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PATENTED APR. 3, 1906.

M. DANNER.  
ELECTRIC AUTOMATIC MAIL CARRIER.

APPLICATION FILED AUG. 8, 1905.

4 SHEETS—SHEET 1.

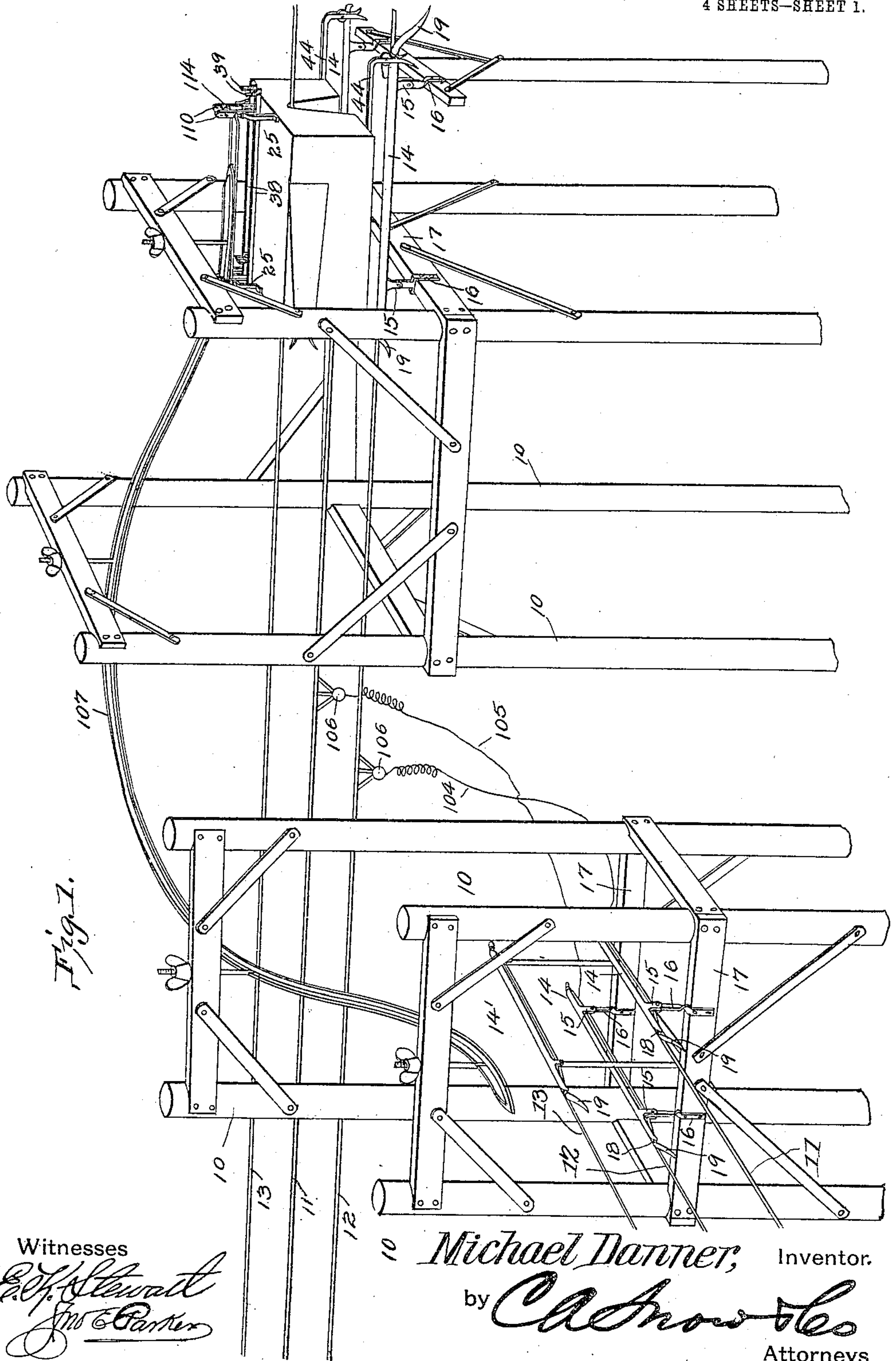


Fig. 1.

