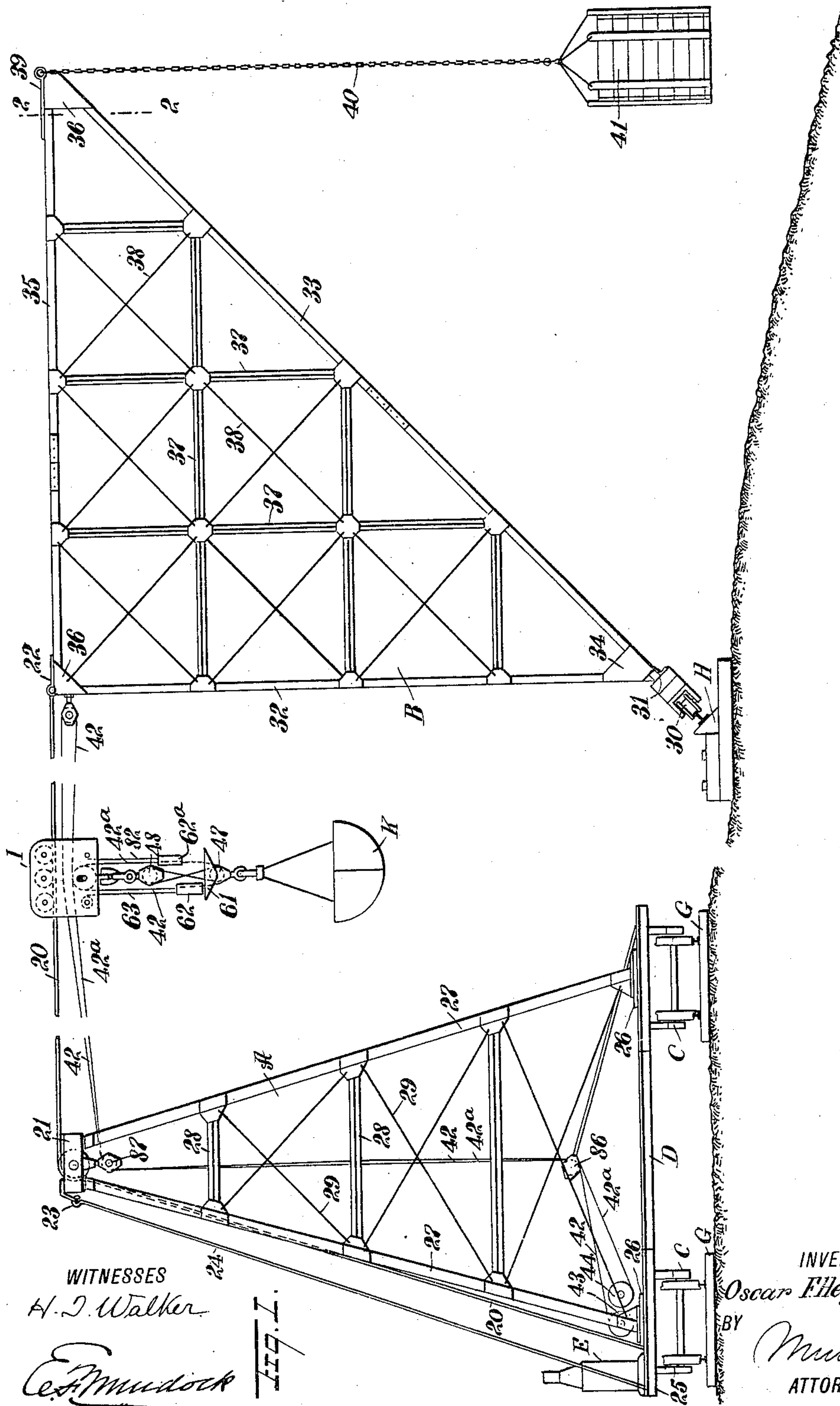


O. F. HEYDENREICH.
PORTABLE TRAMWAY.
APPLICATION FILED OCT. 18, 1909.

Patented Nov. 8, 1910.

4 SHEETS—SHEET 1.

975,238.



WITNESSES
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117.1.

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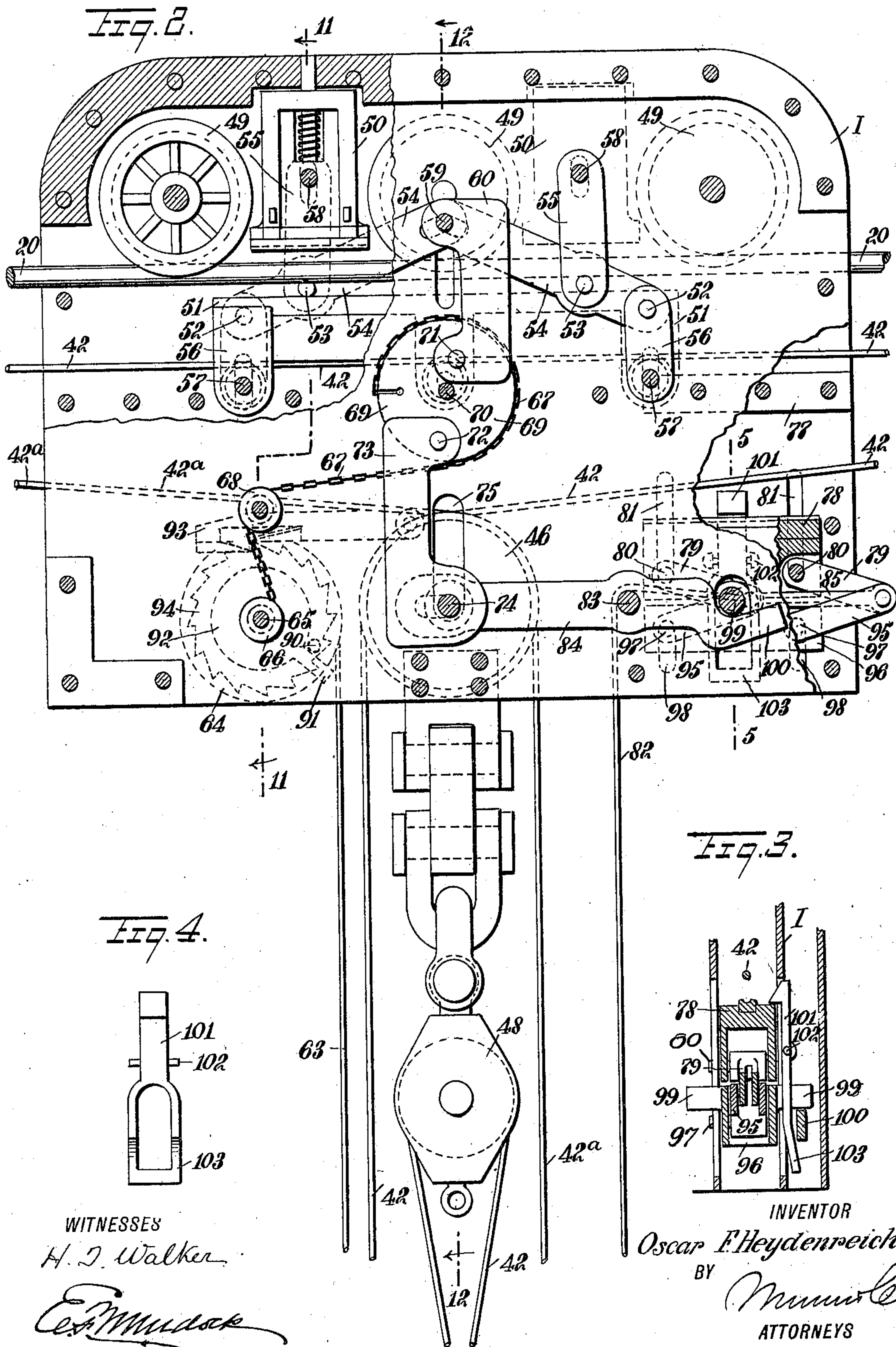
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4 SHEETS—SHEET 3.

