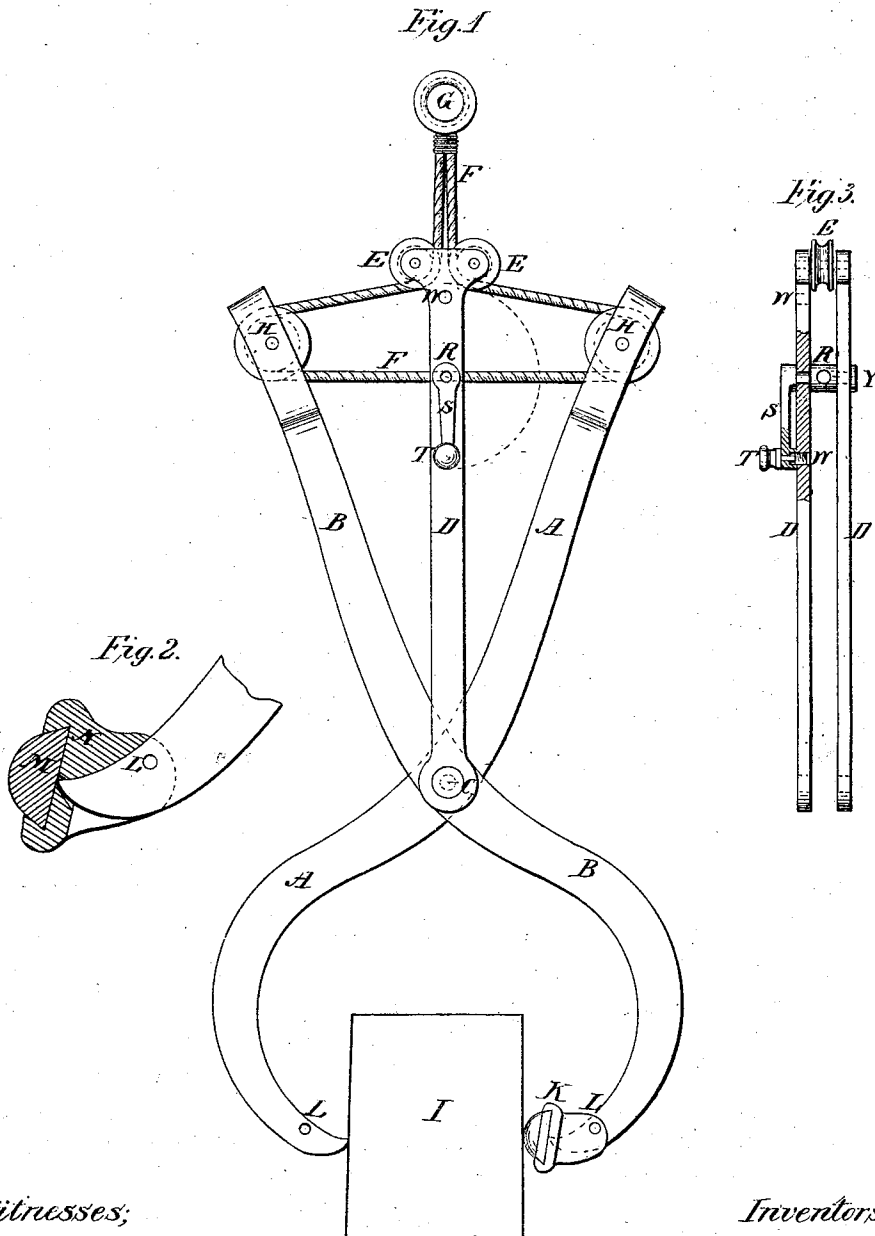


W. E. MERRILL & G. S. KINSEY.
Hoisting-Grapples.

No. 151,792.

Patented June 9, 1874.



Witnesses;

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UNITED STATES PATENT OFFICE.

WILLIAM E. MERRILL AND GIDEON S. KINSEY, OF CINCINNATI, OHIO.

IMPROVEMENT IN HOISTING-GRAPPLES.

Specification forming part of Letters Patent No. **151,792**, dated June 9, 1874; application filed March 7, 1874.

