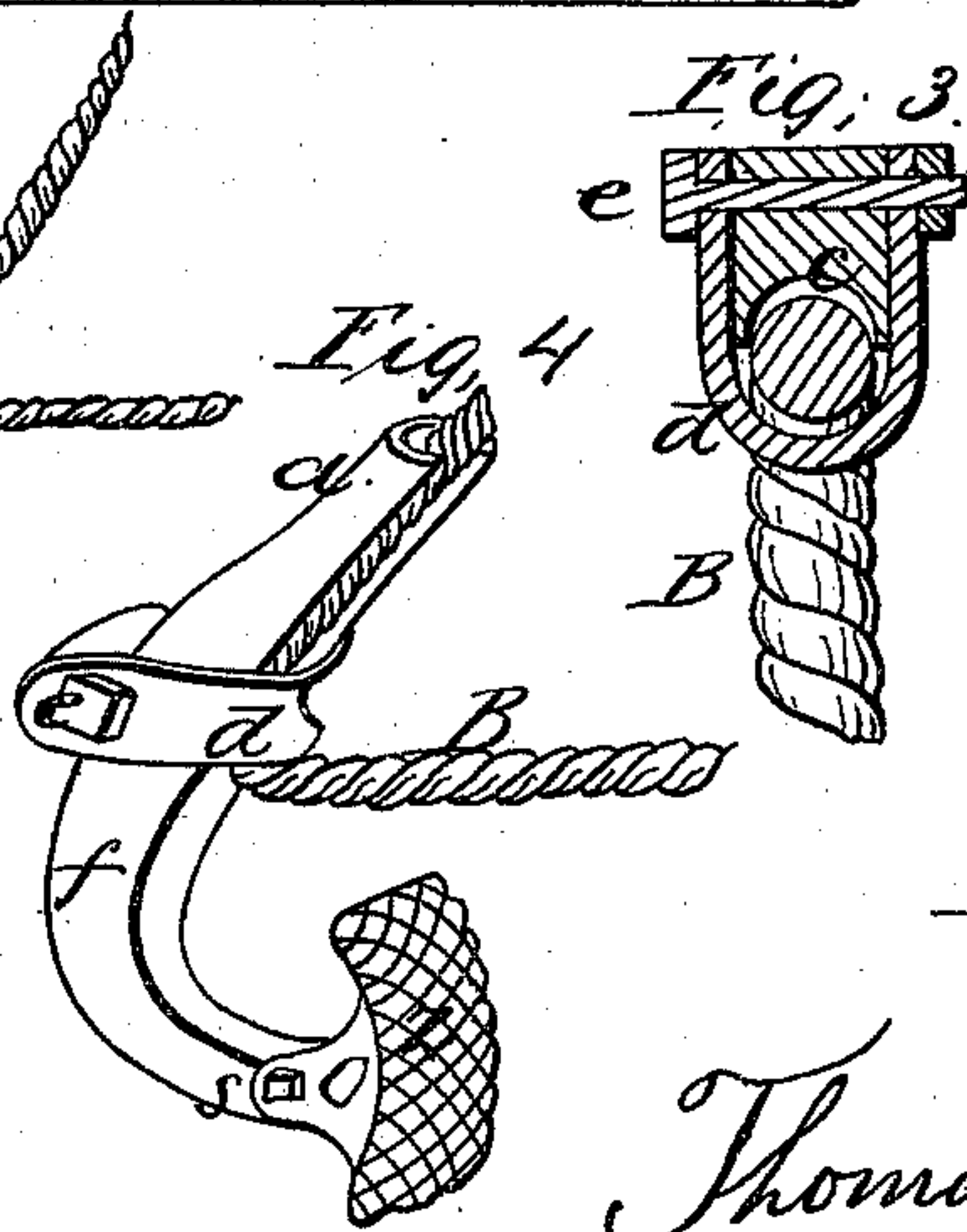
