

I. F. COLE.  
AUTOMATIC MAIL DELIVERY APPARATUS.

APPLICATION FILED APR. 9, 1903.

NO MODEL.

3 SHEETS—SHEET 1.

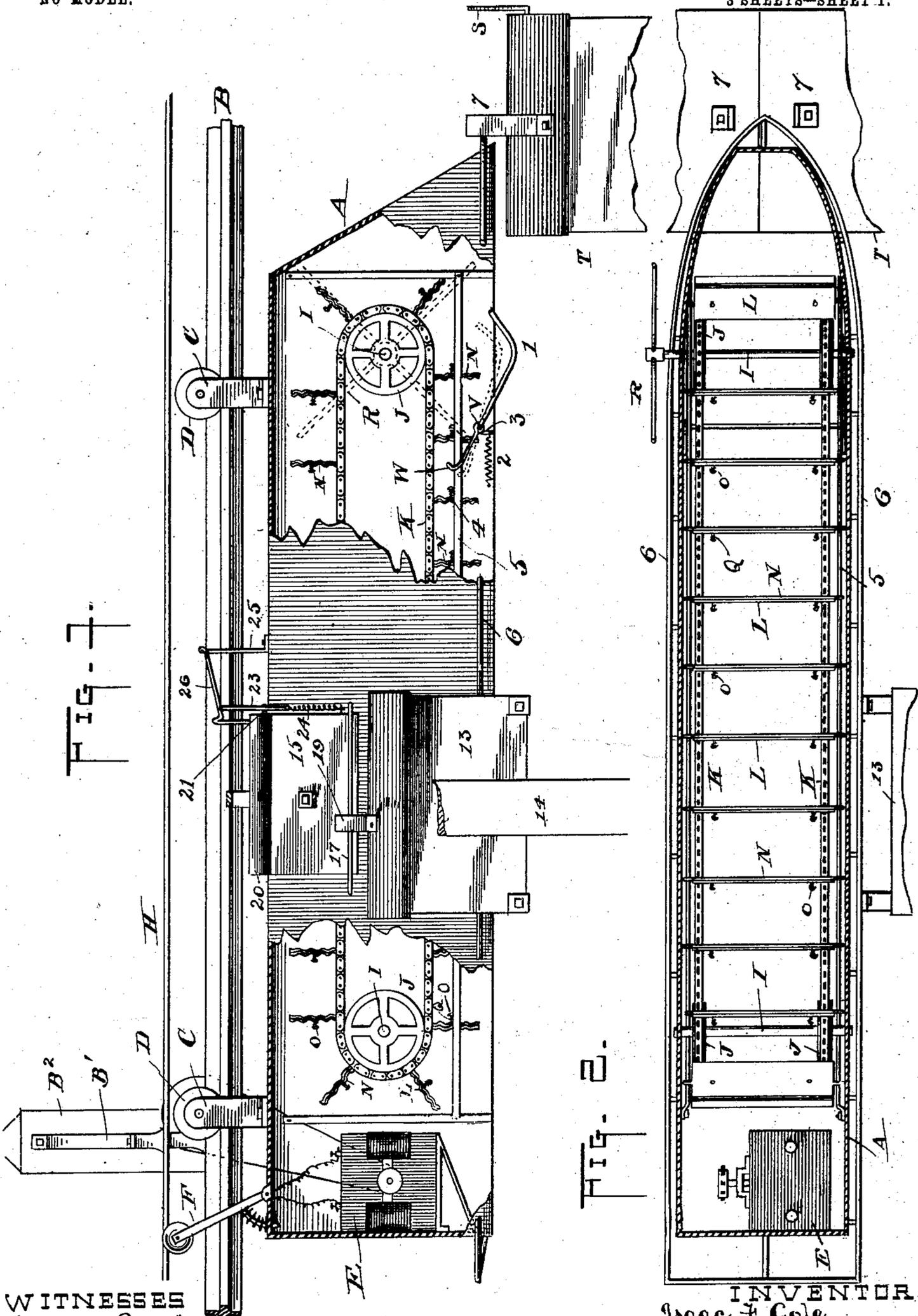


FIG-1

FIG-2

WITNESSES  
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3 SHEETS—SHEET 2.

