

(No Model.)

3 Sheets—Sheet 1.

E. DEDERICK.

CAR MOVER.

No. 412,732.

Patented Oct. 15, 1889.

Fig. 1.

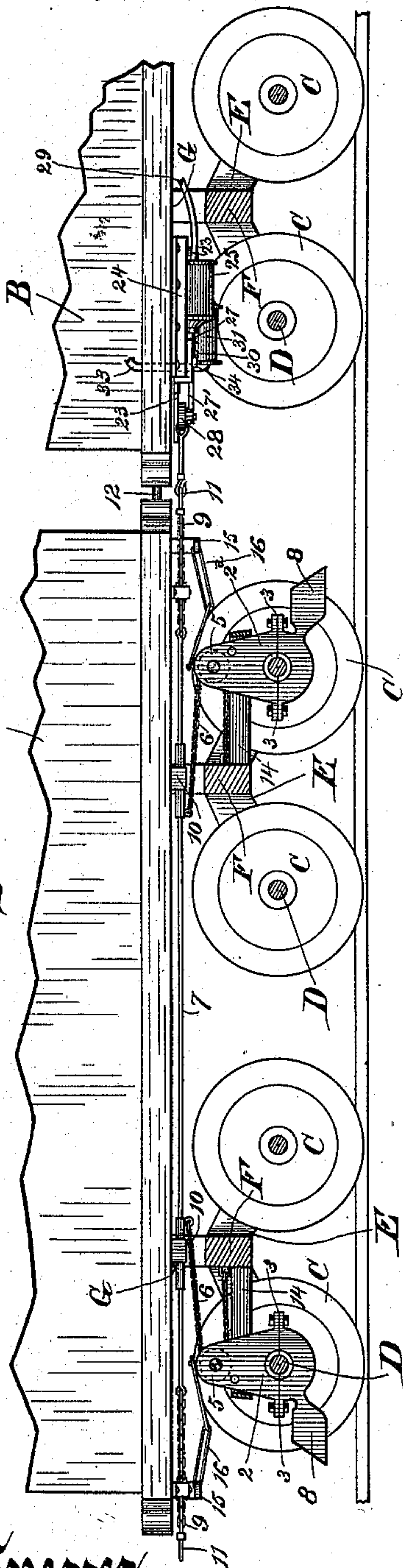
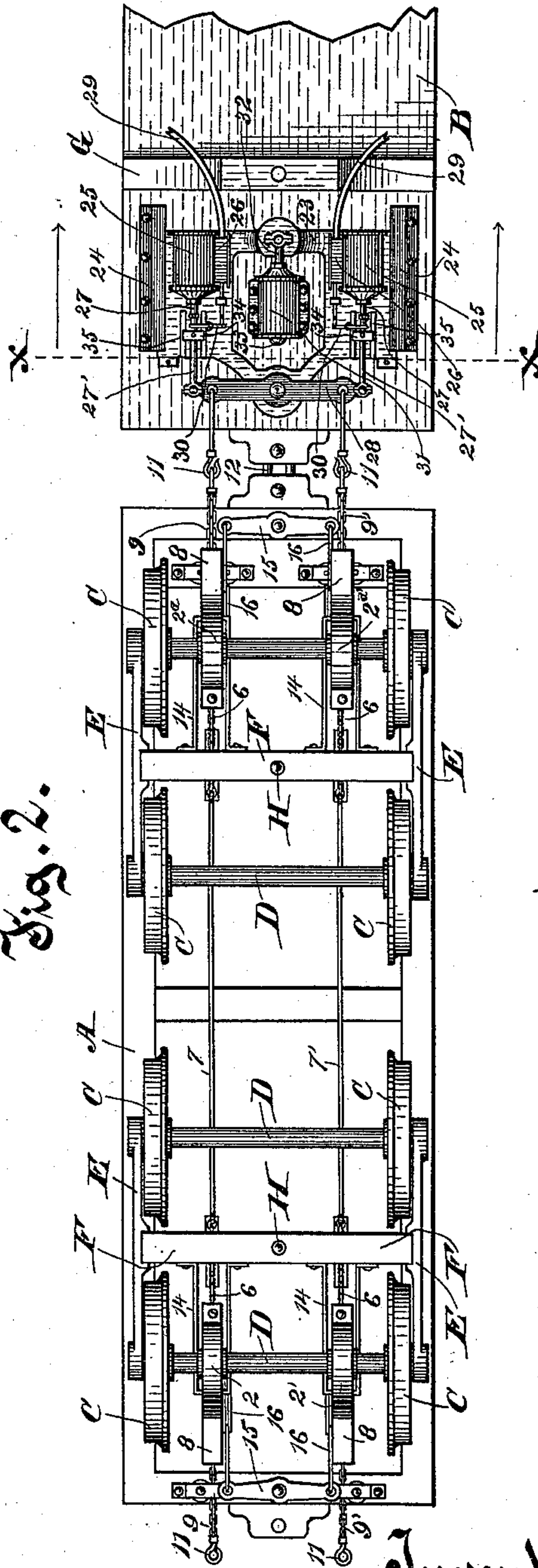


Fig. 2.



