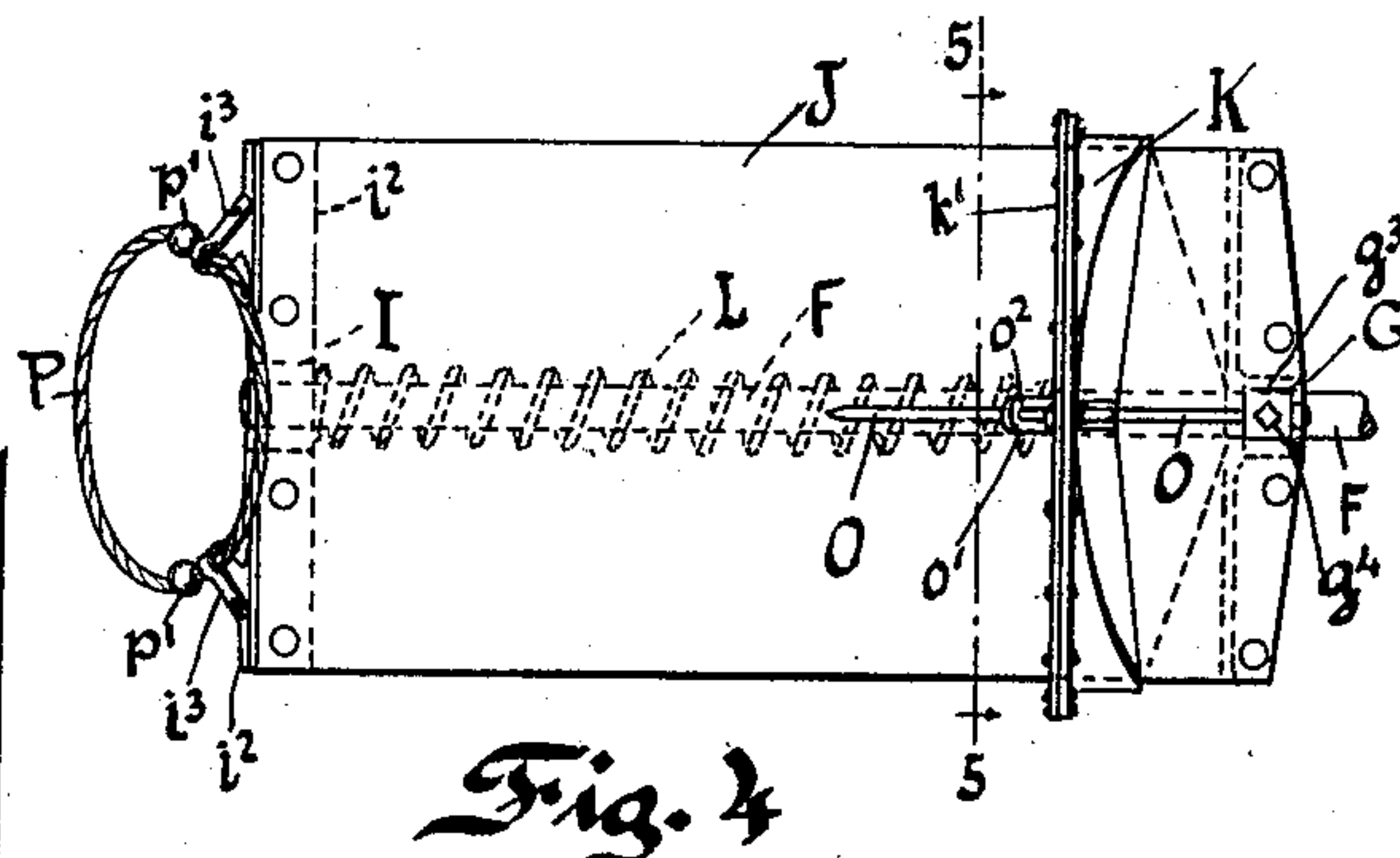


Fig. 4

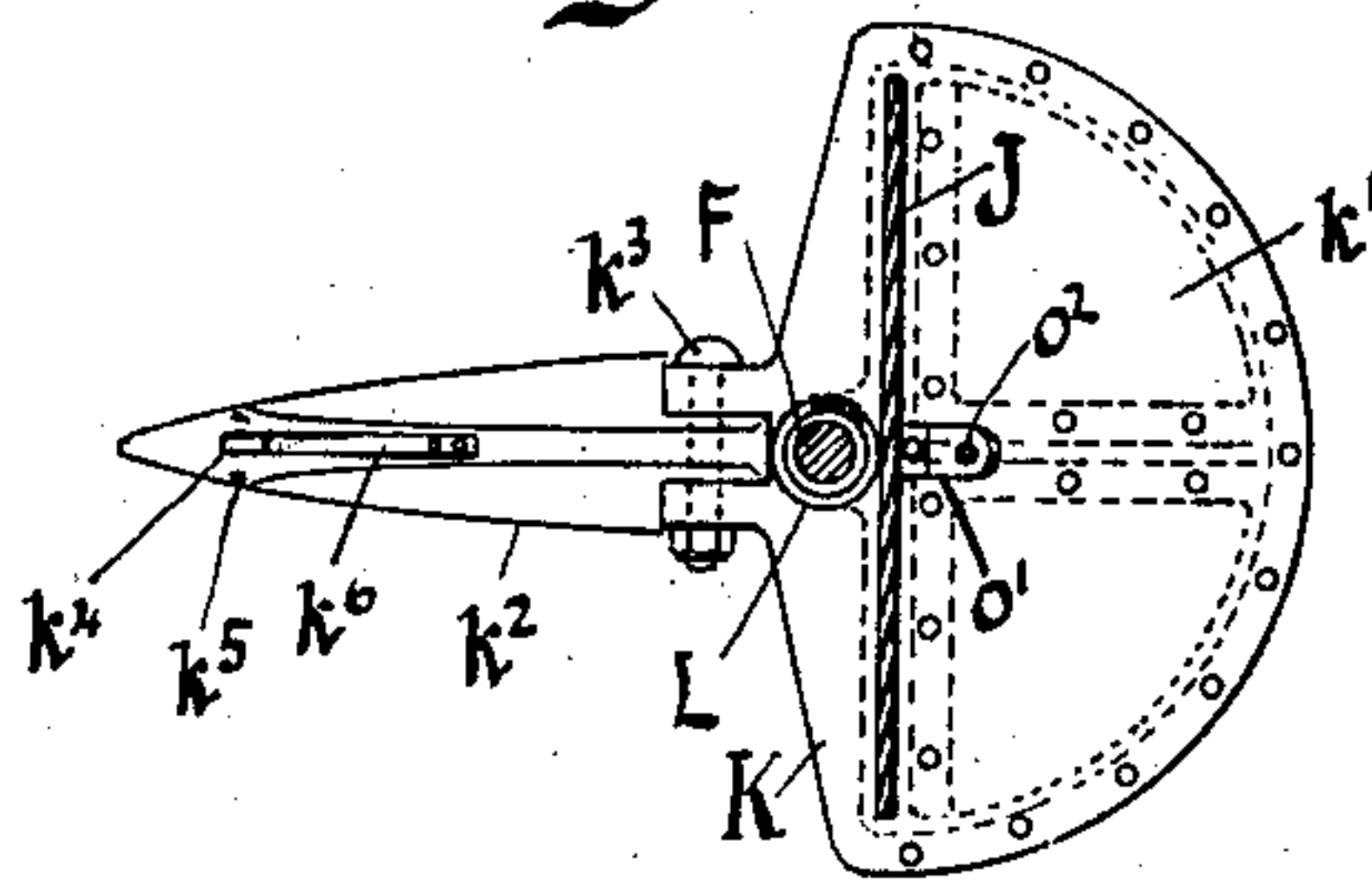


Fig. 5

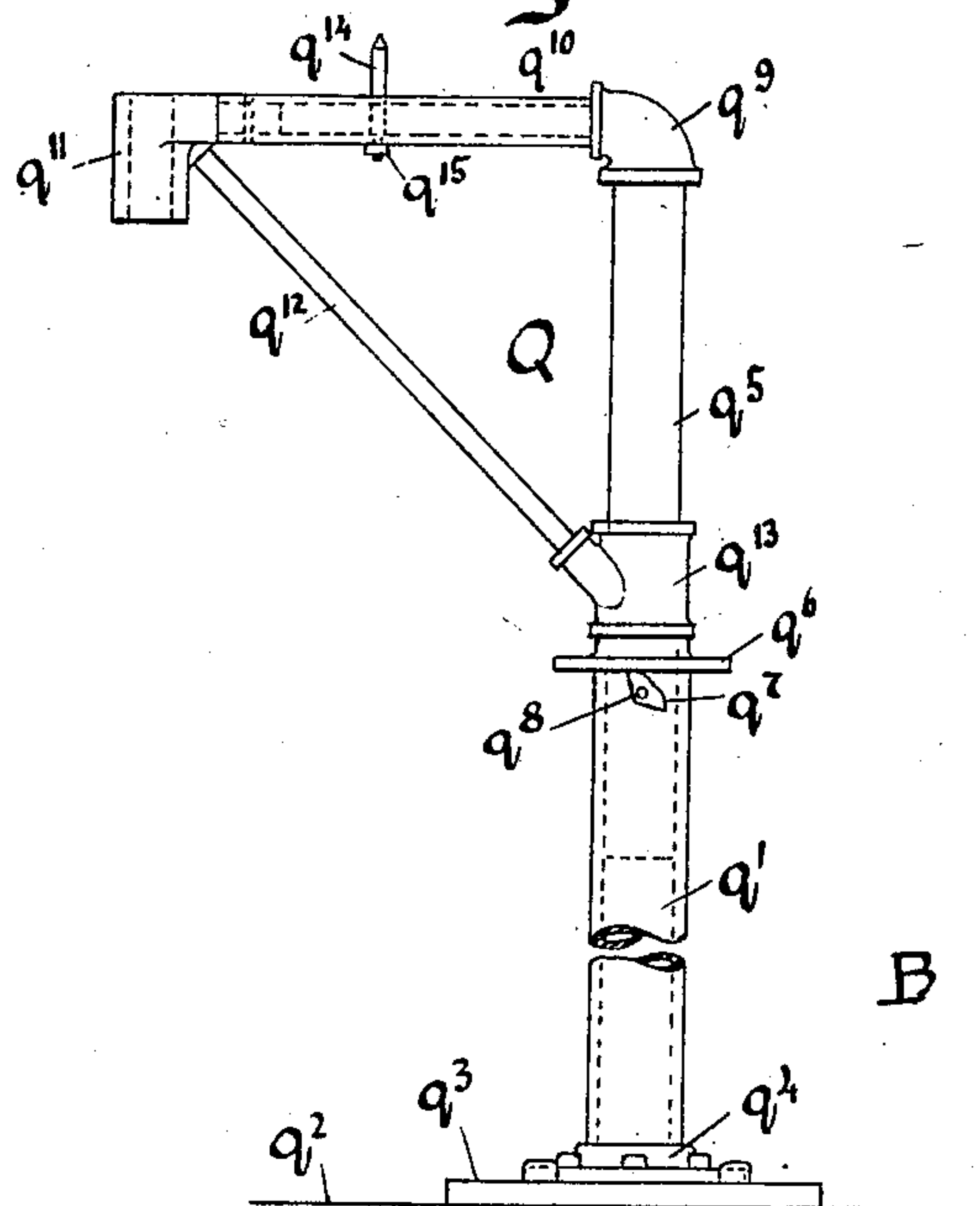


Fig. 6

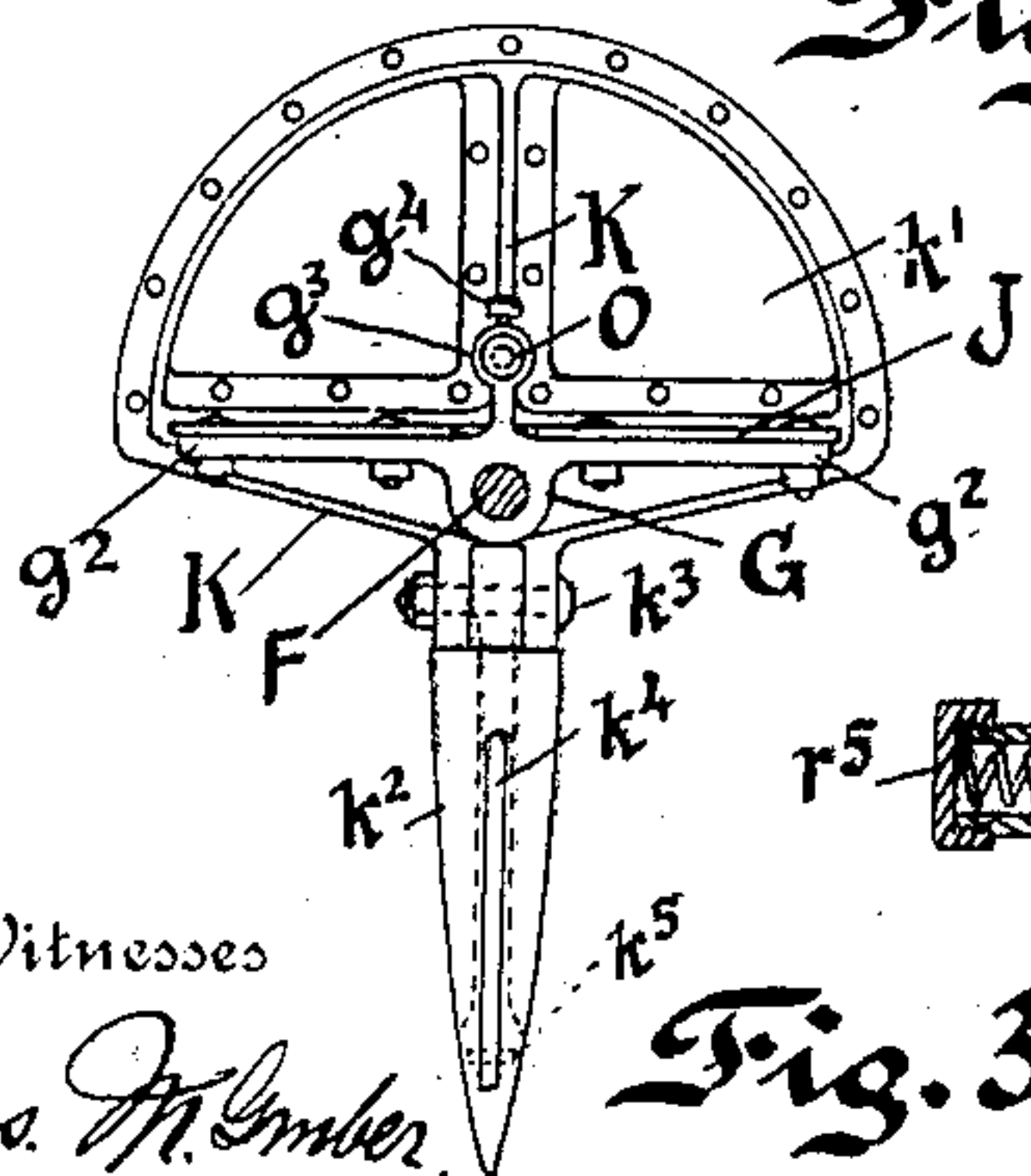


Fig. 3

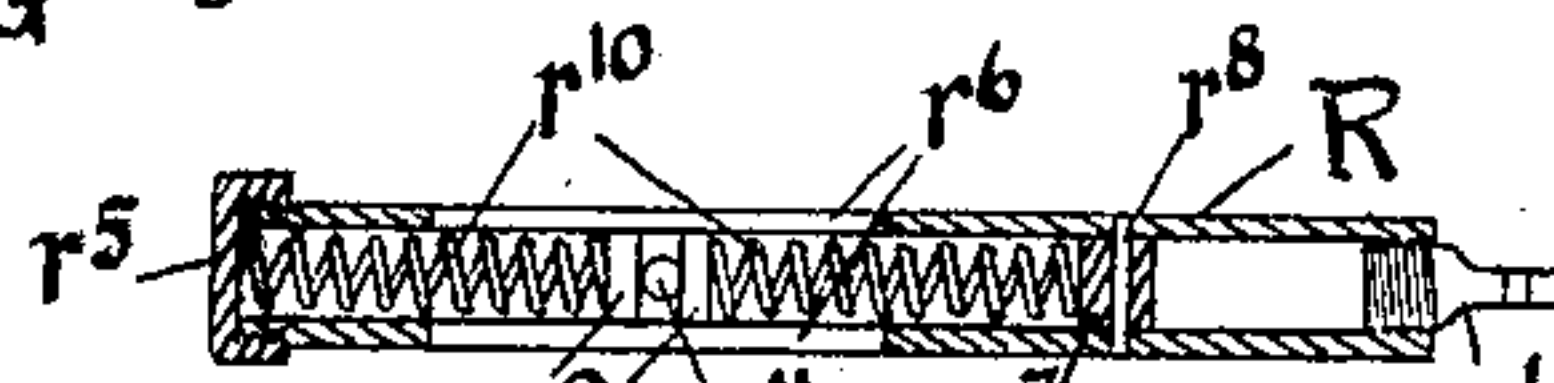


Fig. 7

Witnesses
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UNITED STATES PATENT OFFICE.

EDWARD M. SPOTTS, OF MILWAUKEE, WISCONSIN.

MAIL-BAG CATCHING AND DELIVERING DEVICE.

No. 896,946.

Specification of Letters Patent.

Patented Aug. 25, 1908.

Application filed January 4, 1908. Serial No. 409,285.

To all whom it may concern:

