No. 756,264. PATENTED APR. 5, 1904.

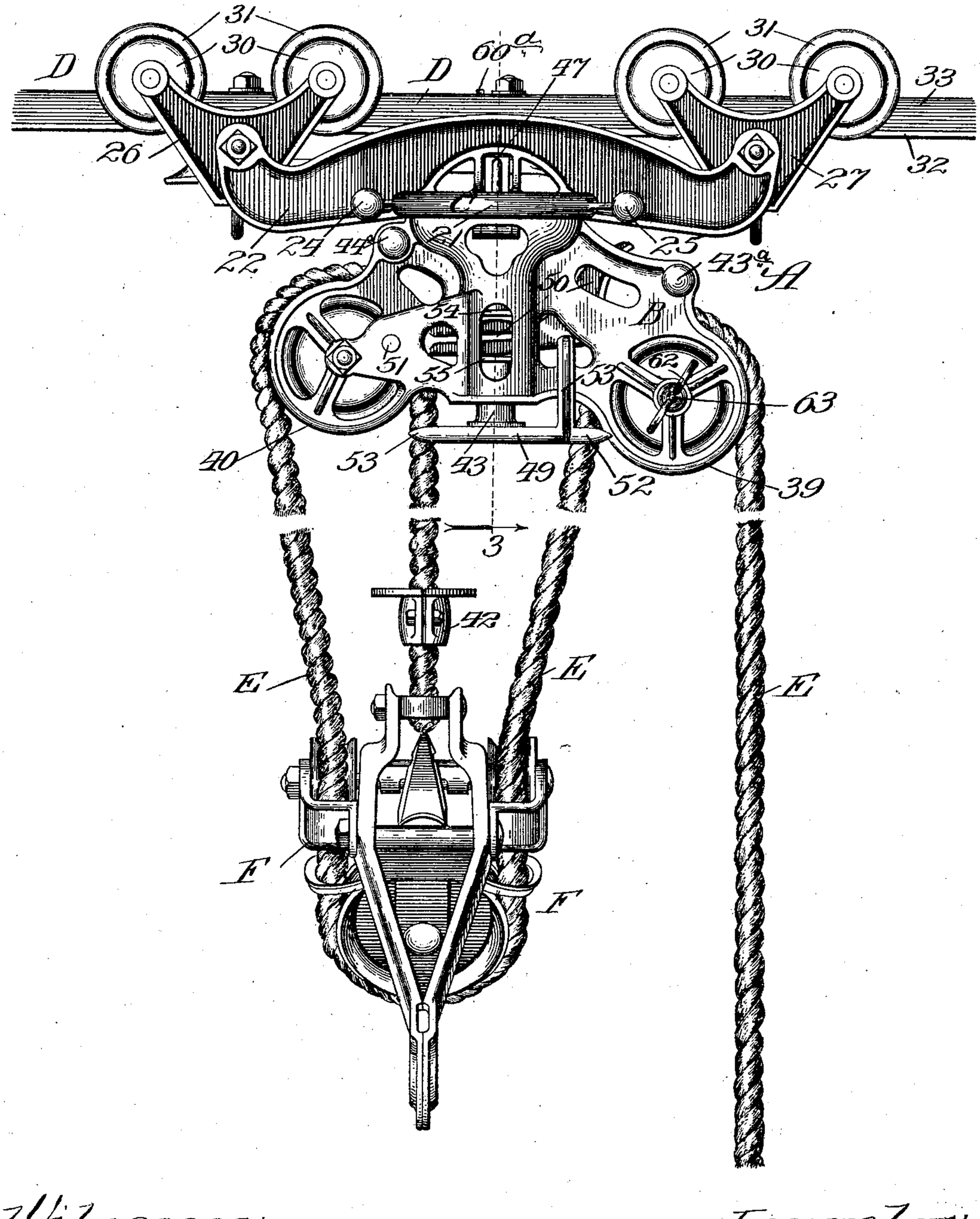
D. M. MOTHERWELL.

TRAVELING CARRIER.

APPLICATION FILED JUNE 27, 1903.

NO MODEL. 6 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
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Ed. C. Larson.

Inventor:
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By Robert Catherwood
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No. 756,264. PATENTED APR. 5, 1904.

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TRAVELING CARRIER.

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NO MODEL. 6 SHEETS—SHEET 2.

