B. FREEMAN.

Derrick.

No. 167,398. Patented Sept. 7, 1875.

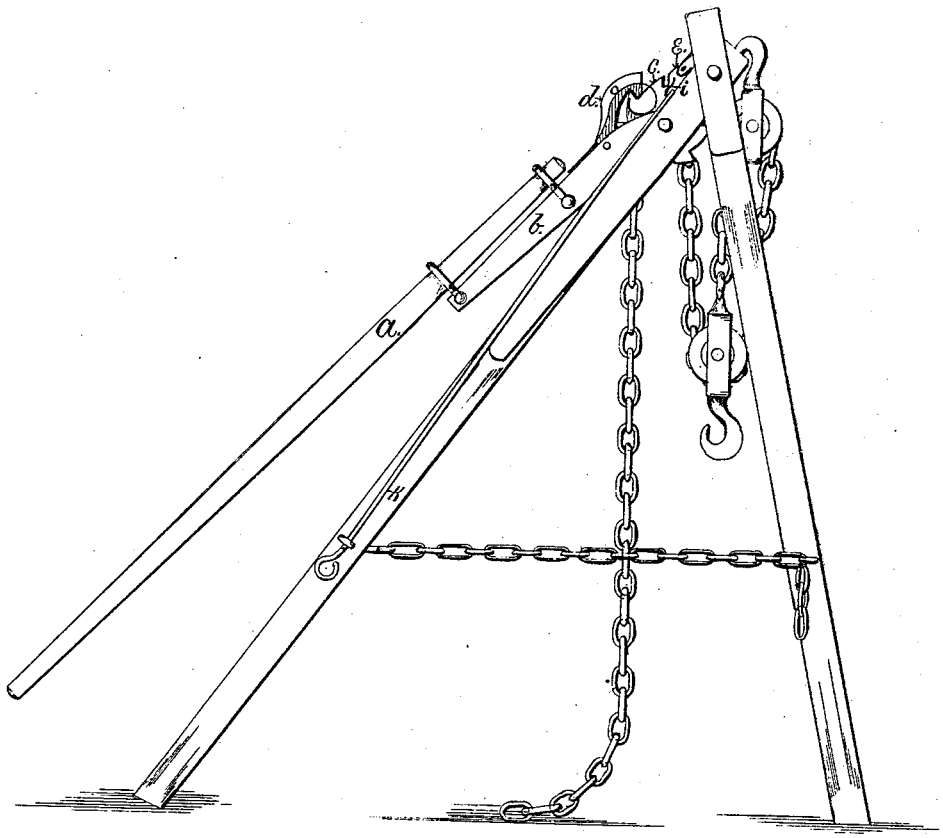


FIG. I

FIG. II.

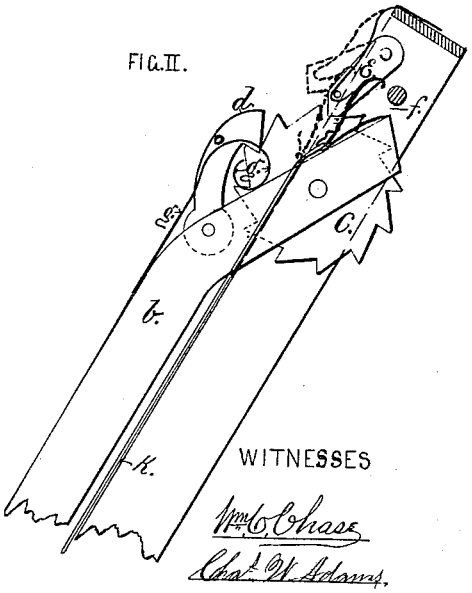
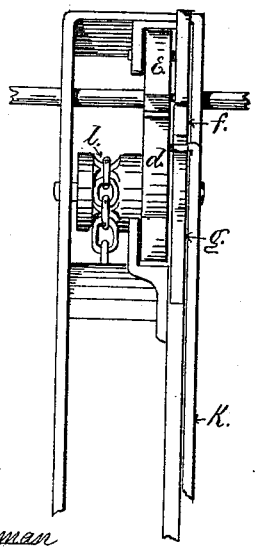


FIG. III



WITNESSES

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UNITED STATES PATENT OFFICE.

BARTON FREEMAN, OF EAST ATTLEBOROUGH, MASSACHUSETTS, ASSIGNOR OF ONE-HALF HIS RIGHT TO JAMES McANERNEY, OF ATTLEBOROUGH, VERMONT.

