WILLIAM M. HOWLAND & GEORGE L. HOWLAND.

Improvement in Derricks.

No. 119,612. Patented Oct. 3, 1871.

Fig: 6

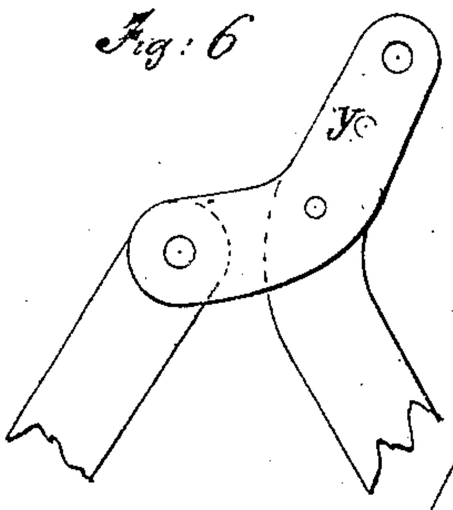


Fig: 2.

Fig: 5

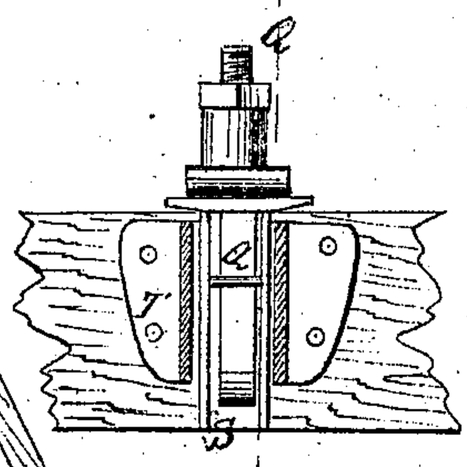


Fig: 4

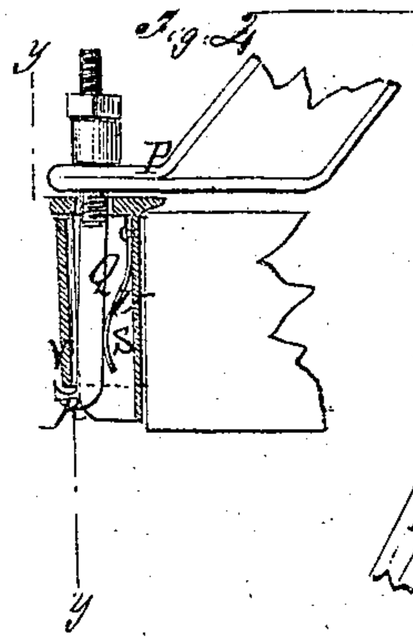
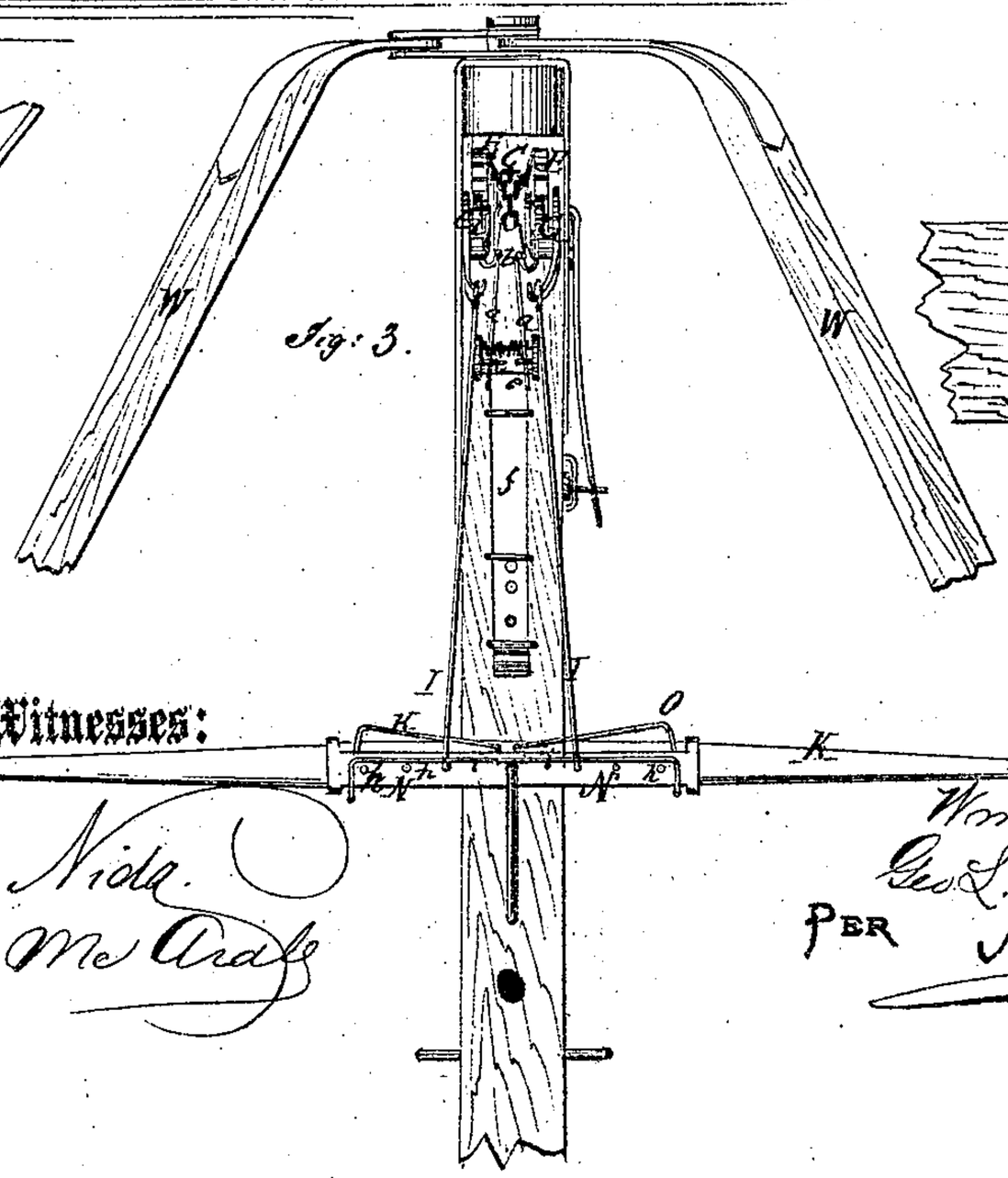


