

No. 829,623.

PATENTED AUG. 28, 1906.

H. J. BOLINSKI.

MAIL CARRIER.

APPLICATION FILED APR. 2, 1906.

5 SHEETS—SHEET 1.

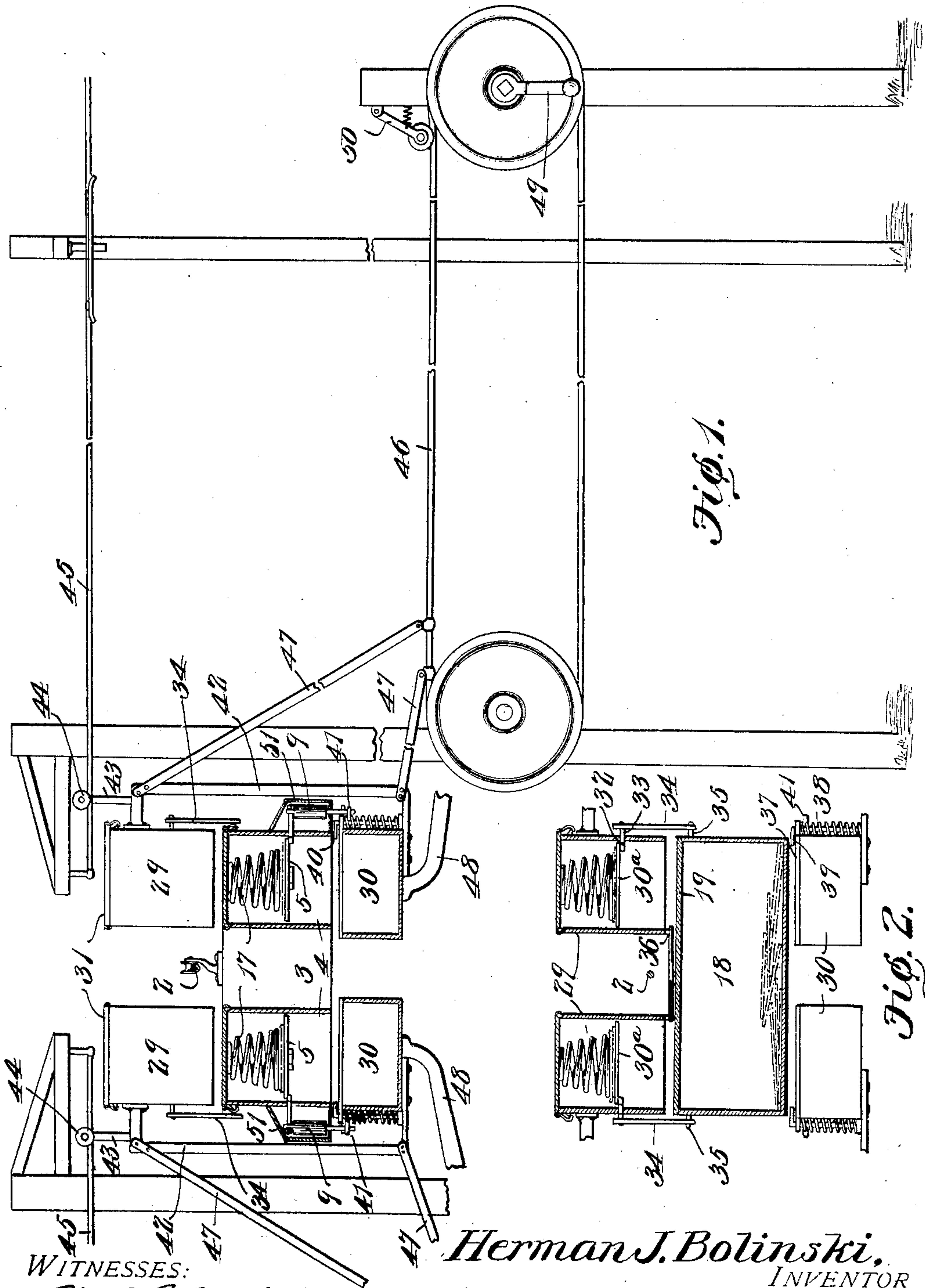


Fig. 1.

Fig. 2.

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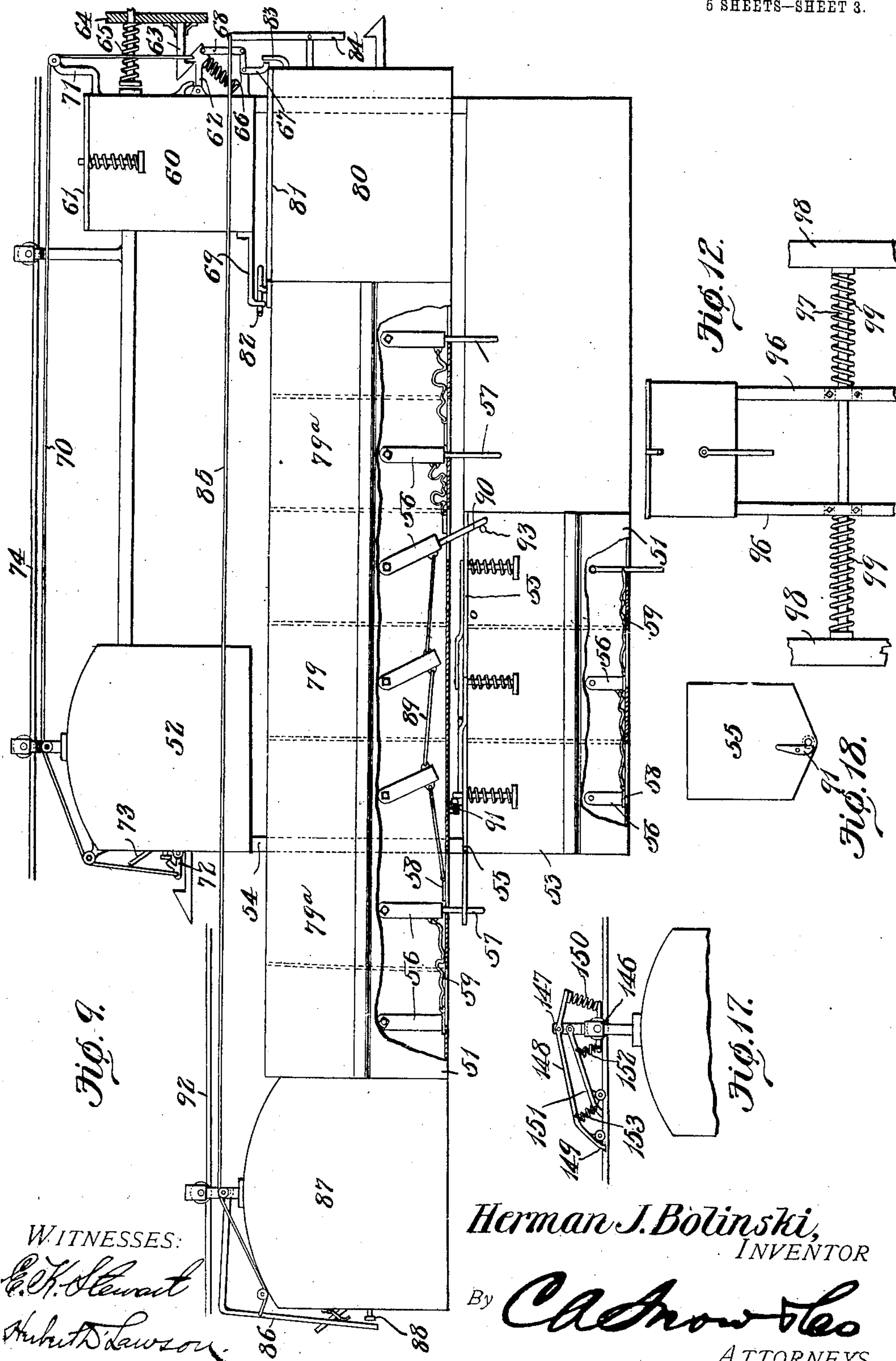
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6 SHEETS—SHEET 3.



