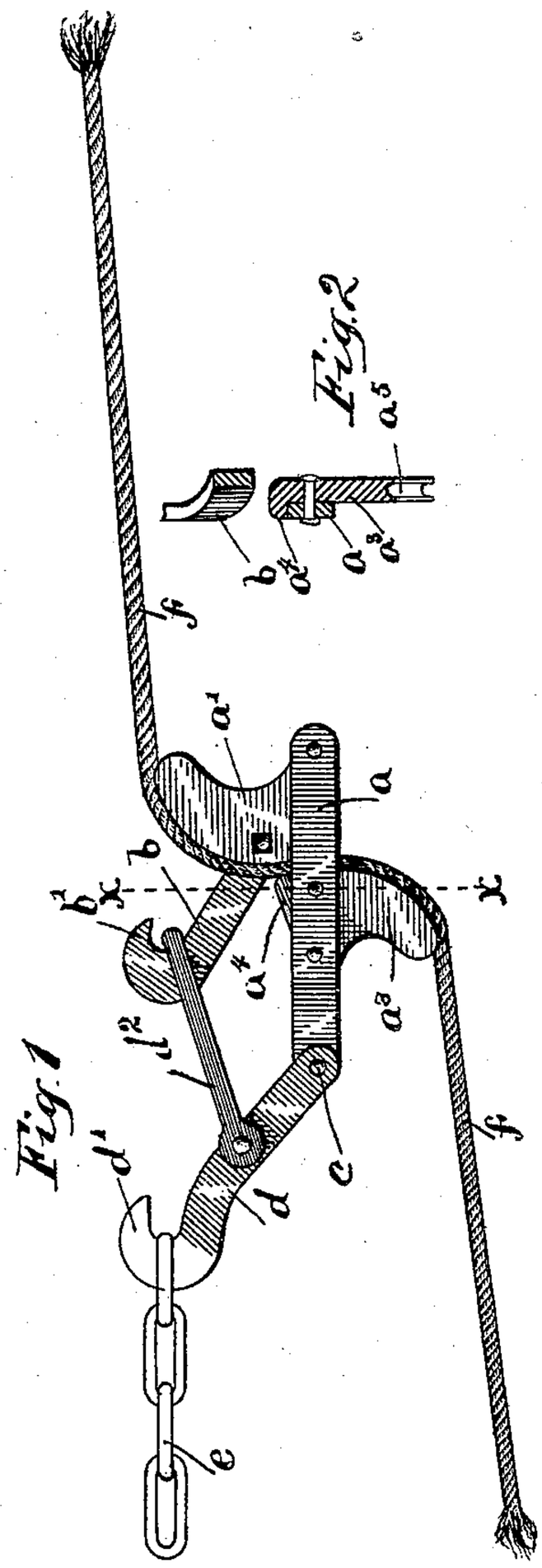
(No Model.)

# H. L. BENNETT & R. B. ADAMS.

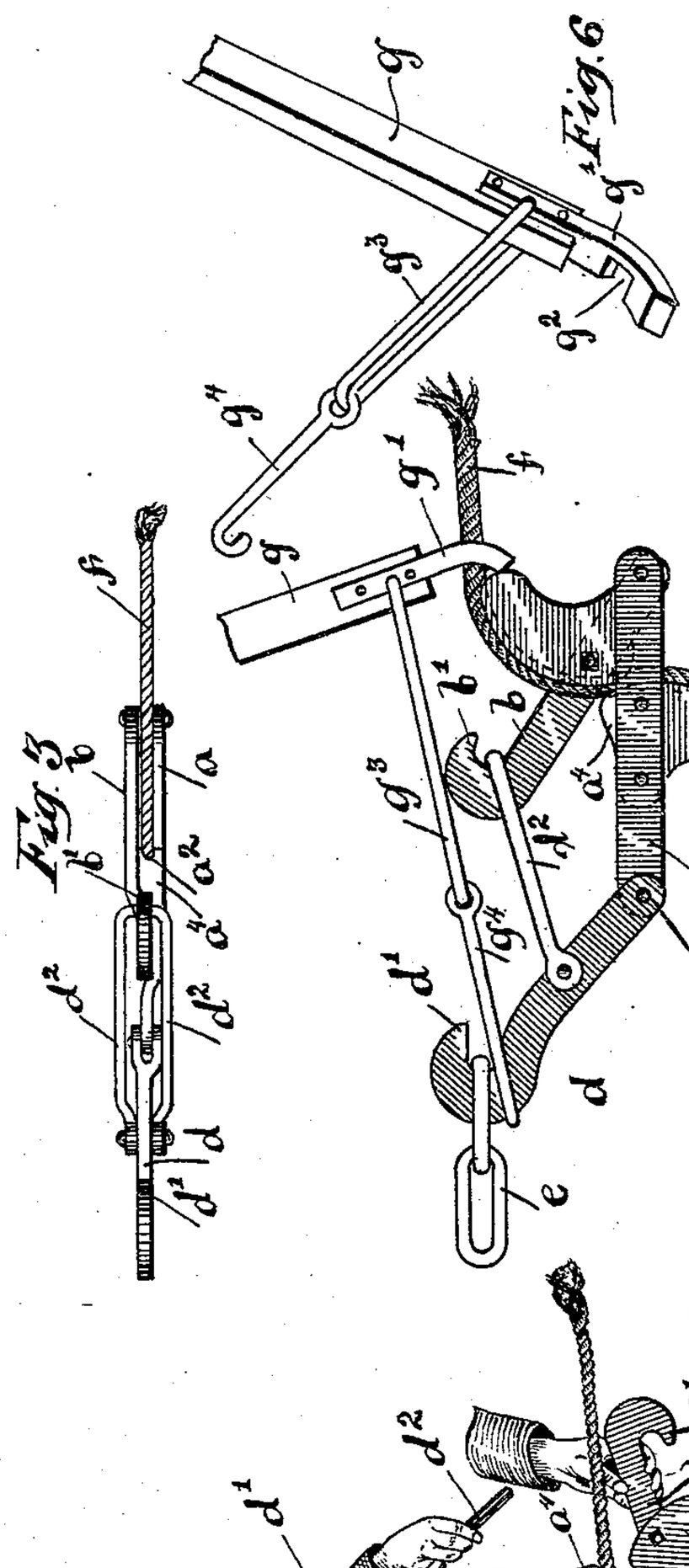
## ROPE CLUTCH.