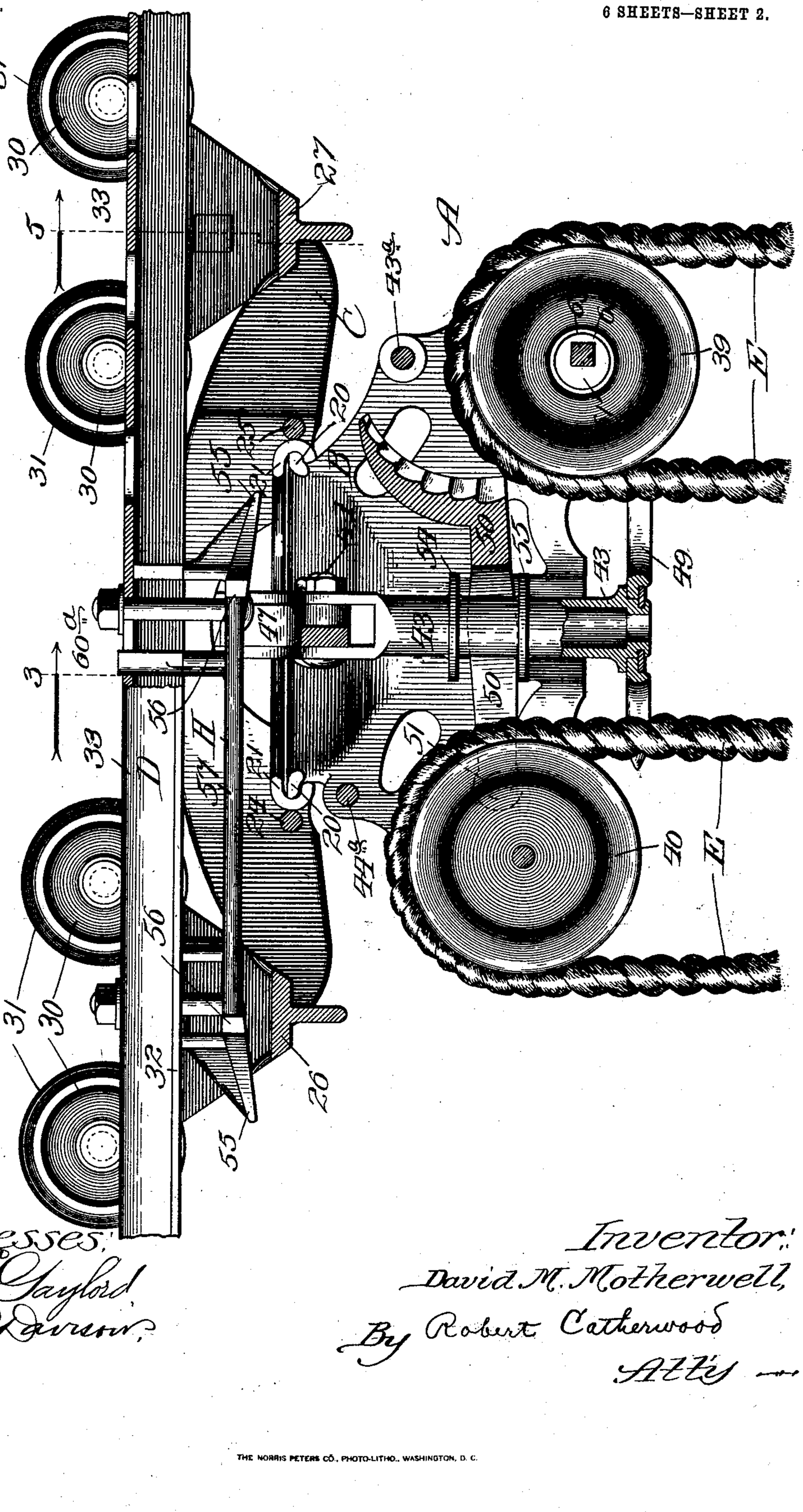

FIG. 2.

Witnesses:
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NO MODEL. 6 SHEETS—SHEET 3.

Fig. 5.

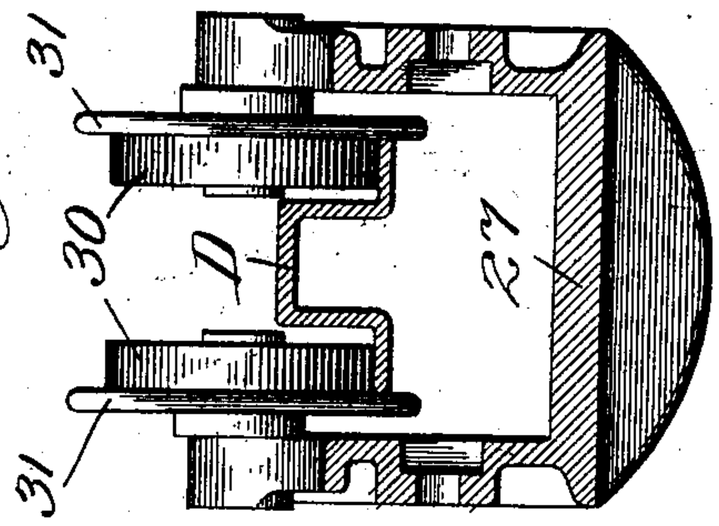

Fig. 6.

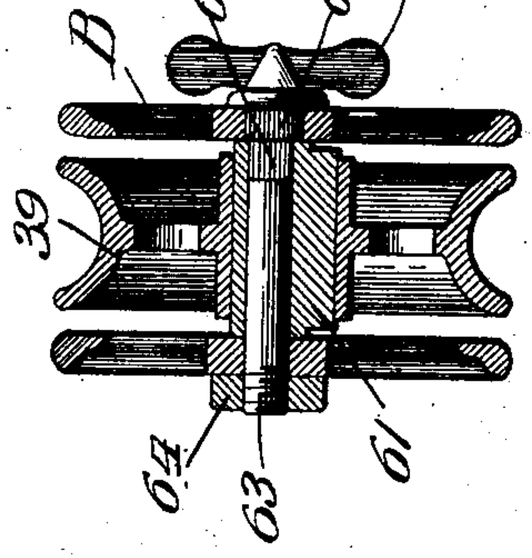

Fig. 4.