Witnesses

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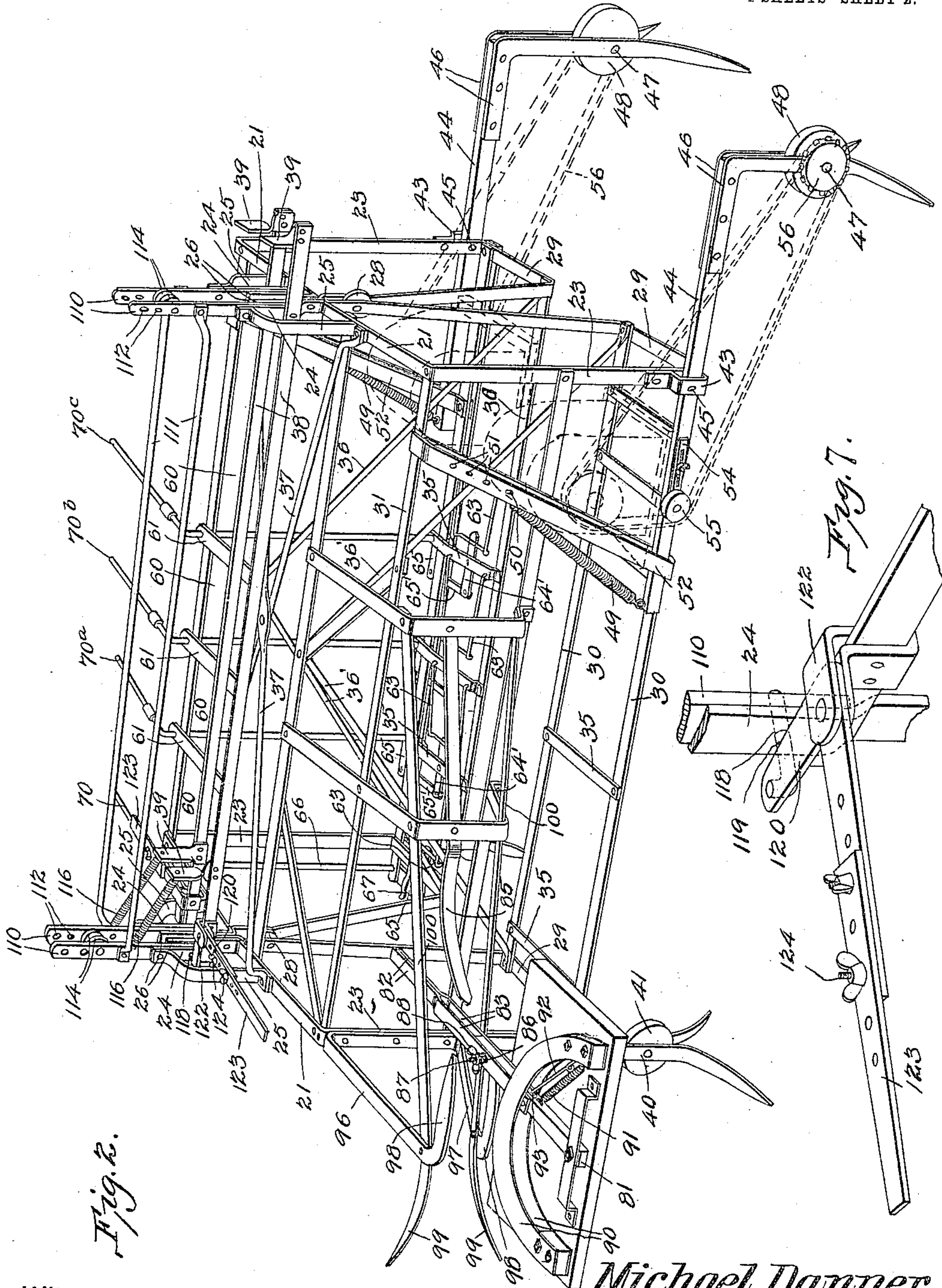
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