Witnesses.

C. H. Lundy.
Anna Faust

Inventor.

Ezra Dederick
By Erwin C. Dederick
Attorneys.

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Fig. 3.

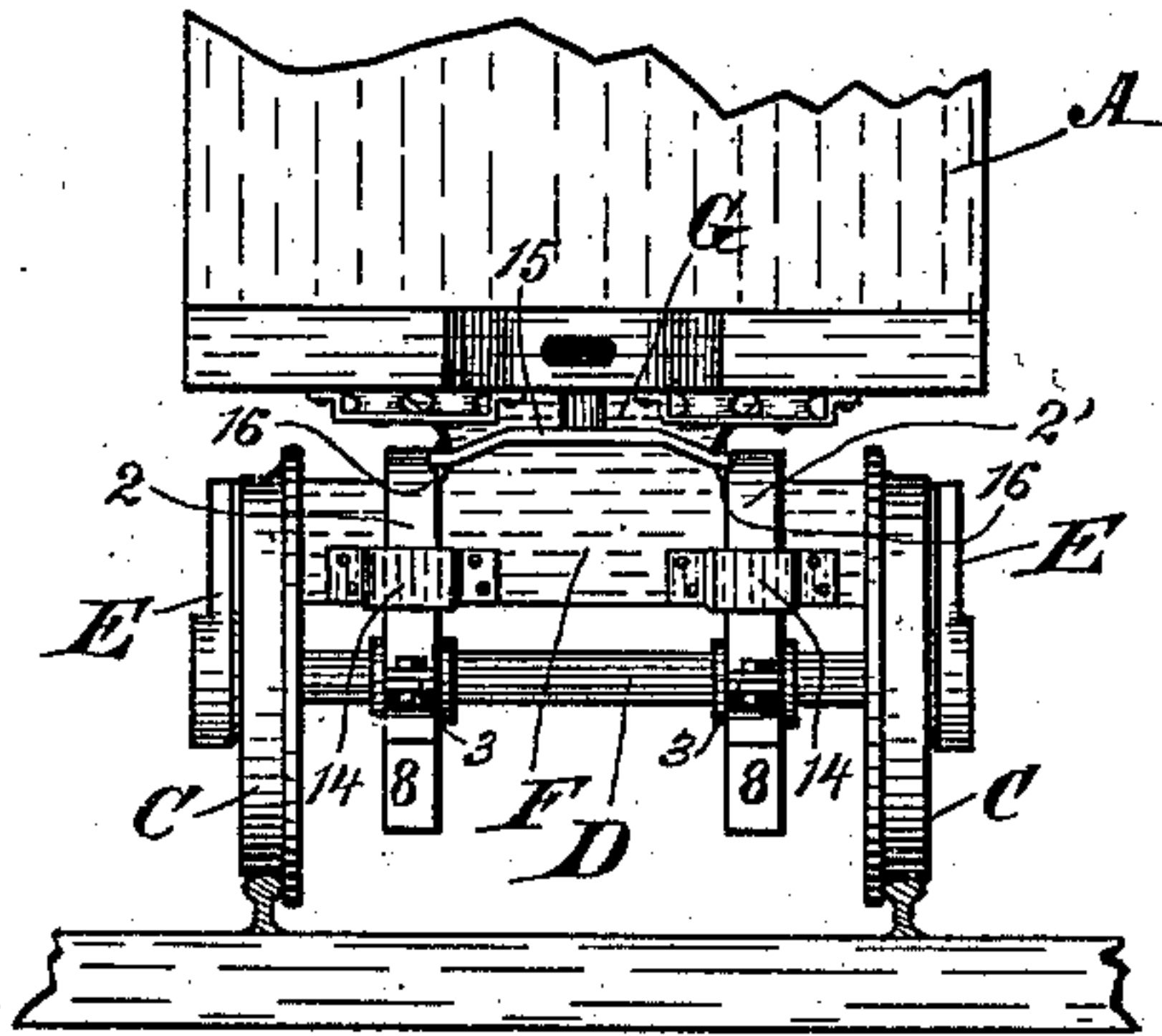


Fig. 4.

