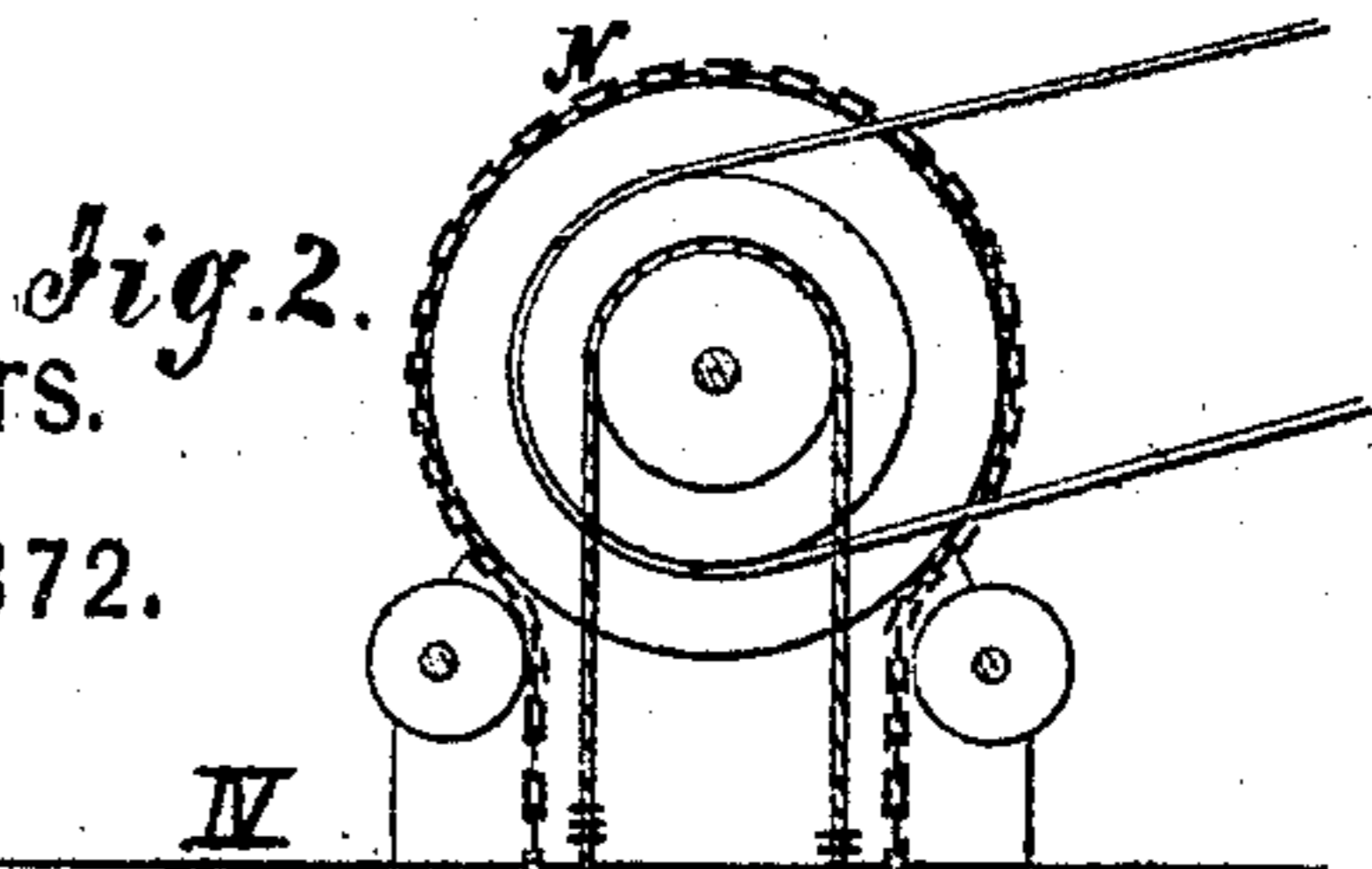


J. D. WARNER.
Improvement in Elevators.

Patented Jan. 16, 1872.



