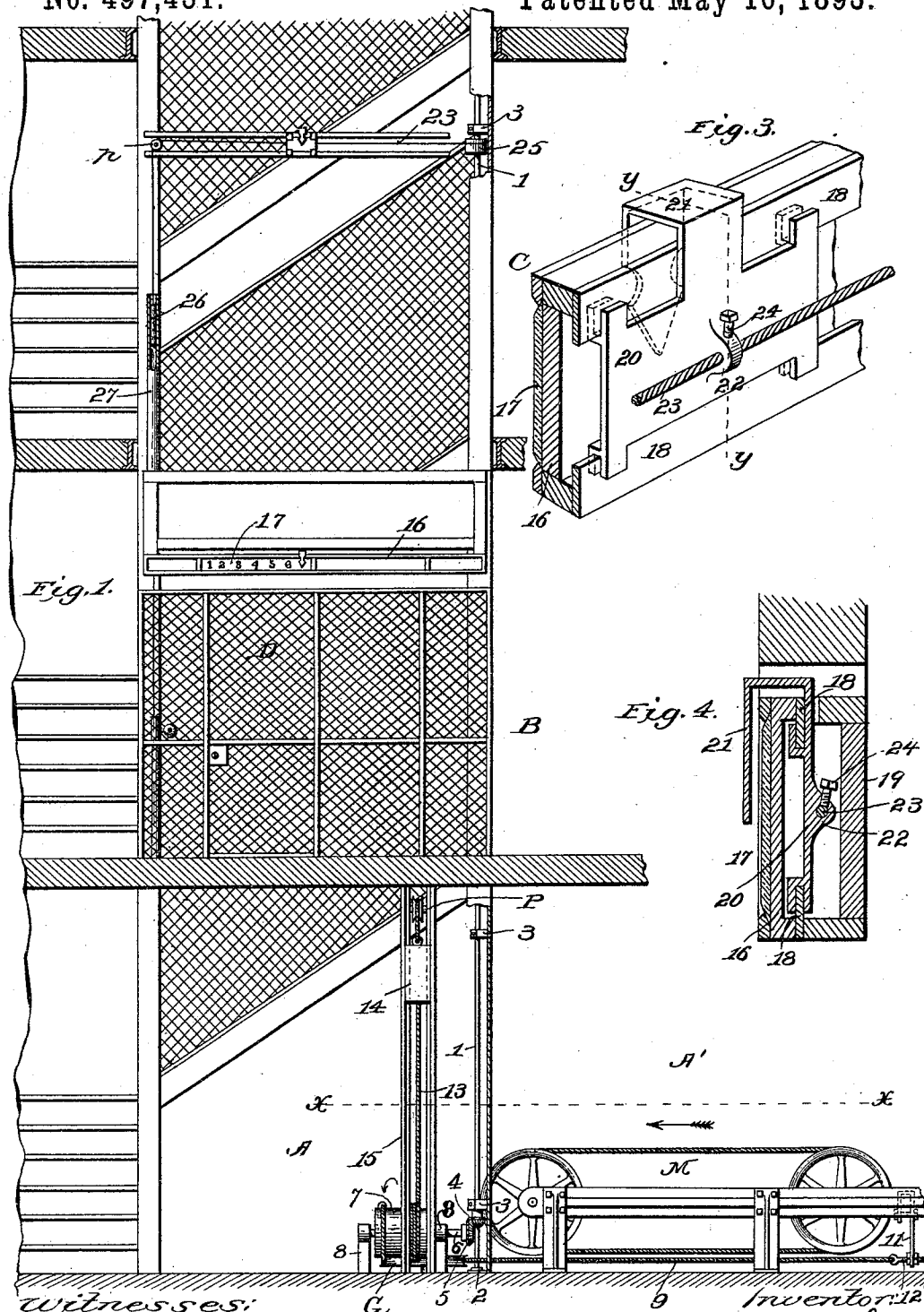


J. H. MCGILL.
INDICATOR FOR ELEVATORS.

No. 497,431.

Patented May 16, 1893.



