No. 751,464. PATENTED FEB. 9, 1904.

I. F. COLE.

AUTOMATIC MAIL DELIVERY APPARATUS.

APPLICATION FILED NOV. 19, 1902.

NO MODEL. 3 SHEETS—SHEET 1.

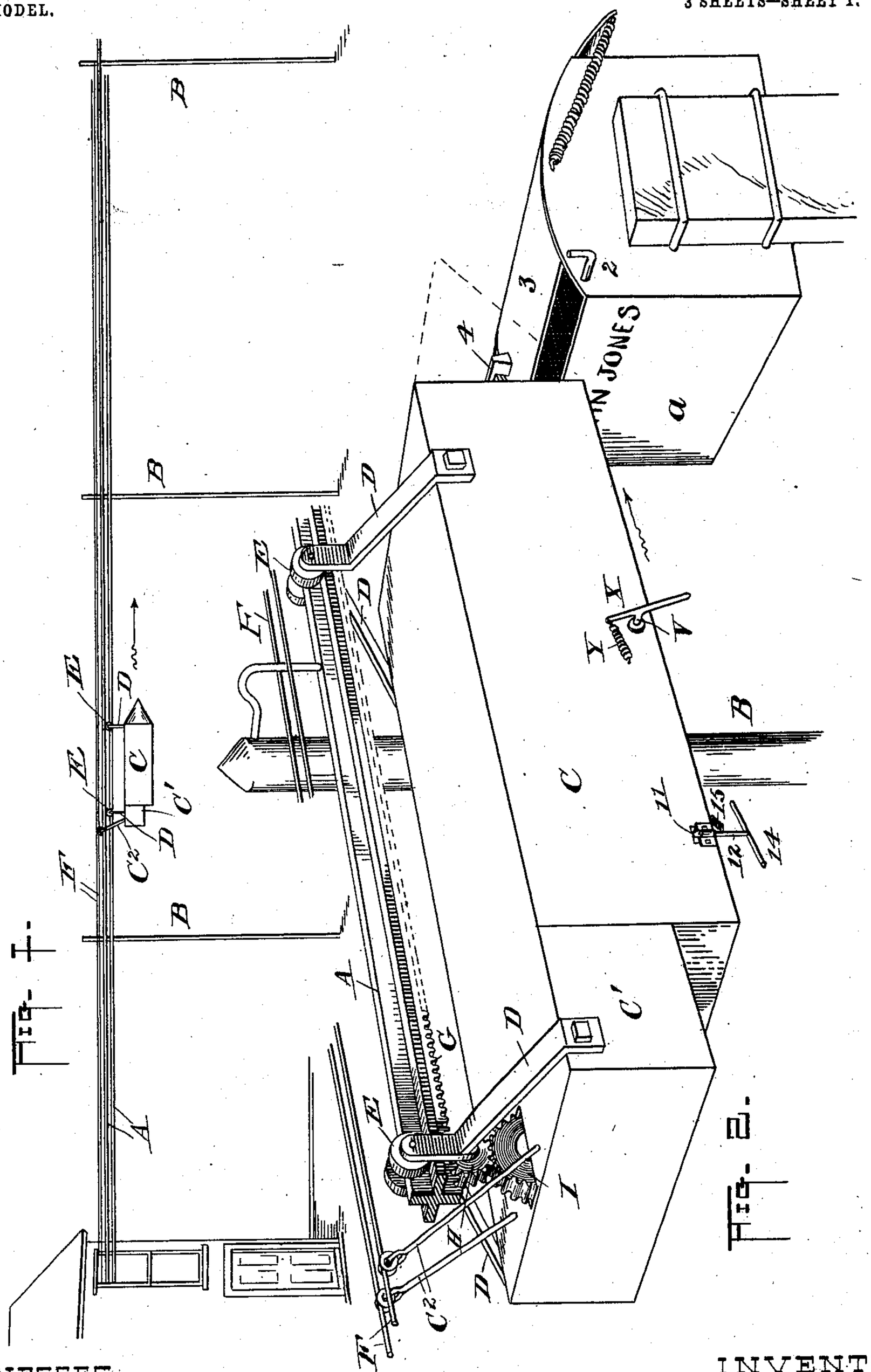

FIG. 1.

