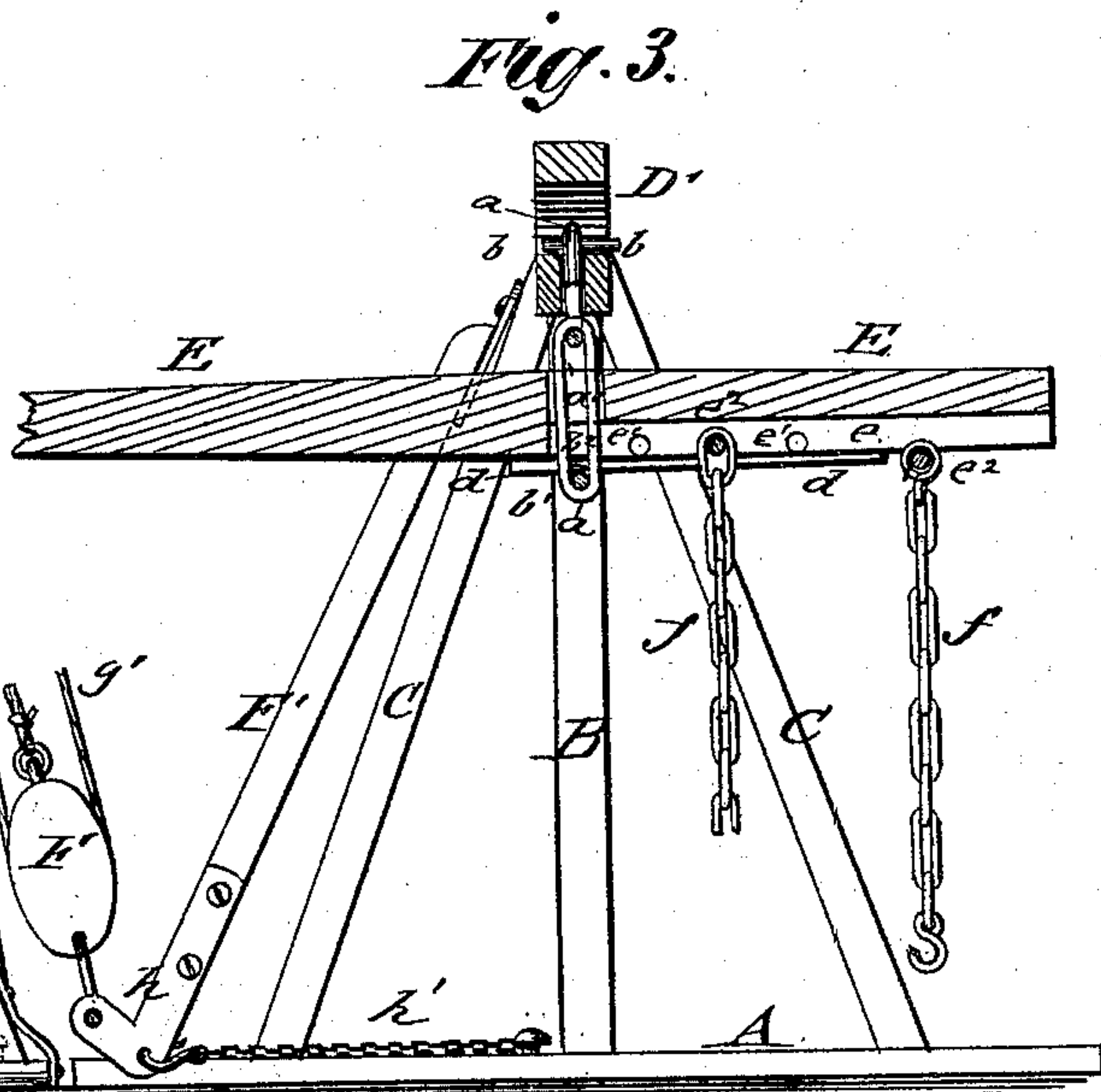