No. 122,791.

Fig. 3.

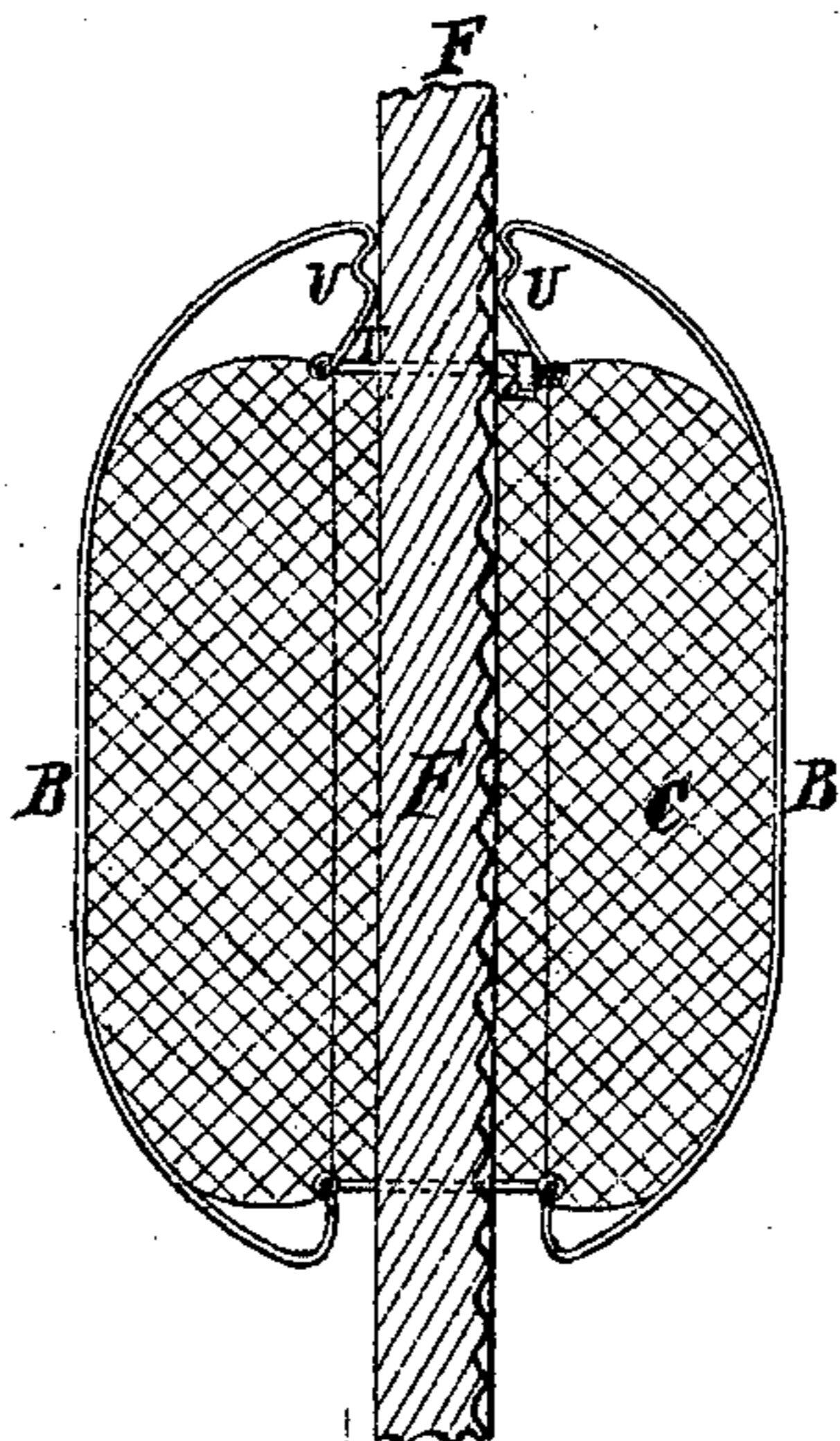


Fig. 4.

