

No. 881,596.

S. H. LIBBY.

PATENTED MAR. 10, 1908.

ELECTRIC CARRIER.

APPLICATION FILED MAY 18, 1906.

2 SHEETS—SHEET 1.

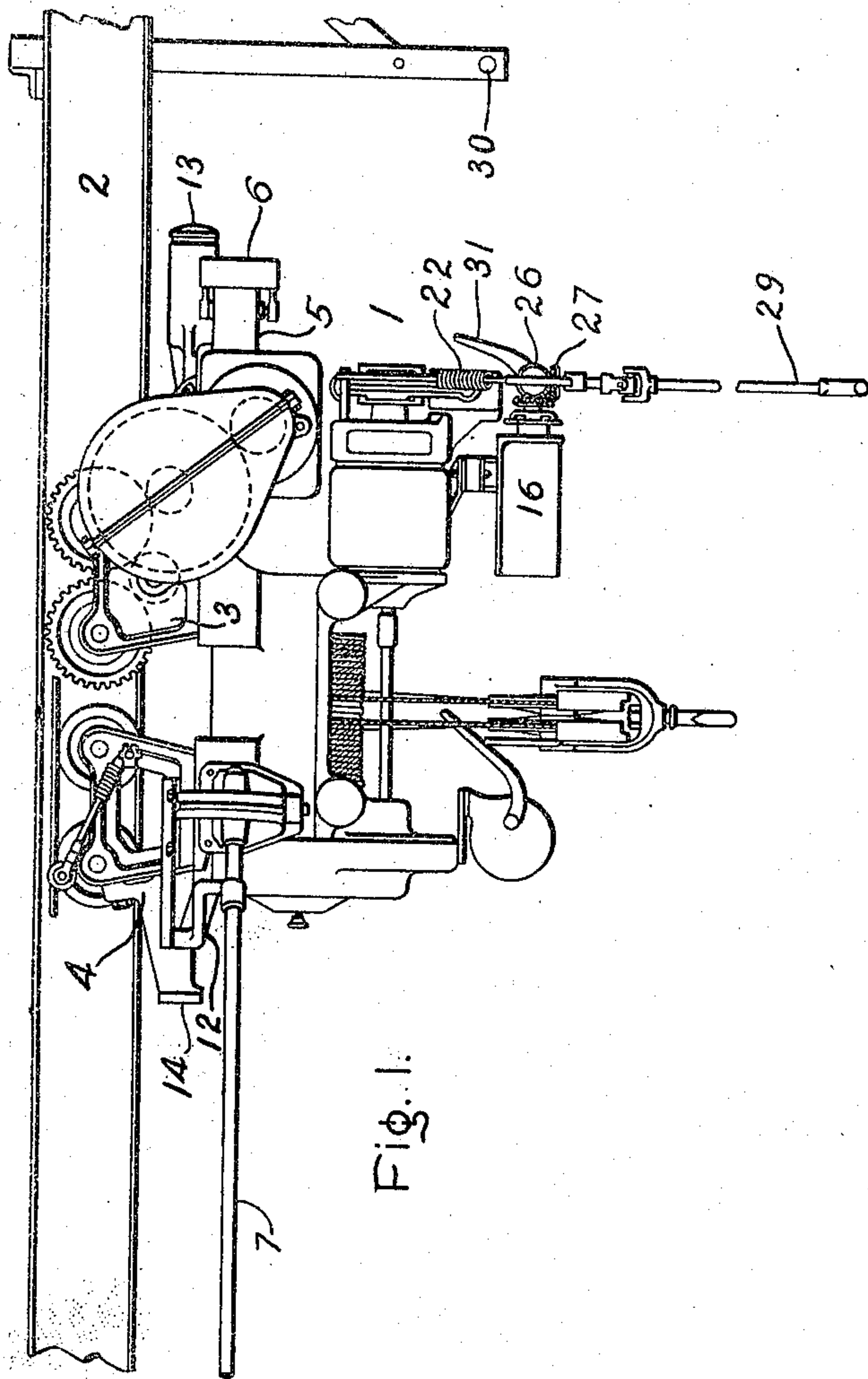


Fig. 1.