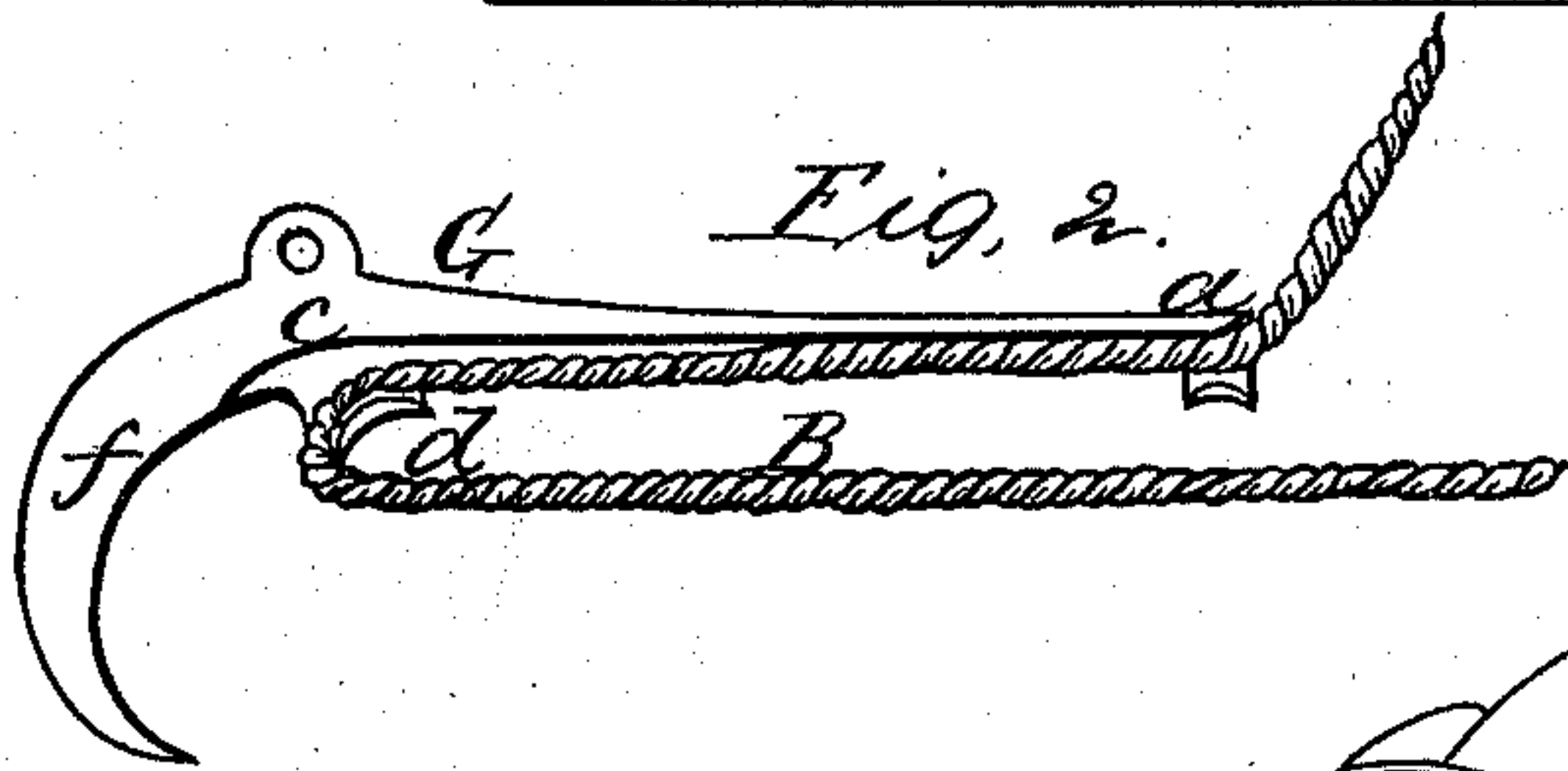