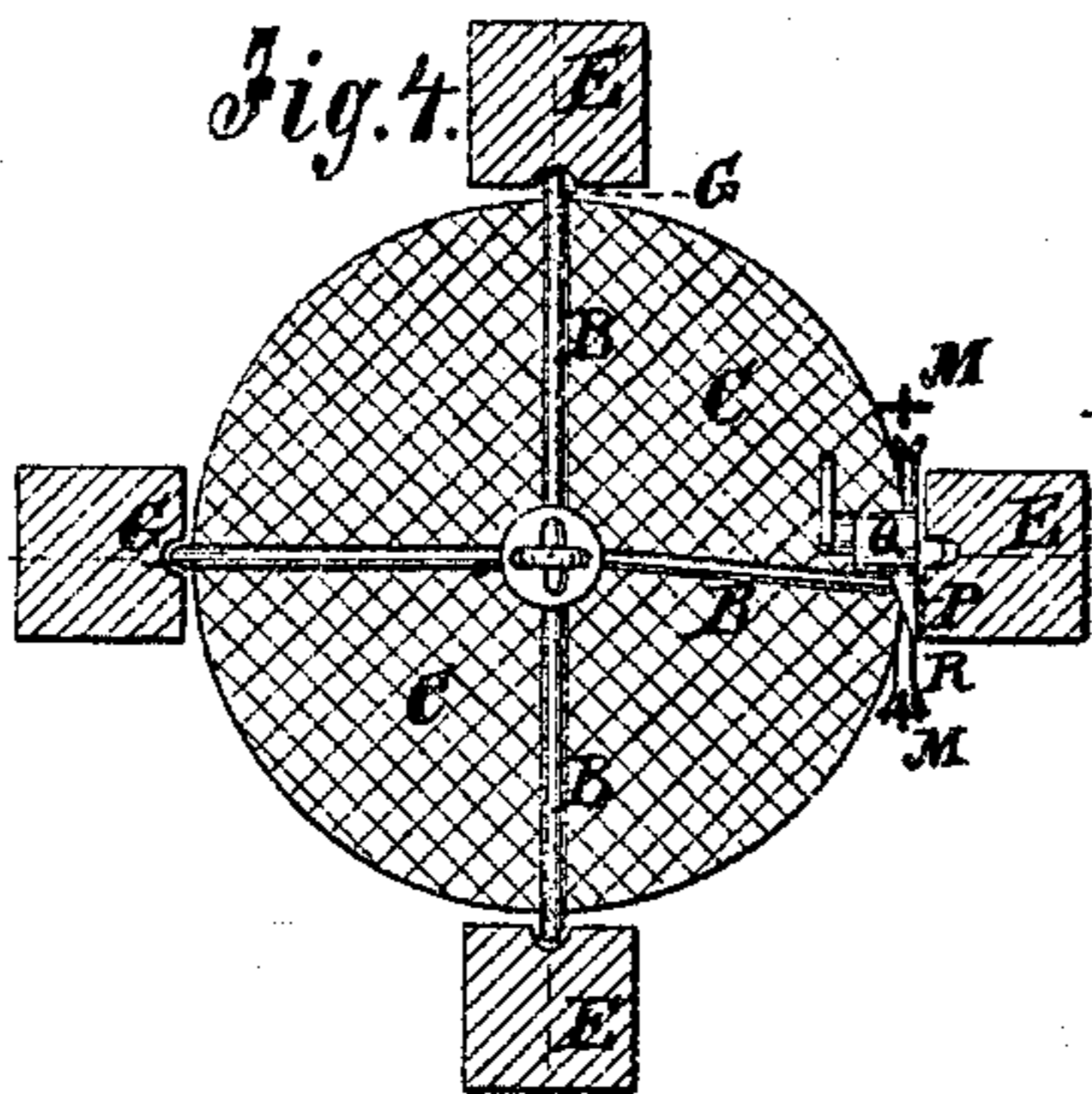