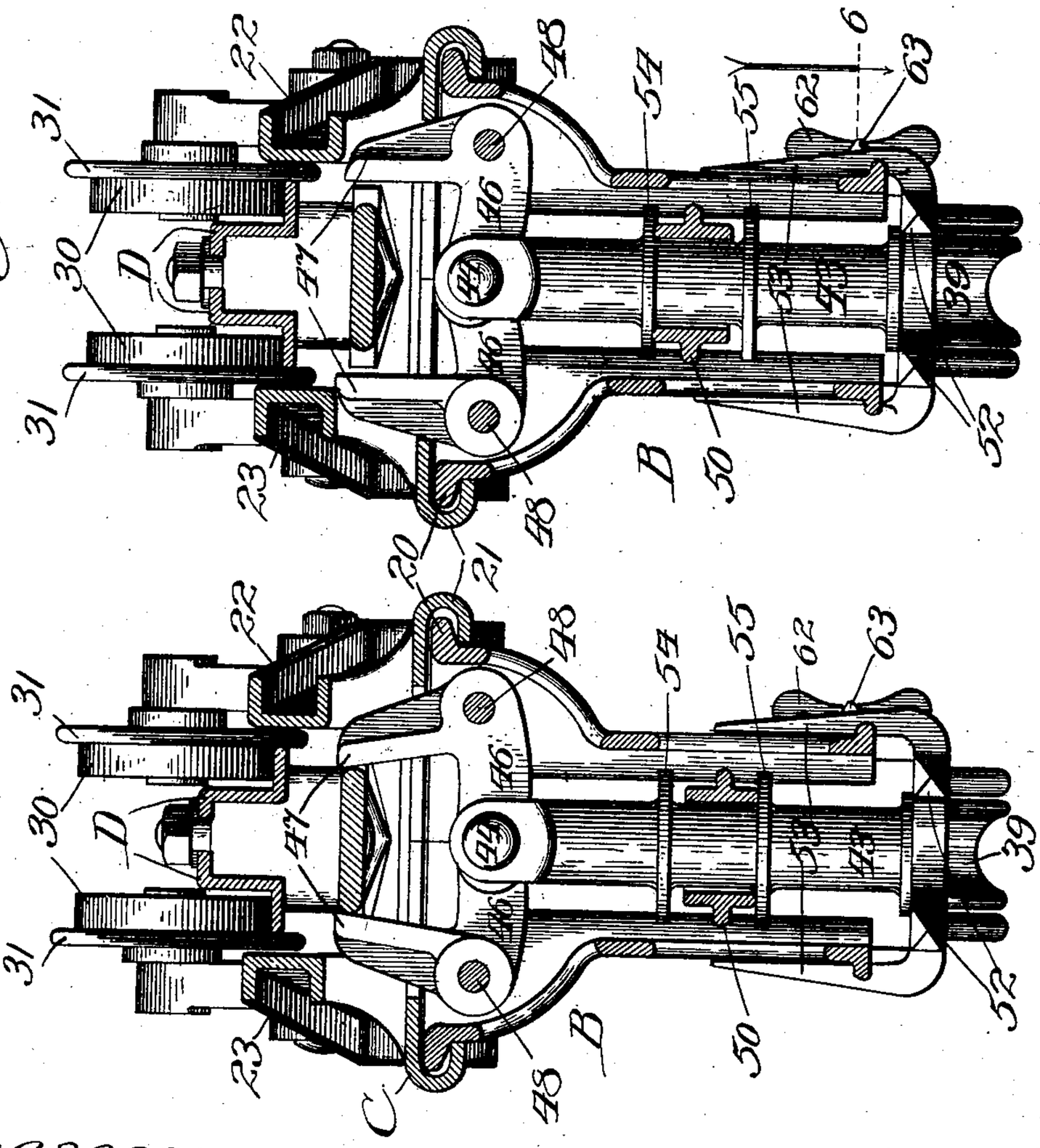

Fig. 3.

Witnesses:
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TRAVELING CARRIER.

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NO MODEL. 6 SHEETS—SHEET 4.

Fig. 8.

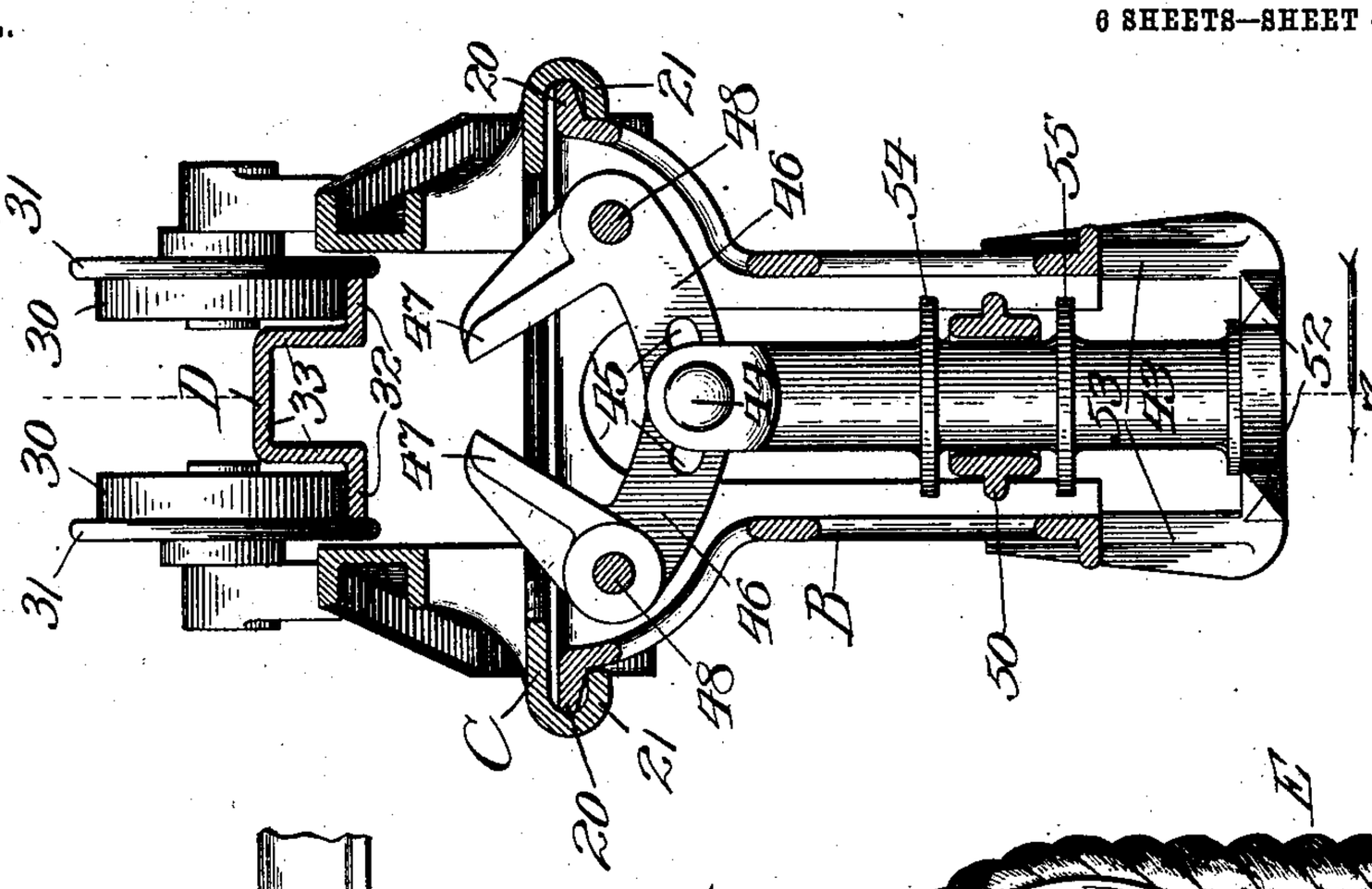
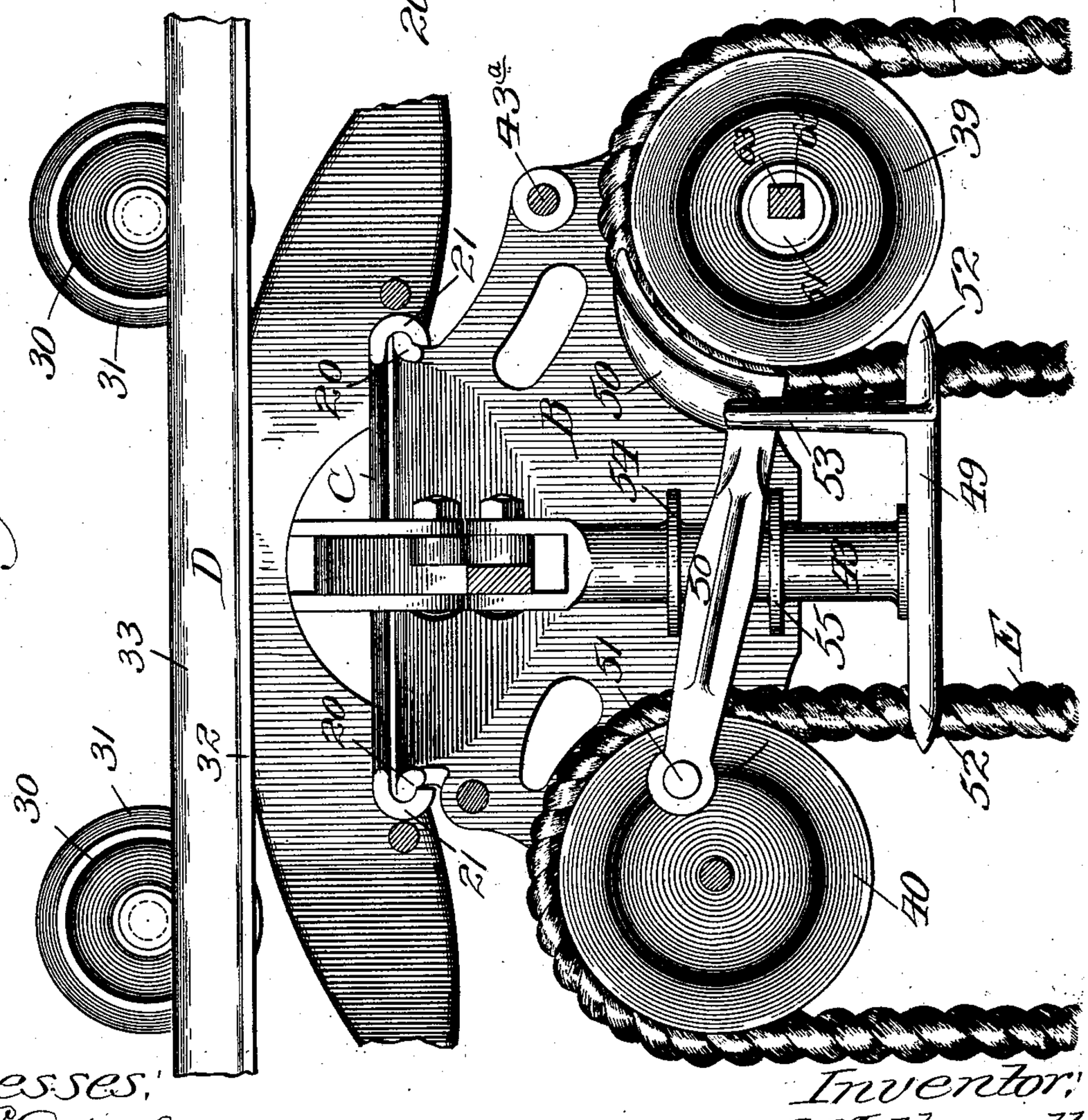