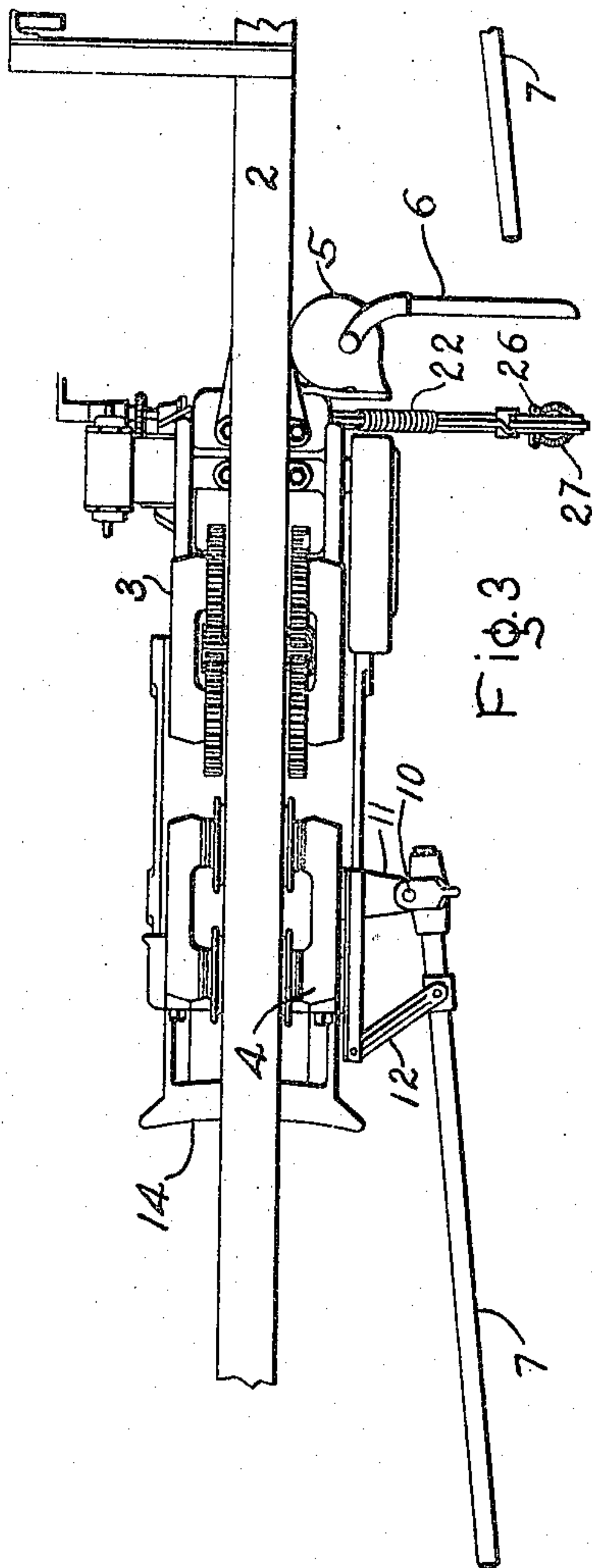


Fig. 3.

