(No Model.)

2 Sheets—Sheet 1.

C. W. BALDWIN.

STARTING AND STOPPING DEVICE FOR ELEVATORS.

No. 416,983. Patented Dec. 10, 1889.

Fig. 4.

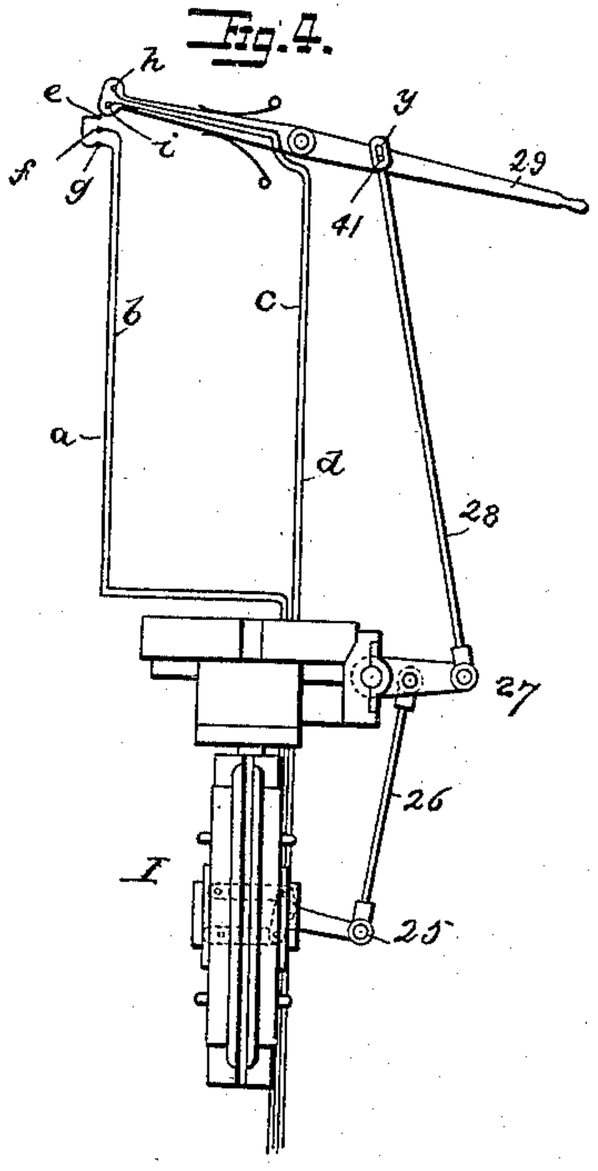
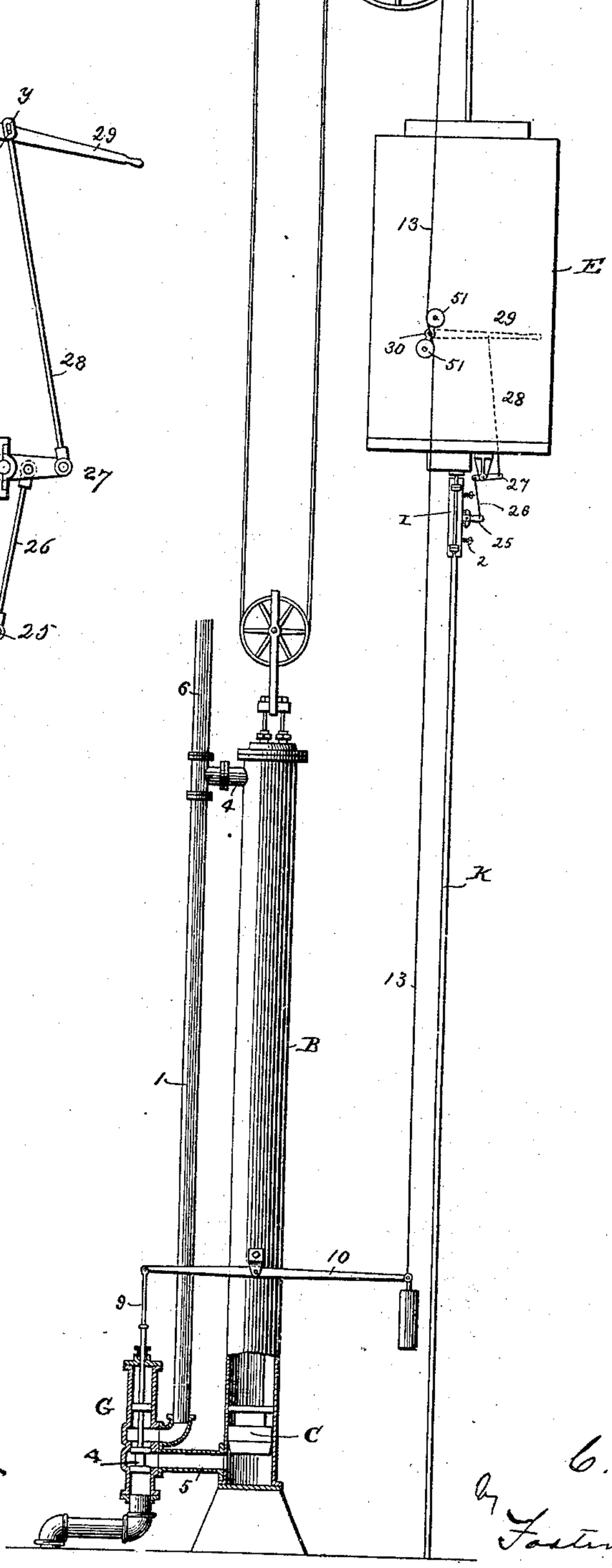