Be it known that I, EDWARD M. SPOTTS, of Milwaukee, Wisconsin, have invented a Mail-Bag Catching and Delivering Device, of which the following is a specification.

This invention relates to devices for transferring packages of mail, more particularly mail-bags or pouches, from moving trains to stations and vice versa. As is well understood, the postal authorities have been constantly seeking for devices of this class superior to those in present use. They require that, to be satisfactory, mail-catchers, that is devices for transferring the mail-bag from the station to the train, shall not act too violently on the pouches, nor twist the straps to which they are suspended, sometimes breaking them, nor injure or bruise the mail by striking the pouches against the sides of the car and the like. Delivering devices, or those for catching the mail-bags from the train, are said to be somewhat uncertain in their actions, and being independent of the catching devices, the two cannot be easily used simultaneously. Moreover previous devices are as a rule not adapted to the catching or delivering of more than one bag of mail, which for the larger stations is a serious objection.

It is my object to provide by this invention an apparatus which can be used, and is intended to be customarily used, for catching and delivering mail simultaneously; that is, for exchanging mail-bags between the train and the station-platform; for catching and delivering two, three or more mail-bags simultaneously in each direction; and to provide means for gradually yet positively accelerating the sacks from a state of rest to the motion of the train, or vice versa, in such a manner that the sacks and their contents shall not be injured or subject to severe strain.