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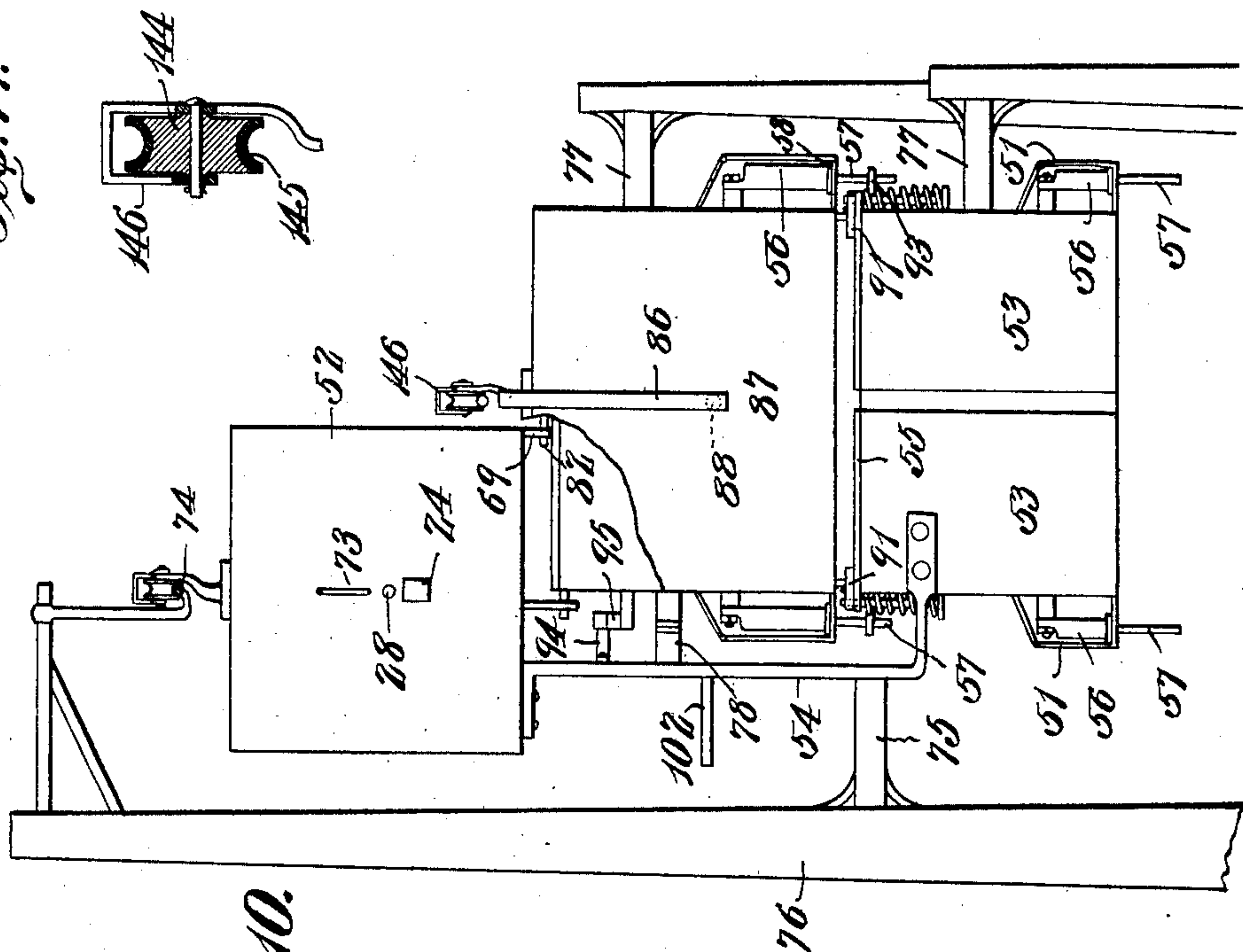
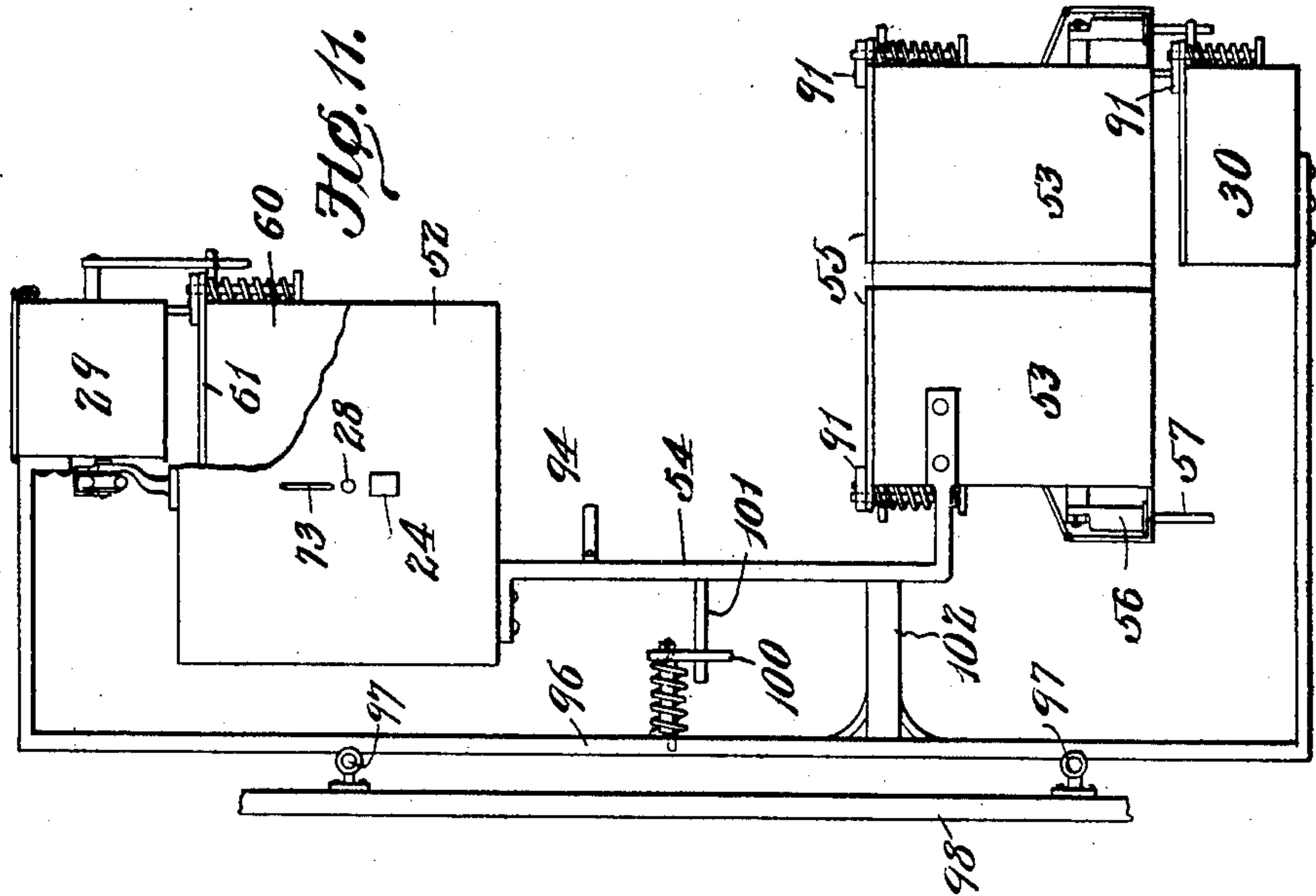
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5 SHEETS—SHEET 4.