Fig. 1.



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(No Model.)

2 Sheets—Sheet 2.

C. W. BALDWIN.

STARTING AND STOPPING DEVICE FOR ELEVATORS.

No. 416,983. Patented Dec. 10, 1889.

Fig. 2.

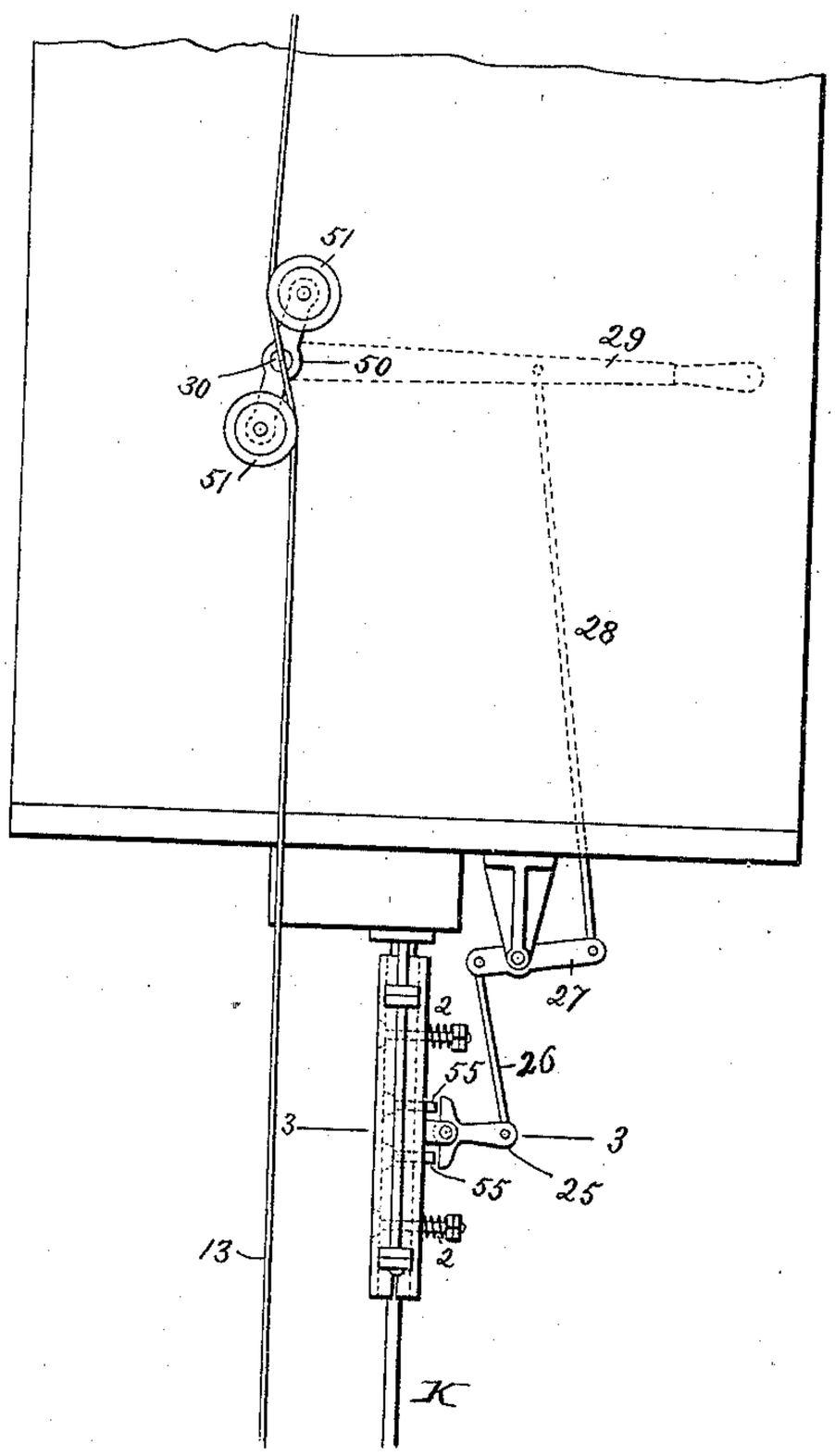
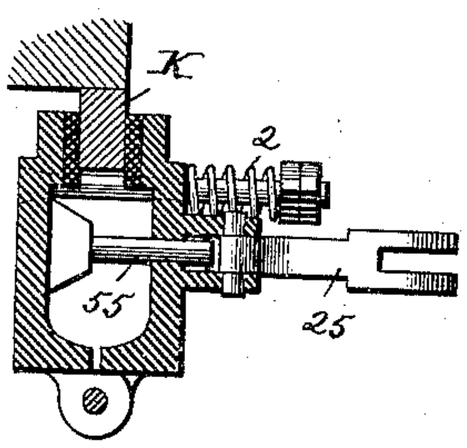