FIG. 2.

WITNESSES

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NO MODEL. 3 SHEETS—SHEET 2.

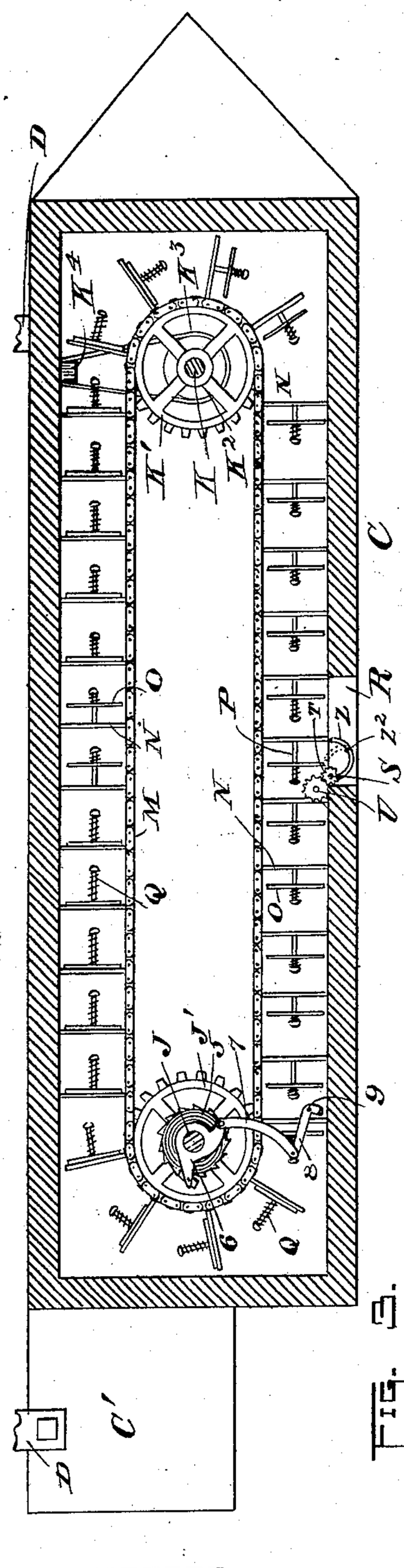

FIG. 3.

