

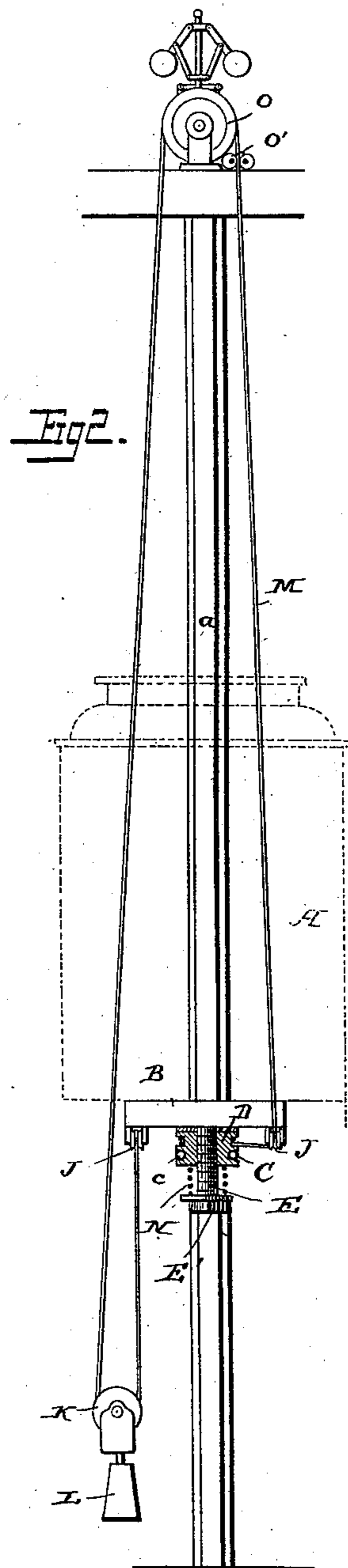
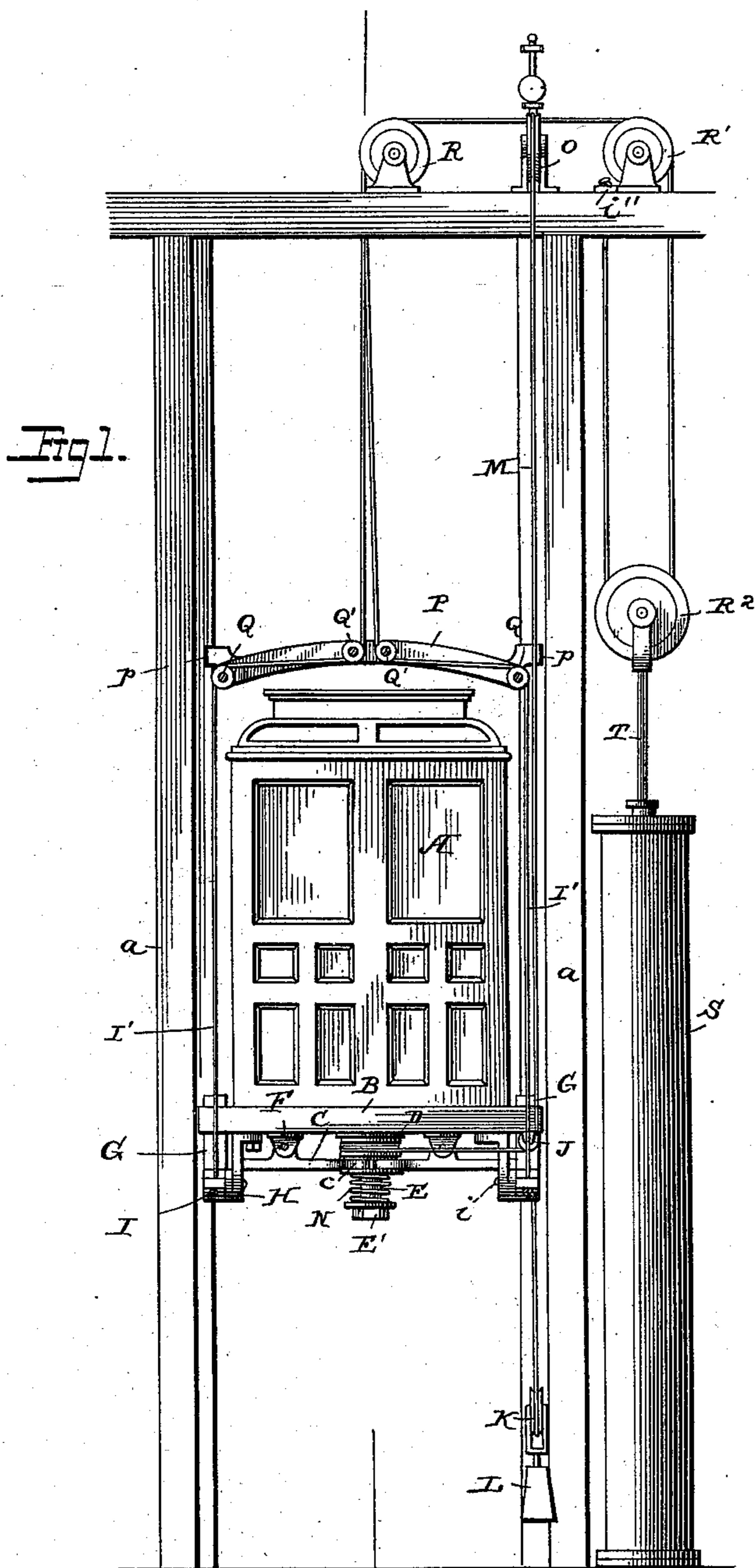
(No Model.)