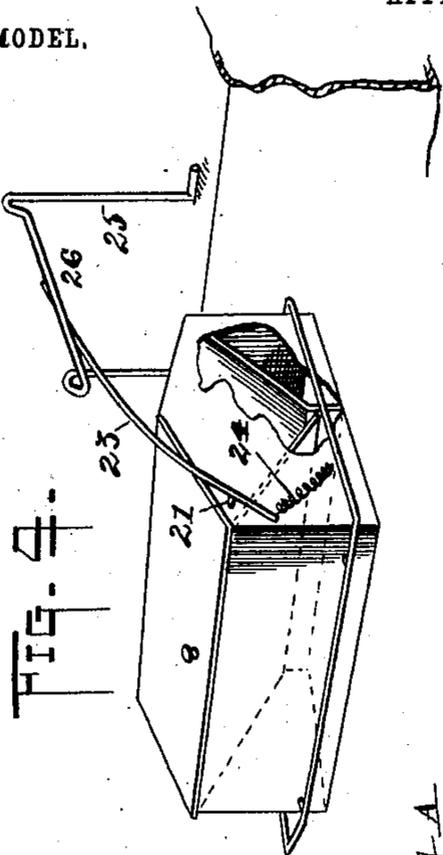


FIG. 4.

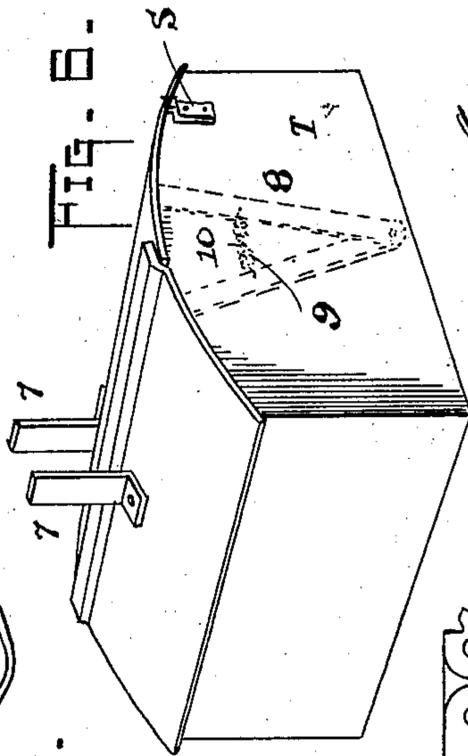


FIG. 5.

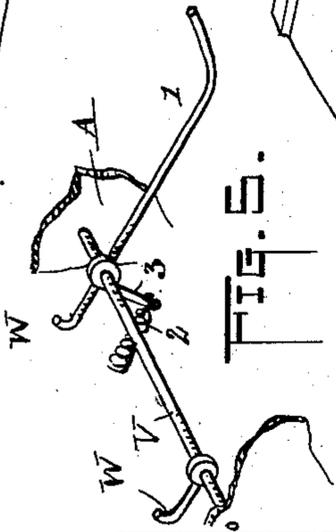


FIG. 6.

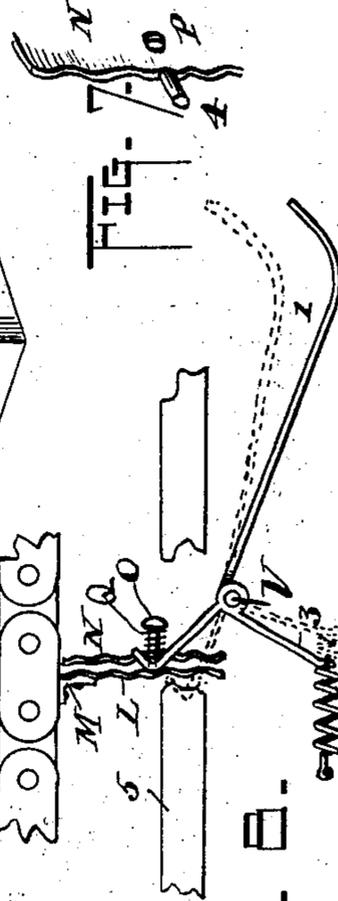


FIG. 7.

FIG. 8.