Fig. 7.



Witnesses:
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TRAVELING CARRIER.

APPLICATION FILED JUNE 27, 1903.

NO MODEL. 6 SHEETS—SHEET 5.

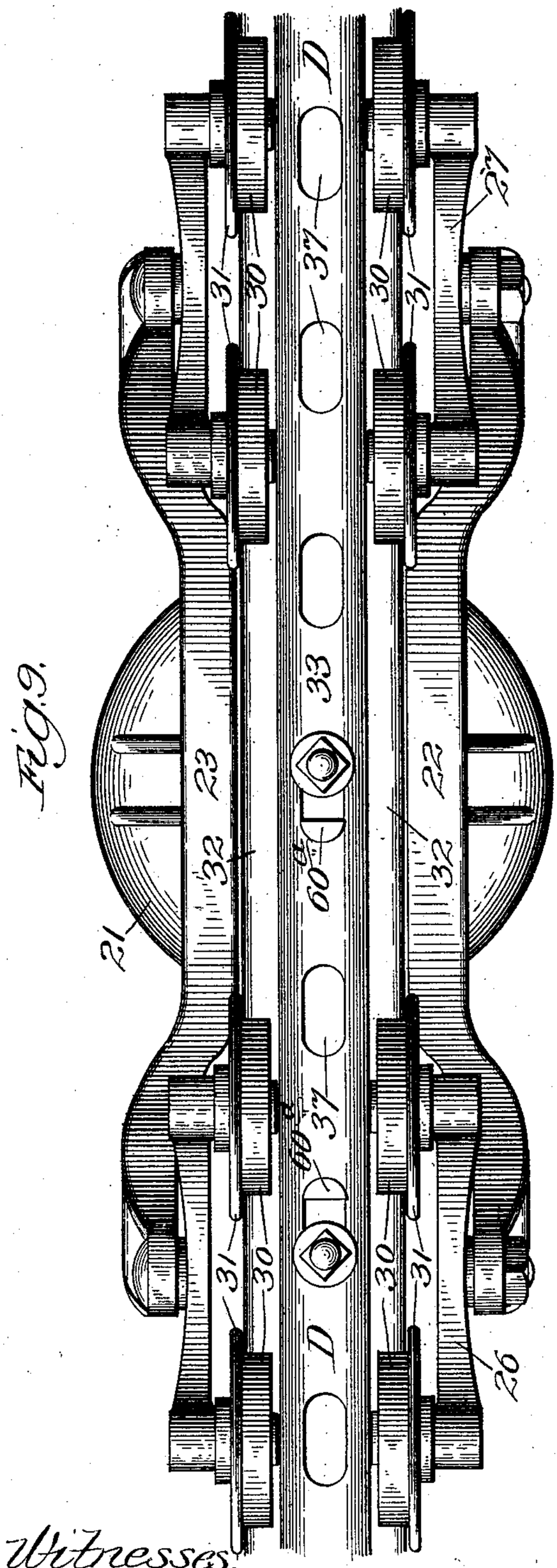

Fig. 9.

