

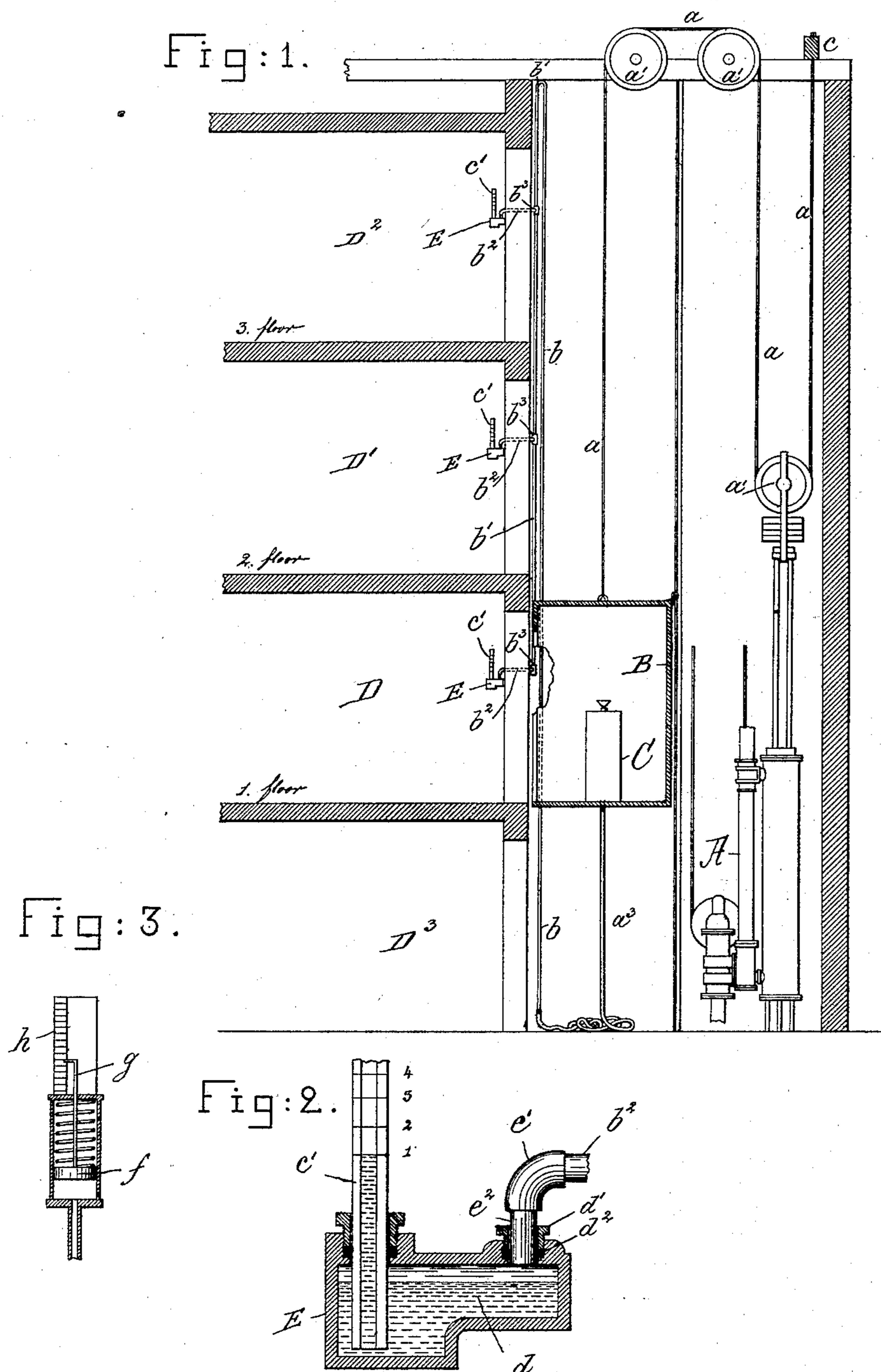
(No Model.)

Q. N. EVANS.

INDICATOR FOR ELEVATORS.

No. 327,075.

Patented Sept. 29, 1885.



Witnesses.

Arthur Lipperloss.
John F. C. Prentiss

Inventor.

Quimby N. Evans.
By Crosby & Gregory Attys

UNITED STATES PATENT OFFICE.

QUIMBY N. EVANS, OF BOSTON, MASSACHUSETTS.

INDICATOR FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 327,075, dated September 29, 1885.

Application filed March 31, 1885. (No model.)

To all whom it may concern:

Be it known that I, QUIMBY N. EVANS, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Indicators for Elevators, of which the following description, in connection with the accompanying drawings, is a specification, the same letters on the drawings representing the same or like parts.

