

(No Model.)

J. W. SIMMONS.

SAFETY CLUTCH FOR ELEVATORS.

No. 297,459.

Patented Apr. 22, 1884.

Fig. 1.

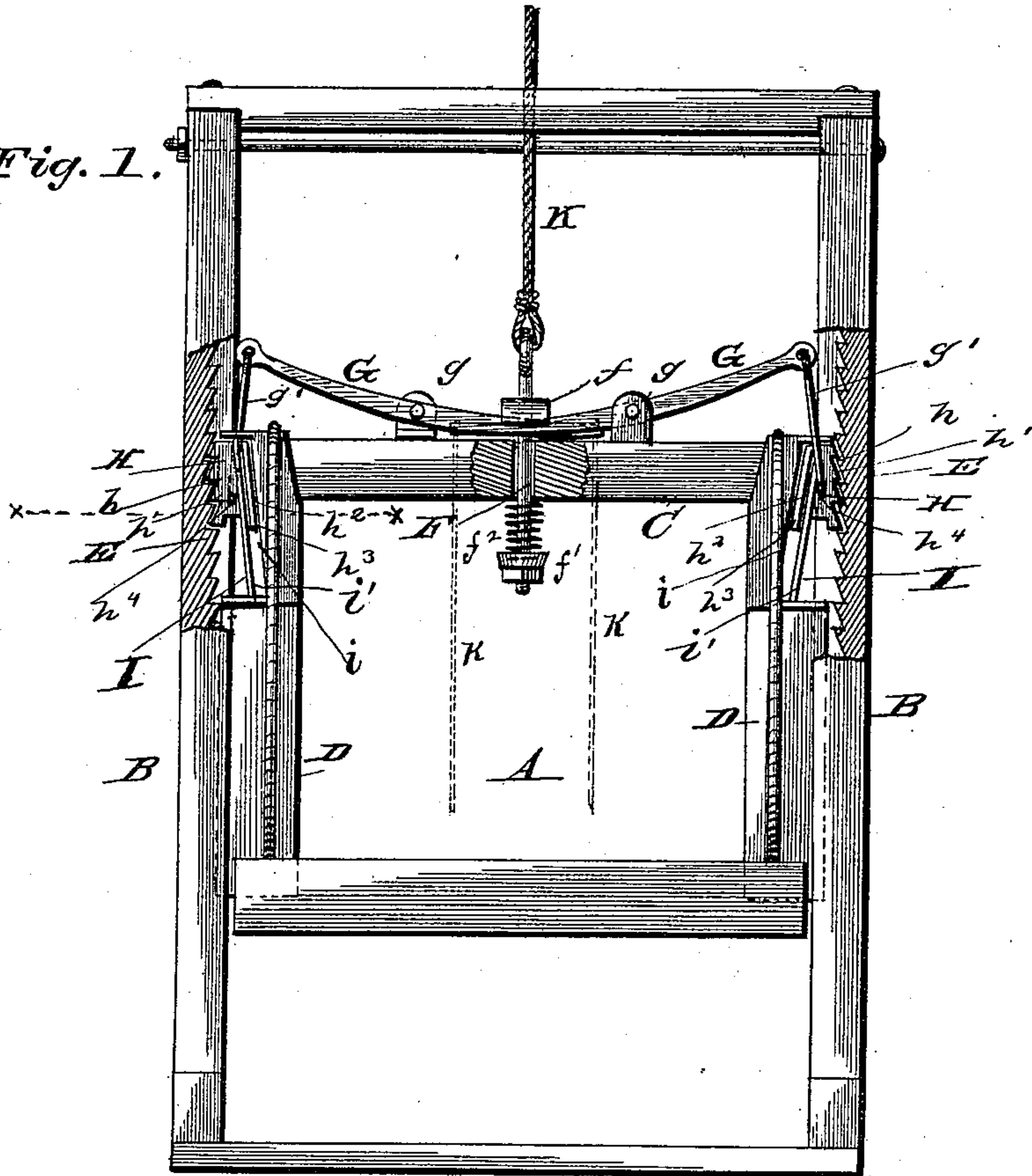


Fig. 4.