2 Sheets—Sheet 1.

I. H. VENN.
ELEVATOR.

No. 400,613.

Patented Apr. 2, 1889.



Witnesses.
Jno. Hinkel, Jr.
J. S. Parker.

J. H. Veau Inventor,
By Jester & Leman

Attorneys.

(No Model.)

2 Sheets—Sheet 2.

I. H. VENN.
ELEVATOR.

No. 400,613.

Patented Apr. 2, 1889.

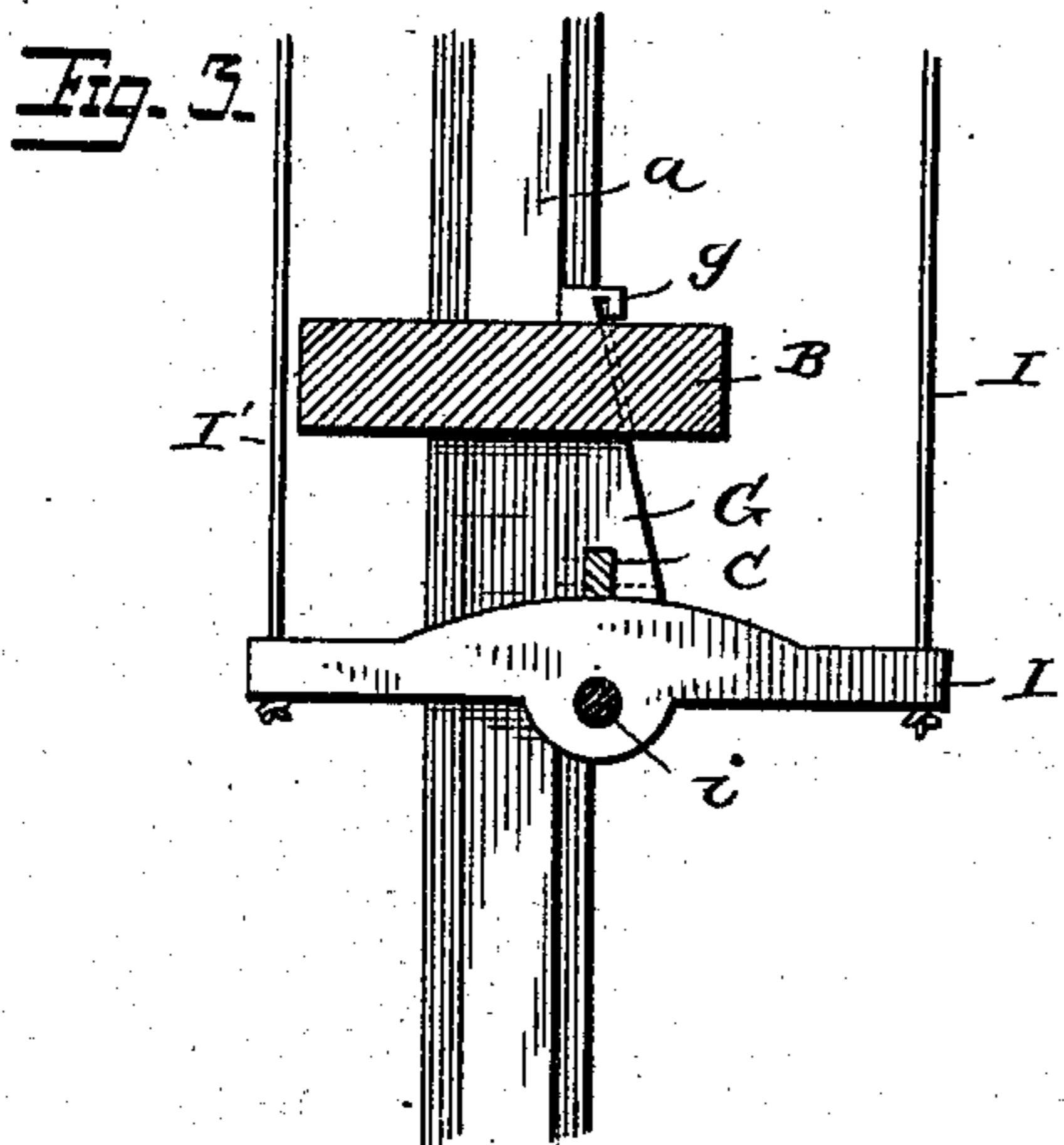


Fig. 4.