IMPROVEMENT IN DERRICKS.

Specification forming part of Letters Patent No. **167,398**, dated September 7, 1875; application filed May 6, 1875.

To all whom it may concern:

Be it known that I, BARTON FREEMAN, of East Attleborough, in the county of Bristol, State of Massachusetts, have invented a new and useful Improvement in Derricks; and I do hereby declare that the following is a full, clear, and exact description thereof, which, with the accompanying drawings forming part of this specification, will enable others skilled in the art to make and use the same.

Figure I shows my improved derrick in elevation. Fig. II is an enlarged view of the power-multiplying device. Fig. III is a top view of the same.

Similar letters of reference indicate corresponding parts.

The object of the invention is to produce a simple device for lifting heavy weights by manual power, and also for lowering the same by a simple movement of the same device.

The nature of the invention consists in the peculiar arrangement of lever, pawl, ratchet-wheel, and check-pawl with springs, so that in one position the check-pawl will prevent the chain-wheel from turning backward, and in the other position the check-pawl is kept clear of the ratchet-wheel, and allows the same and the chain-wheel to turn backward and so lower the load, until the lever is raised to a given point, when the check-pawl engages with the ratchet-wheel again, and so holds the weight.

In the drawings, A is a long handspike or lever secured to the curved lever *b*. This curved lever is supported on the same shaft which is secured to the ratchet-wheel and chain-wheel, and which turns in journals made in the iron frame of the third leg of the derrick. C is the ratchet-wheel, and *l* the chain-wheel. These are preferably made in one piece, but can be made separately and secured to the same shaft, so as to act together. E is the check-pawl secured to the frame by a pin, on which it turns. *f* is a spring resting on the curved lever *b*, and secured to the rod K, having the end where it is secured to the rod K turned up, as shown at *i*, so as to form a shoulder. *g* is a spring secured on the curved lever *b* close to the pawl *d*. The blocks and falls are of the usual construction, made so as to sustain heavy weights, the chain from which passes over the chain-wheel *l*. When a heavy weight is secured to the lower hook of the block and fall, and the long lever A is raised, the pawl *d* passes over the ratchet-wheel C, and when the lever is lowered the pawl engages with the ratchet-wheel, and turns the same, and also the chain-wheel *l*, and thus exerts a strain upon the chain, and through the same a corresponding but greater strain through the block and fall upon the weight to be raised. By repeating the up-and-down motion of the lever A the weight is raised to any desired height within the limits of the derrick. When the mass is to be lowered the rod K is pulled down until the spring *f* is in the position indicated by the broken lines on Fig. II. By this motion the check-pawl E is raised sufficient to clear the teeth in the ratchet-wheel C, as shown in dotted lines, and when the lever A is raised the ratchet-wheel C and chain-wheel *l* will turn and pay out the chain, thus lowering the mass suspended by the block and fall. As soon as the spring *g* reaches the turned-up part *i* of the spring *f* it is pressed over, and thus allows the check-pawl to engage with the ratchet-wheel, while the spring *g*, in passing over the turned-up end *i* of the spring *f*, disengages the pawl *d* from the ratchet-wheel by lifting the pin in the side of the pawl *d*, and thus raising the same over the edge of the tooth, and by depressing the lever A the pawl engages with the tooth, and the spring *f*, being released, again lifts the check-pawl E, thus allowing a heavy mass to be slowly and safely lowered. By the vertical movements of the handle *a*, causing the curved upper surface of the lever *b* to change the tension of the spring *f*, the check-pawl E is automatically lifted from the ratchet when the handle *a* is raised to back the chain-wheel, and it is caused to engage with the teeth when the handle *a* is lowered to take a fresh hold of the ratchet; the shoulder on the spring *f* causing the spring *g* to rise and lift the pawl from the ratchet, and

permit the handle *a* to be lowered while the check-pawl E holds the ratchet, these two springs operating upon the pawls, and causing them to act like the escapements of a watch.

The whole operation of raising and lowering a heavy mass may be performed by one person without moving from his position at the end of the lever.

Stumps may be effectually pulled by this derrick by one man; and the same device may be arranged to form a part of other hoisting-machines for raising heavy masses and lowering the same by manual power, the same being strong, efficient, and simple in construction and manipulation.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The combination, in a derrick, of the lever A, the curved lever *b*, the pawl *d*, check-pawl E, and ratchet-wheel C with the springs *g* and *f* and rod K, the whole operating together substantially as and for the purpose set forth.

BARTON FREEMAN.

Witnesses:

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