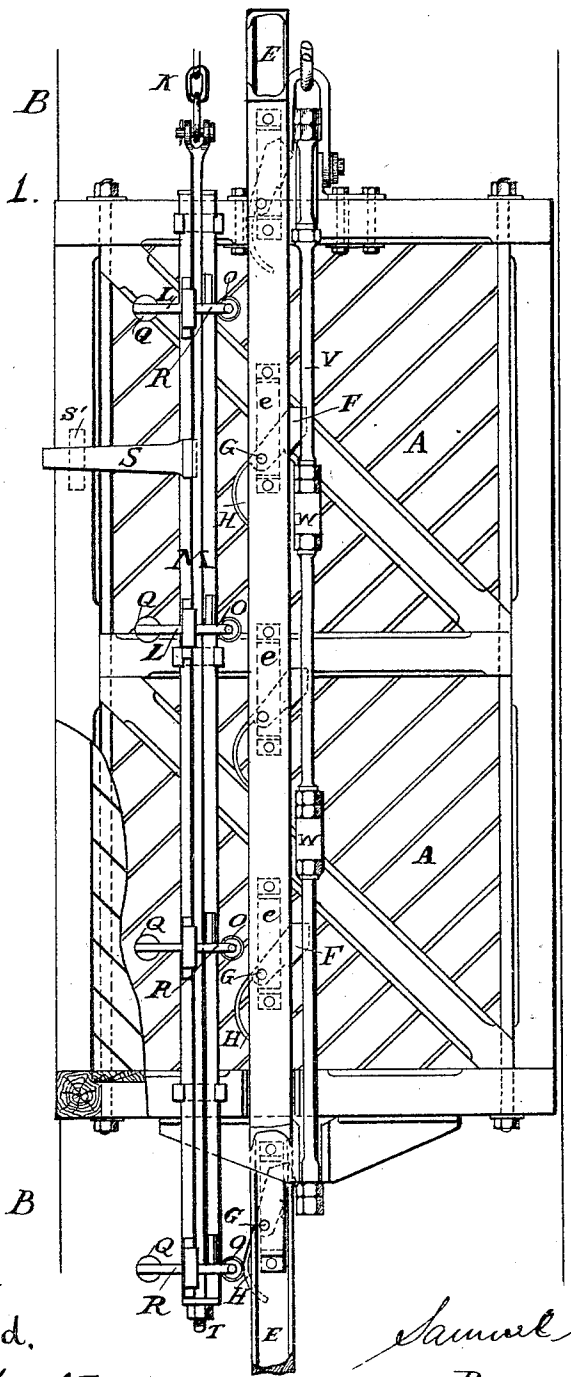
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S. G. BENNETT.

SAFETY DEVICE FOR ELEVATORS.

No. 426,100. Patented Apr. 22, 1890.

Fig. 1.



Witnesses:-
D. C. Haywood.
J. H. Dougherty

Inventor:-
Samuel G. Bennett
Per James N. Lancaster
Attorney.

