

(No Model.)

A. LARSEN.
ELEVATOR.

No. 495,813.

Patented Apr. 18, 1893.

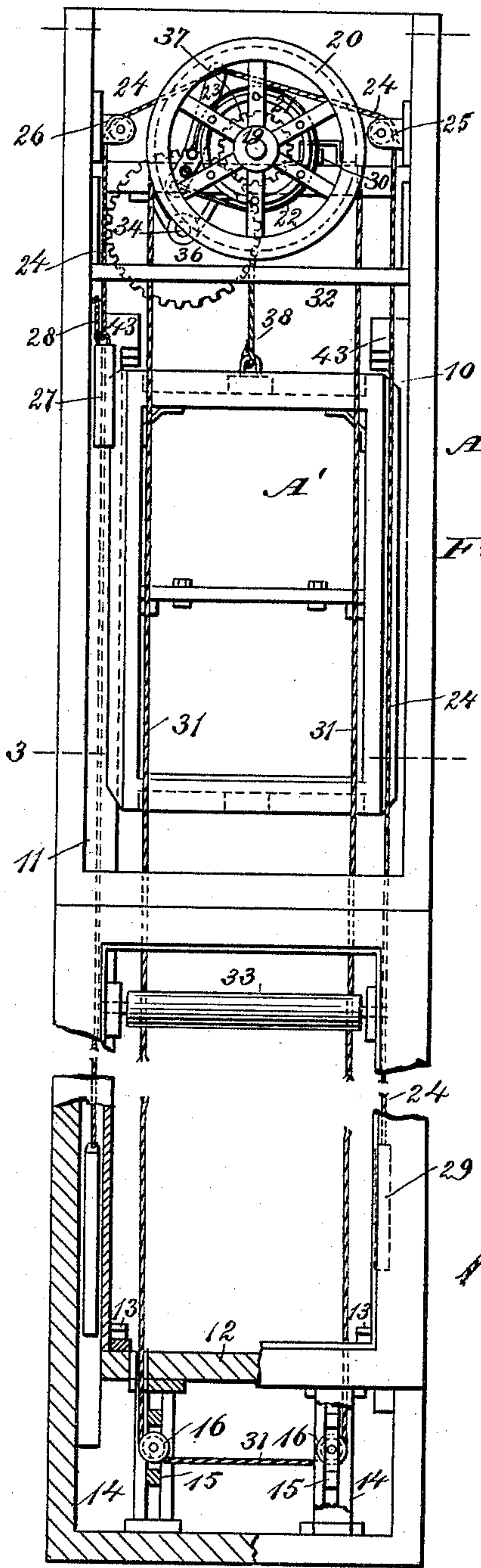


Fig. 1

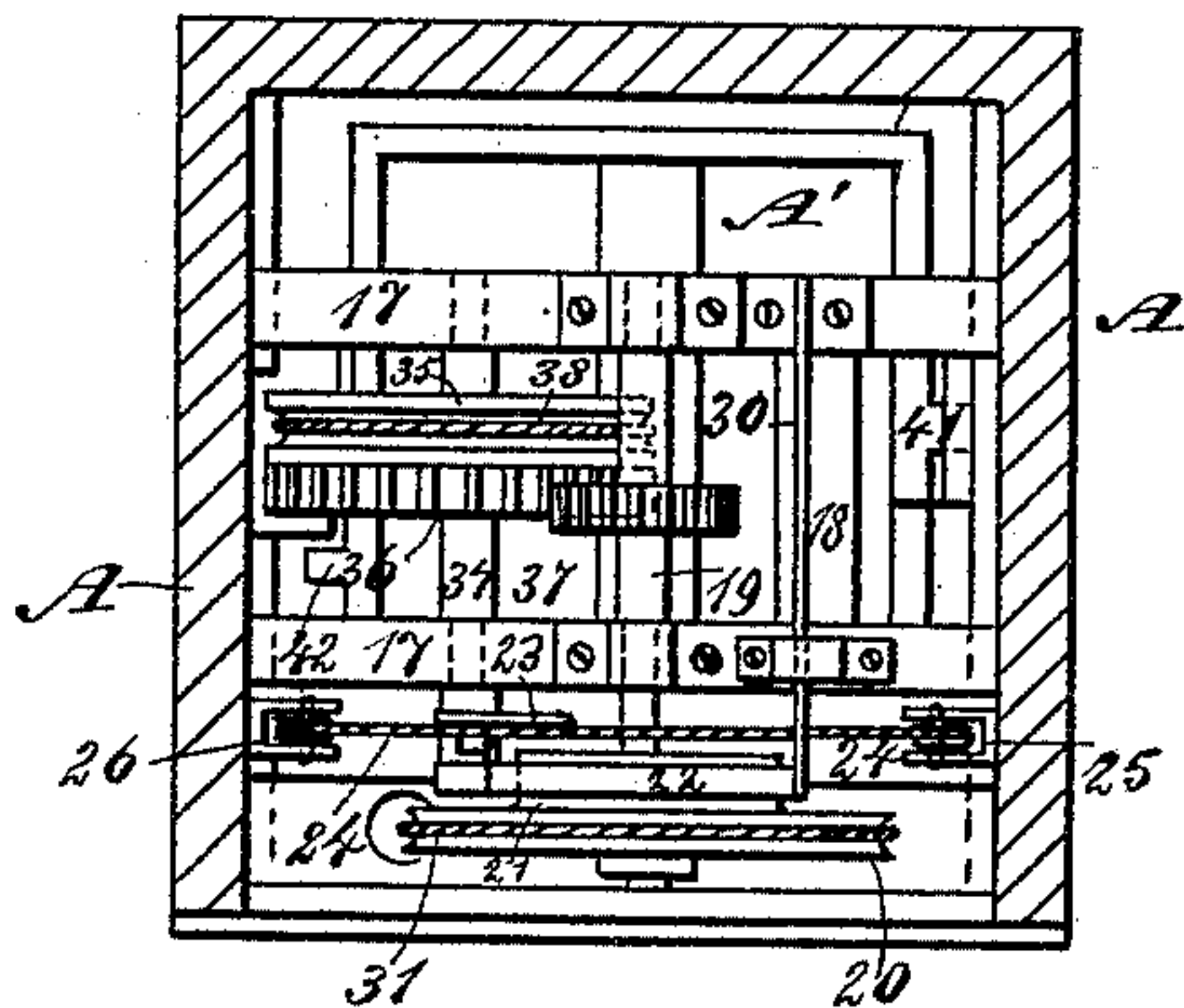


Fig. 2