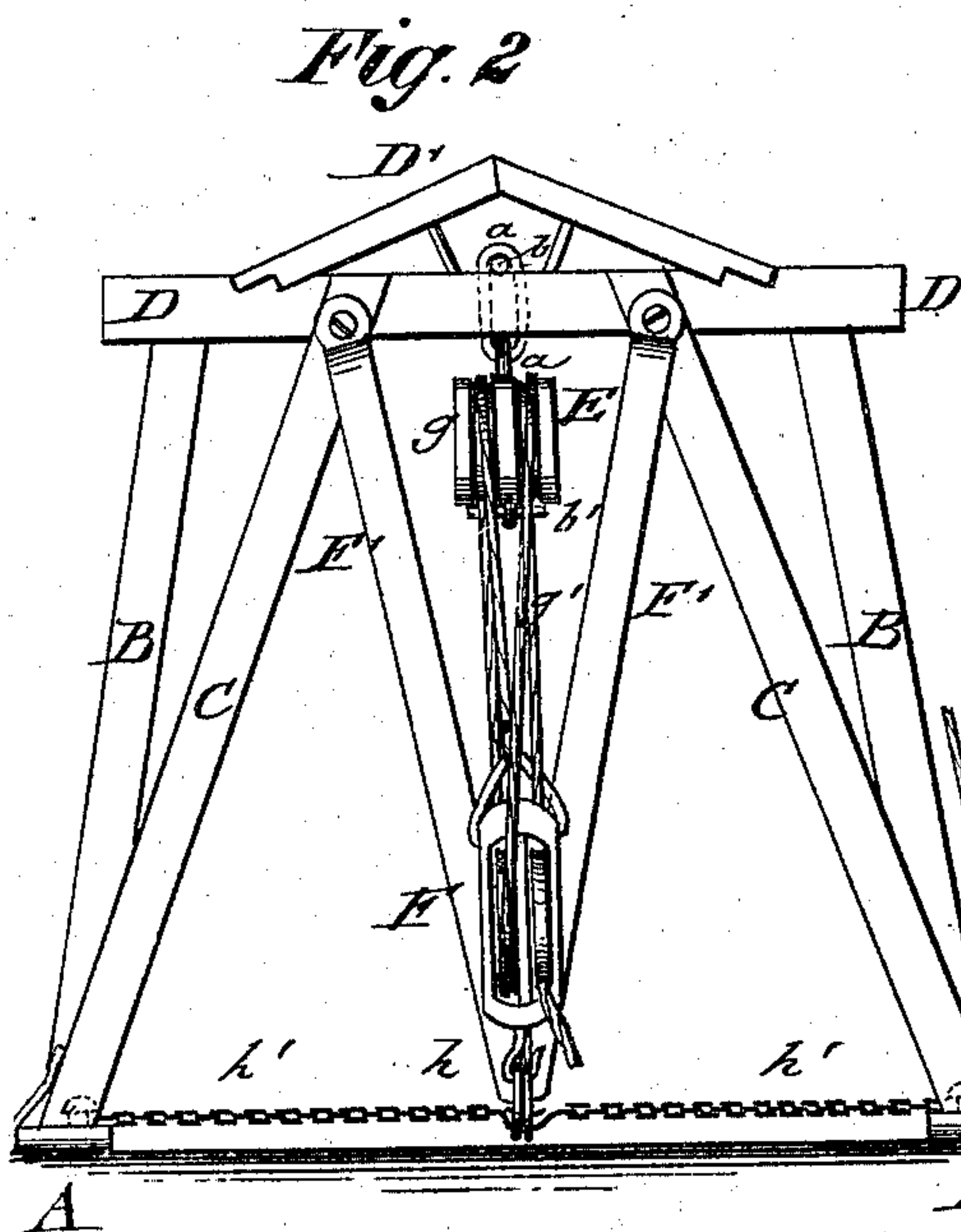