Briefly summarized, the invention comprises a pair of equal or companion devices mounted respectively on the station platform and mail-car, and set to project into mutual proximity; each of these devices is provided with a catching-hook projecting forward in position to catch in a ring to which the bag or bags on the other device are attached, said hook being mounted so that it can yield backwardly, but held forward by the resilient action of a spring or springs; and a pusher plate attached to each hook and moving with it, said pusher-plate being arranged to abut against the rear end of the

mail-sacks (which are held horizontal) and assist them forward by pushing when the hook yields under the pull of the mail-sacks on the opposite device.

The invention also provides adjusting devices whereby the device on the train can be set to trail in either direction, according to the motion of the car, and that on the platform can yield to impart it momentum by swinging around on a pivot.

My invention further involves such other principles of construction and subordinate combinations and arrangement as will be hereinafter more explicitly described, and as are set forth in the claims at the end of this specification.

For the better understanding of my invention, I have shown in the accompanying drawing an improved form thereof, which latter is described in detail hereinafter.

In these drawings, Figure 1 is a plan showing (in section) part of a mail-car and station-platform provided with my devices, and in the act of catching and delivering mail by means thereof. Fig. 2 is a front-face view of the catching and delivering device extended in its frame, which is shown in side elevation (corresponding to the position shown in dotted lines in Fig. 1 at upper right-hand corner of sheet); Fig. 3 is a transverse section through said delivering device on the line 3 of Fig. 2. Fig. 4 is a rear face elevation of the catching and delivering device. Fig. 5 is a transverse section through the same taken on the line 5 of Fig. 4. Fig. 6 is a side elevation of the platform-crane; and Fig. 7 is a longitudinal section of the spring distance-bar used in connection therewith.

In these drawings every reference character always refers to the same part.

Referring first to Fig. 1 of the drawings A represents the car in partial cross-section, while B represents the station-platform, or the ground outside the car where the stationary catching and delivering device is placed. a' is the floor of the car, a^2 the side wall thereof, a^3 is the side doorway, and a^4 the sliding door for closing the same. At one side of the doorway a^3 , preferably, as shown, on the side opposite that toward which the door a^4 slides or opens, is arranged a small crane C, swinging upon a vertical axis which is preferably and most simply a piece of pipe c' (see Fig. 2). This piece of pipe or standard c' is shown as secured to the floor by means of a flange plate c^2 and at its upper end to the wall by a

bracket-plate c^3 , above which the standard is provided with a cap c^4 . The crane C has an outwardly extending arm bent laterally for the purpose of enabling the pivoted cross-head D, which is socketed at its end, to turn about an axis outside the door, as shown. The pivot of this member is shown in the dotted line d' of Fig. 1. This member D carries journaled therein the trunnion e' of a second crosshead E; and this in turn carries journaled therein the ends of a shaft F, which is held in place by means of a head f' at one end of the member E, and a collar G at the other end, which latter is secured to the shaft F in any manner, as by means of a transverse pin g' . The shaft F may be held against rotation in the cross-head E by any approved means, as a transverse pin f^4 . This shaft F carries all of the catching and delivering gear, and the weight thereof is counterbalanced by means of a weight H sliding on a rod h' fixed to the end of the trunnion e' of the cross-head E. The rod h' may be held against rotation upon the trunnion e' in any approved manner, as by making the latter of non-circular section, or by means of a transverse pin e^2 passing through it. The weight H is adjustable to counterbalance varying weights carried by the rod F due to different weights of mail matter supported by it, and said weight H is fixed in any desired position by means of the set-screw h^2 .

The rod F has fixed to its free end a collar I, and each of the collars G and I have oppositely extending bolting-lugs g^2 , i^2 , to which is secured, by means of rivets, bolts, or other approved fastenings, a flat metal sheet or plate J, on the inner side of the shaft F, that is, the side next the car when in use. Between the two collars G and I is mounted a sliding-cross-head K and is normally held pressed forward against the collar G by means of a coiled compression-spring L, which has the collar I for a fixed abutment. The cross-head K completely surrounds and embraces the plate J, as clearly shown in the section of Fig. 5, whereby there is secured thereto on the opposite side from the shaft F a plate k' , which is at right-angles to the plate J. On its opposite side, that is on the front side or face of the shaft F, the cross-head K carries a mail-bag catching-hook k^2 , which as shown is secured to the cross-head by means of two bolts or pins k^3 , one or both of which may be made removable, whereby in the former case the hook k^2 may be turned up about the upper pin as an axis, and in the latter may be removed entirely in order that it may be out of the way. This catching-hook k^2 carries a pivoted barb k^4 pivoted upon a pin k^5 near the end of the hook, and held pressed outwardly by a wire or leaf-spring k^6 secured to the back of the hook and pressing against the heel k^7 formed on the barb k^4 , the latter being pivoted in

a recess k^8 formed longitudinally in the hook k^2 , and adapted to fold thereinto, so as to allow the strap of a mail-bag to slide freely upon the hook k^2 , but immediately snapping back to its normal position, when the strap has passed over it, so as to prevent the mail-bag from falling off the hook.