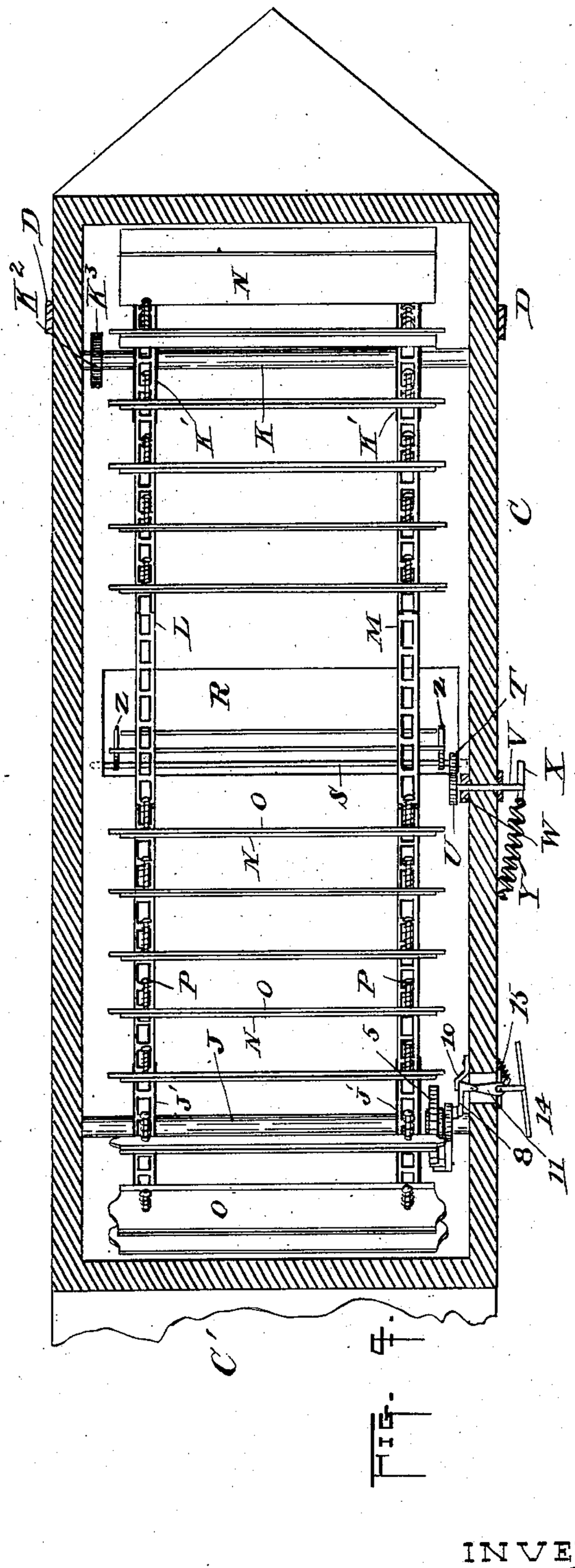

FIG. 4.

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AUTOMATIC MAIL DELIVERY APPARATUS.

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NO MODEL. 3 SHEETS—SHEET 3.