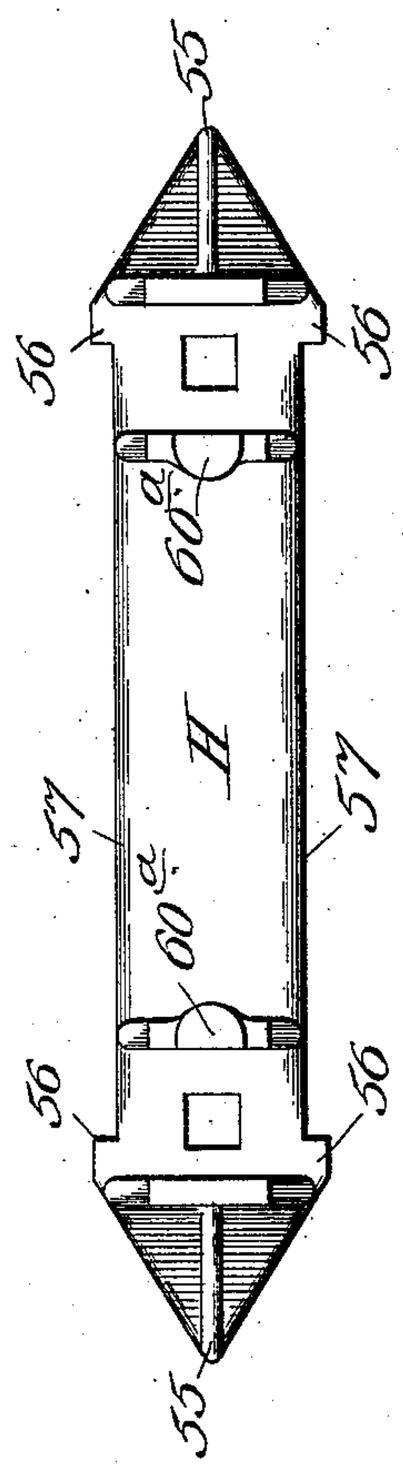

Fig. 10.

Witnesses:
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No. 756,264. PATENTED APR. 5, 1904.

D. M. MOTHERWELL.

TRAVELING CARRIER.

APPLICATION FILED JUNE 27, 1903.

NO MODEL. 6 SHEETS—SHEET 6.

Fig. 11.

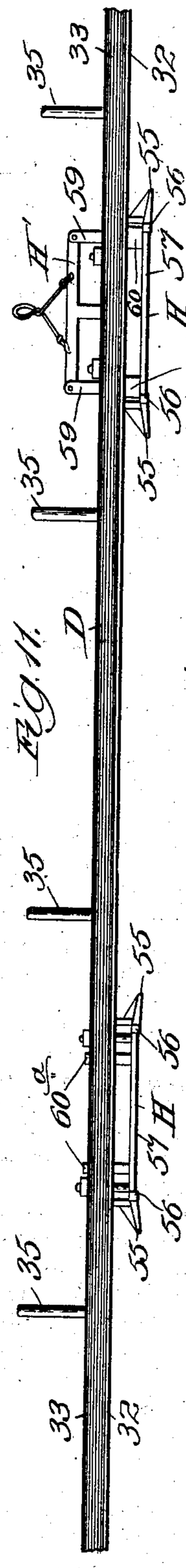

Fig. 12.

Fig. 13.

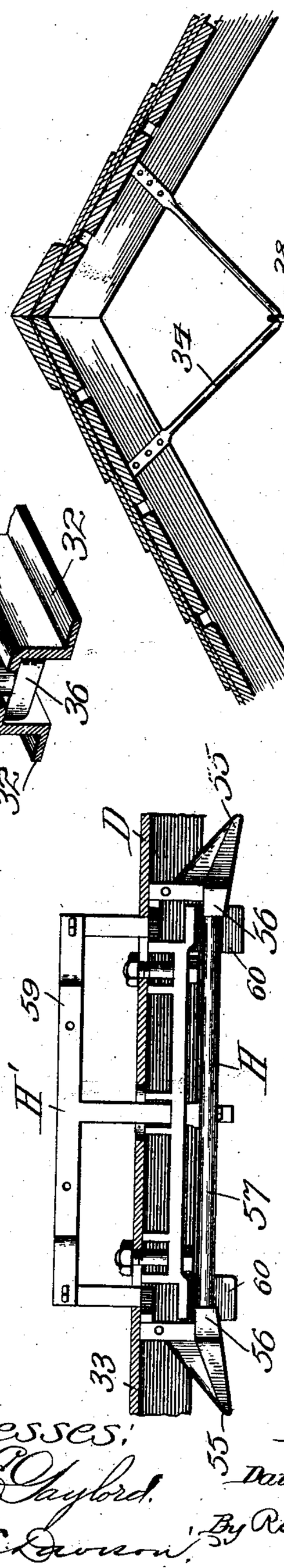

Fig. 14.

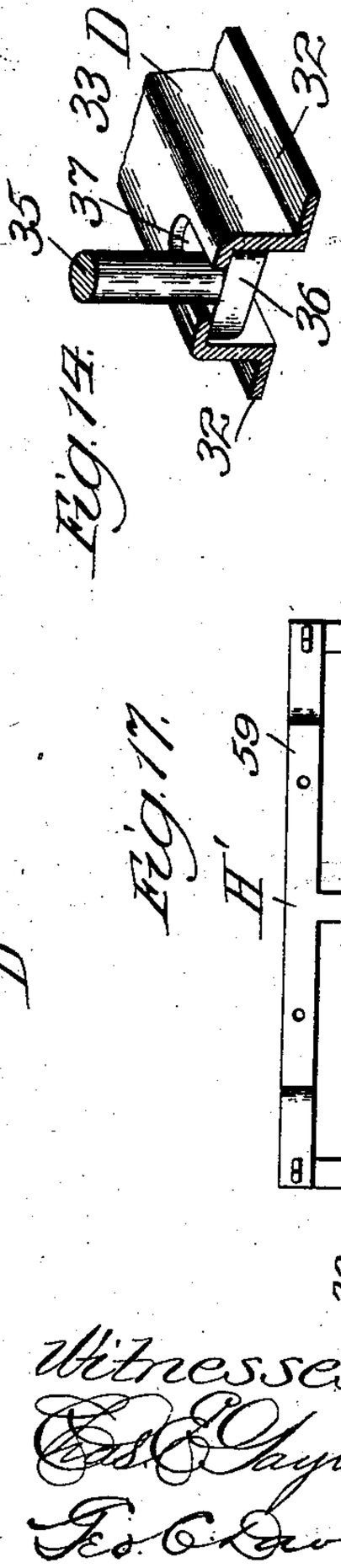

Fig. 15.