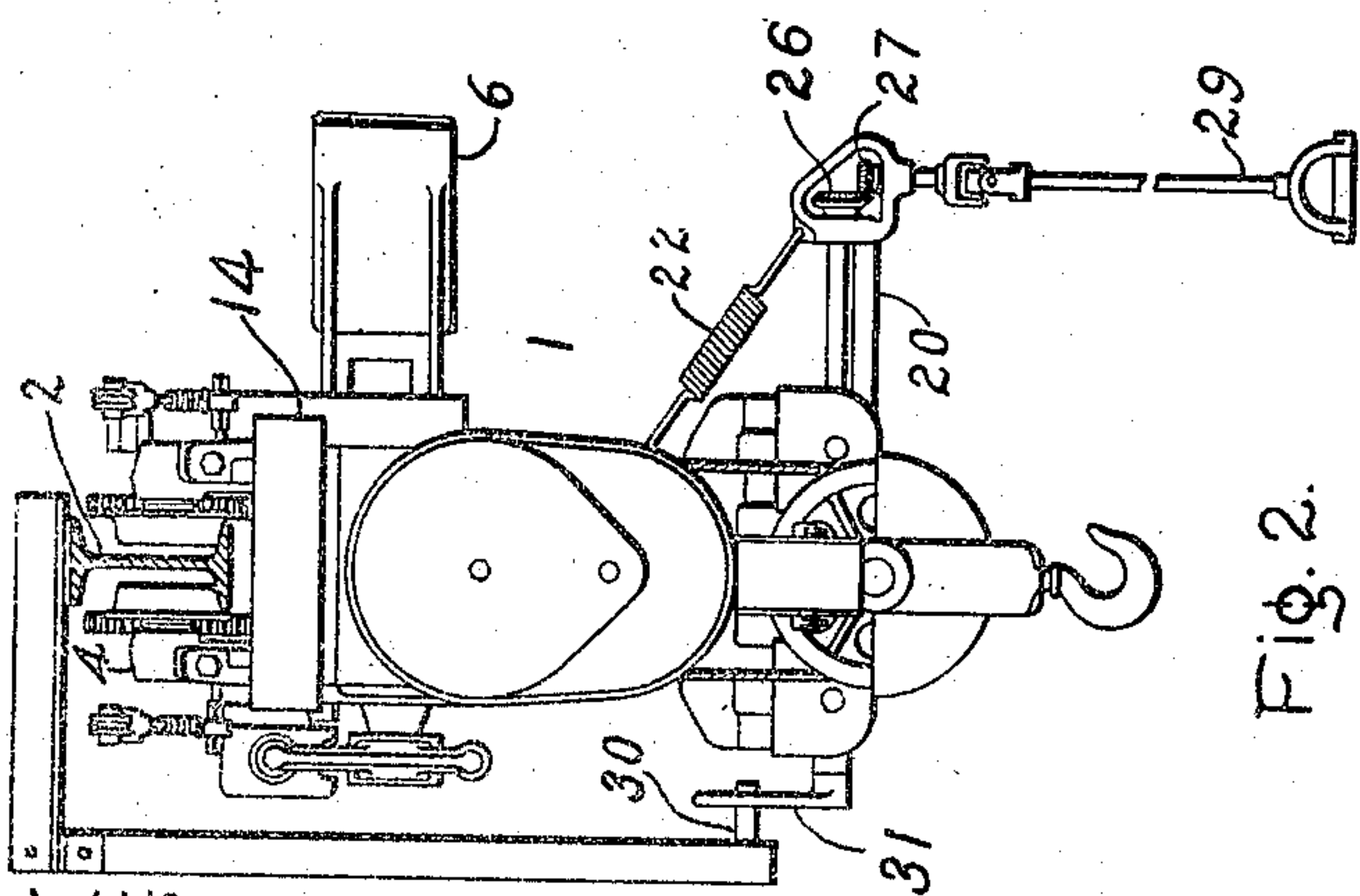


Fig. 2.