On the rear side of the plate J are provided means for holding one or more mail-sacks M (only one is shown in the drawing, but any number may be held according to the capacity of the device.) The mail-bags or sacks are in the first place secured to a longitudinal bar N by means of transverse girth-straps n' fastened to the bar N, by rivets n^2 . The bar N has a ring n^3 at one end and a snap-hook n^4 at the other, the former being secured on a rod O which passes through a hole in the cross-head and plate k' , being secured in fixed position to a bolting-lug g^3 by means of a set-screw g^4 . In conjunction with the rod O operates a perforated strap o' secured upon the plate k' , the bar O passing through the hole o^2 in said strap. The bar O is long enough so that the strap o' will not pass off the end of same until the cross-head K has moved a considerable fraction of the distance toward the collar I, at which point, and not till then, the ring n^3 will be free and mail-bag or bags M released. The snap-hook n^4 , on the other end of the bar N, is engaged with a large ring P, which may be either rigid, or preferably of flexible material such as wire rope. This ring is attached to the collar I by means of two spring-clips i^3 which effectively hold the ring in position against the drag caused by the weight of the mail-bags M, but are readily released by a pull in an endwise direction from the end of the shaft F. The ring, as shown, is supported substantially in a plane at right-angles to the motion of the car (designated by the arrow a^5), and is kept from sliding down through the spring-clips i^3 by means of two balls or other like obstructions p' .

On the station-platform, or at the mail-receiving point, wherever it may be, is mounted a duplicate of the aforesaid apparatus, with the exception of the crane C, whose place in this case is taken by a stationary crane Q. The precise form of this crane does not form a necessary part of my invention, but that shown in the drawing, Figs. 1 and 6, possesses some novel and desirable features in this connection. The crane Q is formed entirely of gas-pipe and fittings, and can therefore be cheaply made. It comprises a standard of large-size (say four-inch) pipe q' , mounted on a base of concrete or other material q^2 by means of a foot-plate q^3 and bolting-flange q^4 . Within the upper end of the pipe q' extends the end of a smaller pipe q^5 , which is pivoted therein, carrying a flange-plate q^6 which rests upon the upper end of the pipe q' . A double friction-pawl q^7 is piv-

oted upon a pin q^8 below the flange q^6 , its ends being slightly eccentric in opposite directions whereby the pipe q^5 is permitted to rotate in only one direction, being held against rotation in the other; the direction being reversed by merely turning the pawl q^7 with the other end up. At its upper end the pipe q^5 is connected by an elbow q^9 with a horizontal arm q^{10} , which latter has on its end a pivot-bearing q^{11} , formed to fit the pivot d' of the cross-head D. A diagonal brace q^{12} , is provided, consisting of a smaller pipe which is screwed at one end into the member q^{11} , and at the other into the branch of a tee q^{13} on the pipe q^5 . Further, an upright pin q^{14} passes through a hole in the arm q^{10} and is secured in position by a nut q^{15} on the lower end, as shown. In connection with the pin q^{14} there is used a spring-distance-bar R, also consisting of a piece of pipe, with an eye-piece r' secured to one end and turning upon a pin r^2 carried by a movable collar r^3 on the extension f^2 of the rod F which corresponds in this instance to the rod h' of the device carried by the car. (The rod h' is placed on the opposite side of the pivot d' in order to make the device more easily manageable, otherwise the device would interfere with the doorway of the car or with the crane C.) The collar r^3 can be rotated or moved longitudinally upon the extension f^2 and can be fixed in any desired position by means of a set-screw r^4 . Ordinarily it will be used in only one longitudinal position however, and therefore a collar f^3 may be provided on the extension f^2 to avoid the necessity of fastening the set-screw a^4 .

The free end of the distance-bar R is closed by a cap r^5 and intermediately it is slotted longitudinally as shown at r^6 ; while at the side of the slot r^6 opposite the cap r^5 is placed a plug r^7 fixed by a pin r^8 . Between the cap r^5 and plug r^7 are two sliding-blocks r^9 , each pressed toward the center by a coiled compression spring r^{10} ; these slots lie on opposite sides of the pin q^{14} , which passes through the slot r^6 . To keep the blocks r^9 at a proper distance apart to enable the pin q^{14} to be readily inserted between them, and also to prevent either block r^9 from following up the pin q^{14} beyond the central position, a pin r^{11} is inserted on one or both sides of the pin q^{14} ; this has the effect of always bringing the bar F back to its proper position when it is turned.