Witnesses:
Harry B. Arthur.
Edward Bates

Inventor: J. H. McGill

(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

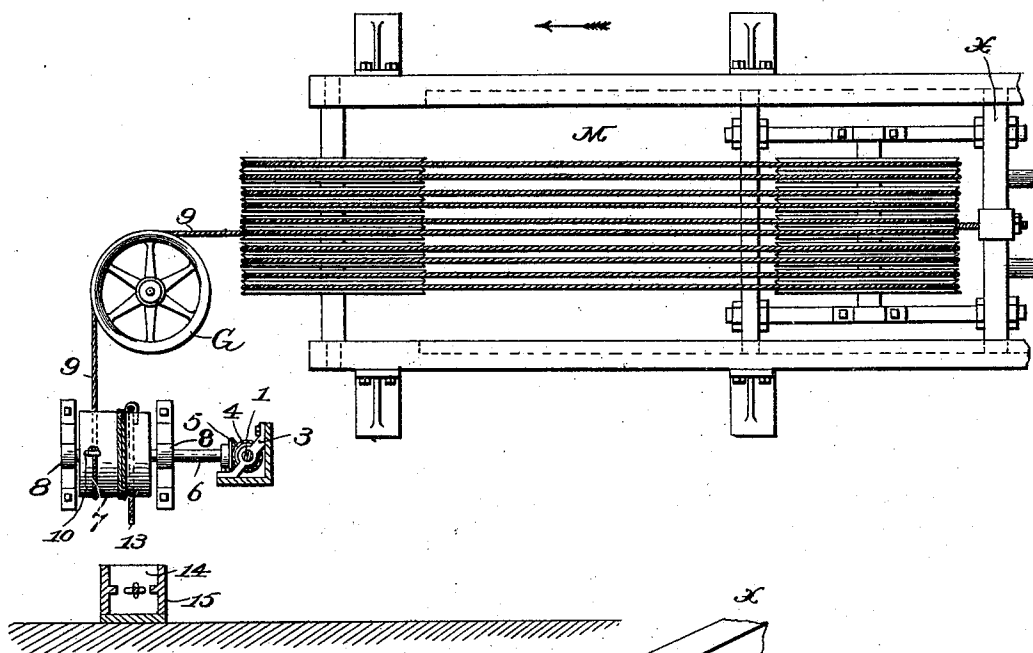


Fig. 7.

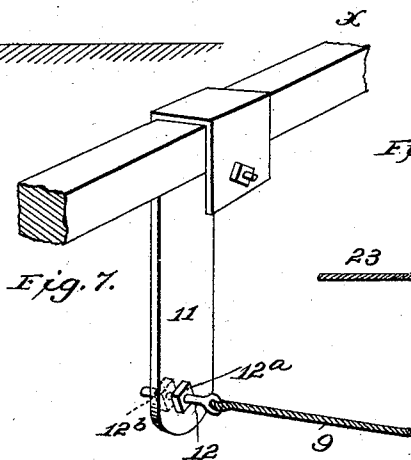


Fig. 5.

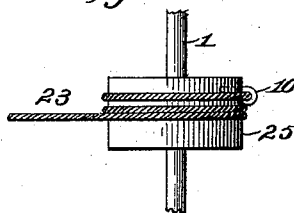
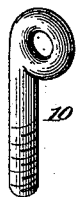


Fig. 6.



witnesses:

Henry J. Rohrer.
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Inventor:

James McGill

UNITED STATES PATENT OFFICE.

JAMES H. MCGILL, OF WASHINGTON, DISTRICT OF COLUMBIA.

INDICATOR FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 497,431, dated May 16, 1893.

Application filed February 11, 1893. Serial No. 461,849. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. MCGILL, a citizen of the United States, residing at Washington city, in the District of Columbia, have invented certain new and useful Improvements in Indicators for Elevators; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is an elevation of the basement, first and second floors of a building, the walls of the basement and second floor being removed to show the interior of the elevator shaft, and the mechanism embodying my invention. Fig. 2 is an enlarged plan view of the drums and cross-head of the elevator motor, the primary or power drum of the indicator mechanism, and other details pertaining thereto, looking down from the plane of the dotted line $x-x$ Fig. 1. Fig. 3 is a detail perspective view of a portion of the indicator frame and slide track, the indicator slide, and a portion of the flexible connection between the power shaft and indicator slide. Fig. 4 is a vertical transverse section of the indicator frame and the indicator slide and track, on the dotted line $y-y$ Fig. 3. Fig. 5 is an enlarged view of a portion of the power shaft and one of the drums for the flexible connection between the power shaft and slide. Fig. 6, is an enlarged detached view of a threaded eye-bolt for securing the flexible connection to the drum of the power shaft; and Fig. 7 is an enlarged detail view of a portion of the cross-head of the elevator motor, and a portion of the flexible connection between the cross-head and the primary or power drum of the indicator mechanism, illustrating one form of adjustable connection for taking up any slack in said flexible connection.

In Figs. 1 and 2 the mechanism is shown in the position it will occupy when the elevator is raised or on the upper floor of a building.

Like symbols refer to like parts wherever they occur.

My invention relates to the construction of indicators and indicator mechanism for elevators, whereby the position of the elevator within the shaft, its relation to any floor of the building, and its direction of travel—whether up or down—is simultaneously indi-

cated on each of the several floors of the building.

The main objects of my invention are to simplify the mechanism for actuating the indicator mechanism, render its first cost cheaper, correct the tendency to variation in the travel of the indicator, reduce the strain and wear on the operative devices and thus render the indicator mechanism more efficient and less liable to become deranged.