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5 SHEETS—SHEET 5.

Fig. 13.

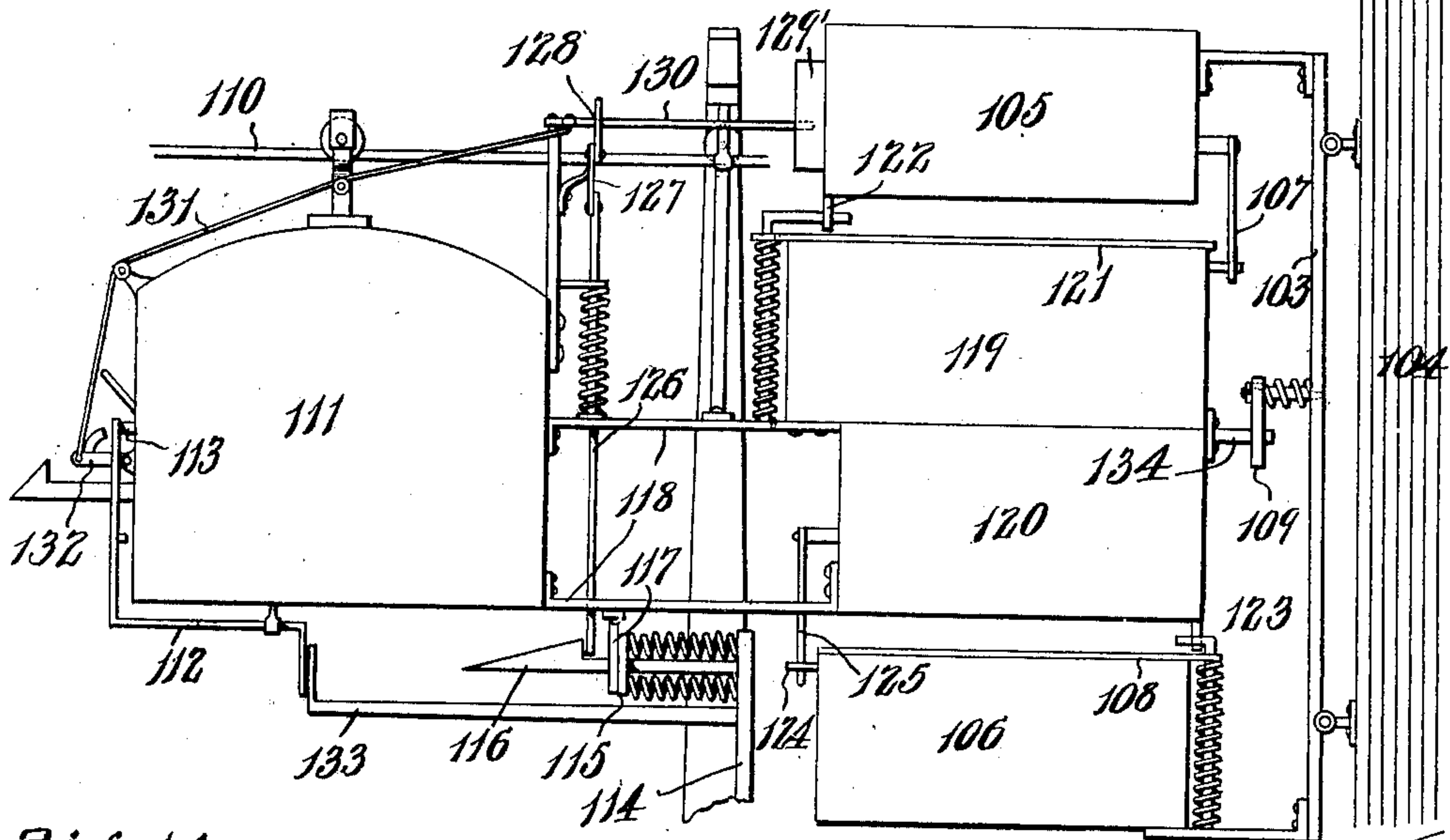


Fig. 14.

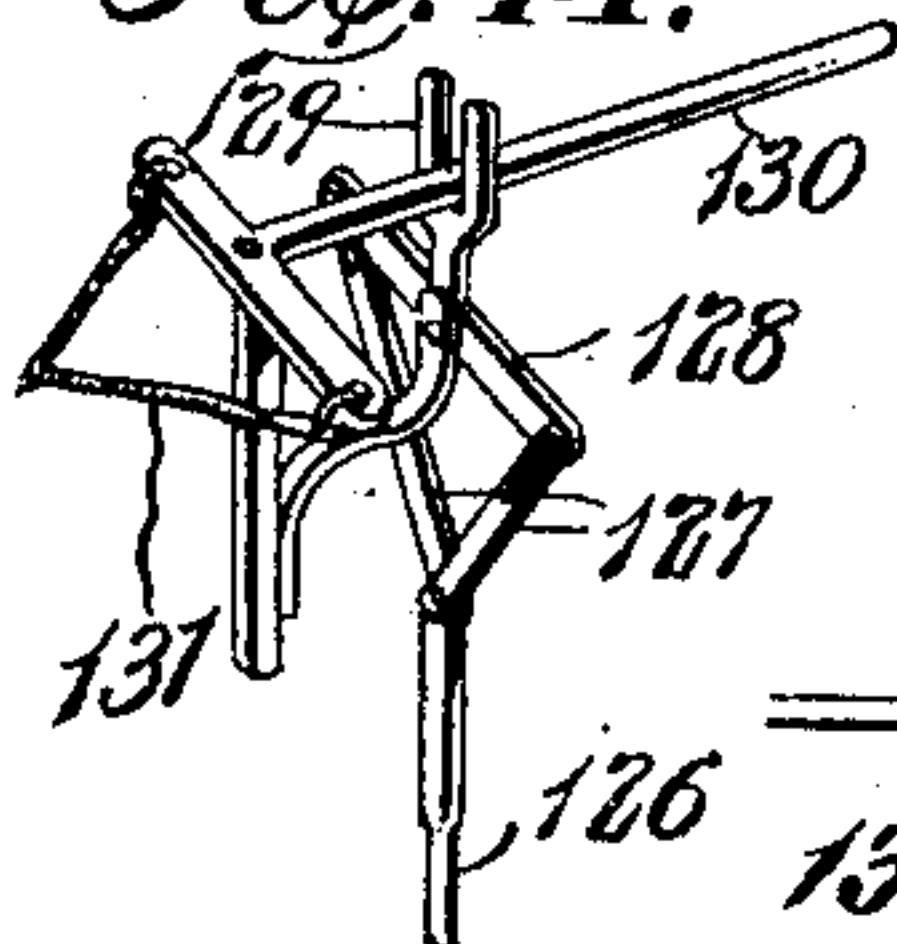


Fig. 15.