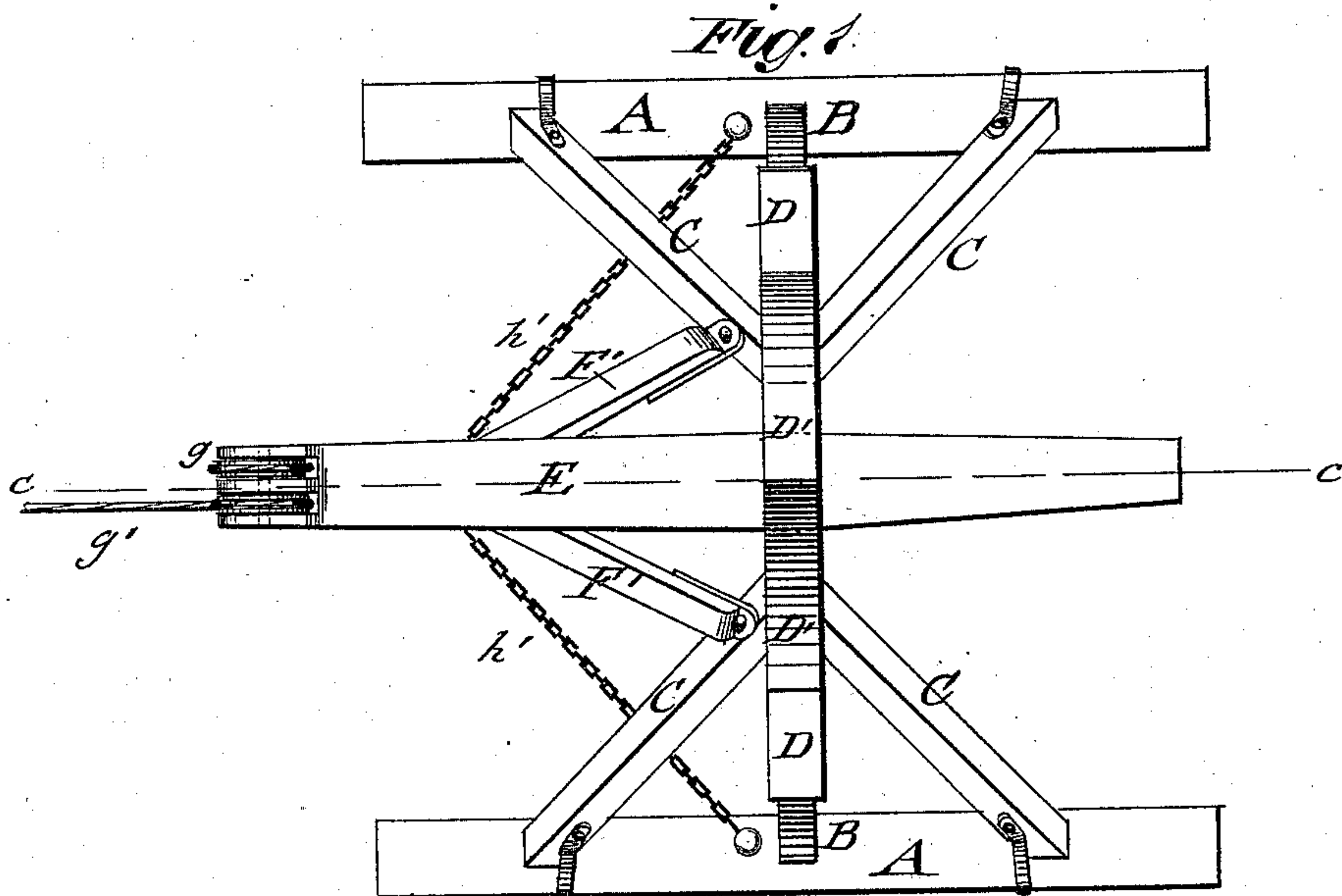


