

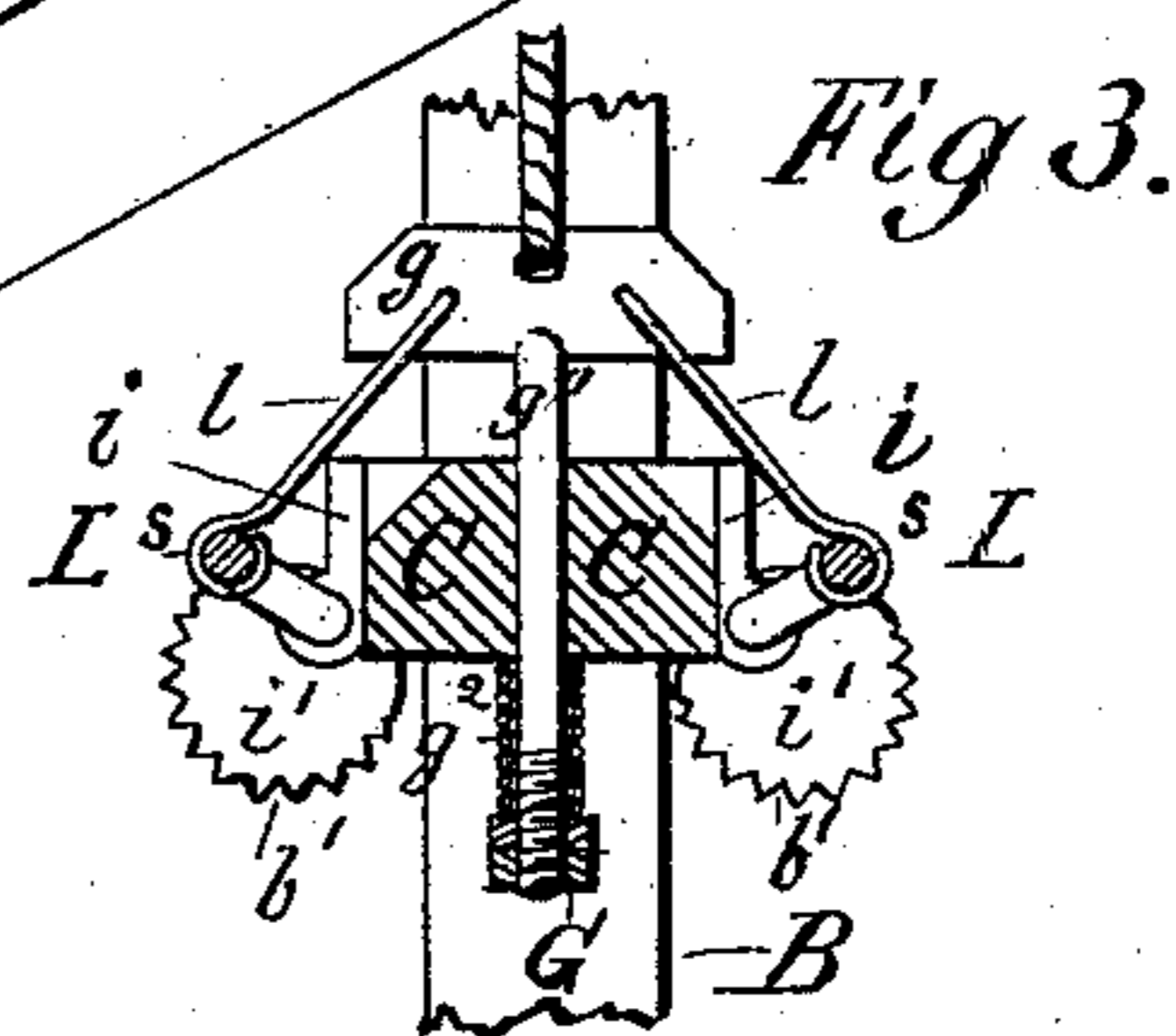