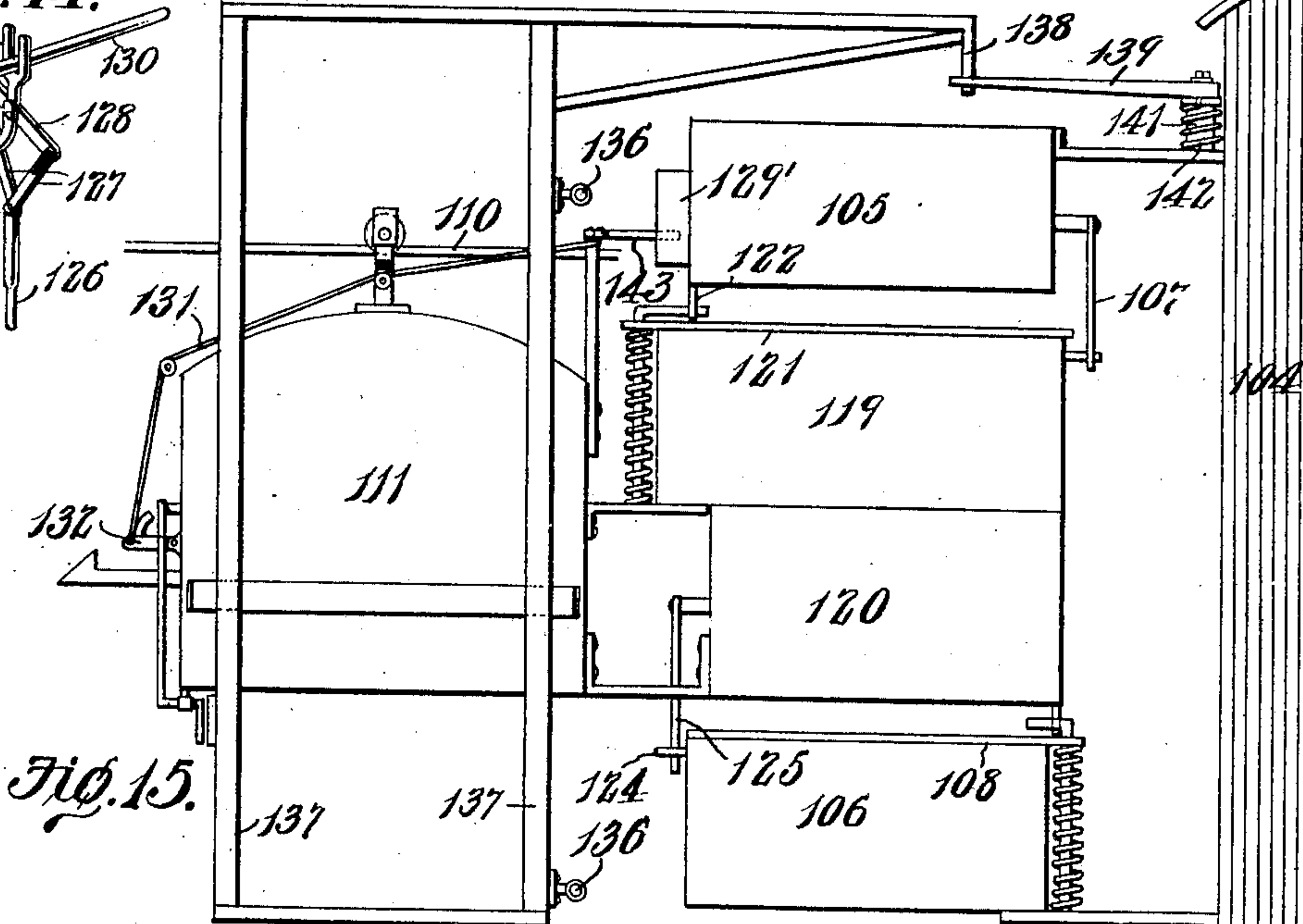
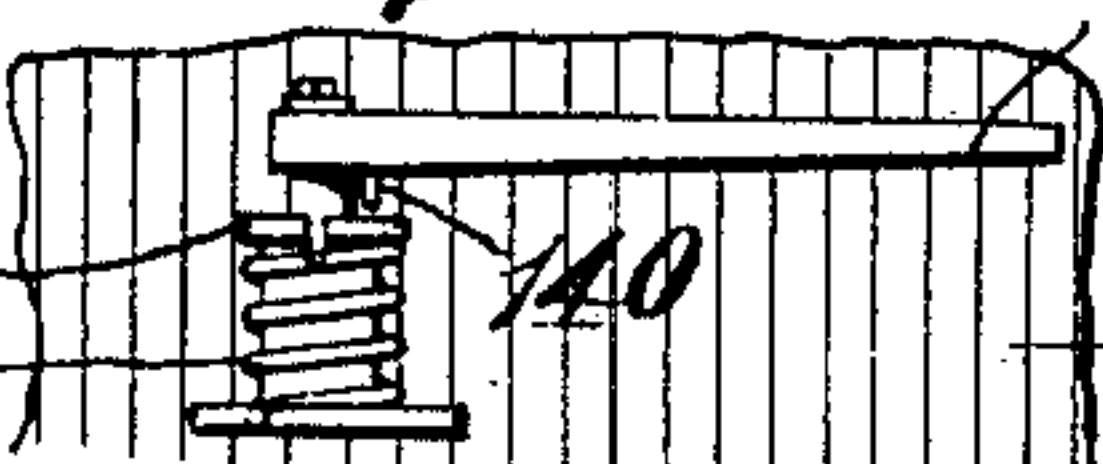


Fig. 16.

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UNITED STATES PATENT OFFICE.

HERMAN J. BOLINSKI, OF NEW LONDON, WISCONSIN.

MAIL-CARRIER.

No. 829,623.

Specification of Letters Patent.

Patented Aug. 28, 1906.

Application filed April 2, 1906. Serial No. 309,423.

To all whom it may concern:

Be it known that I, HERMAN J. BOLINSKI, a citizen of the United States, residing at New London, in the county of Waupaca and State of Wisconsin, have invented a new and useful Mail-Carrier, of which the following is a specification.

This invention relates to apparatus for use in rural districts for the purpose of collecting and delivering mail at predetermined points, such collection and delivery being automatic.

Another object is to provide means whereby a series or train of delivery-boxes can be directed over a predetermined route and said boxes will be opened automatically and in proper succession when they assume positions above private collection-boxes which are adapted to be brought into the path of the train at points along the route.

A still further object is to combine with the train a collection-box which is adapted to automatically receive from private delivery-boxes any mail or parcels which may be deposited therein.

The apparatus is designed as a substitute for the rural mail-carriers. It consists of a train of delivery-boxes and a collection-box, one delivery-box being provided for each place of mail distribution along the route, and this train of boxes, together with a motor for pulling it, is adapted to be supported by a cable, which can extend for any suitable distance and which makes a circuit beginning at a post-office or other point where mail is to be received and from which it is to be distributed. Each delivery-box is provided with novel means for instantaneously projecting its contents when the bottom of the box is released, and mechanism is provided whereby the bottoms of the different boxes can only be released successively, thereby insuring the delivery of mail only at the points intended. Arranged along the route are private boxes arranged in pairs, one box of each pair constituting a private delivery-box and the other a private receiving-box. The delivery-box has means upon it for automatically opening the receiving-box of the train when it assumes a position thereunder and for instantaneously projecting the contents of the delivery-box into the collecting-box. The private receiving-box has means for tripping mechanism upon the proper delivery-box of the train, whereby as soon as said box assumes a position above the receiving-box the contents thereof will be projected into

said receiver. The private boxes can be stationary or can be mounted on supporting-cables and provided with means whereby they can be conveyed from a residence down to the mail-carrying line and into position to deliver and receive mail, after which it can be operated to convey the mail back to the house.

The invention also consists of certain other novel features of construction and combinations of parts, which will be hereinafter more fully described, and pointed out in the claims.

In the accompanying drawings is shown the preferred form of the invention.

