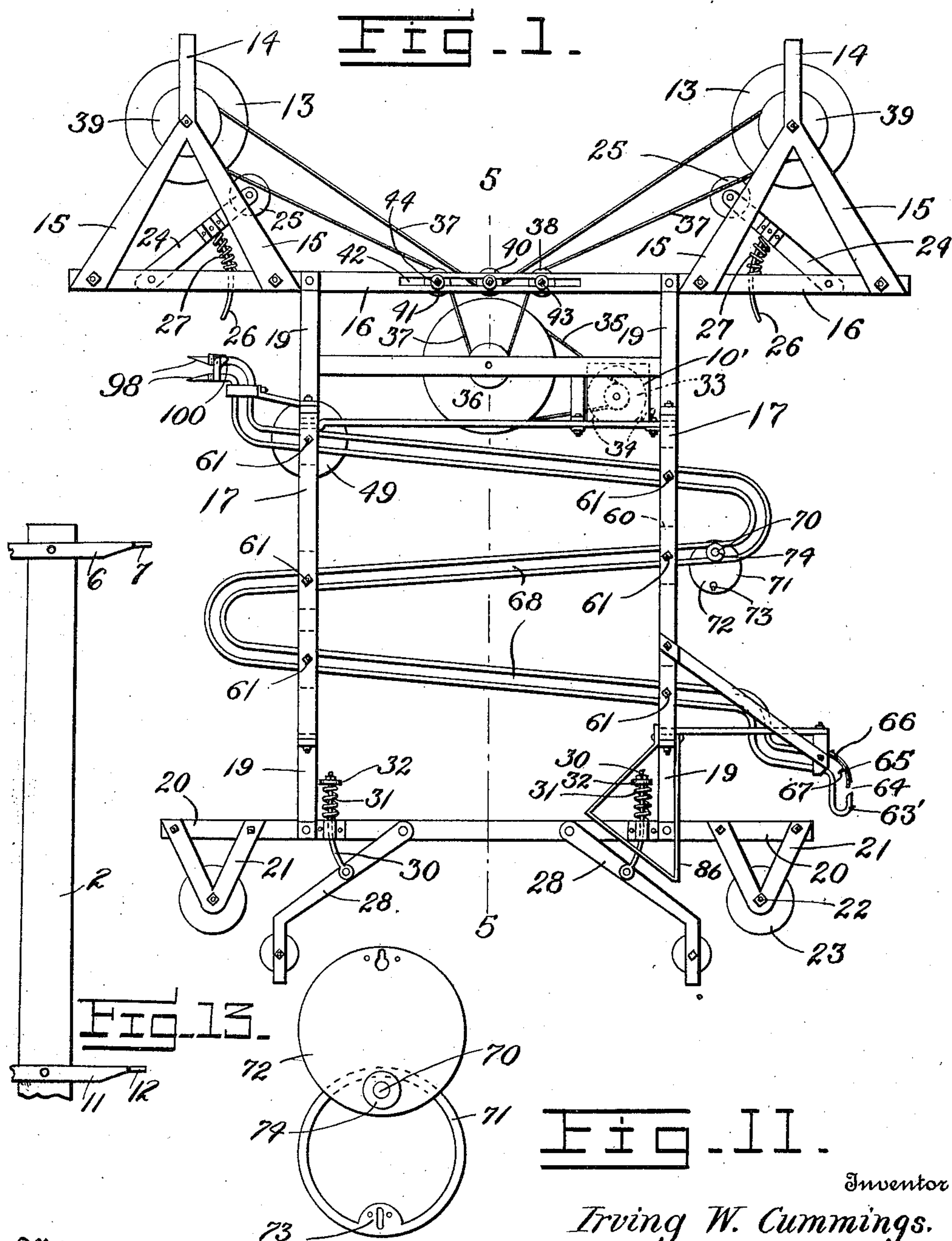


998,875.

I. W. CUMMINGS.  
DELIVERY APPARATUS.  
APPLICATION FILED APR. 11, 1911.

Patented July 25, 1911.