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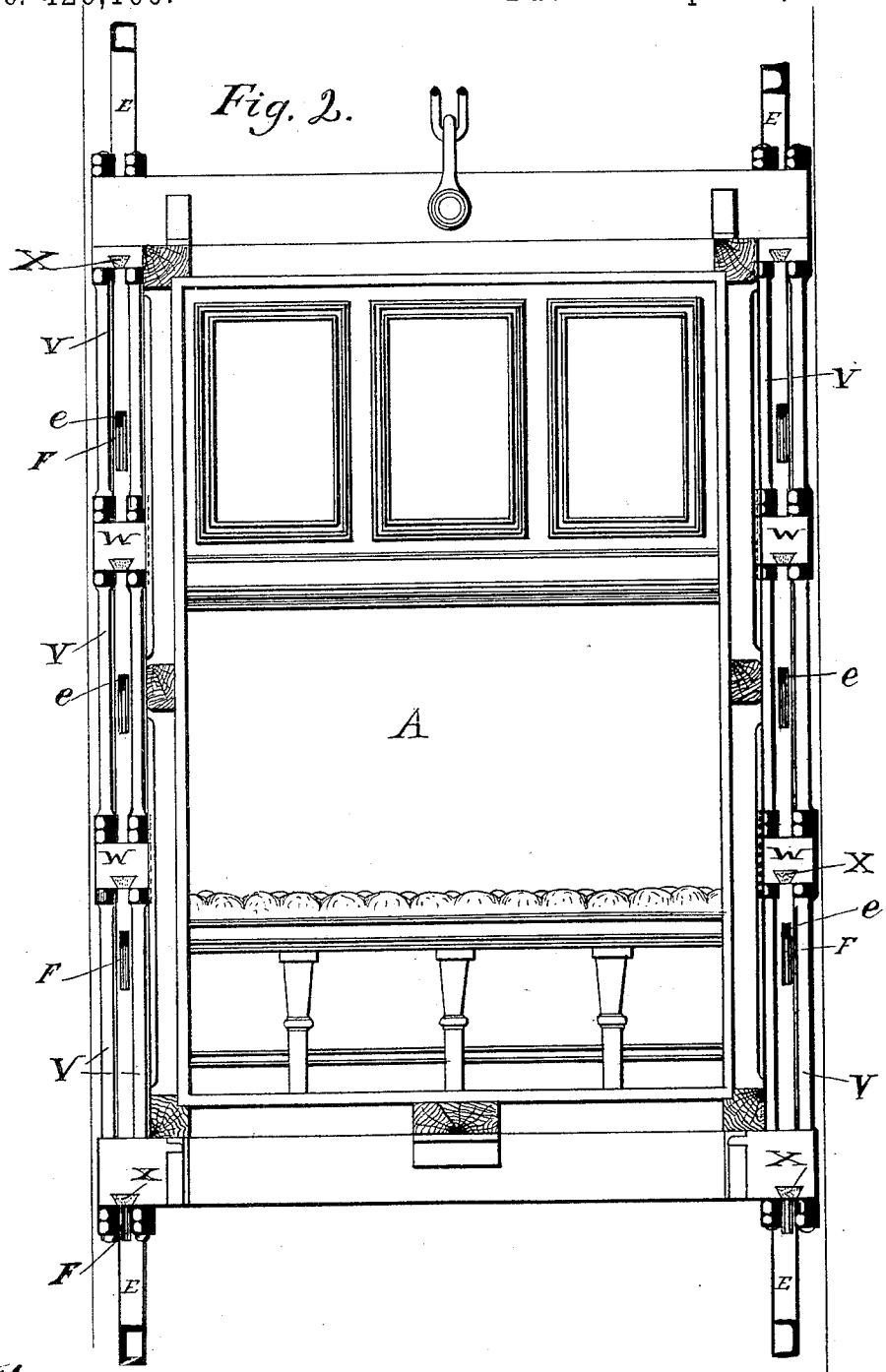
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S. G. BENNETT.

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Fig. 2.



Witnesses:-
D. S. Maywood.
J. H. Dougherty

Inventor:-
Samuel G. Bennett
Per-
James N. Lancaster
Attorney.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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Fig. 3