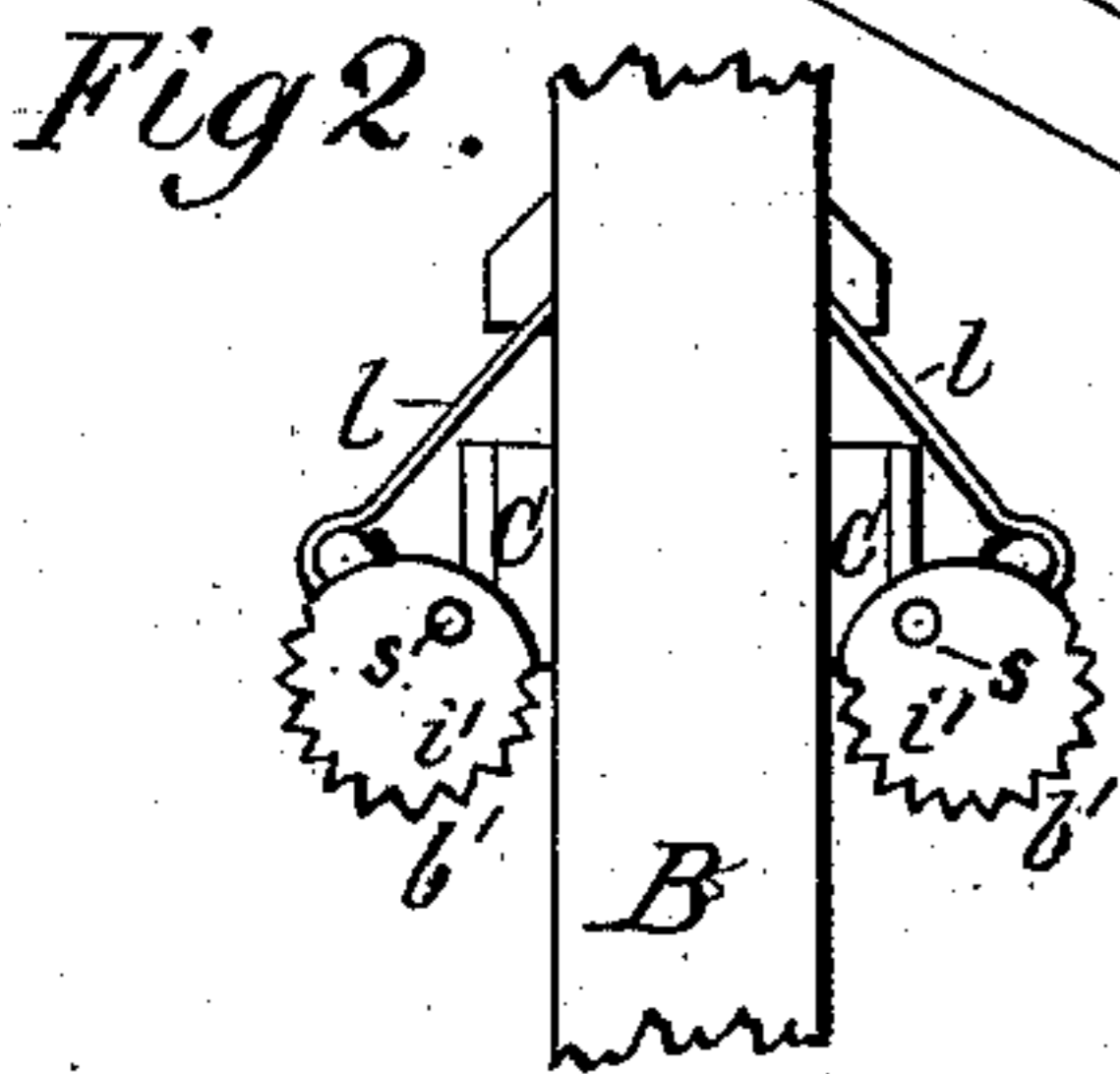
