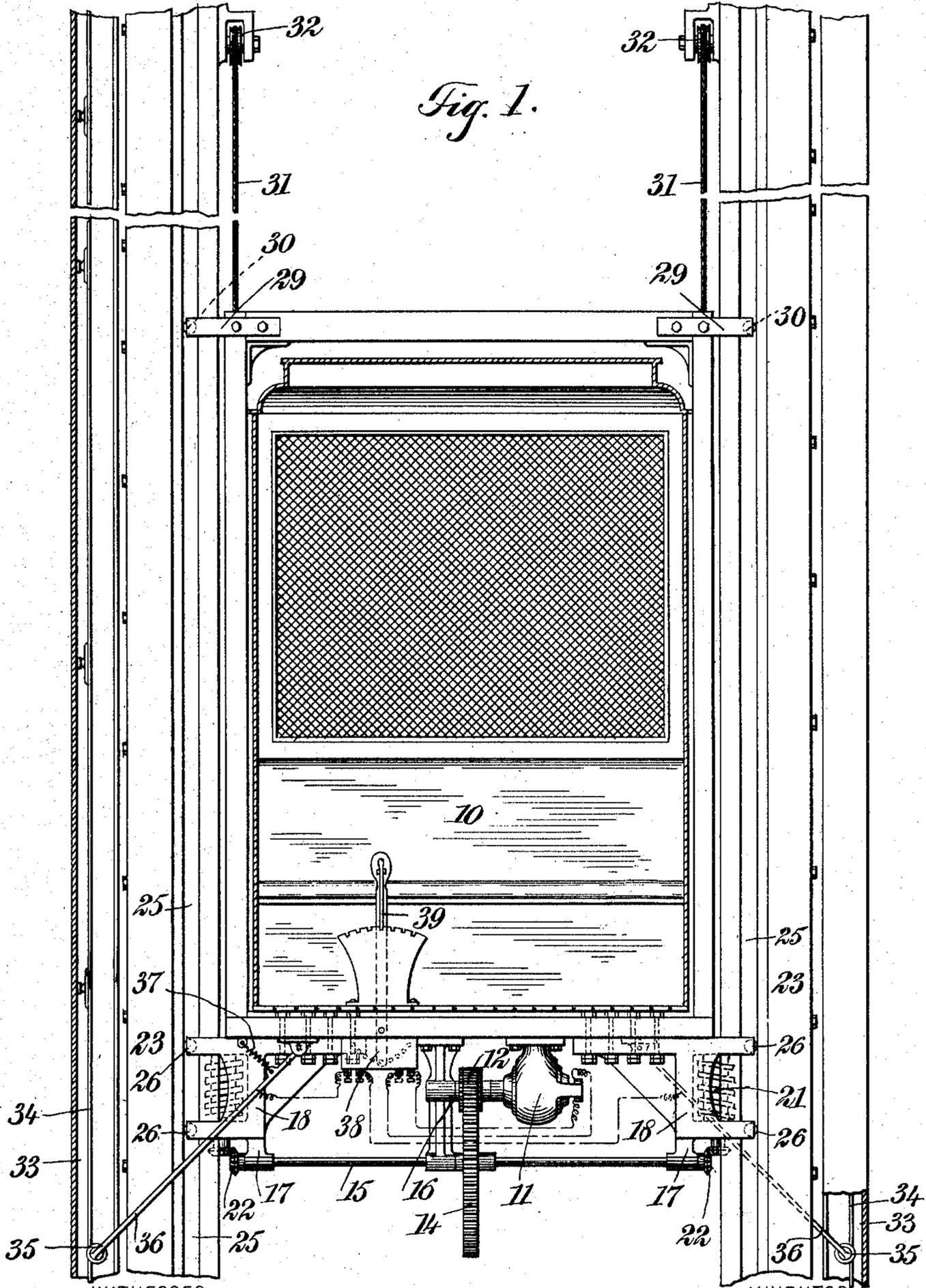


A. KARRER.  
ELEVATOR.

APPLICATION FILED APR. 28, 1903.

3 SHEETS—SHEET 1.



WITNESSES:

*Al B. Mattingly*

*Isaac B. Owens.*

INVENTOR

*Armand Karrer*

BY *Mumm*

ATTORNEYS.

A. KARRER.  
ELEVATOR.

APPLICATION FILED APR. 28, 1903.

3 SHEETS—SHEET 3.

Fig. 3.