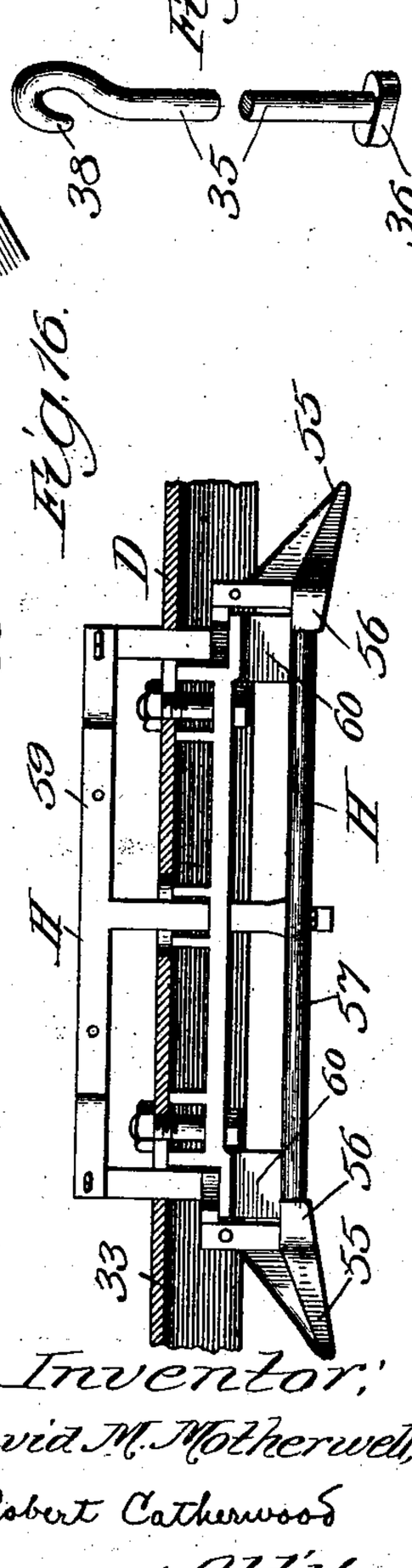

Fig. 16.

Fig. 17.

Witnesses:
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Atty.

No. 756,264. Patented April 5, 1904.

UNITED STATES PATENT OFFICE.

DAVID M. MOTHERWELL, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WHITMAN & BARNES MANUFACTURING CO., OF AKRON, OHIO, A CORPORATION OF OHIO.

TRAVELING CARRIER.

SPECIFICATION forming part of Letters Patent No. 756,264, dated April 5, 1904.

Application filed June 27, 1903. Serial No. 163,448. (No model.)

To all whom it may concern:

Be it known that I, DAVID M. MOTHERWELL, a citizen of the United States, residing at Chicago, Cook county, Illinois, have invented a new and useful Improvement in Traveling Carriers, of which the following is a specification.

My invention relates to traveling carriers which operate to raise a load vertically, convey it horizontally, and release it at a desired point. Its object is to provide efficient and safe means for thus elevating a load, for allowing the carriage to make its horizontal trip with the load held securely, and for automatically lowering and releasing the load at a desired point.

The invention consists in a carriage or trolley adapted to travel upon an approximately horizontal overhead track in connection with a detent and stop operated to hold the trolley at certain points on the track, mechanism for causing the trolley to become disengaged from this stop and for simultaneously gripping the supporting-rope, whereby whenever the trolley is released the load is prevented from descending, and means for gradually arresting the progress of the trolley and automatically releasing the load at a desired point.

My invention also contemplates the use upon the track of a plurality of stops or trip devices which may be operated to permit the trolley to pass them or to arrest the progress of the trolley and release the load, whereby the load may be raised or deposited at any one of a number of points beneath the track.

It also consists in other features set forth in the specification and particularly pointed out in the claims.

In the drawings, Figure 1 is a side view of a carrier embodying my invention, showing the supporting or hoisting rope connected with a sling-pulley and hooks for engaging with the load. Fig. 2 is a view of the same side with portions of the exterior casting broken away to reveal the interior construction. Fig. 3 is an end view taken on line 3 of Figs. 1 and 2, showing the detents in engagement with the abutments on the stop-plate or tripping member. Fig. 4 is a similar view of the same parts, showing the detents held out of engagement with the abutments to permit the carrier to leave the stop-plate or tripping member. Fig. 5 is an end view taken on line 5 of Fig. 2 looking in the direction of the arrow, showing the end of a truck and the end pair of wheels attached thereto. Fig. 6 is a view, partly in section and partly in perspective, taken through the pulley opposite the corrugated jaw of the gripping-dog, showing the adjustment for shifting the pulley nearer or farther from the dog to fit different sizes of ropes or cords. Fig. 7 is a side view of the carrier after it has passed the stop-plates or tripping members, showing the gripping-dog brought into engagement with the rope or cord. Fig. 8 is an end view illustrating the position which the plunger and detents assume when the dog occupies the position shown in Fig. 7 as the carrier travels between stop-plates or tripping members. Fig. 9 is a top view of the carrier and track. Fig. 10 is a top view of a stop-plate. Fig. 11 is a side view of the track, showing a stationary and a movable stop-plate or tripping member. Fig. 12 is a top view of the track. Fig. 13 is an elevation of a bracket and hanger for supporting the track. Fig. 14 is a view of a section of the track, showing a hanger inserted therein for supporting the track. Fig. 15 is a perspective of one of the hangers. Fig. 16 is an elevation of a movable stop-plate or tripping member on the track in position for arresting the carrier. Fig. 17 is a similar view of the same parts drawn out of working position to permit the carrier to pass.