Fig. 3

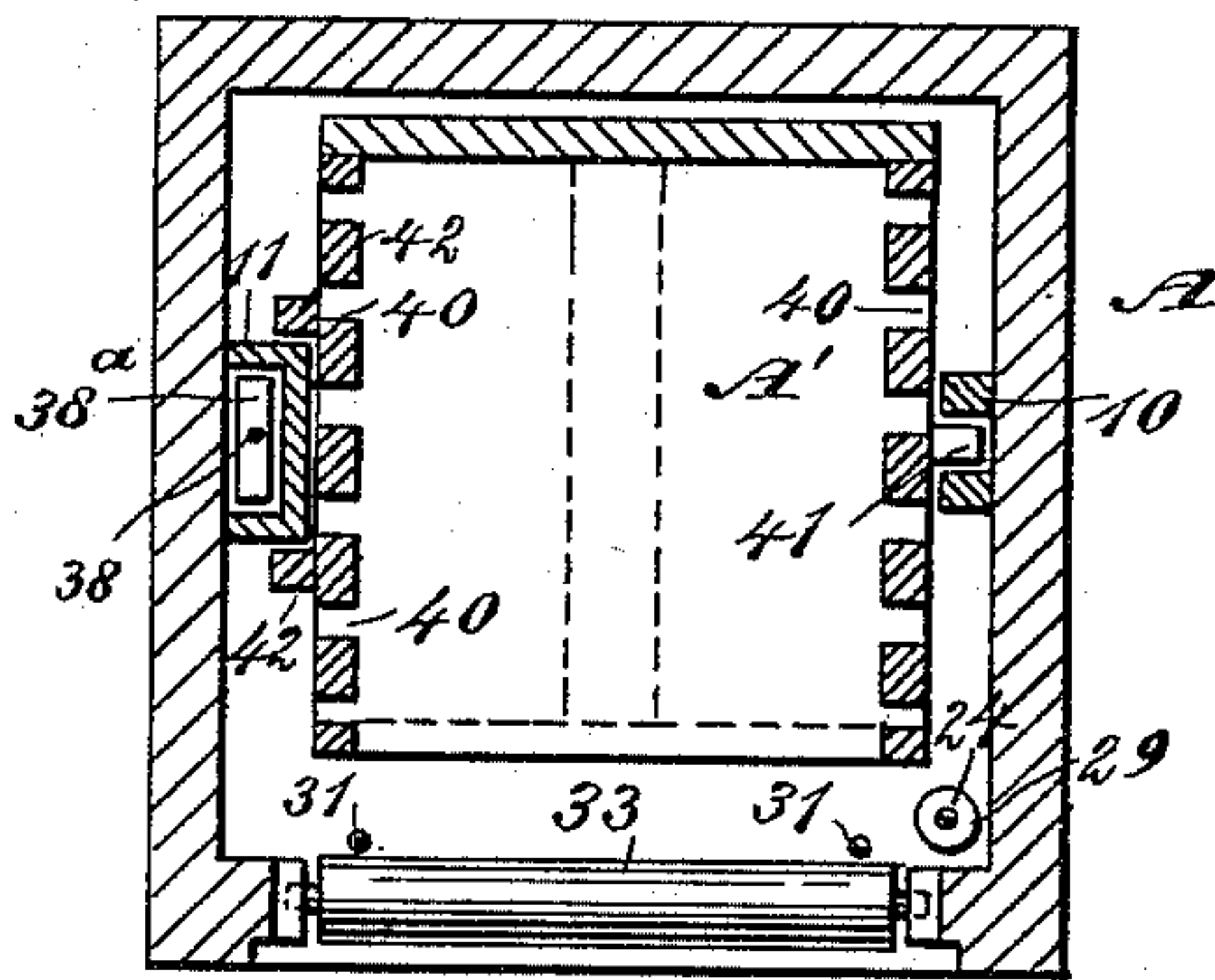
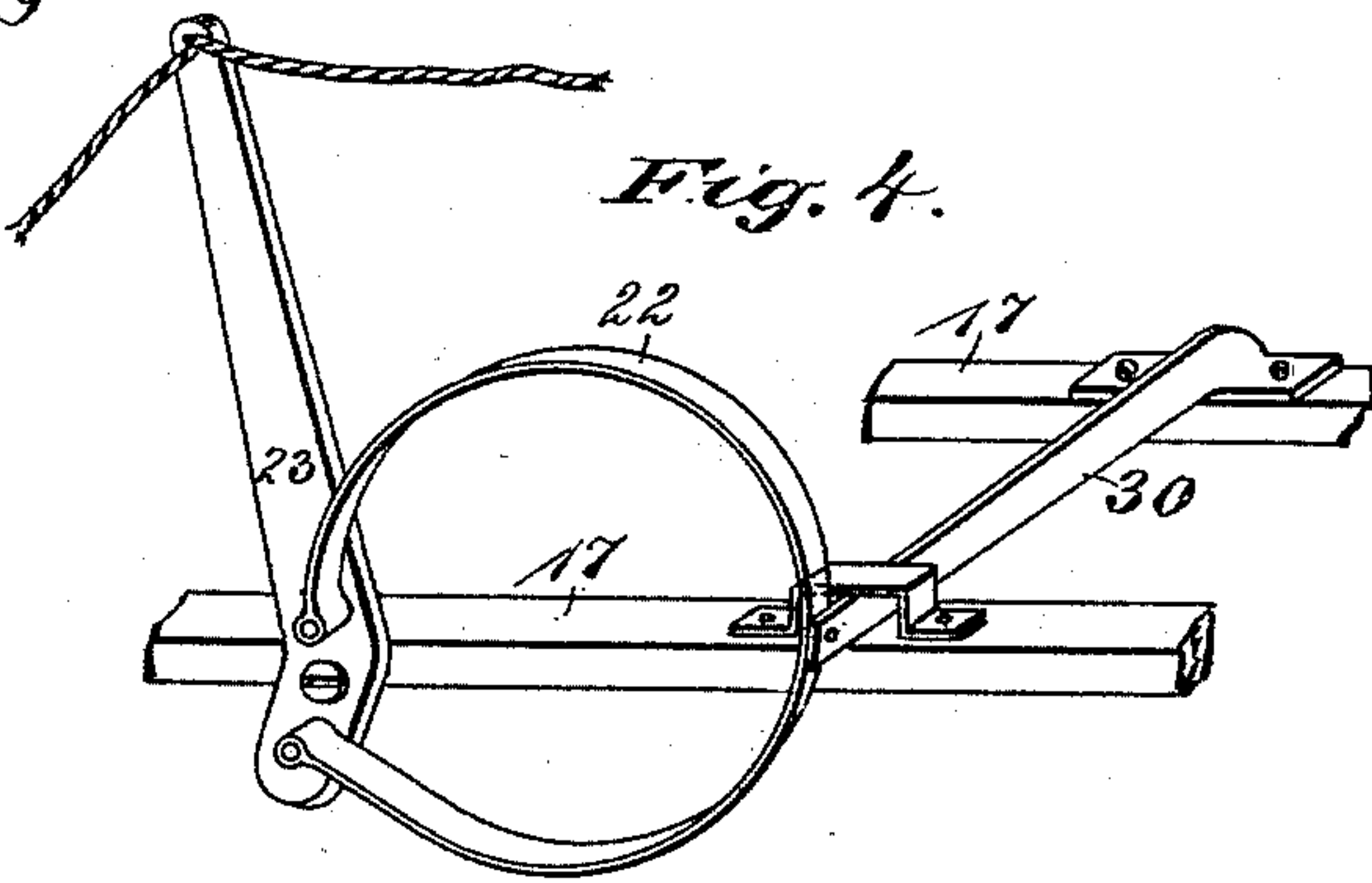