In said drawings, Figure 1 is a side elevation of a portion of the carrier for conveying the private receiving and delivery boxes into the path of the mail-carrier, two of these conveyers being shown in position at opposite sides of the main carrier, which is shown in section, one of the private receiving-boxes being shown in section. Fig. 2 is a section through the private delivery-boxes and through the collection-box of the main carrier, the private receiving-boxes being shown in elevation. Fig. 3 is a side elevation of the collection and delivery train, a portion of the same being removed and a part of the delivery mechanism being shown in section. Fig. 4 is an enlarged section through one of the private boxes and showing the positions occupied by the bottom thereof prior to the discharge of mail. Fig. 5 is a similar view showing the positions assumed by the bottom sections subsequent to the discharge of mail. Fig. 6 is a detail view of the lock of the bottom sections. Fig. 7 is a plan view of one of the private receiving-boxes. Fig. 8 is a similar view of the collecting-box of the train. Fig. 9 is a view showing a main train and a branch train adapted to exchange mail while the main train is in motion and whereby a branch train, stationed along the route of the main train can be started on an independent route and automatically deliver mail received thereby. Fig. 10 is an end elevation showing the two trains in position while receiving and delivering mail. Fig. 11 is an end elevation of the branch train in position for receiving mail from and delivering it to private boxes along its route. Fig. 12 is an elevation of a private delivery-box and showing a portion of the slidable frame on which it is mounted. Fig. 13 is a view showing means whereby mail may be delivered to and from a moving railway-car. Fig. 14 is a de-

tail view of mail-actuating levers for use in connection with said modification. Fig. 15 is a view of a modified form of mechanism for receiving and delivering mail to and from a moving railway-car. Fig. 16 is a detail view of a frame-actuating arm for use in connection with the modification shown in Fig. 15. Fig. 17 is a detail view of an ice-cutter adapted to be used upon the motors of the mail-carriers. Fig. 18 is a detail view of a tripping-dog for use on each delivery-box of the main train, and Fig. 19 is an enlarged section through the propelling-wheel of the motor.

Referring to the figures by numerals of reference, 1 1 are posts arranged along a route to be traversed by the collecting and delivering train, and these posts support a cable 2, from which is suspended a motor 3, which is connected to parallel series of delivery-boxes 4. Each of these boxes is provided at a point midway its height with oppositely-arranged hinged bottom sections 5, which sections are hinged to the front and rear walls, respectively, of box 4 and are supported normally at their adjoining edges upon a block 6, one end of which is rounded, as shown at 7. This block is secured to a stem 8 and rotatably mounted in one side wall of the box and having a cylinder 9 depending therefrom. In this cylinder is mounted a weight 10, from which projects an arm 11, which is normally supported on a slide 12, mounted on a suitable guide 13, arranged along the side wall of the box. Each one of the boxes is provided with this mechanism, and each of the slides 12 has an arm 14 pivoted to it and formed with a tubular extension 15, in which is slidably mounted a rod 16, connected to the cylinder 9 upon the adjoining box and nearest the rear end of the train. The rear box 4 of each series has no support 12 for its arm 11, but instead said arm hangs at all times below the bottom of the train and in a position to be tripped by any object which might be in the path thereof. A coiled spring 17 is arranged within each box 4 and is normally under tension and bears against the bottom of the sections 5. This spring is adapted to instantaneously throw mail downward from the box as soon as the bottom sections are released.

Connected to the rear boxes 4 of the train is a collection-box 18, which extends the full width of the train and has a cover 19 thereon, pivoted at the center of its forward edge so as to swing either to the right or to the left. This cover rotates with a stem 20, rotatably supported by a bracket 21, interposed between the boxes 4 and 18. A spring 22 serves to hold the stem 20 normally in an operative position with the cover 19 closed. A T-shaped extension 23 is provided at the upper end of the stem and forms oppositely-extending arms adapted to be tripped by suitable devices for the purpose of opening the

collecting-boxes to receive mail. Any suitable motor may be provided for propelling the train of boxes upon the cable 2, and said motor must be of sufficient strength to pull the boxes without stopping throughout the length of the circuit, which is adapted to begin and end at a post-office or other place from which mail is to be distributed and where it is to be received. In Fig. 3 the motor is shown provided with a hooked extension 24 at its forward end, which is adapted to come into contact with the spring-supported bell-crank lever 25, constituting a bumper, and this bell-crank lever has a hook 26 for engaging the extension 24 and also has a head 27, adapted to contact with a stem 28 on the motor for the purpose of stopping the mechanism within the motor as soon as the extension 24 becomes engaged with the hook 26. This mechanism is adapted to be placed at the end of the route, so as to automatically stop the train when it arrives with the collected mail.

Arranged at suitable points at both sides of the route of the train are disposed pairs of private delivery and receiving boxes, these pairs being equal in number to the boxes 4 of the train. Each pair of private boxes comprises a delivery-box 29 and a receiving-box 30. The delivery-box is formed with any suitable closure 31 and is provided at a point above its lower open end with oppositely-disposed hinged bottom sections 30^a, similar to those in the boxes 4 and also supported in the same manner by a block 32, formed at the end of a rotatable stem 33, having an arm 34 secured thereto and projecting downward from the rear wall of the box 29 and into the path of the projections 35, formed upon the side of collecting-box 18. The front face of the private delivery-box 29 has a projection 36 depending therefrom and into the path of the arms 23, and these projections 35 and 36 are so disposed in relation to each other that when the collecting-box 18 comes into position under the box 29 one of the arms 23 will first be contacted by projection 36, so as to cause the cover 19 to swing open, and immediately following this operation the projection 35 will contact with and trip the arm 34, so as to release the spring-pressed bottom section of the box 29. The receiving-box 30 is adapted to be disposed directly under the path of the delivery-boxes 4 and has a cover 37, which is mounted to rotate with a spring-controlled stem 38, said stem having an arm 39, which projects into the path of projections 40, formed upon the lower ends of the boxes 4 at the forward portions of the sides thereof. A projection 41 is also formed on the rear walls of this box 30, and these projections 40 and 41 are so disposed in relation to each other that when the train of boxes 4 travels thereover the projections 40 will contact with the arm 39 and open the box immedi-

ately prior to the extension 41 coming into contact with the arm 11 and tripping it to release the bottom of the proper box 4.

The boxes 29 and 30 of each pair are preferably rigidly connected by means of a frame 42, supported by a hanger 43, to which is connected a wheel 44, mounted on a supporting-cable 45. This cable can extend from a house down to the point adjacent the supporting-cable of the main line, and the cable can be so disposed as to support the boxes in position so as to receive one side of the train between them. The private boxes are preferably actuated by means of an endless carrier 46, having arms 47 connected to it and to a frame 42, there being a stop 48 for stopping the movement of the boxes as soon as they have arrived in proper position along the main line. The carrier 46 can be propelled manually by means of a crank 49 or by any other suitable power and may have suitable tightening means 50 to take up slack.

Instead of the means shown any other mechanism may be utilized for carrying the boxes 29 and 30 down to the main line, or, if desired, these boxes can be immovably supported in position to deliver and receive mail. Of course any desired number of these private boxes can be provided, and they may be located at both sides of the mail-line, as shown in Fig. 1, it merely being necessary to provide one delivery-box 4 for each receiving-box 30.