In the drawings, A indicates the trolley or carrier, which consists of the lower frame B and the upper frame C, the former supported by the latter and swiveled thereto. This swivel attachment may be accomplished, preferably, by providing the top of the frame B with a circular orifice having a flange 20 fitting into and adapted to turn in the circular guideway 21 in the frame C. This permits the lower frame B to be reversed or turned about freely. Frame C is provided with supports or beams 22 and 23, bolted together at

24 and 25 and secured to trucks having flanged wheels 30 running on the track, as shown. I prefer to construct the trucks 26 and 27 of a single U-shaped casting, the upright portions thereof being, when viewed from the front of the carrier, of substantially triangular form, Figs. 1 and 5. These triangular side piece are attached at the two upper corners to the axes of the wheels, so that each piece holds two wheels in alinement on one side of the flanged track, while the triangular pieces forming the other upright of the U-shaped casting also holds two wheels in alinement with each other opposite to the first-mentioned wheels. The frames 22 and 23 are bolted or otherwise suitably secured from the lower corner of each triangular piece of the truck-casting. This construction insures accurate alinement of the wheels and prevents them from twisting or jamming or from wearing the truck unevenly. The flange 31 on wheels 30 is located on the outer side. The frames, trucks, and wheels may be of any suitable construction adapted to support the weight of the trolley and its load upon the track.

The drawings illustrate my preferred form of track, (indicated by D.) This track is provided with a web or raised portion 33 and with horizontal flanges 32 at the base of the raised portion, projecting to afford a rail support and guide for the wheels 30 to travel upon. The track is usually constructed of iron and is adapted to support considerable weight. Where the weight is less or where for other reasons it is desirable, my carrier may be run upon rods, wires, or other suitable ways. The track may be suspended in any suitable manner. The use of hangers (illustrated in Figs. 13, 14, and 15) in connection with brackets and the perforations or orifices 37 in the track D will be found satisfactory. Brackets 34 are secured to the joist-beams or ceiling to afford support to the hangers 35. The brackets are placed substantially at right angles to the track. Each of the hangers 35 is provided with a lug 36, adapted to slip into one of the slots or apertures 37 in the web or raised portion 33 of the track. It will be observed by inspection of Figs. 13, 14, and 15 that the apertures and lugs have substantially greater length than width, so that when a lug is slipped through one of the apertures it may be turned crosswise to afford a support to the track. The hook 38 on each hanger is set at right angles to the length of the lug, so that when it is turned for engagement with the bracket the lug locks the track securely to it, and it cannot be unlocked until the hook is taken off the bracket and turned at right angles to the bracket and track. This construction provides a track which may be readily put up and taken down by lifting and taking out the hangers and attaching them again to other lines of brackets fastened overhead. Any desired number of these hangers may be used, and the apertures are therefore placed at frequent intervals along the raised portion 33.

At one of the lower corners of the frame B is journaled the pulley 39 and at the other corner the pulley 40, the frame being made, preferably, in two parts bolted together at 43^a and 44^a. E denotes the hoisting or supporting rope or cord attached at one end to the sling, basket, hooks, or other receptacle for containing or securing the load. In Fig. 1 is shown a double pulley, with grappling-hooks for engaging the load, (indicated by F.) Secured about the rope is the movable clamp stop or trip 42, adapted to operate the plunger and detents hereinafter described.

While I have shown two pulleys on the frame B and the rope E passed first between the sheaves of 40, thence around a pulley in F, and lastly over pulley 39, it is obvious that any combination of ropes and pulleys or simple fall and tackle adapted to raise and lower the load and cause the trip to operate the plunger 43 may be used to advantage. Plunger 43 is fastened by bolt 44 through slots 45 in detents 46, the latter provided with jaws or pawls 47, pivoted at 48 to ears in the frame C. At successive stages of the operation of my device these detents occupy three different positions. The first is illustrated in Fig. 4, where they are spread far apart by thrusting the plunger 43 upward to allow them to pass the abutments in the trip-stops or stop-plates H H′, hereinafter described. This position is assumed when the carrier is first started by pulling the free end of the rope E in the direction of travel, which causes the trip 42 to contact with the plunger and force it up until the detents pass the abutments in H or H′. The second position is illustrated in Fig. 3, wherein the detents are shown held apart by the recessed portion of the stop-plates. This is the position which they assume when the carrier is brought to a standstill during the loading and unloading operations. The third position is shown in Fig. 8, wherein the detents are drawn together, the plunger having dropped and thrust the dog 50 into engagement with the rope E. It will be seen that the plunger 43 is operated upon both by the detents and by the trip 42, the former operation being accomplished by the trip-stops or stop-plates H H′, which spread the plunger, and the latter by the trip 42 striking upon or contacting with the face 49 upon the lower end of the plunger. This face or piece 49 is provided with horizontal guide-fingers 52, embracing the rope, and vertical guide-fingers 53, embracing the frame B to prevent the face from twisting out of place as the trip 42 rises and strikes it at an angle to the center and is swiveled to the plunger 43. Dog 50, bifurcated and pivoted at 51 to frame B, is operated by the upper and lower annular flanges 54 and 55 on plunger 43. These parts are so arranged that after the trip 42

has been jerked against the face 49 to release the detents from the recess in stop-plate H or H′ and the carrier has been started the detents being free will allow the plunger to drop, carrying the annular flange 54 down upon the dog, which is so placed that its corrugated or roughened jaw will grasp or bite the rope against the pulley 39 and hold it firmly during transit of the carrier. (See Figs. 7 and 8.) Plunger 43 is passed between the bifurcations of dog 50.

Fig. 6 illustrates the construction of an adjustable bushing 61, upon which the pulley 39 is mounted and which permits adjustments of the pulley to revolve in any one of four different distances from the dog 50 in order to enable the dog and pulley to grip any one of four different sizes of ropes or cords. The bolt or pin 63, held in place by nut 64, is provided with the square neck 65 in the bushing and the larger square neck 66 in the frame and having the exterior wings or handles 62. This pin passes through the center of the frame B about the pulley through a hole square on that side adapted to fit neck 66 and a hole in bushing 61, disposed off the center thereof, thereby making an eccentric of said bushing. The opening in the bushing is cored square at one end to receive neck 65 of pin 63. The nut 64 may be removed or loosened and the pin drawn out by means of wings 62 until the neck 66 is clear of the frame, the neck 65 being still in engagement with bushing 61, when by turning the pin the bushing will turn, thereby changing the axis of the pulley 39 relatively nearer or farther from the dog 50. (See Figs. 2 and 6.) The necks and square holes all having four sides may be made to occupy four different positions relative to the dog to grip four different sizes of rope.

