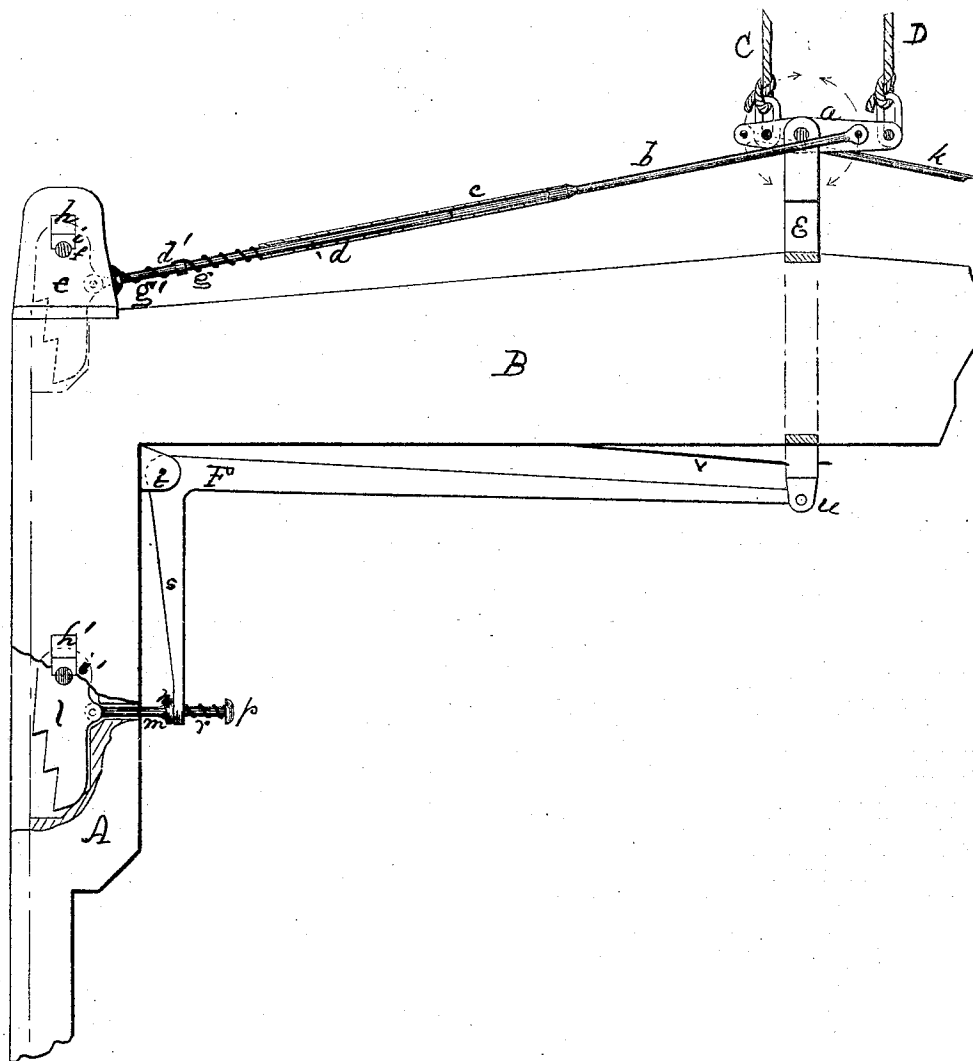


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Improvement in Safety-Pawls for Hoisting Apparatus.

No. 128,467.

Patented July 2, 1872.



Witnesses
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RICHARD T. CRANE AND WILLIAM H. LAVINIA, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN SAFETY-PAWLS FOR HOISTING APPARATUS.

Specification forming part of Letters Patent No. 128,467, dated July 2, 1872.

We, RICHARD T. CRANE and WILLIAM H. LAVINIA, of Chicago, Illinois, have invented certain new and useful Improvements in Safety-Pawls for Hoisting Apparatus; and the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, consisting of one figure, showing an elevation of a portion of the platform-frame and some other parts, with a portion of the frame cut away. The drawing is on a scale of one and a half inch to the foot.