Fig: 3.



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UNITED STATES PATENT OFFICE.

WILLIAM M. HOWLAND AND GEORGE L. HOWLAND, OF TOPSHAM, MAINE.

IMPROVEMENT IN DERRICKS.

Specification forming part of Letters Patent No. 119,612, dated October 3, 1871.

To all whom it may concern:

Be it known that we, WILLIAM M. HOWLAND and GEORGE L. HOWLAND, of Topsham, in the county of Sagadahoc and State of Maine, have invented a new and Improved Derrick; and we 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 drawing forming part of this specification.

Our invention relates to improvements in derricks; and it consists in a combination, with a chain-wheel which engages the links of the chain so as to draw it without winding around said wheel, of a chain-keeper or guide adapted to prevent the chain from twisting at the under side of the chain when returning to the wheel in letting down the chain after being raised up. The invention also consists in novel arrangements of apparatus for connecting the shores or braces of the derrick to flat railroad cars. It also consists in a novel arrangement of reversing-gear for letting out the chain after raising a load; and it also consists in a novel arrangement of a pair of shore-braces and a connecting-bar, whereby they are connected together and to the derrick, and may be disconnected and folded together for transportation.

Figure 1 is a side elevation of our improved derrick mounted on a flat car. Fig. 2 is a section through the chain-wheel and keeper or guide. Fig. 3 is a front elevation of the derrick. Fig. 4 is a section of the devices for securing the shores or braces to the car, the section being taken on the line *x x* of Fig. 5. Fig. 5 is a section of the same devices taken on the line *y y* of Fig. 4. Fig. 6 is a plan of the upper end of a pair of shores or braces and a plate or bar by which they are connected together and to the top of the derrick.

Similar letters of reference indicate corresponding parts.