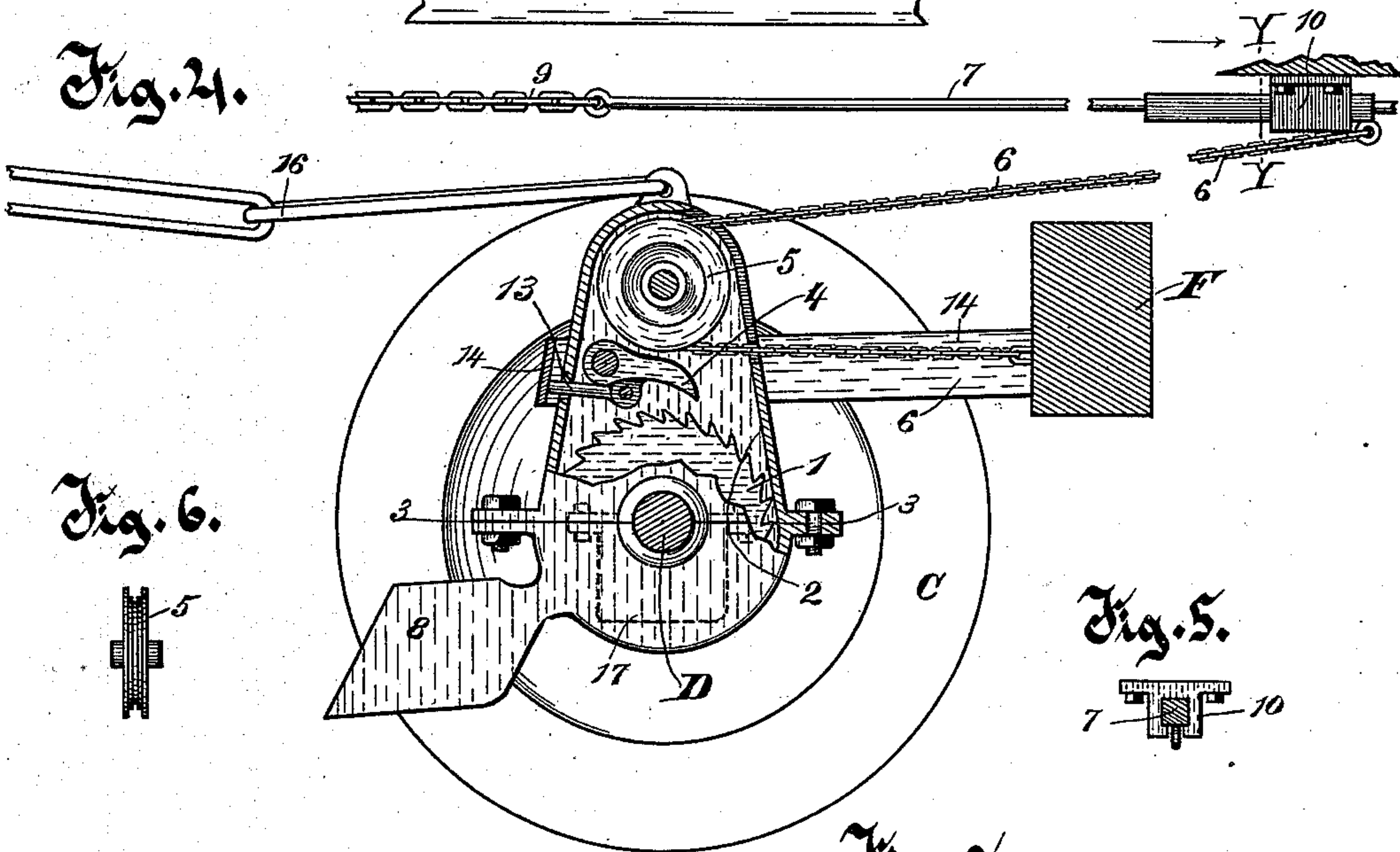


Fig. 6.