In the drawing, A B represent part of the frame, to which the platform is connected; C, the cable by which the platform is elevated, and D a safety-cable; E, a bar loose in B, and having shoulders to limit its movement. *a* is a cross-bar or lever, pivoted to E, to which cross-bar the cables are secured. *b* is a rod, pivoted to *a*, having an enlarged portion, *c*, within which the rod *d* telescopes, and *d* is pivoted to a three-toothed pawl, *e*, shown in dotted lines, pivoted at *f* within the frame, and so formed that the upper tooth will first engage with the rack, which is not shown. *d'* is a shoulder on *d*. *g* is a spring between the shoulder *d'* and the end of *c*; *g'*, another spring between the shoulder *d'* and the frame. The pawl *e* is not rigidly pivoted to the frame, but there is a loose bearing, *i*, above *f*. *h* is a rubber spring above the movable bearing *i*; *k*, a rod corresponding with *b*; and on the other side of the frame are other parts corresponding with the rods, pawl, and springs above described. *l* is another three-toothed pawl, similar to *e*, pivoted to the frame, having a movable bearing, *i'*, above it, and rubber spring *h'* above *i'*. This pawl also is to engage with a rack, (not shown.) F is an elbow-lever, pivoted to the frame at *t*; *m*, a rod pivoted to the pawl *l*; *n*, a shoulder on *m*; *p*, a nut on *m*. The rod *m* passes loosely through the end of the arm *s* of the lever F. The end of the other arm is pivoted to the lower end of E. *r* is a spring on *m*. *v* is a strong spring. On the other side of the frame is another pawl, similar to *l*, with other parts corresponding with those last described.

The upper pawls *e*, with the rods and other

operating parts, might be used without the pawls *l*; or the pawls *l* can be used without *e*; or both can be used together, as represented.

A single cable attached directly to E might be used if only the pawls *l* are on the apparatus.

In use, if either of the cables should break the bar *a* will assume a perpendicular position, and the pawl *e* will be thrown out by the rods *b* *d*, and its upper tooth will engage with the rack. The spring *g* will yield sufficiently to prevent any undue pressure upon the rods *d* sliding within *c*. At the same time the spring *g'* will be compressed between the shoulder *d'* and the frame, and at the proper time will withdraw the pawl *e*—that is, when the broken cable is restored. While *a* is assuming a perpendicular position the spring *v*, which is connected with the bar E, will force this bar down, and the pawl *l* will at once engage with the rack, which is not shown. If only the pawl *l* be used with its operating parts, the cable being connected directly to E, the operation will be as last described whenever the cable breaks. After the pawl *l* has been engaged with the rack, the platform being at rest, when the power is again applied to raise the platform, the effect will be to first compress the spring *r*, and as soon as the pawl is released it will be withdrawn in part by the action of the spring *r*. The springs *g'* and *r* operate in substantially the same manner. The spring *g* is much stronger than *g'*. The spring *h* receives the shock caused by the sudden contact of the pawls with the rack in case of accident, which, when the platform is weighted, is severe.

The bar or lever *a* is not pivoted at its center to E; but the arm to which the cable C is attached is considerably shorter than the other arm, to which the safety-cable D is connected. These cables are to be so adjusted that when in use the lever *a* will stand at right angles with E, and, one arm of *a* being longer than the other, there will be much less strain upon D than on C, so that D will be more surely a safety-cable than if the strain upon it were equal to that on C.

What we claim as new is as follows:

1. The spring *h*, in combination with the pawl *e* and movable bearing *i*, substantially as and for the purpose specified.

2. The pawl *e* and spring *h*, in combination with the bar *E*, lever *a*, rods *b* *d*, and springs *g* *g'*, substantially as and for the purposes specified.

3. The pawl *l* and spring *h'*, in combination with the bar *E*, spring *v*, lever *F*, rod *m*, and spring *r*, substantially as and for the purposes set forth.

4. The combination of the cables *C D*, lever *a*, and bar *E*, arranged as described, in combination with the devices for operating the safety-pawl, substantially as and for the purposes specified.

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