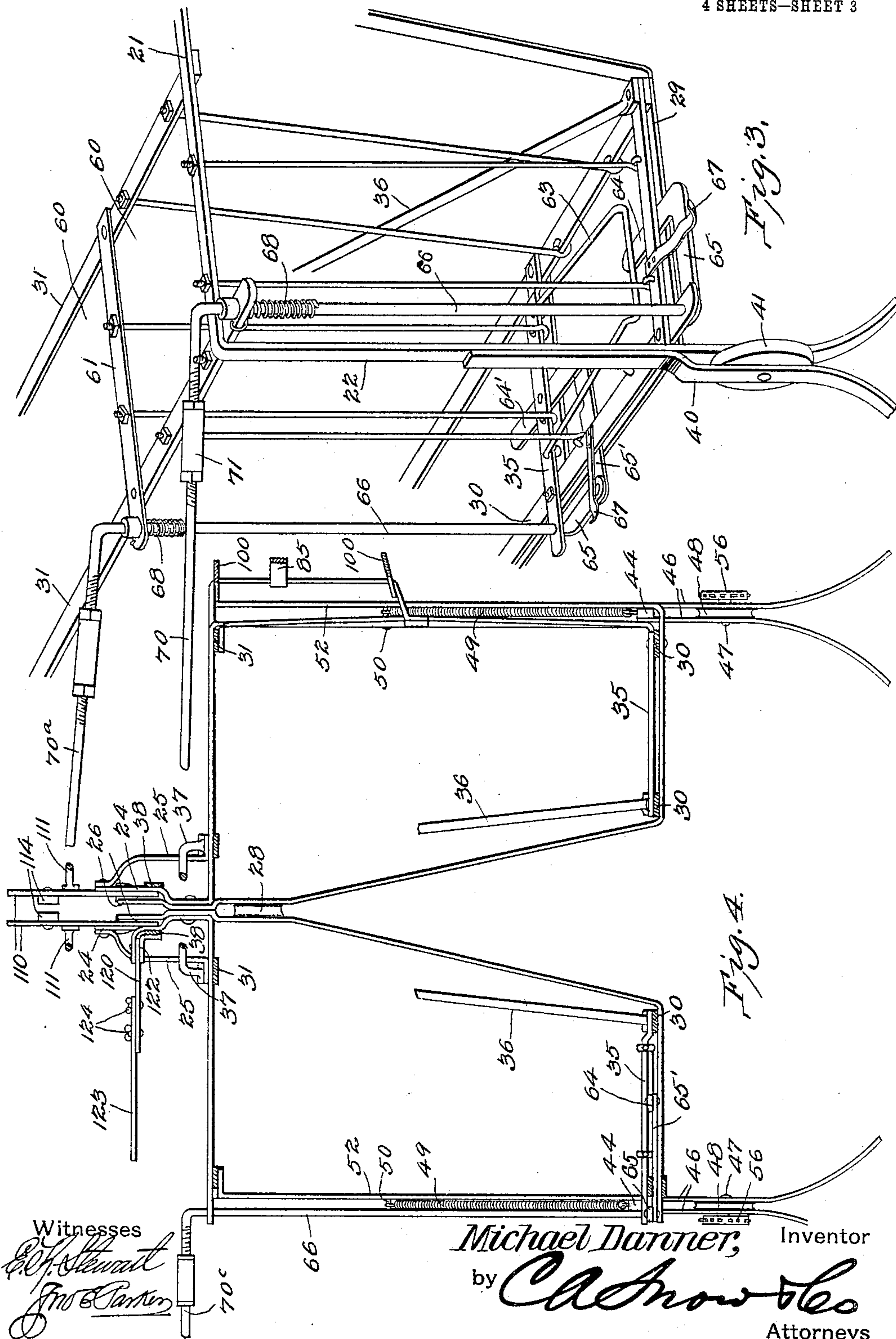
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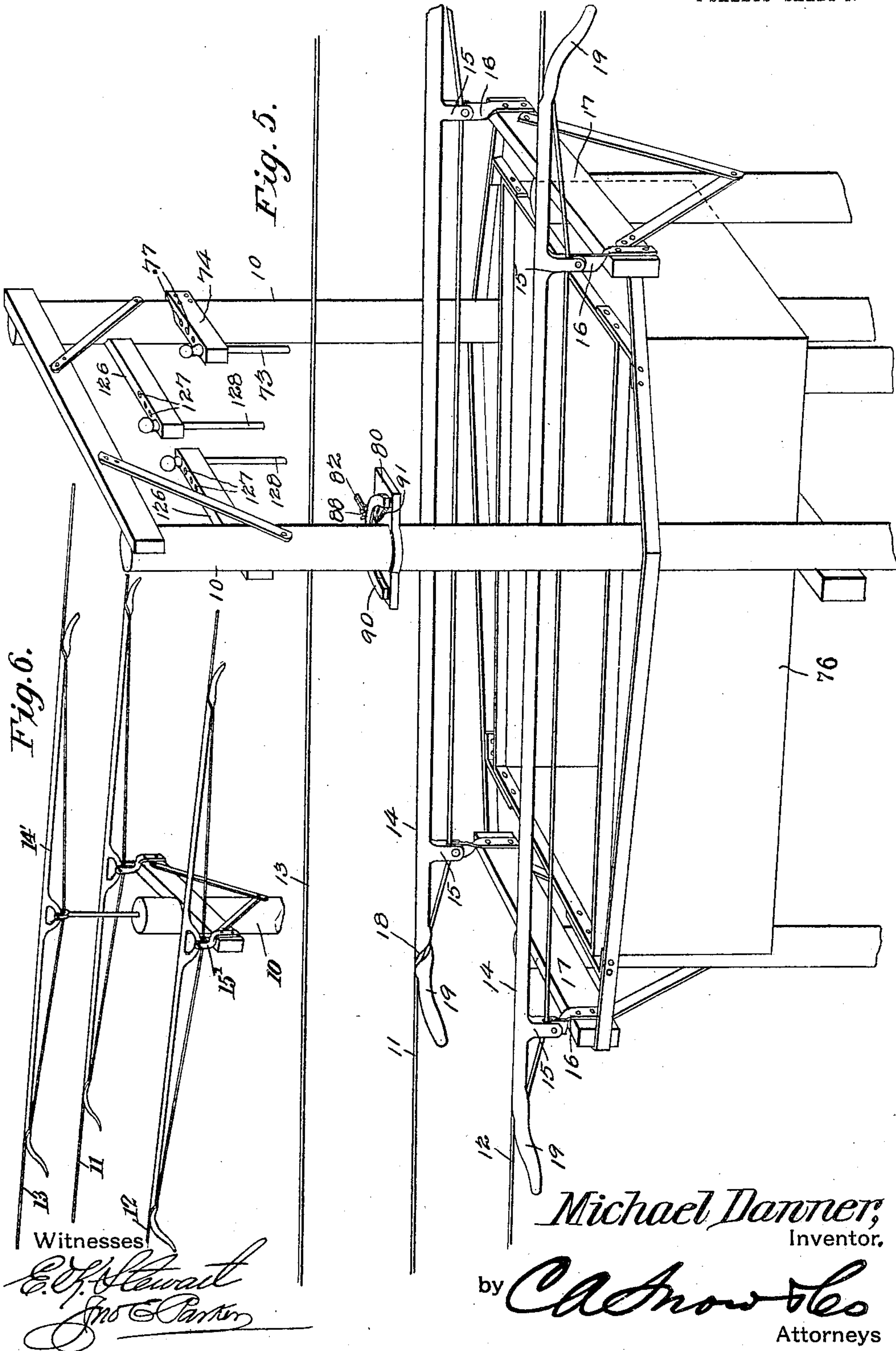


