

(No Model.)

U. P. SMITH.

ELEVATOR.

No. 314,736.

Patented Mar. 31, 1885.

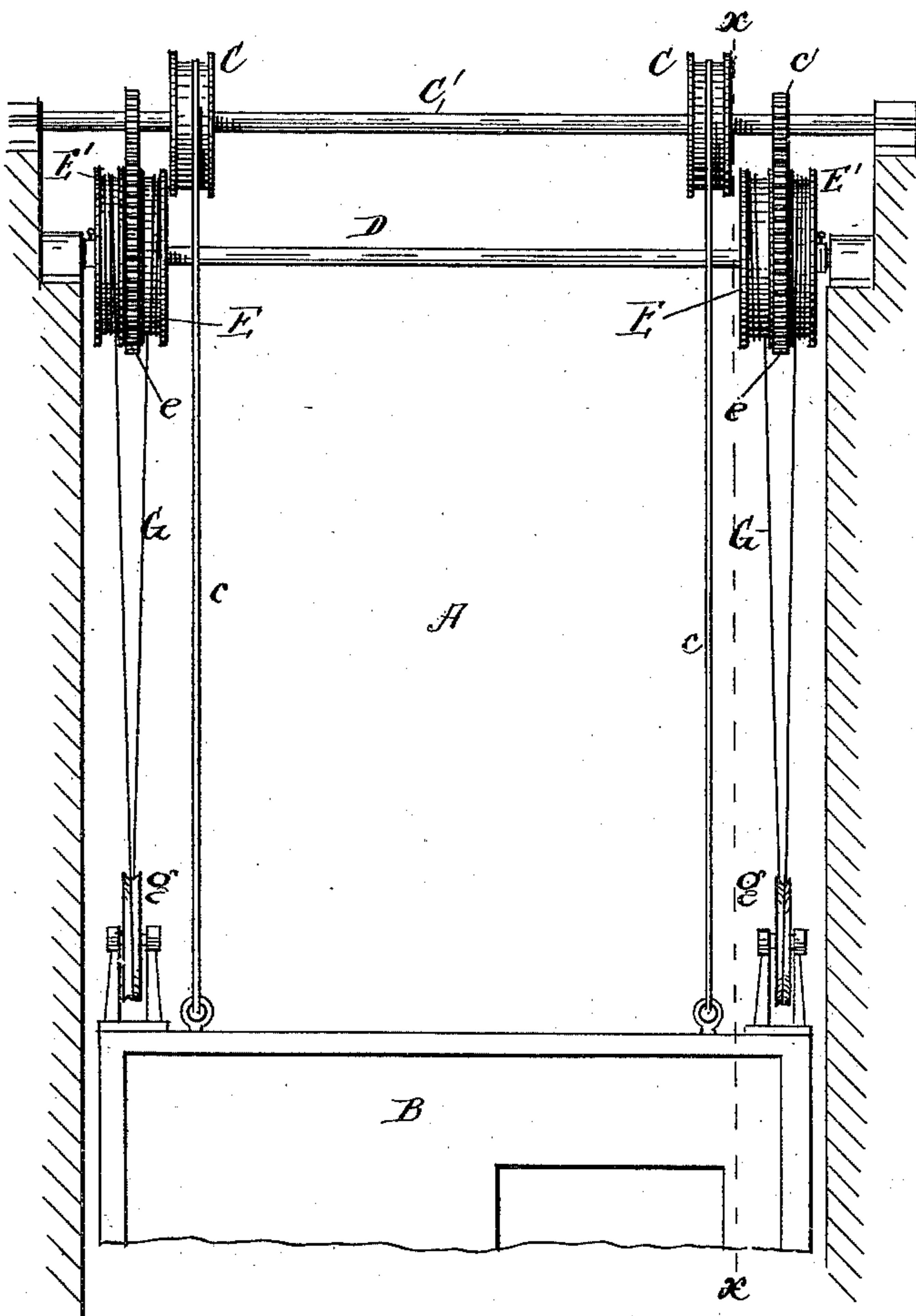


Fig 1

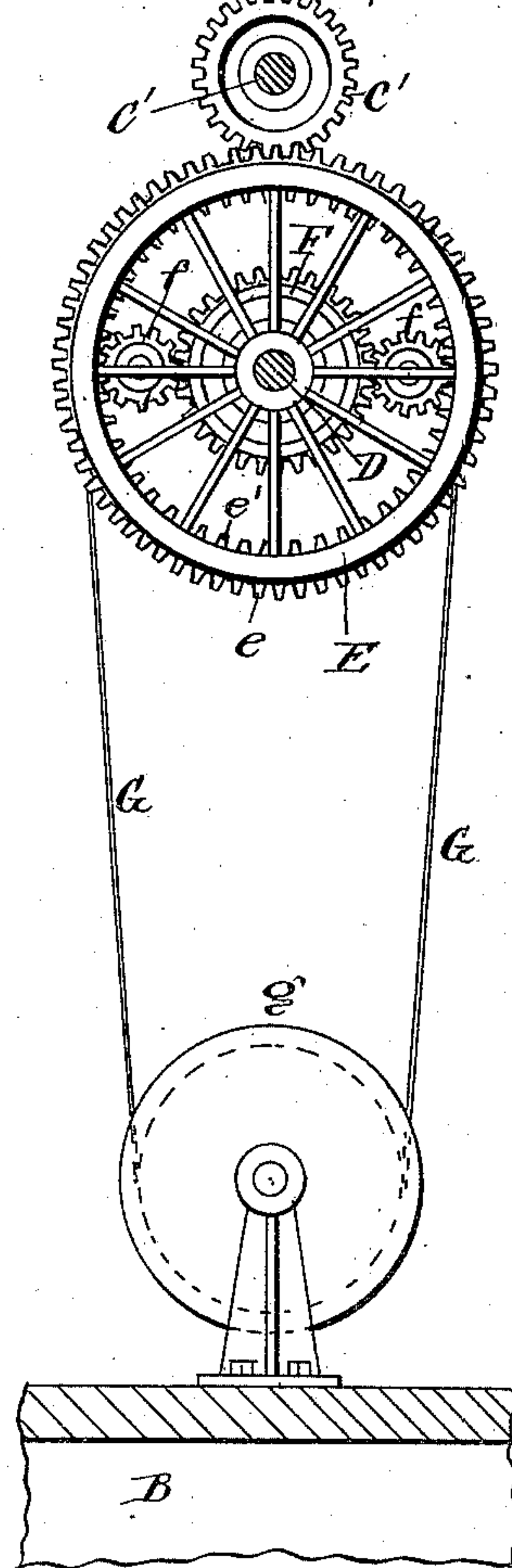


Fig 2

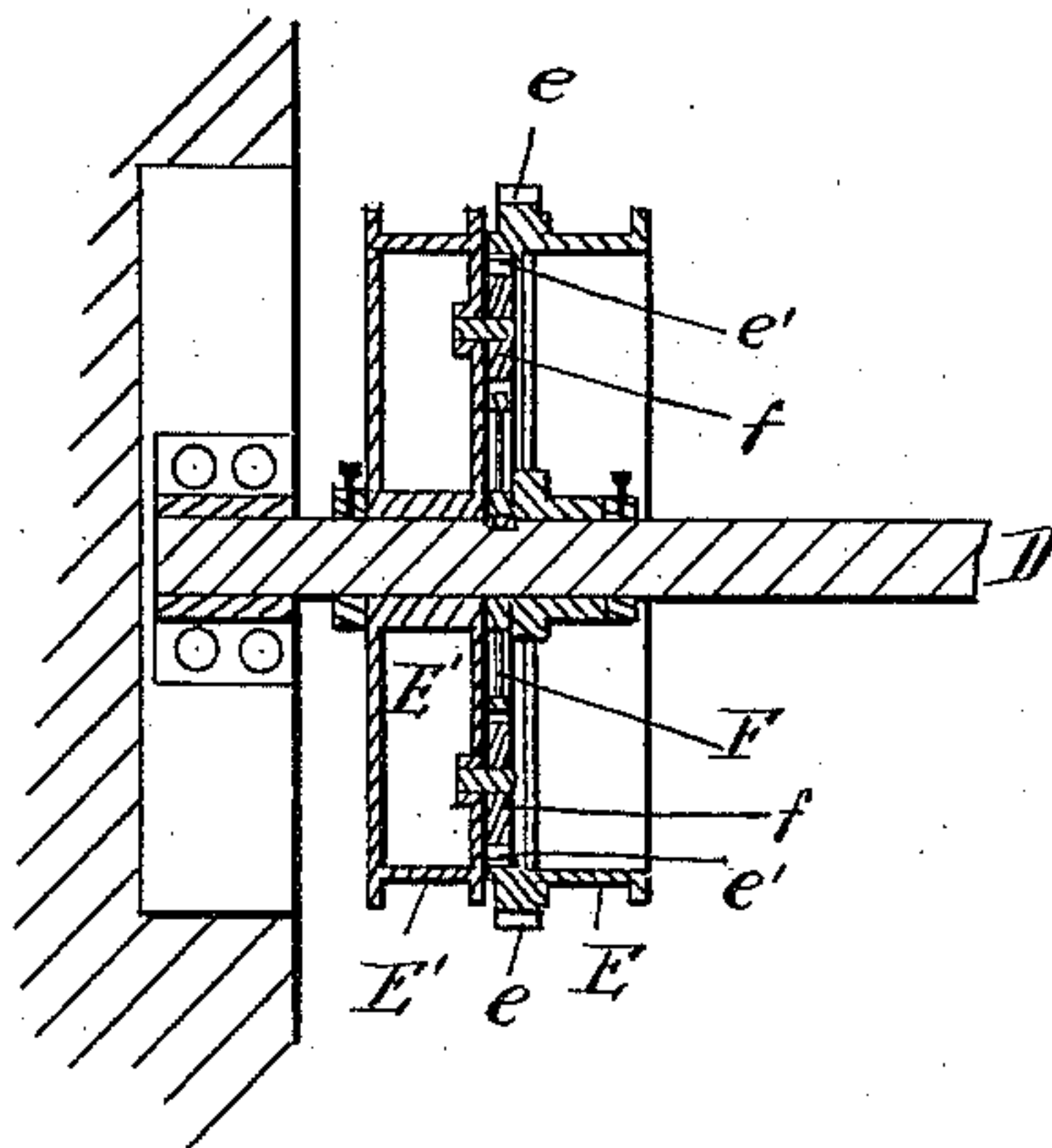


Fig 3

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# UNITED STATES PATENT OFFICE.

UZZIEL P. SMITH, OF CHICAGO, ILLINOIS.

## ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 314,736, dated March 31, 1885.

Application filed September 4, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, UZZIEL P. SMITH, a citizen of the United States, and residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Elevators, which are fully set forth in the following specification, reference being had to the accompanying drawings, in which—

10 Figure 1 represents a front elevation of the elevator mechanism; Fig. 2, a sectional view on the line *xx* of Fig. 1; and Fig. 3 a sectional view on the line *yy*, Fig. 1.

15 My invention relates to elevators for buildings and other hoisting apparatus, being intended more particularly for application to passenger-elevators, especially for those used in private residences.

20 I will proceed to describe the construction and operation of an elevator embodying my invention as it may be carried out practically in one way, and will then point out definitely in the claims the special improvements which I believe to be new and wish to protect by Letters Patent.