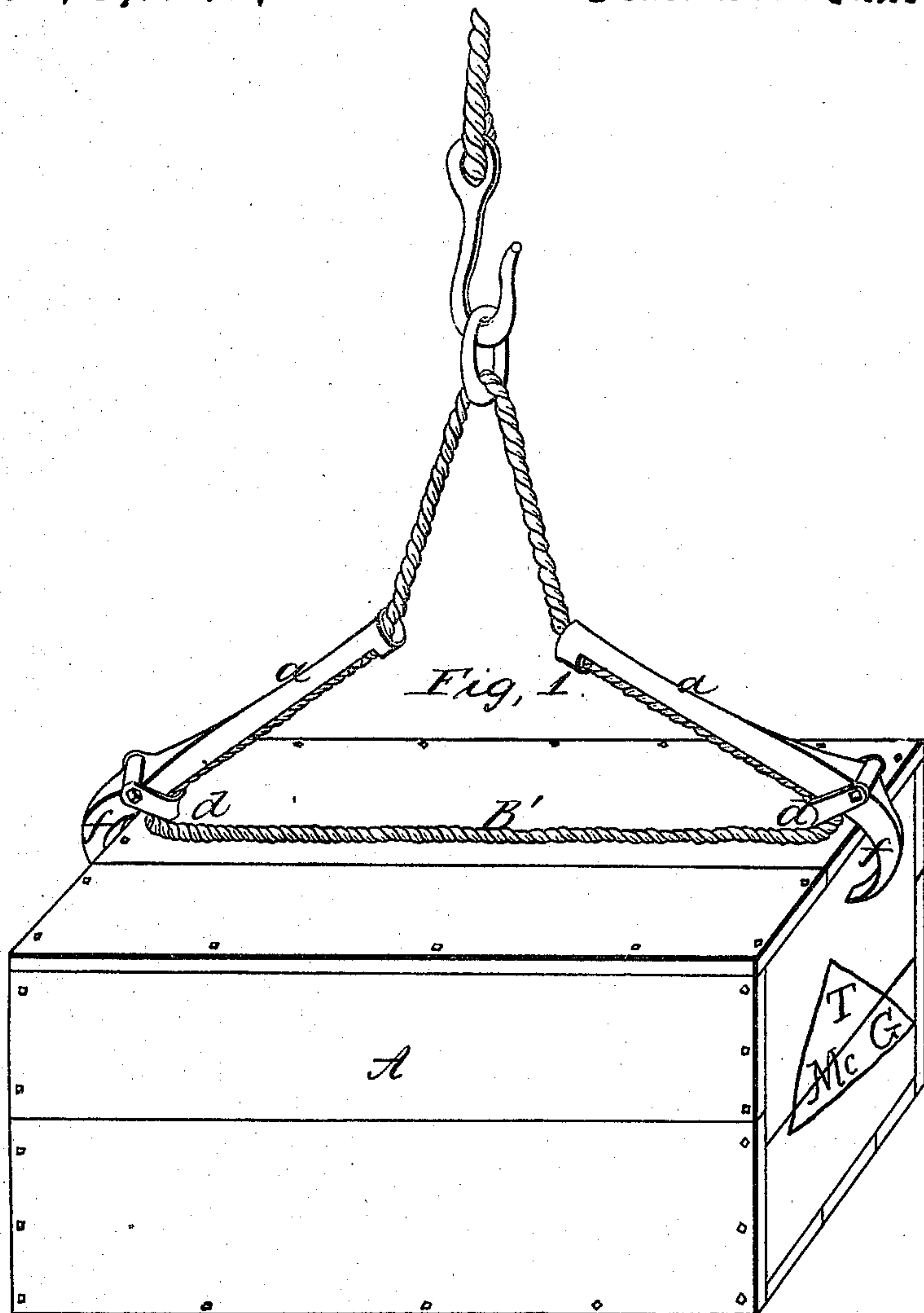