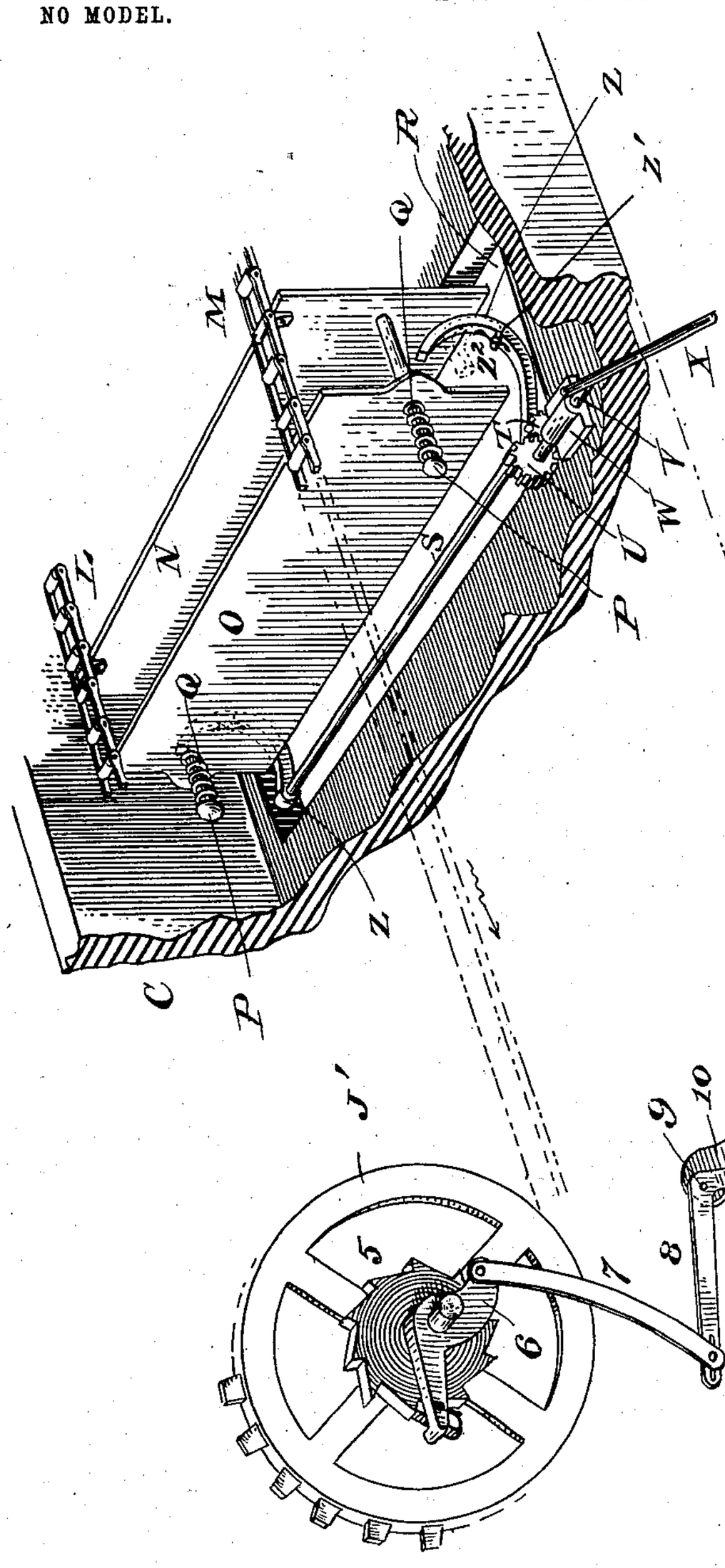

FIG. 5.

WITNESSES

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UNITED STATES PATENT OFFICE.

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AUTOMATIC MAIL-DELIVERY APPARATUS.

SPECIFICATION forming part of Letters Patent No. 751,464, dated February 9, 1904.

Application filed November 19, 1902. Serial No. 132,036. (No model.)

To all whom it may concern:

Be it known that I, ISAAC F. COLE, a citizen of the United States, residing at Williamsfield, in the county of Knox and State of Illinois, have invented certain new and useful Improvements in Automatic Mail-Delivery Apparatus; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an apparatus for automatically delivering mail.

The object of the invention is to provide an apparatus consisting of a car and an overhead track for the same which is arranged to carry mail over rural routes and automatically deliver the mails to their respective destinations, all of which will be described in the following specification.

Figure 1 is a view showing a building from which tracks extend supported by poles and showing a mail-car suspended on such tracks. Fig. 2 is a perspective view of the mail-car, showing the track from which it is suspended and wires above which convey power to a motor situated within the car, but not shown, such figure also showing a mail-box with which the said car contacts in its onward movement. Fig. 3 is a side elevation in section of the car, showing its interior arrangement. Fig. 4 is a plan view of the same in section. Fig. 5 is a perspective view of portions of the interior mechanism of the car.

In Fig. 1 is illustrated a building which may be the post-office from which the mail is to be delivered. A track A extends from the building along poles B set at intervals to support the same, and a car C is suspended from said track by means of hangers D and wheels E. Above the track are wires F for conducting an electrical current out along the route taken by the track, said current being transmitted to and from a suitable motor within a rear extension C′ of the car C by the trolley-arms C^2 shown. The track A consists of a metal bar having four flanges in form of a + (plus) sign. On each horizontal flange one of the wheels E runs as shown in Fig. 2, the hangers D of said wheels being attached to the side of the car in any good manner. The lower vertical flange of the track is provided with teeth G, with which engages a pinion-gear H, driven from the motor (not shown) from a gear I. It will be seen that power applied to drive the gears will propel the car by means of the said teeth G. However, it is not my purpose to confine myself to this particular propelling means, as I may drive directly by means of the wheels E on the track A. Other means of propulsion may of course be used, if desired.

