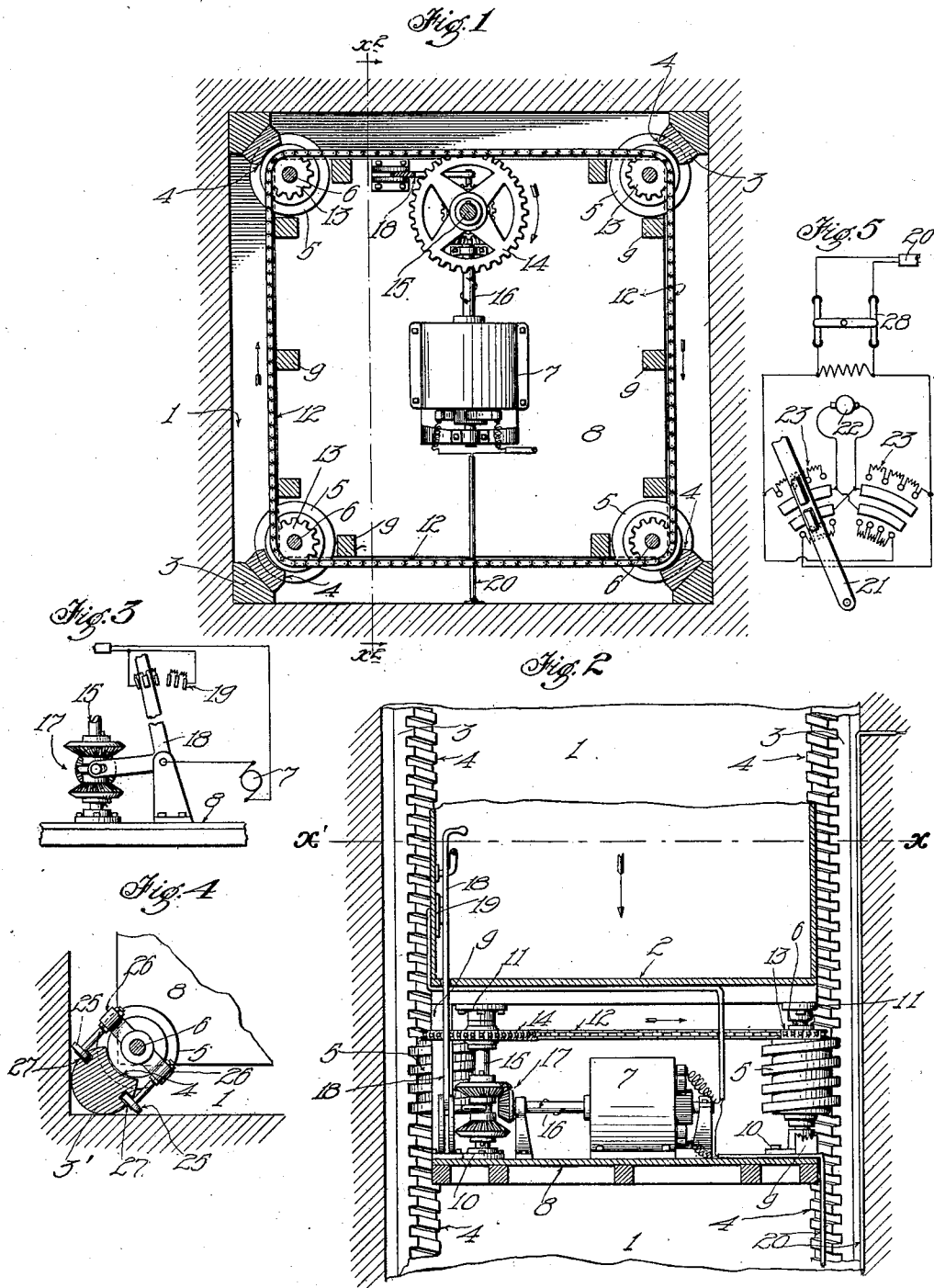


No. 828,029.

PATENTED AUG. 7, 1906.

C. W. JACKSON.
ELEVATOR.
APPLICATION FILED NOV. 1, 1904.



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UNITED STATES PATENT OFFICE.

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ELEVATOR.

No. 828,029.

Specification of Letters Patent.

Patented Aug. 7, 1906.

Application filed November 1, 1904. Serial No. 230,893.

To all whom it may concern:

Be it known that I, CHARLES W. JACKSON, a citizen of the United States, residing at San Diego, county of San Diego, State of California, have invented certain new and useful Improvements in Elevators, of which the following is a specification.

An important object of this invention is to provide an elevator which will be continuously supported by the propelling or lifting and lowering means in such manner that there is no possibility of falling of the elevator in the shaft.

A further object of the invention in this connection is to provide this positive support and propelling means for the elevator while maintaining a clear and unobstructed elevator-shaft.

A further object of the invention is to do away with all the suspending-cables with their attendant risk of breakage.

Another object of the invention is to do away with the necessity of using safety devices such as are required with the cables now in use.

Another object of the invention is to utilize the rails or tracks which serve as guides for the elevator-cage as part of the supporting and propelling means for the cage.

Another object of the invention is to dispense with the use of brakes.