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4 SHEETS—SHEET 4.





# UNITED STATES PATENT OFFICE.

MICHAEL DANNER, OF PANOLA, ILLINOIS.

## ELECTRIC AUTOMATIC MAIL-CARRIER.

No. 816,649.

Specification of Letters Patent.

Patented April 3, 1906.

Application filed August 8, 1905. Serial No. 273,275.

*To all whom it may concern:*

Be it known that I, MICHAEL DANNER, a citizen of the United States, residing at Panola, in the county of Woodford and State of Illinois, have invented a new and useful Electric Automatic Mail-Carrier, of which the following is a specification.

This invention relates to telpher systems, and has for its principal object to provide means for delivering mail or other articles at different stations and for collecting mail at different stations, the apparatus being of especial value in connection with rural free-delivery systems and being so arranged that a car or carrier may be sent out from a centrally-located post-office and deliver and collect mail at a large number of outlying stations.

A further object of the invention is to provide in an apparatus of this class for the automatic switching of the cars or carriers from a main line to a branch line where necessary and to provide for the return of such cars or carriers to the main line without interfering with the movement of carriers on the main line.

A further object of the invention is to provide means for automatically controlling the entrance of a carrier to either a main or branch line.

A still further object of the invention is to provide improved means for effecting the automatic delivery of mail at distant stations along the line and, further, to collect mail at the same or different stations.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a general perspective view of a telpher system arranged and constructed in accordance with the invention and illustrating more especially the connections between a main and a branch line. Fig. 2 is a detail perspective view of the framework of one of the carriers, the outer casing being removed. Fig. 3 is a similar view of a portion of one of the carriers,

illustrating more clearly the mechanism for delivering the mail at one of the stations. Fig. 4 is a transverse sectional elevation of the carrier. Fig. 5 is a detail perspective view showing the mechanism at one of the stations for receiving the mail from a carrier, for holding mail to be collected by a carrier, the mechanism for shifting the mail-holding devices of the carrier, and the means for shifting the mechanism which controls the passage of a carrier to a branch line. Fig. 6 is a detail view illustrating the pivotally-mounted bars, which form the connections between the wires and the supporting-posts. Fig. 7 is a detail perspective view of one of the arms controlling the locking and unlocking of the arms which support the switch-rail wheels.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

In carrying out the present invention suitable posts 10 are arranged at intervals for the support of three wires 11, 12, and 13, the wires 11 and 12 being arranged, preferably, in the same horizontal plane and the wire 13 being arranged above and in a vertical plane midway between the vertical planes of the two wires 11 and 12. One of these wires, generally wire 11, serves to conduct a current from a central station to the carrier or carriers mounted on the wires, while another wire, generally the wire 12, serves as a return-conductor.