4 SHEETS—SHEET 1.



Witnesses  
Charles J. Mac Carter  
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Inventor  
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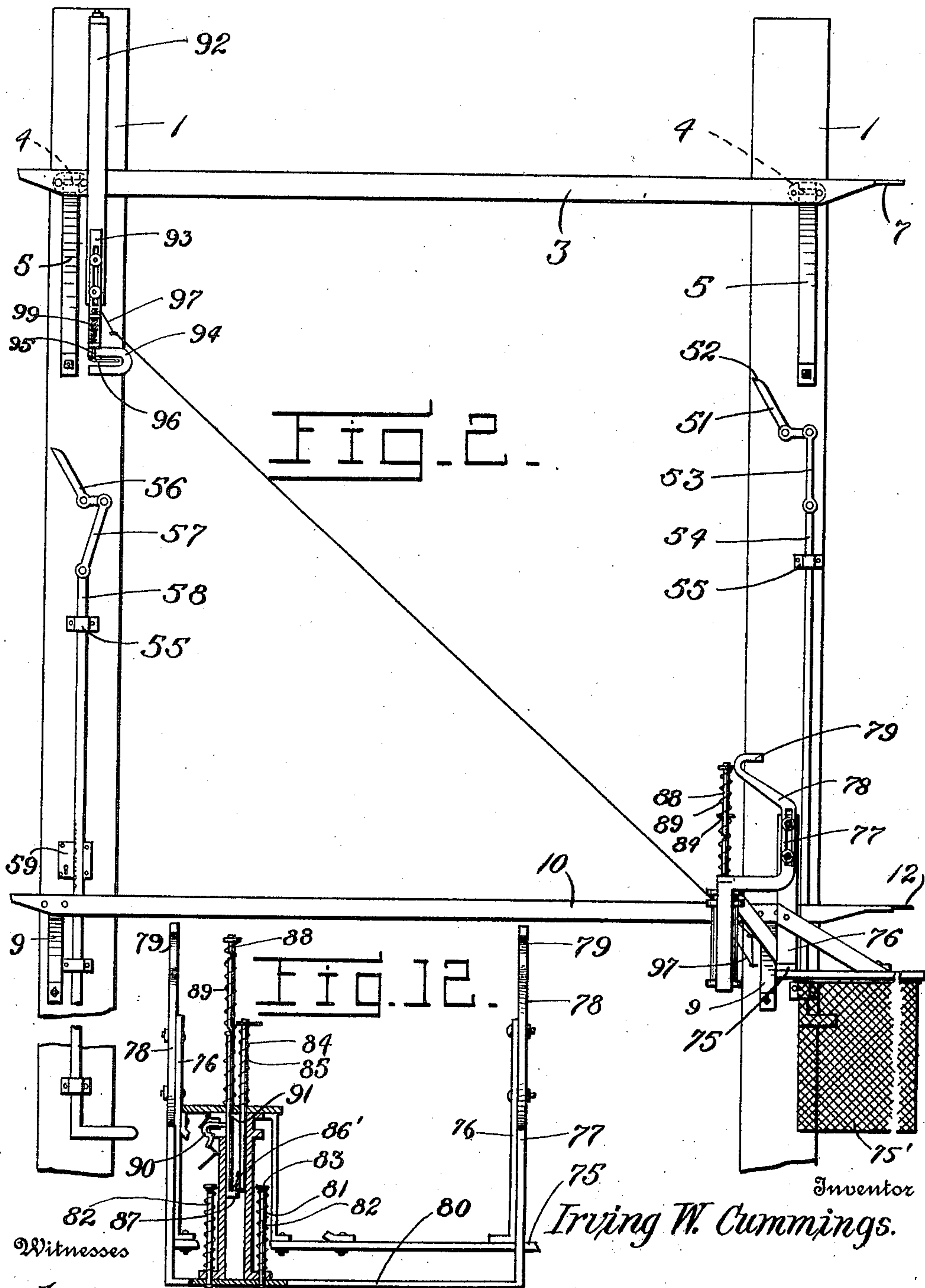