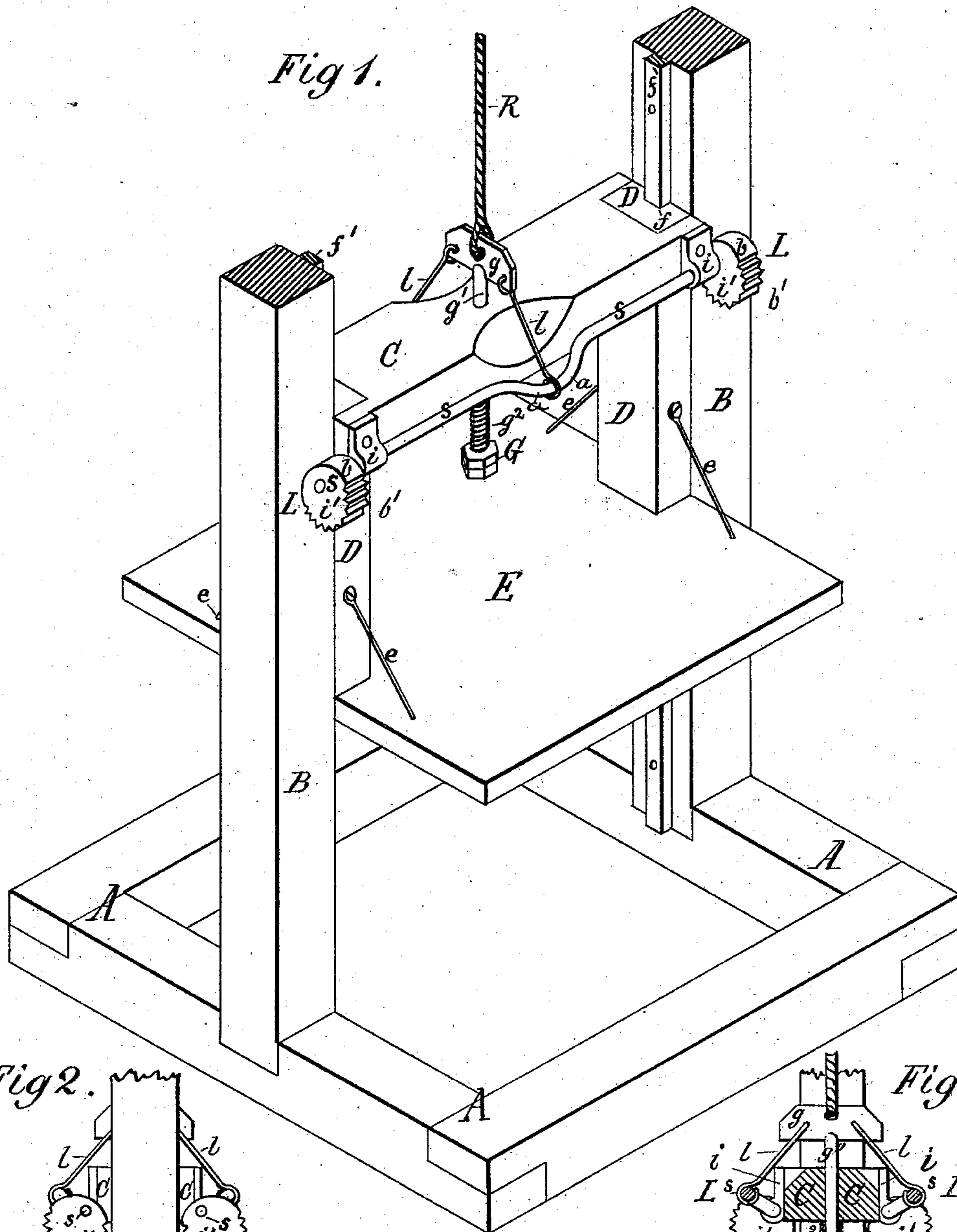
(No Model.)