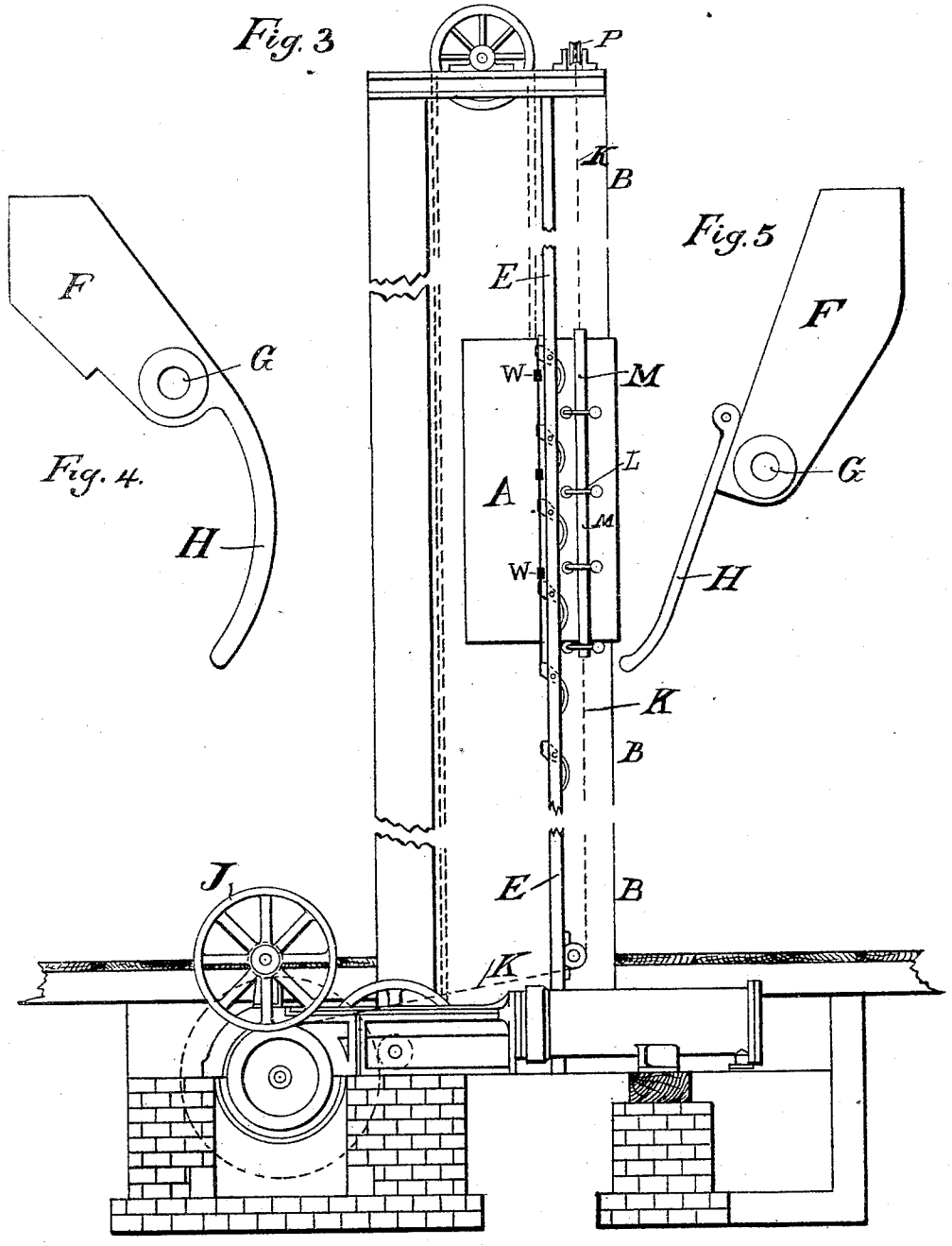


Fig. 4.

Fig. 5

Witnesses:-
D. H. Harywood.
J. H. Dougherty

Inventor:-
Samuel G. Bennett
Per- James N. Lancaster
Attorney.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

SAMUEL GREEN BENNETT, OF HANDSWORTH, COUNTY OF STAFFORD, ENGLAND.

SAFETY DEVICE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 426,100, dated April 22, 1890.

Application filed March 7, 1889. Serial No. 302,372. (No model.) Patented in England September 28, 1887, No. 13,111.

To all whom it may concern:

Be it known that I, SAMUEL GREEN BENNETT, a subject of the Queen of Great Britain, and a resident of Handsworth, in the county of Stafford, England, have invented certain new and useful Improvements in Safety Devices for Elevators, (for which I have obtained a patent in Great Britain, No. 13,111, dated September 28, 1887,) of which the following is a full, clear, and exact specification.

My invention relates to improvements in the construction of hoists or elevators in which steps or catches pivoted to a guide act in combination with rests secured to the frame of the elevator; and the object of my invention is to secure absolute safety to the hoist or elevator in the event of the chains or ropes from which the same is suspended breaking or the elevator or motive power not acting properly. I attain this object in the manner illustrated in the accompanying drawings, in which—

Figure 1 is a side view of an elevator with my attachment shown in position. Fig. 2 is a front view of Fig. 1, the elevator-car being in section. Fig. 3 is a general side view of an elevator-car and motive power with my improvement in position, showing the means of working same. Figs. 4 and 5 are enlarged views of the steps or catches.

Similar letters refer to similar parts throughout the several views.

The cage is shown at A, the usual guide-frame at B, the additional guide at E, which is sometimes made of cast-iron in suitable lengths and jointed, or is constructed of wrought channel-iron, as shown at E. These guides E contain a series of slots *e*. Into each of these slots is fixed a spindle G, on which is loosely mounted a step F, (shown in detail at Figs. 4 and 5,) which by its own gravity, or, if necessary, by springs, projects beyond the body of the guide E into range of the main supporting-frame V of the elevator-car. These steps F are provided with a continuation H, which is sometimes jointed to the front portion of the step F, as in Fig. 5, but is generally made all in one piece, as at Fig. 4.

