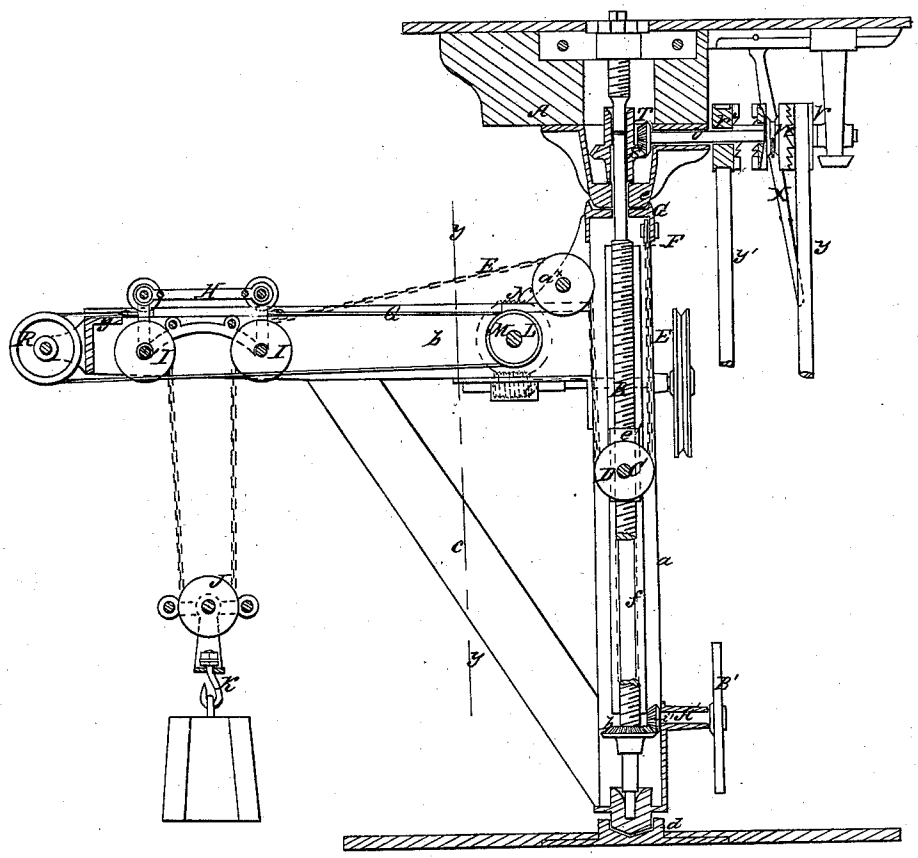
2 Sheets-Sheet 1

W. F. Durfee,

Derrick.

No. 80,930. Patented Aug. 11, 1868.



Witnesses;
Wm. A. Morgan
Geo. Cotton

Inventor;
W. F. Durfee
per Munn & Co
attorneys.

2 Sheets - Sheet 2.

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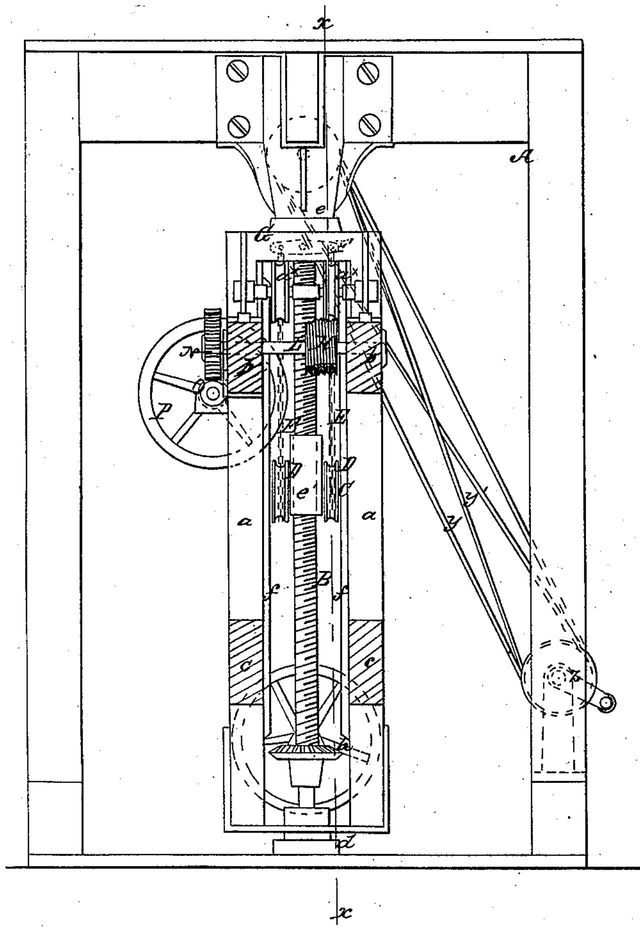

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United States Patent Office.

W. F. DURFEE, OF NEW BEDFORD, MASSACHUSETTS.

Letters Patent No. 80,930, *dated August* 11, 1868.