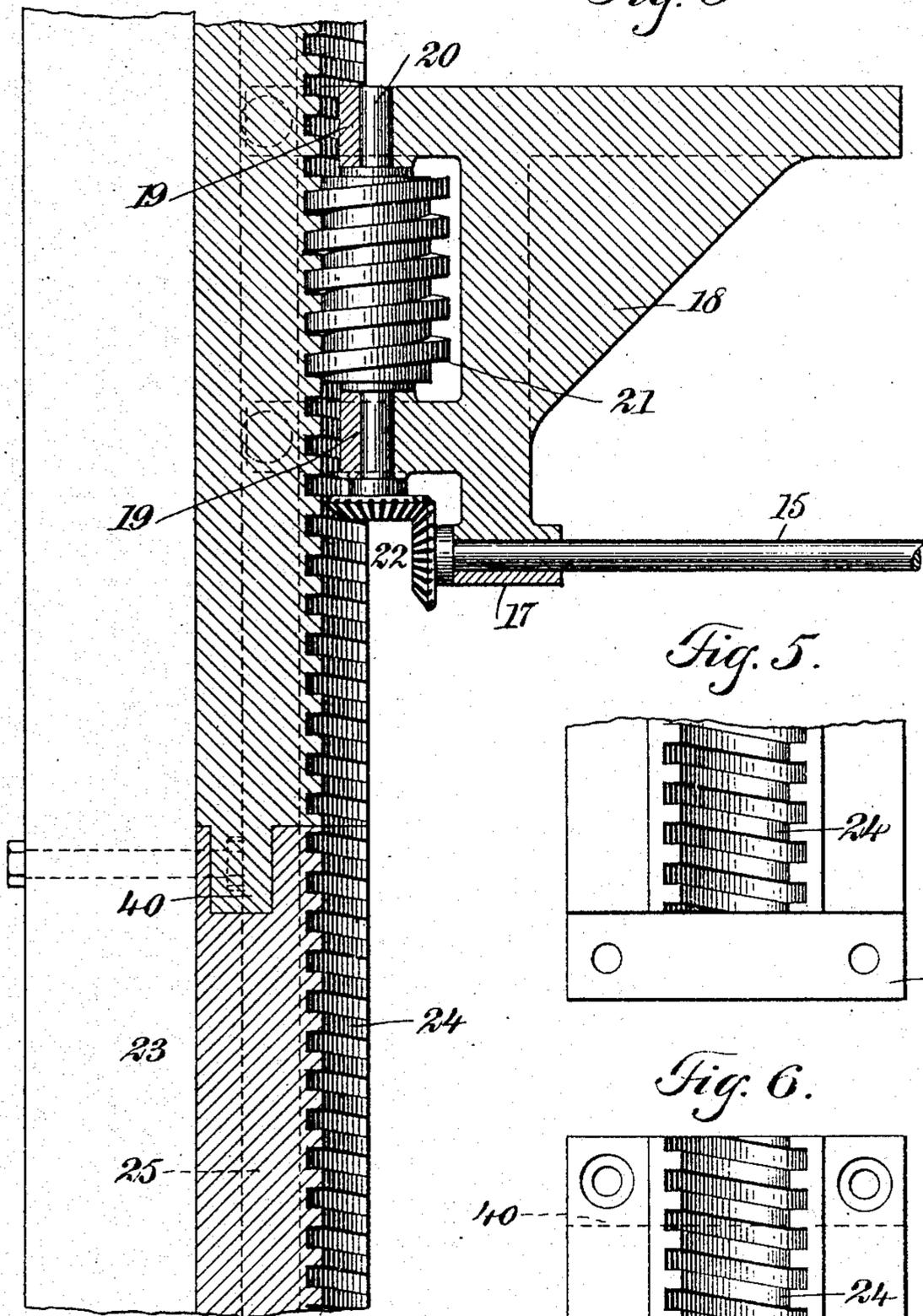


Fig. 5.

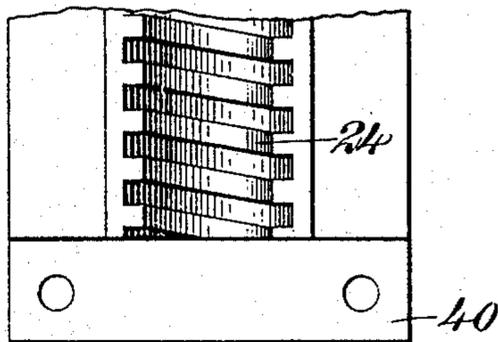
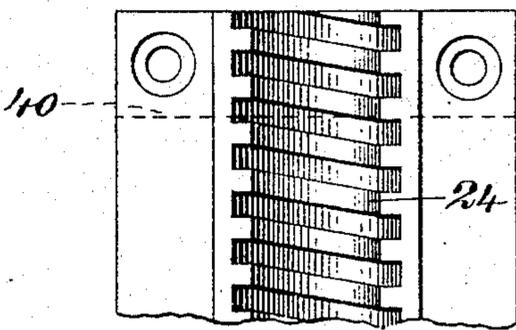


Fig. 6.



WITNESSES:

*W. B. Mattingly*

*Isaac B. Owens.*

INVENTOR

*Armand Karrer*

BY

*Mumford*

ATTORNEYS.

# UNITED STATES PATENT OFFICE.

ARMAND KARRER, OF ST. JOSEPH, MISSOURI, ASSIGNOR OF ONE-HALF  
TO ALFRED L. LOEWENSTEIN, OF ST. JOSEPH, MISSOURI.

## ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 790,137, dated May 16, 1905.

Application filed April 28, 1903. Serial No. 154,635.

*To all whom it may concern:*

Be it known that I, ARMAND KARRER, a citizen of the United States, and a resident of St. Joseph, in the county of Buchanan and State of Missouri, have invented a new and Improved Elevator, of which the following is a full, clear, and exact description.