In Fig. 3 the winding-drum J actuates a chain K, which is conveyed to the top of the guide-frame over the pulley P, whence it descends toward the bottom of the shaft, its traverse either upward or downward being in the same direction and at the same speed as the cage. To this chain is suspended a frame M, having a series of strikers L mounted thereon. The frame M may be tubular and may be weighted, if required. No weighting is necessary if the chain K be made endless. These strikers may be made of any design, so long as they correctly actuate the aforementioned steps.

A superior arrangement of strikers is shown in the drawings, each striker consisting of a roller O, which is sometimes covered with leather or india-rubber to make the roller noiseless. These rollers are mounted on levers R, and are kept in horizontal position by counterbalance-weights Q. These rollers engage the ends H of steps F just at the right moment to lift the steps, and thus allow the cage to pass.

To the frame M, on which the rollers are fixed, an indicator S is secured, which, projecting through a slot S′ into the cage, shows at once when any adjustment of the frame M is required, which is readily obtained by the screw and nut at T. If desired, the striking-gear is placed at right angles to the cage, in which case the steps would be made to engage in recesses in the side of the cage. In other cases the arrangement is as shown in the drawings, when on each side of the case is attached the supporting-frame V, which is securely attached to the cage, as shown. In this supporting-frame I secure the transverse rests W, spaced farther apart vertically than the vertical spacing of the steps, so that a rest shall always be near a step, and thus reduce the possible amount of distance the car may fall. In these rests I generally place india-rubber cushions X, which if the cage falls would annul the concussion of the rest W upon the step.

When all parts of the elevator are acting properly, the strikers L move in unison with the rests W. On the up-trip of the elevator the steps are deflected by the rests W, and, like pawls, on the down-trip, the steps are moved to clear the descending rests W by the strikers L. Should the car start to descend in ad-

vance of the strikers, it must stop on the step nearest a rest W. Obviously the car cannot descend except all parts of the mechanism are in order and adjustment, and absolute safety is thus obtained.

In order to cheapen the cost of erecting these hoists, I frequently construct the guides of wood, as in an ordinary hoist, and at suitable distances I screw or otherwise attach a short cast or wrought iron frame, somewhat similar in shape to those attached to the channel-iron guides E. These frames support both ends of the spindles on which the steps are mounted to transmit equally the strain. I employ a wrought-iron strap of convenient section, which is bolted or screwed to the said wooden guide, and which would also act as a guide for the cage. It will be readily seen that this arrangement enables my invention to be applied to existing hoists, according as desired. Either one or two sets of steps may be used. When a double set is used, the light chain K is attached to the additional chain, which works the extra set of steps by means of a shackle or any convenient method.

When constructing these hoists, the top step would generally finish at the floor-level of the highest floor, and it is obvious that the steps need not be continued to the extreme bottom of the hoist-well.

The hoisting-engine shown is not a part of this invention, but is shown to make clear my invention in relation to it.

I am aware that an independent rope or chain K has been used to control safety mechanism for elevators, and I do not claim it, broadly.

Having now described the nature of my invention and its application, what I claim as new, and desire to secure by United States Letters Patent, is—

1. In a hoist or elevator, the combination of a guide-frame E, having movable steps F F, and the frame M, having strikers L L, all substantially as set forth.

2. In an elevator, the combination, with the guide-frame having movable steps provided with the tail parts H, of the frame M and strikers on said frame to engage said tail parts, substantially as and for the purpose specified.

3. In an elevator, the combination, with the guide-frame having movable steps provided with tail parts H, of the frame M, strikers on said frame to engage the tail parts, and the rope K, guided in said frame and arranged to control the strikers independent of the elevator-car, substantially as described.

4. The combination, with the guide-frame having movable steps provided with tail parts H, of the frame M, the rope K, and strikers on said frame, consisting of horizontal levers, and rollers at each end of said levers, substantially as herein shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 9th day of July, 1888.

SAMUEL GREEN BENNETT.

Witnesses:

CHARLES ASKIN CHANCE,

WILLIAM HENRY KIMBERLEY.