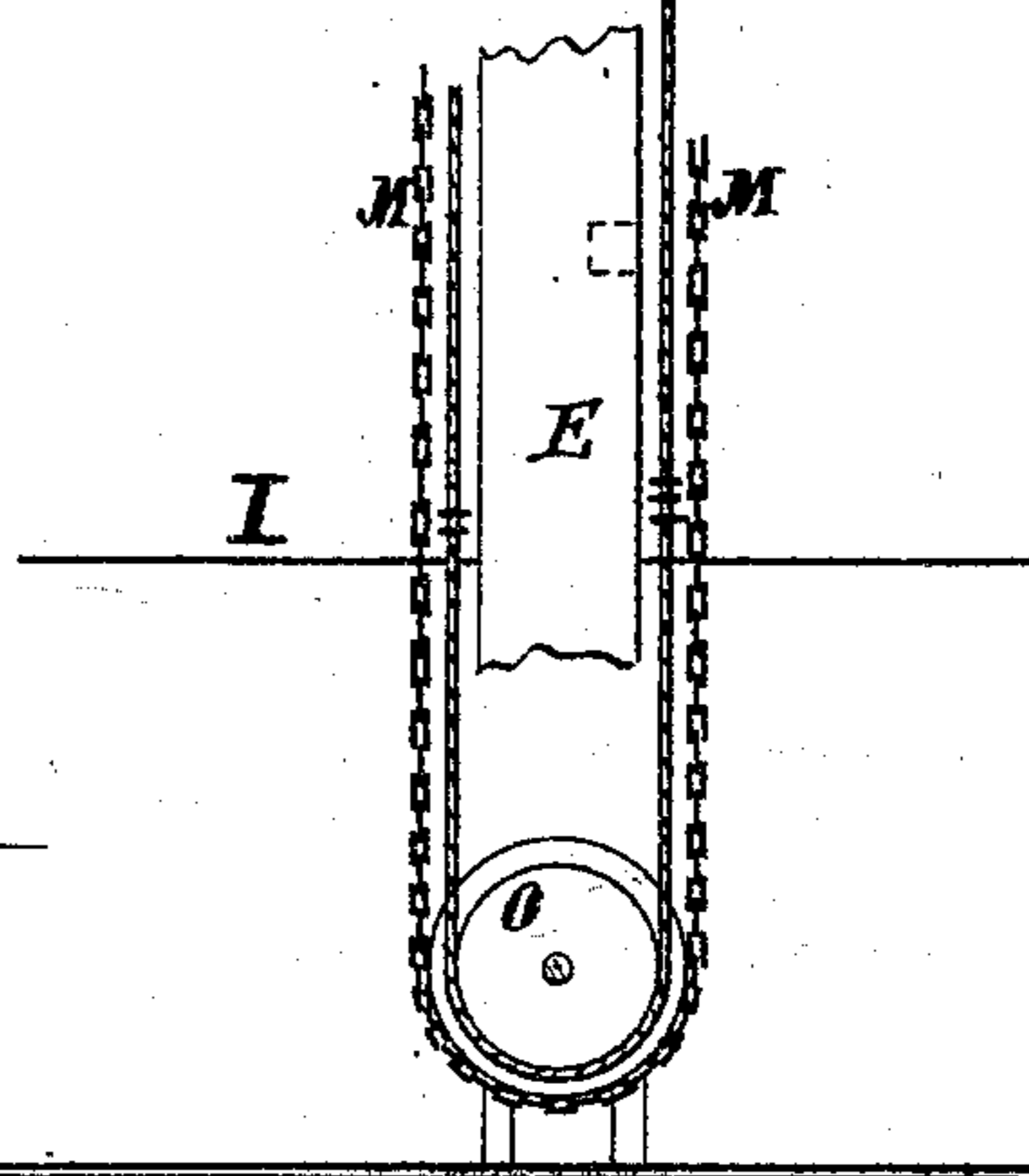