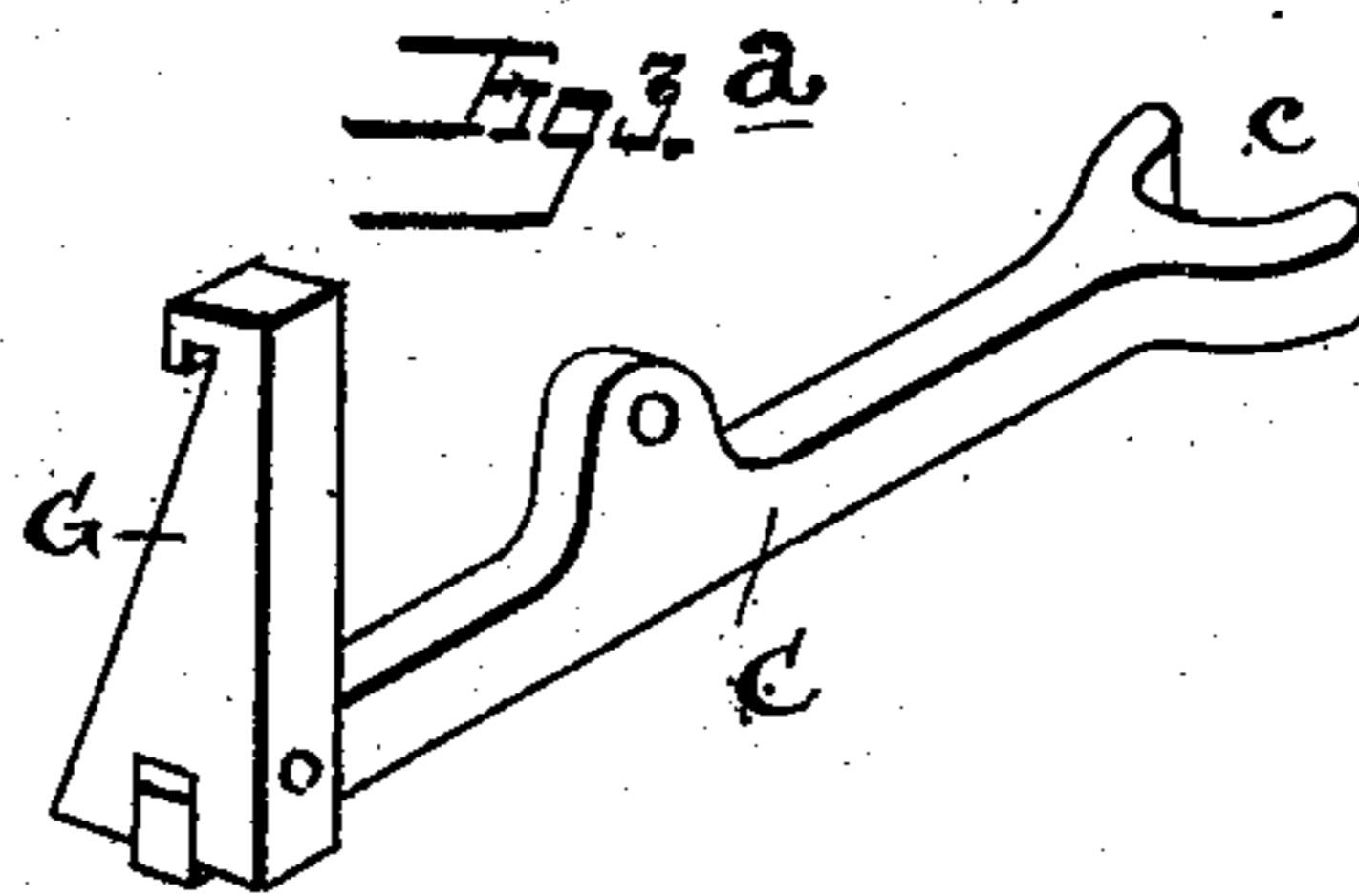