A person desiring to send mail to the post-office places it upon the bottom sections of the private delivery-box 29 and then moves the two boxes 29 and 30 into position against the stop 48. The train of collecting and delivering boxes in traveling over its route will travel successively between the various boxes 29 and 30 along said route. When the train arrives between the boxes of the first pair, the projections 40 on the boxes 4 will successively contact with the arm 39 of box 30, so as to swing the cover 37 open. Immediately subsequent to the opening of the box 30 by the projection 40 on the last box 4 the extension 41 on the box 30 is contacted by the depending arm 11 of the rear box 4 and said arm, with its cylinder 9, is swung backward, so as to rotate the supporting-block 6 and release the spring-pressed bottom sections 5. The mail supported by said bottom sections will be instantaneously projected from the open end of the box 4 into the open receiving-box 30. This backward movement of the arm 11 and the cylinder 9 will be sufficient to move the slide 12 from under the arm 11 of the adjoining box 4, and said arm will promptly drop by gravity into position below the train and where it may be contacted by the extension 41 of the next receiving-box 30 on the route. After the mail has been projected into the box 30 the train continues in its movement, and as

soon as the cover 37 is released from the extension 40 it swings into closed position. The collection-box 18 is then brought into position under the box 29, and the projection 36 on said box 29 first comes into contact with one of the arms 23 and swings the cover 19 laterally, so as to open the box. Immediately subsequent to this operation the projection 35 contacts with the arm 34 and causes the block 32 to rotate and release the bottom sections of box 29, so that mail supported thereon will be instantaneously projected by the spring into the collecting-box and before the cover of said box has had time to close. After the train passes from between the boxes the cover on the collecting-box will be closed automatically by its spring 22. When the train arrives in position between boxes of the next pair, the operation above described will be repeated, with the exception that a different box 4 will be opened, such operation setting the next adjoining box, so that the same will be opened in its proper turn. When the train returns to its starting-point, it will have collected mail from all of the boxes 29 on the route and will have automatically distributed mail from its delivery-boxes 4 into its proper receiving-boxes 30. It is of course understood that the mail for the first box on the route is always placed in the rear box 4, the mail for the second box in the box 4 next to the last one, and so on throughout the length of the train. This arrangement is followed along both sides of the train.

In order that the opening mechanism of the boxes 4 may be protected from the elements, a shield 51 is arranged upon each side of the train and extends downward over the tubes 9, the slides 12, and their connections.

The construction heretofore described has been limited solely to mechanism for delivering mail to and from private boxes disposed along the route of a train of mail collection and delivery boxes. This system, however, is not limited to such an arrangement, for, if desired, mail may be carried by a main train of delivery and collection boxes, and at a predetermined point along the route of said train a portion or all of the mail may be delivered into boxes of a branch train which may be automatically started on a separate route and will deliver the received mail at proper points in the manner described in connection with Figs. 1 to 8. I have shown apparatus of this modified form in Figs. 9, 10, and 11, wherein 52 is a motor, below which is suspended a plurality of combined receiving and delivering boxes 53, said boxes being connected to the motor by means of a suitable frame 54. Each of these boxes 53 has a spring-controlled cover 55, similar to the cover shown in Fig. 7, and is also provided with oppositely-disposed bottom sec-

tions, such as shown in Figs. 4 and 5, adapted to be tripped by swinging cylinders 56, into which are mounted weighted arms 57, said parts being constructed in the same manner as described in connection with Fig. 6. The slides 58 for supporting these arms 57 are connected to the adjoining cylinders 56 by cords or other flexible devices, (shown at 59,) this arrangement being much more simple than the provision of rods 14 and 16 and just as effective. The cords 59 are normally slacked, so that when the end arm of the series of boxes is swung backward by contact with a collection-box the cords connecting said arm with the next succeeding arm is tensioned sufficiently to operate said succeeding arm without, however, tensioning the next cord in the series, so that the arms will be successively elongated in the same manner as those described in connection with Fig. 3.

The frame 54, carrying the boxes 53, also carries a collecting-box 60, which is disposed in rear of the motor 52 and has a swinging cover 61, similar to the cover 37, and dropping bottom sections which are similar to the sections 5 and actuated in the same manner. This collection-box is disposed at the rear end of the branch train and has a hooked arm 62 pivoted thereto and adapted to engage a fixed arm 63, extending from a stationary support 64, there being a cushion 65 adapted to be held under tension while the two hooks are in engagement. A spring 66 supports the two hooks 62 and is adapted to cause said hooks to automatically engage when brought together. A bell-crank lever 67 is pivoted on the rear end of the box 60 and is connected by a link 68 with hook 62, while one arm of said lever projects below the collection-box 60. Another arm 69 extends forward from said box 60 and is for the purpose hereinafter described. It will of course be understood that the boxes 53 and 60 are not provided with springs 17, such as hereinbefore described for the purpose of expelling mail, because it would obviously be impossible to use said springs where the mail is received into the top of the box and delivered through the bottom thereof. A cable or other flexible device 70 extends upward from the hook 62 and over brackets 71 to the motor 52, where it is connected to a lever 72, adapted when the train is to be propelled to bear against the button 28 of the motor, so as to start it. The reversing-lever 73 also extends forward from the motor 52 above button 28 and is adapted when brought into contact with a resisting object to be pressed inward, and thereby reverse the motor. This branch train is adapted to travel on a cable 74, disposed above the cable on which the train of the main line is carried, and after mail has been placed within the box 60 said branch is adapted to be backed against the support 64, so as to compress the spring

65 and cause the hooks 62 and 63 to engage. When the train is in this position, it is held upright by side springs 75, connected to the post 76, supporting the cable, and similar bowed springs 77 contact with the other side of the frame and are also disposed in position to contact with the main train when it arrives in position between the boxes 53 and 60, so that all of the boxes will be held in register. A double bowed spring 78 is connected to the frame 54 of the branch train for contacting with the face of the main train adjoining frame 54.

The main train in use in connection with the branch train is substantially similar to the train disclosed in Fig. 3. This is made up of a plurality of delivery-boxes 79 and 79^a, provided with mechanism for successively opening them, and a collection-box 80. This box has a cover 81, similar to that shown in Fig. 8 and the arm 82 of which is adapted to be tripped by arm 69. A finger 83 extends upward from the rear wall of box 80 and into the path of the lever 67. A lever 84 is pivoted upon the rear end of box 80 and is connected by a cable 85 to a lever 86, mounted on the motor 87 and adapted to depress the button 88 so as to reverse the motor as soon as the train backs into contact with a fixed object. Certain of the boxes 79 are adapted to deliver directly into the boxes 53 of the branch train, and the cylinders 56 of these boxes are connected directly by means of taut cords or rods 89, and only one of said cylinders—to wit, the rear one—is provided with an arm 90. The covers 55 of boxes 53 are adapted to be simultaneously opened by dogs 91, depending from the front ends of the boxes and mounted in the manner shown in Fig. 18. This main train is mounted on a cable 92, which is disposed below and to one side of the cable 74 and in such position that when the branch train is standing at a predetermined position the main train will travel directly between the boxes 53 and 60. The contents of the rear boxes 79^a are of course discharged before the main train arrives in this position, and as soon as the two trains assume the positions shown in Figs. 9 and 10 the arm 90 of the rearmost box 79 is tripped by a projection 93 on the rear box 53, so as to cause the three boxes 79 to be simultaneously opened, this opening occurring immediately subsequent to the opening of the covers 55 by the box 91. The contents of said boxes 79 will therefore fall by gravity into the boxes 53. While this operation is going on, the boxes 60 and 80 are opened in the same manner, so that the contents of the box 60 will fall into the receiving-box 80. During this interchange of mail between the two trains the finger 83 contacts with lever 69 and swings it so as to pull hook 62 from engagement with hook 63. This results in the depression of button 28 on motor 52, and

the tension-spring 65 gives the branch train an initial impulse, so as to start it in motion suddenly and with the main train, so that the two trains will travel together while the interchange of mail is going on.