By Harry Ellis Chandler,  
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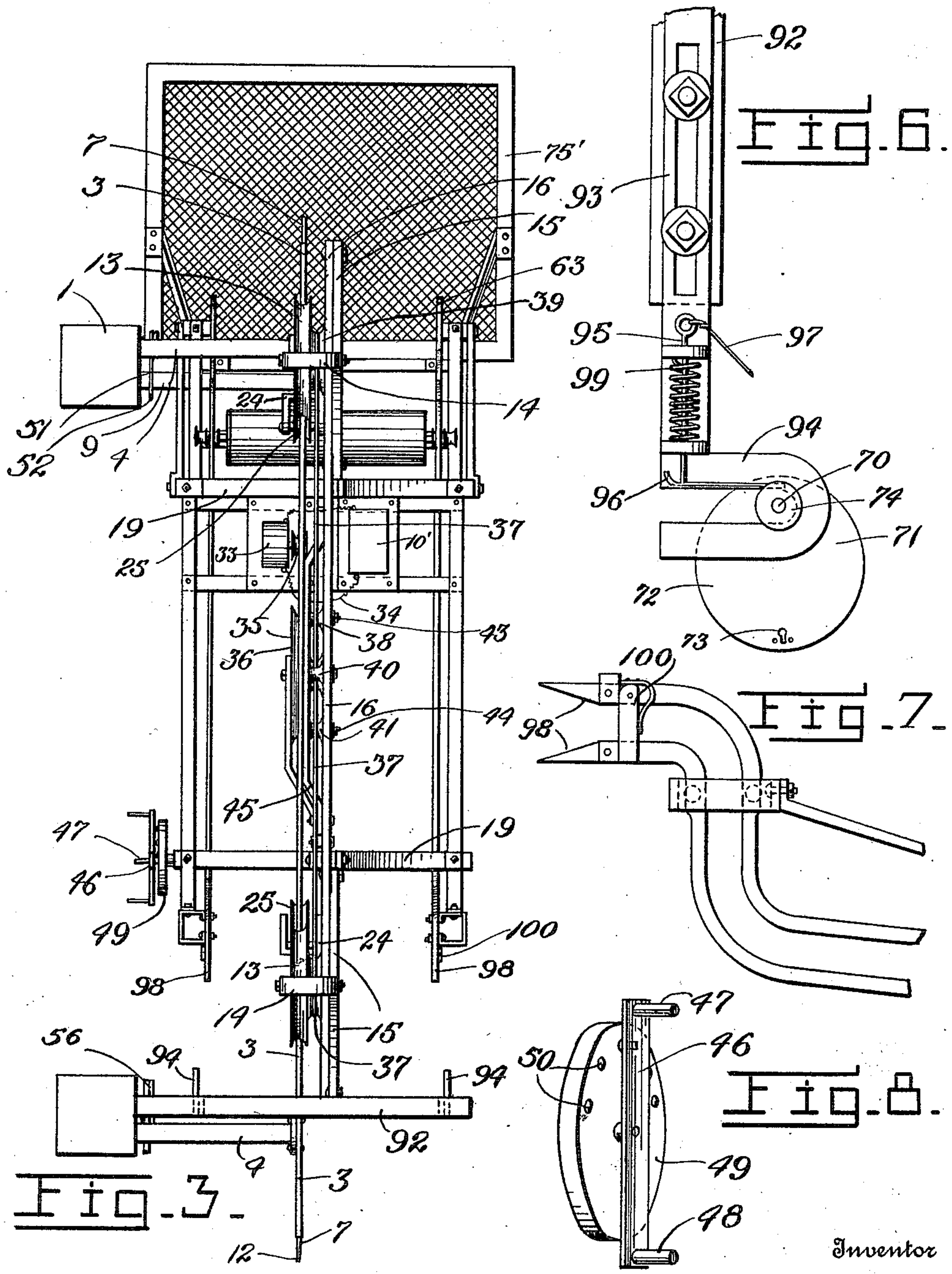
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4 SHEETS—SHEET 2.