A and B are the post and arm, such as are ordinarily used for derricks; and C is the hoisting-chain. This chain is worked by a chain-wheel, D, between two ratchet-wheels, E, pawl-levers F, pawls G, connecting-rods I, and the pawl-lever K, all of which are similar in construction and arrangement to the apparatus described in the patent granted to us the 12th day of October, 1869, No. 95,691. We now propose to provide a chain-keeper or guide, L, under the chain-wheel, with the chain passing through it, to have the links guided so that it will not be twisted when it passes onto the whee in letting it back after raising a load. The said keeper or guide is provided with four grooves in the wall of the hole, suited to receive the links of the chain as it is being raised from the space below, and turn them, if twisted, to the right position to be presented to the wheel properly for the points M to receive each alternate link between them. Without this guide the chain is liable to come up to the wheel so twisted that the links will not engage properly with the wheel. In this apparatus the chain is let out by the reversing of the action of the pawls G on the ratchet-wheels—that is to say, by causing the pawls to lift from said ratchet-wheels when the levers F are lifted up and to drop into the notches when the said levers are in the lowermost position; but the arrangement of devices for effecting the said action is quite different from that in the aforesaid patent, the said arrangement being as follows: The pawls have long rods *a* connected to them near the lower or free ends by the cranked or bent arms *b*, which are rigidly connected to them. Said rods *a* hang downward obliquely from the front of the post A and pass through an eye, *d*, in the outer end of a spring, *e*, one for each, projecting outward from a plate, *f*, arranged to slide up and down on the post, the ends of the said rods being bent at *g* to engage the springs and be pulled downward or prevented from rising by them, when the levers F and the pawls arrive at the uppermost part of their movement, when the reverse motion of the ratchet-wheels is to be effected to let out the chain, the plate *f* being at this time down to its lowest position on the post to cause the rods *a* to pull the pawls out at this time; but they let said pawls drop into the notches when the levers F are in the lowest position, so that by the same movements of the levers F that are employed for turning the ratchet-wheels forward, they are allowed to turn backward by the pulling of the chain upon them or the chain-wheel. When the wheels are to be worked forward the plate *f* is shifted upward, so that the springs and rods *a* do not act upon said pawls at this time. Two levers, K, are employed for working the pawls, being detachably connected to the metal sockets N for readily shifting to use long or short levers, as demanded by the nature of the case. They are secured in the said sockets by a spring, O, suitably arranged on each

The rods I which are to be shifted from one hole, *b*, to another, according to the weight to be lifted, are secured in said holes by the rod *i*, having the springs *k* arranged as shown, to hold the said rods up in front of rods I, but admit of its being readily pushed down out of the way while shifting said rods. For securing the shores to the side of the platform of the car I provide them with a foot-piece, P, with a hole to receive a vertical bolt, Q, with a nut and washer above it, the said bolt having a hook-head, R, and being placed in a metal case, S, open at the front sides, as shown in Fig. 5, and capable of being introduced in the metal stake-holding socket T of the car, the said case being provided with a spring, U, which throws the hook-headed bolt outward as soon as it passes below the lower edge of the front wall V of the socket to engage it, so that the foot-piece may be screwed down firmly upon the top of the car-platform. These front pieces may also be secured to the overhanging edges of the platform by having the hook-headed bolts adjusted so that the heads engage the under side of the projecting bottom. The said shores W are to be detachably connected to the top of the post A by a pin, X, so as to be readily detached when required; but to save the labor of making more than one connection thereat, (two shores being necessary,) we propose to pivot the two shores to a curved plate, Y, adapted to be connected to the post A by the pin X, as clearly shown, the said curved plate and the connection of the shores thereto being so that the said shores may be folded together side by side, when not connected to the post, to facilitate the handling and storing of them.

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

1. The combination of the keeper or guide L with the chain and chain-wheel, substantially as specified.

2. The arrangement, with the pawls G and pawl-levers F, of the rods *a*, springs *e*, and adjustable plate *f*, substantially as specified.

3. The foot-piece P, hook-headed bolt Q, case S, and spring T, combined with the shore and socketed stake-holder of a car, all substantially as specified.

4. The combination, with levers K and rods I, of the rod *i* and springs *k*, substantially as specified.

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