Fig. 5.

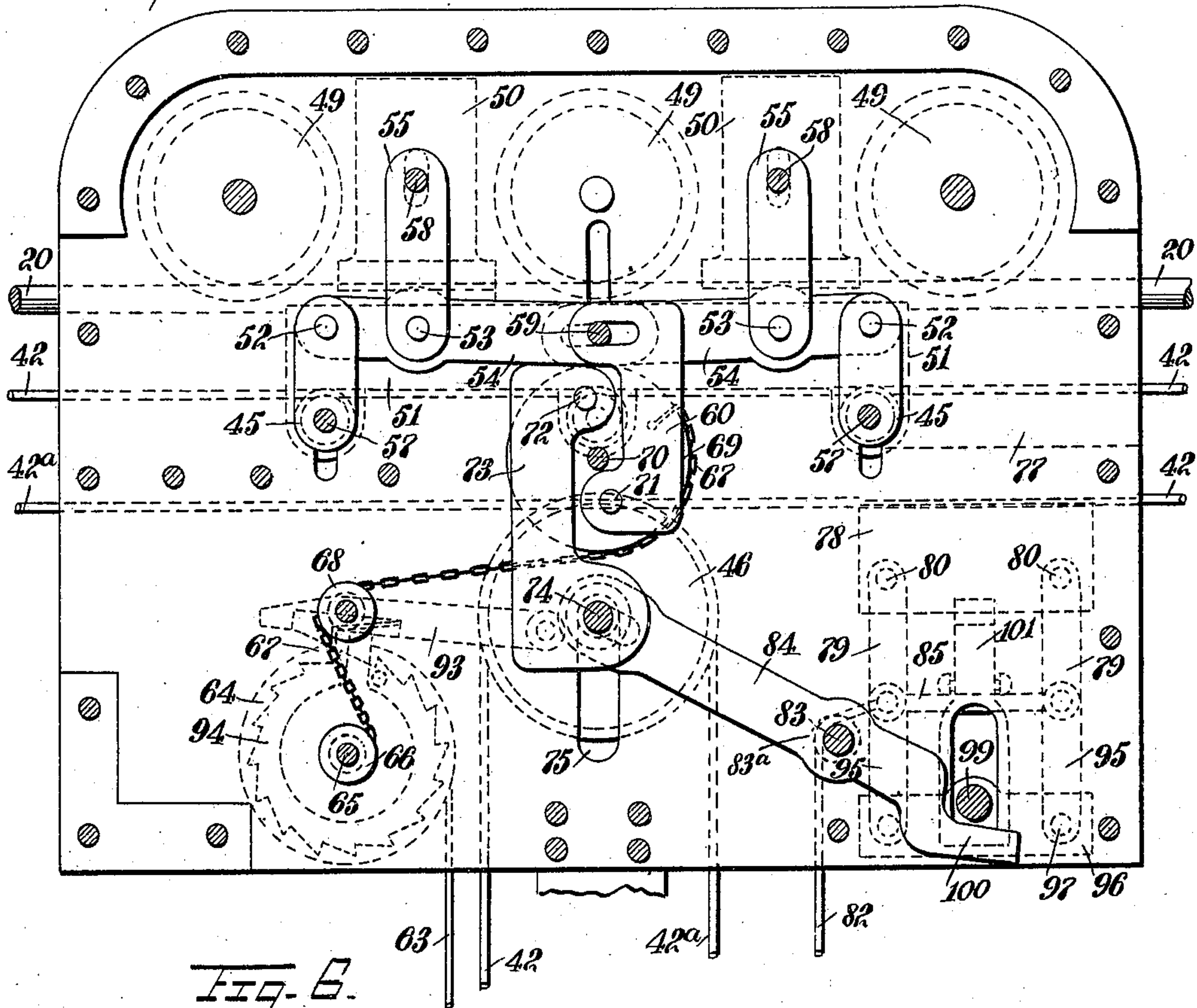


Fig. 6.