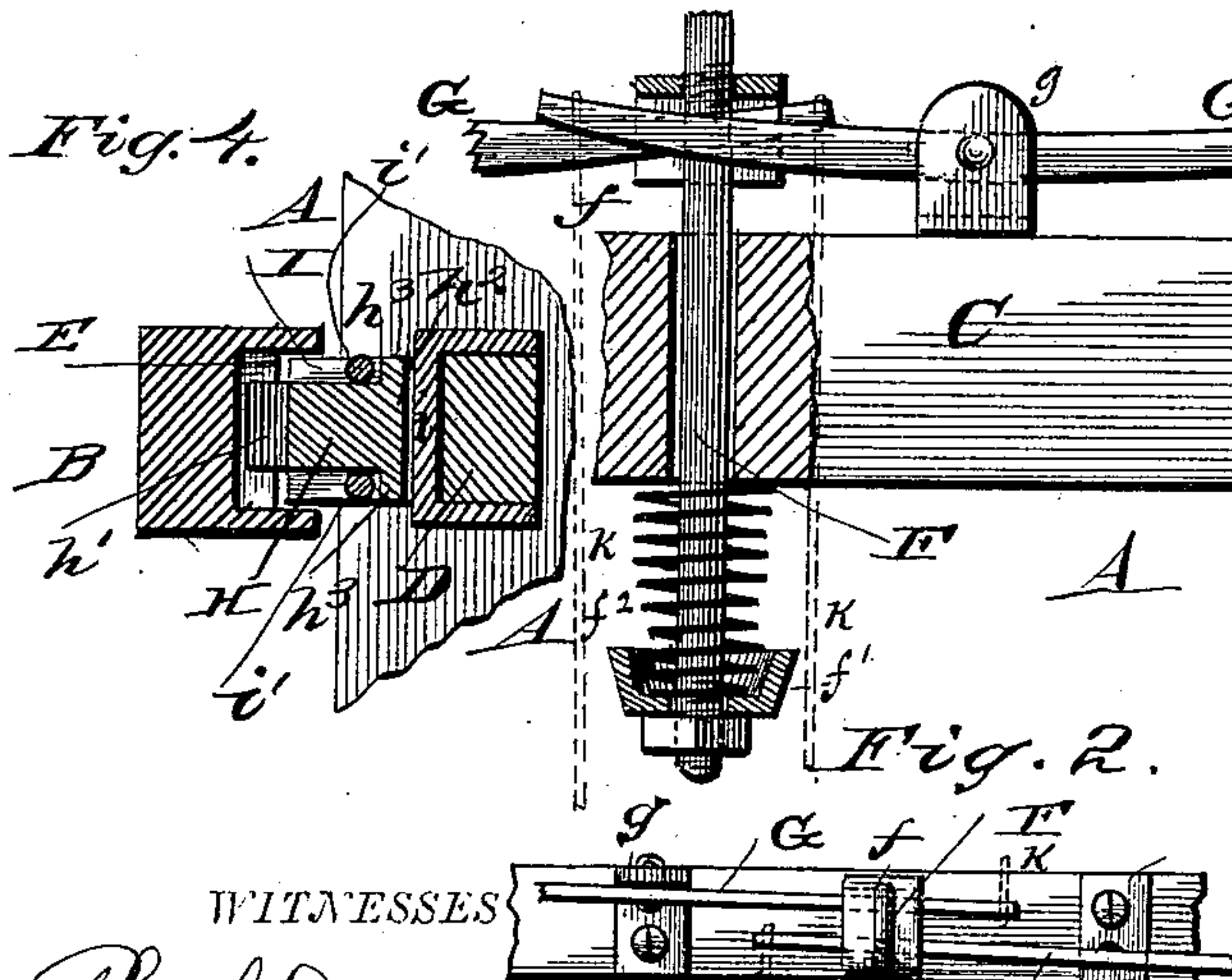
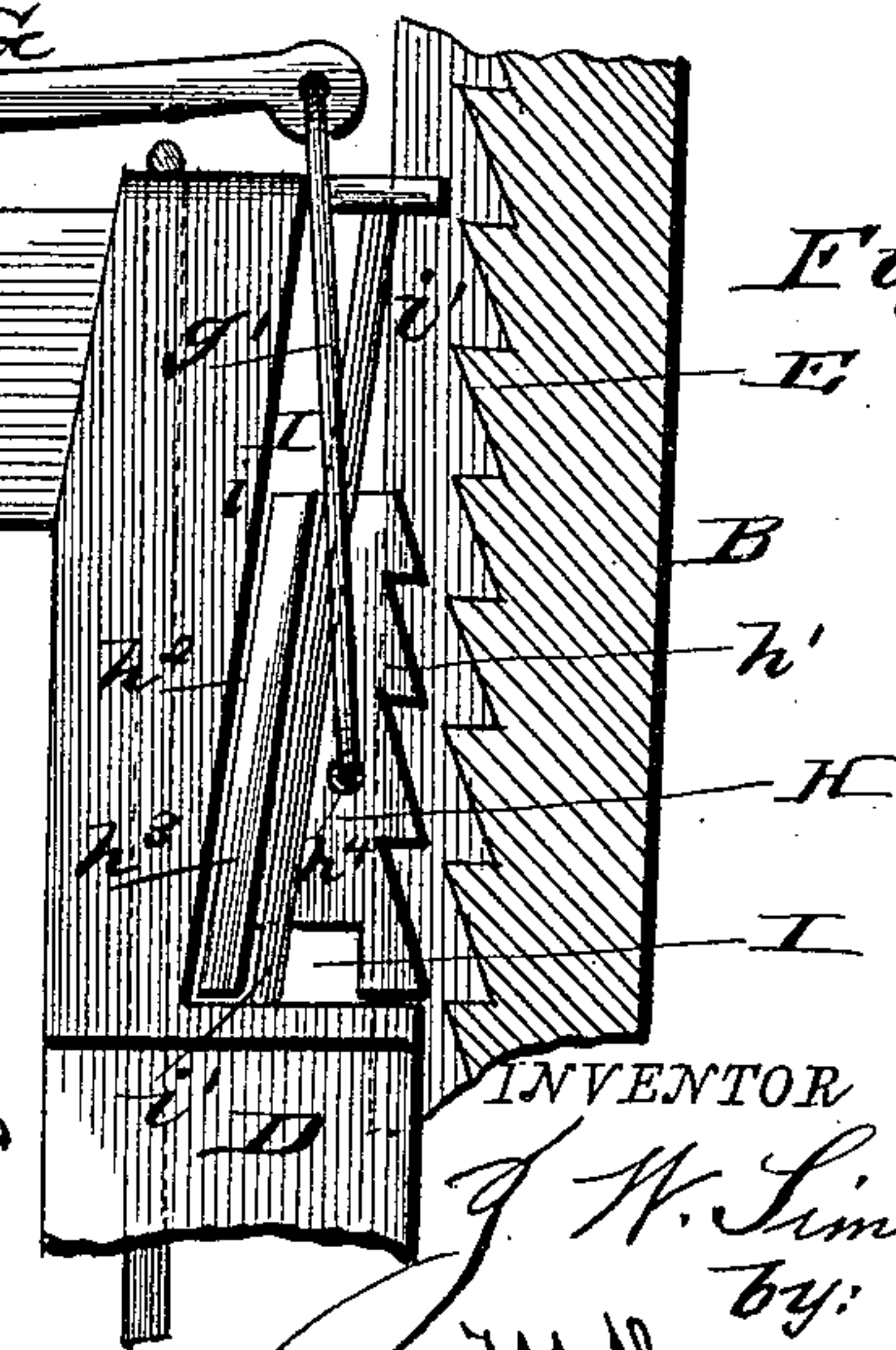


