No. 679,142. Patented July 23, 1901.

A. R. FARMER.

ELEVATOR.

(Application filed Feb. 25, 1901.)

(No Model.)

Fig. 1.

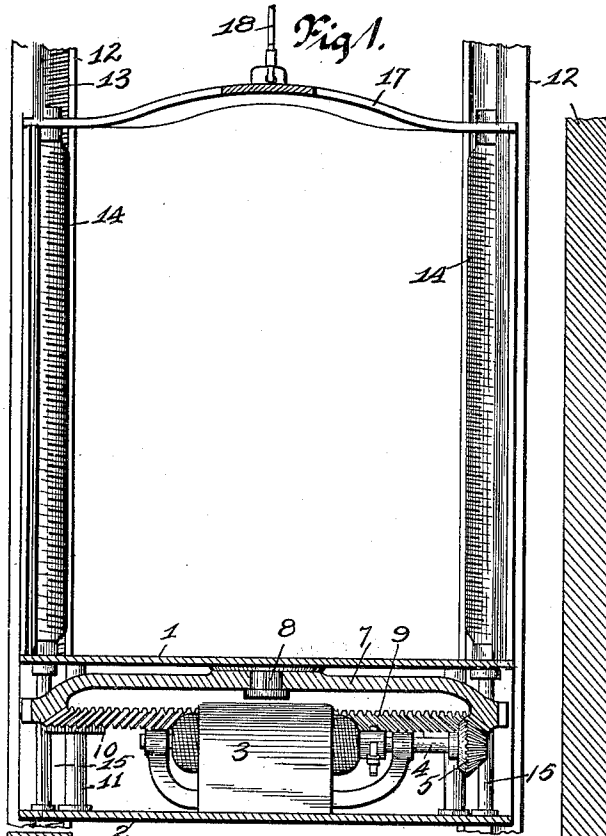


Fig. 3.

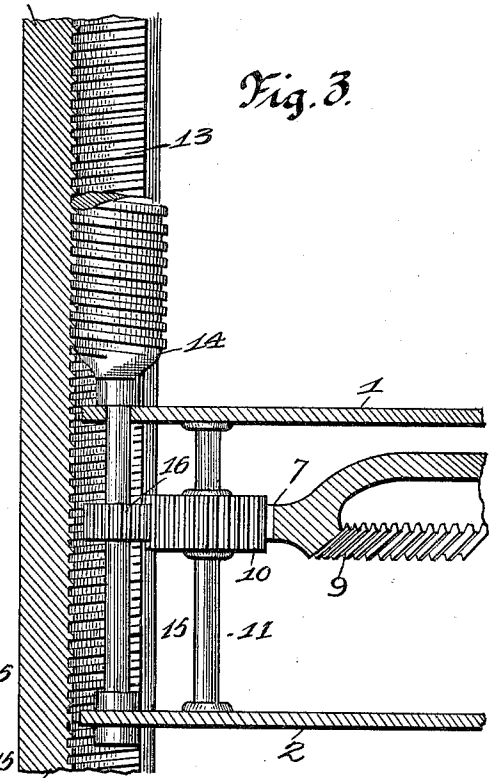
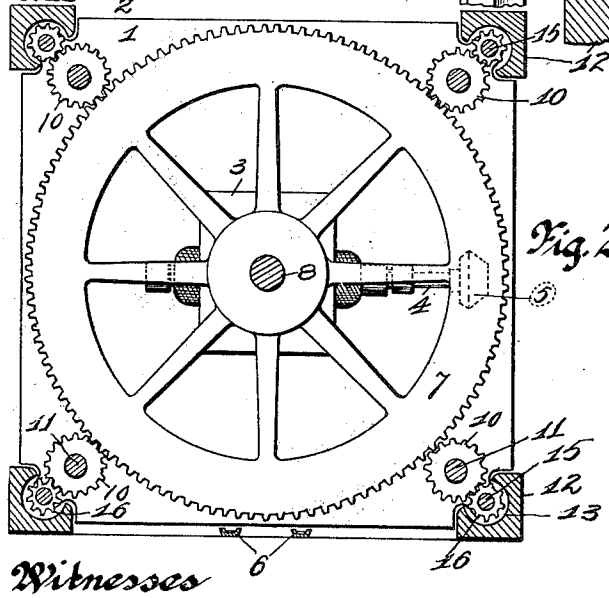


Fig. 2.



Witnesses
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UNITED STATES PATENT OFFICE.

ARCIDAS R. FARMER, OF ST. LOUIS, MISSOURI.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 679,142, dated July 23, 1901.

Application filed February 25, 1901. Serial No. 48,683. (No model.)

To all whom it may concern:

Be it known that I, ARCIDAS R. FARMER, of the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Elevators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

This invention relates to elevators; and it consists of the novel construction, combination, and arrangement of parts hereinafter shown, described, and claimed.

One object of this invention is to provide an elevator having a number of rotary threaded shafts traveling in hollow posts and driven by a motor carried by the elevator-car, so that the latter can be raised or lowered by directing the rotation of the shafts.

Another object is to provide an elevator having a number of threaded shafts to be rotated by the motor and having means for rotating all of said shafts with equal rapidity, thereby positively holding the elevator-car in the plane of travel and preventing it from becoming tilted despite any unequal distribution of weight on the elevator-floor.

Another object is to provide means for rotating the rotary shafts at uniform speed by means of a single motor.

Figure 1 is a vertical section showing the construction of my improved elevator. Fig. 2 is a view showing the gear connections by which the threaded shafts are driven. Fig. 3 is an enlarged detail view showing a portion of the invention.