Another object of the invention is to provide for convenient control of the propelling devices from the elevator-cage.

The accompanying drawings illustrate the invention.

Figure 1 is a horizontal section of the elevator-shaft and the lower part of the cage on line X' X' in Fig. 2. Fig. 2 is a vertical section on line X² X² in Fig. 1. Fig. 3 is a detail of the controlling and reversing gear. Fig. 4 is a detail horizontal section showing different forms of the combined guide and screw-rack. Fig. 5 is a diagram of the elevator connections for electric reverse and control.

1 designates an elevator shaft or well, and 2 a cage or car adapted to travel therein.

Suitably positioned in the shaft—for example, at each corner thereof—are tracks or rails 3, which are provided on their inner faces with screw-racks 4, in which engage screw drums or members 5, mounted on vertical axes or shafts 6 at the respective cor-

ners of the elevator-cage. The engagement of said screw-drums with the screw-racks 4 serves to firmly support the cage in the shaft against the action of gravity, as well as against any rotative action or any lateral displacement. The screw-racks 4 are desirably concaved on their inner faces to enable more effectual engagement with the screw-drums 5.

It will be seen that by driving all of the screw-drums 5 from left to right they will work down on the screw-racks 6, thus lowering the cage, while by turning said screw-drums in the reverse direction they will cause the cage to rise. To effect this, driving means is connected to said screw-drums, comprising an electric motor 7, supported on a false bottom 8, which is suspended from the main cage 2 by studs 9, said bottom carrying the lower bearings or steps 10 for the vertical shafts 6 aforesaid, the upper bearings 11 for said shaft being carried on the bottom of the main cage 2. The several screw-drums 5 are connected together by means of a sprocket-chain 12, running on sprocket-wheels 13 on the shaft 6 of the respective screw-drums; said sprocket-chain also running over a sprocket-wheel 14 on a vertical shaft 15, journaled in bearings on the cage 2 and false bottom 8. Said shaft 15 is connected to be driven by the shaft 16 of the motor 7 through a reversing-gear, (indicated at 17.) This reversing-gear may be controlled by a lever 18, which may also control a rheostat 19 for motor 7 to control the speed and give an easy start.

20 designates the flexible supply-cable which is suspended in the elevator-shaft and from which connection is made to switch lever 18 and then to motor 7. The handle of controller-lever 18 extends up into the cage.

If electric reverse is desired, the connections may be made as in Fig. 5, where 21 designates a reversing controller-switch, reversing the connections to armature 22 of motor 7 and also throwing in circuit more or less of the resistances 23 to control the speed. 28 designates the main circuit-switch for the motor.

Means may be provided for guiding the cage independently of the engagement of screw members 5 with screw-racks 4. Thus, as shown in Fig. 4, guide-wheels 25 may be

provided mounted on brackets 26 on the cage and engaging in track-grooves 27 in the vertical rails or rods 3'.

The supporting screw-racks being located in fixed positions exteriorly of the cage between the cage and the sides or corners of the elevator-shaft, no more room is taken up than with an ordinary elevator and the elevator-shaft will be left clean and unobstructed.

In running the elevator the controller or handle will be moved one way or the other, according to whether it is desired to ascend or descend, and in either case the driving means will be brought into operation to rotate all the screw-drums simultaneously, thereby causing the cage to continuously move up or down in the shaft, as the case may be. When it is desired to stop, the handle is thrown to the middle position, thereby stopping the operation of the driving means.

Any number of screw-racks and engaging screw members may be provided, and the construction may be otherwise modified without departing from my invention.

What I claim is—

1. In an elevator, the combination of a plurality of tracks extending longitudinally of the elevator-shaft and provided with screw-racks, driving means, an elevator-cage provided with screw members rotating on vertical axes and engaging said racks, a chain connected to rotate all of said screw members simultaneously, a false bottom for said cage, a motor carried by said false bottom and reversing and controlling means for said driving means.

2. In an elevator, the combination of a

plurality of tracks extending longitudinally of the elevator-shaft and provided with screw-racks, a cage mounted to travel between said tracks, vertical axes at the respective corners of the cage, screw members mounted on said vertical axes on said cage and engaging said vertical tracks, sprocket-wheels connected to the respective screw members, a sprocket-chain engaging said sprocket-wheels, wheel-driving means engaging said sprocket-chain, a motor connected to said wheel-driving means, a false bottom beneath the cage, and a motor carried by said false bottom.

3. In an elevator, the combination of a plurality of tracks extending longitudinally of the elevator-shaft and provided with screw-racks, an elevator-cage mounted to travel between said tracks and having a false bottom below the cage, studs for supporting said bottom, steps carried by said bottom, screw members engaging the respective screw-racks, vertical shafts carrying said screw members and journaled on the cage in said steps and on the false bottom, an electric motor mounted on the false bottom, driving connections between said motor and the screw members, flexible supply connections for the electric motor, a controller having a handle in the cage, and reversing means operated by said controller.

In testimony whereof I have hereunto set my hand, at San Diego, California, this 21st day of October, 1904.

CHARLES W. JACKSON.

In presence of—

ROSCOE HOWARD,
GEO. F. MAHLER.