No. 816,679. PATENTED APR. 3, 1906.

T. E. MURRAY.

ELEVATOR.

APPLICATION FILED DEC. 1, 1905.

2 SHEETS—SHEET 1.

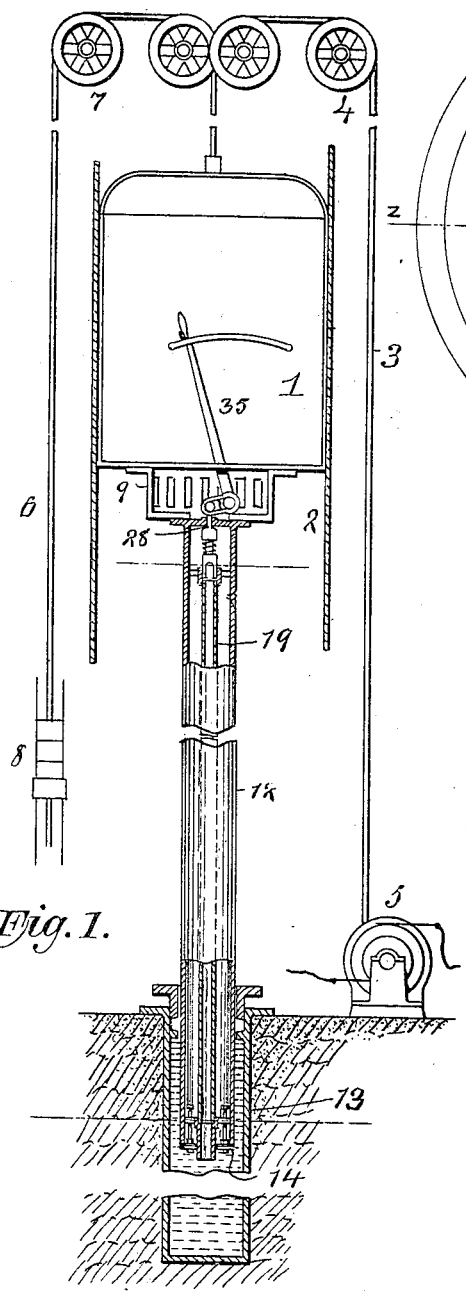

Fig. 1.

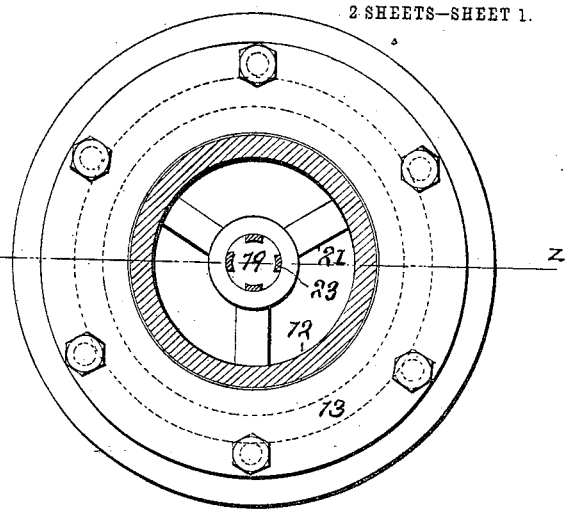

Fig. 2.

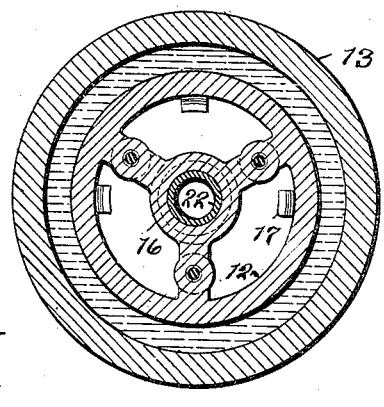

Fig. 3.

