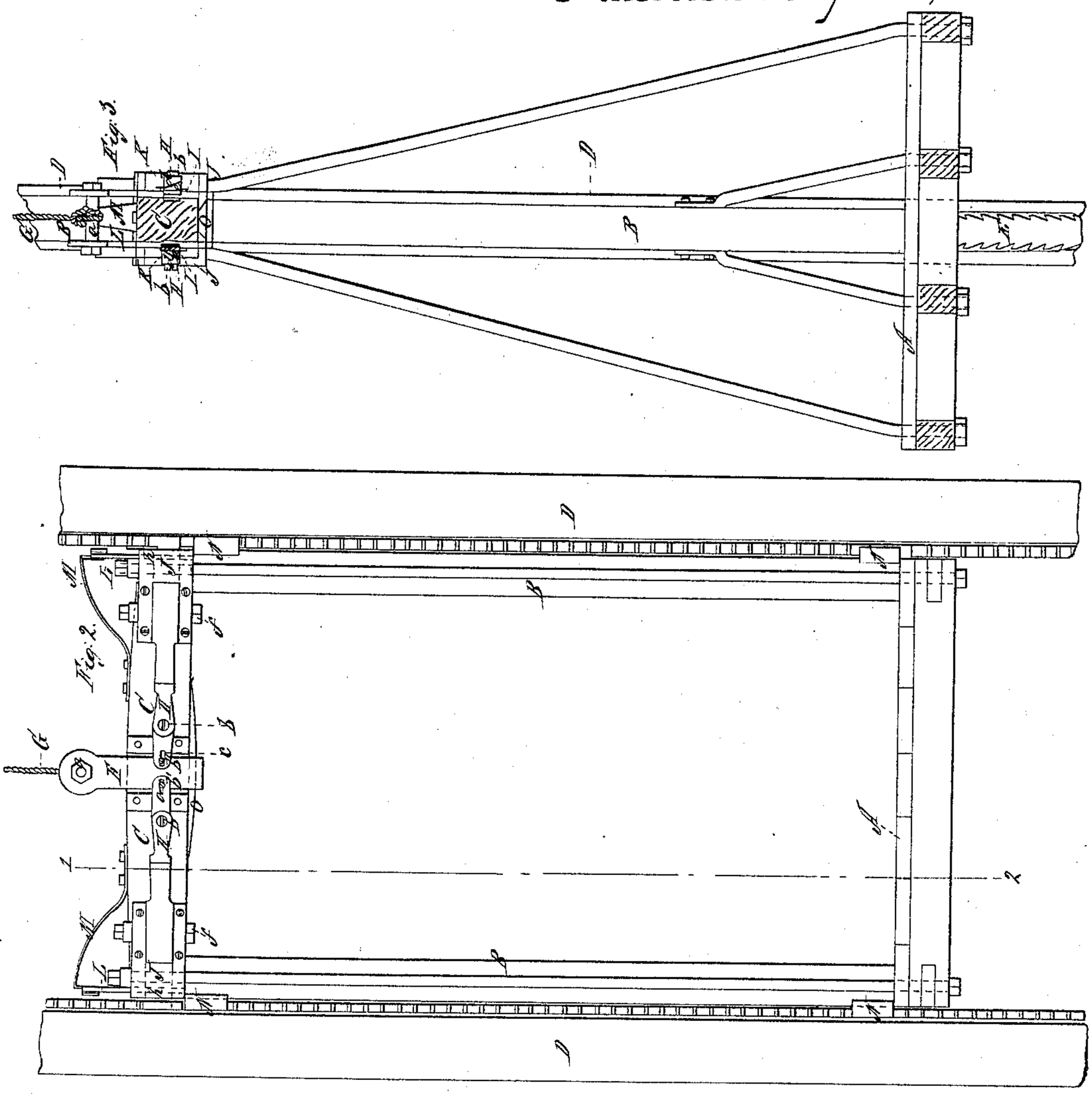
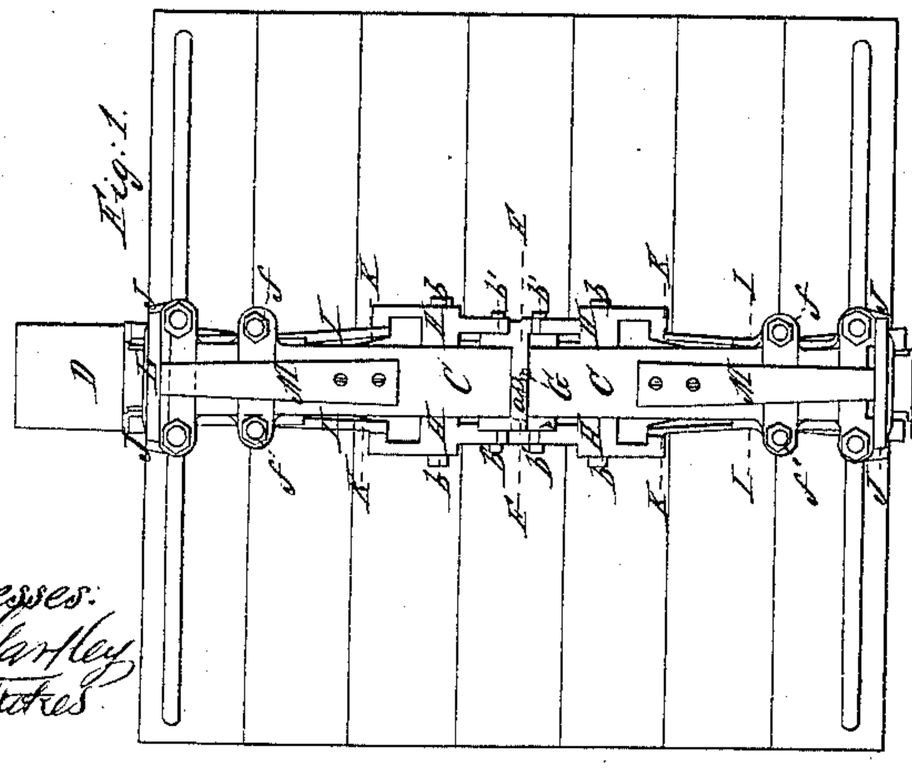