No. 478,839. Patented July 12, 1892.













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# UNITED STATES PATENT OFFICE.

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## ROPE-CLUTCH.

SPECIFICATION forming part of Letters Patent No. 478,839, dated July 12, 1892.

Application filed April 2, 1892. Serial No. 427,454. (No model.)

*To all whom it may concern:*

Be it known that we, HARWELL L. BENNETT and RUSSELL B. ADAMS, citizens of the United States, residing at Westerville, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Rope-Clutches, of which the following is a specification.

Our invention relates to that class of rope-clutches which are particularly designed to form a lever connection between a power-windlass rope and a chain for pulling stumps or moving heavy bodies.

The objects of our invention are to provide a simple and reliable device of this class of great strength and durability and of such construction as to admit of a rope being firmly grasped and held thereby, to so construct said device as to provide for an increase in the binding action of the clutch in proportion to the increase of strain on the rope, to admit of the connection of the clutch with a loose or tight rope, to so construct our device as to prevent injury to the fiber of the rope, to so construct our device as to admit of one or more objects being pulled upon by the same windlass-rope, and to produce other improvements, which may be more specifically pointed out hereinafter. These objects we accomplish in the manner illustrated in the accompanying drawings, in which—

Figure 1 is a view in elevation of our improved clutch, showing a portion of a winding rope and power-chain in connection therewith. Fig. 2 is a vertical section on line $x\,x$ of Fig. 1. Fig. 3 is a plan view. Fig. 4 is a view in elevation showing the parts in position for connecting with the rope. Fig. 5 is a view in elevation showing in connection therewith means for releasing the rope from engagement with the clutch, and Fig. 6 is a detail view in perspective of the releasing device employed.

Similar letters refer to similar parts throughout the several views.

$a$ represents the main or jaw-supporting arm of our improved clutch. Pivotally connected with the inner side of the arm $a$, adjoining what we shall term the "forward" end thereof, is an outwardly-extending tongue or jaw $a'$, which curves forwardly, its rear edge or side having formed therein a groove $a^2$, which substantially describes the arc of a circle. Secured to the inner side of the arm $a$, and slightly in rear of the inner end or heel of the jaw $a'$, is the inner end or heel of a correspondingly-shaped jaw $a^3$, which projects and curves in a direction opposite that of the jaw $a'$. The heel of the jaw $a^3$ projects, as shown, slightly beyond the arm $a$, thus slightly overlapping the heel of the jaw $a'$, said projecting portion being thickened, as shown at $a^4$, to form a shoulder, which abuts against the edge of the arm $a$. The forward edge of the jaw $a^3$ is provided with a groove $a^5$, which extends throughout the length thereof.

As indicated in dotted lines in Fig. 5 of the drawings, those portions of the grooves $a^2$ and $a^5$ which are in the oppositely-located portions of the jaw-heels run in straight lines instead of curved lines. To the outer side of the jaw $a'$ is secured the forward end of a rearwardly and outwardly inclined arm $b$, which terminates in a forwardly-turned hook $b'$. To the rear end of the arm $a$ is jointedly connected, as shown at $c$, an arm $d$, which terminates in a forwardly-turned hook $d'$. To the arm $d$, at or near the center of the length thereof, is pivotally connected one end of a link $d^2$, the outer end of which, as hereinafter described, is adapted to be engaged with the hook $b'$ of the arm $b$.