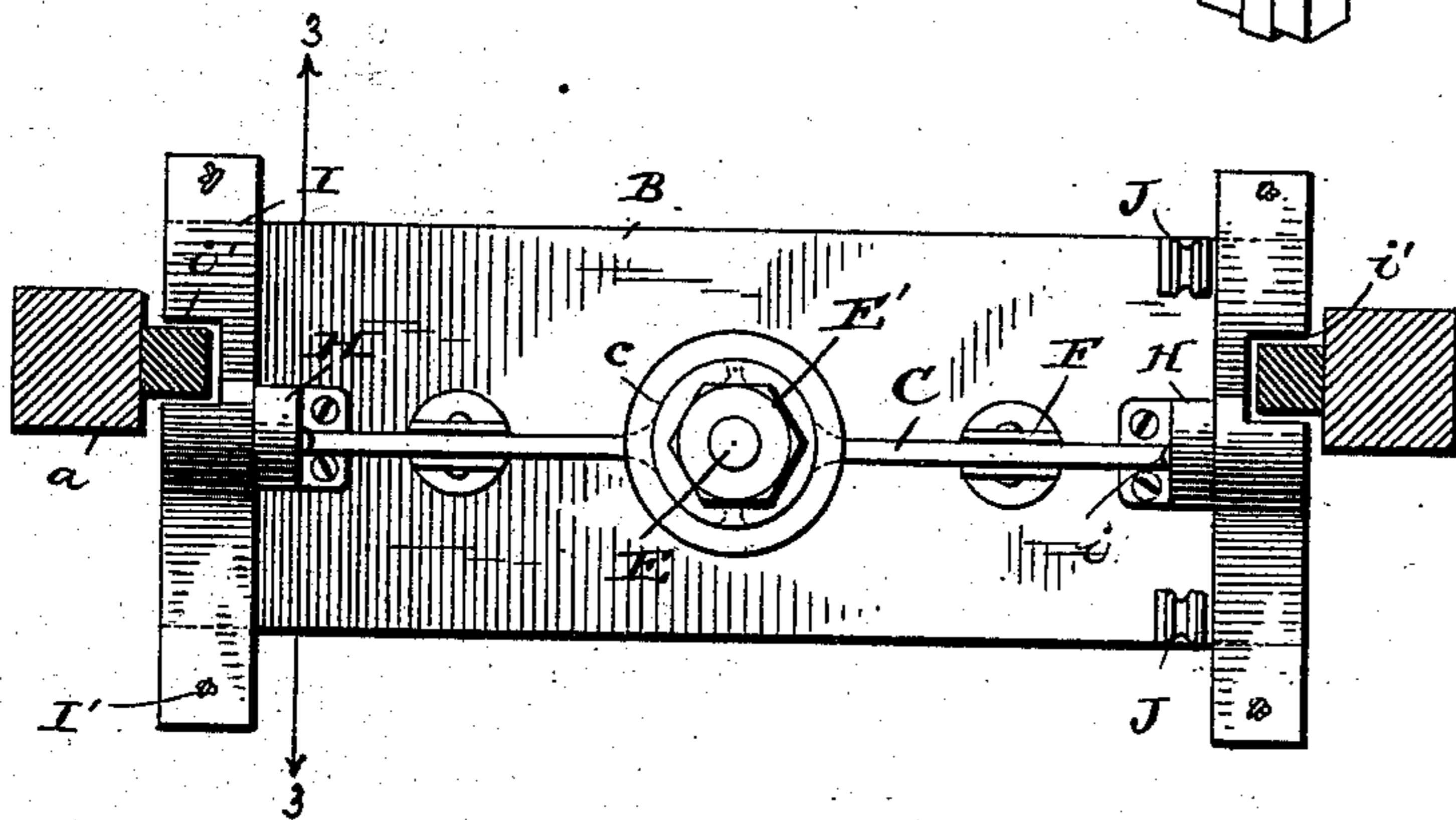