IMPROVEMENT IN POWER-CRANE.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, W. F. DURFEE, of New Bedford, in the county of Bristol, and State of Massachusetts, have invented a new and improved Power-Crane; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to a new and improved crane, designed more especially to be operated by steam or horse-power, and for raising and lowering heavy bodies.

The object of the invention is to obtain a crane of the kind specified, which may be operated or manipulated with the greatest facility, be simple in construction, not liable to get out of repair, and which may be constructed at an under-rate cost.

In the accompanying sheet of drawings—

Figure 1, Sheet No. 1, is a side sectional view of my invention, taken in the line *x x*, fig. 2.

Figure 2, Sheet No. 2, a vertical section of the same, taken in the line *y y*, fig. 1.

Similar letters of reference indicate corresponding parts.

The frame of the crane is composed of two uprights, *a a*, two horizontal bars, *b b*, and two diagonal brace-bars, *c c*, all framed together, and secured firmly by proper iron-work at their connections. The form or shape of the crane is shown clearly in fig. 1.

The lower end of the crane is fitted in a proper step, *d*, and the upper end is fitted on a head-piece, *e*, the crane being allowed to turn freely, and the step and head-piece attached to a suitable framing, A.

B is a screw, which is fitted vertically in the framing A, and passes down between the uprights *a a* of the crane. This screw passes through a nut, *e*, in a cross-bar, C, which is allowed to rise and fall freely between the uprights *a a*, the ends of said cross-bar being fitted in guides *f*, at the inner sides of said uprights.

On this cross-bar there are fitted loosely two pulleys, D D, around which chains E E pass. These chains are attached at one end to a cross-bar, *g*, at the outer ends of the horizontal bars *b b* of the crane, and the opposite ends of said chains are attached to a lever, F, which is secured in a cap, G, on the upper ends of the uprights *a a*, the chains also passing over suitable guide-pulleys, *a*, near the rear of the bars *b b*.

H is a carriage, which runs on ways on the horizontal bars *b b*, and has two pairs of pendent pulleys, I, attached, over which the chains E E pass, and on the loop of the chains, between the pulleys I, two pulleys, J, are fitted, which are in a frame, having a hook, K, attached, (see fig. 1.) The article to be raised or lowered is suspended to this hook.

L is a shaft, which passes horizontally through the bars *b b* of the crane, near the uprights *a a*. This shaft has a spirally-grooved pulley, M, upon it, and a worm-wheel, N, at one end, said worm-wheel N gearing into a screw, O, having a pulley, P, on its outer end.

Q is a rope or chain, which passes around the pulley M on shaft L, with several convolutions, and also passes around a pulley, R, at the outer side of the cross-bar *g*. This rope or chain is attached to the front and rear ends of the carriage H, as shown clearly in fig. 1.

On the upper part of the screw B there is keyed a bevel-wheel, S, into which a bevel-pinion, T, on a horizontal shaft, U, gears, the latter having two loose pulleys, V V′, placed on it, with either of which a clutch may be made to engage by adjusting a band-lever, X.

These pulleys V V′ have belts Y Y′ passing over them from a driving-shaft, Z; Y being a straight belt, and passing over pulley V, and Y′ a cross-belt, and passing over pulley V′, (see fig. 2.)

On the lower part of the screw B there is keyed a bevel-wheel, *h*, into which a bevel-pinion, *i*, on a horizontal shaft, A′, gears, said shaft having a hand-wheel, B′, on its outer end.

It will be seen, from the above description, that the article suspended to hook K may be raised and lowered by the revolution of the screw B, the latter being turned in either direction by engaging the clutch W with pulley V or V′. In elevating or lowering the article on hook K of the carriage H, the latter is at the outer

part of the bars *b b*, and in elevating articles, when the latter are fully raised, the carriage, when necessary, may be drawn inward on the bars *b b* by turning the shaft L, and the elevated article lowered.

By turning the shaft A′, the crane may be moved to the right or left with the greatest facility.

In consequence of having one end of the chains E E attached to the lever F, any difference in the tension of the two chains will be compensated for.

This crane may be operated with the greatest facility, it is very compact, may be worked by steam or horse-power, and constructed at a reasonable cost.

I claim as new, and desire to secure by Letters Patent—

1. The screw B, with the nut *e′* and pulleys D D attached, in connection with the chains E E and carriage H, all arranged and applied to the crane, to operate in the manner substantially as and for the purpose set forth.

2. The lever F, in combination with the chains E E, for the purpose of compensating for any inequality of tension between the two chains, as herein set forth and shown.

3. The spirally-grooved pulley M on the shaft L, rope or chain Q, and the shaft L, operated by the screw-gear, all arranged for moving the carriage H on the bars *b b*, substantially as set forth.

4. The bevel-wheel *h* on the screw B, and pinion *e′* on shaft A′, arranged substantially as shown and described, for turning or adjusting the crane.

W. F. DURFEE.

Witnesses:

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