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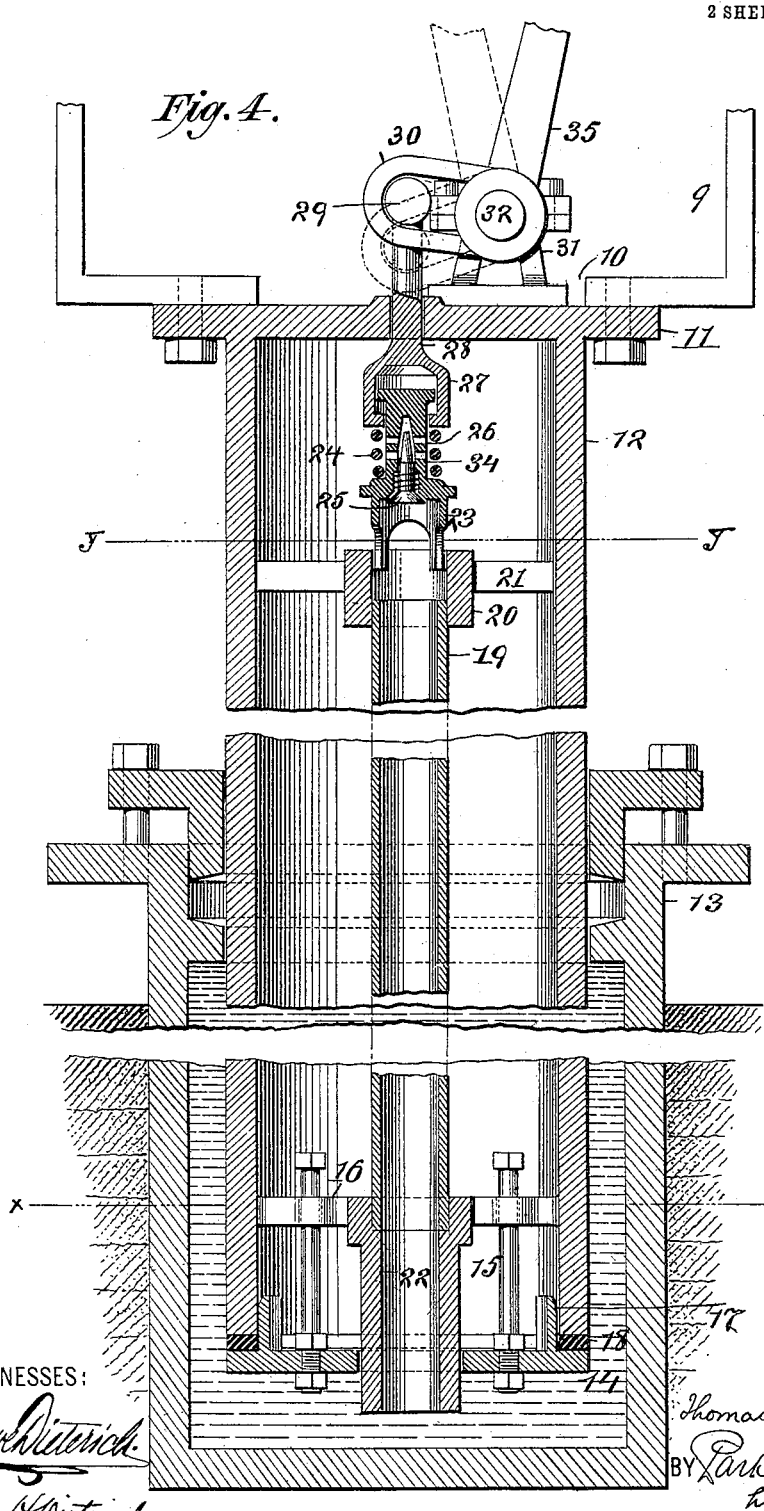
Fig. 4.



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UNITED STATES PATENT OFFICE.

THOMAS E. MURRAY, OF BROOKLYN, NEW YORK.

ELEVATOR.

No. 816,679. Specification of Letters Patent. Patented April 3, 1906.

Application filed December 1, 1905. Serial No. 289,720.

To all whom it may concern:

Be it known that I, THOMAS E. MURRAY, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented a certain new and useful Improvement in Elevators, of which the following is a specification.

The invention relates to elevators for passengers, goods, &c.

The invention has for its object to allow of the speed of descent of the car to be regulated as may be desired and also to prevent any possible falling of the car due to the injury of the ordinary hoisting apparatus.

The apparatus for raising and lowering the car may be of any known type and preferably is electrically actuated.

My invention, which is used in conjunction with such apparatus and without requiring modification thereof, consists in the combination, with an elevator-car and a closed liquid-containing receptacle, of two tubes, one within the other, connected to said car and entering said receptacle, means for controlling the passage of liquid from said receptacle to the annular space between said tubes, and means for regulating the flow of liquid from said inner tube to said outer tube. By means of this regulation of the liquid-flow the speed of the car in descent may be controlled.

In the accompanying drawings, Figure 1 is a general view of the elevator-car in its shaft with hoisting-gear and my device applied to said car. Fig. 2 is a section on the line *y y;* and Fig. 3, on reduced scale, a section on the line *x x* of Fig. 4. Fig. 4 is an enlarged vertical section of my device on the line *z z* of Fig. 2, breaks being made to allow of the parts being shown on a conveniently large scale.

Similar numbers of reference indicate like parts.

1 is the elevator-car, which travels up and down in the usual shaft 2. The hoisting-cable 3 is attached to the top of the car, passes over fixed pulleys 4, and is connected to any suitable hoisting mechanism 5, preferably electrically actuated. The cable 6, also attached to the car, leads over fixed pulleys 7, and carries the usual counterweight 8.

Secured to the bottom of the car is a cage 9, having an opening 10, closed by the flanged plate 11, which may be formed integrally with the depending tube 12. Said tube enters through a suitable stuffing-box the liquid-receiving cylinder 13. At the lower extremity of tube 12 is a check-valve 14, carried by headed rods 15, which freely move in a spider 16, fixed within the tube. Said check-valve is guided by projections 17 on its upper side, which enter tube 12, and between said valve and the end of the tube may be interposed any suitable packing-ring 18.