To this end the principal feature of invention, generally stated embraces the combination with indicator mechanism of a vertical rotary power shaft for actuating said index mechanism, means for rotating the shaft in one direction, and a counterweight or its equivalent for maintaining a constant counterdraft in the reverse direction whereby the variation in the travel of the index mechanism incident to the torsion of the power shaft is corrected.

Minor or secondary, features of the invention embrace the position and combinations of the index mechanism with the vertical rotary power shaft and counterweights, all as will hereinafter more fully appear.

I will now proceed to describe my invention more fully so that others skilled in the art to which it appertains may apply the same.

In the drawings A indicates the basement section of the elevator shaft, A' the chamber for the elevator motor, B the first floor of the building, and C the second floor—three floors being simply chosen for purposes of illustration—though seven floors are marked on the indicator scale—and it will be understood that the invention hereinafter described is applicable to a building of any number of stories—the mechanism for any story being but a duplication of that for the preceding story, the index power shaft being lengthened to correspond.

At any suitable point within the clearance space of the elevator shaft, but preferably close within one of the front corners of the elevator shaft, I erect a vertical rotary index power shaft 1—which, as it has little or no strain imposed on it, may if desired be as light as three-fourths inch diameter rod—may be made up of sections threaded at the ends and united by threaded sleeves and set screws, or in other suitable manner. This index power

shaft 1 is stepped below on a foot plate 2 and passes at suitable intervals through brackets 3, 3, which maintain it in its proper position. At a short distance above the foot of the shaft it is provided with a bevel pinion 4 which may be adjustable on shaft 1 and secured thereto by a feather or spline, a set screw or in any suitable manner. With said bevel pinion 4 there meshes a bevel pinion 5 on the shaft 6 of a primary power drum 7, mounted in suitable bearings 8, 8, arranged on the same foundation or adjacent to the elevator motor M.

9 indicates a flexible connection, it may be a chain, steel ribbon, or other suitable flexible connection if desired, but is preferably wire rope, connected at one end to the drum by a threaded eye rod 10 which screws into a tapped hole in the drum—or in any other suitable manner, which wire rope after being coiled two or three times around the drum 9 (according to the amount of motion required) has its opposite end connected to the cross head X of the elevator motor.

The character of the motor M and its position is immaterial—and any other source of power may be the point of connection for the end of the wire rope 9, not connected to the drum 7. However, I prefer to use the cross head X of the motor as the source of power, and therefore attach thereto an arm or bracket 11 to which the wire rope 9 is secured in any suitable manner, but preferably by means of an adjustable threaded eye bolt 12 and jam nuts 12^a, 12^b, whereby any slack in the rope 9 can be taken up at will. In case of change of direction of the flexible connection 9 one or more guide pulleys G may be employed.

13 indicates a second flexible connection—or wire rope—also connected at one end to the primary power drum 7, coiled about the same passing thence over an elevated pulley P (see Fig. 1) and having its opposite end attached to a suitable weight 14 which weight may be housed in a vertical guide box 15 if desired. From the above description it will be noted that the drum 7 receives its motion in one direction from the cross-head of the elevator motor (or other suitable source of power) through the flexible connection 9, and its reverse motion from the weight 14, through the flexible connection 13, and imparts said several motions to the index power shaft 1, through the bevel pinions 4 and 5.

16 indicates the indicator frame, arranged transversely of the elevator shaft above the plane of the door D, and having let into or secured to its face a reflector or mirror strip 17 on which the numbers indicating the several floors (or the scale) are marked as indicated in Fig. 1. Secured to the back of the indicator frame 16 are the slide track rails 18, and if desired the slide may be boxed or cased in at the rear, as indicated at 19 Fig. 4.

20 indicates the index slide or carriage adapted to move on rails 18, and provided with an index finger 21, arranged to travel in front

of the reflector or mirror and scale strip 17. At the rear of index slide or carriage 20 is an eye 22 through which passes the flexible connection 23 (wire cord—steel band—light chain or equivalent) which connects the index slide 20 with the index power shaft 1. The index slide or carriage 20 is therefore adjustable with relation to the flexible connection 23, and when adjusted as desired, can be secured in position by the set screw 24. Arranged on, and secured to, the index power shaft 1 at a point corresponding with the horizontal plane of the index slide 20 is a small drum 25 (one for each index slide) to which one end of the flexible connection or wire cord 23 is secured by an eye bolt (similar to 10—Fig. 6) or in other suitable manner—while the opposite end of said flexible connection 23 after passing around a pulley p (see top Fig. 1) is secured to a weight 26, which, if desired, may be incased by a tube 27 or equivalent casing.