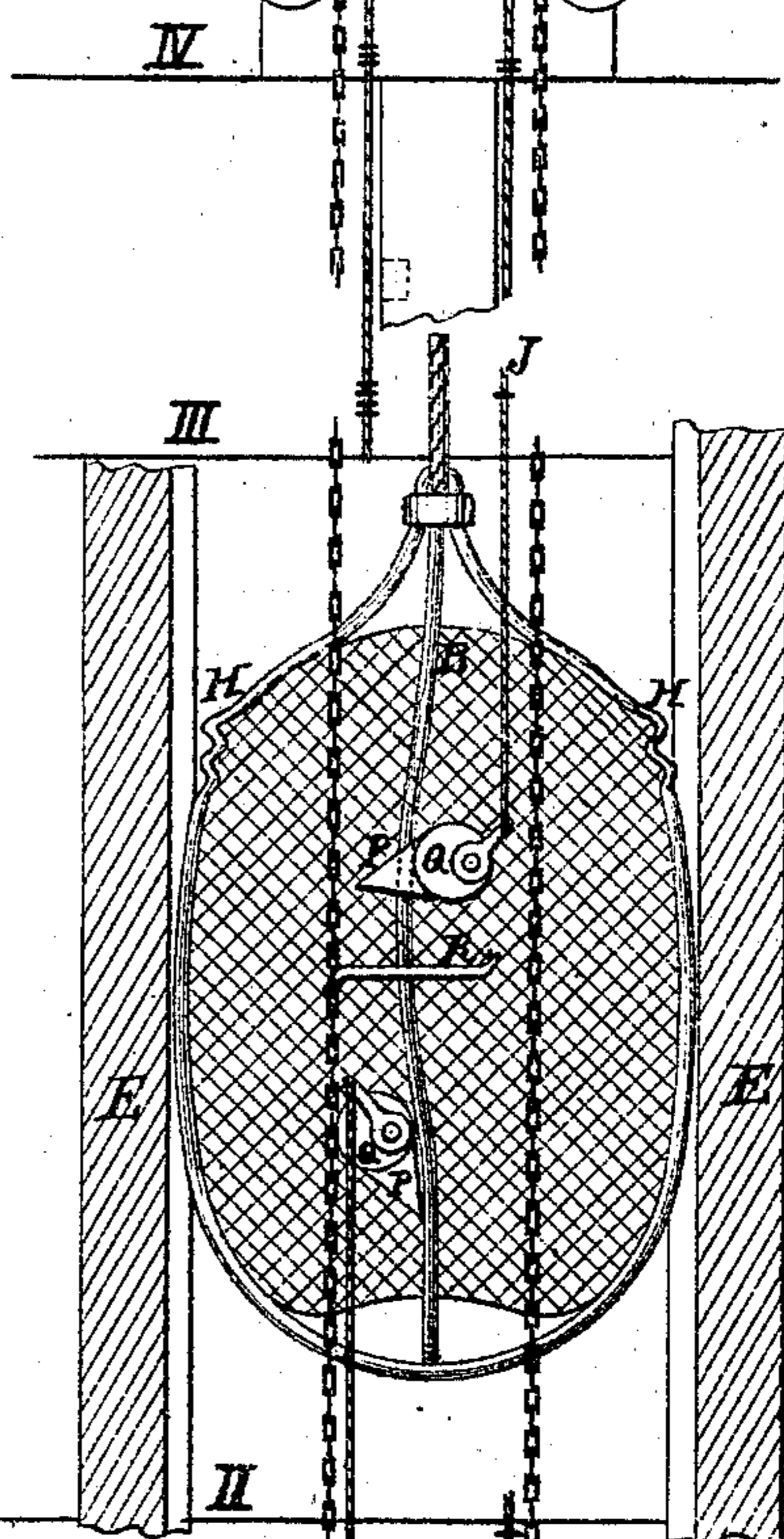
