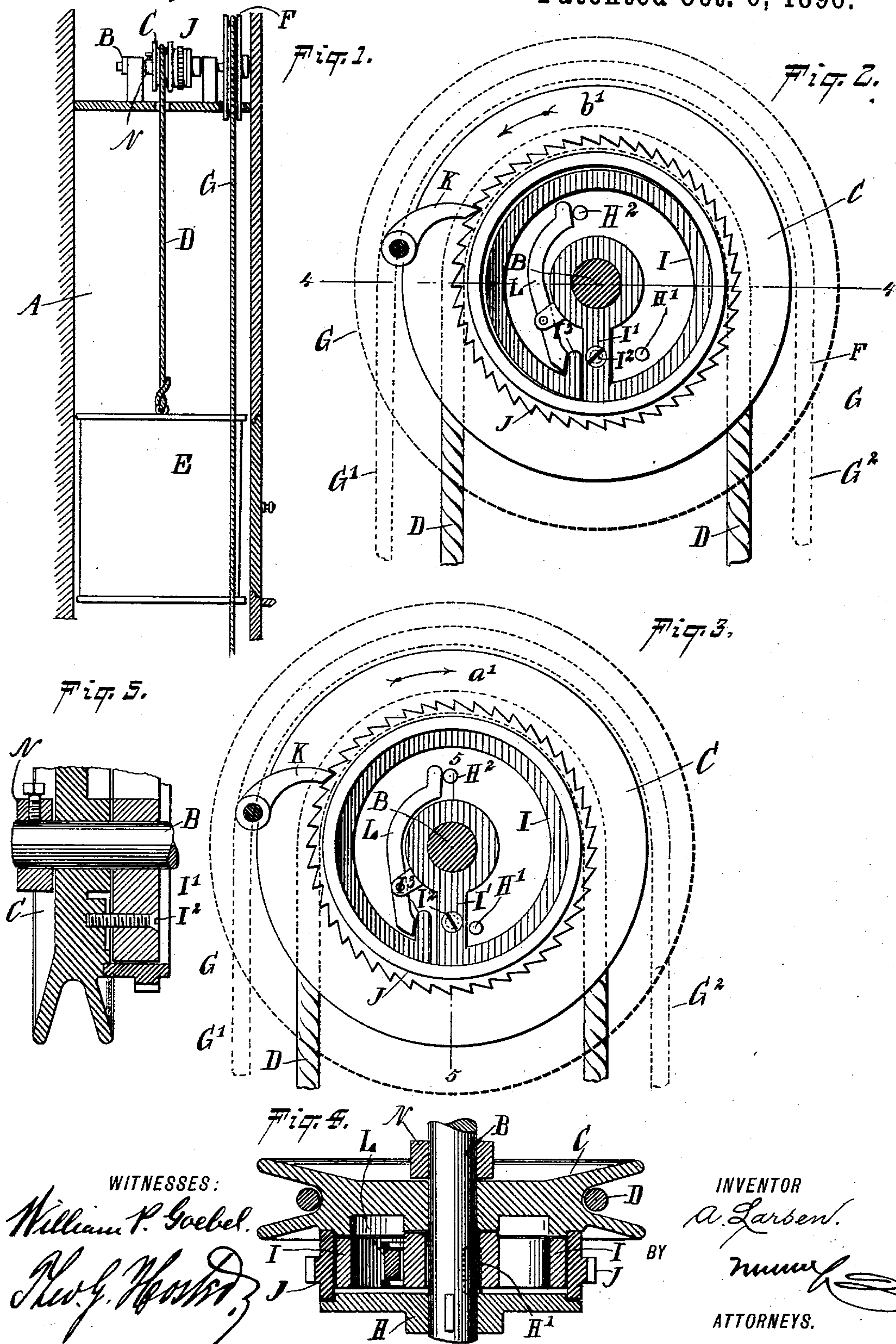


(No Model.)

A. LARSEN.  
HOISTING APPARATUS.

No. 569,046.

Patented Oct. 6, 1896.





# UNITED STATES PATENT OFFICE,

ANTON LARSEN, OF NEW YORK, N. Y.

## HOISTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 569,046, dated October 6, 1896.

Application filed March 10, 1896. Serial No. 582,515. (No model.)

*To all whom it may concern:*

Be it known that I, ANTON LARSEN, of New York city, in the county and State of New York, have invented a new and Improved Hoisting Apparatus, of which the following is a full, clear, and exact description.

The invention relates to dumb-waiters and the like; and its object is to provide a new and improved hoisting apparatus which is simple and durable in construction and arranged to securely hold the cage with its load at any point when the operator releases the hoisting-rope.

The invention relates principally to a spring-band adapted to be carried around in one direction by the rotation of a shaft and adapted to be opened by rotating said shaft in an opposite direction, said spring-band being secured to the pulley carrying the cage-carrying cable or rope and a ratchet-wheel normally engaged by said spring-band and also engaged by a pawl fulcrumed on a fixed part in the well of the hoisting apparatus.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improvement with the shaft in section. Fig. 2 is an enlarged front sectional view of the improvement. Fig. 3 is a similar view of the same with the friction-band in a different position. Fig. 4 is a sectional plan view of the same on the line 4 4 of Fig. 2, and Fig. 5 is a sectional side elevation of the same on the line 5 5 of Fig. 3.