In order to insure the register of the proper boxes of the two trains while said trains are in motion, a projection 94 is arranged on the frame 54 and is automatically engaged by a notched spring 95 on the box 80 of the main train, so that the two trains necessarily move in unison. When, however, the cables of the two trains diverge, the pin 94 and the spring 95 will be separated, and the two trains can then move independently along their respective cables. The main train will continue to deliver mail from the remaining boxes 79^a to private boxes along its route and the mail received by the boxes 53 of the branch train will be similarly distributed to private boxes along its route. As these boxes 53 are not provided with springs for automatically ejecting mail when the bottoms of the boxes are opened, it is necessary that the private receiving and delivering boxes be mounted in such a manner as to lengthen the period during which the private boxes register with the proper boxes of the branch train. In order to produce this result, said private boxes are connected to the frame 96, which is slidably mounted on parallel shafts 97, supported on standards 98, such shafts being arranged parallel with the path of the branch train and having coiled springs 99 on them, which bear at opposite ends on the standards 98 and the frame 96, so as to hold said frame normally centered on the shafts. The frame 96 has a spring-controlled crank-arm 100 extending from it, and another arm 101 extends from the frame 54 of the branch train. Obviously as soon as the boxes of the branch train are brought into register with those on the frame 96 the arm 101 will come into contact with the crank-arm 100 and will pull the frame 96 along the shafts 97 in the direction of the movement of the branch train and until the tension of the compressed springs 99 will be sufficient to overcome the tension of the spring-controlled arm 100, whereupon said arm will swing out of the path of arm 101. The frame 96 will return with its boxes to its original position, and the branch train will continue on its way to the next delivery-station. It is of course to be understood that while this movement of the frame 96 is taking place the mail is being delivered from and received by the branch train. Centering-springs 102, similar to the springs 75 and 77, are located at each of these stations for the purpose of centering the branch train in relation to the private boxes.

In Fig. 13 I have shown mechanism whereby a motor with a detached collection and delivery box can be placed in position between the paths of delivery and collection

boxes mounted on the side of a railway mail-car, so that while a train is going at full speed mail can be transferred therefrom and received thereby, and the collected mail can be conveyed from the railroad to a post-office, all of this operation taking place automatically and without requiring the attendance of an operator. By referring to Fig. 3 it is noted that a frame 103 is mounted on the side of the car 104, said frame being of the same construction as that disclosed in Fig. 12. A delivery-box 105 is arranged at the upper end of the frame and a collection-box 106 at the lower end thereof, and the box 105 has a bottom section adapted to be tripped by the swinging of an arm 107, while the box 106 has a swinging cover 108, adapted to be operated in the same manner as the device shown in Fig. 7. A spring-controlled crank-arm 109 is mounted on the frame 103 and is similar to the arm 100, hereinbefore referred to. A supporting-cable 110 is adapted to extend from a post-office or other place to a point adjacent the track and carries a motor 111, similar to motor 52, said motor, however, being provided with a slide 112 for operating the button 113 to stop the motor when the slide is actuated. A bumper 114 is arranged adjacent the track and has a spring-pressed head 115, mounted on a fixed hook 116, said head adapted to be contacted by a hanger 117, extending from a frame 118. To this frame are connected a receiving-box 119 and a delivery-box 120. The receiving-box has a swinging cover 121, adapted to be operated by a depending extension 122 on box 105, and the cover 108 of box 106 is also adapted to be swung open by a depending extension 123 on box 120. This box 120 has bottom sections, such as hereinbefore described, adapted to be tripped, so as to open automatically when a lug 124 on box 106 contacts with the arm 125. A spring-pressed plunger 126 is mounted on the frame 118 and is connected by links 127 to opposite ends of a T-shaped lever 128, each of said links being slotted, so as to slidably engage the lever. The upwardly-extending member of lever 128 is forked, as shown at 129, and embraces the bell-crank lever 130, disposed in a plane at right angles to lever 128 and connected by means of a cord or other flexible device 131 with a lever 132 for actuating the button 113 of the motor.

Where the parts are constructed and arranged in the manner hereinbefore described, the box 120 is filled with mail to be delivered to a train and the motor 111 is moved along the cable 110 until the hanger 117 contacts with the head 115, whereupon the spring of said head will be compressed and the plunger 126 will be sprung into engagement with the hook 116. The slide 112 will also be brought into contact with an arm 133, so as to stop the mechanism of the motor. When

the mail-car 104 arrives in position opposite the motor, the boxes 105 and 106 will pass above and below boxes 119 and 120, and the cover 121 will be opened by extension 122, and the contents of box 120 will be discharged by the tripping of arm 125 immediately subsequent to the opening of cover 108 by extension 123. While the boxes are in this position an arm 134 will strike the spring-controlled arm 109, so as to cause the frame 103 to slide on its shafts 135 a short distance to enable the interchange of the mail to take place without hindrance. As soon as the boxes pass in this position the projection 129' will contact with bell-crank lever 130 and cause the withdrawal of plunger 126 from engagement with hooks 116. Simultaneous with this actuation of the plunger the motor will be started by the lever 131 and will be given an initial impulse by the sudden actuation of the spring-pressed head 115.

Instead of mounting the movable frame 103 on the mail-car the same can be carried by shafts 136 at the side of the track, as shown at 137 in Fig. 15. With this construction it is necessary to provide a projecting arm 138 upon the frame 137, adapted to be tripped by an arm 139, extending from the mail-car 104. This arm is provided with a projection 140, which normally rests on the upper end of a rotatable sleeve 141, connected to the car and controlled in its movement by the spring 142. By swinging the arm 139 at right angles to the car projection 140 will engage the sleeve, so that when the arm 139 strikes the arm 138 it will pull said arm and the frame 137 a predetermined distance, after which the arm 139 will swing out of engagement with arm 138, thereby tensioning the spring 142.

With the modified construction shown in Fig. 15 the means for imparting an initial impulse to the motor is dispensed with, although said motor is provided with a bell-crank lever 143 for actuating the button of the motor after the boxes of the train have passed a predetermined distance beyond the boxes connected to the motor.

The various motors herein described may have mechanism within them of any preferred construction, and it is not deemed necessary to go into a detailed description of it. The propelling-wheel 144 of each motor is preferably provided with a grooved rubber tire 145, which will not slip upon the cable. A hood 146 is disposed upon each of these propelling-wheels, and each hood may be provided with an ice-cutting device for removing ice from the cable in advance of the wheel. Such a device has been disclosed in Fig. 17, wherein a standard 147 is shown mounted upon the hood 146 and having an angular lever 148 fulcrumed upon it and forked at one end, so as to embrace the cable, as shown at 149, and contacting with oppo-

site portions thereof, so as to scrape the ice therefrom. A spring 150 exerts an upward tension upon the rear end of the lever 148, so as to force the connecting end 149 against the cable, and an intermediate lever 151 is fulcrumed upon the standard and bears upon the top of the cable, so as to remove the ice therefrom. A spring 152 exerts a constant downward pull upon the lever 151, and another spring 153 connects the two levers and also serves to exert a downward pull on the lever 148. This ice-cutting device can be connected to the hood in winter and will effectively remove the ice from the cable and insure the proper propulsion of the mechanism.

What is claimed is—

1. In an apparatus of the character described delivering mechanism comprising a plurality of alining boxes, a closure for each box, spring-pressed ejecting means upon each closure, a normally locked arm upon each box for releasing the closure therein to permit the actuation of the ejecting means, and means operated by each arm when opening its closure for unlocking the arm of the next adjoining box.

2. In an apparatus of the character described delivering mechanism comprising a plurality of alining boxes, mail-supporting sections within each box, spring-pressed ejecting means in each box movable means for holding said sections in closed position, arms for operating said means, said arms being normally locked, and means operated by the tripping of each arm for moving the arm of the adjoining box into position to be tripped.