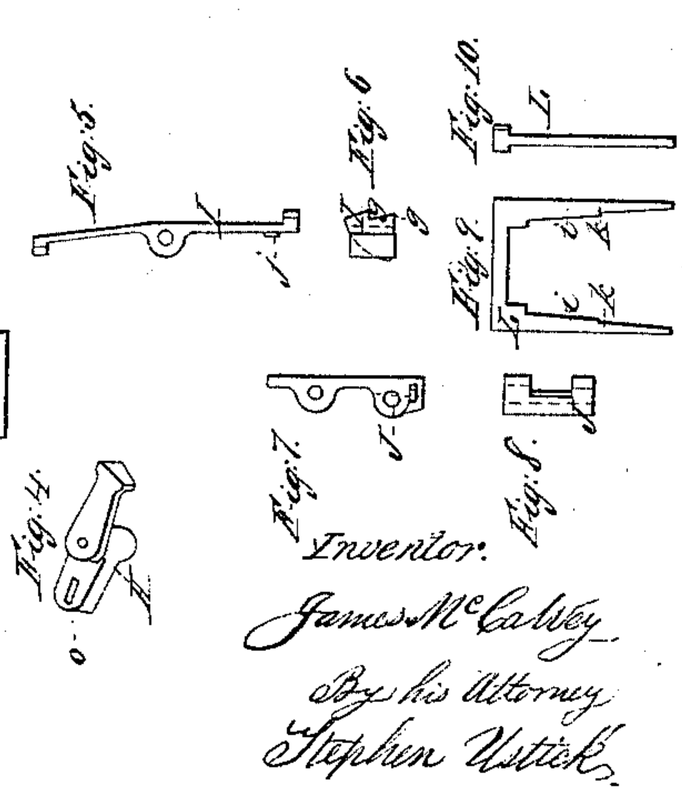
J. McCalvey,