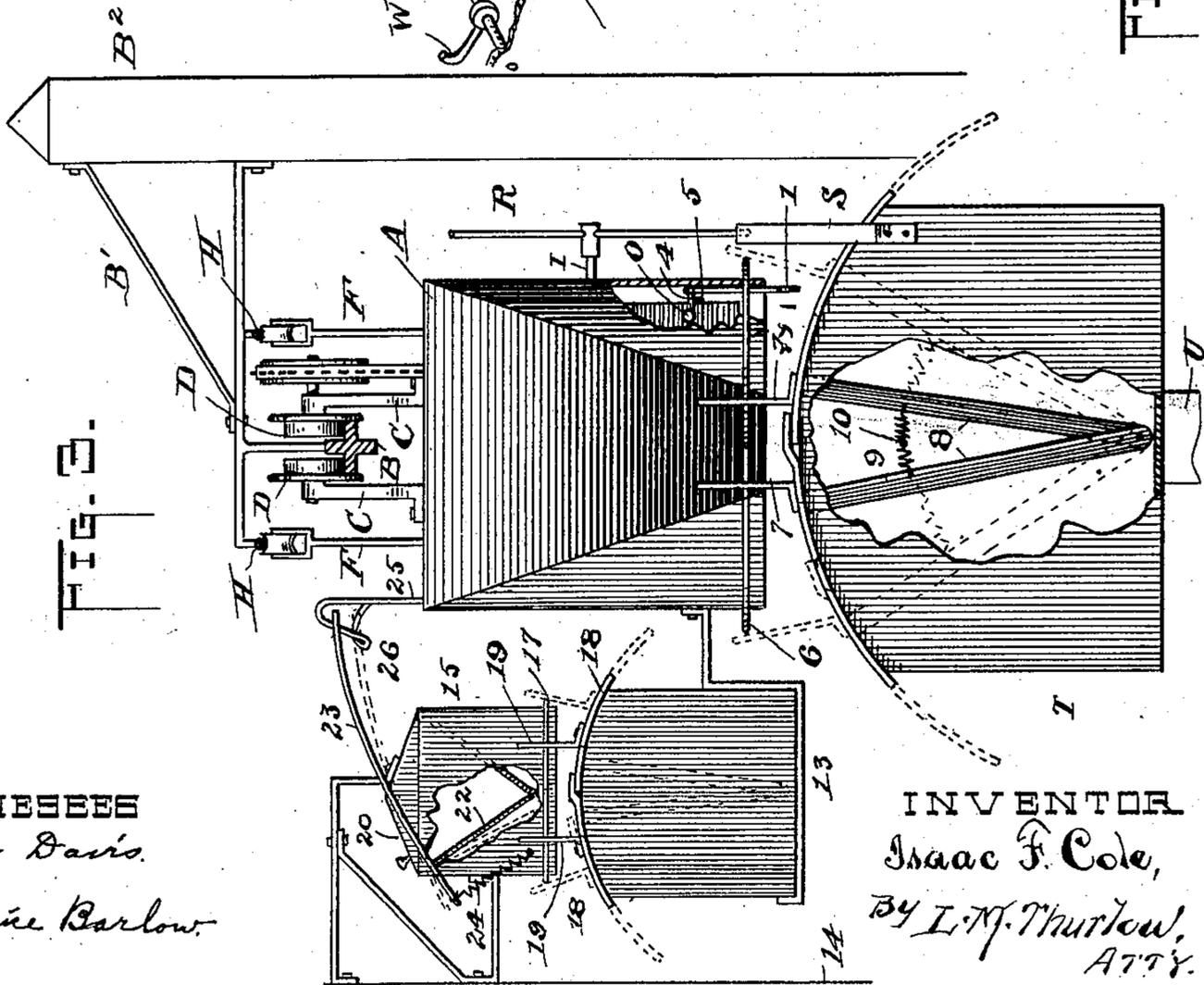


FIG. 9.

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3 SHEETS—SHEET 3.

FIG. 9.

