Feb. 14, 1939. R. FREELAND 2,146,891

GRAPPLE

Filed April 3, 1937

Fig. 1.

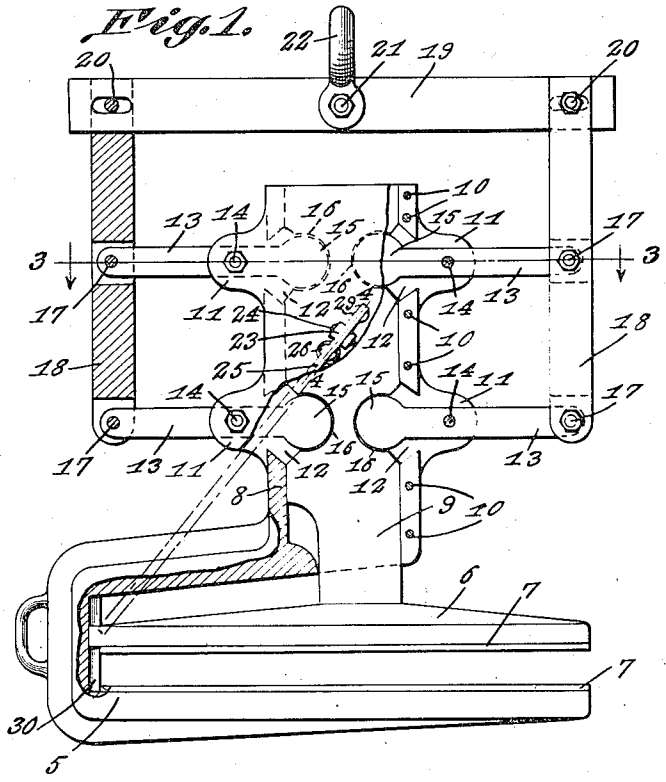


Fig. 2.

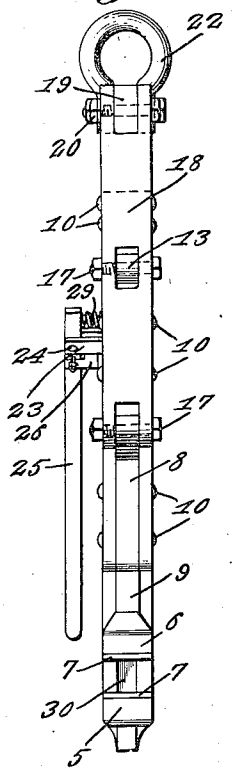


Fig. 3.

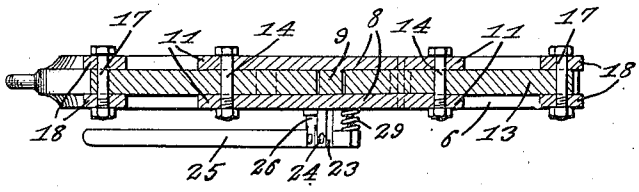
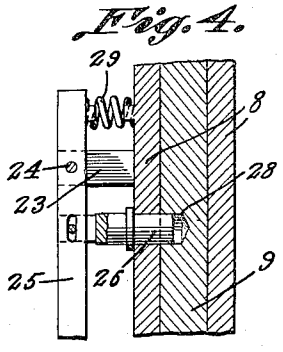


Fig. 4.



Robert Freeland, INVENTOR

BY Victor J. Evans & Co.

ATTORNEYS

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GRAPPLE

Robert Freeland, Steubenville, Ohio

Application April 3, 1937, Serial No. 134,920

5 Claims. (Cl. 294—103)

The invention relates to a load puller and more particularly to a load grapple.

The primary object of the invention is the provision of a grapple of this character, wherein the same is susceptible of being latched in open position and when released and subjected to a load the latter will be grappled, the grapple structure being novel in form.

Another object of the invention is the provision of a grapple of this character, wherein the grip jaws thereof are interfitted one within the other and are relatively movable with respect to each other while a pulling action positive or direct to one of the jaws enables both jaws to obtain a firm and secure grip upon work or a load so that the latter may be conveyed from one point to another without accidental release thereof during transit, that is to say, during the pull action of the grapple.

A further object of the invention is the provision of a grapple of this character, which is simple in construction, compact, possessed of a minimum number of parts yet strong, durable, thoroughly reliable and efficient in operation, and inexpensive to manufacture.

With these and other objects in view, the invention consists in the features of construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawing, which discloses the preferred embodiment of the invention and pointed out in the claims hereunto appended.

In the accompanying drawing:

Figure 1 is a side elevation partly in section of a grapple constructed in accordance with the invention and shown in open latched position.

Figure 2 is an edge elevation thereof.

Figure 3 is a sectional view on the line 3—3 of Figure 1 looking in the direction of the arrows.

Figure 4 is a fragmentary enlarged sectional view taken on the line 4—4 of Figure 1.

Similar reference characters indicate corresponding parts throughout the several views in the drawing.