The dumb-waiter or similar hoisting apparatus is provided with the usual well or shaft A, in the upper part of which is journaled a shaft B, on which is mounted to turn loosely the pulley C, formed with an annular groove in its periphery for the cage rope or cable D, secured at one end on the top of the cage E and supporting at its other end the usual weights for counterbalancing the cage.

On the shaft B is secured a hoisting-pulley F, over which passes a hoisting-rope G, extending downwardly with both runs G' and

G<sup>2</sup> in the well A, so that either run can be taken hold of by the operator for pulling the load upward or drawing the same downward in the manner hereinafter more fully described.

On the shaft B, between the pulleys F and C, is secured by a key or other means a disk H, provided on its inner face with lugs H' H<sup>2</sup>, of which the lug H' is adapted to engage a radial arm I', extending from one end of a friction-band I, fitted within a ring-shaped ratchet-wheel J, concentric with the shaft B and pulley C and abutting with its inner face on said pulley, as is plainly illustrated in the drawings. The ratchet-wheel J is engaged by a pawl K, fulcrumed on a fixed part of the well A, so that the ratchet-wheel is free to turn in the direction of the arrow a', but is prevented from turning in the inverse direction of said arrow a'. The arm I' of the band I is secured by a screw I<sup>2</sup> to the pulley C, said arm being also provided with an opening for the passage of the shaft B, as plainly shown in Figs. 2 and 3.

The free end of the band I is formed with an inwardly-extending arm I<sup>3</sup>, adapted to be engaged by one end of a lever L, fulcrumed on the arm I', and adapted to be engaged at its other end by the lug H, previously mentioned, at the time a downward pull is exerted on the run G' of the hoisting-rope G. (See Fig. 2.) It will be seen that when this takes place the lug H<sup>2</sup>, by pressing lever L, swings the latter and presses on the arm I<sup>3</sup>, thereby causing an opening of the band I to move the same out of its normal strong frictional contact with the inner face of the ring-shaped ratchet-wheel J, and consequently the rotary motion given by the pull on the hoisting-rope G to the shaft B is transmitted by the latter and arm J' to the pulley C to rotate the latter in the direction of the arrow b'. (See Fig. 2.) When this motion takes place, the cage E, with its load, is lowered in the well A, and the moment the operator releases the pull on the run G' of the hoisting-rope G, then the split friction-band I moves back into its normal position—that is, into a strong frictional contact with the inner surface of the ratchet-wheel J, held against rotation in the direction of the arrow b' by the pawl K. Thus, when the operator releases



the pull on the hoisting-rope, the cage E, with its load, remains stationary in the well A until the operator gives another pull to the run G' in a downward direction.

5 When it is desired to hoist the cage E and the load contained therein, the operator pulls on the run G<sup>2</sup> of the hoisting-rope G to cause the shaft B to rotate in the direction of the arrow a', so that the lug H' moves in engage-  
10 ment with the fixed arm I', and consequently carries the fixed arm around, whereby a rotary motion in the direction of the arrow a' is given to the pulley C in the same direction. This motion of the pulley C causes a lifting  
15 of the cage E and its load. It will be seen that when this motion takes place the friction-band I, by being in contact with the ratchet-wheel J, carries the latter around with it, the pawl K simply gliding over the teeth  
20 of the ratchet-wheel as the latter revolves in the direction of the arrow a'.

It is understood that the band I is preferably made of spring-steel and is sprung in position in the ratchet-wheel J, so as to firmly  
25 engage the ratchet-wheel with a force more than that of the highest load to be carried by the cage E.

The pulley C abuts with its outer face on a collar N, secured on the shaft, and as the  
30 ratchet-wheel fits closely to the inner face of said pulley and the outer face of the ratchet-wheel is engaged by the disk it is evident that longitudinal movement of the pulley C on the shaft B is prevented, and said disk  
35 also forms a cap for the ratchet-wheel and friction-band to prevent dust and other impurities from passing into the ratchet-wheel between the latter and the friction-band.

Having thus fully described my invention,  
40 I claim as new and desire to secure by Letters Patent—

1. In a hoisting apparatus, the combination

of a shaft, a spring-band adapted to be carried around in one direction by the rotation  
45 of said shaft and adapted to be opened by rotating said shaft in the opposite direction, a pulley carrying the cage-carrying cable or rope, said spring-band being secured to said pulley, and a ratchet-wheel normally engaged  
50 by said spring-band, and a pawl fulcrumed on a fixed part in the well of the hoisting apparatus and engaging said ratchet-wheel, substantially as specified.

2. A hoisting apparatus, comprising a shaft, a hoisting-pulley on said shaft, over which  
55 passes a hoisting-rope, a disk secured on said shaft and provided with lugs, a split friction-band adapted to be acted on at its ends by said lugs, a ratchet-wheel normally engaged  
60 by said band, a pawl for holding said ratchet-wheel from rotation in one direction, and a pulley carrying the cable for the cage and rigidly connected with said friction-band, said pulley being mounted to rotate loosely on the  
65 shaft, substantially as specified.

3. A hoisting apparatus, comprising a shaft, a hoisting-pulley on the shaft, over which  
70 passes a hoisting-rope, a disk secured on said shaft and provided with lugs, a split friction-band adapted to be acted on at its ends by said lugs, a ratchet-wheel normally engaged  
75 by said band, a pawl engaging with the ratchet-wheel, a pulley carrying the cable for the cage and rigidly connected with said friction-band, said pulley being mounted to rotate loosely on the shaft, and a lever fulcrumed on the friction-band and interposed between the free end of the band and one of said lugs, substantially as specified.

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Witnesses:

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