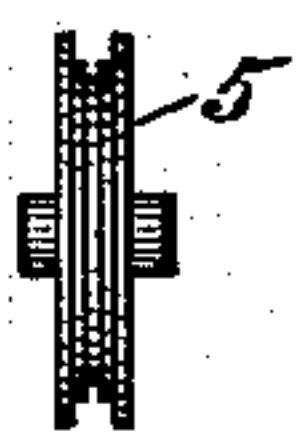
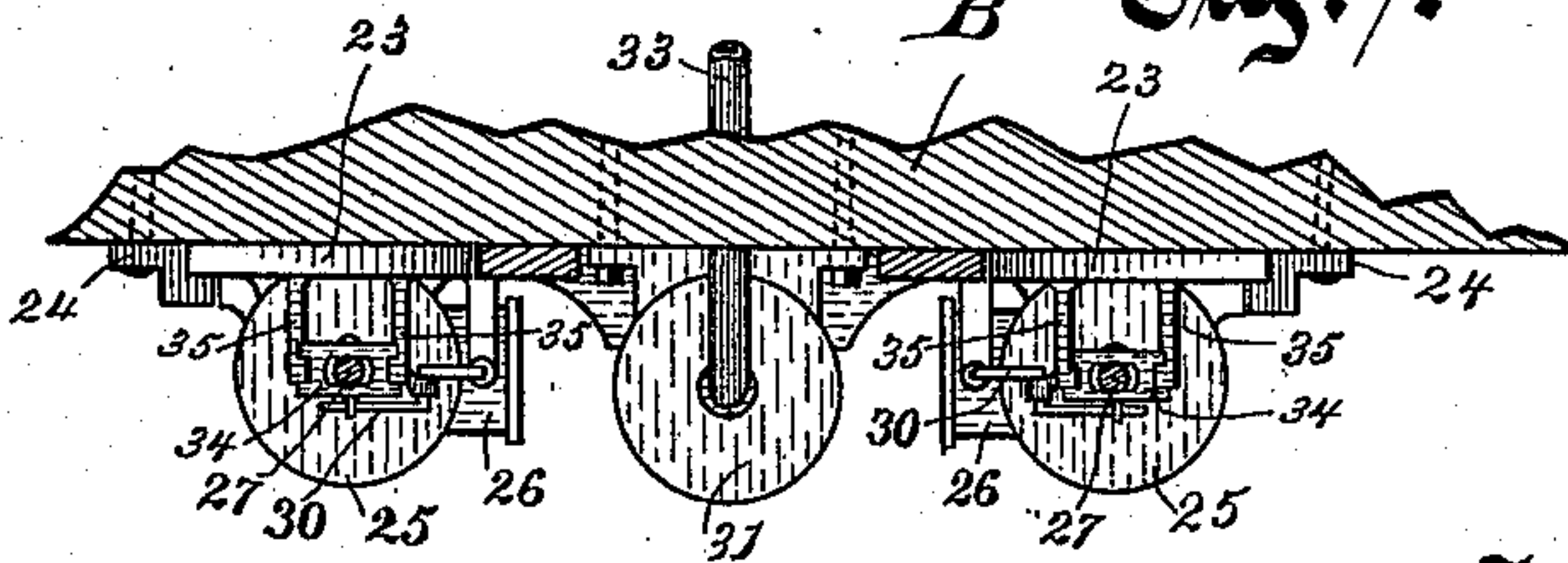


Fig. 5.



Fig. 7.



Witnesses.

C. H. Keener,
Anna Faust

Inventor.

Ezra Dederick
By Emmit Benedict
Attorneys.

(No Model.)

3 Sheets—Sheet 3.

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CAR MOVER.

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Fig. 8.