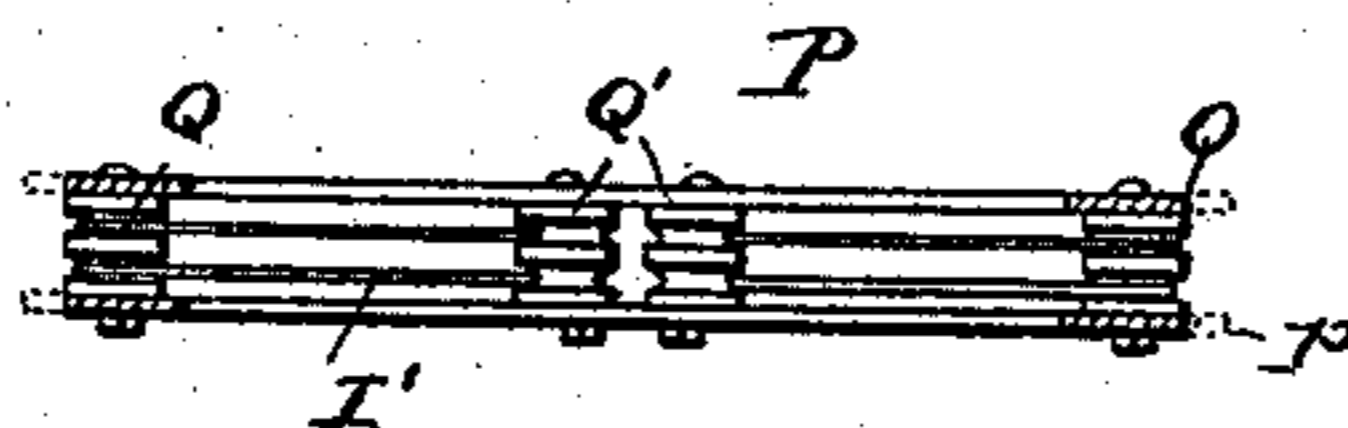


