Jan. 22, 1946. V. THOMPSON 2,393,430

SLIDING HOISTING CLAMP

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Fig. 1

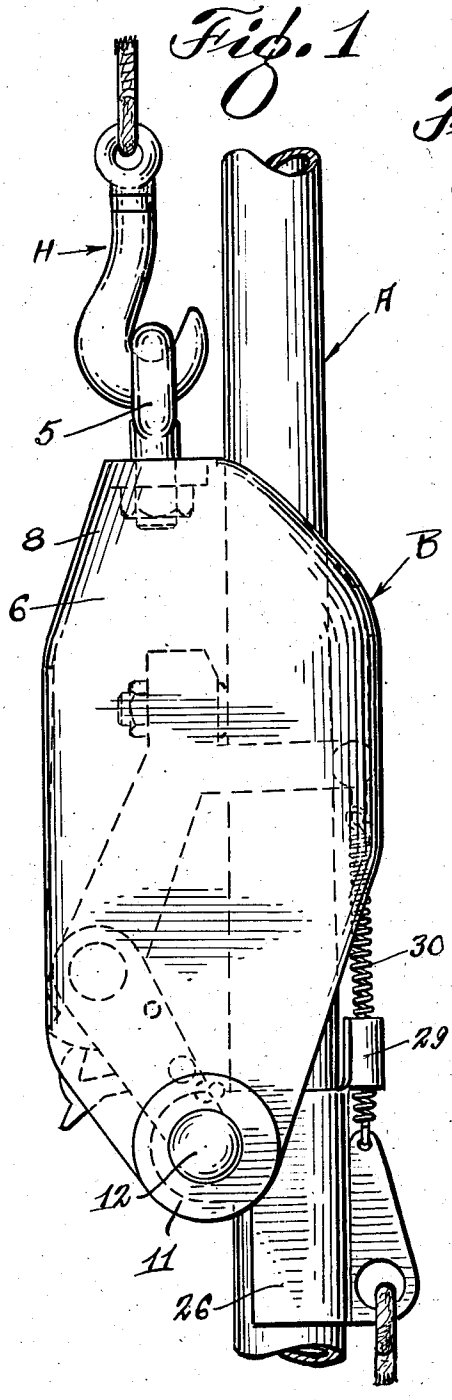

Fig. 2

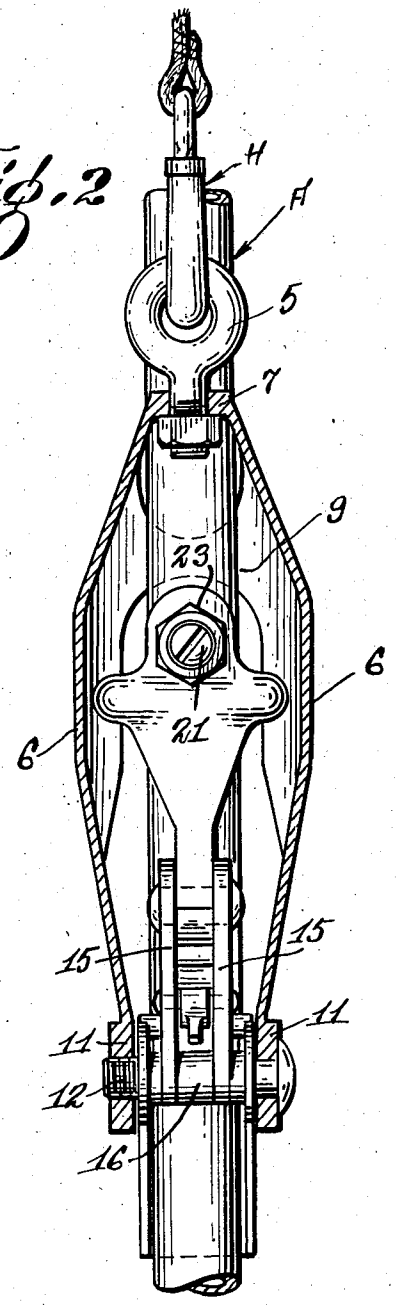

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Fig. 3

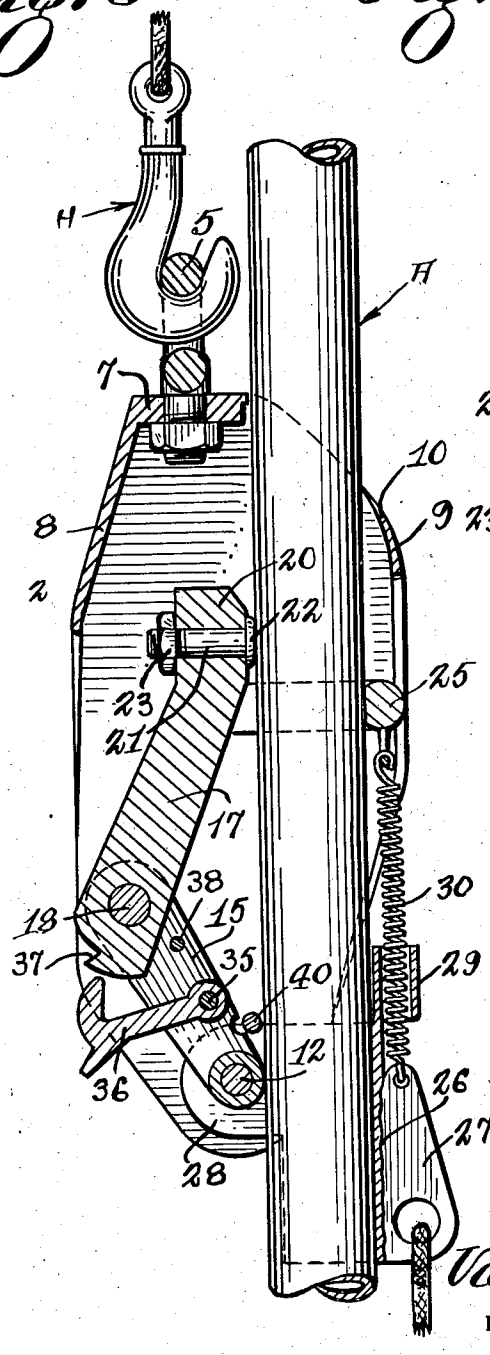
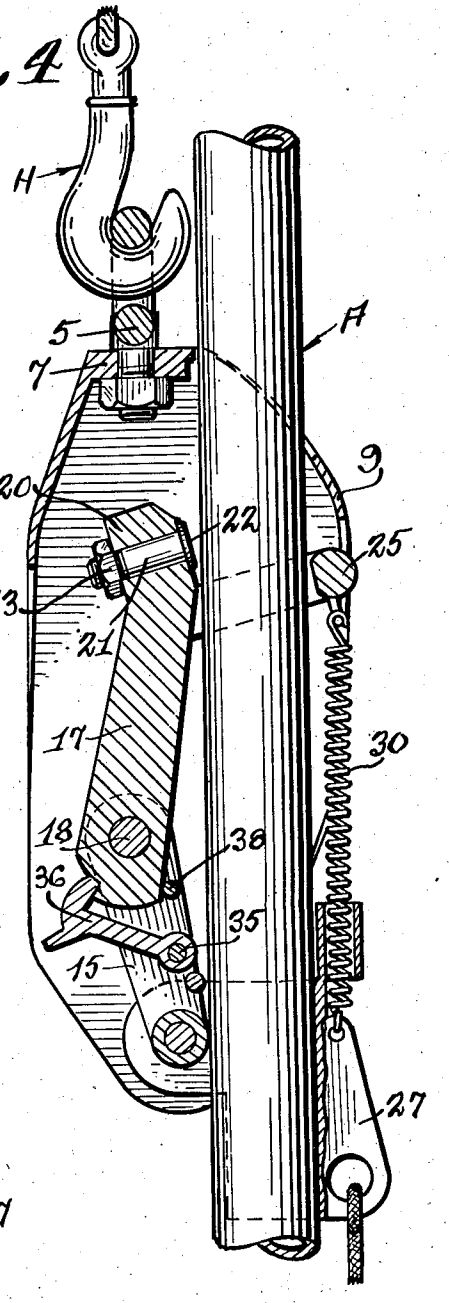


Fig. 4



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SLIDING HOISTING CLAMP

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4 Claims. (Cl. 294—92)

The present invention relates to clamps and, more particularly, clamps for hoisting or lifting smooth rod-like objects.

The main object of the invention resides in the provision of highly efficient clamping means for lifting pipes and the like.

Another object is the provision of such a clamp which is quickly operable, rugged and of simple character.

A further object relates to a clamp of the character described having clamping means devoid of teeth or other object-marking devices.

Still another object concerns a hoisting clamp instantly releasable and easily slidable on the object being lifted when no lifting effort is present.

A still further object contemplates a hoisting clamp which can be made at relatively low cost.

Other objects and advantages of the invention will become apparent, or be pointed out further, during the description to follow.

As an example, and for purposes of illustration only, a preferred embodiment of the invention is shown in the annexed drawings, wherein:

Figure 1 is a side elevational view of the clamp according to the invention,

Figure 2 is an elevational view of said clamp, seen from the rear and with a portion of the housing bail cut away,

Figure 3 is an elevational view similar to Figure 1, with a portion of the housing bail cut away to show the clamp in operative position, and

Figure 4 is a similar view but showing the clamp mechanism in inoperative locked position.

Referring to the drawings, wherein similar reference characters represent corresponding parts throughout, the letter A generally indicates an object being lifted such as a rod or the like, said object being, in the present instance, a tube for well-drilling purposes. As shown in Figure 1, the tube A is engaged by the clamp, said clamp being hoisted or lifted by means of the hook H engaging the screw-eye 5 bolted or otherwise secured to the uppermost portion of the casing bail indicated generally by the reference letter B.