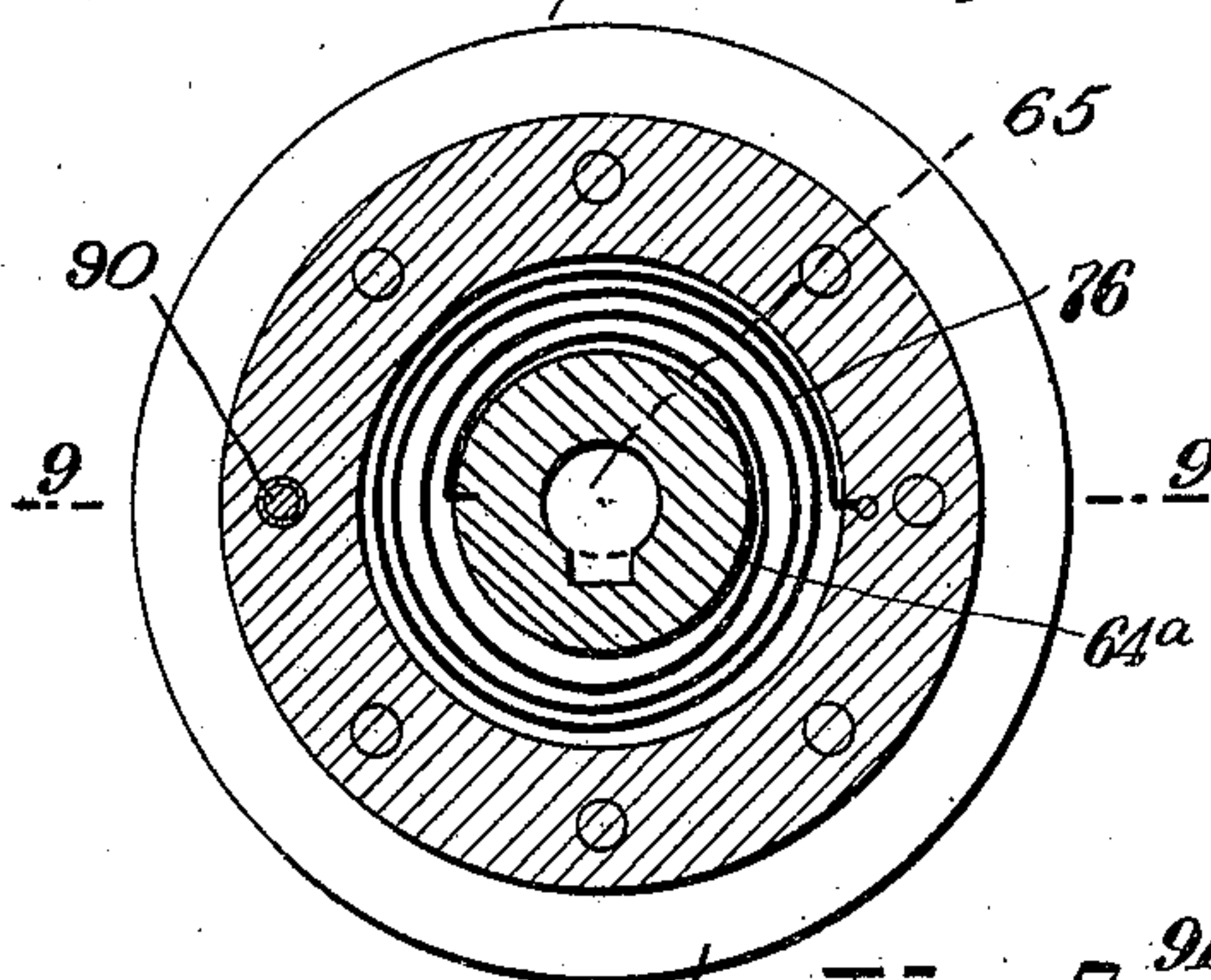


Fig. 7.

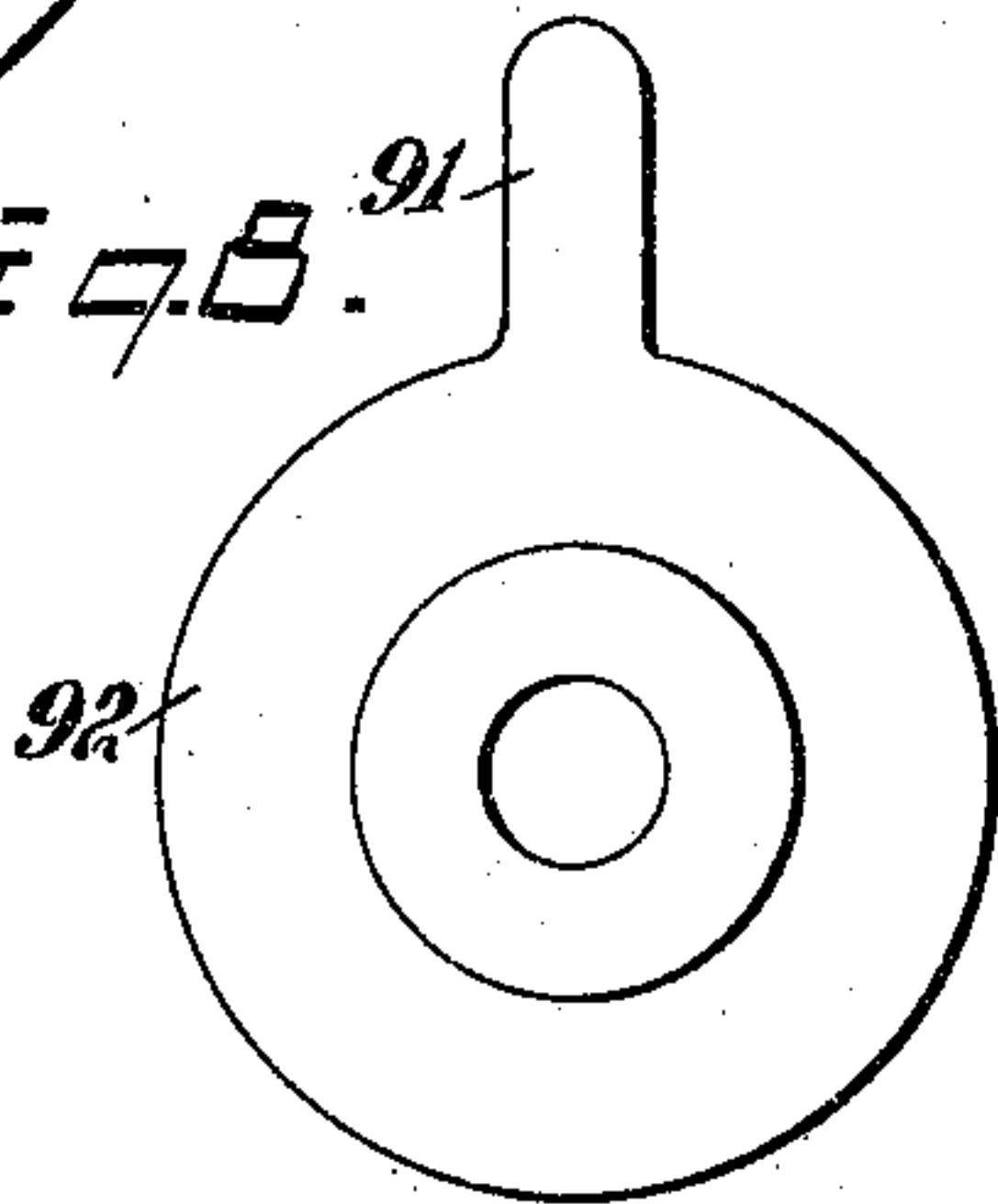
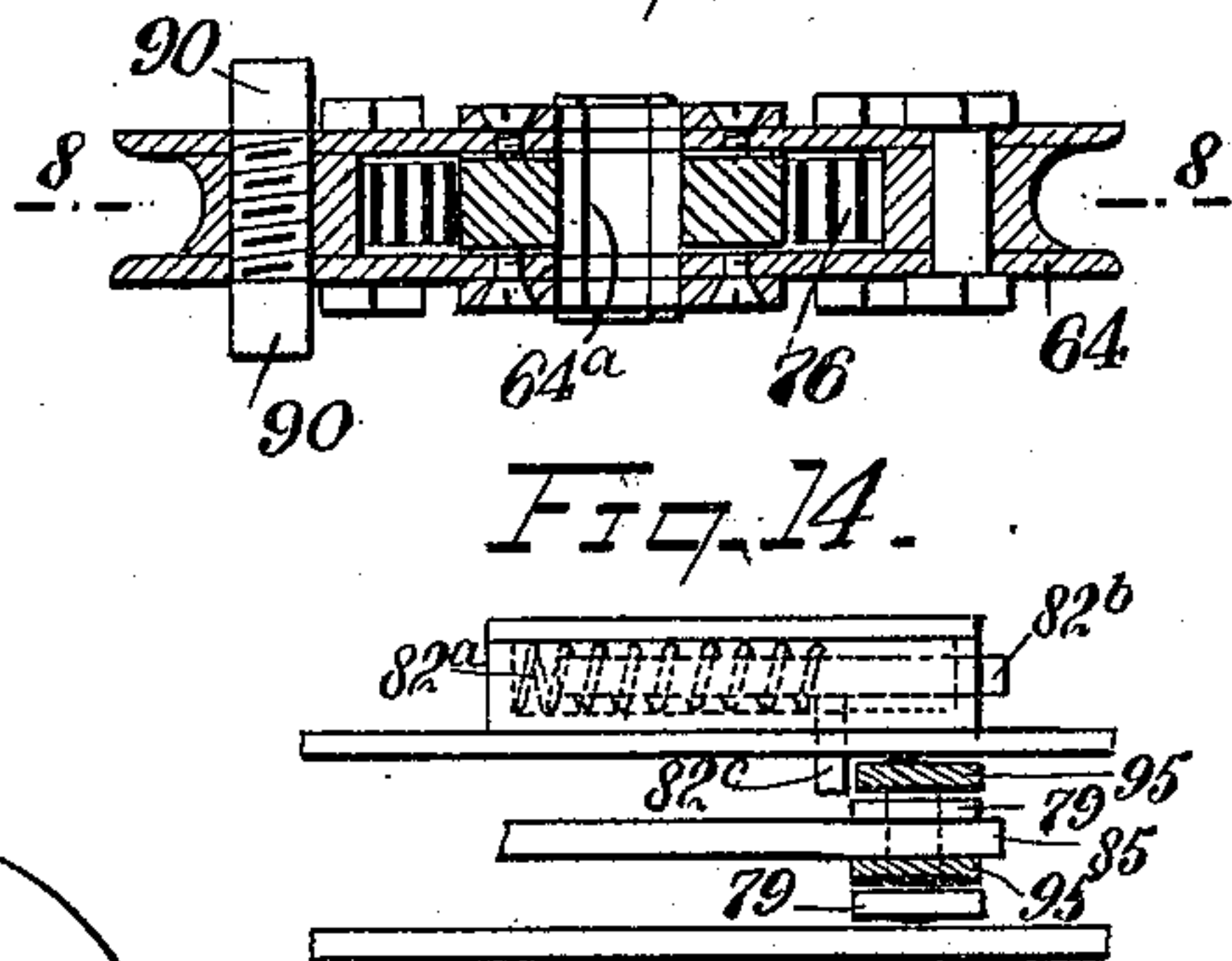