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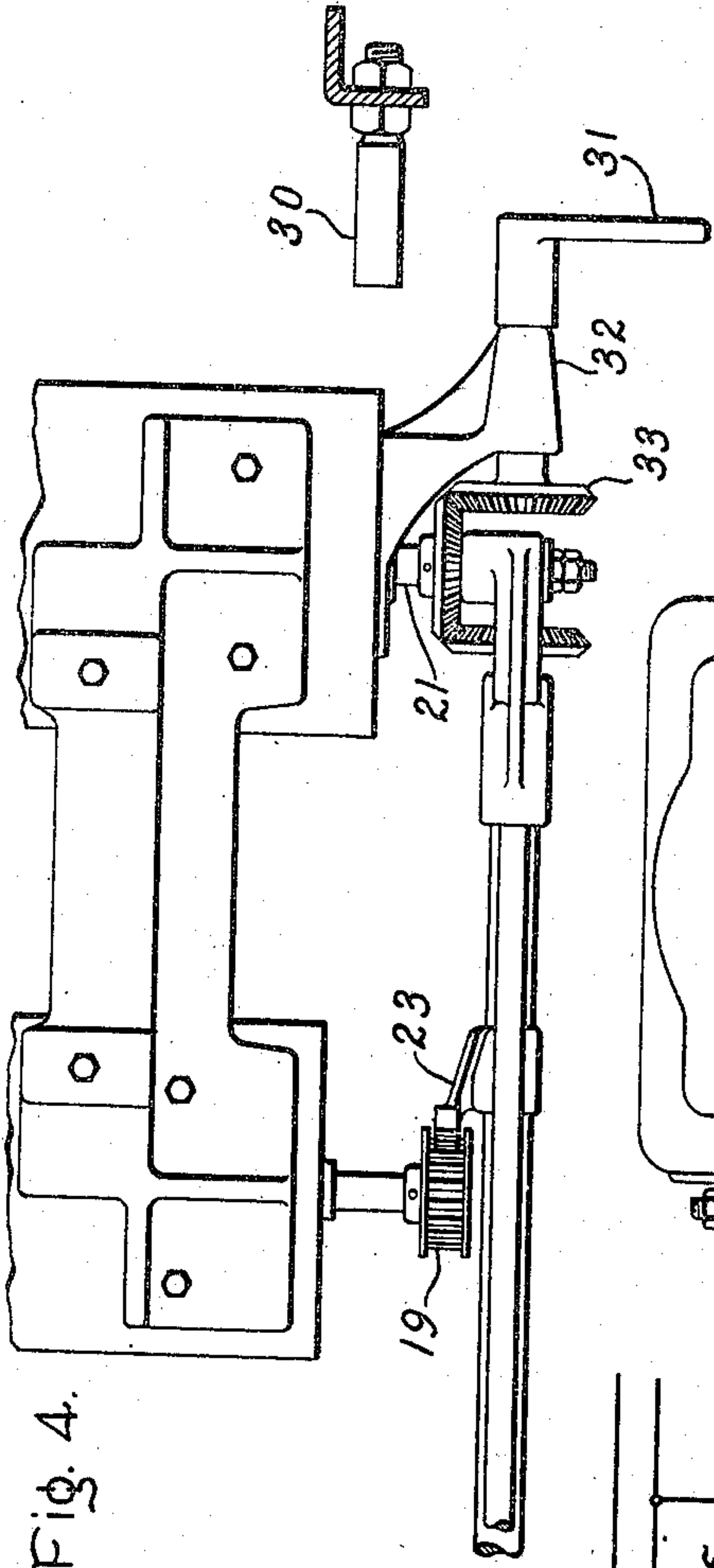


Fig. 4.