Figs. 10, 11, 16, and 17 illustrate my preferred form of movable and stationary stop-plates or trip-stops. The stationary stop-plates H may be used at the extremities of the track at the point where the elevating takes place and the movable stop-plates H′ at intermediate points. In this way loads may be carried to the farther end of a barn or warehouse by drawing the intermediate stop-plates out of the way of the detents on the carrier and by lowering an intermediate stop-plate only when it is desired to unload beneath that point. The plates H and H′ are supported underneath the track in the path of the detents by bolts passing through two of the openings in the track and have at their ends the points or wedges 55, the abutments 56, and the recesses 57. In order to spread the detents more gradually, it is desirable to turn downward or dip the ends of the wedges. This tends to reduce the force of the blow when the wedges strike the detents to spread them. This spreading operation elevates the plunger 43, and the dimensions of the plate are such that as the detents pass up the wedge and drop into the recesses 57 the plunger is elevated to draw the dog 50 out of engagement with the rope, thus releasing the load. The abutments 56 hold the detents in the recess 57 until the jerk and blow imparted by trip 42 starts the carrier and draws the detents apart to pass them, when they fall together and draw the dog 50 into engagement until the next stop-plate spreads them and releases the load, as above described. The removable stop-plates H′ are provided with a handle or lifting-frame 59 and are slotted to admit the projecting guide-fingers 60, which hold them parallel to the track, but permit them to be lowered into position or drawn up out of the way by the handle-frame 59, secured in any suitable manner. The stationary stop-plate H is usually provided with the upright spacers 60ª, adapted to project through and fit into the slots 37, near the end thereof, and prevent the stop from moving backward or forward on the track, serving as a support or steadying device to hold the stop-plate in accurate alinement.

After the carrier has been installed the operation in elevating and conveying loads is as follows: A receptacle or other holding device is attached to one end of rope E and drawn up by power operating at the other end of the rope until the trip strikes the plunger-face and causes it to rise and spread the detents. The carrier is given a pull in the direction along which it is to travel. As soon as the detents pass the stop-plate the plunger drops, drawing them close together and forcing the dog into engagement with the rope. The supporting-rope is thus held firmly between the pulley and the dog during transit of the carrier. Such of the movable stop-plates H′ as are drawn up out of the path of the detents do not operate them, but permit them to pass until they are opened or spread apart by the wedge of a stop-plate in working position, when the friction in spreading them and the abutment 56 arrests the car and simultaneously raises the plunger to release the dog 50 and permit the load to sink to the ground. The empty carrier may then be reversed and brought back to the loading-point.

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

1. In a traveling carrier, a trolley adapted to move along an overhead horizontal track, an overhead horizontal track having flanges on the sides and a central arched web, trip-stops adapted to be raised within it to permit said trolley to pass or to be lowered therefrom to arrest said trolley, and means for raising and lowering said trip-stops, for the purposes described.

2. In a traveling carrier, an overhead horizontal track and a trolley adapted to travel thereon, a trip-stop adapted to operate said trolley, slots in said track having bolts therein

adapted to support the trip-stop and permit it to be alternately raised and lowered, and guide-fingers secured to said stop and fitting into said slots whereby said trip-stop is secured against horizontal movement, for the purposes described.

3. The combination with an elevated horizontal track and a trolley suspended from and traveling upon said track, of a succession of trip-stops having inclined ends and lateral recesses adapted to spread and engage detents, detents on said trolley, vertical fingers adapted to hold said stops in the same horizontal plane, and means for alternately raising and lowering said stops in and out of the path of said detents, for the purposes described.

4. In a traveling carrier adapted to move along a horizontal track and having a reversible frame attached thereto provided with a pulley and a pivotally-mounted dog adapted to grasp a rope or cord passed over said pulley, a plunger having annular flanges adapted to thrust said dog alternately in and out of engagement with said rope or cord, a track, means for propelling said carrier thereon, stop-trips and detents adapted to arrest said carrier and operate said plunger to release said rope and means for disengaging said detents and causing said dog to engage the rope.

5. In a traveling carrier, a pulley mounted therein, a supporting-rope about said pulley adapted to elevate and lower loads secured thereto, a dog pivoted to press or clutch said rope against said pulley to support the load, a plunger having flanges above and below said dog, and means for alternately raising said plunger to draw said dog away to release said rope and for lowering it to force said dog to press said rope against said pulley and support the load.

6. In a traveling carrier, the combination of means for raising and lowering a load attached to a rope or cable, a pulley adapted to support said rope or cable, a separately-pivoted dog adapted to compress or clutch said rope against the pulley and support the load, and means for adjusting the pulley to revolve nearer or farther from said dog.

7. In a traveling carrier, in combination with a dog and pulley attached thereto and means for operating the dog alternately to clutch and to release a rope or cord, a rope or cord adapted to support a load beneath the carrier, a bushing adapted to be inserted in the axis of said pulley, said bushing having an axial orifice disposed off the center thereof, and means for turning and securing said bushing in the axis of said pulley and of attaching it to said carrier whereby said pulley is adjustable to revolve relatively nearer or farther from said dog and operate upon ropes or cords of different sizes.

8. In a traveling carrier, the combination of a pulley mounted thereon, a bushing inserted in the axis of said pulley and having a square axial orifice disposed off the center, a bolt consisting of a head, two quadrilateral necks and a shank, an opening in the carrier adapted to fit the neck nearest the head and an opening on the opposite side adapted to receive the end of the shank, the orifice in said bushing being adapted to receive said shank and the neck farthest from said head whereby the axis of rotation may be shifted to any one of four different directions from the median of said bolt.

9. In a traveling carrier, the combination of a pulley mounted in the frame thereof, of the bushing 61, having an axial opening disposed off the center adapted to receive the shank and neck 65 of bolt 63, inserted through the frame B, the bolt 63 consisting of the necks 65 and 66, the shank and head 62, and means for turning and securing said bushing and bolt, for the purposes described.

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