Witnesses  
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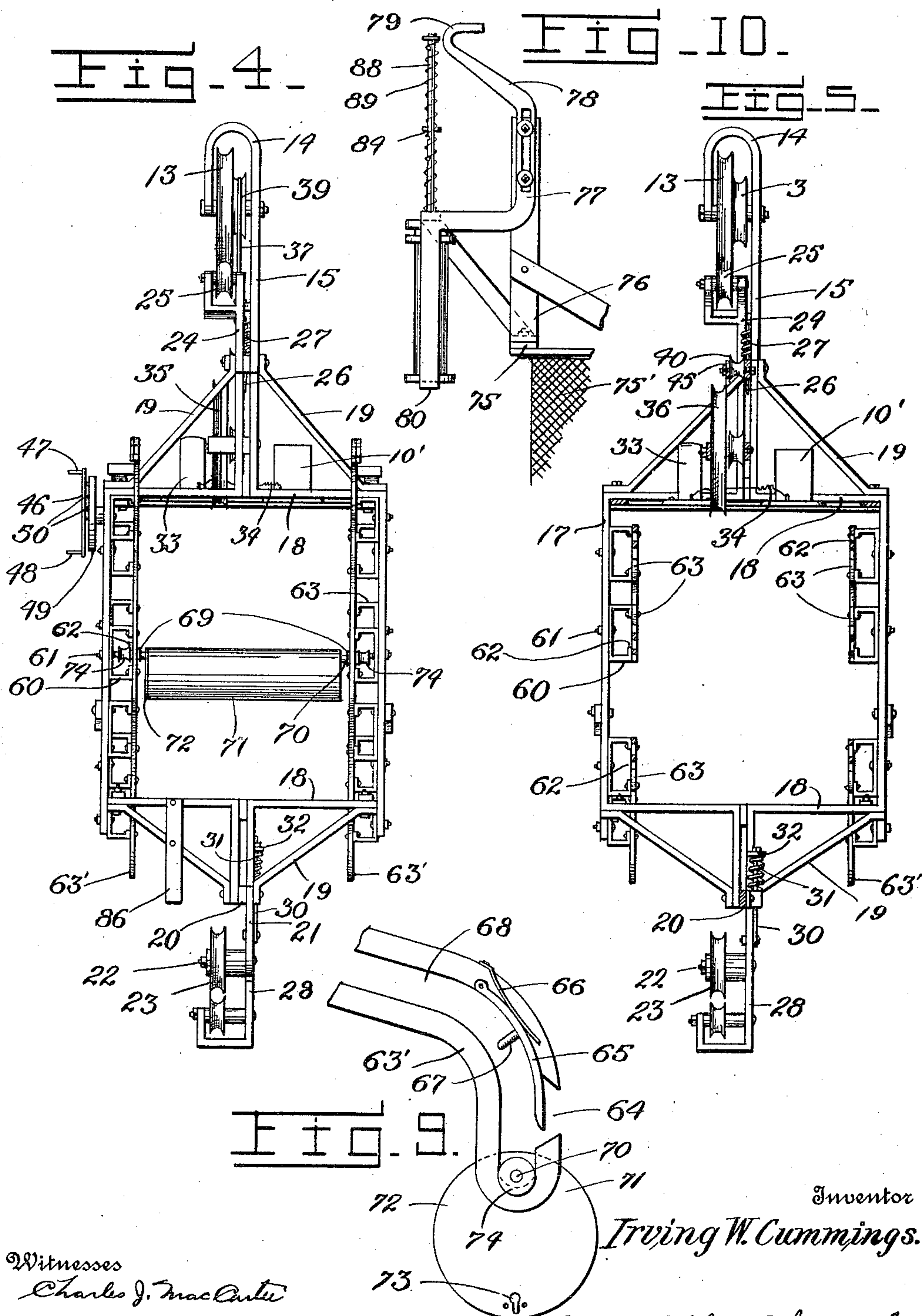
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4 SHEETS-SHEET 4.