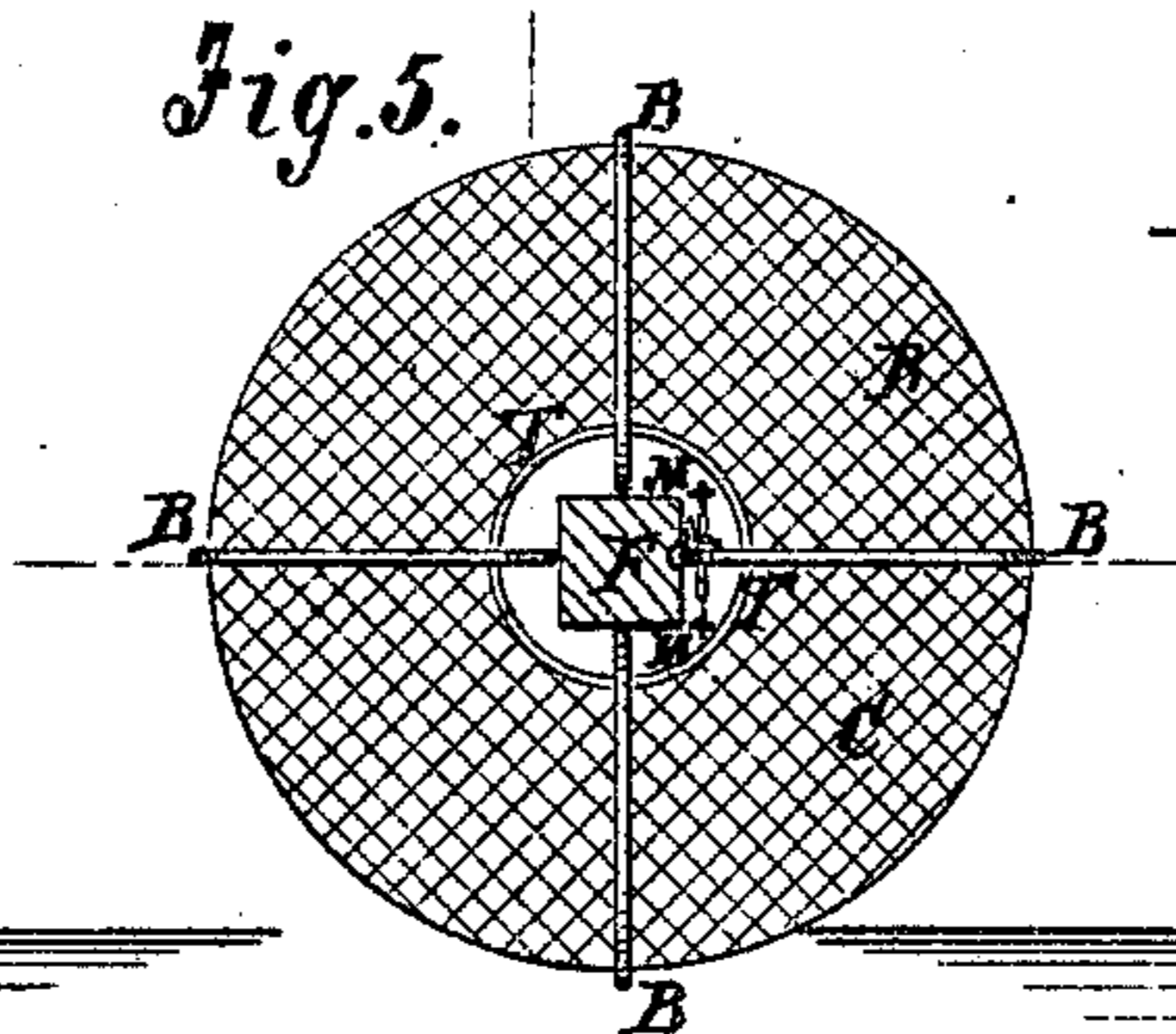