$e$ represents a power or pulling chain, one end of which is adapted, as shown, to be engaged by the hook $d'$. This chain $e$ is adapted to be connected at its otherwise free end with the object to be moved in any desired manner.

$f$ represents a windlass or winding rope, which extends from the clutch in an opposite direction from the chain $e$. This rope, as shown in the drawings, passes over and lies within the grooved edge of the jaw $a'$, from whence it passes about and lies within the groove of the jaw $a^3$, and extends rearwardly. In order to make this connection of the rope and clutch and clamp the same firmly between the jaws of the latter, we will assume that the clutch is in the position indicated in Fig. 4 of the drawings—*i. e.*, the link $d^2$ disengaged from the hook-arm $d'$ and the latter, together with the jaw $a'$, thrown forward.

The rope $f$ is then brought into position to be clamped by the jaws, as above described, the jaw $a'$ turned inwardly toward the jaw $a^3$, and the link $d^2$ engaged with the hook $b'$. The forward movement of the rope $f$, which may be imparted thereto by a suitable power-windlass or by other means, will result, as will readily be seen, in drawing the chain $e$ taut and placing the same under such tension as to draw the outer end of the arm $d$ outward, and through this movement of said arm $d$ produce a downward and rearward pressure of the arm $b$. This rearward pressure of the arm $b$ must result, as will readily be seen, in a clamping of the heel of the jaw $a'$ toward the jaw $a^3$ and in a consequent clamping of the rope $f$ between said jaws. It will thus be seen that the increase of strain on the rope $f$ must be followed by a corresponding increase in the clamping action of the jaws and that the greater the power exerted on the rope $f$ the stronger will be the locking action of the clutch. It is obvious that the rearwardly-extending portion of the rope $f$ may be anchored to some fixed body or that it may hang loose from the clutch without effecting the clamping action thereof. It is also evident that this rear end portion of the rope may, in addition to the chain $e$, be affixed to a stump or other object to be moved, thus admitting of more than one object being moved at the same time. The arcs of circles described by the grooved edges of the tongues $a'$ and $a^3$ may be varied according to the size of the rope employed, and other similar changes in forms may be produced without altering the principle of our invention.

In order to release the rope from the binding action of the clutch when the rope and chain are under strain, we employ the releasing device shown in Fig. 6 of the drawings. This releasing device consists, as shown, of a lever-arm $g$, which has an end extension in the form of a slightly-curved arm $g'$. This arm $g'$ is notched on one side, as indicated at $g^2$, said notch being of a size adapted to receive the rope $f$. To that end of the lever-arm $g$ which is provided with the extension $g'$ is fulcrumed one end of a link $g'$, the outer end of which is jointedly connected with a hook-arm $g^4$. In using this releasing device the lever $g$ is so placed that the outer end of its extension $g'$ abuts against the outer end of the tongue or jaw $a'$, while that portion of the rope which leads from the clutch to the windlass passes through the notch $g^2$. The hook-arm $g^4$ is then engaged with the outer end of the hook-arm $d$ of the clutch and the lever-handle $g$ is pressed forward, thus drawing the jaw $a'$ and the arm $d$ toward each other sufficiently to admit of the disengagement of the link $d^2$ from the hook $b'$. By this means an exceedingly simple and convenient device is provided for disengaging the link $d^2$ when the chain $e$ and rope $f$ are under tension.

It is obvious that the clutch herein shown and described is adapted to be engaged with either a wire rope or ropes of any ordinary construction or material.

Having now fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a rope-clutch, the combination, with the arm $a$, fixed and pivoted jaws carried thereby, and hook-arm $d$, jointedly connected therewith, of connections between said pivoted jaw and arm $d$, substantially as and for the purpose specified.

2. In a rope-clutch, the combination, with the arm $a$, the fixed and pivoted jaws arranged as described thereon, said jaws having curved edges, as described, an arm $d$, jointedly connected with the arm $a$, and connections between the arm $d$ and pivoted jaw, substantially as specified.

3. In a rope-clutch, the combination, with the arm $a$, fixed and pivoted jaws $a'$ $a^3$, arranged thereon, as described, said jaws having grooved edges shaped to form conjointly a substantially compound curve, substantially as specified.

4. In a rope-clutch, the combination of the arm $a$, a pivoted and a fixed jaw thereon, as described, an arm $b$, carried by said pivoted jaw at an angle therefrom, an arm $d$, jointedly connected with said arm $a$, and a link $d^2$, fulcrumed to said arm $d$ and adapted to engage with said arm $b$, substantially as specified.

5. In a rope-clutch of the character described, a releasing device consisting of a lever-arm $g$, a notched end portion $g^2$, and jointed link and rod $g^3$ $g^4$, said link fulcrumed to said lever-arm, substantially as and for the purpose specified.

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In presence of—
THOS. S. GATES,
C. C. SHEPHERD.