This invention relates to an elevator in which the car is moved by means of screws or worms climbing on corresponding racks, by which arrangement it is practically impossible for the car to drop through the shaft upon the breakage of some part of the machinery.

The invention resides in certain novel features of construction and coactive arrangement of parts, as will be hereinafter set forth.

This specification is an exact description of one example of my invention, while the claims define the actual scope thereof.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the invention with the car in section and other parts broken away. Fig. 2 is a bottom plan view of the car. Fig. 3 is an enlarged detail of the screw or worm and the rack on which it works.

Fig. 4 is an enlarged bottom plan of one of the brackets for the worms, said view showing in section the rack and the guide-rollers of said bracket; and Figs. 5 and 6 are detail views showing the manner of connecting the sections of the rack.

The car 10 may be of any construction desired, and my improvements preferably are mounted on the bottom of the car.

11 indicates a reversible electrical motor suitably mounted under the car and having a pinion 12 on its shaft in mesh with a spur 14, fastened on a shaft 15, which lies horizontally under the bottom of the car and is held at its middle portion by an annular bearing 16 and at its ends by bearings 17, attached to the worm-brackets 18. These worm-brackets are bolted to the under side of the car and are suitably ribbed to insure the necessary strength. Said brackets have bearings 19, in

which are mounted the journals 20 of screws or worms 21, said worms extending vertically and being located one at each side of the car, in the central plane thereof, as shown in Fig. 2. The worms 21 are connected by gears 22 with the ends of the shafts, and by this means said worms are driven.

At each side of the elevator-shaft vertically-extending beams 23 are arranged, and to these beams are bolted or otherwise fastened the racks, which are formed on their inner edges with arc-shaped teeth 24, conforming to the worms 21, as indicated best in Fig. 3. Inward of said teeth the racks have at each side longitudinally-extending guide-grooves 25, in which fit the antifriction-rollers 26, carried by arms 27, projecting outwardly from the brackets 18. This construction not only allows the car to move freely in its vertical path, but prevents any lateral movement and holds the worms properly engaged with the racks. It is clear that the rotation of the worms against their respective racks will raise or lower the car, according to the direction in which the worms are driven, and it will also be seen that it is impossible for the car to drop through the shaft by reason of any ordinary accident. The car can only drop when it has been racked as to bring the worms with the racks, and this condition is impossible in practice. The car is provided at its upper end with projecting arms 29, which carry guide-rollers 30, running in the aforesaid grooves, the same as the rollers 26, thus steady at its top, and attached to the upper end of the car are cables 31, which pass over pulleys 32 at the top of the shaft and serve as counterweights to assist in the upward movement of the car.

At each side of the shaft conduits 33 are arranged, these conduits carrying conductors 34 on which run the trolleys 35, there being one for each conductor and being supported by arms or poles 36, pivoted on the sides of the car and held in active position by means of springs 37. (See the drawings, Fig. 1.)

38 indicates any suitable controller, and 39 a hand-lever and quadrant thereof, the hand-lever being located within the car, as usual.

The electric current is taken to the elevator mechanism by one of the trolleys 35 and is cut therefrom through the other trolley by its arm or pole. The conductors 34 should be insulated within their respective conduits, in order to prevent the dissipation of the electrical energy.

The racks at the side of the shaft may be constructed in sections, if preferred, and these sections mortised into each other, as indicated at 10 in Figs. 3, 5, and 6.

Various changes in the form, proportions, and minor details of my invention may be resorted to at will without departing from the spirit and scope thereof. Hence I consider myself entitled to all such variations as may lie within the intent of my claims.

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

1. The combination with an elevator-shaft and the car therein, of a motor mounted on the car, two brackets attached to and projecting downward from the bottom of the car at opposite sides thereof, a shaft extending across the bottom of the car and having its end portions mounted in the brackets, a vertical worm mounted in each bracket, gearing connecting the shaft with the motor, gearing connecting the ends of the shaft with the vertical worms, racks mounted at each side of the shaft and having teeth conforming to the threads of the worms, with which racks the

worms are in mesh, the said racks having vertical grooves at each side thereof and the brackets having outwardly-projected arms lying at the sides of the racks, and devices carried by the arms and projected inwardly to run in said grooves of the racks, for the purpose specified. 40

2. The combination with an elevator-shaft and the car therein, of a motor mounted on the car, two brackets attached thereto and projecting downward from the bottom of the car at opposite sides thereof, a shaft extending across the bottom of the car, bearings projecting downward from the lower extremities of the brackets, in which bearings the shaft is mounted, said shaft having connection with the motor, to be driven therefrom, vertical worms mounted respectively in the brackets, bevel-gearing connecting the ends of the said shaft with said worms, racks mounted in the elevator-shaft and having the worms meshed therewith, said racks having each a longitudinal groove therein, an arm projecting laterally from each bracket alongside of the racks, and a member carried by each arm, said members running in the grooves of the respective racks, for the purpose specified. 50 55 60

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

ARMAND KARRER.

Witnesses:

W. A. LLOYD,  
A. A. THOMAN.