At each of the stations where the carrier comes into contact with the stationary members, either for the purpose of depositing or collecting mail or for tripping the branch-line mechanism, the lower wires 11 and 12 are continued in the form of rails 14, the rails being of sufficient strength to resist the strain of operation. These rails 14 are formed of metallic bars having pendent lugs 15 near their opposite ends, and these lugs are secured to vertical standards 16, carried by cross-trees or similar supports 17. Near the opposite ends of these bars are grooves 18 for the passage of the wires, the grooves being so arranged that the wires will be in alinement with the bars in order not to interfere with the free passage of the carriers. The forward end portions of the bars are provided with downwardly and forwardly deflected arms 19, which serve as guiding members to engage the wheels of the carriers as the latter approach the bars in case the wires are sagging



or in case of breakage of one or both of the lower wires. The upper wire 13 may also be provided with one of these bars 14', the bar in this case being supported by a vertical standard 20 in order not to interfere with the passage of the carrier. Each of the cars or carriers has an iron or steel frame covered and protected by a suitable sheathing of iron or other material, and each carrier is provided with wheels arranged to run on the several wires 11, 12, and 13.

In the construction of the carrier two end frames 21 are formed, each of these comprising outer vertical bars 23, the upper ends of which are bent inward in an approximately horizontal plane and thence upward to form a pair of spaced vertical bars 24, which are braced by short bars 25. Between the bars 24 are clamped the upper ends of a pair of bars 26, the upper portions of which are arranged in parallel relation and have bearings for the reception of the spindle of a grooved supporting-wheel 28. The bars 26 flare outwardly beyond the wheel 28 and at their lower ends are connected to horizontal bars 29, the outer ends of which are connected to the lower ends of the bars 23. The end frames are connected by lower horizontal bars 30 and upper horizontal bars 31, the lower sets of bars being connected by cross-braces 35, which form at the rear portion of the frame supports for a pair of electric motors 36. The lower ends of the frame are connected to the central portion of the upper frame by inclined cross-bars 36', and the end frames 21 are further connected by cross-braces 37 and by a pair of longitudinally-disposed parallel bars 38, the latter being provided with lower vertical brackets 39, arranged at or near their ends and serving as stops for portions of the mechanism which controls the passage of the carrier to and from the branch lines.

The vertical bars 23 at the front end of the frame are continued down below the bars 29, and to these bars 23 are secured auxiliary bars 40. The two bars 23 and 40 are continued in parallel relation for some distance below the main frame and are provided with openings for the reception of the spindles of grooved wheels 41, which run on the lower wires 11 and 12. The lower ends of these bars are then flared outward in order to form guides, which will permit the ready placing of the carriers in place on the wires. These wheels 41 may be formed of insulating material or may be insulated from the frame, if desired.

The rear bars 23 are provided at their lower ends with brackets 43, slightly spaced from the bars 22 for the passage of levers 44, which are pivoted on pins 45, passing through the brackets. The rear end of each lever is provided with a pair of downwardly-extending parallel arms 46, having bearing-open-

ings for the reception of the spindle 47 of a grooved wheel 48, these wheels running on the wires 11 and 12 and being formed of conducting material. The lower ends of the bars 46 are flared outward at points below the wheels in order to assist in properly centering the carrier on the wire. The front end of each of the levers 44 is connected by a spring 49 to a pin 50, that may be adjusted into any one of a number of openings 51, formed in a pair of parallel bars 52, that constitute a part of the framework and serve as guides for the front end of the lever. The spring serves to force the rear end of the lever downward, and thus hold the wheel 48 in contact with the wire should the wire become slack. This bar, moreover, carries a bracket 54, that supports a slack-take-up wheel 55, over which passes a driving-belt leading from the motor to a wheel 56 on the spindle 47, and the bracket may be adjusted in order to take up all slack in the belt. In practice this belt may be in the form of a link belt, and the wheels 56 may be sprocket-wheels, if desired.