Fig. 5.



Witnesses,
Jno. G. Hinkel Jr.
J. S. Parker,

I. H. Venn
Inventor,
By Arthur L. Leman

Attorneys,

UNITED STATES PATENT OFFICE.

ISAAC H. VENN, OF YONKERS, NEW YORK, ASSIGNOR OF ONE-HALF TO
ELBRIDGE G. W. BARTLETT, OF SAME PLACE.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 400,613, dated April 2, 1889.

Application filed May 2, 1888. Serial No. 272,573. (No model.)

To all whom it may concern:

Be it known that I, ISAAC H. VENN, a citizen of the United States, residing at Yonkers, Westchester county, State of New York, have
5 invented certain new and useful Improvements in Elevators, of which the following is a specification.

My invention is an improvement in safety devices for elevators; and it consists in the
10 combination, with the elevator car or cage and the vertical rails or guides, of devices for creating a resistance to the descent of the car upon its too rapid motion, or upon the breaking of the supporting devices.

15 In the drawings, Figure 1 is an elevation of an elevator having my invention applied thereto. Fig. 2 is a view taken at right angles to Fig. 1, parts being in section. Fig. 3 is a sectional view on the line 3 3 of Fig. 4. Fig.
20 3^a is a detail perspective view of one of the brake-wedges and its carrying-lever. Fig. 4 is an inverted plan view. Fig. 5 is a top plan view of the elevator cross-head.

The cage, car, or platform A is of any desired or preferred construction and moves vertically in the well between the upright rails or
25 guide-bars *a*. Across the bottom of the cage extends a bar or beam, B, notched at its ends to embrace the edges of the guide-bars *a*.

30 Between the edges of the notches of the bar or beam B and the uprights *a* are arranged brakes or retarding devices carried by the cage and arranged to engage with the uprights, the form of brake which I prefer consisting of the
35 wedges G, preferably one at each, in which case one face of each notch is parallel with the adjacent face of the upright, while the other face is beveled to lie parallel with the beveled face of the adjacent wedge G, as shown most
40 clearly in Fig. 3. Each wedge is provided with a lip, *g*, or other suitable stop, which is adapted to engage with the upper face of the beam B, and thereby support the wedge in a
45 loose position between the upright and the beam, so that the wedge will normally be carried freely up and down with the elevator-cage in its movements.

H H are brackets secured to the cross-bar B near its ends, on which are mounted the
50 arms I I, to the outer ends of which are se-

cured the cables I', by which the cage is supported and elevated.

The elevator is shown as supported by four cables, though this number is not essential to the invention, and the arms I, which are sup- 55
ported about midway between their ends, extend transversely across the faces of the upright guides *a*, being cut away at *i'*, so they may be brought close thereto and yet move
60 freely past them without interference therefrom. Two cables are arranged upon each side of the elevator-cage, one being connected to each end of each arm I, whence they pass upward and around the pulleys Q, mounted
65 in the ends of the cross-head P, and the pulleys Q', mounted about centrally thereon, and thence around the sheaves R, R', and R² in the usual manner to the plate *i''*, in which their ends are secured. The movable sheave
70 R² is connected with and operated by the piston-rod T of the elevator-cylinder S.

The cross-head P is shown in top view in Fig. 6, and consists of two plates of metal, between which are mounted the pulleys Q Q', and is provided at its ends with guides *p*, 75
which run in engagement with ribs upon the uprights *a*.

In connection with the devices thus far described is used a device which will cause the
80 retarding-wedges or brakes to be applied if the speed of the cage becomes excessive—such a device, for instance, as the Otis safety-governor, patented May 25, 1880, No. 228,107, and which device I have illustrated. The endless
85 rope M from the governor is made to pass around and operate a sheave-nut traveling on a screw, which, through suitable connections, moves and applies the brake or brakes, the
90 connections which I prefer to employ being those now to be described. To effect the operations just referred to, I pivotally connect
95 the wedges to the outer ends of levers C, fulcrumed in stands F, secured to the bottom of the cage, and having their inner ends forked, as at *c*, to embrace a stud, E, projecting centrally from the bottom of the cage. This stud
100 is preferably screw-threaded and engaged by the nut E', between which and the ends *c* of the levers is arranged a coiled spring, N, tending to rock the levers, so their outer ends will