**2 Sheets—Sheet 1.**

J. B. ATWATER.  
Elevator.

**No. 235,664.**

**Patented Dec. 21, 1880.**



Witnesses:  
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Inventor:  
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(No Model.)

2 Sheets—Sheet 2.

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Fig 4.

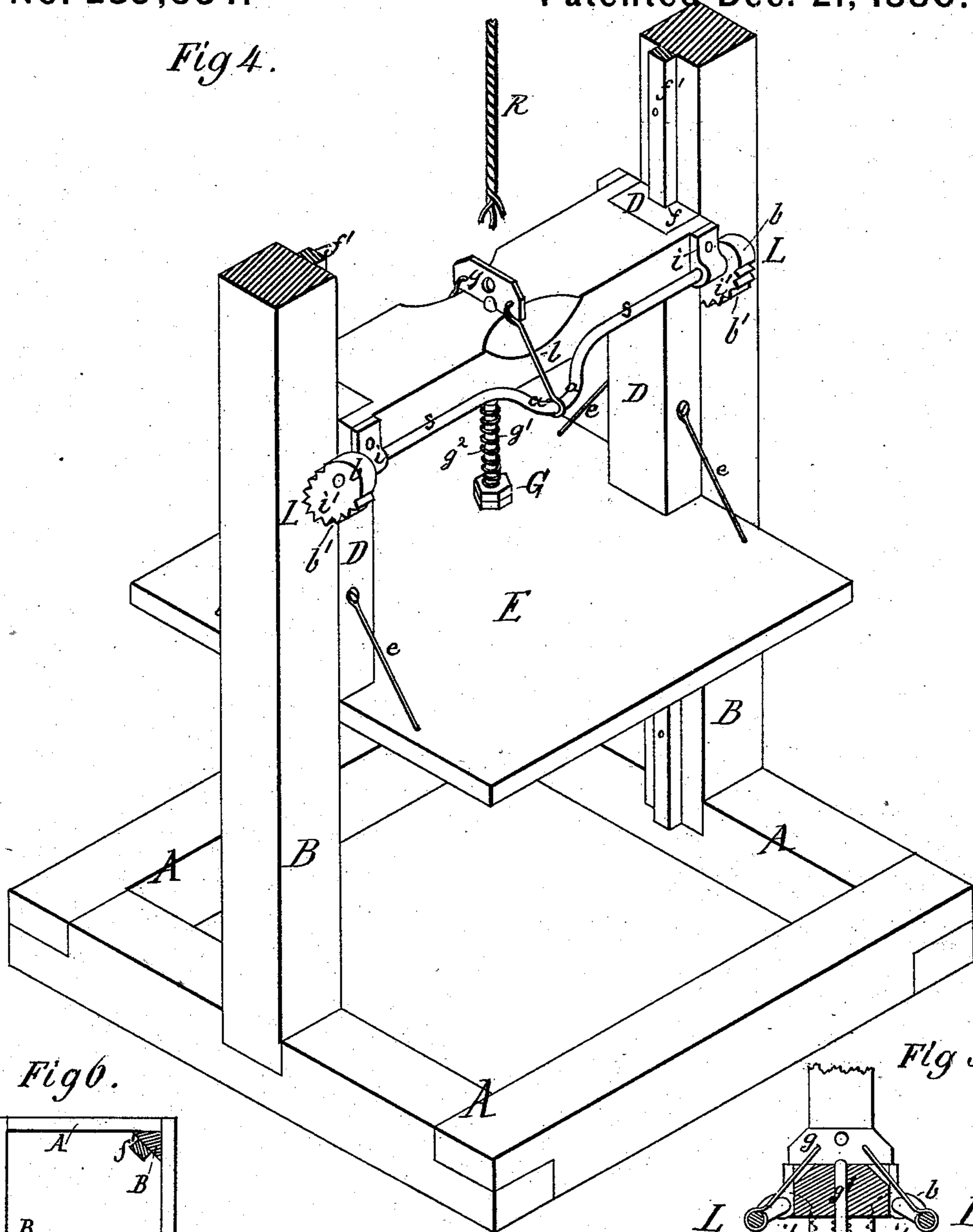


Fig 6.