The device as described is manipulated for use as follows: The mail-bag or bags to be delivered at the station are first bound to the rod N by the straps n' , and the ring n^3 or like device at one end is then engaged with the rod O, by releasing and drawing back the latter; the apparatus for this purpose being ordinarily swung into the vertical position as shown in Fig. 2, where it is completely inside the car and does not take up unnecessary

room. A ring P being then adjusted in the clips i^3 , the snap-hook n^4 is engaged with it; and the operator then takes hold of the rod h' as a handle, swings the apparatus into horizontal position, at the same time adjusting the counterweight H and dropping a pin d^2 into appropriate registering holes in cross-head D and trunnion e' when the bar F reaches horizontal position. Still using the bar h' as a handle, the operator then pushes the catching and delivering device out of the doorway a^3 , rotating the crane C about its axis and the crosshead D about the crane, and finally bringing the apparatus into the position of Fig. 1 of the drawing, in which it is fixed by means of a pin d^3 passing through one of a pair of ears d^4 on opposite sides of the cross-head D and into an appropriate registering hole in the arm C, and also causing the latter to abut against a fixed abutment-piece c^5 on the side of the doorway, and fixing it in this position by means of a hook c^6 which also engages in a suitable hole c^7 in the arm C. The apparatus on the car, so placed, is then ready for delivery. Meanwhile the station-operator performs the same series of operations upon the stationary device, except that in this case the swinging arm of the crane Q is not fixed in position, except automatically by the pawl q^7 , against motion in one direction (that is, the direction opposite to the car), and that, in swinging the bar F into horizontal position the distance-piece R is engaged with the pin q^{14} . When so fixed, as shown in Fig. 1 of the drawings, the hook k^2 on the car-device is in position to enter the ring P on the stationary device, and vice versa. Now when this engagement happens, the inertia of each mail-sack or set of mail-sacks causes the cross-head K with which it engages to slide backward upon its rod F against the pressure of the spring L, which is contracted thereby; this then produces a gradual acceleration in the mail-sacks, the rings P of which have been respectively detached from their spring-clips i^3 by the jerk and are being pulled forward. At the same time, however, the yielding of each crosshead K brings the pusher-plate k' up against the base of the respective mail-bag M, and therefore gives it an additional acceleration by pushing, thus relieving undue strain upon the ring P and its connections. As the crosshead K slides backward, a point will be reached where the strap o' passes off the rod O and releases the ring n^3 , whereupon the mail-sacks are held by their respective hooks k^2 , and are respectively caught and delivered. It now only remains for the operator on the car to remove the hooks c^6 and pins d^3 and d^2 , bring the device inside the car and into vertical position, and detach the caught mail-sacks from the hook k^2 . When not in use the device in the car is swung around into the dotted-line position shown in the upper

right-hand corner of Fig. 1, the hook k^2 in this position being removed if desired. In case the mail-sack or sacks which are being attached are so heavy as to draw down the crosshead K against the pressure of the spring L sufficiently to release the end of the rod O, the crosshead may be fixed temporarily in position by inserting a pin k^3 into registering holes in the crosshead and plate J; which pin is immediately withdrawn as soon as the mail-bags are fixed and the device swung into horizontal position.

As thus far described, the device is manipulated for use when the car is going in the direction of the arrow a^5 . In case the car is moving in the other direction, it is only necessary to swing the device around about its axis e' through 180 degrees, and to turn it about the pivot e' through an angle equal to double that it makes with the side of the car, in which case the opposite ear d^4 will register with the appropriate hole in the arm C. This position is also represented in dotted lines in Fig. 1.

The stationary device, by its mounting upon the crane Q, has greater range of yielding than can be given to that upon the car, since the shock upon the crane is relieved by the latter rotating upon its pivot q^5 in the direction of motion of the car; and also by the yielding of one of the springs r^{10} .

When there is a mail-sack to be delivered, but none to be caught, or vice versa, one of the catching-devices will be empty, and in this case the pull upon the ring P upon the other device and upon the strap c' through the rod N will be sufficient to move the crosshead K the small distance necessary to release the ring n^3 from the rod O.

While I have hereinabove described the preferred form of my device, I wish it distinctly understood that not all of the above features are essential thereto, nor is it essential that the parts should have the exact form shown; as mechanical equivalents for many of the features, and modifications of the others, will readily occur to those skilled in the art. I do not therefore consider my invention further restricted than is contemplated by the reasonable scope of my claims.

In my claims I have used the term "loop" for the ring P since the ring is of course only one form of a loop which might be used.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A mail-bag catching and delivering device, comprising, in combination, a support, a catching hook mounted to reciprocate on said support and directed forwardly, a pusher-plate attached to and moving with said hook, and a spring resiliently main-

taining said hook and plate in their forward position.

2. A mail-bag catching and delivering device, comprising, in combination, a support, a plate mounted in a vertical plane on said support, a catching-hook reciprocally mounted on said support at one side of said plate, a pusher-plate fixed to said hook and projecting at the other side of said plate, and resilient means for maintaining said hook and plate in a forward position.

3. A mail-bag catching and delivering device, comprising, in combination, a support, a plate mounted in a vertical plane on said support, a catching-hook reciprocally mounted on said support at one side of said plate, a pusher-plate fixed to said hook and projecting at the other side of said plate, resilient means for maintaining said hook and plate in a forward position, and means for supporting a loop at the rear end of said plate projecting outward on the same side as said hook.