J. A. HART & W. A. GROVE.

STUMP-EXTRACTOR.

No. 171,379.

Patented Dec. 21, 1875.



WITNESSES:

Alex. F. Roberts  
Alfred Lurcott.

INVENTORS.

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# UNITED STATES PATENT OFFICE.

JOHN A. HART AND WILLIAM A. GROVE, OF TIONESTA, PENNSYLVANIA.

## IMPROVEMENT IN STUMP-EXTRACTORS.

Specification forming part of Letters Patent No. 171,379, dated December 21, 1875; application filed November 13, 1875.

*To all whom it may concern:*

Be it known that we, JOHN A. HART and WILLIAM A. GROVE, of Tionesta, in the county of Forest and State of Pennsylvania, have invented a new and Improved Stump-Extractor, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a top view, Fig. 2 a front view, and Fig. 3 a vertical longitudinal section on the line *c c*, Fig. 1, of our improved stump-extractor.

Similar letters of reference indicate corresponding parts.

Our invention relates to a simple, strong, and effective stump and grub extractor; and it consists of a truss-beam, which is supported on side standards and braces, and carries centrally the longitudinal fulcrumed main lever. The rear end of main lever is connected by adjustable chains, according to the power required to lift the stump, while the front end is connected by pulleys and rope with a tackle-block, coupling pivoted V-brace pieces, stiffened by chains, to the bed-piece. By detaching the tackle-block, the V-pieces may be swung out of the way of stumps, in setting the extractor.

In the drawing, A represents the parallel bottom or bed pieces of the main lever-supporting frame; B, the uprights; and C, the inclined braces for supporting the lateral top beam D, that is stiffened by truss-pieces D', and a central connecting-bolt. This imparts to the beam such additional strength that the width of the side standards may be correspondingly increased, and thereby the extractor be made wide enough, even for the largest pine stumps. The main lever E is hung centrally, by links *a* and top cross-pin *b*, to the beam D, being arranged in longitudinal direction between the supporting side pieces, and fulcrumed to a cross-pin, *b*<sup>1</sup>, which rests in a groove, *b*<sup>2</sup>, of the bottom plates *d* of the beam. The connecting-link *a* passes through a vertical slot or recess, *a*', of the beam. The bottom plates *d* run along a central groove, *e*, of the rear part of the beam, and serve, in connection with a series of lateral holes, *e*<sup>1</sup>, and cross-pins *e*<sup>2</sup>, adjustable therein, to shift the chains *f* to any desired distance from the fulcrum of the main beam, according as a great-

er or lesser degree of force is required. The chains *f* are arranged with a hitch and take-up near the ground, which admits the ready attaching of the chain to the stump and does away with the lifting of the chain, as required in other extractor constructions. The front end of the main beam E is provided with pulleys *g* and connected by a rope, *g*', running over the same, with a tackle-block, F, that is attached to the strong shoe-pieces *h*, of V-brace pieces F', which are coupled together by the tackle-block hook and pivoted at their upper ends to the truss-beam or side braces, so as to be capable of being swung to the sides of the supporting-frame on the detaching of the tackle-block, and allow, thereby, the setting into position of the extractor, for clearing stumps and other obstructions. The shoe-pieces *h* of the V-braces F' are furthermore connected to the bottom pieces A by strong stiffening-chains *h*', that impart the required rigidity to the V-pieces, on being coupled by the tackle-block, so as to resist the strain of the horses applied to rope *g*', and raise, by the operation of the fulcrumed main lever, the stump from the ground.

Considerable power may thus be exercised by an extractor of comparatively simple and cheap construction, and the stumps and grubs removed with great facility and rapidity.

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

1. The combination of lever E, having slot *a*', the beam-connection, having link *a* passed through it, cross-pin *b*<sup>1</sup>, and the cross-grooved plates *d d*, as and for the purpose set forth.
2. The combination of the pivoted V-braces, having shoes at their lower ends, with the frame-connecting stiffening-chains, and the coupling tackle-block, for connecting and disconnecting the braces as required, substantially as shown and described.
3. The combination of plates *d d*, detachable cross-pin *e*<sup>2</sup>, and chain *f*, with a lifting-lever having the cross-holes *e*<sup>1</sup>, as and for the purpose specified.

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Witnesses:

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