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# UNITED STATES PATENT OFFICE.

IRVING W. CUMMINGS, OF BEAVER CREEK, MINNESOTA.

## DELIVERY APPARATUS.

998,875.

Specification of Letters Patent.

Patented July 25, 1911.

Application filed April 11, 1911. Serial No. 620,309.

*To all whom it may concern:*

Be it known that I, IRVING W. CUMMINGS, a citizen of the United States, residing at Beaver Creek, in the county of Rock and State of Minnesota, have invented certain new and useful Improvements in Delivery Apparatus, of which the following is a specification.

My invention relates to improvements in delivery apparatus and has for its leading object the provision of an improved automatic carrier adapted to pass on a suitable elevated track and to both deliver receptacles containing mail, groceries, or other commodities at predetermined points along the route of the carrier and to simultaneously collect a second set of receptacles.

A further object of my invention is the provision of an improved device particularly adapted for use upon rural free delivery routes which will run on a suspended cable and which will automatically deliver receptacles containing the mail at the various points along the route and will thus insure prompt delivery of the mail under all conditions irrespective of the condition of the roads and much more expeditiously than is possible to deliver the mail by the ordinary carrier plan and in a safer and less expensive manner than that now employed.

Another object of my invention is the provision of an improved aerial carrier having novel devices for collecting and for delivering receptacles containing mail or commodities and having improved means for automatically controlling the speed of operation of the device, which carrier will be simple and efficient of operation and may be readily installed at but slight expense.

Other objects and advantages of my improved delivery and collection apparatus will be apparent from the following description taken in connection with the accompanying drawings, and it will be understood that I may make any modifications in the specific structure shown and described within the scope of the claims without departing from the spirit of the invention.

Figure 1 represents a side elevation of my device. Fig. 2 represents a view of the pair of adjacent posts at one of the collection and delivery stations showing the various members carried by said posts. Fig. 3 represents a top plan view of the invention. Fig. 4 represents an end view of the carrier in posi-

tion to receive a receptacle or containing box from the supporting post. Fig. 5 represents a vertical sectional view of the carrier on the line 5—5 of Fig. 1. Fig. 6 represents a detailed view of the box supporting jaw carried by the post. Fig. 7 represents an enlarged view of the receiving end of the containing track or guideway for the box supporting rollers. Fig. 8 represents a detailed view of the motor controller. Fig. 9 represents a detailed view of the retaining device of the lower or delivery end of the track or guideway. Fig. 10 represents an enlarged side elevation of the mechanism for removing the lowermost box from the carrier. Fig. 11 represents an enlarged view of the box in opened position, and Fig. 12 represents a detailed view of the means for automatically moving the box removing device into inoperative position. Fig. 13 represents a fragmentary view of one of the intermediate posts illustrating the track plates supported thereby.

In the drawings, the numeral 1 designates the supporting posts at the stations of my aerial carrier, while the numeral 2 designates the posts intermediate the stations, the posts 1 having secured thereto the track bars 3 which are held in horizontal position and connect the post, said bars being held a distance from the posts 1 by the braces 4 and 5, similar braces being carried by the posts 2 and having pivotally secured to their outer end the track bars 6. Secured to the ends of the bars 3 and connecting them with the ends of the bars 6 are the cables 7 which form the trackway proper for my invention. A second set of brackets 9 projects from the posts 1, and secured to and connecting the brackets 9 is the bar 10 parallel to the bar 3, the post 2 having pivoted thereto the bars 11 which are connected with the bars 10 by the cable track 12.

The bars and cables above described provide a pair of parallel trackways, and riding on the upper face of the upper trackway are the grooved wheels 13 pivotally mounted in the yokes 14 which have the depending flaring arms 15 which are secured to the opposite ends of the upper frame bar 16 for supporting the same. Said frame bar 16 has secured thereto the Z-shaped frame plates 17 which thus provide a depending yoke-shaped member having its lower ends held in spaced relation by the frame bars 18 and braces 19 as clearly shown



in the drawings. The frame bars 18 and braces 19 are secured to the lower longitudinal frame bar 20 which has depending therefrom the brackets 21 located at each end and having pivotally secured thereto by the stub axles 22 of said brackets the grooved wheels 23 riding on the upper face of the lower trackway. The wheels 13 and 23 both riding on the parallel trackways serve to prevent swinging movement of the carrier frame, while to prevent the bouncing off the track of the wheels, I pivotally secure to the frame bar 16 near each end the trolley pole 24 bearing on its upper end the trolley wheel 25 for engaging the trolley wire 8 and having the depending curved rod 26 secured thereto on which is mounted the spring 27 having one end bearing against the trolley pole and the other against the frame bar 16 through which the rod 26 passes, the tension of said springs resisting any upward movement of the carrier frame. To further resist any upward movement of the carrier frame, I pivot to the lower bar 20 a pair of trolley poles 28 having riding therefrom the curved rods 30 which pass through the bar 20 and have mounted on their upper ends the springs 31 bearing against the washers 32 secured on the upper ends of the rods 30 and tending to force the washers upward to draw the trolley wheels tightly against the under face of the trackway.