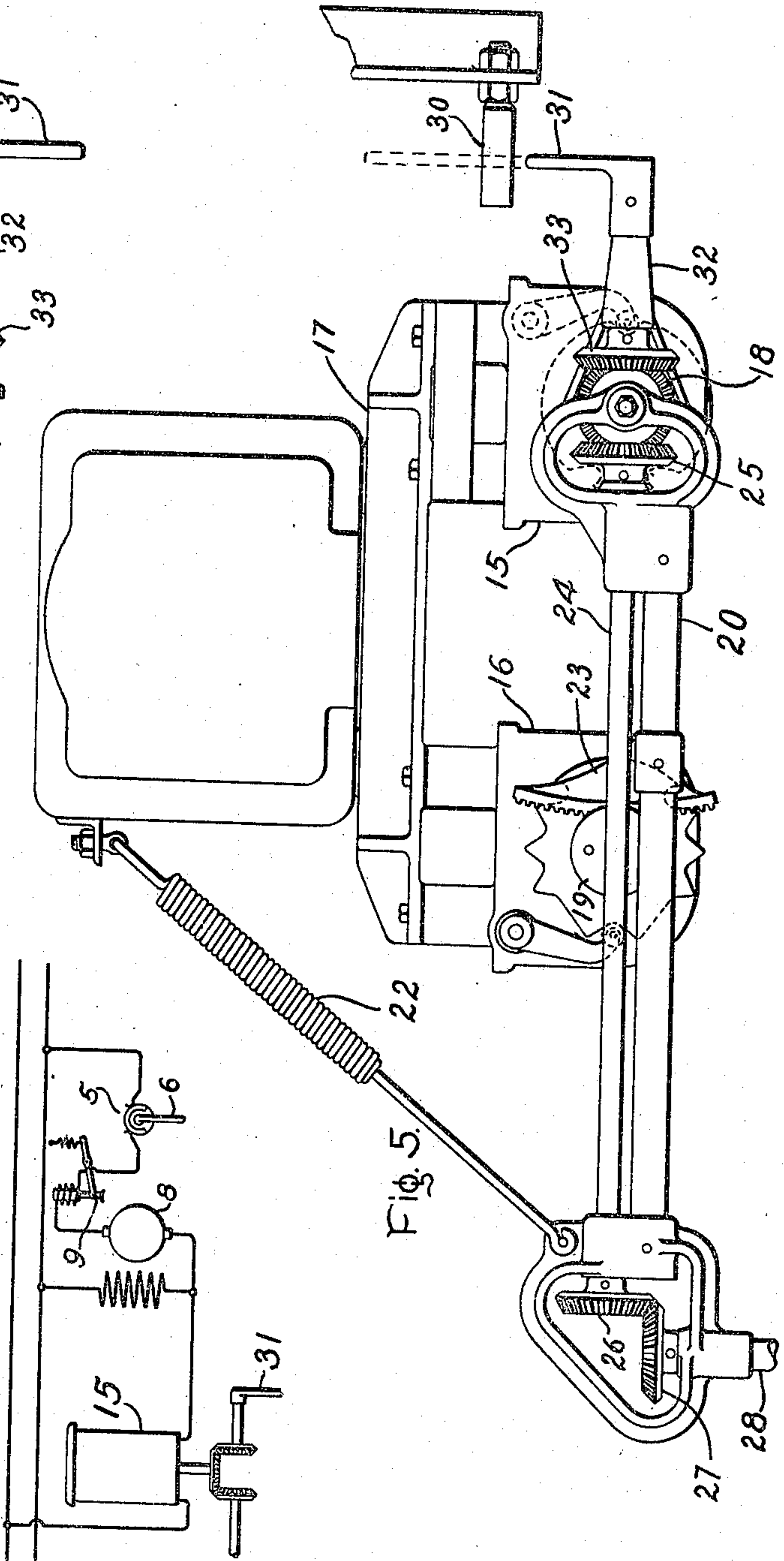


Fig. 5.

Fig. 6.

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UNITED STATES PATENT OFFICE.

SAM H. LIBBY, OF EAST ORANGE, NEW JERSEY, ASSIGNOR TO SPRAGUE ELECTRIC COMPANY,
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ELECTRIC CARRIER.

No. 881,596.

Specification of Letters Patent.

Patented March 10, 1908.

Application filed May 18, 1906. Serial No. 317,526.

To all whom it may concern:

Be it known that I, SAM H. LIBBY, a citizen of the United States, residing at East Orange, county of Essex, State of New Jersey, have invented certain new and useful Improvements in Electric Carriers, of which the following is a specification.

In systems wherein a plurality of electric carriers are adapted to run upon the same track, particularly where the track is circular and in which the carriers are run without an attendant from one point to another, there is danger of collision between carriers, for example, one carrier may move more rapidly than the carrier ahead of it and overtake it, or, a carrier may run into another carrier which has been stopped.

The object of the present invention is to prevent the occurrence of collisions in systems of the character described, and to this end the invention comprises a novel form of circuit-breaker apparatus adapted to be operated when two cars come too close together.

The present invention also comprises improved operating means for the main hoisting and traverse controllers to be hereinafter described and particularly pointed out in the claims.

In the accompanying drawings I have illustrated a preferred form of the present invention, Figure 1 showing in side elevation an automatic carrier running upon an overhead track; Fig. 2 being an end elevation of the same; Fig. 3 being a top plan view; Figs. 4 and 5 being enlarged views showing in plan and in side elevation, respectively, the controller operating means; and Fig. 6 being a diagram showing the traverse motor circuit and the emergency switch for opening it.