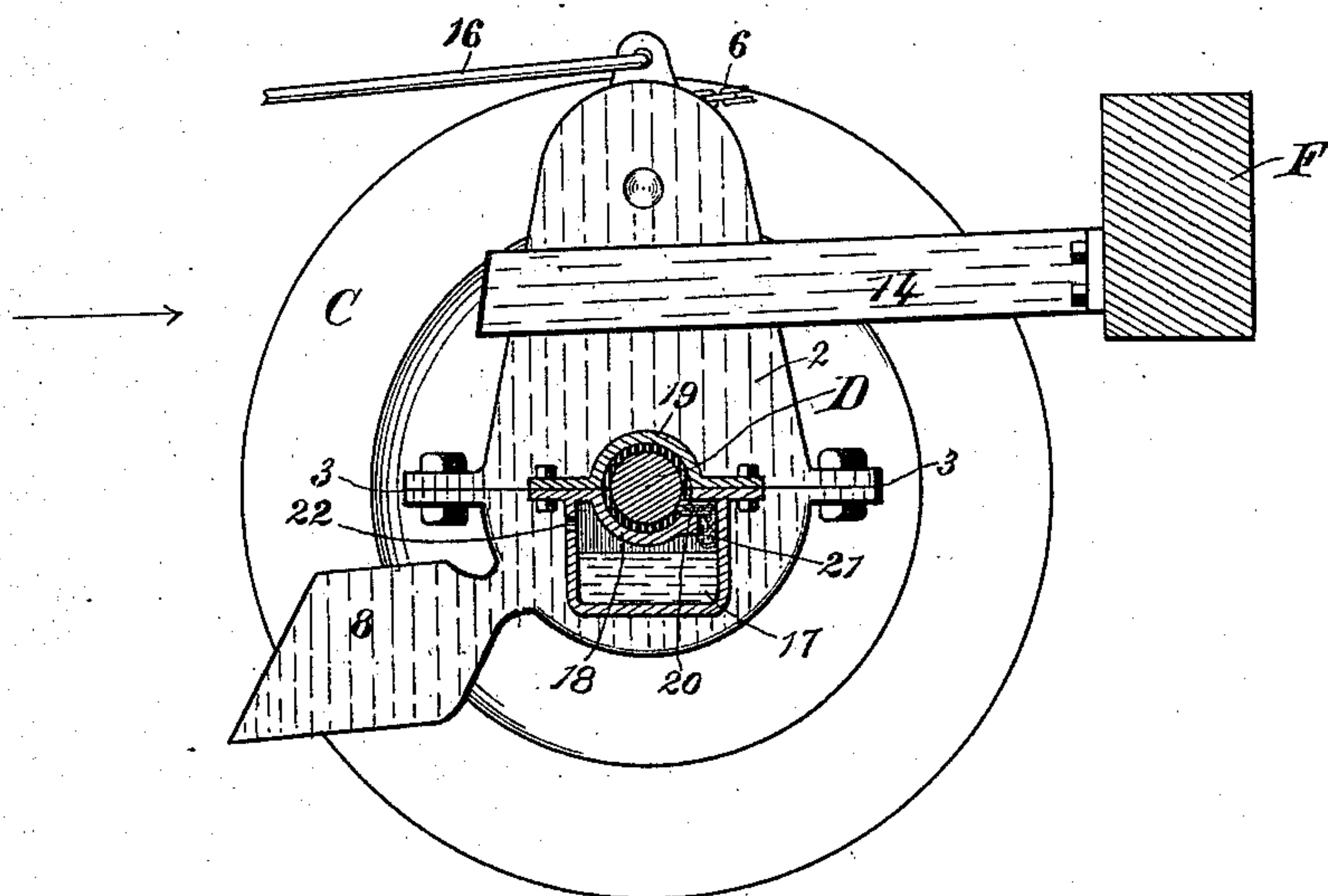
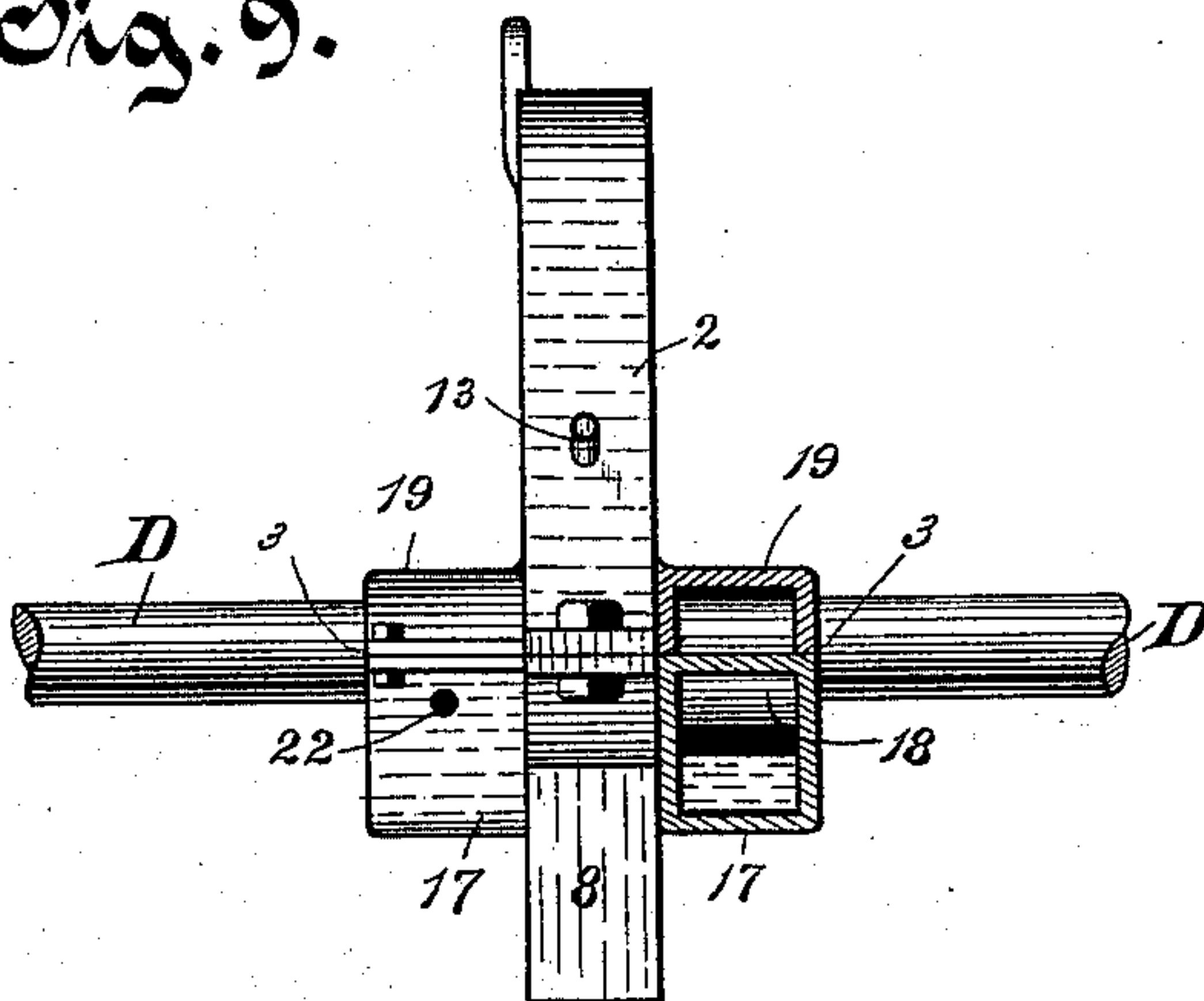


Fig. 9.