To propel the carrier along the trackway, I secure within the frame the motor 33 to which current is fed by the wires 34 leading from the storage battery 10'. Said motor through suitable gearing 35 drives the drum 36 around which passes the endless belt 37 which passes from the drum over the sheave 38 and around the grooved wheel 39 which is secured to one of the supporting wheels 13 and thence to the guide sheave 40 carried by the frame bar 16 and around the drum 39 of the other supporting wheel 13 and back to the drum over the sheave 41. To adjust the tension of said belt 37, I form in the bar 16 the slot 42 in which are the adjusting pivot pins 43 and 44. I preferably secure to the bar 16 the bracket member 45 which is likewise provided with a slot to permit of adjustment of the sheave pins.

In order that I may automatically control the speed at which the carrier is traveling to cause the same to normally move at a high rate of speed but to check said speed when it is either descending a grade, rounding a curve or at a station, I pivotally secure to the side of the frame 17 the controller lever 46 having at its upper end the projecting abutment 47 and at its lower end a similar abutment 48, said lever being intermediately pivoted and riding over the face of the resistance box 49 having the contacts 50 for causing a greater or less electrical resistance

to the current according to the point on which the controller rests. Pivotally secured to the posts 1 or 2 are the bell crank levers 51 having rounded ends 52, while secured to one end of said bell cranks by the links 53 are the operating rods 54 slidably supported in the brackets 55, the vertical adjustment of the rods 54 swinging the bell cranks to bring their ends 52 into diverse positions. Said ends 52 are adapted on account of their position to engage the abutments 47, the traveling of the carrier past the lever 51 causing the abutment to ride on the lever and be swung to throw in a heavy resistance to decrease the speed of the motor and thus of the carrier. To restore the speed of the motor, I pivot to one of the posts farther along the route a second bell crank 56 controlled by the link 57 and rod 58, said bell crank being adapted to engage the abutment 48 at the lower end of the controlling lever to swing the lever in a reverse direction to cut out the resistance and thus increase the speed of the motor. The adjustment of the bell cranks 51 and 56 by means of the rods 54 and 58 permits of the throwing of the controller lever but a single point or of entirely cutting off the current to allow the machine to progress on a down grade merely by its own momentum, said controlling rods being carefully provided with locking devices 59 to secure them in adjusted position and prevent tampering therewith.

It will be understood that my invention has a two fold purpose or object, first to deliver a receptacle containing mail or commodities to the outlying house by which it passes, and second to carry back the emptied box with any articles therein which the owner may wish to return. I have formed my machine of such construction as to employ the same track or guideway for containing both the boxes to be delivered by the carrier and those to be returned in the carrier. Said trackway consists of a metal plate 60 bent into rectangular form in cross section and bolted to the frame bars 17 by the bolts 61, said members 60 having the slots 62 in their inner face, plates 63 being secured to the member 60 to form facings for the slots. It will be observed that one of the track forming members 60 is secured at each side of the frame, and that the same extends downward in inclined reversely bent portions to provide a zig-zag track which will contain a maximum number of the boxes within a limited space. The lower end of the track 60 has the depending hooked portion 63' having the slot 64 at the rear slightly above the curved termination or bottom of the track. Pivoted to the upper portion of the track and lying at one side thereof is the curved latch member 65 which normally lies partially across and closing the slot 64, a



spring 66 bearing against the member 65 to hold it in closed position, and said member 65 having an inwardly projecting lug 67 which projects into the trackway 68.