In practice the carrier is divided into two main compartments, one of which contains the mail to be delivered and the other serving to receive the mail collected at the different stations. The delivery-space is divided into a number of compartments, each arranged for the reception of a mail-box, by means of vertically-disposed slots 60, extending between upper cross-bars 61 on the frame and the lower cross-bars 35, the latter being arranged in superposed pairs at each side of the machine. To the lower of the first pair of bars from the front of the machine are pivoted the rear ends of a loop 63, formed of heavy wire and constituting a movable bottom for the receptacle in which the mail-box is held. The front end of this loop is supported by rearwardly-extending portion 64 of a rocker-arm 65, that is secured to the lower end of a vertically-disposed shaft 66, and said arm is normally held in operative position by a spring-catch 67, secured to the frame and extending over said arm. The shaft 66 is arranged in suitable bearings formed in the frame and carries a torsion-spring 68, one end of which is connected to the shaft and the other end to one of the shaft-bearings, and the spring tends normally to turn the shaft in such manner as to withdraw the arm 64 from below the supporting bail or loop 63, this being prevented by the catch. Extending from the upper end of the shaft 66 is an arm 70, which may be adjusted by a suitable nut 71 in order to vary the distance between the extreme outer end of the arm and the side of the frame. The arm 70 is held outward in a plane at a right angle to the longitudinal plane of the wires, and on the arrival of the mail at a station where mail is to be delivered this arm is engaged by a pin 73, carried by an arm 74, pro-



jecting from one of the supporting-posts or other support. As soon as this occurs the arm 70 is thrown rearward and the shaft is turned, pulling the arm 64 from beneath the  
 5 bail or loop 63, allowing the mail to fall in a basket 76, supported beneath the wires, Fig. 5. The construction of the mechanisms for delivering mail at the rear of the first of the delivery mechanisms is practically the same,  
 10 with the exception that levers 64' take the place of the arms 64 and are connected to the arms 65 by means of links 65'. In the present instance the several delivery mechanisms are shown as provided with arms 70, 70<sup>a</sup>,  
 15 70<sup>b</sup>, and 70<sup>c</sup>, and these are of successively-increased length, the arm 70 being shortest and the arm 70<sup>c</sup> longest. At each station where mail is to be delivered is arranged one of the arms 74 and one of the pins 73. This  
 20 pin is adjusted into any one of a number of openings 77, carried by the arm, in order that it may trip the proper lever on the carrier. For the first station the pin will be adjusted in the opening 77 nearest the supporting-  
 25 post in order to engage the longer or rear-most arm 70<sup>c</sup>. At the second station the pin will be entered in the second hole in order to engage the second longest arm 70<sup>b</sup>, and so on, the shorter arm 70 being engaged by the  
 30 pin at the last station. When the arms are once moved and the loops are tripped, the arms are held in parallel relation with the car or carrier by means of the springs 68.

For the purpose of collecting mail there is  
 35 arranged at each station a support 80, to which is pivoted an arm 81, carrying two spring-fingers 82 and 83, the outer portions of the fingers constituting clamping-jaws between which the mail is placed, the latter be-  
 40 ing first placed in a mail-box or casing, and to the rear of the clamping-jaws the arms are spaced to permit the entrance of a separating-finger 85, arranged on the carrier. The clamping-jaws are held together by a  
 45 spring 86, surrounding a suitable bolt 87, which extends through the upper jaw, the stress of the spring being adjusted by means of a suitable wing-nut 88. The arm 81 is arranged between two superposed semicircular  
 50 guide-bars 90 and is engaged by a tension-spring 91, that tends normally to draw the arm around in the direction indicated by the arrow and out of the path of movement of the carrier. When the mail has been placed  
 55 between the jaws, the arm is thrust open to the position at a right angle to the longitudinal plane of the wires, being in the plane of the carrier, and is held in place by a spring-arm 92, the front end of which is hooked in  
 60 an opening formed in a small lug 83 at one side of the arm 81, and the parts are held in this position until the passage of the carrier.

Projecting from one side of the forward end of the carrier are two arms 96 and 97,  
 65 that are provided with rearwardly-curved

terminals 98, which, in connection with the flared terminals 99 of inclined brace-bars 100, form a passage into which the mail-collecting arms 82 and 83 are directed. The collecting-finger 85 projects from the carrier in a posi-  
 70 tion to enter the enlarged space between the two jaws, and in so doing the jaws are separated and the mail is removed from between them, after which the stress on the arm 81 causes spring-arm 92 to disengage from the  
 75 lug 93, and after the passage of the carrier the arm 81 will be drawn around to inoperative position and will remain in said position until further mail is to be deposited in the carrier.

In many cases it is desirable to switch the carrier to a branch line, where it may travel for some distance to deposit and collect mail at stations some distance from the main line and then return to the main line. Each of  
 85 the branch lines is of precisely the same construction as the main line, as will be seen on reference to Fig. 1, and is electrically connected thereto by the wires 104 105. Where the connections are made at a distance from  
 90 the bars 14, each of the wires 11 and 12 may be provided with a weighted pendent arm 106, electrically connected to the wire and electrically connected to the branch wire, as shown in Fig. 1.