Witnesses.

C. N. Kuehn,
Anna Faust.

Inventor.

Ezra Dederick
By Emma W. Baudier
Attorneys.

UNITED STATES PATENT OFFICE.

EZRA DEDERICK, OF MILWAUKEE, WISCONSIN.

CAR-MOVER.

SPECIFICATION forming part of Letters Patent No. 412,732, dated October 15, 1889.

Application filed January 3, 1889. Serial No. 295,305. (No model.)

To all whom it may concern:

Be it known that I, EZRA DEDERICK, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and useful Car-Mover; and I do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters or figures of reference marked thereon, which form a part of this specification.

The object of my invention is to provide a device by which cars may not only be started, but may be kept moving by and through a considerable leverage applied on the wheels causing them to rotate, which device is especially useful in moving freight-trains up heavy grades.

My device, so far as the parts of it which are directly attached to the ordinary freight or passenger car are concerned, may be operated directly from the locomotive or by a special device constructed and attached to a car, which special means for operating is shown in the drawings, and will be hereinafter described.

Figure 1 is a vertical section showing a part of a freight-car and its running-gear with my device attached thereto, and of a part of a second car with the special mechanism for operating my car-moving device attached thereto. Fig. 2 is a bottom or under side view of the same cars and mechanism shown in Fig. 1. Fig. 3 is an end view of the car A, having my device attached thereto. Fig. 4 is an enlarged view of a car-wheel and of that part of my device which is attached directly to the axle of the wheels and of other parts having close connection therewith. Fig. 5 is a vertical transverse section of a part of my device, (seen in Fig. 4,) the view being taken on line Y Y thereof, looking in the direction of the arrow. Fig. 6 is an edge elevation of the chain-pulley shown in Fig. 4. Fig. 7 is a vertical transverse section of the mechanism and car B, (shown in Fig. 2,) taken on line X X thereof, and looking in the direction of the arrows. Fig. 8 is an elevation of the ratchet-case attached to the axle, showing the peculiarly-constructed lubricating-cup-attached thereto in vertical section, which I preferably use with my device. Fig. 9 is an elevation,

part in vertical section, of the same device shown in Fig. 8, taken at right angles thereto and looking in the direction of the arrow in Fig. 8.

The same letters and figures refer to like parts in all the views.

A and B are freight-cars of the ordinary construction provided with wheels C C, rigid on axles D D, which axles are journaled in the truck-frame, consisting, as shown in the drawings, of the yokes E E, on which rest the cross-beams F F, on which are pivoted the bolsters G G by means of king-bolts H H, the body of the cars being supported upon and made rigid to the bolsters G G. Two ratchet-wheels 1 1 are affixed rigidly to an axle D, and a case 2, preferably made in two parts and bolted together on a horizontal line at 3 3, incloses each ratchet-wheel and is supported movably upon the axle. A pawl 4, pivoted in the case 2, is adapted to engage with the teeth of the ratchet-wheel 1. A pulley 5 is journaled in the upper part of the case 2, and a chain 6, secured at one end rigidly to the cross-beam F, runs around and upon the pulley 5, being attached at its other extremity to an endwise-moving rod 7. The case 2 is provided with a gravity-weight 8, whereby the case is held yieldingly in the upright position shown in Figs. 1 and 4.

The rod 7 is supported and moves endwise in brackets 10 10, affixed to the under side of the car, and the rod 7 is continued and made up in part of the chains 9 9, used as a part of the connecting device of the mechanism for the purpose of giving flexibility to it, and these rods and chains are provided with means for connecting them together at the ends of two cars in a continuous line through the train, which means, as shown in the drawings, are the hooks, (seen at 11 11,) the cars in the drawings being coupled by means of the links 12 12.

There are two ratchet-wheels 1 1 on each of one or more axles on each car, which ratchet-wheels have their teeth turned in the same direction, and there are also two ratchet-wheels on each of one or more axles of the same car, the teeth of which ratchet-wheels are turned in the opposite direction.

There are two rods 7 7' attached to each

car, one of which rods is connected by branching chains 6 6' to at least two cases 2 2^a, one of which cases incloses a ratchet-wheel, the teeth of which are turned in one direction, and the other of which (2^a) incloses a ratchet-wheel the teeth of which are turned in the opposite direction. These wheels being commonly placed one at one end of the car and the other at the other end of the car, and the gravity-weight 8 of the respective cases being on opposite sides of the axles, and the tilting-chains 6 being passed about the pulley 5 in opposite directions, so by the endwise movement of the rod 7 the case at one end of the car is adapted to be tilted forward in one direction, while by the reverse endwise movement of the rod 7 the case at the other end of the car is adapted to be tilted forward in the other direction, the movement of the rod and corresponding tilting forward of the case in each instance being adapted to throw the pawl 4 into engagement with the ratchet-wheel 1 and carry it forward correspondingly, thereby rotating the wheel to a corresponding extent.