Referring to the drawing in detail, the grapple comprises relatively movable jaw members 5 and 6, respectively, provided with the opposed work engaging faces 7 for the grasping of a load, the jaw or member 5 being of substantially C form and is provided with a sectional plunger casement 8 forming a guide for the plunger 9 of the jaw member 7. The sections of the casement 8 are separably joined with each other by fasteners 10 and the plunger slidably fits this casement.

Formed on the casement at opposite sides thereof are laterally directed outstanding pivot ears 11, the casement being provided with clearances 12 between the ears 11 for rocker arms 13, these being accommodated between the ears 11 and are pivoted at 14 thereto for rocking movement. The inner ends of the arms 13 are formed with circular terminals or heads 15 accommodated within correspondingly shaped sockets or notches 16 provided in opposite edges of the plunger 9.

The outer ends of the rocker arms 13 are pivoted at 17 to spaced parallel links 18 disposed at opposite sides of the casement 8. Bridging the space between the links 18 beyond the outer end of the casement 8 is a lift bar or beam 19 having pivotal connection at 20 with the said links 18 while swingingly connected with this beam or bar 19 centrally thereof by a pivot 21 is a crane hook shackle 22 so that the said grapple can be used with a crane, derrick or the like. On a pull exerted against the beam or bar 9 through lifting action of the crane, derrick or the like, the arms 13 function in a manner for relatively moving the jaws 5 and 6 toward each other and in this movement a load or work can be gripped and held thereby for the shifting of the work or load from one point to another without liability of the accidental disengagement or the freeing of the load during transit.

Carried exteriorly on the casement 8 is a pivot bracket 23 in which is pivoted at 24 a hand release latching lever 25 to which is attached a latching pin 26 playing through a clearance or opening 27 in the said casement for engagement in a keeper socket 28 formed in the plunger 9, the location of the keeper socket 28 in the latter being such that the said plunger 9 will be latched when the jaw 6 has separated from the jaw 5 within the latter. Active on the lever 25 is an expansion spring 29 which urges the pin 26 into latching position and such pin is manually released by the lever 25 when operated against the tension of the spring 29 and such pin 26 is engaged in the keeper socket 28. The lever 25 is of appropriate length for convenience in manual manipulation thereof.

The jaw 5 interiorly thereof is provided with a guide rib 30 interfitted with the jaw 6 to prevent lateral shift of the latter and by this rib 30 the said jaw 6 is guided toward and away from the jaw 5.

The grapple by reason of the construction before set forth is adaptable for pulling cobbles from a strip mill although it is useful for holding

and transporting other work and loads, as, for example, the carrying of coils of steel with safety.

What is claimed is:

1. A grapple comprising a jaw formed with an offset end section having a plunger casement, a plunger slidably fitting said casement, a jaw on the plunger for coaction with the first-mentioned jaw and arranged in proximity with said first-mentioned jaw, and pull means having plunger actuating members extending within said casement and active therein upon the plunger to move the jaw thereof toward the first-mentioned jaw.

2. A grapple comprising a jaw formed with an offset end section having a plunger casement, a plunger slidably fitting said casement, a jaw on the plunger for coaction with the first-mentioned jaw and arranged in proximity with said first-mentioned jaw, pull means having plunger actuating members extending within said casement and active therein upon the plunger to move the jaw thereof toward the first-mentioned jaw, and latching means on the casement and movable therein for engaging the plunger to lock the same fixed.

3. A grapple comprising a jaw formed with an offset end section having a plunger casement, a plunger slidably fitting said casement, a jaw on the plunger for coaction with the first-mentioned jaw and arranged in proximity with said first-mentioned jaw, pull means having plunger actuating members extending within said casement and active therein upon the plunger to move the jaw thereof toward the first-mentioned jaw, latching means on the casement and movable therein for engaging the plunger to lock the same fixed, and a guide formed in the first-mentioned jaw and engaged by the jaw on the plunger for guiding it toward and away from said first-mentioned jaw.

4. A grapple comprising a jaw formed with an offset end section having a plunger casement, a plunger slidably fitting said casement, a jaw on the plunger for coacting with the first-mentioned jaw and arranged in proximity with said first-mentioned jaw, pull means having plunger actuating members extending within said casement and active therein upon the plunger to move the jaw thereof toward the first-mentioned jaw, latching means on the casement and movable therein for engaging the plunger to lock the same fixed, a guide formed in the first-mentioned jaw and engaged by the jaw on the plunger for guiding it toward and away from said first-mentioned jaw, and a lift beam included in said means.

5. A grapple comprising a jaw formed with an offset end section having a plunger casement, a plunger slidably fitting said casement, a jaw on the plunger for coaction with the first-mentioned jaw and arranged in proximity with said first-mentioned jaw, pull means having plunger actuating members extending within said casement and active therein upon the plunger to move the jaw thereof toward the first-mentioned jaw, latching means on the casement and movable therein for engaging the plunger to lock the same fixed, a guide formed in the first-mentioned jaw and engaged by the jaw on the plunger for guiding it toward and away from said first-mentioned jaw, a lift beam included in said means, and links pivotally connected to said beam and said members for transmitting pull from said beam to said members to move said plunger.

ROBERT FREELAND.