Fig. 14.



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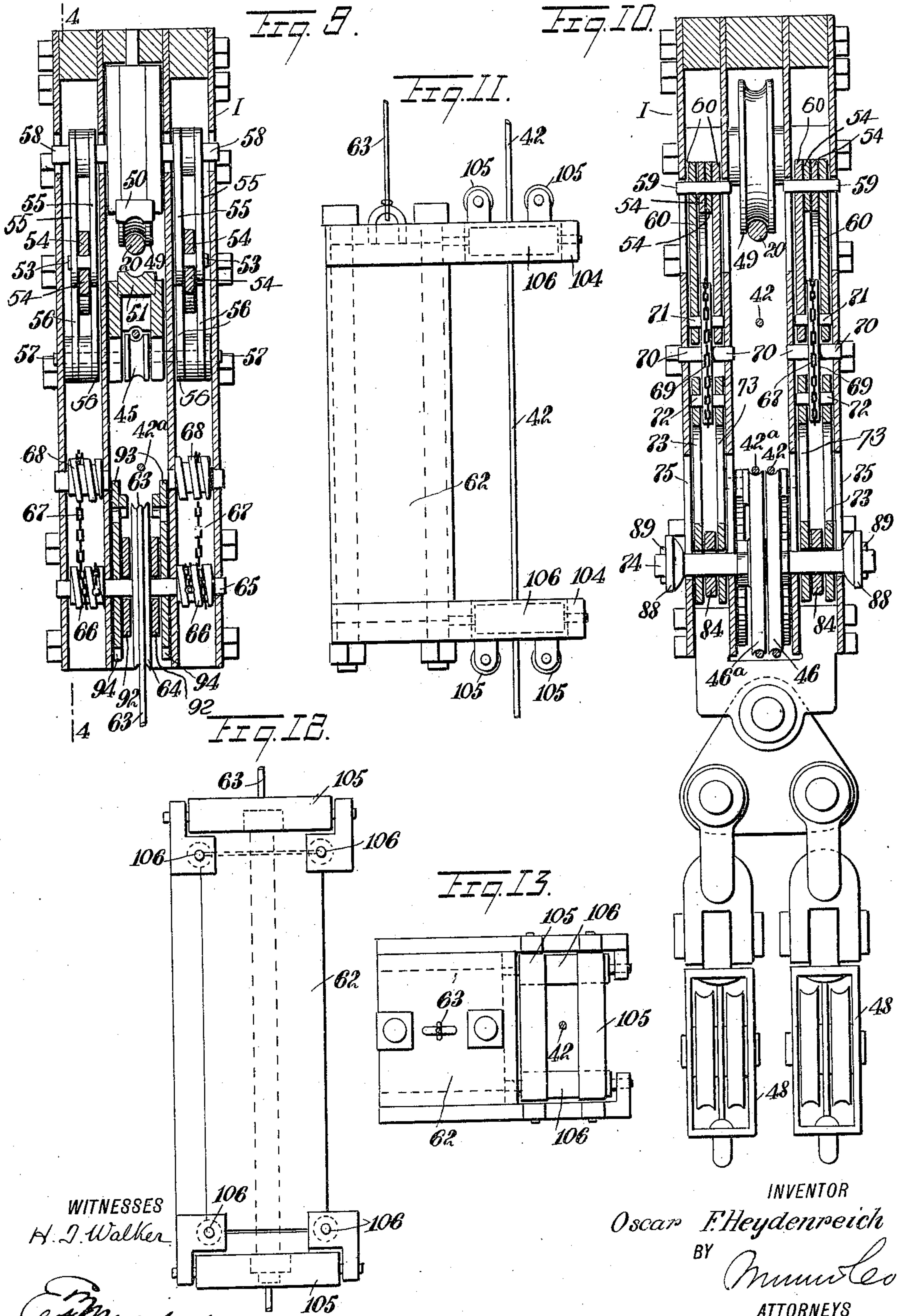
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4 SHEETS—SHEET 4.