A small tripping-arm 13 is pivoted at one end in the under side of the pawl 4, and extends horizontally through an aperture in the case 2, and when the case is in an upright position bears at its other extremity against the end of a bracket 14, which bracket is rigid to the cross-beam F. When the case 2 is tilted forward by means of the chain 6, the tripping-arm 13 is carried away from engagement with the bracket 14, and the pawl 4 immediately drops into engagement with the teeth of the ratchet-wheel 1 and remains in engagement therewith until the case 2 is brought back into its upright position by the gravity-weight 8, when the tension on the chain 6 is released.

The rod 7, chains 6, and cases 2 and 2^a, with their attached mechanism on one side of the car, are duplicated on the other side of the car, as shown, in the rod 7', case 2' and 2^a, and attached parts.

Two levers 15 15—one at each end of the car—are centrally pivoted to the under side of the car, and chains 16 16—one at each side—are connected at their respective ends to the upper extremities of the respective adjoining cases 2 2' and 2^a and 2^a'. These chains 16 16 are a little slack when the cases 2 2' are tilted toward them to the limit of their movement in that direction, and the pawls 4 4 will then be out of engagement with the ratchet-wheels, as shown in Fig. 4, and in using this car-mover this slack in the chain 16 16 is to be first taken up by drawing the rods 7 7' forward until the chains 9 9' and 16 16 are taut, by means hereinafter to be described, and then when either of the rods 7 or 7' is drawn forward, tilting the case forward farther on one side, the case on the other side will be correspondingly tilted rearwardly. When the rods 7 7' are released, so that the chains are slack again, the gravity-weights 8

8 will tilt the cases 2 2' rearwardly, so as to throw the pawls 4 4 out of engagement with the ratchet-wheels 1 1.

It will be understood that by means of the mechanism already described through a reciprocating endwise movement of the rods 7 and 7' alternately a forced continuous rotary movement of the wheels is obtained by the forward tilting of the cases 2 and 2' alternately when running in one direction, or by the forward tilting alternately of the cases 2^a and 2^a' when running in the other direction. Such an alternate reciprocating movement of the rods 7 and 7' may be obtained by connecting them directly with the mechanism of the locomotive or by a similar mechanism, hereinafter to be described. The rods 7 and 7' are preferably enlarged or provided with a sleeve for a bearing in those parts which pass through the brackets 10 10. The pulley 5 is preferably made with a double groove, the inner one being narrow and intended to receive the edge of alternate links of the chain, while the sides of the other alternate links of the chain rest on the bottom of the outer groove, as will be understood by reference to Fig. 6.

For lubricating the cases 2 2' about the axles on which they are supported, I provide an oil or grease cup 17, affixed to or made integral with the case 2, having a false top 18, affixed at the rear edge to the side of the cup and curving about the axle on its under side and terminating a little distance from the real cover 19, whereby the aperture 20 is left along the front upper edge of the false cover 18, through which the lubricant may come in contact with the axle when the case is tilted forward, or opposite to which a sponge 21 may be inserted, which sponge will absorb a supply of oil from the cup when the case tilts forward, whereby the axle is kept constantly lubricated. The oil or lubricant may be introduced into the cup through an aperture 22 in the rear part of the cup just beneath the false top 18. These cups are provided on both sides of the cases 2, as shown in Fig. 9, though I have not introduced them in all the drawings, as the other parts are shown more conveniently without the presence of these oil-cups, and as these oil-cups are not a requisite to the proper work of the other mechanism.

To properly operate the double set of devices on the respective axles, it is necessary to forcibly draw the rods 7 7' forward alternately, and for this purpose these rods may be connected forward to proper mechanism on the locomotive, or may be operated by the device shown on the under side of car B in Figs. 1, 2, and 7. This mechanism has a movable carriage 23, supported in ways 24 24, secured to the under side of the car B. This carriage is adapted to move toward front and rear of the car to a very limited extent, which movement is provided for the purpose of taking up any slack in the chains 9 9' and 16 16.

