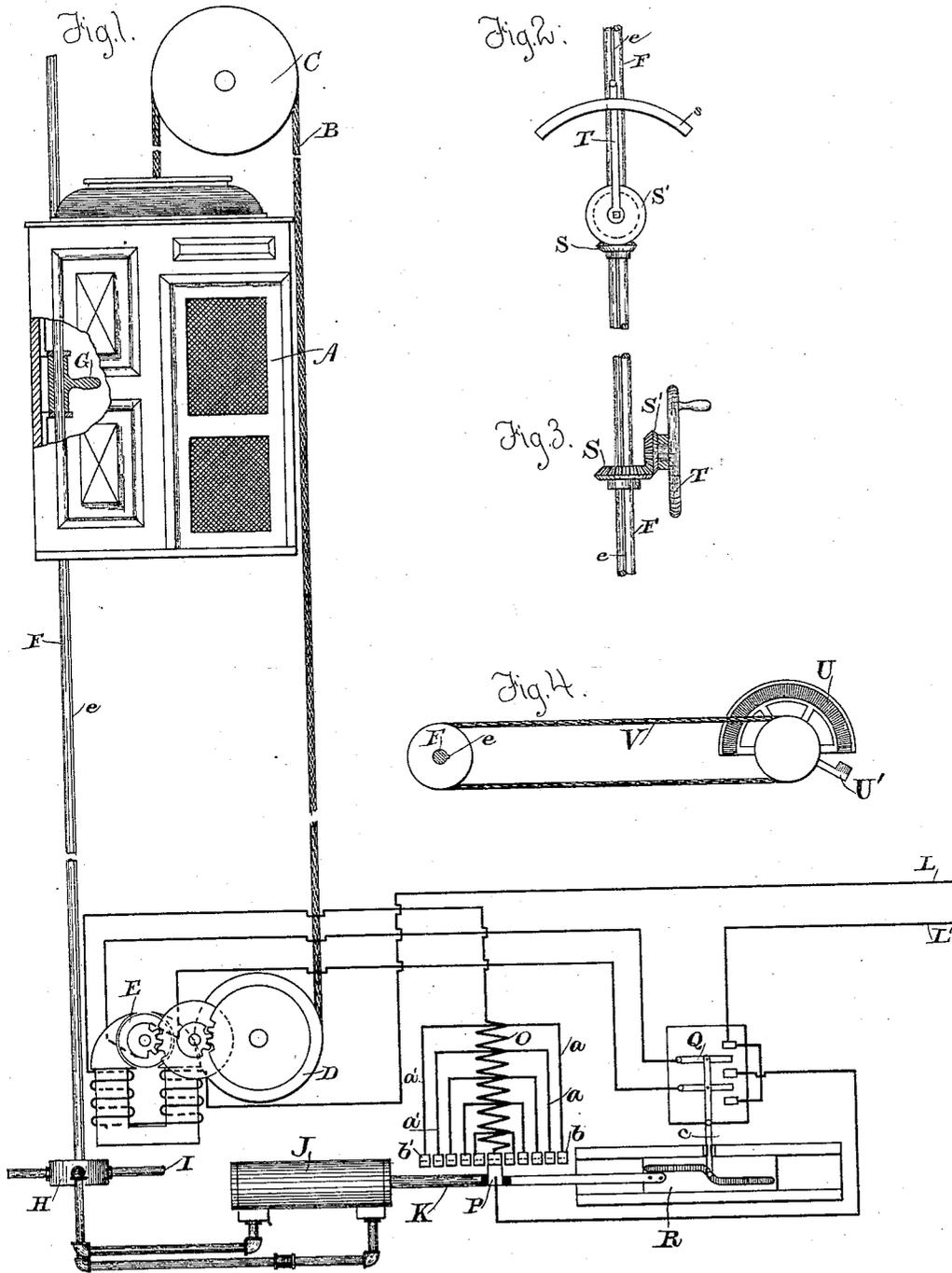


(No Model.)

W. O. WAKEFIELD.
CONTROLLING MECHANISM FOR ELEVATORS.

No. 454,095.

Patented June 16, 1891.



Witnesses.

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CONTROLLING MECHANISM FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 454,095, dated June 16, 1891.

Application filed August 6, 1890. Serial No. 361,174. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM O. WAKEFIELD, a citizen of the United States, residing at Lynn, county of Essex, and State of Massachusetts, have invented a certain new and useful Improvement in Controlling Mechanism for Elevators, of which the following is a specification.