975,238.



UNITED STATES PATENT OFFICE.

OSCAR F. HEYDENREICH, OF NEW ORLEANS, LOUISIANA.

PORTABLE TRAMWAY.

975,238.

Specification of Letters Patent.

Patented Nov. 8, 1910.

Application filed October 18, 1909. Serial No. 523,206.

To all whom it may concern:

Be it known that I, OSCAR F. HEYDENREICH, a citizen of the United States, and a resident of New Orleans, in the parish of Orleans and State of Louisiana, have invented a new and Improved Portable Tramway, of which the following is a full, clear, and exact description.

Among the principal objects which the present invention has in view are: to provide a mechanism whereby the operation of the tramway is simplified and facilitated; and to provide a mechanism for operating the carrier to automatically arrest the same in adjusted positions.

One embodiment of the present invention is disclosed in the structure illustrated in the accompanying drawings, in which like characters of reference denote corresponding parts in all the views, and in which—

Figure 1 is a side elevation of a tramway constructed and arranged in accordance with the present invention; Fig. 2 is a vertical section of the carrierhead, the section being taken on the line 4—4 in Fig. 9; Fig. 3 is a vertical section on the line 5—5 in Fig. 2 through the clutch mechanism by which the load line is clamped; Fig. 4 is a detail view in front elevation of the detent latch for the moving member of the clamp for the load line; Fig. 5 is a vertical section taken on the line 4—4 in Fig. 9, showing the parts in the position assumed when the carrier is arrested; Fig. 6 is a vertical section of the lifting wheel taken on the line 8—8 in Fig. 7; Fig. 7 is a cross section of the lifting wheel taken on the line 9—9 in Fig. 6; Fig. 8 is a side view in detail, of the device for releasing the mechanism for gripping the supporting cable; Fig. 9 is a vertical cross section taken on the line 11—11 in Fig. 2; Fig. 10 is a vertical cross section of the carrier taken on the line 12—12 in Fig. 2; Fig. 11 is a side elevation of the balancing weight for the mechanism for releasing the carrier; Fig. 12 is an end elevation of the same; Fig. 13 is a top view of the same; and Fig. 14 is a detail view of a buffer for opening the toggles of the cable brake.

The embodiment of the invention illustrated in the accompanying drawings is that mechanism employed in the building of dikes, levees and similar structures, or to the filling in of low places in grading. In such employment a cable 20 is stretched

across the line of work, where it is supported by a tower on the one side and a crane on the other. The tower in the present instance is provided at the top with a saddle 21, through which the cable 20 is drawn. The opposite or far end of the cable is suitably anchored in a block 22. The cable 20 rides freely over the saddle 21. The saddle 21 has, at its inner or near end, an eyelet to receive a hook 23. The hook 23 is formed or attached to the end of an anchor cable 24, the lower end of which is suitably anchored in the platform 25 of a carrying truck or car.

The tower A, in the present instance, has a triangular base, the foot-plates 26, 26 whereof rest upon one or more platforms supported by the flat cars C C. The intermediate section D, illustrated in the drawing, may be dispensed with, if desired. Standing members 27, 27 converge upon the saddle 21 and are bolted securely thereto, as to a head-cap. In the median sections the members 27, 27 are braced by cross braces 28, 28 and tie rods 29, 29.

The cars C, C are mounted upon suitable and parallel road beds G, G, which are provided with suitable T-rails forming a track bed of the railroad type. While I have herein shown a car C as having the usual railway trucks run on two rails, it will be understood that I can alter such construction by substituting a mono-rail track. Such a rail is shown at H for the support of the crane B.

The truck wheels 30, 30 provided on a sill 31, and together therewith, constitute the pivot for the crane B. The crane B is constructed with a triangular side section. This is formed by a vertical standing member 32, and an elongated inclined member 33. The members 32 and 33 unite and are secured upon the sill 31, and there reinforced by a corner plate 34. At the upper end of the members 32 and 33 they are united by a ridge rod 35, which is extended from corner plates 36, 36, to which the said member 32, the ridge rod 35, and the inclined member 33, are fixedly connected. The triangular side of the crane B is suitably reinforced and cross braced by struts 37, 37 and tie rods 38, 38. By this construction there is secured a light but strong crane, having a maximum over-hang from the rail H. At the outer angle of the crane B is provided an eyelet plate 39, to which is fixedly at-

tached a chain 40, upon the swinging end of which is mounted a counter-balancing weight 41. In the present instance this weight is illustrated as a receptacle for holding dirt, whereby the weight may be increased or decreased to produce the desired tautness on the cable 20.

In arranging the tramway, the rail bed H is located substantially parallel with the road beds G, G, and upon the side of the space upon which work is to be performed opposite that where are located the beds G, G. In mounting the tramway the crane B is disposed in a recumbent position, so that the wheels 30, 30 rest upon the rails of the bed H. The cable 20 is connected to the block 22 and reeved through the saddle 21 on the tower A. The cable 20 is then drawn until the crane B is raised to the position shown in Fig. 1 of the drawings. At any time, either prior to the crane assuming the operative position illustrated in Fig. 1, or subsequent thereto, the desired weight may be added to the receptacle 41.

When the crane B is in operative position, the cable 20 is anchored firmly upon the platform of the car C carrying the engine E. It will be understood that prior to securing the cable 20 to the car C the end thereof has been threaded through the carrier I, so that as the cable is raised to the position substantially level with the saddle 21, and block 22, the carrier is likewise raised to such position. From the carrier is suspended a bucket K.