Elevator,

No. 57,535, Patented Aug. 28, 1866.







Witnesses:
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UNITED STATES PATENT OFFICE

JAMES McCALVEY, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN HOISTING-MACHINES.

Specification forming part of Letters Patent No. **57,535**, dated August 28, 1866.

To all whom it may concern:

Be it known that I, JAMES McCALVEY, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Safety-Stops of Hoisting-Machines; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention and improvement consists in a combination of gripe-levers with vertical ratchets and the lifting rope or chain of a hoisting-machine by means of a vertical yoke and trip-levers, in such a manner that when the rope or chain breaks the gripe-levers are thrown into connection with said ratchets, and thus arrest the downward movement of the cage to prevent further casualty.

To enable others skilled in the art to which my improvement appertains to make and use my invention, I will proceed to describe its construction and operation.

In the accompanying drawings, Figure 1 is a top view or plan of the machine. Fig. 2 is a front elevation of the same. Fig. 3 is a vertical section at the red line 1 2 of Fig. 2. Fig. 4 is a perspective view of one of the trip-levers H. Figs. 5 and 6 are an edge and end views of one of the gripe-levers I. Figs. 7 and 8 are an edge and end views of one of the castings J. Figs. 9 and 10 are a face and edge views of one of the wedge-keys L.

Like letters in all the figures indicate the same parts.

A is the cage or platform. B B are the uprights, and C a cross-beam framed to their upper ends. D D are stout timbers, which extend through all the stories of the range of the cage A. On the inner sides of said timbers the ratchets E E are fastened by means of screws. The ratchets have teeth on each edge to receive the teeth of gripe-levers, as I will presently describe.

F is a lifting-yoke, fitting loosely on the beam C, between guiding-irons. The lower end of the windlass-rope G is attached to the cross-rod *a* of the yoke. There are pairs of trip-levers H H and H H connected to the beam C by means of the fulcrum-pins *b*. The inner ends of the levers have slots *c*, which connect with the pins *b'*, the pins being screwed into the sides of the beam. On the outer ends of said levers there are inclines *d*, which bear against the inclines *e* on the inner ends of the gripe-levers I I I I, which partially turn on the screw-bolts *f f*, that pass through the cheeks of the castings J, the longitudinal grooves of which receive said levers. These castings are secured to the sides of the beam C by means of screws, as represented in the drawings. The said gripe-levers have double catches or teeth *g g*, which fit in corresponding teeth of the ratchets E E. There are springs K K K K, with their permanent ends secured to the sides of the beam C by means of screws. Their resilient ends bear against levers I I I I, and keep their inclines *e* against the inclines *d* of the trip-levers when in the position represented in the drawings. One of the trip-levers is shown detached in Fig. 4, one of the gripe-levers in Figs. 5 and 6, and one of the castings J in Figs. 9 and 10.

There are double wedge-keys L, which fit in vertical slots *h* of the castings J, which have inclines *i* on their inner edge, that fit against corresponding inclines *j* on the outer ends of the trip-levers I. When these levers are to be thrown into connection with the ratchets E, the keys L are borne down by the springs M M, whose permanent ends are fastened by means of screws to the upper side of the beam C; but when the gripe-levers are disengaged from the ratchets the shoulders *k* rest on the top edges of the levers. When the levers are to be thrown into connection with the ratchets, as their outer ends are thrown inward they are disengaged from said shoulders, which allows the springs M M to exert their force in causing a sudden descent to the keys L, which, by means of their inclines *i*, instantaneously throw the levers into connection with the ratchets.

N N N N are slides on the outer sides of the uprights D D, whose cheeks *l* have an easy fit against the edges of the ratchets E E. The slides are secured to the uprights by means of screws.

O is a spring between the lower end of the yoke F and the cross-beam C, for the purpose of giving a sudden descent to the former to throw the trip-levers out of connection with the gripe-levers when the rope or chain breaks.

The operation is as follows: The machine is

in working order, as represented in the drawings, and when the rope or chain breaks, the spring O opens and forces the yoke F downward, and, by drawing the inner ends of the trip-levers H downward, disengages their inclined ends from the gripe-levers, and, consequently, throws their teeth ends into connection with the vertical permanent ratchets E E. At the same instant the springs K, pressing upon the keys L L, give the latter a sudden descent, which, by means of their inclines *i*, above described, acting against the inclines *j* of the levers, assist in connecting them with the ratchets, and thus an instantaneous stop of the cage is produced.

The teeth of the levers and ratchets are made a little hooking, to assist in effecting instantaneous action.

Having thus fully described my improvement in safety-stops of hoisting-machines, what I claim therein as new, and desire to secure by Letters Patent, is—

1. The combination of the gripe-levers I, springs *k*, keys L, and springs M, arranged and operating in relation to each other and to the permanent ratchets E substantially in the manner hereinbefore described, and for the purpose set forth.

2. The combination of the trip-levers H with the yoke F, beam C, and gripe-levers I, substantially as described, and for the purpose specified.

3. The combination of the spring O with the beam C and yoke F, for giving an instantaneous drop to the latter when the rope or chain breaks, and thus throwing the gripe-lever I instantly into connection with the permanent ratchets E, to securely lock the cage A, substantially as described.

In testimony that the above is my invention I have hereunto set my hand and affixed my seal this 19th day of June, 1866.

JAMES McCALVEY. [L. S.]

Witnesses:

STEPHEN USTICK,

JOHN WHITE.