In order to shift the position of the carrier, it is necessary to raise the latter clear of the upper wire 13, and for this purpose a switch-rail 107 is employed. This rail is in  
 100 the form of an inverted T in cross-section, and its entrance and discharge ends are arranged at suitable levels to engage wheels carried by the car, while the intermediate  
 105 portion of the switch is elevated to such an extent that the carrier will be raised clear of the wire 13, so that it may be crossed over the wires without touching the latter and be carried to the branch line.

Pivoted to the upper end of each of the bars 24 is a lever 110, these levers being con-  
 110 nected in pairs by bars 111, and each lever has a series of openings 112 for the reception of the spindle of a wheel 114, which latter is designed to travel on a switch-rail, the wheels being spaced from each other to permit their  
 115 traveling on the horizontal webs of the switch-rail. The forward pair of wheels are engaged by tension-springs 116, that tend to move the levers to the horizontal position, and when the forward levers are depressed  
 120 movement is transmitted to the rear levers through the rods 111, and when in this horizontal position the wheels 114 are below the switch-rail, so that the carrier may pass thereunder without being transmitted to the  
 125 branch line. In order to hold the levers in vertical position, the lower end of each of the front levers is provided with an opening 118, adapted to receive a locking-bolt 119, that is carried by a bell-crank lever 120, the latter  
 130



being pivoted to a bracket 122 on the frame. One arm of the bell-crank lever 120 is provided with an adjustable extension or arm 123, both the lever and arm having a plurality of openings for the passage of securing-bolts 124, so that the distance to which the arm extends may be adjusted in accordance with the branch line onto which the carrier is to be transferred.

10 Arranged at suitable points along the line are arms 126, having a plurality of openings 127 for the reception of pins 128, and these pins may be adjusted in order to trip the locking-bolts 119 on the car or carrier. By properly adjusting the arms 123 and the pins the movement of particular cars to particular branch lines may be accurately controlled, and any car may be arranged to travel on one or two or more branch lines and then return to the main line before being tripped and its passage to further branch lines prevented.

With a device constructed in accordance with this invention it is simply necessary to separate the mail in accordance with the different stations, placing the mail for one station in one of the receptacles and the mail for the second station in the second receptacle, and so on. The carrier is then started, and at each station will automatically deliver the mail belonging to that station, and at the same time the receiving side of the carrier will collect mail at different points in the route.

35 The several wires 11, 12, and 13 are connected to their supporting-posts in the manner shown in Fig. 6. In this case the bars 14' are provided with downwardly-extending loops that are pivoted to brackets 15' on the cross-trees or other support, and these bars may swing on their pivotal supports to accommodate slack or taut wires.

Having thus described the invention, what is claimed is—

45 1. In a telpher system, line-wires extending between stations and forming carrier-supports, rigid bars connected to the wires and in alinement therewith, said bars forming carrier-supports at the stations, each bar having downwardly-bent end portions forming guards or guides for directing the wheels of the carrier on to said bars.

2. In a telpher system, a carrier having a plurality of independent compartments each provided with a movable bottom portion, trip-arms of different length carried by the car and connected to said bottoms, and means for engaging said trip-arms to effect the opening of the bottoms and the discharge of the contents of the receptacles.

60 3. In a telpher system, a carrier having a plurality of receptacles, tripping mechanisms for controlling the dumping of said receptacles, said tripping mechanisms extending, respectively, different distances from the car, and means at the different stations arranged

to be engaged by said tripping mechanisms to effect the discharge of the receptacles at the proper stations.

4. In a telpher system, a carrier having a plurality of independent receptacles, and a pivoted bottom for each receptacle, a latch for holding the bottom in closed position, a vertically-disposed shaft connected to the latch, an adjustable arm extending from the shaft, and arm-engaging members arranged along the line.

5. In a telpher system, a carrier having a plurality of independent receptacles, a pivoted bottom for each receptacle, a latch holding the bottom in closed position, a vertically-disposed shaft connected to the latch, an adjustable arm extending from the shaft, means arranged along the line for engaging the arms, and a spring acting on each shaft and tending to move the arm of said shaft into parallel relation with the carrier.

6. In a telpher system, a carrier having a plurality of independent receptacles, a pivotally-mounted loop forming the bottom of each receptacle, a vertically-disposed shaft having bearings in the frame of the carrier and provided with loop-supporting arm, a holding-spring engaging said arm and tending to maintain the same in loop-engaging position, a trip-arm carried by the shaft and extending outward from the side of the carrier in position to be engaged by a tripping-lever on the line, and a spring arranged on the shaft and tending normally to move the tripping-arm into parallel relation with the carrier.