To all whom it may concern:

Be it known that we, WILLIAM E. MERRILL and GIDEON S. KINSEY, both of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain Improvements in Hoisting-Grapples, of which the following is a specification:

The first part of our invention relates to the means adopted for obtaining in all positions of the grapple the maximum moment of the power, so that the maximum pressure may be developed at the opposite end of the grapple, and the maximum friction may thus be generated between the hook or shoe and the object to be lifted. As the machine is designed to lift bodies of various sizes by friction alone, it is of great importance that this friction should, at all times, be the greatest that can be generated by the action of the weight on the arms of the grapple, and that this friction should be independent of the thickness of the body to be lifted. This object is attained by the use of two sheaves in a T-head link resting on the pin, which is the axis of the grapple. The second part of our invention consists in the use of two sheaves in the upper ends of the arms, in connection with an endless rope or chain, which passes around both of these sheaves and the two sheaves in the T-head link supported on the axis. The third part of our invention consists in the arrangement devised for taking up the slack of the hoisting-chain before lifting the weight, so as to reduce to the minimum the height of the mast of the hoisting-derrick. The middle of the chain passes through a hole in a small drum or shaft, which is held between the two T-head links, and the chain is wound up on this drum, as much as may be necessary, by means of a crank fastened on one end. After the slack of the chain or rope has been taken up the crank is held in place by a screw-thread on the under side of its handle, which enters a corresponding screw-hole in the T-head link, either above or below the axis of the drum. The fourth part of our invention consists in the detachable shoe, which is fastened at will to one or both of the grappling-points, so that the machine can lift without injury stones or other materials having one or more smooth

faces, and can also be used without the shoe to lift heavy bodies whose surfaces are rough.

Figure 1 is a side elevation of a machine embodying the invention. Fig. 2 is a vertical section on a larger scale of the detachable shoe. Fig. 3 is a side elevation of the double T-head link, showing the handle of the crank in section.

In Fig. 1, A and B are the two arms of the grapple, which should be proportioned in accordance with the weight which the machine is designed to lift. C is the cylindrical pin, which is the axis of the grapple. D is the link, in the shape of a T, whose lower end rests on the axis, and whose upper end supports the two deflecting-sheaves E E. F is the endless rope or chain, and G is the ring at the upper end of this rope or chain, to which the hook of the hoisting-purchase is attached. H H are the sheaves in the upper ends of the upper arms of the grapple, around which the rope or chain passes. I represents a block of stone or other weight in the jaws of the machine. K is the detachable shoe, and L L are the holes through which the pin passes that is used to attach a shoe to either or both jaws. R represents the position of the drum between the two T-head links, on which the slack of the hoisting-chain is wound. S is the crank, and T is the knob or handle, to whose under side the screw-thread is fastened. W represents the upper screw-hole for holding the crank.

In Fig. 2, M represents the hemispherical block of wood, cast-iron, or other suitable material, which presses against the object to be lifted, and N is the shoe proper, which may be made of any suitable metal, provided with a socket, into which the lower end of the jaw fits closely, so as to prevent any lateral motion. The pin which secures the shoe to the jaw is designed to prevent the former from dropping off when not in contact with a body to be lifted. The hemispherical friction-block is held securely in a dovetailed receptacle in the face of the shoe, and can be taken out and replaced whenever necessary.

In Fig. 3, D D represent the two T-head links in side elevation. E is one of the sheaves in the top of the T-head links. R is the drum

on which the rope or chain is wound. Y is the hole through which it passes. S is the crank, and T is the handle. The screw-thread on the under side of the handle is shown in section, as also one of the screw-holes W, by which the handle is fastened.

We make no claim for the sheaves in the upper end of the arms, as we are aware that they are not novel; but

We claim as our invention—

1. In combination with the arms A and B, the link D, provided with sheaves H and E, as and for the purpose set forth.

2. The detachable shoe N, in combination with the hemispherical friction-block M and tooth L, as and for the purpose set forth.

3. In combination with the link D, the drum R and crank S, for taking up the slack in the hoisting-chain F.

4. The combination of the T-head link D, the detachable shoe N, the friction-block M, the drum R, and the crank S in a hoisting-grapple, as and for the purpose herein set forth.

WILLIAM E. MERRILL.
GIDEON S. KINSEY.

Witnesses:

WM. WESTON,
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