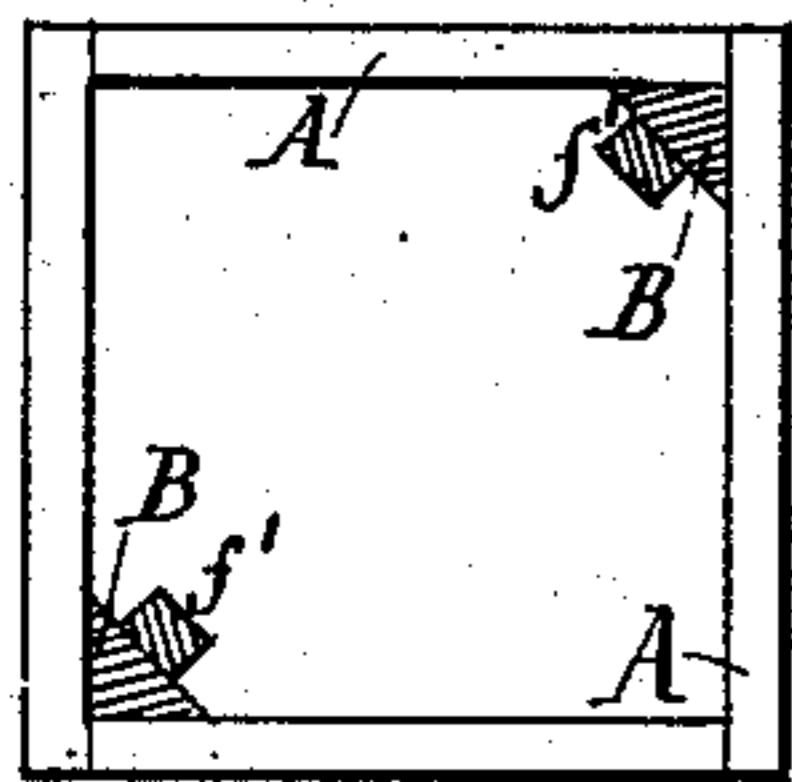
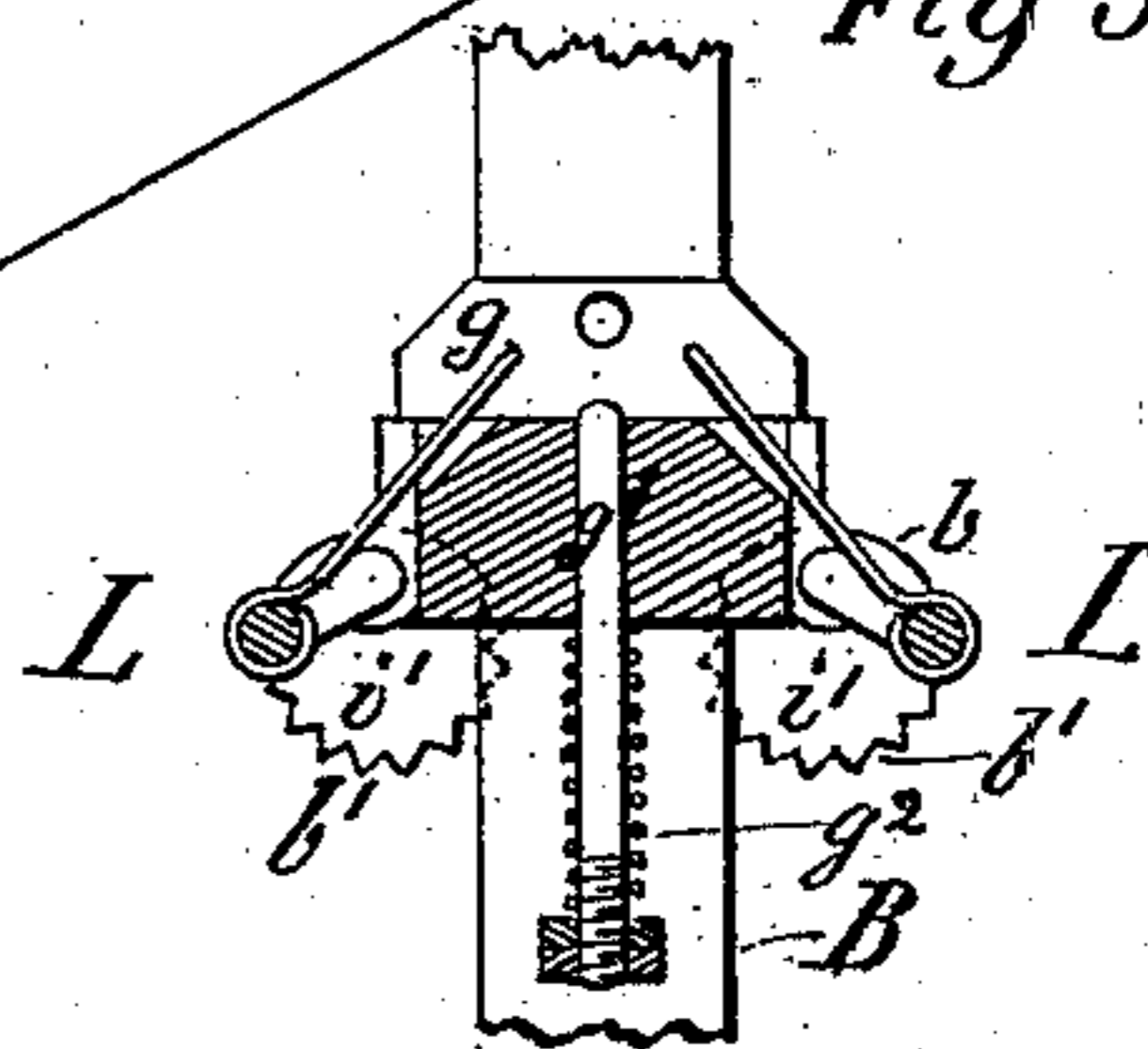