5 When my carrier is started from the post-office or store I engage in the trackway 68 the inner pair of rollers 69 which are mounted on the axle 70 that passes longitudinally eccentrically of the box 71 which is preferably cylindrical in form and has pivotally engaged on the axle the door 72 normally held in closed position by the lock 73, the sending office and the party to receive the box having duplicate keys thereto, the boxes 10 of different parties on the route having different locks. A second or outer set of rollers 74 is secured on the outer ends of the axles 70 and are contained in the space between the outer portion of the track members 60 and the track facing plates 63, but project outward beyond the hooked portion of the plates 63.

To disengage the lowermost of the boxes 71 from the hooked portion 63' of the track, I provide the depending casing 75 which is 25 carried by one of the posts 1, said casing having rising therefrom the supports 76 to which are slidably secured the vertical portions of the bars 77 having the forwardly inclined portions 78 terminating in the hooks 30 79 disposed to be in alinement with the slots 64 of the member 63, said members 77 having their lower ends connected by the cross bar 80 which is held in raised position by the springs 81 mounted on the studs 82 projecting upward from the cross bar through the bottom of the casing, said springs bearing against the heads 83 of the studs and against the bottom of the casing to resiliently support the cross bar.

In operation, as the carrier passes the station, the outer rollers 74 are engaged by the incline 78 which causes them to ride upward until the rollers 69 are in alinement with the 45 slot 64, and as the carrier continues to pass forward, the hooks 79 will prevent the forward movement of the box whose rollers 74 are engaged by the hooks 79 and the rollers 69 of said box will pass rearwardly through the slot 64. As the rollers pass through the 50 slot 64 they swing the latch member 65 outward to remove its lug arm 67 from the trackway 68 to allow another box to drop down into the hooked portion 63'. As the box 71 is released from the track it will ride down the incline 78 and drop into the casing or receptacle 75.

In the use of my mechanism it is intended that there shall be but two boxes for each 60 station on the route, one to be returned while one is left in the casing, and to prevent boxes being removed from the carrier after both of the boxes for said station have been delivered and have not been returned, I secure to the casing 75 the slidably mounted 65

rod 84 held in elevated position by the spring 85 and adapted to be engaged and depressed by the inclined block 86 depending from the frame. The member 84 is provided at its lower end with the spring latch 70 member 86' which engages one of the recesses 87 formed in the plunger 88 which is slidably supported by the casing and is held in raised position by the spring 89, the depression of the member 84 by the block 86 75 carrying the plunger 88 down therewith, a spring pressed detent 90 carried by the casing engaging the plunger to lock the same in its depressed position, while the spring latch 86 permits the member 84 to spring upward. 80 When the carrier passes over the member 84 a second time without the detent having been released to allow the plunger to spring upward as hereinafter described, the catch 86 will engage the projection 91 of the plunger 88 and will further depress said plunger, the plunger bearing against the cross bar 80 and forcing the same downward to draw the hooked members 79 to lie below the path of movement of the lower end of the track 63, 90 the detent 90 locking the plunger 88 in this second depressed position. It will thus be seen that the releasing member 77 will fail to engage the lowermost box of the carrier and the carrier will therefore pass the station without leaving a box. 95

To return the boxes to the main office, I suspend from the post 1 the inverted U-shaped frame 92 which spans the trackway and has the pair of vertically adjustable arms 93 provided with the forwardly opening hooks 94 to engage and hold the outer rollers 74 of the box to be returned, said arms having the spring pressed locking rods 95 with inclined lower ends 96 adapted 105 to be engaged by the rollers when forced forward out of the hooks 94 to raise the detent rods. Said rods 95 are connected by the flexible connections 97 with the detent 90, the raising of the rods by the insertion or removal of a box from the hook 94 releasing the detent 90 to allow the plunger 88 and thus the member 77 to rise into operative position. The upper forward ends of the track plates 63 have the beveled flaring jaws 115 98 to engage the inner rollers 69 of the box supported by the hooks 94, said rollers being forced inward into the main portion of the track by the resistance of the spring 99 of the detent member 95 and the track members 120 being provided with a spring pressed detent 100 for preventing outward jolting of the uppermost box in the track.