Secured fixedly to the carriage 23 are two steam-cylinders 25 25 and their attached steam-chests 26 26, which steam-chests are each provided with a piston adapted to reciprocate therein lengthwise of the cylinder, which pistons are each provided with a stem 27, these stems at their other extremities being respectively attached by means of the connecting-rods 27' 27' to the outer ends of a lever 28, centrally pivoted on the carriage 23. The rods 7 7' are also connected, respectively, to the extremities of the lever 28. These steam-cylinders 25 25 are supplied with steam from any convenient source, either the boiler of the locomotive or a separate boiler located on a car, through the steam-induction pipes 29 29, entering the steam-chests 26 26, from which the steam is alternately admitted to the steam-cylinders 25 25 on one side of the piston only, and discharged therefrom by means of reciprocating cut-off valves in the steam-chest operated by the stem and lever. (Seen at 30 30.) The interior mechanism of the steam-cylinder and the steam-chest is not shown in detail, as such mechanism is in common use and is well known among all mechanics. A steam-cylinder 31 is secured fixedly to the bottom of the car B within an aperture therefor in the carriage 23, which cylinder is provided with a piston having a stem 32, the outer extremity of which stem is connected to the carriage 23, and the steam-cylinder is provided with a steam-induction pipe 33, leading from a steam-supply into it behind the piston, whereby when steam is let into the cylinder the piston will be forced forward carrying the carriage 23 with it, and thereby taking up the slack in the chains 9 9', so that when the rods 7 7' are to be reciprocated by means of steam introduced into the cylinders 25 25 the slack will be so taken up that the working of the pistons in the cylinders 25 25 will at once act on the rods 7 7', and on the cases 2 2', tilting them forward. The connecting-rods 27' 27' are pivoted at both ends to provide for the curvilinear motion of the oscillating lever 28, being pivoted at their rear ends with the stems 27 27 in the traveling guide-blocks 34 34, which are supported and travel in the ways 35 35, secured to the carriage 23.

Additional sets of ratchet-wheels with their allied mechanism may be attached to other axles of the car and connected through the cases with the reciprocating rods, if desired. It will be seen that the cases 2 and 2' and 2^a and 2^a' can be oscillated alternately without the chains 16 16, and the lever 15, by the counterpoises 8 8, being constructed of sufficient weight to tilt the cases and the thereto-attached mechanism rearwardly quickly on being released from the alternately-forward pull of the rods 7 and 7', respectively; but the double construction of the gravity-weights in connection with the chains 16 16 and lever 15 is preferred.

What I claim as new, and desire to secure by Letters Patent, is—

1. A car-mover consisting of two ratchet-wheels rigid on a car-axle, two cases, one about each ratchet-wheel, oscillating on the axle, each provided with a gravity-weight or counterpoise and carrying a pivoted pawl, in combination with two reciprocating rods connected with the oscillating cases, and means, substantially as described, for reciprocating the rods, all for the purpose set forth.

2. A car-mover consisting of two ratchet-wheels rigid on a car-axle, two cases, one about each ratchet-wheel, oscillating on the axle and carrying a pivoted pawl, in combination with two reciprocating rods connected, respectively, with the oscillating cases, which rods, being connected with mechanism for operating them, are adapted for tilting the cases alternately, and a central pivoted oscillating lever connected at its ends to the oscillating cases, whereby when one case is tilted forward the other case is drawn up rearwardly, substantially as described.

3. The combination, in a car, of two or more sets of ratchets, cases, pawls, and two reciprocating rods connected with the cases, each set of ratchets being on one axle, and the ratchet-wheels and cases of the two sets being, in sets, reversed in direction, with two reciprocating rods, each rod being connected with one case of each set, whereby the two rods and the two cases of one or more sets may be alternately tilted in the same direction, and by the same rods, operated in the reversed direction, the two cases of one or more of the other sets may be tilted in the other direction, substantially as described.

4. In a car-mover, a tilting case and therein a pulley having a double groove, or groove in the bottom of a groove, in its periphery, in combination with a chain running therein, such chain being made of links alternately at right angles to each other, substantially as described.

5. In the tilting case of a car-mover, a pivoted pawl and a thereto-pivoted arm supported on the case, and a stationary bracket, against which the arm is adapted to impinge, substantially as and for the purpose set forth.

6. In the tilting case of a car-mover, a grease-cup having a false top with an aperture therein so located as to permit a fluid lubricant to come or be brought up to the supporting-axle by the tilting of the case, substantially as described.

7. The combination of ratchets, pawls, and cases in sets on the axles of a car and two reciprocating rods, one connected to each of a set of cases and both connected to the respective ends of a centrally-pivoted lever, with a movable carriage supported in ways on the bottom of a car and carrying the centrally-pivoted lever, to which the reciprocating rods are connected, the carriage by its

movement being adapted to take up slack in the reciprocating rods, substantially as described.

8. A car-mover consisting of two ratchet-
5 wheels rigid on a car-axle, two cases, one about each ratchet-wheel, oscillating on the axle, each provided with a gravity-weight and carrying a pivoted pawl, in combination with
10 two reciprocating rods connected, respectively, with the oscillating cases, which rods, being connected with mechanism for operating them, are adapted for tilting the cases al-

ternately, and a central pivoted lever, connected at its ends to the oscillating cases, whereby when one case is tilted forward the
15 other case is drawn rearwardly, substantially as described.

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

EZRA DEDERICK.

Witnesses:

C. T. BENEDICT,
JAS. B. ERWIN.