Fig. 3.



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UNITED STATES PATENT OFFICE.

CYRUS W. BALDWIN, OF YONKERS, NEW YORK, ASSIGNOR TO THE HYDRAULIC ELEVATOR COMPANY, OF CHICAGO, ILLINOIS.

STARTING AND STOPPING DEVICE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 416,983, dated December 10, 1889.

Application filed February 18, 1889. Serial No. 300,280. (No model.)

To all whom it may concern:

Be it known that I, CYRUS W. BALDWIN, a citizen of the United States, and a resident of Yonkers, Westchester county, New York, have invented certain new and useful Improvements in Stopping and Starting Devices for Elevators, of which the following is a specification.

My invention relates to that class of controlling devices for elevators in which a brake is used in connection with the stopping and starting device; and my invention consists of certain connections between the operating device within the cage, the stopping and starting device, and the brake, as fully set forth hereinafter, whereby to secure the movement of the stopping and starting device in advance of the application or release of the brake.

In the accompanying drawings, Figure 1 is an elevation in part section showing my improved controlling appliances in connection with a vertical elevator. Fig. 2 is an enlarged view showing the parts in immediate connection with the cage. Fig. 2 is a section on the line 3 3, Fig. 2. Fig. 4 is a view illustrating the application of the appliances in connection with an electrical stopping and starting device.

For the purpose of illustrating my invention I have shown the same in connection with a vertical elevator of the "Baldwin" type, having a cylinder B, piston C, valve device G, circulating-pipes 1 4 5, and supply-pipe 6, communicating directly or through the valve device with the circulating-pipes, as is common in apparatus of such kinds. There is also a cage E, operated from the piston through flexible suspensories, which cage is provided with a brake I, of any suitable construction. As shown, the brake is a clamp-brake having two jaws pivoted and suspended below the cage and adapted to grip the vertical brake bar or guide K, and the jaws are forced against the guide to grip the same by the action of springs 2 2, and are separated by swinging a T-lever 25 in either direction from a central horizontal position, as fully set forth in Letters Patent of the United States granted to me February 22, 1887, No. 358,322, to which reference is made in lieu of a more detailed description of the brake.

The brake is operated from within the cage from any suitable device provided with an operating-handle, as a wheel or lever, to be grasped by the attendant. As shown, there is a handled lever 29, connected by a rod 28 with the arm 27 of a shaft rocking in bearings on the cage, the arm 27 being also connected by a rod 26 with the end of the T-lever 25, and the parts being so arranged that the movement of the handle 29 in either direction from its central position will swing the lever 25 and unclasp the clamp, releasing the brake, while a reverse movement will allow the springs to act to clamp the guide K between the jaws of the brake.

The object of the brake is to coact with the stopping and starting device, whether a belt-shifter, switch, or steam or water valve, so that the brake will aid in reducing the momentum of the cage and hold it finally in a fixed position.