The bucket K is supported from the carrier I by means of a hoisting cable 42. The end of this cable is suitably secured to a winding drum 43, which is rotated by the engine E. The cable 42 is threaded through the carrier I, the upper strand passing over idlers 45, 45, while the lower strand is reeved over a sheave 46 and about blocks 47 and 48. By varying the blocks 47 and 48 any multiplication of power may be obtained.

A cable 42^a is wound upon a drum 44, and reeved through blocks 86 and 87, as is the cable 42, and from a sheave 46^a, and thence to and through the blocks 47 and 48. The cable 42^a is connected with the dumping mechanism of the bucket K.

The operation of the present tramway is facilitated by the mechanism for automatically arresting the carrier I at any point on the cable 20. It is also facilitated by arranging the hoisting cable 42 in such manner that the same is utilized for moving the carrier I.

The carrier I is run back and forth over the cable 20 upon the carrier wheels 49, 49. These are suitably journaled in the sides of the carrier. Extending downward between each of the said wheels are movable brake shoes 50, 50. These shoes are preferably grooved to fit the cable 20. Extended below

the said brake shoes 50 is an elongated brake shoe 51, likewise movable. The ends of the shoe 51 and the shoes 50, 50 are pivotally connected at 52, 52 and 53, 53 to levers 54, 54. The said levers are connected to the shoes 50 and 51 by means of links 55, 55 and 56, 56. The links 56, 56 pivotally connect the levers 54, 54 and the shoe 51 by pins 57, 57 and pins 58, 58 pivotally connect the said levers with the shoes 50. The adjacent sections of the levers 54, 54 are provided with elongated slots through which is passed a pin 59 secured in a slot formed in the end of a link 60.

When in the course of operation the link 60 is depressed, it will be seen, by following the action of the levers, that the adjacent ends of the levers 54 connected by the pin 59, are depressed, raising the shoe 51 and depressing the shoes 50, 50, each striking upon the cable 20 and frictionally engaging the same. With the increase of power applied through the link 60 the grasp of the shoes 50, 50 and 51 becomes proportionately more intensely set.

Normally the shoes 50, 50 and 51 are in the position shown in Fig. 2 of the drawings. In Fig. 5 of the drawings is illustrated the position where the shoes are in holding engagement with the cable 20. In this position the carrier I is stationarily arrested on the cable 20. It is at this stage that the hoisting cable 42 is operated to lower or raise the bucket K.

There being no set position on the cable 20 where the action of the levers and brake shoes above described shall occur, the dumping of the bucket K may be regulated to extend over any suitable area, the operation being within control of the engineer handling the hoisting cable 42.

The shoes 50 and 51 are operated to grip the cable 20 whenever the bucket K is lowered to remove a bracket 61 from under the weight 62. The weights 62, and 62^a are supported by short cables 63 and 82. The cable 63 is reeved about a wheel 64, which is loosely mounted on a shaft 65, suitably carried in the frame of the carrier I. Fixedly mounted upon the same shaft are drums 66, 66, upon which are anchored winding chains 67, 67. The chains 67, 67 are reeved over idler drums 68, 68, and extend around wheels 69, 69, to which they are anchored. The wheels 69 are pivoted on a shaft 70 set in the frame of the carrier I, and are provided with pins 71 and 72 set out from the side of the wheels to engage the links 60 and 73. The links 73 are pivoted upon the shaft 74 which supports the sheaves 46 and 46^a. The shaft 74 is mounted in guide slots 75, 75 formed in the sides of the frame of the carrier I to guide the same in its rise and fall.

To hold the shaft 74 in line and to prevent jamming thereof in the slots 75, 75, the

shafts are provided with conical wheel washers 88, 88, which are rotatably secured upon the shaft 74, and held thereon by pins 89, 89 on the outer side of the frame for the carrier I. With this construction, should the said shaft 74 rock, the horizontal position would be corrected by one of the wheel washers 88 striking upon the side of the frame and leveling the said shaft.

The operation whereby the shoes 50, 50 and 51 are set upon the cable 20 as shown in Fig. 5 of the drawings is as follows: When the hoisting cable 42 is released by the operator so that the bracket 61 is removed from under the weight 62, it permits the said weight 62 to fall. The weight 62, as shown, is suspended from the short cable 63, which is wound around the wheel 64. The wheel 64 is provided with a bushing 64^a, upon which it is rotatably mounted. The said bushing is mounted upon the shaft 65 and connected with the wheel 64 by means of a coiled spring 76. The said bushing is keyed fixedly upon the shaft 65. With the drop of the weight 62 the cable 63 draws upon the wheel 64, rotating the same to unwind the said cable. In this operation the spring 76 is drawn into full tension. The wheel 64 is provided with a pin 90 extended from both sides thereof into the path of extensions 91, 91 of the idlers 92, 92, which are loosely mounted upon the shaft 65. The purpose of the pin 90 is to rotate the idlers 92 until the extensions 91 strike under and raise the gravity pawls 93, 93, and to remove the same so that the pawls fall upon ratchet wheels 94, 94. The ratchet wheels 94, 94 are fixedly mounted upon the shaft 65. As above stated, the drums 66, 66 are fixedly mounted upon the same shaft.

When the wheel 64 has been rotated by the falling weight 62 through the cable 63, one complete revolution, the pin 90 is brought into contact with the extension 91 upon the side opposite that from which it has just been removed. From this point, the wheel 64, in its rotating, carries the idlers 92, 92, removing the same from the support of the pawls 93, and permitting the pawls to engage the teeth of the ratchet wheels 94.

With the tightening of the spring 76 upon the shaft 65 the same is impelled to rotate in unison with the wheel 64, carrying the ratchets 94 backward under the teeth of the pawls 93. With the rotating of the shaft 65 the drums 66 are rotated, winding upon them the chains 67. The chains 67 rotate the wheels 69 until the pins 71 and 72 are disposed as shown in Fig. 5 of the drawings. The wheel 69, being thrown to the position shown in Fig. 5, has, through the links 60, lowered the shoes 50 and raised the shoe 51 in the manner as above described.

It will be observed that the pawls 93, 93 are engaged with the teeth of the ratchets

94, 94, and prevent the return rotation of the shaft 65. It will also be observed that the full weight of the loaded bucket, in rising, is exerted through the cable 42 upon the sheave 46, which is, by the links 73, supported on the wheels 69 in the position shown in Fig. 5 of the drawings.