Attention is now directed to the interior arrangement of the mail-car, and the same may be understood from the following: Two shafts J and K are suitably journaled in the sides of the car and each carries two sprocket-wheels J′ and K′, respectively. These pairs of wheels are located opposite each other near each end of their shafts and carry sprocket-chains L and M. The said chains are provided with plates N, which are secured thereto in rigid manner, said plates being held at right angles to the length of the chain, as shown, and being attached to a separate link in any good manner are permitted to pass around the sprocket-wheels in the onward movement of the chains. Adjacent to said plates N are other plates O, which are held by means of pins P, passing therethrough, which are held at one end in rigid manner in the plates N. Such pins pass through the plates O, and the latter are adapted to slide upon them and held in place by means of springs Q. Between the plates N and O the articles to be mailed are held. Sufficient space is left between the chains in which to insert the longest articles usually carried in the mails, and the postmaster merely separates the plates against the pressure of the springs and inserts the mail to be delivered, and on releasing the spring-held plate O the mail is firmly held and cannot be dropped until liberated by the proper means, which will be described presently. In placing the mail within this car the various articles are placed in the order in which they are to be delivered—that is to say, in rural delivery perhaps fifty or one

hundred lots of mail are to be delivered—in doing which the mail-carriers usually have the various deliveries arranged in the order in which they successively arrive at their various destinations. Therefore the postmaster will place each lot of mail within the inclosing plates in the same order until all the mail to go out is distributed through the various compartments, and when the car is thus loaded the chains are adjusted so that the first lot to be delivered is brought just above an opening at R in the bottom of the car.

The means for delivering the mails may now be described. It consists in placing a rock-shaft S in the opening R and provided at one end thereof with a pinion-gear T, with which meshes a larger gear U on a shaft V, having a bearing at W on the floor of the car out of reach of the plates N and O. At the outer end of the shaft V is an arm X, (better shown in Fig. 2,) which is controlled by a spring Y, attached at one end to the upper end of said arm and at the other to the side of the car. On the shaft S are two jointed curved arms Z Z, one at each end of the said shaft and each in position to engage a projecting ear on each end of each of the plates O. The arms Z are so located that the movement of the plates N and O, with the chains, is not interfered with, and when in their normal positions the said arms lie within the opening R, as shown in Fig. 3. The arm X at the outside of the body is adapted to engage a projecting arm 2 on the side of the mail-box, as shown in Fig. 2. Said box (designated by the letter *a*) has a curved cover 3 designed to slide within suitable guides, which are not shown, because they form no part of my invention, and a lug 4 on said cover is met by the car as the latter approaches the box, and the box is at once opened by sliding the cover back, and said cover is held open as long as the car is above it, since the lug 4 is continually held by the sliding car. Now during this time the arm X meets the arm 2 on the box and is moved against the pull of the spring to turn the wheel U, whose movement imparts a movement to the gear T to raise the arms Z Z to contact with the said projections of the plate O. As this movement takes place the plate O, which is just above the opening R, is moved against the tension of the springs holding it and releases the mail held between it and the plate N and allows it to drop into the box *a* beneath. It now becomes necessary to shift the entire lot of mail to a position which will bring the next mail-compartment above the opening R, so that its contents may be dropped into the next box in the manner just described. To do this, I have provided on the shaft J a ratchet-wheel 5, which is secured rigidly thereto, and with such wheel engages a pawl 6, which is loose on the shaft, so as to swing thereon, and to it is pivoted one end of an arm, whose lower end is in turn loosely attached to a bell-crank or lever 8, pivoted at 9 to a bracket 10 on the side of the car. The other extremity of such bell-crank is in engagement with an arm 11, secured to a vertical shaft 12, journaled to the outside of the car, as shown at 13. The lower end of said shaft carries a horizontal arm 14 for engaging the vertical portion of the arm 2 of the mail-box *a*. It will be seen that a spring 15 normally holds the arm 14 at an angle to the side of the car, as shown in Fig. 5, and it is intended that the said arm 2 will contact with such arm 14 at a point just forward of the shaft 12, and as the car moves forward said arm 14 will be turned with the shaft against the pull of the said spring 15, and this action will operate the bell-crank 8 to raise the pawl 6 and turn the ratchet-wheel and the sprockets and their chains a sufficient distance to bring the desired mail-compartment above the opening R. Before this movement takes place the spring Y has placed the arms Z out of the way of the oncoming plates. However, if for any reason said arms are met before they reach their normal positions or position of rest I have provided that they may have a hinged joint at Z′, so that they may freely double over after the manner of a jack-knife when the plates meet them, and after such plates pass a spring Z^2 on each returns the portions to their proper positions. On the shaft K, I provide a friction-drum K^2, around which is placed a band K^3, whose ends are secured to a block K^4 in the top of the car. This device keeps an even friction which prevents the sprockets revolving except when turned positively by the pawl mechanism described. By the means described it will be seen that as each mail-box is met and passed said box is opened, the mail is deposited therein, and the next compartment to be delivered of its contents is brought into position above the opening in the bottom of the car for the next delivery. A spring is employed on the mail-box *a* for closing the cover 3 after the car has passed over.