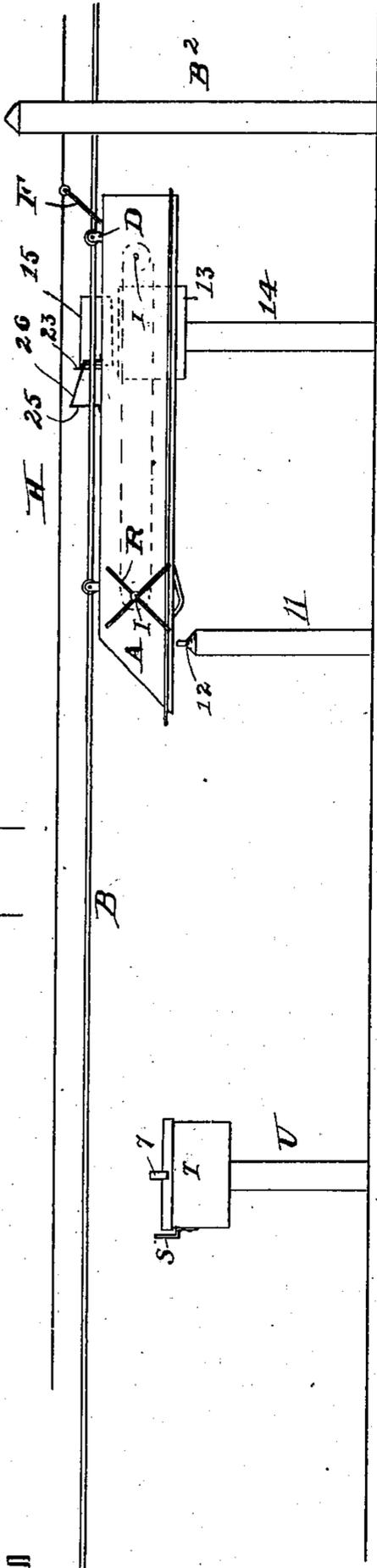


FIG. 10.

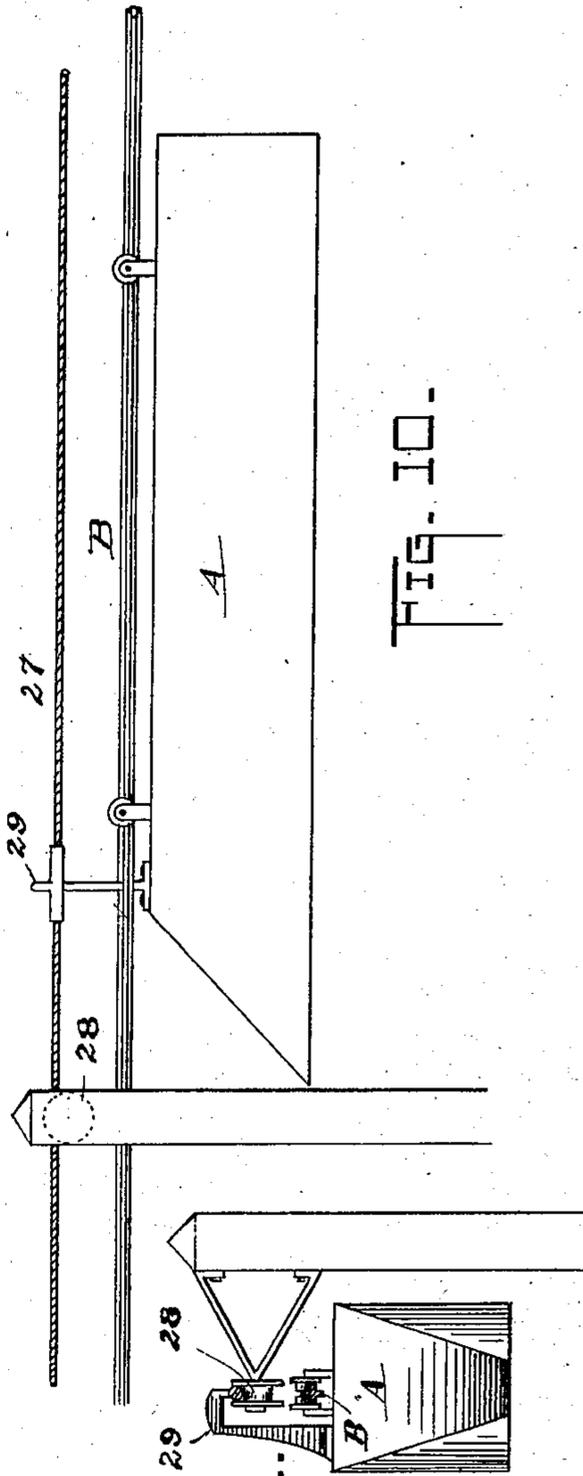
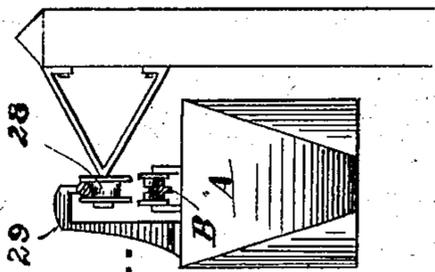


FIG. 11.



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# UNITED STATES PATENT OFFICE.

ISAAC F. COLE, OF WILLIAMSFIELD, ILLINOIS.

## AUTOMATIC MAIL-DELIVERY APPARATUS.

SPECIFICATION forming part of Letters Patent No. 751,465, dated February 9, 1904.