Fig. 3.



WITNESSES

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# UNITED STATES PATENT OFFICE.

JAMES WILLIAM SIMMONS, OF EAST MONROE, OHIO.

## SAFETY-CLUTCH FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 297,459, dated April 22, 1884.

Application filed February 19, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, J. W. SIMMONS, of East Monroe, in the county of Highland and State of Ohio, have invented certain new and useful Improvements in Safety-Clutches for Elevators; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification, in which—

Figure 1 is a front elevation broken away on both sides to show the clutch-block in position. Fig. 2 is a plan view showing the action of the king-bolt on the levers; and Fig. 3 is an enlarged detail view in section, showing the action of the clutch-block. Fig. 4 is a detail section taken horizontally through one side of Fig. 1 in the plane indicated by dotted line  $x x$  thereon.

This invention relates to that class of elevators or mining-shaft cars or cages which, upon the breaking or detaching of the hoisting mechanism, will be upheld by some form of automatic device engaging or meshing into vertical racks made usually in or upon the guideways.

The essential feature of the invention is the employment of clutch-blocks with racks made upon their outward surfaces, which blocks automatically engage the vertical racks on the guideways. The said clutch-blocks are connected by links to horizontal levers situated on the top of the elevator-car and having their free inward ends resting under and overhung by arms projecting from the upper part of the king-bolt.