My invention has for its object to provide a building having an elevator with an indicator deriving its movement from the pressure of a column of air acted upon by a column of water or other equivalent fluid which is varied in height by the vertical position of the car—the higher the car the higher the column of water or other fluid and the greater the air-pressure.

The indicator herein shown to illustrate one embodiment of my invention, and which is actuated by variations in air-pressure, consists of a tube connected with a vessel containing mercury, the air acting upon the surface of the said mercury in the said vessel. The indicator may be of other usual form or construction, wherein a column of air acting thereon will cause a part of the indicator to move with relation to a fixed scale—as, for instance, the air might actuate directly or indirectly a piston or a diaphragm having connected with it a rod to move a pointer over a suitable scale.

Prior to my invention indicators having pointers and dials have been moved by means of ropes connected with the car; but prior to my invention I am not aware that variations in air-pressure caused by fluid-pressure upon the column of air, the said fluid-pressure being controlled by the position of the car, have ever been made available to act upon an indicating apparatus to indicate the position of the car.

My invention therefore consists, primarily, in the combination, with an indicating device and an attached air-pipe, of a tank containing fluid and adapted to be raised and lowered in the movement of the car, and a flexible tube connecting the fluid-tank with the air-pipe, so that when the tank is raised or lowered in the movement of the car as specified the air in the air-pipe is caused to act upon the indicator

with more or less force, thus varying its position.

Figure 1 is a diagram showing in vertical section a building provided with an elevator-car and actuating apparatus therefor of usual construction, my improved indicating apparatus being added. Fig. 2 is an enlarged detail of the reservoir for the indicating-fluid, preferably mercury, when a fluid is used as the indicator, and the attached glass tube provided with the usual scale-marks; and Fig. 3 is another form of air-indicator which may be used in connection with my invention.

The elevator-actuating mechanism A, its ropes *a*, sheaves *a'* *a'*, and elevator-car B are and may be of any usual construction, that herein shown being what is known as the "Baldwin system."

The different floors of the building are marked *D D' D''*, and the basement *D'''*. Upon the wall at each floor, and preferably near the elevator-entrance, I have placed, as shown in Fig. 1, a reservoir, E, containing mercury or other equivalent fluid, mercury being preferred because of its greater specific gravity.

Into each reservoir is placed a glass tube, *c'*, opened at its upper end and provided with scale-marks to indicate the different floors of the building, the scale-marks having, opposite them preferably, figures 1, 2, 3, 4, &c., the said indicating apparatus being one of the many forms of indicators which can be used in connection with my invention. The tube *c'* is opened at its upper end, and its length depends upon the number of floors in the building.

The movement of the elevator-car controls the movement of a tank, C, containing water or other suitable liquid, and the said tank has connected with it a flexible pipe or hose, *a''*, attached at its lower end to a pipe, *b*, which is carried to the top of the elevator-well, and then turned down, forming a loop, *b'*. This loop is tapped at each floor, and has connected with it a pipe, *b''*, which is connected with the indicating device or apparatus, and is shown in this instance as being provided with an elbow, *e'*, and an extension, *e''*, which is led through a suitable gland, *d'*, and packing *d''* into the reservoir containing mercury.

Assuming the car to be in the position shown

in Fig. 1, or at the first floor, the top of the column of mercury will stand at 1. Now, as the car rises the pipe a^3 will be lifted, and the water in the tank C will enter the pipe, the column of water therein gradually growing longer and longer, and, acting under well-known laws of pressure, the said column of water compresses the air in the tube $b\ b'$, closed at its end b' , and causes the air therein to press with increased force upon the surface of the mercury in the reservoir E, thus causing the said mercury to rise in the tube e' , the distance to which it rises depending upon the height of the car.

15 The indicator may be of other usual form or construction, as shown in Fig. 3, wherein a column of air acting upon a piston, f , will cause a rod, g , connected therewith to move with relation to a fixed scale, h ; or the air

20 might actuate directly or indirectly a piston

or a diaphragm having connected with it a rod to move a pointer over a suitable scale.

I claim—

In an elevator-indicator, the combination, with an indicating device or apparatus and an attached air-pipe, of a tank containing fluid and adapted to be raised and lowered in the movement of the car, and a flexible tube connecting the fluid-tank with the air-pipe, whereby when the tank is raised or lowered in the movement of the car, as specified, the air in the air-pipe is caused to act upon and operate the indicator, substantially as described.

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

QUIMBY N. EVANS.

Witnesses:

G. W. GREGORY,

F. CUTTER.