Fig 5.



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# UNITED STATES PATENT OFFICE.

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ALBERT G. COLEMAN, OF CHICAGO, ILLINOIS.

## ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 235,664, dated December 21, 1880.

Application filed July 16, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN B. ATWATER, a citizen of the United States, residing at Geneva, in the county of Kane and State of Illinois, have invented a new and useful Improvement in Elevators; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the annexed drawings, forming a part of this specification, in which drawings—

Figure 1 is a perspective view of my improved elevator, the several parts being in proper position to allow the passenger platform or floor of the elevator to be raised and lowered in the usual manner by a rope or chain, the several parts being shown in the position they will maintain when the rope or chain is unbroken. Fig. 2 is a side elevation, and Fig. 3 a sectional view, of a portion of Fig. 1. Fig. 4 is a perspective view illustrating my said invention, the several parts being represented in the position they will occupy in the event that the elevating rope or chain becomes broken, and whereby the sudden and dangerous descent of the passenger-platform of the elevator will be arrested, and Fig. 5 is a central sectional view of a portion of Fig. 4. Fig. 6 is a diagram of an elevator-well having the platform guide-posts in opposite corners thereof.

The nature of my invention consists in utilizing counterbalancing cam-levers for the arrest of the sudden descent of the passenger or business platform or floor of an elevator due to the breaking of the rope or chain by which it is elevated, whereby all strain and tendency to spread apart the frame-work of the elevator is avoided, while at the same time such descent will be arrested simultaneously, or nearly so, with the breaking of the rope or chain.

In the drawings, A indicates a foundation-frame of my improved elevator, having two main upright posts central of the frame, as at B B, which posts extend from the top to the bottom of the passage in which the elevator is situated. These posts, with their frame A, are secured in position to the building in which the elevator is used in any proper manner.

C indicates a cross-bar into which guide-

posts D are framed, as shown, and to which posts the passenger platform or floor E of the elevator is secured in a proper manner and stayed by stay-rods, as at e, to keep the floor level during the use of the elevator. The posts D, central of their length, are provided with rectangular grooves f their entire length, to engage with guides f' provided on the inner surface of the posts B B, as shown, and which guides f' may extend the whole length of said posts, or nearly so. Thus when the parts C, D, and E are raised and lowered by the rope or chain R they will be maintained in proper working line with the guides f'.

The rope R (operated by power as usual) is at one end attached to a strong metal plate, g, as signified in the figures. This plate is constructed with a shank, g', which extends through the cross-bar C, and at its lower end is provided with an enlarged head, G, of greater diameter than the shank g'. This head G may be composed of screw-nuts screwed upon the lower end of the shank g', and when finally placed in position upon the shank g' the extreme lower end of said shank may be upset in order to prevent the nuts from casually unscrewing and falling off from the shank.