The housing proper consists of two side parallel cheeks 6, slightly concave, and joined together at the top by means of a narrow cross bridge 7 to which the screw eye 5 is secured, and by means of a rear web 8 and a front narrow web 9 defining therebetween and the bridge 7 an opening 10 through which the object to be lifted is intended to project. The lower portions of the cheeks are thickened at 11 to form a support for the arm bolt 12 threadedly engaged with one of said enlargements 11.

The bolt 12 serves as the pivot for a pair of parallel links 15 freely mounted on said bolt and held in spaced alignment from each other by the fixed washer 16. Said links support, at the free end thereof, therebetween, the inner end of an arm 17, which extends upwardly from said links and is pivoted thereto by means of a rivet or the like 18. As shown to advantage in Figures 3 and 4, the upper end of the arm 17 is bent angularly so that the bent portion lies in a plane parallel with the axis of the object being lifted, when in operative position. Said bent portion, or finger, indicated at 20 in the drawings, is apertured to receive a threaded stud 21 having a head 22 projecting on the side of the object and held in place by a nut 23. This stud is preferably of highly tempered steel to resist wear and also to prevent marking the rod or pipe being handled, as well as to enable adjustment of the clamping action without recourse to machining operation on the finger 20.

Integrally formed with the arm 17, just below the juncture of said arm with the finger 20, there is formed a forwardly projecting ring 25 disposed in a plane parallel with that of the bolt 21 and suitably reinforced on the arm proper to insure the proper solidity. This ring, therefore, is movable as a unit with the arm 17 and provides one of the three contact points which, in operation, grips the object to be lifted.

The device is completed by a U-shaped sleeve 26 having a medial web 27 and ears 28 projecting within the housing, on both sides thereof, and apertured to fit over the bolt 12 which, thus, serves to retain said sleeve in position. As shown in Figures 1, 3 and 4, the sleeve is provided, at the upper end thereof, with a short integral tube 29, adapted to guide a spring 30 which is attached at one end to the upper part of the web 27 and hooked at the other end to the front portion of the ring 25, as shown in Figures 3 and 4.

Disposed between the links 15, approximately midway between the bolt 12 and the rivet 18, there is pivoted at 35 a hook 36 adapted to engage a notch 37 formed in the lower end of the arm 17. The purpose of this hook is to hold the clamp in inoperative position (shown in Figure 4), the arm in this position being prevented from rotating around the rivet 18 and, furthermore, abutting against the stop pin 38 also disposed between the links 15. Inasmuch as in this extended position of the arm 17 the spring 30 is

extended also, this spring has a tendency to swing the arm 17 out of the housing, especially when the object or pipe A is removed from the clamp. In order to prevent this swinging motion, a second stop pin 40 is provided between the cheeks of the housing and adapted to contact the links 15 and hold the same in the position indicated in Figure 4. The arm being held elevated in inoperative position, any object, pipe or the like, can be slid within the ring 25 and the clamp lowered or raised thereon for proper positioning without any clamping action being present.

The operation of the clamp should be obvious from an examination of Figures 3 and 4: when the rod A is inserted within the ring 25, and the catch 36 released, the spring 30 will urge the ring downwardly and cause the head 22 to contact the rod which, furthermore, is caused to abut against the bolt 12. Consequently, three points of contact engage the rod which points are constituted by the head 22, the outer inner margin of the ring 25 and said bolt 12. Assuming that a lifting strain is exerted on the hook H, the housing will tend to be lifted and carry therewith the bolt 12. This movement will have for an effect to further articulate the arm 17 causing a pressing action of point 22 against the rod, which action is, of course, resisted by the ring 25. As a result, the rod is gripped between said three points and the greater the lifting action, the greater will be the clamping effect between the three points mentioned.

From the foregoing, it will be evident that the present invention is an advance in the art of lifting clamps, in that said clamp is constituted of a minimum of parts and adapted to grip elongated and smooth objects solely by means of a clamping action without recourse to gripping teeth or the like devices liable to mar or otherwise distort objects being lifted.

It is to be understood that the form of my invention herein shown and described is to be taken as a preferred example of the same, and that various changes as to the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

Having thus described my invention, I claim:

1. A hoisting clamp, comprising a housing, a link pivoted to the bottom of the housing, an arm pivoted to said link, a ring extending from the free end of the arm at right angles thereto, means for causing downward movement of the ring and arm, and means at the top of the housing for receiving a hoisting strain.

2. A clamp of the character described, comprising a housing, links pivoted to the bottom of said housing, an arm freely connected to said links, a ring angularly extending from the free end of the arm, spring means for urging the ring downwardly, and means for locking the arm in inoperative extended position.

3. In clamping means, a housing, an articulated linked arm pivoted at its lower end to the housing, and a ring angularly extending adjacent the free end of the arm, whereby three clamping points are had for clamping an elongated object, said points consisting of the arm pivot, the free end of the arm and the inner edge of the ring.

4. In clamping means as claimed in claim 3, means for receiving a hoisting strain at the top of the housing, means for retaining the arm in extended inoperative position, and means at the bottom of the housing for pulling the housing downwardly.

VAUGHAN THOMPSON.