Fig. 4.



WITNESSES:

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ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 495,813, dated April 18, 1893.

Application filed January 19, 1892. Serial No. 418,550. (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 useful Improvement in Dumb-Waiters, of which the following is a full, clear, and exact description.

My invention relates to improvements in dumb waiters, and the invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth and pointed out in the claims.

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

Figure 1 is a front elevation of the shaft, portions being broken away, illustrating the hoisting mechanism and the dumb waiter in position within the shaft and connected with said mechanism. Fig. 2 is a horizontal section taken through the shaft immediately above the hoisting mechanism. Fig. 3 is a similar section taken through the shaft and the dumb waiter, practically upon the line 3—3 of Fig. 1, and Fig. 4 is a detail perspective view of the brake strap, its operating lever and the spring for preventing the brake strap from sagging.

The shaft A may be of any approved construction, but is preferably made rectangular in cross section, and is provided upon one side with a slide-way 10, and upon the opposite side with a boxing 11. Near the bottom of the shaft a platform 12, is located, provided preferably with spring buffers 13, upon which the dumb waiter is adapted to rest when it is in its lowermost position. These spring buffers may be of any suitable or approved construction. In the base of the shaft slotted standards or posts 14, are located, extending from the bottom to the under side of the platform 12; and in the slots of these posts or standards carriages 15, are held to slide, each carriage being provided with a friction roller 16. At the top of the shaft cross beams 17 are located, connected by suitable bars 18. Upon the cross beams 17 the drive shaft 19, is journaled, extending

from the front rearward, the said shaft being located at or near the centers of the cross beams, as is best shown in Figs. 1 and 2.

Upon the front or outer end of the drive shaft a peripherally grooved wheel 20, is secured, which wheel is the hoisting wheel of the elevating mechanism; and this wheel, upon its inner face, is provided with an attached or integral annular flange 21. The flange 21 has passed around its outer face a strap brake 22, of a spring metal. This strap brake is secured at its ends to the lower portion of a lever 23, the lever being fulcrumed upon the front cross bar or beam 17, at one side of the center of the latter. The fulcrum of the lever is near its lower end, and the lever is somewhat L-shaped, the fulcrum being located near the center of its lower arm or section, and the ends of the brake are secured to the lever one at each side of its pivot or fulcrum. The lever is of sufficient height to extend some distance above the flange of the hoist wheel and the brake, and the lever has attached thereto a rope or chain 24, which extends from opposite sides of the lever over friction pulleys 25 and 26, attached preferably to the sides of the dumb waiter shaft in transverse alignment, and below the upper end of the lever. The pulley 26, is nearest to the lever, and the rope or chain passing over this pulley is quite short, having attached to its lower end a weight 27, and this weight is also connected with the dumb waiter shaft through the medium of a chain 28, or its equivalent, so that should the weight become detached from the rope or chain 24 it will not fall down the shaft. That portion of the rope or chain 24 passed over the farther pulley 25, extends downward nearly to the base of the dumb waiter shaft, and at its lower end is provided also with a weight 29, as is best shown in Fig. 1. When the lever is in the perpendicular position, or is inclined in direction of the pulley 26, the brake is held out of engagement with the flange of the hoisting wheel 20. When, however, the lever is inclined in the direction of the opposite pulley 25 the brake is applied, and since the burden of the weight 29 is upon the longer length of the chain or rope 24, when the lever is carried in a direction to apply the brake

the said weight maintains it in its applied position, as the shorter length will have been carried upward such a distance as to detract from the action of the opposite weight 27.