7. In a telpher system, the combination with the line-wires, of a carrier mounted thereon and provided with a collecting-receptacle, article-clamping jaws arranged at different points along the line and adjustable into the path of movement of the carrier, and a jaw-spreading arm supported by the carrier and serving to open said jaws and effect the discharge of the articles into said receptacle.

8. In a telpher system, the combination with the line-wires, of a carrier having a collecting-receptacle, article-clamping jaws arranged at stations along the line, a swinging arm for the support of each pair of jaws, means for holding said arm with the jaws in the path of movement of the carrier, and a jaw-spreading arm supported by said carrier and movable between the jaws to effect the discharge of the articles carried thereby.

9. In a telpher system, the combination with the line-wire, of a carrier having a collecting-receptacle, article-clamping jaws arranged at different points along the line, a spring tending normally to hold the jaws together, an arm supporting the jaws, a support to which said arm is pivoted, a pair of guides for the arm, a spring tending normally to hold the arm in operative position, a locking device for holding the arm with the



jaws in the path of the carrier, and a jaw-spreading arm supported by the collector and arranged to open the jaws and remove the articles therefrom.

5 10. The combination with a movable car or carrier having an article-receptacle, of a pair of guard-arms projecting from the carrier, a collecting-arm arranged between the guard-arms, and article-supporting members  
10 arranged at different positions along the line and engageable by the collecting-arm as the car passes the stations.

11. In a telpher system, the combination with the line-wires, of a frame having a plu-  
15 rality of pairs of wheels running on the wires, levers pivoted to the frame, and carrying one of the pairs of wheels, and springs engaging said levers and tending to force said wheels into engagement with the wires.

20 12. In a telpher system, a line comprising three wires, two arranged in a horizontal plane, and the third in a plane above and between the other two, a carrier having a recessed central portion to straddle the third  
25 wire, and supporting-wheels arranged on the carrier and running on all of the wires.

13. In a telpher system, a main line, and a branch line, each comprising a plurality of parallel wires, a carrier having wheels run-  
30 ning on said wires, a switching member in the form of a rail leading between the main and branch lines, and auxiliary wheels mounted on the carrier and arranged to engage and travel on said rail.

35 14. In a telpher system, a main line, and a branch line, each provided with a plurality of parallel wires, a switch-rail extending over the wires, and forming a connecting means between the two lines, a carrier having  
40 wheels running on the line-wires, auxiliary wheel-supports on said carrier, wheels mounted thereon and adapted to travel on the switch-rail, and means for automatically tripping said supports and lowering the  
45 wheels to prevent the passage of the carrier to the branch line.

15. In a telpher system, a main line, a branch line, each line including a series of

parallel wires, a wheeled carrier arranged to travel on the wires, a switch-rail extending 50 over and connecting the two lines, pivotally-mounted wheel-carrying arms on the carrier, wheels arranged on said arms and adapted to travel on the switch-rail, springs tending nor-  
55 mally to lower said arms, and move the wheels to a position below the switch-rail, locking devices for maintaining said arms in elevated position, adjustable trip-arms con-  
60 nected to said locking device, and trip-engaging devices arranged at different points along the line.

16. In a telpher system, the combination with main and branch lines, each including a plurality of parallel wires, a switch-rail ex-  
65 tending over the two lines, said rail being of T shape in cross-section, a wheeled carrier arranged to travel on the wires, a pair of sets of pivoted arms mounted on the carrier, means for connecting the arms for mutual  
70 movement, wheels carried by said arms and adapted to travel on the horizontal web of the T-rail, springs tending to depress the arm, a locking-bolt for holding said arms in upright position, a bell-crank lever connected  
75 to the bolt, and an adjustable arm connected to the bell-crank lever and arranged to be engaged by trips or stops at different points along the line.

17. In a telpher system, line-wires, a sup-  
80 port, and a track-bar pivoted at a point intermediate of its ends to said support and free for swinging movement in a vertical plane and provided at its ends with means for engaging the wire.

18. In a telpher system, a pivotally-  
85 mounted track-bar forming a connection between the line-wire and its support, said bar being free for swinging movement in a vertical plane.

In testimony that I claim the foregoing as  
90 my own I have hereto affixed my signature in the presence of two witnesses.

MICHAEL DANNER.

Witnesses:

ANDREW L. WILTZ,  
JOHN C. McINTOSH.