be thrown downward, and thus supplement the force of gravity in normally holding the wedges downward out of frictional engagement with the uprights *a*. The rope M, which
 5 operates the governor, passes over the pulley *o* and between the clamps *o'* thereof, and is connected with the levers C to move them upon the cord being arrested by the governor when a too rapid movement of elevator takes
 10 place, so as to operate the wedges and regulate or stop the movements of the cage. In the device for effecting this result which I prefer to use and which I have shown in the drawings, the rope M passes from the gov-
 15 ernor to a guide-pulley, J, supported near one end of the beam B, and thence to a sheave-nut, D, mounted upon the screw-stud E. After passing one or more times around the sheave D the rope M passes around another pulley,
 20 J, by which it is directed to the weighted block L, hung near the bottom of the well and carrying a pulley, K, around which the rope passes to the governor, the two ends of the rope being united, thereby making it practi-
 25 cally endless. The friction of the rope passing around the sheave-nut D is normally sufficient to prevent it from slipping thereon, and hence causes the rope to travel with the cage and around the pulleys *o* and K; but
 30 whenever the speed of the cage becomes excessive the governor operates to throw the clamps *o'* into engagement with the rope, and thus stops the movement thereof. After such
 35 stopping of the rope the continued movement of the cage will cause the sheave D to be turned by the action of the stationary rope, and by reason of its being mounted upon a screw-stud it will travel longitudinally thereon as it turns, and will force the forked ends of the levers
 40 C downward against the tension of the spring N, and thereby operate the friction wedges or brakes. When it is desired to turn the sheave-nut in the opposite direction, and thereby run it up on the stud, the cord M is
 45 moved relatively to the cage by hand or otherwise in the direction to revolve the sheave-nut and return it to its normal position. As the nut moves upward, the spring N tends to cause the levers to follow it, and thus with-
 50 draw the wedges; but if the tension of the spring be insufficient to release the wedges from their frictional engagement, the elevator-cage may be hoisted slightly, when the parts will return to their normal position.
 55 If the elevator-cage should be supported

by but a single cable, it would be secured centrally to the cross-head P, and the arms I would be dispensed with, as will be understood.

Without limiting myself to the precise construction and arrangement of parts shown, I claim—

1. The combination, with an elevator-cage, of the brake, a sheave-nut movable upon a screw, connections between the said nut and
 65 brake to move and apply the latter as the nut is moved, an endless governor-rope passing around the said sheave-nut, and a governor which may arrest the movements of the rope, substantially as described. 70

2. The combination, with an elevator-cage, of the brakes, an endless governor-rope, a governor to retard the motion of the rope upon an undue increase in the speed thereof, a sheave on the cage normally stationary and
 75 around which the rope is wound, but to which it is not secured, whereby the rope is caused to move with the cage when traveling at normal speeds, but turns the sheave when the cage travels too rapidly, and connections be-
 80 tween the said sheave and brakes, whereby upon the rotation of the former the latter are applied, substantially as described.

3. The combination, with an elevator-cage, of the brakes, a sheave-nut, connections be-
 85 tween the said nut and the brakes, a governor, and a governor-rope extending from the governor to the sheave-nut, which latter forms the sole connection between the rope and the cage, substantially as described. 90

4. The combination, with an elevator-cage movable between the upright bars *a*, of brakes arranged loosely between the said bars and the cage, the levers C, fulcrumed to the cage and pivoted at their outer ends to the brakes,
 95 and having their inner ends arranged in proximity to a screw-stud, E, a sheave-nut, D, mounted upon the stud and resting upon the inner ends of the levers, a spring which holds the levers against the nut, the governor-rope
 100 passing around the sheave-nut, and the elevator-governor, substantially as described.

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

ISAAC H. VENN.

Witnesses:

JAMES S. FITCH,
 JOHN J. SPEIGHT.