Fig. 5.

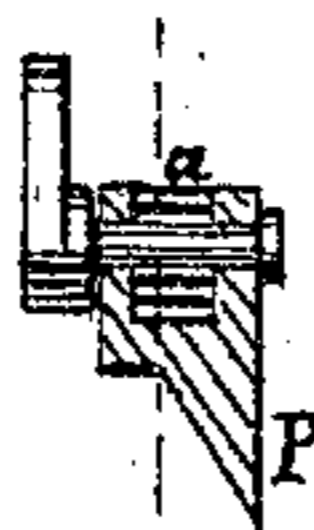


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PER

UNITED STATES PATENT OFFICE.

JAMES D. WARNER, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN ELEVATORS.

Specification forming part of Letters Patent No. 122,791, dated January 16, 1872.

Specification describing certain Improvements in Elevators, invented by JAMES D. WARNER, of Brooklyn, in the county of Kings and State of New York.

My invention consists of a small, light, cheap, and economical elevator, principally adapted for use in private houses, the "cage" or "car" of which is to be constructed of wire, the elliptical shape being preferred, and is to be attached and detached at pleasure, by suitable means, to an up-and-down, continuously-moving, endless chain. The chain passes around pulleys at the top and bottom of the passage, and is propelled by a motive power competent to pull up and down about one-half the maximum weight proposed to be elevated or lowered. The cage is guided up and down by a suitable number of wire rods or ribs, which press outward against the guides, in which are gauged suitable slots for retaining the rods. The counterpoises are so attached as to pull against the weight which causes the ribs of the sides to spring inward, away from the guides, so as to move freely up and down. Whenever disconnected the ribs of the cage will spring outward and bind against the guides, the friction being increased, if necessary, by short bends in the rims at the top, which, when not pulled by the counterpoises, will enter notches cut at the back of the slots. One of the ribs has a bend or two to catch in notches in that guide which is between the up-and-down running parts of the chain, and has a hook on each side, so that by springing the rib inward and sidewise a hook will catch in the chain, and the rib will be released from the guide. The hook on one side will, at pleasure, catch on that part of the chain running upward and thus pull the cage up; or the other hook, at pleasure, will catch on the down-running part of the chain and pull against the counterpoises and lower the cage. There is on each side of this rib an eccentric button, held in one position by suitable springs; by pulling properly attached cords or wires the buttons are turned so that either one, at will, will pass behind the rib, and first press it inward and then sidewise until the hook catches the chain on the opposite side; by turning the other button, then it will be released, and the rim will fly back into position and hold the cage stationary.

There are suitable projections arranged—one at the top, the other at the bottom—which will catch upon a button and release the rib which is attached to the chain, and prevent the cage from being pulled against the ends of the passage-way. If the chain should break, the hook being released will allow the rib to fly back into its normal position and hold the car stationary.

Figure 1 is a sectional elevation of my improved elevator. Fig. 2 is another sectional elevation taken in a plane perpendicular to that of Fig. 1. Fig. 3 is a sectional elevation showing an arrangement of the cage upon one central guide. Fig. 4 is a horizontal section of Fig. 1 on the line *x x*. Fig. 5 is a top view of Fig. 3. Fig. 6 represents sections of the eccentrics.

Similar letters of reference indicate corresponding parts.

The car or cage, which is composed of the vertical wire ribs B and the wire-gauze covering C, preferably arranged in the elliptic shape represented, is suspended by a counterpoise rope, D, between two or more vertical guides, E, or around a single one, F. The ribs B are intended to be capable of springing considerably, so that in case the counterpoise rope should break they will instantly spring outward into the grooves of the guides, and lock the cage fast against falling. For insuring the success of this operation the grooves G of the guide-posts will have notches formed in the bottom, and the ribs B will be constructed with the zigzag bends shown at H for locking with the said notches. The weight of the cage will, when suspended on the counterpoise rope in its normal condition, spring the ribs so much from the guides that they will be freed sufficiently from the bottoms of the grooves to allow the cage to move up and down without obstruction. K is the door opening into the cage, being suspended on the horizontal wires L so as to slide back and forth in opening and closing. M is the endless chain for moving the cage up and down. It works on a driver, N, at the top or bottom, and a pulley, O, at the other end, and runs along one side of the cage and at opposite sides of the guide—that is, on the same side of the cage that the chain is. It is intended to keep the chain continually in