Between the under surface of the cross-bar C and the head G of the shank g', I interpose a coil-spring, g<sup>2</sup>, which in its normal condition is expanded, as signified in Figs. 4 and 5, and with its upper end bearing against the under side of the bar C and its lower end upon the head G of the shank g' of the plate g.

The plate g, by means of draw-rods l l, which are of uniform length, is connected to two cam-levers, L L, one on each side of the posts B B, as shown, one end of said rods being hooked to the plate g and their opposite ends to the levers L, as represented. The cam-levers L have their shafts s supported in bearings i securely applied to the cross-bar C, as shown. These cam-levers are of the same length; are provided at each end of their shafts s with cams, as at i', of the same size and form and contiguous to opposite surfaces of the posts B, as shown; are each alike bent centrally of their length, so as to practically form lever-arms, as at a a; are applied in opposite relation to each other on opposite sides

of the cross-bar C, and in such manner that the smooth surfaces *b* of the cams *i'* will all simultaneously be kept from contact with the posts B B when the elevator is ascending, as signified in Fig. 1, and the serrated or cogged surfaces *b'* of the cams *i'* be simultaneously brought into a cam impact with said posts when the rope R shall become broken, as signified in Figs. 4 and 5.

10 In the operation of the elevator, when the rope R is unbroken, as shown in Fig. 1, the draft upon the rope and weight of the parts C D E and of the persons upon the platform or floor E cause the plate *g* to be drawn up from and its shank *g'* to be drawn up through the cross-bar C. This action simultaneously produces a contraction of the coil-spring *g*<sup>2</sup> between the head G of the shank *g'* of the plate *g* and the under side of the cross-bar C, and  
20 also a simultaneous draft upon the links or rods *l*, thereby raising the lever-arms *a a* of the cam-levers L, and so presenting the smooth surfaces *b* of the cams *i'* toward, but free from contact with, the posts B. In this condition  
25 the parts C D and platform E with persons thereon can be freely raised and lowered the whole working height of the posts B B. If, however, the rope R should become broken during the act of either raising or lowering  
30 said parts, the coil-spring *g*<sup>2</sup> will instantly become released from its contracted condition, and assume its normal expanded condition, as shown in Figs. 4 and 5, thereby forcing down the plate *g* and its shank *g'*, while at the same  
35 time the rods *l*, attached to plate *g*, will force down the lever-arms *a a* of the cam-levers L, and thus bring the serrated cam-surfaces *b'* of the cams *i'* into a cam impact with the posts B upon opposite sides thereof, as shown in  
40 Figs. 4 and 5, thereby instantly arresting the downward movement of the elevator. This arresting action of the cams *i'*, it will be observed, takes place simultaneously upon ex-

actly opposite sides of the posts B, and thus the cams exert a counterbalancing force, and in a direction longitudinally of the posts B B, and thus the shock produced by arresting the descent of the elevator has no tendency to strain the posts apart or displace any of the frame-work of the elevator. In fact, by my improvement the strain and tendency to spring apart the frame-work of elevators as ordinarily heretofore constructed, due to the sudden arrest of the descent of their passenger or business platforms, are entirely avoided, while at the same time in the construction of elevators on my improved plan only two main posts, as at B B, which are located in line with a central vertical plane of the passage or well in which the elevator is located, are required.

It will also be seen that in case a breakage should occur other than in the rope R—as, for example, in the plate *g* or the rods *l*, so as to allow the parts C, D, and E to fall, still the fall would be arrested, since the cam-levers L, by their own gravity, would be brought into action with the posts B. When the posts B are arranged as in Fig. 6 the cams *i'* may act upon the guides *f'*.

I claim—

1. A cam-lever, L, having a cam, *i'*, upon each end of its shaft *s*, and with a crank-bend, as at *a a*, centrally of the length of the shaft *s*, substantially as and for the purpose set forth.

2. The combination of the counterbalancing-cams *i'*, applied to frame-posts of an elevator, shafts *s*, bent midway of their length, plate *g*, rod *g'*, spring *g*<sup>2</sup>, and links *l*, substantially as and for the purpose described.

Signed in presence of two subscribing witnesses.

JOHN BOWMAN ATWATER.

Witnesses:

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C. P. BRADLEY.