In the drawings accompanying and forming part of this specification, A represents the elevator-car moving between the guideways B B. C is the central beam of the frame attached to the top of the car, and D D are central side beams of the same.

Made in and forming part of the guideways B B are the vertical racks E E, having their teeth inclined upwardly.

F represents the king-bolt rendering through the center of the beam C, and provided immediately below the ring for securing the hoisting mechanism with the arms  $f f$ , extending out horizontally to front and to rear.

$f'$  is a cup retained on the lower end of the king-bolt by a nut, as shown, between which and the lower surface of the beam C the spring  $f^2$  is held in place. The function of the spring  $f^2$  is to draw down the king-bolt should the hoisting rope or chain K become separated therefrom, thus automatically locking the cage and preventing it from dropping.

G G are horizontal levers pivoted to proper supports,  $g g$ , on the beam C at equal distances on each side of the center of the same, and each having a free inward end, which rests under and is controlled by one of the arms  $f$  of the king-bolt. The ends of the arms curve downward, so as to more securely embrace and retain the levers. The outer ends of the levers are connected by links  $g' g'$ , or in other proper manner, to the clutch-blocks H H. The outward surface,  $h$ , of each of the clutch-blocks is made into a rack, which meets and meshes with the vertical rack E on the same side of the car, and has its teeth  $h' h'$  inclined downwardly, so that one rack fits well into the other. The outward surface,  $h^2$ , of each of the clutch-blocks is smooth and inclines from the top downwardly and inwardly, so that the block is considerably thicker at the base than at the top. Each block is, moreover, provided along the inner edges of its sides with the longitudinal flanges  $h^3 h^3$ , and has a horizontal opening,  $h^4$ , running from side to side at about one-third of its length above the base. This opening is for the reception of the end of one of the links  $g'$ , which is secured therein, and from which the clutch-block swings freely. The top of each central side beam, D, is cut away to form a recess, I, for the reception of one of the clutch-blocks H. The inner surface,  $i$ , of this recess is metal-lined, and has the same inclination as the inward surface of the block, so that the latter rides easily against the former when the parts are in position.

$i' i'$  are bars firmly fixed within the recess I, and forming in conjunction with the flanges  $h^3 h^3$  of the clutch-blocks ways and guides for the latter as it moves on the inward surface of the said recess.

$k k$  represent cords or chains attached to levers G G between their fulcrum and inner ends, by means of which the cage can be locked or held at any intermediate place between its



extremities of travel simply by pulling said cords.

The mode of operation of the invention is as follows: When the king-bolt becomes detached from the hoisting mechanism, the spring  $f^2$  forces it down and the arms  $f f$  come in contact with and depress the inward ends of the levers  $G$ , which, by means of the pivots and link-connections, cause the clutch-blocks to rise; but in rising the blocks are slid outwardly by the inclined surfaces of the recess  $I I$  acting in connection with the inclined surfaces of the blocks. This outward motion binds the racks of the blocks and the vertical racks together with great force, and gives a much larger bearing-surface and greater security than if the block had only a single bearing-point, like a pawl, or were plain-surfaced.

Having described my invention, I claim as new, and desire to secure by Letters Patent, the following:

1. In a safety-clutch for elevators, the combination, with the vertical side racks,  $E E$ , king-bolt  $F$ , and clutch-blocks  $H H$ , provided with proper connecting and operating mech-

anism, of the beams  $D$ , having recesses  $I I$ , provided with inclined surfaces  $i i$ , all constructed and adapted to operate substantially as shown and described.

2. In a safety-clutch for elevators, the combination, with the vertical side racks,  $E E$ , king-bolt  $F$ , levers  $G G$ , and links  $g' g'$ , of the clutch-blocks  $H H$  and beams  $D$ , having recesses  $I I$ , all constructed and arranged to operate substantially as shown and described.

3. The combination, with an elevator-cage, of vertical side racks,  $E E$ , king-bolt  $F$ , provided with shoulders  $f f$ , a spring,  $f^2$ , chain or cord  $K$ , levers  $G G$ , clutch-blocks  $H H$ , and links  $g' g'$ , all constructed and arranged to operate substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JAMES WILLIAM SIMMONS.

Witnesses:

NANTAQUAS GRIFFITH,  
HARRY WILSON.