Within the tube 12 is a tube 19, having its upper end entering and fixed in a sleeve 20, centrally formed in the spider 21, which in turn is secured in tube 12 near the top thereof. Said tube 19 at its lower end is socketed in the upper end of a short tube 22, fast in the spider 15.

The sleeve 20 in spider 21 forms the seat of a cylindrical valve 23, having downwardly-extending projections entering said sleeve. The valve-stem 34 is hollow and receives a snifting-valve 25, provided with a surrounding helical spring. The snifting-valve 25 operates to open or close air-openings 26 in said valve-stem. At its upper end the stem 34 is headed and is received in a shouldered recess in an enlargement 27 on the end of a rod 28, which extends up through an opening in plate 11 and carries a pin 29. Said pin enters a slot in the arm 30, which is on a short shaft 32, supported in bearings on a standard 31 in cage 9. Said shaft also carries a lever-arm 35, which extends upward into the car. Interposed between valve 23 and the end of rod 28 is a helical spring 24.

The operation of the device is as follows: The elevator-car is hoisted and lowered in the usual way by the mechanism indicated at 5. When it ascends in its shaft, the valve 23 is closed by turning the lever-arm 35 into the position shown by dotted lines, Fig. 4. The check-valve 14 opens automatically, permitting a free escape of liquid from tube 12, and the snifting-valve 25 also opens, allowing air to enter tube 19, so that liquid can freely flow from the open end of said tube into cylinder 13. The presence of the device therefore offers no material impedance to the quick hoisting of the car. On the descent of the car the check-valve 14 and snifting-valve 25 close, and liquid from the cylinder flows into tube 19. The lever-arm 35 is moved toward the position shown in full lines, Fig. 4, so that the valve-stem is free to rise in the recess in enlargement 27 until its upper end strikes the bottom of said recess. In this way the extent of opening of valve 23 may be regulated. Upon the extent of opening of valve 23 depends the quantity of liquid flowing per given time from tube 19 to tube 12, and so to

cylinder 13, and upon this in turn depends the speed of the descent of the car.

The object of the spring 24 is to insure close seating of valve 23.

I claim—

1. In combination with an elevator-car and a closed liquid-containing receptacle, two tubes, one within the other, connected to said car and entering said receptacle, means for controlling the passage of liquid from said receptacle to the annular space between said tubes and means for regulating the flow of liquid from said inner tube to said outer tube.

2. In combination with an elevator-car and a closed liquid-containing receptacle, two tubes, one within the other, connected to said car and entering said receptacle, means for controlling the passage of liquid from said receptacle to the annular space between said tubes, means for regulating the flow of liquid from said inner tube to said outer tube and a device within said car for operating said regulating means.

3. In combination with an elevator-car and a liquid-containing receptacle, two tubes, one within the other, connected to said car and entering said receptacle, means actuated by the movement of said car for intermittently permitting and preventing passage of liquid from said receptacle to the annular space between said tubes, and means for regulating the flow of liquid from said inner tube to said outer tube.

4. In combination with an elevator-car and a closed liquid-containing receptacle, a tube depending from said car and entering said receptacle, a check-valve at the lower end of said tube, a second tube fixed in said first tube and extending through said check-valve and means for regulating the flow of liquid from said inner tube into said outer tube.

5. In combination with an elevator-car and a closed liquid-containing receptacle, a tube depending from said car and entering said receptacle, a check-valve at the lower end of said tube, a second tube fixed in said first tube and extending through said check-valve, means for regulating the flow of liquid from said inner tube into said outer tube and a snifting-valve in the upper part of said inner tube.

6. In combination with an elevator-car and a closed liquid-containing receptacle, a tube depending from said car and entering said receptacle, a check-valve at the lower end of said tube, a second tube fixed in said first tube and extending through said check-valve and a vertically-moving valve disposed at the upper end of said inner tube for regulating the flow of liquid from said inner tube to said outer tube.

7. In combination with an elevator-car and a closed liquid-containing receptacle, a tube depending from said car and entering said receptacle, a check-valve at the lower end of said tube, a second tube fixed in said first tube and extending through said check-valve, a vertically-moving valve disposed at the upper end of said inner tube for regulating the flow of liquid from said inner tube to said outer tube, a hollow stem for said valve having air-openings in its wall, and a snifting-valve seated in said stem.

8. In combination with an elevator-car and a closed liquid-containing receptacle, a tube depending from said car and entering said receptacle, a check-valve at the lower end of said tube, a second tube fixed in said first tube and extending through said check-valve, a vertically-moving valve disposed at the upper end of said inner tube for regulating the flow of liquid from said inner tube to said outer tube, a hollow stem for said valve having air-openings in its wall, a snifting-valve seated in said stem, a valve-rod, a lever within the car and means between lever and rod supported below said car for transmitting motion from said lever to said rod.

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

THOMAS E. MURRAY.

Witnesses:

PARK BENJAMIN, Jr.,

GERTRUDE T. PORTER.