4. A mail-bag catching and delivering device, comprising, in combination, a support, a plate mounted in a vertical plane on said support, a catching hook reciprocally mounted on said support at one side of said plate, a pusher-plate fixed to said hook and projecting from the other side of said plate, resilient means for maintaining said hook and plate in a forward position, and means for supporting a mail-bag from each of said plates, which means are adapted to release said bags when the latter are pulled away therefrom.

5. A mail-bag catching and delivering device, comprising, in combination, a support, a plate mounted in a vertical plane on said support, a catching hook reciprocally mounted on said support at one side of said plate, a pusher-plate fixed to said hook and projecting from the other side of said plate, resilient means for maintaining said hook and plate in a forward position, means for supporting a mail-bag on each of said plates, which means are adapted to release said bag when the latter is pulled away therefrom, and a supporting ring to which the mail-bag is fastened in such manner that it projects beyond the rear edge of said plate.

6. A mail-bag catching and delivering device, comprising, in combination, a crane pivoted about a vertical axis, a member pivoted upon said crane turning about a vertical axis, and a mail-bag catching and delivering device mounted upon said pivoted member and pivoted upon a horizontal axis thereon.

7. A mail-bag catching and delivering device comprising, in combination, a crane pivoted on a vertical axis, a crosshead pivoted upon a vertical axis on the arm of said crane, a second crosshead pivoted upon a horizontal axis upon said first crosshead, and a mail-

bag catching and delivering device carried by said second crosshead.

8. A mail-bag catching and delivering device comprising, in combination, a crane pivoted on a vertical axis, a crosshead pivoted upon a vertical axis on the arm of said crane, a second crosshead pivoted upon a horizontal axis upon said first crosshead, a rod mounted on said second crosshead and extending in one direction at one side of said first crosshead, mail-bag catching and delivering devices carried thereby, a second rod mounted on said second crosshead at the opposite side of said first crosshead and extending in the opposite direction from said first rod, and a counterpoise carried by said second rod.

9. A mail-bag catching and delivering device comprising, in combination, a crane pivoted on a vertical axis, a crosshead pivoted upon a vertical axis on the arm of said crane, a second crosshead pivoted upon a horizontal axis upon said first crosshead, a rod mounted on said second crosshead, a sliding crosshead mounted on said first rod, a spring resiliently pressing said sliding crosshead forward upon said rod, a mail-bag catching hook mounted upon said sliding crosshead, means for releasably supporting a loop at the free end of said rod whereby it is detached by a pull away from the end of said rod, and means for supporting one end of a mail-sack from said crosshead and the other end from said ring.

10. A mail-bag catching and delivering device comprising, in combination, a support, a crosshead sliding thereon, a mail-bag catching hook carried by said crosshead, a pusher-plate also carried by said crosshead, means for releasably supporting the mail-sack from said support at the rear end thereof, a pusher-plate mounted on said crosshead in a plane at right-angles to the direction of motion thereof, a rod parallel to the direction of motion of said crosshead carried by said support and extending from in front of said pusher-plate through a hole in the latter, and a member mounted on said pusher-plate and having an eye through which the end of said rod passes,

said rod being adapted in connection with said member to engage a loop on the end of a mail-sack adjacent thereto but to release the same when said pusher-plate is moved rearwardly far enough to pass off the end of said rod.

11. In a mail-bag catching device, a mail-bag catching hook, a barb pivoted near the point thereof and adapted to fold backwardly into a recess in the inner face of said hook, and a spring acting on said barb to hold it resiliently extended.

12. A mail-bag catching and delivering device comprising, in combination, a vertically pivoted crane having a swinging arm, a crosshead pivoted on a vertical axis upon said swinging arm, a second crosshead pivoted on a horizontal axis in said first crosshead, a rod mounted on said second crosshead, a pair of collars secured to said rod and spaced apart, a plate secured to said collars at the side of said rod and parallel thereto, said plate occupying substantially a vertical plane when in use, a sliding crosshead on said rod between said collars, a coiled-spring surrounding said rod at the rear of said sliding crosshead and acting thereon to hold it resiliently pressed forward, a mail-bag catching hook mounted on said crosshead and directed forwardly, a pusher-plate also mounted on said crosshead but at the opposite side of said first-named plate, a loop adapted to be releasably secured to said device at the rear end of said first-named plate, and projecting out at right angles to the direction of motion of the train, means for securing a mail-sack at one end to said loop, and means for securing the other end of said sack to said pusher-plate, said last-named means being detached automatically from said pusher-plate when the latter has moved a certain portion of its travel to the rear.

In witness whereof I have hereunto set my hand this thirty-first day of December, 1907.

EDWARD M. SPOTTS.

Witnesses:

GEORGE W. COLLES,
MINNIE D. SCHIENBEIN.