*T. Mc Grath,*

*Hoisting Graphle.*

*No. 87,349.*

*Patented Mar. 2. 1869.*



*Witnesses,*  
*Michael P. Byrne*  
*Henry P. Nugent*

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# United States Patent Office.

THOMAS McGRATH, OF ALBANY, NEW YORK.

Letters Patent No. 87,349, dated March 2, 1869.

## IMPROVEMENT IN HOISTING-GRAPPLES.

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, THOMAS McGRATH, of the city and county of Albany, State of New York, have invented a new and improved "Mode of Constructing Hoisting-Grapples;" and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, and the letters of reference marked thereon, in which—

Figure 1 represents a perspective view of my invention, in the operation of hoisting.

Figure 2 is a longitudinal cross-section of a grapple.

Figure 3 is a cross-section of grapple at clevis.

Figure 4 is a perspective view of grapple furnished with a grasping-point for bales, being only one modification of the form of such point for grasping.

The nature of my invention consists in making the hoisting-sling, consisting of a chain or rope, act as a lever and a fulcrum, in and at certain parts and points of the said rope or chain sling. This I do by constructing the long arm of the grapple-irons with concave recesses, made in their under sides, which recesses are to receive, and preserve from slipping, the rope or chain used.

At the termination of the said recess of each iron, I provide a clevis, or friction-wheel, properly fixed. The said clevis may be U-shaped, or a suitable ring may be provided, and in case either a clevis, ring, or friction-roller is used, it is placed so that the sling-rope or chain will pass through or over it after leaving the concave recess.

The said clevis, or its equivalents, is secured to the irons in such a manner as to allow a hinge-like movement to the said clevis, that it may adjust itself to suit any desired angle at which the grapple may be set.

The lower end of the grapple-iron is furnished with any form of point or hook, for an impinging-face suitable to be applied to any box, bale, cask, and the like, to be hoisted.

These grapples work in pairs, and when a pair is slung with a rope or chain passed through their clevises, or their equivalents, the points where the rope or chain impinges the said clevis, act as a fulcrum, while that portion of the rope or chain setting in the concave recess, and stiffened thereby, acts as the long end of a lever.

When power is applied to the sling, to hoist or draw, as the case may be, the said rope or chain in the recesses presses up against the long end of the grapple-irons, and causes the hook-end to impinge harder, and hold firmer in the substance they are to grasp.

The present mode of slinging grapple-irons from their upper ends, does not insure, in many cases, proper security against accident in hoisting heavy articles, and has too often resulted in loss of life.

By my mode, the heavier the article to be raised, the

more firm and severe will be the pressure or bite of the grapple on the article so raised or drawn, and accident can only result from breakage of some part of the hoisting-apparatus.

To enable others skilled in the art to make and use my invention, I will proceed to describe it in reference to the drawings, and their letters of reference, the same letters indicating like parts.

A, fig. 1, represents a box being hoisted with the grapple G, constructed and slung after my mode.

The said grapple-iron G is constructed with a long arm, *a*, furnished with concave recess *c*, figs. 2, 3, and 4, the said recess running down in the under side of the said long arm, to the point where the lifting or grasping-hook *f* commences.

A little above where the recess *c* terminates, is hung a clevis, *d*, connected to the back of the iron by a suitable bolt or rivet, *e*.

I prefer to use the U-shaped clevis, although a ring, attached by a staple or a friction-roller, properly held, would, answer as an equivalent substitute for the same purpose.

The impinging-point of the hook *f* may be made in any suitable form, as may be best adapted to the material to be operated on.

For boxes, barrels, casks, and the like, I would prefer a blunt chisel-edge point; for bales to be handled without injury to their covers, I would prefer a roughened convex impinging-surface, as Z, fig. 4; for stone, timber, and the like, I would use a fish-tail point; while for hay, straw, and similar substance, I would use tine-points, similar to a fork.

These various forms of grasping or holding-points, one of which is Z, fig. 4, may be permanently or temporarily attached to the hook, as shown in fig. 4. If temporarily attached, I would use two set-screws, *s*, which would pass through the side-lugs or ears *o* of such temporary attached grasping-points Z.

In hoisting a box, bale, or anything of considerable width, the grapples, which operate in pairs, are extended out in position, as shown in fig. 2, so as to embrace, by their hooks *f*, the substance to be moved, and when the rope, or its equivalent B, is pulled on, the long arm *a* will be thrown up, as in fig. 1, and the grasping-end *f* will be pressed into or against the surface of the box or substance it impinges. The rope or chain B, all the while impinging the clevis *d*, is, at that point, the fulcrum, while that part of the rope sitting in the recess *c*, with the long end *a* of the grapple, acts as a lever, to throw the hook-end *f* against the resisting surface it impinges.

To move stone, timber, blocks of iron, and the like, I would cross the arms *a* of a pair of grapples, and in other respects would operate the other parts as has been described.

This crossing of the arms *a* would give them an X-



shape position, and would contract the space between the hooks *f*, and insure a firm grasp of a narrow-formed substance.

Having described my invention,

What I claim, and desire to secure by Letters Patent, is—

A grapple-iron constructed with a long arm, *a*, fur-

nished with recess *c* and the grasping-end *f*, in combination with the clevis *d* or chain B, as and for the purpose set forth, as specified.

THOMAS McGRATH.

Witnesses:

MICHEAL P. TYNER,  
HENRY P. NUGENT.