In erecting the system the wires and tracks are carried high above the street, so as to interfere with nothing, and when reaching the country the tracks are then lowered and carry the car over the mail-boxes.

I may use any other kind of power for operating the cars than that already mentioned and may change the various means of dropping the mail into the boxes and for shifting the mail-compartments for bringing the desired one above the delivery-opening of the car and, in fact, may change the entire arrangement without departing from the spirit and intent of my invention.

Having thus described my invention, I claim—

1. An automatic mail-delivery apparatus

comprising a car, tracks from which the car is suspended and upon which it runs, spring-held plates within the car for holding the several parcels of mail to be separately delivered, said plates adapted to be separated to release the mail and means for separating the plates by contact with the mail-boxes along the route for releasing the mail-parcels in successive order as each said mail-box is met.

2. In an automatic overhead mail-delivery apparatus, a car, an endless carrier therein for holding and distributing mail, a series of pairs of plates on said carrier one of each pair being affixed to the carrier, the other of the pair supported by the fixed plate and spring-held against the latter when in its position of rest and means for separating the plates for the purposes set forth.

3. In an automatic overhead mail-delivery apparatus, a car, an endless carrier therein adapted for delivering mail-packages, a series of pairs of plates on said carrier, one of each of the pairs being affixed to the carrier and stationary thereon, the other plate of each pair being movable to and from the fixed plate, guiding and supporting pins secured to and projecting at right angles from the said fixed plate, the movable plate being carried on said pins, and springs for normally keeping the loose plate against its neighbor, the packages of mail being held between the said plates, and means for separating the said plates automatically for dropping the mail.

4. In an automatic overhead delivery apparatus for the purposes indicated, an automatically-operated carrier comprising a pair of endless chains, a series of pairs of plates, one of each pair secured to the chains at right angles thereto, the other plate being movable to and from the fixed plate, a pair of pins rigidly secured to said fixed plate perpendicular to the plane thereof, there being apertures in the said movable plates through which the pins pass, said pins adapted to support such movable plate, springs on the pins for throwing the latter plates toward the fixed ones and serving to clamp the mail-packages between the plates, and means for separating the plates when a mail-receiving box is met.

5. In an automatic mail-delivery apparatus, a container or car, a carrier therein comprising endless chains adapted for a starting and stopping movement for the purposes set forth, means for imparting movement to the chains, a series of pairs of plates carried by the said chains substantially as shown, one plate of each pair being affixed to the said chains, the other movable to and from the fixed plate, springs for normally keeping the plates together for clamping packages of mail between them, means carried by the car for engaging each movable plate in successive order when each pair thereof is moved to the position at which the mail-packages are delivered, such means being operated to shift the movable plates by contact with each successive mail-box along the route.