Application filed April 9, 1903. Serial No. 151,829. (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 pertains to mechanism for automatically delivering and collecting mail, and relates particularly to mechanism for use on rural mail-routes.

The object of the present invention is to provide a device that can be loaded with mail at the post-office and sent out through the country to automatically deliver the mail to the respective receiving-boxes along the route.

Another object is to provide a device which will receive mail from boxes along the route from those having mail to be sent to other localities, this collection being made automatically as the device proceeds on its journey.

In a former application filed by me on the 19th day of November, 1902, Serial No. 132,036, a mail-delivery apparatus is described and shown for automatically delivering mail, but does not include means for collecting mail en route.

It is the object, therefore, of the present application to include this feature besides having different means for operating the mail-holding receptacles for delivering the mail into the receiving-boxes.

The invention further relates to other details of construction, as will be pointed out in the specification and claims appended.

In the accompanying drawings, Figure 1 is a side view of a mail-car hung from a track, showing receiving and delivering mail-boxes adjacent to such car. Fig. 2 is a plan view of the car in section, showing the interior arrangement. Fig. 3 is a front view of the car and the delivering and receiving boxes. Fig. 4 is a perspective view of mail-box, into which the residents along the mail-route deposit their outgoing mail for delivery into the mail-car, said figure showing a portion of the mail-car

and means thereon for operating the delivery portion of said box. Fig. 5 is a perspective view of a device for assisting in dropping the mail from the car into the receiving-boxes along the route. Fig. 6 is a perspective view of the receiving-box at the roadside. Fig. 7 is a perspective view of a clamping-plate for assisting in holding the mail within the car. Fig. 8 is a detail view of the mail-holding plates and certain portions for assisting in separating the plates to drop the mail. Fig. 9 is a side view of the car, its track, the mail-boxes along the route, and a device at the side of the road for releasing certain parts, all of which will be described. Fig. 10 is a side view of a modified means of propelling the mail-car; and Fig. 11 is a front view of the car, showing such modified propelling means.

In Figs. 1, 2, 3, and 9 the reference-letter A indicates the car for carrying the mail. The said car is hung from an overhead track B by means of brackets C and flanged wheels D, substantially as shown in Fig. 3. Pairs of the said brackets C are secured to the top of the car and secured thereto and support said car at each end. In the rear end of the latter member is located an electric motor E, connected through a pair of trolleys F with overhead current-conducting wires H, said trolleys being insulated from each other and from the car, so that the current can be conducted along one wire H down through the motor and out and back on the remaining wire, all of which will be readily understood. Other means of locomotion can of course be employed, since I attach no claim whatever to this portion of the apparatus. The said track B and the wires H are suitably carried by brackets B', attached to posts B<sup>2</sup>, and these two portions—*i. e.*, the track and the wires—are suitably insulated from one another, so that no short circuits will be possible. The body of the car is composed of sheet metal, the front of which is preferably pointed, so as to present a wind-cutting form. Journaled in the sides of said body, near each end, is a transverse horizontal shaft I, each carrying a pair of sprocket-wheels in about the position shown in Fig. 2. A sprocket-chain K runs over complementary pairs of these wheels J,

so that the two chains travel together or at exactly the same rate of speed. So far the device is almost identical with that described in the former application above referred to; but just here the changes in the balance of the device will be noted. Secured to certain of the links of the chains K are plates L by brackets M, Fig. 8, or other suitable means, which will hold the plates at right angles to the length of said links. Adjacent to each plate L is a plate N, which is made shiftable to and from said plate L by sliding upon a pin O, secured to the latter. The plate N is provided with a hole P, Fig. 7, slightly larger than the said pin O, so that said plate is perfectly free to move, as stated. The pin is provided with a head, and between the head and the movable plate a spring Q is placed, which surrounds said pin and normally keeps the plate N against L. It will be noted that the pins O are placed at each end of the pairs of plates, so that these latter members will move N bodily away from L without tipping or binding. As in my former device, the chains and their plates are designed to move in an intermittent manner, so as to bring each pair of plates at a certain point for delivery of the mail held between them. The means employed for setting up such movement consists in first securing upon one end of the front shaft J a "spider" or star-wheel R, having four arms, as shown. These arms are adapted to contact with a vertical arm S, secured to the box T, used for receiving the mail. The said box T is mounted on a post U, Fig. 9, and as the car passes over it the said arm S is met by one of the arms of the wheel R, and this turns the said wheel one-quarter of a full revolution. The result of this movement will appear presently. At V is a rock-shaft, (better shown in Fig. 5 in perspective,) which is carried at each end in the sides of the body A or in any other desired manner. Secured near each end of this shaft is a hook W, extending in a rearward direction. Also secured to this shaft, also at one end, is an arm 1, extending forward and downward, substantially as shown. The said arm is held down by means of a spring 2 connected at one end to an arm of said shaft, the opposite end of the spring having connection with the side of the car, as in Fig. 1. While this holds the arm 1 down, it also keeps the hooks W raised to about the position shown in said Fig. 1 and in Fig. 8. At each end of the plate N is a projection 4, which rests upon and slides along a horizontal guide 5, Figs. 1 and 8. The said hooks W are designed to receive and hold the projection 4 of each plate as it is moved along the guide 5. It will be understood that the mail to be delivered is clamped between the plates L and N, the pressure of the springs Q being sufficient to hold the mail firmly, so that it cannot be dislodged by jarring, the plates being corrugated to fit