3. In an apparatus of the character described delivery mechanism comprising a plurality of alining boxes, bottom sections movably mounted within each box, a movable support for the sections, a gravity-operated arm slidably connected to the supports and adapted to swing therewith, a movable supporting device for each arm, and a connection between each of said arm-supporting devices and the arm of one of the adjoining boxes.

4. In an apparatus of the character described a delivery device comprising a series of delivery-boxes, a collecting-box, and a motor for propelling said boxes, said collecting and delivery boxes being secured together throughout the operation of the apparatus.

5. In an apparatus of the character described delivering and collecting mechanism comprising a parallel series of delivery-boxes, a collecting-box disposed in rear of said series, a movable cover upon the collecting-box, independently-movable bottoms within the delivery boxes and normally locked in closed position, and means for successively unlocking the bottoms of said boxes.

6. In an apparatus of the character de-

scribed the combination with a receiving-box having projections thereon; of delivering mechanism comprising a plurality of alining boxes, bottom closures for said boxes, means depending from one of the boxes for locking the closure of its box, said means adapted to be tripped by the projection on the receiving-box, normally locked means for securing the closures of the other boxes, means operated by the tripping of the depending means for unlocking and releasing the locking means of the adjoining box, and means within each delivery-box for ejecting the contents thereof when the closure is unlocked.

7. In an apparatus of the character described the combination with a receiving-box; of delivering mechanism comprising a plurality of alining boxes, bottom closures for said boxes, means for locking the closures, guides movable with said means, weighted arms slidably mounted within the guides, one of said arms normally projecting below its box and adapted to be contacted and tripped by the projection, and movable supports for the other arms, said supports being connected to and adapted to be actuated by the swinging guides of one of the adjoining boxes.

8. In an apparatus of the character described the combination with a plurality of receiving-boxes; of delivering mechanism comprising a plurality of alining boxes, movable bottom closures, means operated by each receiving-box for releasing the closures of one of the delivery-boxes, the closures of said delivery-boxes being successively released, and ejecting means within each delivery-box.

9. In an apparatus of the character described the combination with a plurality of receiving-boxes; of delivering mechanism comprising a plurality of boxes, a movable closure in the bottom of each of said boxes of the delivering mechanism, means upon the delivery-boxes for releasing the bottom sections to open them, said means adapted to be successively actuated by the successive receiving-boxes, and ejecting means within each delivery-box.

10. In an apparatus of the character described the combination with a plurality of receiving-boxes; of delivering mechanism comprising a plurality of boxes adapted to travel above the receiving-boxes, a movable bottom to each delivering-box, means for securing the bottom of each box in closed position, an extensible arm movable with and adapted to actuate each of said means, one of said arms normally projecting below the delivery-boxes and adapted to be tripped by the first one of the receiving-boxes, means for normally supporting the remainder of the extensible arms above the bottoms of the delivery-boxes, and means connecting all of said arms whereby they are successively re-

leased and extended by the tripping of a depending arm.

11. In an apparatus of the character described the combination with a plurality of delivery-boxes having movable bottoms, means for holding the bottoms closed, and actuating-arms depending from said means; of a collecting-box movable beneath said delivery-boxes, means upon the collecting-box for contacting with the depending arms to successively trip them and release the bottoms of the delivery-boxes, and means for ejecting the contents of the boxes when the bottoms are released.

12. The combination with a plurality of delivery-boxes having movable bottoms, means for locking the bottoms closed, and depending arms for actuating said locking means; of a collecting-box movable beneath the delivery-boxes, a cover movably mounted thereon; means upon each delivery-box for actuating the cover to open the collecting-box, means upon said collecting-box for successively contacting with the depending arms to release and open the bottoms of the delivery-boxes, and means for ejecting the contents of the boxes when the bottoms are released.

13. The combination with a plurality of receiving-boxes, each box having a normally closed movable cover and a projection; of a plurality of delivery-boxes movable above the receiving-box, means upon the delivery-boxes for actuating the covers to open the receiving-boxes, and spring-pressed means upon the delivery-boxes adapted to be tripped by the projections to automatically discharge the contents of the delivery-boxes into the receiving-boxes when the same are opened.

14. The combination with a plurality of delivery and receiving boxes; each delivery-box having a movable bottom, and an arm depending from the box for releasing said bottom, and each receiving-box having a movable cover and a projection; of a plurality of delivery-boxes movable between the receiving-boxes and the first-mentioned delivery-boxes, movable bottoms within the movable delivery-boxes, means operated by said boxes for successively opening the receiving-boxes, means operated by the successive projections for successively opening the bottoms of the movable delivery-boxes, a collecting-box movable with the movable delivery-boxes, and means carried thereby for successively opening the bottoms of the first-mentioned delivery-boxes.

15. In an apparatus of the character described the combination with movable receiving and delivery boxes; of a movable series of main delivery and collection boxes, and means for causing the simultaneous actuation of the boxes when registering.

16. The combination with movable receiving and delivering boxes; of a movable series

of collection and delivery boxes adapted to register with the first-mentioned boxes, means operated by the boxes for opening the same to deliver and receive mail, and resilient means for causing movement of the boxes in unison for a predetermined period.

17. The combination with a branch train of receiving and delivering boxes, a motor for propelling said train; of a holding device for securing said train against movement, mechanism operated by the release of the holding device for imparting an initial impulse to the train and starting the motor, and means for releasing said holding means.

18. The combination with a branch train of receiving and delivering boxes, and a motor for propelling said train; of a holding device for securing said train against movement, mechanism operated by the release of the holding device for imparting an initial impulse to the train and starting the motor, a motor-propelled main train of delivery and collection boxes movable between the boxes of the branch train, and means upon the main train for opening the boxes of the two trains to receive and deliver mail.

19. The combination with a branch train of receiving and delivering boxes, and a motor for propelling said train; of a holding device for securing said train against movement, mechanism operated by the release of the holding device for imparting an initial impulse to the train and starting the motor, a motor-propelled main train of delivery and collection boxes movable between the boxes of the branch train, and a releasing device carried by the main train for actuating the holding means of the branch train to release said train.

20. The combination with a branch train of receiving and delivering boxes, and a motor for propelling said train; of a holding device for securing said train against movement, mechanism operated by the release of the holding device for imparting an initial

impulse to the train and starting the motor, a motor-propelled main train of delivery and collection boxes movable between the boxes of the branch train, a releasing device carried by the train for actuating the holding means of the branch train to release said train, and means for automatically locking the trains together during their movement.

21. The combination with delivery and receiving boxes and a motor for propelling the same; of laterally-movable spring-controlled delivery and receiving boxes adapted to cooperate with the boxes of the train to interchange mail, and means upon the two sets of boxes for causing the momentary movement of all of the boxes in the same direction in unison during the interchange thereof.

22. The combination with motor-propelled receiving and delivering boxes; of means for locking said boxes against movement, mechanism operated by the unlocking of said means for actuating the motor, a normally tensioned device for imparting an initial impulse to the boxes when unlocked, movable collection and receiving boxes adapted to cooperate with the first-mentioned boxes to interchange mail, and means operated by said movable boxes during their movement for automatically releasing and starting the locked boxes.

23. In an apparatus of the character described a delivery device comprising a series of delivery-boxes, a collection-box, a motor for propelling said boxes, and an ice-cutting device carried by the motor, said collecting and delivery boxes being inseparable throughout the operation of the apparatus.

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

HERMAN J. BOLINSKI.

Witnesses:

E. HUME TALBERT,
EUGENE K. STEWART.