In Fig. 1 the brake is shown in connection with a valve stopping and starting device, the valve and the brake being operated preferably from the same handle through devices which first start the movement of the valve and then apply or remove the brake. Thus the operating-lever 29 is connected to a shaft 30, extending through the cage and carrying an arm 50 outside the cage provided with studs for two grooved pulleys 51 51, between which extends a cable 13, hung from an eye-bolt at the top of the well and connected at its lower end to the end of a lever 10, attached at its opposite end to the stem 9 of the stopping and starting valve G. These parts are so arranged that when the lever 29 is horizontal the pulleys 51 51 will be in the position shown—that is, one of the pulleys will be on each side of the cable, one above the other, and the cable will be bent around the pulleys in such manner that the portion below the pulleys has been drawn upward to hold the lever 10 in its mid-position to close the valve and arrest the movements of the engine. By raising the lever 29 the cable is further drawn up and the valve depressed to

put the circulating-pipes in connection, allowing the water to circulate and the car to descend. By depressing the lever 29 from its mid-position the cable is slackened, the outer end of the lever 10, which is weighted, descends, the valve is raised, and the water escapes from below the piston, and also passes under pressure onto the top of the same, and thus moves down the piston and elevates the cage.

Without provision to the contrary the movement of the operating-handle would apply the brake simultaneously with the opening or closing of the valve. This sometimes leads to abrupt actions and the jolting and jarring of the mechanism. I therefore so connect the handle with the two devices as to secure the lead in the movement of the stopping and starting device, as will be now described. Thus the T-lever 25 is shown in Figs. 1 and 2 arranged out of contact with the bearings 55 55 when in mid-position, so that it can have a limited movement before it makes contact with the said bearings to force apart the jaws, so that the lever 29 swings to a certain extent to start the movement of the valve in one direction or the other before the brake is released or applied. When the hand-lever 29 begins its reverse movement, the cable is operated on to move the valve simultaneously with the first movement of the jaws of the brake; but until the jaws are brought close to the brake-bar they do not act to retard the cage, so that in this movement also the valve operates to control the cage in advance of or leads the brake.

In Fig. 4 I illustrate the arrangement of parts not herein claimed, as it forms the subject of a separate application for Letters Patent, Serial No. 285,200, in connection with a switch for electrically controlling the stopping and starting device. In this case the hand-lever 29 carries two contacts *h i*, connected with conductors *c d*, and there are three stationary contacts *e f g*, connected with conductors *a b*, as shown.

When the contacts *h i* are brought to coincide with the pair of contacts *e f*, a circuit is completed to move the valve in one direction, and when brought to coincide with the pair of contacts *f g* a circuit is completed to move the valve in the opposite direction; but in either case the lever is not in its mid-position, but is slightly inclined from a horizontal line.

The rod 28, instead of being pivotally connected with the lever 29, is provided with a slot *y*, receiving a pin 41 on the lever to permit a limited motion of the latter before moving the rod, so that if the lever is in its mid-position it can be moved to bring either pair of contacts to coincide with those on the lever and start the valve before the pin 41 reaches the end of the slot in either direction, after which the continued movement of the lever operates to move the rod 28 and separate the jaws. On reversing the movement of the lever the contacts are brought to coincide, and the valve started before the brake is moved sufficiently to exert any retarding effect upon the cage.

I have not shown the electric connections with the stopping and starting device, as they form no part of this invention; but the parts described serve to illustrate another application of my invention, whereby from a single operating-handle I am enabled to start the movement of the stopping and starting device, whatever may be its character, in advance of the application or releasing of the brake.

Without limiting myself to the precise construction and arrangement of parts shown, I claim—

1. The combination, in an elevator, of a cage, a stopping and starting device, a brake, and connections between the stopping and starting device and the brake, arranged substantially as set forth, to start the movement of the stopping and starting device in advance of the application or release of the brake, substantially as set forth.

2. The combination, with the cage, stopping and starting device, and brake of an elevator, of an operating-handle connected with the brake and with the stopping and starting device, the arrangement of the parts being such as to secure the lead of the stopping and starting device in operating either to start or stop the cage, substantially as set forth.

3. The combination of the cage, stopping and starting device, and a brake of an elevator, with a hand-lever connected to operate the stopping and starting device, and connected with the brake through connections having a limited play to permit the stopping and starting device to be put in action before the application or release of the brake, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CYRUS W. BALDWIN.

Witnesses:
WM. H. SWENY,
WILLIAM F. HARRIGAN.