25 In the drawings, A represents an elevator-well of any usual construction, in which the car B is suspended by means of ropes *c* from drums C on the drum-shaft C'. This drum-shaft may be operated by any suitable means to raise and lower the car, and has near each end a pinion, *c'*.

30 Arranged below the shaft C' is another fixed shaft, D, on which are arranged at each end a pair of drums, E E', revolving loosely thereon. Each drum E has an external gearing, *e*, to mesh with one of the pinions *c'*, and an internal gearing, *e'*, to mesh with two small pinions, *f*, fixed on the inner face of the drum E'.

35 On the shaft D, between the two drums, is fixed a gear, F, which meshes with the pinion *f*, as shown in Fig. 2. From each pair of drums a rope, G, passes around a pulley, *g*, on top of the car B, the rope having its ends secured to and wound in opposite directions around the two drums E E'.

40 The operation of the device is as follows: Upon rotation of the shaft C' in one direction, the car B will be lowered. At the same time 45 the drums E will be rotated by means of the

pinions *c'*, and thereby pay off the rope G as the car descends. By means of the pinions *f*, which mesh with the internal gearing, *e'*, on the drum E, and also with the fixed gearing F, the drum E' will be rotated in the same direction as the drum E, but at a slower rate. 55 The drum E' takes up the rope G, but, owing to its slower rotation than the drum E, does not take it up as fast as the latter passes it off, the relative proportion of the gearing being such that the increase in the amount of slack of the rope G is equal to the amount of rope *c* that is paid out. Upon rotating the shaft C' in the opposite direction, the movement of the two drums is reversed to take up the slack in the 60 rope G as the car ascends in an obvious manner. In case the main hoisting apparatus gives way, the whole weight of the car is thrown upon the ropes G at the point where they pass around the pulleys *g*, and will tend to unwind this rope from each of the drums E E'; but this tendency is resisted by the gearing connecting the two drums, which prevents their rotating in opposite directions, which operation would be necessary for the simultaneous unwinding of 65 the rope from both drums. The pinions *f* lock between the internal gear, *e'*, on the drum E and the fixed gear F on the shaft D. It will be seen that the weight of the car thus sets this train of gears and prevents any further descent. 70

The safety device described above may be applied to different styles of elevators, and I do not limit myself to its application in the precise manner explained above, nor to the 75 precise details of construction herein described and shown.

It is evident instead of two sets of drums only one may be employed; but I deem the former construction preferable, and more than 80 two may be used. It is also evident that only one pinion, *f*, may be employed; but the construction shown is preferred as being stronger and better preserving the balance of the apparatus. It is also obvious that the hoisting 85 apparatus shown may be omitted entirely, and the car may be raised and lowered by operating the ropes G by hand, and I contemplate such an application of my device.

Having thus described my invention, what 90



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

1. The combination, with the car and a suitable hoisting apparatus, of one or more pairs  
5 of drums connected with the elevator by a rope wound around them in opposite directions, one of said drums being operated from the shaft of the hoisting apparatus, and having an internal gear meshing with one or more  
10 pinions mounted on the other drum between said internal gear and a fixed gear between the drums, substantially as and for the purposes set forth.

2. The safety attachment for elevators, consisting of the drums E E', the former having  
15 external gear, *e*, and internal gear, *e'*, and the latter having a pinion or pinions, *f*, arranged to gear with the internal gear, *e'*, on the former and with a fixed gear, F, between the two  
20 drums, substantially as and for the purposes set forth.

3. The combination, with the car B, having pulleys *g*, of the drums E E', connected therewith by ropes G passing around said pulleys  
25 and wound on said drums in opposite directions, the said drums being connected by pinions on the one gearing with an internal gear on the other, and with a fixed gear between the two, substantially as and for the purposes specified.

4. The combination, with fixed shaft D, of  
30 drums E E', mounted loosely thereon, and having internal gear, *e'*, and pinions *f*, respectively, and of gear F, fixed on said shaft between the arms, substantially as and for the  
35 purposes specified.

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Witnesses:

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