When now the rising bucket K interposes the bracket 61 below the weight 62, and raises the same, the cable 63 is slackened, permitting the wheel 64 to rotate backward, being thus impelled by the spring 76. The shaft 65 remains stationary during this action of the wheel 64 until the said wheel 64, in its reverse action, impinges upon the extensions 91 of the idlers 92, carrying the same until the said extensions are brought under the pawls 93 to lift the heads thereof out of engagement with the ratchets 94. The ratchets 94 being now unrestrained, the weight of the bucket on the cable 42 is permitted to rotate the wheels 69 until the pins 72 are drawn to the lowered position on the said wheels 69, as shown in Fig. 2 of the drawings. This reverse operation of the wheels 69, as just described, reverses the operation above described with reference to the links 60, 55 and 56, and the levers 54, 54. This results in removing the shoes 50, 50 and 51 from the cable 20. The carrier in this position is at liberty to be moved to and fro on the cable 20. This movement of the carrier is imparted through the engagement of the hoisting cable 42 by a brake provided in the carrier I, and which, in the usual operation, is thrown into locked position alternately with the operation of the shoes 50 and 51. This brake is provided with a stationary jaw 77 and a movable jaw 78. Both of said jaws are suitably grooved to receive the cable 42.

The movable jaw 78 is mounted upon the free ends of two pairs of toggle levers 79, 79. The pivots 80, 80 connecting the links of the toggles 79 and the jaw 78 are guided by slots 81, 81. The connecting bar 85 of the toggles 79 is attached to the end of a cable 82 which is reeved over an idler 83^a on the pivot pin 83 of the lever 84. The cable 82 is considerably shorter than the cable 63, in practice being about three feet shorter. This provides for that part of the operation wherein the bucket is lifted during the period when the carriage is held fixed on the cable 20 and when the jaws 50 and 51 are gripping the same. The construction further provides that when in the course of operation, the loaded bucket is lifted so that the weight 62 is raised, the brake on the cable 20 is thereby released and the jaws 77 and 78 grip the cable 42, preventing thereby further elevation of the bucket by this cable. Further operation of the cable 42 traverses the trolley to the dumping point. At this point the cable 42^a is operated and

the bucket is then dumped. In this operation the cable 42^a lifts the bucket until the weight 62^a is lifted, whereupon the jaws 77 and 78 are released from the cable 42, and the jaw 78 is locked in its depressed position by the latch 101 and the mechanism is then in the position shown in Fig. 2 of the drawings. The opposite levers 95, 95 of the said toggles are pivoted on a sliding block 96, by pivots 97, which are extended through guide slots 98, 98 in the frame of the carrier I. Extended from the blocks 96 is a pin 99 which extends over the hook end of the lever 84.

In the operation of the levers 54 to secure the shoes 50, 50 and 51 upon the cable 20, the links 73 and levers 84 are raised, as shown in Fig. 5 of the drawings, depressing the hook end 100 of the lever 84 and removing the same from the downward path of the pin 99. The fall of the weight 62 draws upon the cable 63 and rotates the wheels 69 to lift the links 73 and the levers 84. The weight 62^a suspended by the cable 82 has previously fallen and has drawn upon the said cable, exerting a lateral strain over the idler 83^a upon the toggle levers, and the bar 85 connecting the same. This strain straightens the toggles. The toggles are sustained in the raised position shown in Fig. 5 by the weight on the cable 82. The toggles are thrown to an unlocked position by a spring 82^a, which is mounted on a bolt 82^b mounted on the side of the carrier, as seen at Fig. 14 of the drawings. Extended from the bolt is an arm 82^c which extends into the path of a moving member of the toggle to compress the spring when the toggle is set. When now the wheels 69 are rotated to lower the links 73 and long ends of the levers 84, the hook ends 100 of the said levers rise under and lift the pin 99 of the block 96. The toggles 79 and 95 being vertical, the result of the lift of the block 96 is to elevate the jaw 78 until the same rests firmly against the stationary jaw 77. In this position the cable 42 is clamped firmly. Thus it will be seen that simultaneously with the release of the cable 20 by the shoes 50, 50 and 51, there occurs an engagement of the cable 42 by the jaws 77 and 78. It will be seen that the carrier I may now be moved by pulling upon either the cable 42 or the cable 42^a. In the usual operation of the tramway, as illustrated in Fig. 1 of the drawings, the bucket K is loaded at or near the tower A, and is dumped at a point removed from the tower A. Therefore, when the cable 42 is operated to raise the bucket K until the weight 62, is raised, which produces the action just above described, releasing the cable 20 and engaging the cable 42, a continuance of the pull on the cable 42 carries the carrier outward over the span of the cable 20.

When the carrier, and the bucket support-

ed thereby, have arrived at the point where it is desired to dump the bucket, the drum controlling the cable 42 is arrested, and the drum 44 controlling the dump cable 42^a is rotated to take in the said cable. This results in the operation of the dumping mechanism for the bucket. The drums 43 and 44 are operated to return the bucket and carrier to the loading point, the same being drawn by the cable 42^a. The carrier having arrived at the loading point, it is arrested by stopping the drum 43 and holding the carrier by the cable 42. When the drum 43 and cable 42 are thus arrested, the bucket K and bracket 61 have been carried suspended from the carrier I, so as not to lift the weight 62^a, this position allowing the jaws 77 and 78 to grasp in holding relation the cable 42. The drum 43 and cable 42 having been arrested as above stated, the drum 44 is rotated to draw upon the cable 42^a. The cable 42^a lifts the bucket K and the bracket 61 until the said bracket impinges upon and lifts the weight 62^a. In this position the cable 42 is slacked, closing the leaves of the bucket and lowering the same until the bracket 61 passes downward out of engagement with the weight 62, permitting the same to operate the shoes 50, 50 and 51 to engage the cable 20, thereby lifting the lever 84 and removing the end 100 thereof from the support of the pin 99 and the jaw 78. When the weight 62^a is now lifted, the jaw 78 is depressed by the weight of the cable 42, which separates the jaws 77 and 78. Having thrown the middle link of the toggles out of alinement the jaw 78 collapses upon the block 96, as shown in Fig. 2 of the drawings. In this position the jaw 78 is held by a latch 101, which is pivotally mounted at 102 on the frame of the carrier I. The latch 101 is provided at the lower end with a downwardly projected tail piece 103, which is extended into the path of the end 100 of the lever 84.

When the lever 84 is raised, and the strain of the weight 62^a is exerted upon the cable 82, the end 100 of the lever 84 is in position to swing the tail piece inward, projecting the head of the latch 101 outward from over the jaw 78, which permits the said jaw to be raised, as above described. In the position in which the parts are now placed, both the cables 42 and 42^a are slackened to run the bucket K down to be filled. In this position the carrier is held immovable by the shoes 50, 50 and 51, as above described. On raising the bucket K the operation above described is repeated, and the carrier is again drawn outward over the dump, emptied and returned.