Reference being had to the drawings, 1 indicates a carrier of any suitable construction adapted to run upon a track 2. The carrier illustrated is of the type having a truck 3 and a swiveled truck 4. At one end of the carrier, preferably at the end adjacent the truck 3 is placed a switch 5 which is operated by turning the vane or plate 6 against the side of the carrier. At the other end of the carrier is a long rod or staff 7 which projects a considerable distance beyond the carrier; this member being so located that in case a following carrier approaches too closely, the said member engages with the vane on the following car and moves it into

the circuit-opening position, so that the following car is brought to rest before it comes into collision with the other car. The emergency switch is shown conventionally in Fig. 6 wherein 8 is the traverse motor and 9 a brake for bringing the carrier to rest when the circuit of the traverse motor is interrupted.

Where the track is straight, the member 7 may be given a fixed position on the carrier, but where curves are encountered, means must be provided for keeping this member in proper alinement with the vane on a following car at all points. The member 7 is therefore swiveled at 10 to a bracket 11 extending from the body of the carrier, and a link 12 is pivotally secured at its ends to the frame of the swiveled truck 4 and to the member 7 at a point separated some distance from the point 10. While the carrier is on a straight portion of track the member 7 retains a fixed position with respect to the carrier, but upon entering a curve the truck 4 assumes an angular position with respect to the body of the carrier and, by reason of its connection with the member 7, varies the position of this member with respect to the carrier but maintains it in approximately the same relation to the vane on a following carrier as when both carriers are on a straight piece of track.

By properly proportioning the parts described, collisions between the carriers may be prevented under all ordinary conditions, but in case the relative motion of two carriers should be so great that a collision cannot be avoided, the effect of the collision may be minimized by the use of a buffer 13 at one end of the carrier which is adapted to strike against a stiff stop or bracket 14 at the opposite end of the other carrier.

Another feature of the present invention consists in improved means for operating the traverse controller 15 and the hoisting controller 16. These controllers are mounted on a bracket 17 which may be a portion of the frame of the carrier, so that the axes of the controllers are substantially parallel. To the movable member of the controller 15 is secured a beveled gear 18 and on the end of the movable member of the controller 16 is mounted a pinion 19. 20 is a bracket which may conveniently be journaled upon the shaft 21 of the traverse controller and have its free end supported by means of a spring

22. This bracket carries a curved rack 23 meshing with pinion 19 and carries also a rod 24 which is journaled in the bracket and has secured to its opposite ends beveled gear members 25 and 26. The member 25 meshes with the gear 18, and the member 26 meshes with a beveled gear 27 which is secured to a shaft 28 journaled in the bracket at right angles to the shaft 24 and having connected thereto a downwardly-extending operating handle 29.

In Fig. 5 the parts are shown in their normal positions, that is, the controllers are in the "off" positions. If it is desired to hoist, the handle 29 is pushed upwards and the rack 23 rotates the movable member of the hoisting controller in the proper direction. In order to lower, the handle 29 is pulled downwards and, through the operation of the rack 23, the hoisting controller is turned in the opposite direction. These operations of the handle and bracket have not affected the traverse controller, since the gear 25 has simply been swung through a slight arc upon the gear 18. In order to start the carrier in the forward direction, the handle 29 is turned to the right and the traverse controller is given a similar movement through the gear connection between the controller and the handle. For a backward movement of the carrier, the handle 29 is turned to the left and the movable member of the traverse controller is turned in the direction opposite to that for forward movement. It will be seen that during these operations of the traverse controller no movement of the bracket 20 has taken place, so that the hoisting controller has remained stationary. If desired, however, both controllers may be operated simultaneously, namely, the handle 29 may be pushed either up or down at the same time that it is being rotated toward the right or left. Means is also provided for bringing the carrier to rest at any predetermined station; this means comprising a stop 30 at said station and a controller-operating arm 31 on the carrier. This arm is secured to one end of a short shaft journaled in the bracket 32 secured to or forming part of the casing of the traverse controller and carrying on its opposite end a beveled gear 33 meshing with the gear 18 on the controller. When the controller is operated in a manner previously described the arm 31 is oscillated so as to bring it into the plane of the stop 30 as shown in Figs. 1 and 2 and indicated in dotted lines in Fig. 5. When the carrier reaches a station, this arm strikes a stop and is swung through such an angle that the controller is brought to its "off" position.