into one another to further assist in clamping such mail. By referring to Figs. 1 and 8 it will be noted that the plates N, bearing the projections 4, are behind and follow the plates L, so that by the movement of the latter toward the left, as viewed in Fig. 1, the plates N will be caught by the hooks W, as shown in Fig. 8, by means of the said projections on the said plates. In Fig. 1 the star-wheel R is about to strike the arm S on the box T as the car moves toward the right, and, as before stated, the wheel will be given a quarter-turn. This moves the plates toward the left on the lower stretch of the chains K, and from what has been said it will be seen that the plate L nearest the hooks W, Fig. 1, will pass the latter portions; but the projections 4 will be caught and the plate held, while the said plate L continues to move. The movement at this time, however, is only sufficient to carry the plate L far enough to permit the mail held between the plates to fall. The pairs of plates are located at such a distance apart that by the quarter-turn described only the amount of movement necessary to accomplish the above will take place. At the time this action results the separated plates are positioned above the box T, which is opened automatically to receive the mail. The means for opening said box is quite simple and consists first in securing to the car a rail 6, extending along both sides of the car and pointed at the front end, as shown. This rail forms a wedge which is designed to enter between and separate ears 7, secured to two top portions of the said box T. Said portions are carried on arms 8, pivoted at their lower ends to the ends of the box. The portions are formed in the arc of a circle, the center of which would lie at the pivot of the said arms 8. The box is also formed in the same curve, so as to permit the top portions to move freely without binding. One of the latter overlaps the other at the middle, so that rain and snow will be excluded. Springs 9 serve to normally keep the top closed and are attached to the arms 8, their adjacent ends being fastened to the end of the box, as at 10, in suitable manner. Fig. 3 shows how the covers are separated by the car passing between the ears 7. As the car enters between them the rail 6 forces them apart to the dotted-line position. When the car has passed entirely through, the springs 9 close the cover portions together, as before. While open, the mail is dropped into the box by the means already described.

At any time after the car has left the box and before reaching the next one the hooks W must be moved to release the plate N, so that these members can move to the rear and the next pair of plates brought into position for releasing the mail therefrom. This may be accomplished by placing at any desired point a stop, against which the arm 1 of the rock-shaft V may strike to raise said arm and lower

the said hooks W. In Fig. 9 is shown the manner in which I accomplish this, though of course some other means may be employed, if so desired. A post 11 is located in the path of the car, and upon this is mounted a vertical projection 12, against which the said arm 1 strikes as the car passes over. It is understood that the said post and its projection are set well away from the path described by the star-wheel R, so that this latter member is not interfered with in any way. As the arm strikes this projection 12 the hooks W are lowered, thus releasing the projections 4 and permitting the plate N to return to its position against the plate L by pressure of the spring Q. As the next mail-box is reached the spider or star-wheel is again moved and the mail dropped while the box is open, as before described. Between this box and the next the stop 12 is again located to serve in releasing the plates N, as before. Thus far I have described the mail-car in so far as it relates to the delivery of the mail along the route, and I will now direct attention to the receiving means on the car for taking the mail from the roadside. In carrying out this portion of the apparatus a box 13 is carried in suitable manner at one side of the car, as shown in Fig. 3. This box is constructed in the same way as the box T, already described, and is carried with the car at all times. On a post 14 at the side of the route is secured, by a suitable bracket, a box 15, which hangs just above the box 13, as shown in said Fig. 3. This box is provided with a rail 17, similar to that shown at 6 in Figs. 1 and 2, and serves to open the covers 18 of the box 13 by means of the ears 19 of said covers. In this case the rail 17 is stationary, while the box which it is designed to open travels with the car, as explained. The box 15 is provided with a lid 20, which the party who mails his letter raises and beneath which he deposits his letter into the box. The latter is shaped like a hopper inside—that is to say, a portion of its bottom is slanted toward the middle of the box, as shown in both Figs. 3 and 4. The other portion of the bottom is a pivotal member 22, being carried on a shaft 21, Fig. 4, to which said pivotal member 22 is secured. The outer end of the shaft 21 carries an arm 23 outside the box, one end of which has a spring 24 attached thereto at one end, its other end secured to said box. The free end of the arm extends toward the passing car A and is engaged by a depressing member 25, secured to the top of the car, as shown, Figs. 1, 3, and 4. This member 25 is merely a wire bent into the form shown, with an overhanging limb 26, one portion of which is higher than the other and forming a slanting guide. It will be seen that as the car moves toward the box the member 26 will meet the arm 23, and as said car moves the said arm will gradually be depressed, and this action will open the movable