My invention relates to certain novel devices by which the attendant in charge of the elevator may operate the starting and stopping mechanism to control the speed of the car or to arrest its movement altogether. Heretofore this has been accomplished in various ways through the agency of ropes either fixed in the hatchway or running with the car; but I do away with all such arrangements and provide a bar or shaft of the necessary rigidity, which the attendant may rotate, and thus effect the desired control of movement. For running the elevator I prefer to use an electric motor, and I have devised certain means, simple yet effective, by which such motor can be regulated and reversed by the turning-shaft, all as described more particularly hereinafter.

My improvements are illustrated in the accompanying drawings, wherein—

Figure 1 shows in elevation the car and turning-shaft, and illustrates diagrammatically the electrical connections for the motor. Figs. 2 and 3 are respectively end and side views of different modified means for operating the turning-shaft, and Fig. 4 illustrates a modified form of starting and stopping mechanism and means for operating the same.

The car A is designed to travel up and down the hatchway in the ordinary manner, and the hoisting-cable B, after passing around sheave C at the top of the hatchway, is wound upon and paid off from a winding-drum D, to which is geared an electric motor E.

Passing through or near the car and extending along its path of travel in the hatchway is a turning bar or shaft F, which is suitably journaled in bearings, permitting a rotating movement. Connected with this bar and designed to rotate it is a lever-handle G or other suitable actuator for the attendant, which slides freely up and down the shaft,

but cannot turn thereon. In the device illustrated this sliding but non-rotating connection is formed by a spline *e*, extending the entire length of the shaft, which fits a key-way in the lever-handle; but the shaft may be grooved or squared, or any of the means employed which serve the same purpose in other mechanical constructions.

A valve H, which is opened and closed by the shaft F, controls the admission of water or other fluid from a supply-pipe I to the cylinder J, in which reciprocates a ram or piston upon the plunger-rod K. This rod is connected with a resistance-changer for controlling the speed of the motor and a reversing-switch Q. It should be understood, however, that I may employ different means for connecting the turning-shaft with the starting and stopping mechanism and motors other than the electric one described. The motor-circuit can be readily traced from the conducting-lead L through the field-magnets, resistance O, contact-arm P, reversing-switch Q, the armature of the motor, and back through the reversing-switch to the other line-wire L'. The resistance O is connected at successive points by leads *a a'* to a duplicate set of contact-blocks *b b'*, and the contact-maker P is moved by the rod K to the right or left of the central position shown, according to the direction in which the elevator-car is moving. The reversing-switch Q is also thrown by the plunger K by means of the connecting-rod *c*, which has a pin or roller traveling in a cam-groove in the sliding block R, which is fastened to the plunger. The cam-groove has a straight portion at each end, which permits a certain amount of lost movement between the resistance-changer and the reverser, and the contact-maker P is so arranged relatively to the actuating portion of the groove that the reversing-switch will be thrown at a time when the maximum resistance is in circuit, after which the continued movement of the plunger cuts down the resistance to any desired amount. By providing the double set of contacts a single resistance only is needed to control the motor, no matter which way it is running.

In Figs. 2 and 3 are shown modified arrangements by which the attendant may actu-

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ate the turning-rod. A gear-wheel *S* is keyed or splined to the shaft, and a second gear-wheel *S'*, meshing therewith, is rotated either by a lever-handle, as at *T*, Fig. 2, or a hand-wheel, as at *T'*, Fig. 3

An indicator-segment *s* is provided, by which the positions of the starting and stopping mechanism may be known by noting the corresponding positions of the lever. For example, when the car is at rest the lever will ordinarily occupy the middle position shown, and it will be moved to the right or left, according as the car is ascending or descending.

In Fig. 4 is shown a modification in which the turning-shaft operates the regulator for the motor directly. The regulator is represented as consisting of a resistance *U*, over which sweeps a contact-arm *U'*, and a belt *V*, passing around pulleys fast upon the contact-arm and turning-shaft, furnishes means for controlling the motor as desired.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of an electric motor with a regulator therefor, a plunger working within a cylinder and connected with the reg-

ulator, and a valve mechanism under the control of the attendant for controlling the movement of the plunger, as described.

2. The combination of a stationary electric motor, power-transmitting connections between the motor and moving elevator-car, and a regulator for the motor, with a cylinder and piston for operating the regulator, the valve mechanism, and the turning-shaft operated from within the car to control the valve and through it the regulator, as described.

3. The combination of a stationary electric motor and a cable drawn in and paid out by said motor and attached to a moving elevator-car, with a resistance having duplicate sets of contacts connected therewith, a moving contact-maker, a circuit-reversing switch, and an actuating device for said contact-maker and switch, permitting the former a last movement and controlled by the attendant on the car, as described.

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Witnesses:

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