What I claim as new and desire to secure by Letters Patent of the United States, is,—

1. In an automatic carrier system, an electrically-operated carrier, a switch for controlling the circuit of the carrier motor, a

switch-operating arm projecting laterally from said carrier, and a member mounted on the carrier in the plane of said arm and projecting beyond the end of the carrier for engagement with the switch-operating arm of a following carrier.

2. In an automatic carrier system, an electrically-operated carrier, a switch for controlling the circuit of the carrier motor, a switch-operating arm projecting laterally from said carrier, a member mounted on the carrier in the plane of said arm and projecting beyond the end of the carrier for engagement with the switch-operating arm of a following carrier, and means for automatically adjusting the position of said member relative to the carrier when the carrier is on a curve in order to maintain the outer end of said member at approximately the same distance from the track.

3. In a carrier, a motor, a motor-controlling device, an operating arm for said device projecting laterally from the carrier at one end thereof, and a rod or staff mounted upon the carrier in the plane of said arm and projecting beyond the end of the carrier opposite to that at which the motor controlling device is situated.

4. In a carrier, a motor, a motor-controlling device, an operating arm for said device projecting laterally from the carrier at one end thereof, a member mounted upon the carrier in the plane of said arm and projecting beyond the end of the carrier opposite to that at which the motor controlling device is situated, and means for automatically changing the angular relation of said member relative to the carrier when movement of the carrier deviates from a straight line.

5. In a carrier, a motor, a motor-controlling device, an operating vane for said device arranged at one end of the carrier and projecting at an angle thereto, and a rod or staff mounted on the carrier in a plane passing through said vane, said rod or staff projecting beyond the end of the carrier opposite to that at which the said vane is situated.

6. In a carrier, an electric motor, a brake, a switch for opening the circuit of the motor and causing the brake to be applied, a switch-operating arm arranged at one end of the carrier and projecting at an angle thereto, and a member mounted on the carrier in the plane of said arm and projecting beyond the end of the carrier opposite to that at which the switch-operating arm is situated.

7. In a carrier having a plurality of trucks one of which is swiveled to the body of the carrier, a motor, a motor-controlling device, an operating arm for said device projecting laterally from said carrier at one end thereof, a member pivotally mounted in the plane of said arm and projecting beyond the end of the carrier opposite that at which the said operating arm is situated, and a link pivot-

ally connected at its opposite ends to said member and to the swiveled truck.

8. In combination, two controllers having their axes arranged in parallel with each other, a bracket journaled on the shaft of one of the controllers, a segmental rack on said bracket, a pinion on the shaft of the second controller meshing with said rack, a handle journaled in said bracket and projecting therefrom, and a train of bevel gears between said handle and the shaft of the first controller.

9. In combination, two controllers, a bracket pivotally supported on an axis coinciding with the axis of one of said controllers, a segmental rack on said bracket, a pinion on the second controller meshing with the rack, a yielding support for the free end of said bracket, a handle journaled in said bracket and depending therefrom, bevel gears on the said handle and on the first of said controllers, and a rod journaled in said bracket and having gears meshing with said bevel gears.

10. In a carrier, two controllers, a bracket pivotally supported on an axis coinciding with the axis of one of said controllers, a segmental rack on said bracket, a pinion on the second controller meshing with said rack, a yielding support for the free end of said bracket, a handle journaled in said bracket and depending therefrom, bevel gears on the said handle and on the first of said controllers, a rod journaled in said bracket and having gears meshing with said bevel gears, an arm journaled on an axis at right angles to the line of movement of the carrier and arranged at one side of the carrier, and a bevel gear on said arm meshing with the bevel gear on first of said controllers.

In witness whereof, I have hereunto set my hand this 16th day of May, 1906.

SAM H. LIBBY.

Witnesses:

ROGER H. BUTTERWORTH,
ANNA M. GILLIN.