member 22, so that any mail within the box will be instantly dropped out. Simultaneous with this action the rail 17 on the box 15 opens the cover of the box 13, and the mail is caught therein. At each residence the same operation takes place. After the passage of the car the arm 23 regains its normal position by the pull of the spring 24, and this also closes the member 22, thereby placing the box 15 in condition for receiving more mail to be caught by the car in its next trip over the route.

By what has been stated it will be seen that the apparatus is perfectly automatic in its action and gathers and delivers the mail at each station as it passes along without stopping. The mail for the various boxes along the route is placed between pairs of the plates L N in such order that as each station is reached the mail intended therefor is liberated in the manner described. I have illustrated in Figs. 10 and 11 a modified form of the means for propelling the car along the track. In lieu of a self-contained power of any kind a cable 27 is provided, which runs over pulleys secured to posts, one of which is shown at 28 in the figures named. Attached to the cable is overhanging arm 29, attached to the top of the car. The cable extends entirely around the route to be traversed and is carried on the pulleys mentioned. The car is attached to the cable by means of the said arm 29, so that the former is not hindered in passing over the said pulleys. The cable is driven by passing over a drum driven by an engine or other power at the post-office. By this means the car must complete its full circuit, and snow or ice on the supporting-track will not affect it, as would be the case with the power within the car, unless the track were protected by a housing or the like to keep the ice from the same.

I desire to make it understood that I do not wish to limit myself to the construction shown and described, as other equivalent means may be employed, as will be understood.

Separate cars may be fitted out, one for collecting and the other for delivery, if desired, and in this way the cars will not be as heavy as when both operating portions are combined and when both the collected mail and that to be delivered are carried at the same time. Evidently the car itself would be the receiver, and the delivery-boxes along the route would deposit their contents into it.

I claim—

1. An automatic mail-delivery apparatus comprising a car, a track for carrying the same, a mail-receiver for the car, the same having a spring-closed top in combination with mail-containing boxes situated along the mail-route, means thereon for opening the spring-controlled top of the receptacle on the car which passes beneath, a spring-closed bottom for the mail-containers and means on the car for automatically opening said bottom to drop the

mail into the receptacle on the car when the two members are vertically in line with one another as described.

2. An automatic mail-collecting apparatus comprising a car A, a track B for carrying the same, a mail-receiver 13 carried by the car, spring-closed covers 18 therefor, lugs 19 for opening the covers, in combination with mail-delivery boxes 15 situated along the mail-route, the spring-closed bottoms 22 therein, the members 25 on the car, levers 23 for opening the bottoms 22 by contact with the said members 25, spreading rails 17 on the container 15 for opening the covers 18 by contact of the lugs 19 thereagainst all arranged substantially as shown and described to open the delivery-boxes and receivers simultaneously.

3. An automatic mail delivery and receiving apparatus, comprising a car for carrying the several packages of mail to be delivered, an endless carrier within the car, means for supporting and carrying said carrier, a series of pairs of plates on said carrier for receiving and holding the mail-packages, one of each of said pairs of plates being secured rigidly to the carrier, the other plate having yielding connection with such rigid plate, means for shifting the carrier in an intermittent manner for placing the pairs of plates in position for delivery of the mail held between them, and other means for engaging and holding the yielding plates of the pairs of plates during the movement of the carrier whereby such yielding plates are held while the fixed plates move away therefrom to thereby release the mail held between them.