It is to guide the weights 62, 62^a, and to hold the same in alinement with the cables 42 and 42^a, that I have provided the weights with extensions 104, 104. Mounted on these

extensions are two pairs of anti-friction rollers 105, 105, and two pairs of rollers 106, 106. These rollers strike upon and fend away from the cables 42 and 42^a.

5 Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

10 1. A portable tramway comprising a suspended tram cable; a carrier frame; carrying wheels mounted in said frame to track on said tram cable; a hoisting cable passing through said frame; brake jaws mounted in said frame adapted to engage said tram cable; holding jaws mounted in said frame
15 adapted to engage said hoisting cable; and means embodying a hoisting mechanism for closing said brake jaws and said holding jaws alternately.

20 2. A portable tramway comprising a suspended tram cable; a carrier frame; carrying wheels mounted in said frame to track on said tram cable; a hoisting cable passing through said frame; elongated brake jaws disposed in parallel relation with said tram
25 cable mounted in said frame and adapted to engage the tram cable; holding jaws mounted in said frame adapted to engage said hoisting cable; means embodying a hoisting mechanism for closing said brake jaws and
30 said holding jaws alternately; and suspended weights for actuating the said means for closing the said jaws, said weights being adapted to be held out of operative position by the said hoisting mechanism.

35 3. A portable tramway comprising a suspended tram cable; a carrier frame; carrying wheels mounted in said frame to track on said tram cable; a hoisting cable passing through said frame; elongated brake jaws
40 mounted in said frame in parallel relation to said tram cable and adapted to engage said tram cable; holding jaws mounted in said frame adapted to engage said hoisting cable; means for closing the said brake jaws
45 and said holding jaws alternately embodying a rocking lever adapted to close the one set of jaws while opening the other; and a weight to rock said lever adapted to be lifted by the said hoisting mechanism when the
50 bucket is raised to carrying position.

4. A portable tramway comprising a suspended tram cable; a carrier frame; carrying wheels mounted in said frame to track on said tram cable; a hoisting cable passing
55 through said frame; elongated parallel jaws disposed in parallel arrangement on both sides of the said tram cable and joined by toggle levers; holding jaws mounted in said frame adapted to engage said hoisting cable;
60 a wheel mounted in said frame; a rocking lever operatively engaged with said holding jaws; links connecting said wheel with said rocking lever and with said toggles to operate the one as the other is released; and a
65 weight to rock said lever adapted to be

lifted by the said hoisting mechanism when the bucket is raised to carrying position.

5. A portable tramway comprising a suspended tram cable; a carrier frame; carrying wheels mounted in said frame to track
70 on said tram cable; a hoisting cable passing through said frame; elongated parallel jaws disposed in parallel arrangement on both sides of said tram cable; a stationary jaw disposed to engage said hoisting cable; a
75 movable jaw alined with said stationary jaw; expanding members for elevating the said movable jaw to close on the said stationary jaw and said hoisting cable; and means for actuating said expanding mem-
80 bers controlled by said hoisting cable.

6. A portable tramway comprising a suspended tram cable; a carrier frame; carrying wheels mounted in said frame to track
85 on said tram cable; a hoisting cable passing through said frame; elongated brake jaws disposed in parallel arrangement on both sides of said tram cable and joined by suitable levers; a stationary jaw; a movable
90 jaw; toggle levers for elevating said movable jaw; a base block secured to said toggle levers; a rocking lever attached to the said levers joining the brake jaws and the said base block to raise the latter as the former
95 operates to release the said brake jaws; and a weight to rock the said lever, said weight being adapted to be lifted by the said hoisting mechanism when the bucket is raised to carrying position.

7. A portable tramway comprising a suspended tram cable; a carrier frame; carrying wheels mounted in said frame to track
100 on said tram cable; a hoisting cable passing through said frame; elongated brake jaws disposed in parallel arrangement with the
105 said tram cable and adapted to engage the same and joined by suitable levers; a brake operating wheel; a rocking lever operatively connected with said brake operating wheel; links connecting said levers with said
110 wheel; a stationary jaw; a movable jaw; expanding members for elevating said movable jaw in position to close on said stationary jaw and said hoisting cable; means for actuating said expanding members; a mov-
115 able base block for said expanding members engaged by said rocking lever; a suspended weight to rotate said wheel; and means for supporting said weight on said hoisting cable in inoperative position.
120

8. A portable tramway comprising a suspended tram cable; a carrier frame; carrying wheels mounted in said frame to track
125 on said tram cable; a hoisting cable passing through said frame; elongated brake jaws disposed in parallel arrangement to said tram cable and adapted to engage the same; connecting levers for said jaws; a stationary jaw disposed to arrest said hoisting cable; a movable jaw alined with said stationary
130

jaw; toggle levers adapted to elevate the
said movable jaw to close the same upon said
stationary jaw and said hoisting cable; a
weight suspended from said toggle levers;
5 means for lifting said weight independent
of said toggle levers; a base block for said
toggles; a rocking lever extended under said
base block; a brake operating wheel; links
10 connecting the said rocking lever and con-
necting levers for said jaws with said wheel;
a controlled winding wheel; a flexible con-
nection between said brake wheel and said
winding wheel; a suspended weight to ro-
tate said winding wheel; and means for
15 holding the said winding wheel in position.

9. A portable tramway comprising a sus-
pended tram cable; a carrier frame; carry-
ing wheels mounted in said frame to track
on said tram cable; a hoisting cable passing
20 through said frame; elongated brake jaws
disposed in parallel arrangement to said
tram cable and adapted to engage the same;
connecting levers for said jaws; a stationary
jaw disposed to arrest said hoisting cable;
25 a movable jaw alined with said stationary

jaw; toggle levers adapted to elevate the
said movable jaw to close the same upon
said stationary jaw and said hoisting cable;
a weight suspended from said toggle levers;
30 means for lifting said weight independent
of said toggle levers; a base block for said
toggles; a rocking lever extended under said
base block; a brake operating wheel; links
35 connecting the said rocking lever and con-
necting levers for said jaws with said wheel;
a controlled winding wheel; a flexible con-
nection between said brake wheel and said
winding wheel; a suspended weight to ro-
tate said winding wheel; a ratchet wheel
and pawl therefor to control the movement 40
of said winding wheel; and a releasing de-
vice for said pawl.

In testimony whereof I have signed my
name to this specification in the presence of
two subscribing witnesses.

OSCAR F. HEYDENREICH.

Witnesses:

J. P. BLANCY,
JOSEPH GALVERINA.