motion, and to engage the cage with it whenever desirable, and disengage it when it is to be stopped. For this, the cage is provided with a hook, P, on the rib that is between the up-moving part and the down-moving part of the chain, adapted to engage with either part when moved toward it, and to disengage when moving from it, and the rib is to be moved by eccentrics Q attached to the cage and having an operating cord, J, connected to them and passing over a pulley at the bottom of the way, and another at the top, so that it may be manipulated at every point or any floor along the way. These eccentrics each have a finger, R, adapted to swing outside of the rib they act upon, to force it inward, out of contact with the back of the groove of the guide-post in which it runs, to free it therefrom at the moment it is hooked on the chain and by the same movement, the said spring being arranged to spring against the bottom of the groove as soon as it is freed from the draft-chain to lock the cage, and it is provided with a crooked part, S, between the said eccentrics, for the better and more secure locking of the cage in this way. The eccentrics Q are to be thrown back by a spring, a, out of the way of the rib as soon as it is hooked on the chain, so as to admit of said rib springing into the groove. In case of having only one guide or post with the cage surrounding it, the ribs B may be connected to a ring, T, at top and bottom, surrounding the post, and they may be arranged above the ring to spring into the notched grooves, as shown at u, to lock the cage, or any other equivalent arrangement, may be provided to act upon this principle.

Instead of causing the connections and disconnections of the hook P by bending the rib whereon it is mounted toward the chain, the same may be accomplished by twisting the rib, the cords J being arranged to twist the rib and connect the hook to the chain, and the torsion being used to return the rib to the guide when the hook is freed from the chain.

The ribs of the cage constitute a spring-bottom, that will be very useful in relieving the shock of striking at the bottom of the way in falling, in case such accident should happen.

I propose to have the cord J provided with numbers corresponding to the different floors, as indicated by the numbers 1, 2, &c., for indicating at each floor where the cage is: Thus, No. 1, on the part of the cord extending downward, being where it can be seen on the second floor, will show that the cage is one floor above,

and the same number on the upward extending part, seen on the fourth floor, will show that the cage is one floor below.

Although I have described and represented an endless continuously-moving chain in the example to move the cage, I do not wish to be understood as limiting myself to it, for it may, at pleasure, be varied, and the cage be moved in both directions by one part; or a chain winding on and off drums at each end of the way, and having reversible driving-gear, will be applicable for use in connection with the apparatus I have described, without any material change of the latter, and I propose to avail myself of these modifications.

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

1. The combination of a continuously moving endless chain, an elevator cage or car, and apparatus for connecting and disconnecting said car with the chain, either to move said car up or down, at pleasure, all substantially as specified.
2. A cage or car for elevators, composed of the springing wire ribs B and a wire cloth covering, substantially as specified.
3. The wire ribs of the cage, arranged to spring against the bottoms of the guide-grooves and lock said cage, when relieved of the tension of the counterpoise rope, said ribs being either crooked, as at H, and the grooves corresponding notched or not, substantially as specified.
4. The rib having the hook for connecting with the chain for raising and lowering the cage, provided with the crooked portion S, and arranged to spring into the guide-groove and lock the cage when disengaged from the hoisting and lowering chain, substantially as specified.
5. The eccentrics Q, provided with flanges P arranged to disengage the hook-carrying rib from the guide-groove simultaneously with the connection of the hook R with the chain, substantially as specified.
6. The combination of a springing or twisting rib, the connecting hook and the endless chain, substantially as specified.
7. Having the starting cord J numbered, as described, to indicate the position of the cage, all substantially as specified.

JAMES D. WARNER.

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