No. 712,272. Patented Oct. 28, 1902.

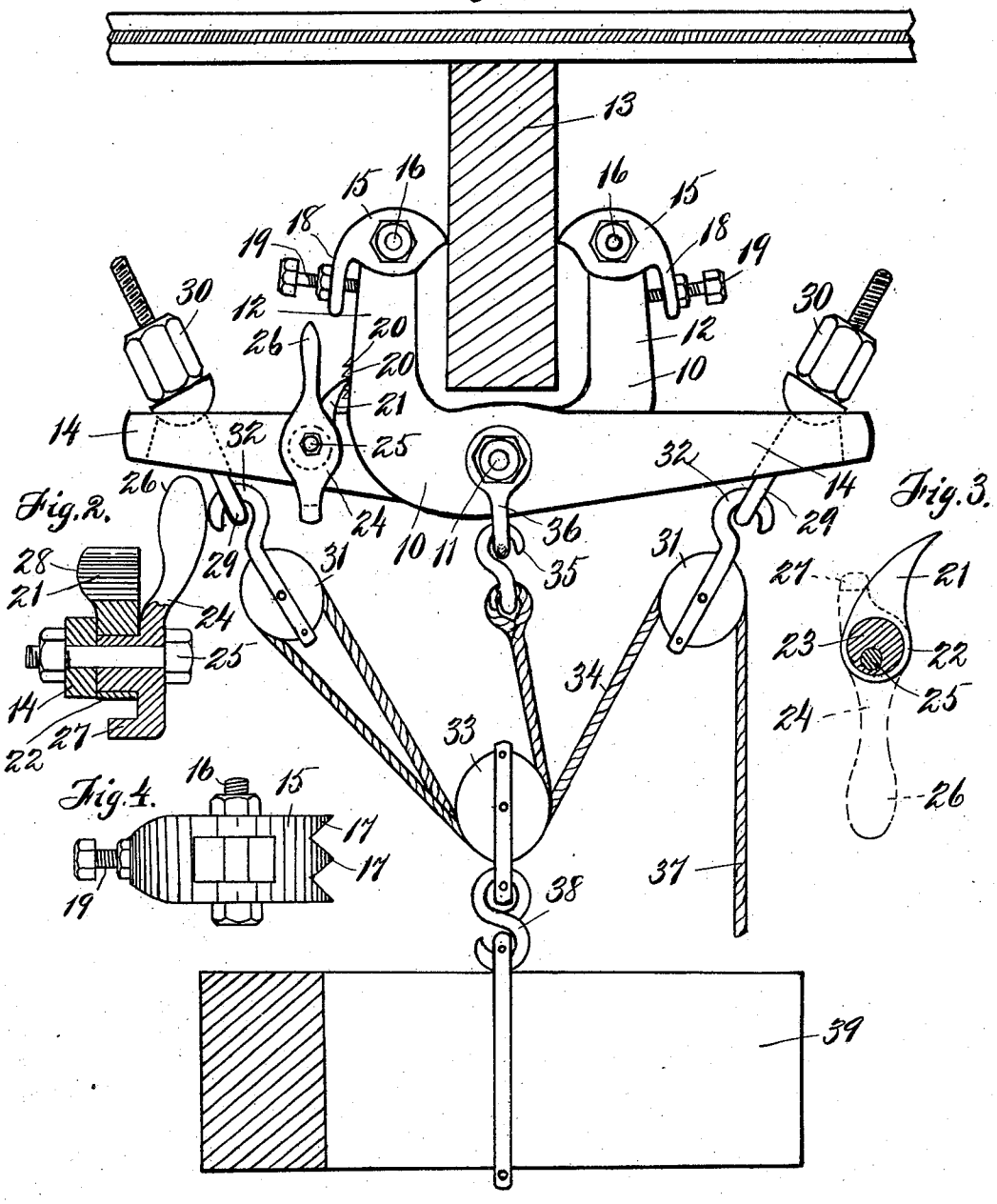
A. T. DUDLEY.

SUPPORTING GRAPPLE.

(Application filed Mar. 25, 1902.)

(No Model.)

Fig. 1.



WITNESSES.

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SUPPORTING-GRAPPLE.

SPECIFICATION forming part of Letters Patent No. 712,272, dated October 28, 1902.

Application filed March 25, 1902. Serial No. 99,874. (No model.)

To all whom it may concern:

Be it known that I, ALPHA T. DUDLEY, of Brockton, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Supporting-Grapples, of which the following is a specification.

This invention relates to grapples adapted to be attached to a roof-beam or similar support for the purpose of supporting or hoisting objects, such as machinery, shafting, pipes, &c.

The invention consists in certain novel features of construction and arrangement which I shall now proceed to describe and claim.

Of the accompanying drawings, Figure 1 represents a side elevation of a grapple constructed in accordance with my invention. Fig. 2 represents a transverse sectional view of the locking device on a larger scale. Fig. 3 represents a longitudinal sectional view of said device. Fig. 4 represents a top plan view of one of the gripping-heads.

The same reference characters indicate the same parts in all the figures.