5 When the longer length of the rope or chain 24, is lifted so as to remove therefrom the heft of the weight 29, the weight 27 at the shorter end of the rope or chain will act to draw the lever in direction of the pulley 26; and owing
10 to the angular position of the upper end of the rope or chain 24 the lever will remain in position to keep the brake unapplied. The brake is prevented from sagging when held out of braking position, and thereby held out
15 of engagement with the top of the flange of the hoisting wheel through the medium of a spring 30, which at one end is secured preferably to the rear cross beam 17, and at its opposite end is connected with one side of the
20 brake.

An elevating cable or chain 31, is passed over the peripherally grooved surface of the elevating or hoisting wheel 20, and downward preferably through apertures formed in a
25 cross bar 32, located beneath the elevating wheel. The elevating rope or chain 31, is endless, and passes down through apertures in the platform 12 in the bottom of the dumb waiter shaft and over the friction rollers 16
30 in the posts or standards at the bottom of the shaft and below the partition or platform. By this means no matter to what extent the rope, cable or chain may expand or contract, its lower portion will remain straight, as the
35 friction wheels over which it passes are free to move up or down as tension is exerted upon or removed from them; and these friction pulleys 16, also serve to keep the cable or chain 31 from kinking.

40 It often happens that when the elevating chain or cable is manipulated by a janitor, for instance, at the lower portion of a shaft to raise or lower a dumb waiter, the said cable or chain is brought in engagement with the
45 walls of the shaft or with the masonry around the upper portion of the lower opening in the shaft, and especially if a cable of rope is employed, which is ordinarily the case, this frictional engagement soon wears the cable to
50 such an extent as to part its strands. To avoid this frictional contact a friction roller 33, is journaled in the upper portion of the lower opening in the elevator shaft in such a manner that when the elevating cable is drawn
55 outward through said opening it will be brought in engagement with this friction roller, and not only will the cable be thereby prevented from wearing but its manipulation will be rendered comparatively easy.

60 At one side of and below the drive shaft 19 a drum shaft 34, is journaled in brackets attached to the under faces of the cross beams 17. Upon this shaft the winding drum 35, is secured and a gear 36, which latter meshes
65 with a pinion 37 attached to the drive shaft.

The cable or chain 38, adapted to be attached to the upper portion of the dumb-waiter A, is carried upward over the drum 35 and downward into the boxing 11, the end of the cable within the boxing having attached thereto a
70 weight 38^a. By locating the drum shaft and the drive shaft in the manner above described, the lifting chain or cable 38 of the dumb waiter is not in the least interfered with by the drive shaft or its pinion, and the
75 elevating mechanism may be closely grouped. The weight 38^a, is capable of slightly more than balancing the dumb-waiter, and the dumb-waiter is elevated when extra weight is added thereto by the manipulation of the
80 elevating cable 31.

The improvement in the construction of the dumb-waiter is as follows: It has been the custom heretofore to unite the framing of the dumb-waiter through the medium of dado
85 and nailing or dove-tailing independent of the frame and passing through apertures therein. As shown in Fig. 3 of the drawings in the construction of the dumb-waiter under
90 consideration, the dowels 40, are made integral with one abutting section of the frame A', and are made to enter suitable openings in the opposite or opposed section. As the
95 dowel pins are integral with the frame, they have considerably more strength and serve better as a means of connecting the parts of the frame than the means heretofore employed.

The dumb-waiter or elevator is guided in its upward and downward movements by a
100 tongue 41 upon one side entering the slide-way 10 in the shaft, and the tongues 42 upon the opposite side engaging the opposite sides of the boxing 11; or the dumb-waiter may be
105 guided in any other suitable or approved manner. The upward movement of the dumb-waiter is regulated by stops 43, preferably provided with elastic cushions located one at the upper end of the boxing 11, and the other
110 at the upper end of the slide-way 10. By this means, both the upper and lower stops for the dumb-waiter are cushioned stops.

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

1. In a dumb waiter, the combination with the actuating wheel of the lifting mechanism provided with an annular flange, of a lever, a
120 brake strap passing around the said flange and having its ends secured to the lever, and a spring having one end secured to a fixed support and its other end to the brake strap, and thereby force the strap from engagement with the flange when the brake is not applied substantially as and for the purpose set
125 forth.

2. In a dumb waiter, the combination, with the actuating wheel of the lifting mechanism, provided with an annular flange, and a lever
130 somewhat angularly shaped fulcrumed near

one side of the flange, of a strap brake in
one piece, the ends thereof being attached to
the lever one at each side of its fulcrum, a
spring attached to the strap brake and nor-
5 mally exerting outward pressure thereon,
guide pulleys located one at each side of the
strap below the upper portion of the lever,
and a cable secured to the lever and passed

downward over the guide pulleys, the lower
ends of the cable being weighted, as and for the
purpose specified.

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