In the construction of my elevator I provide one or more motors conveniently located underneath the elevator-floor, which are made to drive a large gear-wheel attached to the elevator and which in turn, by means of suitable intermediate gearing, is made to rotate a number of threaded shafts connected to the elevator-car. There is one of these shafts at each corner of the elevator-car and they are located in hollow posts, so that as they are rotated the elevator-car will be raised or lowered.

In the drawings, 1 denotes the bottom of the elevator-car, and 2 a secondary bottom or platform supported a suitable distance below the bottom 1. The motor 3 is carried by the secondary bottom 2 and rotates the usual shaft 4, the same being provided on its outer end with a gear 5. In the drawings I have shown only one motor; but it is manifest that I may provide any number, so that in case one becomes broken another may be employed to propel the elevator, or two or more may be thrown in operation at the same time to increase the power.

6 indicates suitable contact-strips arranged at one side of the elevator-shaft, by means of which circuit may be completed by arranging suitable connections of any known character between the motor 3 and the said strips 6.

7 indicates a large gear-wheel, which is supported to the under side of the elevator-floor 1 upon the trunnion 8. The rim of the said wheel 7 is bent downwardly, as shown in Fig. 1, and is provided with teeth 9, which mesh with the wheel 5. The edge of the wheel 7 is also provided with teeth which mesh with intermediate gears 10, and the said gears 10 drive the threaded shafts, by means of which the elevator-car is raised and lowered. The gears 10 are supported on the shafts 11, mounted vertically between the floor 1 and the secondary floor 2, and there is one of the said gears 10 for each of the threaded shafts. At each corner of the elevator-shaft I arrange a hollow vertical post 12, open at the inner corner and provided with internal threads 13 of any desired pitch. Within the posts 12 the threaded shafts 14 operate, the same being connected to the elevator-car and being driven by the motor 3, so that as they are rotated within the posts 12 the elevator-car will be raised or lowered according to the direction of rotation of the said shafts 14.

The bottom 1 of the elevator-car and the secondary bottom 2 are provided with notches at their corners for the reception of a portion of the posts 12 and are also provided with extensions which extend into the said posts 12 and support the threaded shafts 14. Suitable bearings are formed in these extensions, so that the shafts 14 will be retained in position and be permitted to rotate to raise or lower the elevator-car. As shown in Fig. 3, the lower ends of the shafts 14 are provided with the small extensions 15, commencing immediately above the bottom 1 of the elevator-car and extending down to the secondary bottom 2. The smaller portions 15, how-

ever, are rigid with the main portions of the shafts 14 and carry gears 16, which mesh with the intermediate gears 10, whereby the said shafts 14 will be rotated when the motor is in operation. The upper ends of the shafts 14 are connected by a suitable frame 17, pressing them in position and holding the sides of the car. A connection 18 is attached to the upper side of the frame 17 and a counterbalance-weight may be connected thereto, if desired, to overcome the weight of the parts described and render the motion of the car even and uniform.

The usual rheostat and levers may be made use of within the elevator-car to regulate the speed of the elevator and to change the direction of its movement.

An elevator constructed as described is simple and durable and does not easily get out of repair. By means of the usual connections the speed may be regulated and the elevator will move evenly and uniformly and without any unpleasant irregularities of motion.

The motor 3 is preferably electric and has any known connections leading therefrom to the contacts 6.

As above stated, a number of motors may be made use of, so that in case one becomes broken or disarranged another may be used to supply power, or they may all be utilized at once to increase the power.

The posts 12 are preferably of metal and may be extended to any height and, if desired, may be formed in sections and the different sections attached to each other by any known coupling device.

The elevator is comparatively inexpensive, and a minimum number of parts are made use of, and does not require any elevating-cables to raise or lower it in the shaft.

I claim—

1. In an elevator, the combination with the car, of a large gear-wheel supported below the bottom thereof, a secondary bottom carried a suitable distance below the car-bottom, a motor mounted on the secondary bottom, a shaft driven by said motor and adapted to rotate the large gear-wheel, a threaded shaft of equal height with the elevator-car carried at each corner thereof and having gear connections with the large gear-wheel, and a hollow threaded stationary post inclosing each of the threaded shafts and extending as far as the elevator-car is intended to travel.

2. In an elevator, the combination with the car, of a motor, a large gear-wheel driven thereby, a vertical threaded shaft carried at each corner of the elevator-car to prevent the car from becoming tilted, the said shafts extending throughout the length of the car and having gear connections with the large gear-wheel so that all the shafts will be driven by the same wheel, and a hollow threaded stationary post inclosing each of the said shafts.

3. In an elevator, the combination with the car of a large gear-wheel 7 having the gear-teeth 9 on the under side thereof and being also provided with gear-teeth on its periphery, a secondary bottom 2 supported below the bottom of the elevator-car, a motor 3 mounted on the secondary bottom, a shaft 4 driven by the said motor 3, a gear-wheel 5 mounted on said shaft 4 and meshing with the teeth 9 of the gear-wheel 7, a vertical threaded shaft 14 carried at each corner of the elevator-car and extending below the bottom thereof, gear-wheels 16 mounted on the shafts 14 below the bottom of the elevator-car and connected by intermediate gears with the teeth on the periphery of the wheel 7, and a hollow threaded stationary post inclosing each of the said shafts 14 and extending as far as the elevator is intended to travel.

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

ARCIDAS R. FARMER.

Witnesses:
JOHN D. RIPPEY,
ALFRED A. EICKS.