In the drawings, 10 10 represent two crossed levers pivoted together at 11 and having vertically-extending arms 12 12, adapted to embrace between them the beam 13 or other support to which the grapple is affixed and horizontal divergent arms 14 14, extending substantially at right angles to the arms 12. At the upper ends of the levers are gripping heads or jaws 15 15, pivoted upon bolts 16 16 and preferably formed, as shown, with teeth 17, adapted to become embedded in the beam 13 or other support, so as to securely fix the grapple to the beam. These heads are provided with heels 18 18, in which are mounted adjustable stop-screws 19 19, whose inner ends abut against the outer edges of the levers 10, said screws being for the purpose of positively supporting the gripping-heads in different angular positions on the levers. An adjustment of this character is desirable for the purpose of accommodating the grapple to different widths of beams or for increasing the downward slant of the teeth 17 when the latter become dulled by continued use. Up to the point where the screws 19 come into action the heads 15 are self-adjusting, and by reason of their shape the grapple can be slid into place on the beam at times without a full opening should this be desired.

Before the weight of the object is imposed upon the grapple it is desirable to lock the grapple on the beam with sufficient security to prevent it from falling, and to this end I form one of the levers 10 along the outer edge of its vertical arm 12 with ratchet-teeth 20 20, adapted to be engaged by a locking-pawl 21. The latter is provided with the strap 22 of an eccentric 23, formed on the hub of a hand-lever 24, which is pivoted to a bolt 25 on the arm 14 of the other lever 10. By grasping the handle 26 of said hand-lever and rotating the latter on its pivot the pawl 21 is reciprocated, so as to take one tooth after the other of the ratchet-teeth 20, thereby closing together the working ends of the grapple-levers and causing the gripping-heads 15 to sink into secure engagement with the beam 13. Gravity ordinarily holds the hand-lever 24 in the position shown in Fig. 1, with its handle 26 uppermost in position to be swung downwardly to the right to give the pawl 21 its operating thrust. Such downward movement of the handle 26 brings uppermost a lug 27 on the lower end of the hand-lever, which abuts against the back of the pawl 21, as indicated in dotted lines in Fig. 3, and when the parts are thus positioned the pawl is securely locked in engagement with the ratchet-teeth 20 against any unlocking movement, excepting a reverse rotation of the hand-lever 24. Said reverse rotation lowers the eccentric 23 and immediately relieves the locking strain on the pawl, so that the latter may be disengaged from the ratchet-teeth, thus permitting the levers 10 to be opened and the grapple to be removed. The pawl 21 has an enlargement 28 overhanging the upper edge of the arm 14 to limit the backward movement of the pawl.

At the outer ends of the arms 14 are mounted eyebolts 29 29, slanted inwardly and downwardly and having nuts 30 30 on their threaded shanks for securing a delicate adjustment of the objects supported by the tackle. The hoisting-tackle as here shown comprises pulley-blocks 31 31, having hooks 32 32, by which they are supported from the eyebolts 29, a pulley-block 33, suspended between the blocks 31, and a suitable hoisting-band, here shown

as a rope 34, (for which might be substituted a chain,) having its fixed end secured by a hook 35 to a bail 36, suspended from the pivot-bolt 11, said rope passing around one of the sheaves of the block 33, then around the sheave of the left-hand block 31, and back around another sheave of the block 33, then around the sheave of the right-hand block 31, its end or bight 37 passing downwardly to be hauled on. A hook 38, attached to the block 33, is adapted to suspend the object to be supported, a beam 39 being shown in the drawings. It is evident that the strain of the supported object exerted downwardly on the outer ends of the arms 14 tends to close the grapple-levers 10 upon the beam 13, the closing strain increasing with the weight which is supported. By arranging the tackle in looped form between the outer ends of the arms 14 and permitting the lower pulley-block 33 to rise and fall in a vertical path unobstructed by the upper pulley block or blocks I am enabled to hoist the object to be supported closer to the beam 13 or other anchorage which supports the grapple than can be done by using the ordinary form of multiplying tackle, in which the upper block is in the path of the lower block. I am therefore enabled to use my grapple and tackle in hoisting heavy objects, such as shafts, close up to the ceiling, where heretofore it has been necessary to cut a hole through the ceiling and support the upper end of the tackle from above. It is also evident that by the described arrangement the lower block is prevented from turning with respect to the upper blocks and twisting the intermediate strands of the rope, as frequently happens with the ordinary form of tackle used without a guy-rope.

I may make changes in various details of the invention without departing from the spirit or nature thereof.

I claim—

1. In a supporting-grapple, the combination of the coacting pivoted grappling-levers, gripping-heads pivoted thereon, and means for positively supporting said heads in different angular positions on the levers.

2. In a supporting-grapple, the combination of the coacting pivoted grappling-levers, a series of ratchet-teeth formed on one of said levers, a hand-lever pivoted to the other lever and provided with an eccentric, and a pawl formed with the eccentric-strap and coacting with said ratchet-teeth.

3. In a supporting-grapple, the combination of the coacting pivoted grappling-levers, a series of ratchet-teeth formed on one of said levers, a hand-lever pivoted to the other lever and provided with an eccentric, and a pawl formed with the eccentric-strap and coacting with said ratchet-teeth, said hand-lever having a projection adapted to engage the rear side of the pawl.

4. In a supporting-grapple, the combination of the coacting pivoted grappling-levers having divergent arms, and a hoisting-tackle suspended in looped form from one of said arms to the other and comprising a band running over pulley-blocks, one of said blocks being arranged to rise and fall in the middle of the loop, the stationary block or blocks being out of the vertical path of said middle block, and the latter having provisions for the attachment of the object to be supported.

In testimony whereof I have affixed my signature in presence of two witnesses.

ALPHA T. DUDLEY.

Witnesses:
R. M. PIERSON,
E. BATCHELDER.