The operation of the devices will be as follows:—The elevator being at the upper floor (as in Figs. 1 and 2 of the drawings) the return movement of cross-head X (see arrow Figs. 1 and 2), will slack the flexible connection (wire rope) 9, which will be at once wound up on drum 7, said drum 7 being actuated by the descent of weight 14, which will unwind the flexible connection (wire-rope) 13 therefrom. The movement of the drum 7 is communicated to index power shaft 1, by means of the bevel gearing 4, 5, and the movement of index shaft 1, is also assisted by the descent of weights 26, attached to the flexible connections 23, which connect the index slides 20 with index power shaft 1, (see Fig. 1) which weights 26 at the same time, cause the index slide 20 to travel back over the scale 17 until the elevator has reached the first floor. On the rise, or upward travel of the elevator, the cross-head X draws upon the flexible connection (wire rope) 9, unwinding the same from drum 7 rotating said drum so as to wind up the flexible connection 13 thereon and elevate weight 14. This motion of drum 7 is also imparted by means of bevel gearing 4, 5, to index power shaft 1, rotating the same and winding the flexible connections (wire cords) 23, upon drums 25, which draws the index slides 20 toward the index power shaft 1, causing the index finger 21 to travel progressively over the scale from No. 1 to No. 7, &c., at the same time elevating the weights 26, which thereafter serve to cause the return movement of the index slides.

It will be noted that among the advantages of my invention, are—first, that the mechanism is very simple, inexpensive, and efficient; second, that owing to the arrangement of horizontal scale plates, the indicator is easily read at a glance; and third, that owing to the horizontal arrangement of the indicator, and horizontal travel of the index slide or carriage, flexible connections and weights can be used for one travel of the index, and a shaft for

the other travel; fourth, as a result of such combinations, the torsion on the index power shaft is reduced to a minimum, and divided up on to short sections of the shaft, which is an important feature, in case of high buildings and long shafts; and finally, that in the reverse movement of the shaft, the power is divided up and applied along its entire length, all of which tends to preserve the integrity of the structure, reduce the wear on the bearings, and render the mechanism more durable and less liable to get out of order.

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

1. In an elevator indicator mechanism, the combination of a vertical rotary shaft for actuating the index mechanism, means for rotating said shaft in one direction, and a counterweight for rotating the shaft in reverse direction, substantially as specified.

2. In an elevator indicator, the combination of an indicator carriage or slide, a vertical rotary power shaft, a direct flexible connection between the said shaft and carriage, and means for retracting the carriage; substantially as and for the purposes specified.

3. In an elevator indicator, the combination of a horizontal track, an index slide or carriage adapted to travel thereon, a vertical power shaft, an interposed flexible connection, and means for retracting the index slide or carriage; substantially as and for the purposes specified.

4. In an elevator index, the combination with a vertical rotary power shaft and means for actuating said shaft, of an index slide or carriage, and a flexible connection from said slide or carriage to the vertical rotary power shaft, the slide being adjustable on said flexible connection; substantially as and for the purposes specified.

5. In an elevator index mechanism, the combination with a vertical rotary power shaft, of a drum and flexible connections for rotating the drum and actuating the power shaft, an index slide and flexible connections for actuating the index slide from the vertical ro-

tary power shaft; substantially as and for the purposes specified.

6. In an elevator index mechanism, the combination of a drum, a flexible connection therefrom to the source of power, a flexible connection provided with a weight to reverse the movement of the drum, a vertical rotary power shaft, actuated from the drum, and index mechanism, actuated by the power shaft; substantially as and for the purposes specified.

7. In an elevator indicator mechanism, the combination of a drum, an adjustable flexible connection between said drum and the elevator motor, a flexible connection and suspended weight for reversing the movement of said drum, a vertical power shaft actuated by said drum, a horizontal indicator track, an indicator slide or carriage adapted to travel thereon, a flexible connection between said shaft and index slide, and a means for retracting the carriage or slide; substantially as and for the purposes specified.

8. In an elevator index mechanism, the combination of drum 7, flexible connection 9, leading to a motor, flexible connection 13 provided with suspended weight 14, power shaft 1, provided with drum 25, suitable gearing between drum 7 and shaft 1, flexible connection 23 provided with weight 26, a horizontal track, and an index slide adapted to travel on the track and adjustably connected with flexible connection 23, substantially as and for the purposes specified.

9. In an elevator index, the combination with a vertical rotary power shaft and its motor, of a series of independent index slides or carriages, a separate flexible connection from said rotary power shaft to each of said index slides or carriages, and means for retracting said slides or carriages; substantially as and for the purposes specified.

In testimony whereof I affix my signature, in presence of two witnesses, this 11th day of February, 1893.

JAMES H. MCGILL.

Witnesses:

HENRY S. BERLIN,
ARCHIE H. WILLIS.