4. An automatic mail delivery and receiving apparatus comprising a car for containing the mail to be distributed, an endless carrier within such car, a series of pairs of plates on such carrier between which the mail is held, such pairs of plates adapted to deliver their mail in successive order, means for shifting the carrier and its plates, means for separating said plates to drop the mail from between them, in combination with mail-boxes placed along the route, and means on the car for opening them to receive the mail from said car simultaneously with the separation of the plates of the carrier.

5. An automatic mail delivery and receiving apparatus comprising a car for containing the mail to be distributed, an endless carrier with the car, a series of pairs of plates on such carrier between which the mail is held, such pairs of plates adapted to deliver their mail in successive order, means for shifting the carrier and its plates, means for separating said plates to drop the mail from between them into receptacles along the route, there being a series of mail-delivery boxes along the route from which mail is received by the car, a receptacle carried by said car, means on the latter for opening the said delivery-boxes in suc-

cessive order as they are met to permit the mail to pass therefrom into the said receptacle on the car, and means for opening said receptacle at the same time that the mail is released from the delivery-box.

6. An automatic mail delivery and receiving apparatus comprising a car A for containing the mail to be distributed, an endless carrier within the car consisting of the sprocket-chains K K, means for carrying said chains which comprises the sprocket-wheels J J, the shafts I I on which they are mounted, the star-wheel R on one of the shafts for use in turning said sprocket-wheels and the carrier, pairs of plates L, N carried on the chains, said plates N yieldingly connected to the plates L, projections 4 on the ends of the said plates N extending beyond the ends of the plate L, means for engaging said projections and holding the plate while the carrier moves to carry the plate L away from N for releasing the mail held between the plates said means being afterward operated to release the plates for the purposes set forth and described.

7. An automatic mail delivery and receiving apparatus comprising a car A for containing the mail to be delivered, a carrier for the mail consisting of the sprocket-chains K, the sprockets J for the chains, the star-wheel R, the shafts I on which the sprockets are mounted and one of which carries the said star-wheel, a series of plates L rigidly secured to the chains, a series of yielding plates N attached to the plates L, there being projections on the latter, a rock-shaft V journaled in the body A transversely of the said body, hooks W connected to said shaft and extending upward and rearward from such shaft, a forward and downwardly extending arm 1 on the shaft V, and a spring 2 for normally retaining said hooks and the said arm in the position named for the purposes set forth, in combination with a series of mail-boxes placed along the mail-route and adapted to be opened by the car in its passage over them, substantially as described.

8. An automatic mail-delivery apparatus comprising a car A, a receptacle 13 carried thereby for receiving mail, the separable covers 18 therefor, the arms 19 on said covers, means within the box for normally keeping the covers together, in combination with a receptacle at the roadside for holding mail to be collected by said car, which consists of the box 15 the lid 20 beneath which the mail is deposited, the pivotal bottom 22, the arm 23 for operating it, means for normally keeping the said bottom 22 closed to retain the mail within the box, and means on the car for depressing the said arm 23 to open the said bottom 22 to release the mail, and means on the box for contacting with the arms 19 to separate the covers 18 of the box 13 simultaneous with opening of the bottom 22 substantially as described.

9. In a mail-delivery apparatus, an over-  
head track, a car adapted to travel thereon, a  
mail-carrying member within the car adapted  
for delivery of mail-packages by gravity, a  
5 mail-receiver at intervals along the route of  
the car, said car passing over such receiver, a  
spring-closed covering for the receiver, the  
car adapted to open the same for dropping  
the mail into such receiver, and means for si-  
10 multaneously releasing the mail-packages  
from the mail-carrier within the car to enter  
said receptacle substantially as described, the  
covering afterward closing the same.

10. In a mail receiving and delivering ap-  
15 paratus, a car, a track for the same, a mail-  
receiver carried by the car, a stationary mail-  
delivery box at the roadside, the former hav-  
ing two spring-closed cover-sections adapted  
to be separated by the passage thereof beneath

the mail-box to open the receiver, means for 20  
simultaneously releasing the mail from the  
box to deposit it into such opened receiver, a  
stationary mail-receiving box also at the road-  
side for receiving mail from the car, a cover  
therefor comprising two spring-closed mem- 25  
bers adapted to be separated by the passage  
of the car thereover to open the box for re-  
ceiving mail from the car, a mail-carrying  
member within the car and means for oper-  
ating it to drop the mail simultaneous with 30  
the opening of said receiving-box as set forth.

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

ISAAC F. COLE.

Witnesses:

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L. M. THURLOW.