6. In an automatic overhead mail-delivery apparatus, a car, a horizontal carrier adapted for stopping and starting movement, a series of pairs of fixed and movable plates on said carrier adapted to receive and retain mail and to release the mail at the receiving-boxes along the route, means for keeping pressure on the movable plate to clamp said mail, means for imparting a step-by-step movement to the carrier to bring its pairs of plates into position for releasing the mail by contact with stationary devices along the path of the car, and means within the car for engaging successively each movable plate as the pairs of plates are brought into the releasing position, such latter means also adapted to be operated by contact with the mail-boxes to separate said plate for dropping the several packages of mail into their respective receptacles.

7. In an automatic mail-delivery apparatus, a mail-containing car, adapted to run upon an overhead track, means for propelling the same, a series of separately-arranged devices for carrying the several parcels of mail and endless carrier for such devices, said devices adapted to hold the said mail-parcels by spring-pressure, a lever mechanism at the bottom of the car adapted to engage the mail-boxes along the route, said mechanism arranged to contact with the devices for releasing the mail held therein, there being an opening in the car through which the mail is delivered, wheels for the carrier and by which said carrier is moved, and a lever mechanism at the side of the car also adapted for engagement with the mail-boxes for imparting a partial turn to the wheels and carrier for placing a mail-holder above the opening in the car after the preceding holder has been relieved of its load as set forth.

8. In an apparatus for automatically delivering mail, a car for containing the mail, a track from which said car is suspended, propelling means for the car, endless chains within the car, wheels for the same, a series of plates secured to said chains, slidable spring-held plates for the said series of plates arranged substantially as shown, each pair of plates so arranged adapted to hold a parcel of mail, a rock-shaft located beneath the chains and their plates, arms on said shaft for engaging the spring-held plate of each pair for separating it from its neighbor for dropping the mail therefrom, there being an opening in the bottom of the car for the passage of said mail, a pinion-gear on the rock-shaft, a lever at the outside of the car for engaging the mail-box, a shaft for the said lever, a gear-wheel on the said shaft for engaging the pinion-gear as set forth, and means for shifting the chains and the pairs of plates for bringing

a pair of plates above the opening in the car to deliver the mail therefrom after that of the preceding pair has been delivered as set forth.

9. In an apparatus for automatically delivering mail, a car for containing the mail, a track from which said car is suspended, propelling means for the car, endless chains within the car, wheels for the same, a series of plates secured to said chains, slidable spring-held plates for the said series of plates arranged substantially as shown, each pair of plates so arranged adapted to hold a parcel of mail, a rock-shaft located beneath the chains and their plates, arms on the shaft for engaging the spring-held plates of each pair for separating it from its neighbor for dropping the mail therefrom, there being an opening in the bottom of the car for the passage of mail, a pinion-gear on the rock-shaft, a lever at the outside of the car for engaging the mail-box, a shaft for the lever, a gear-wheel on said shaft for engaging the pinion-gear as set forth, a ratchet-wheel on the carrier mechanism, a pawl for engaging it, a lever mechanism for operating the pawl, said lever mechanism adapted to be moved by contact with the mail-boxes along the route for shifting the chains and plates which carry the mail for placing a package of mail above the opening in the car for delivery into the mail-box after its predecessor has been delivered of its load, and a friction device for sustaining the chains wherever stopped all substantially as herein described and shown.

10. In an automatic overhead mail-delivery apparatus, a car, an endless carrier therein, wheels for driving the same, a series of pairs of plates on the carrier arranged substantially as set forth and adapted to clamp mail between them, a ratchet-wheel on one of the shafts which carry the driving-wheels, a pawl for engaging said ratchet-wheel, a device connected with the pawl for contacting with the mail-boxes along the route to turn the ratchet and the carrier to bring each pair of plates successively into position for delivering mail, there being an opening in the bottom of the car for exit of the mail, a pair of arms within the car for contacting with one of the plates to separate it from its neighbor to release the mail, and means for contacting with the mail-boxes for operating the arms substantially as set forth and described.

In testimony whereof I affix my signature in presence of two witnesses.

ISAAC F. COLE.

Witnesses:
FRANK T. MILLER,
L. M. THURLOW.