From the foregoing description taken in connection with the drawings, the construction of my improved delivery and collection apparatus will be readily understood, and it will be seen that I have provided an improved carrier which will serve to deliver a box at each station and to collect a box at the 130



station without pausing in its forward movement, being automatic in its operation, and it will further be observed that my carrier so collects the various boxes that they will be  
 5 contained in the carrier in the order in which they are to be delivered on the following trip and it will further be observed that the construction of the ends of the box and the spaces between the convolutions are such that  
 10 the boxes may be unlocked and their covers swung upward to permit of the removal of the contents of the boxes or the refilling thereof without removing the boxes from the carrier, thus greatly expediting the use of  
 15 the carrier.

I claim:

1. An aerial carrier, comprising a suspended track, a second suspended track parallel to the first, a frame, supporting wheels  
 20 depending therefrom and riding on the second track, brackets rising from the frame, supporting wheels journaled in said brackets and riding on the first track, spring pressed trolleys pivoted to the frame and bearing  
 25 against the under side of both tracks for retaining the supporting wheels thereon, zig-zag track ways formed in the frame, boxes having rollers engaged in said trackways, and means secured adjacent the lower sup-  
 30 porting track for disengaging the lowermost box from the trackway of the frame.

2. The combination with a supporting track, of a frame having wheels moving on said track, means for driving the wheels to  
 35 propel the frame, a trackway formed in the frame, flaring front jaws for said trackway, brackets suspended on each side of the supporting track, open hooks formed on the lower ends of the brackets to lie in aline-  
 40 ment with the flaring jaws of the frame, and a box having an outer pair of rollers for engagement in the hooks and an inner pair of rollers to be engaged by the said flaring jaws to guide them into the trackway.

3. The combination with an upper and a lower suspended track, of a frame having supporting wheels engaged on said tracks, spring pressed guide trolleys carried by the  
 45 frame and bearing against the under face of the tracks, a motor in the frame, storage batteries secured on the frame to provide an impelling current for the motor, connections between the motor and the supporting  
 50 wheels for driving the same, means for automatically controlling the resistance controlling lever to regulate the speed of the carrier, means for delivering a receptacle to the carrier frame as it is impelled by the motor, and means for removing a receptacle  
 55 from the lower portion of the carrier frame.

4. The combination with a plurality of supporting posts, of brackets projecting therefrom, an aerial track carried by the

brackets, a carrier frame having wheels running on said track, a zig-zag trackway  
 65 formed in the frame and having flaring jaws at its upper end, supporting brackets secured to the posts and depending on each side of the track, receptacles having double  
 70 rollers secured to each end thereof, the outer roller of the double roller being adapted to be engaged by the supporting brackets until the inclined jaws engage the inner  
 75 roller, and means carried by certain of the posts for disengaging the lowermost box from the trackway of the carrier frame, said means including hooks for grasping the outer rollers.

5. The combination with an aerial carrier having a trackway formed therein, of a plu-  
 80 rality of boxes, said boxes having a roller secured on each end for engagement in the trackway and a roller on each end exterior to the rollers in the trackway, a hook shaped lower track plate at the end of the trackway,  
 85 and a releasing device for disengaging the box whose rollers rest in the hook shaped plate, said releasing device including an inclined arm for engaging the outer rollers  
 90 of the box to raise the box with its inner rollers above the hook of the track, and a hook formed at the end of said inclined arm for preventing forward movement of the box.

6. The combination with an aerial track,  
 95 of a carrier mounted on and depending therefrom, said carrier having an inclined track formed therein, brackets depending at the sides of the supporting track, a receptacle, an axle passing through the receptacle a  
 100 pair of rollers mounted on each end of the axle, the outer rollers being disposed to fit in the lower ends of the depending brackets and the position of the inner rollers being  
 105 such as to fit the track in the carrier, a spring detent for temporarily securing the outer rollers to the depending brackets, means including hook members for engaging the outer rollers to remove the box carrying the same from the lower end of the in-  
 110 clined track, means carried by the carrier for forcing the box removing means into inoperative position, a detent for locking the removing means in inoperative position, and connections between the detent of the  
 115 brackets and the locking detent, whereby the disengaging of the outer rollers from the depending brackets releases the locking detent to allow the box removing mechanism to return to operative position.  
 120

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

IRVING W. CUMMINGS.

Witnesses:

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