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HOISTING BLOCK

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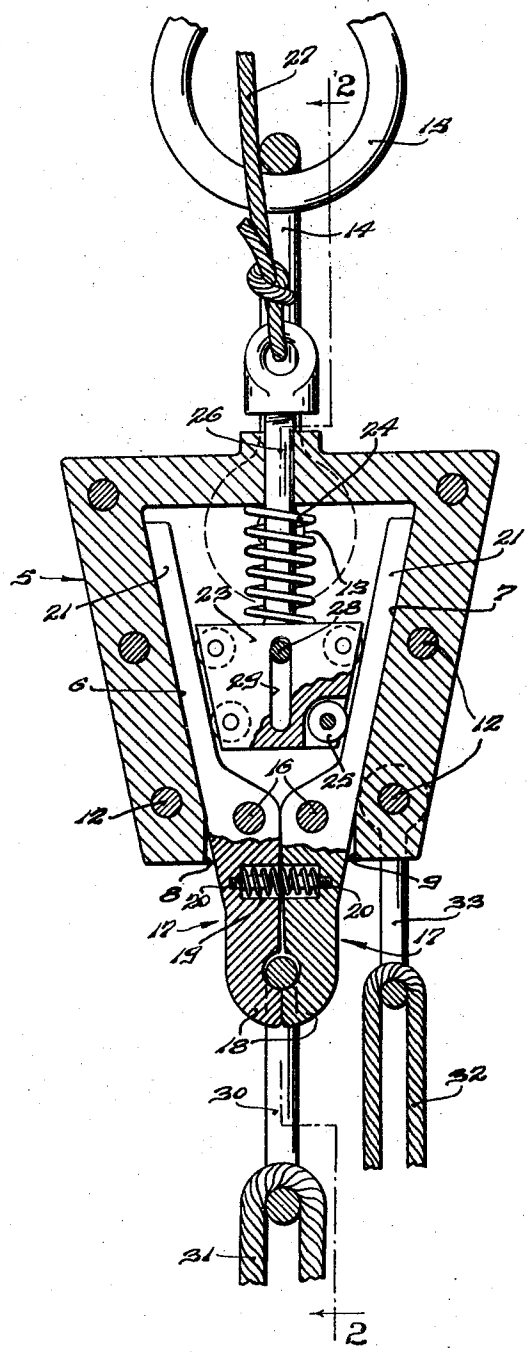


Fig. 1.

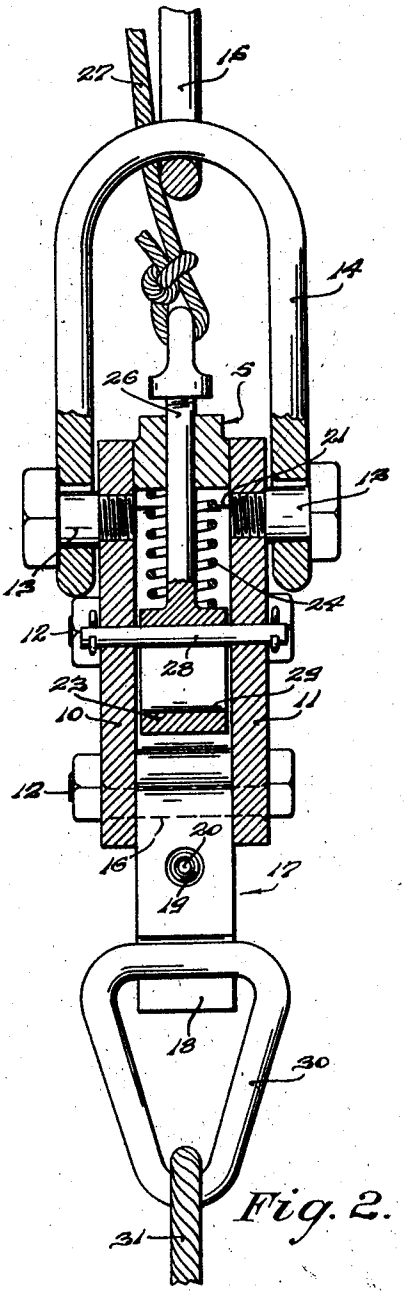


Fig. 2.

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HOISTING BLOCK

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This invention relates to hoisting mechanism, and more especially to a new and improved form of grappling hook therefor.

The object, generally stated, is the provision of mechanism including oppositionally disposed spring-compressed jaws so arranged as to accommodate the use of a relatively weak spring in locking the same, the primary advantage of such being the necessity for little application of power in spreading the jaws.

A further object of the invention is the provision of an arrangement adapted to appreciably reduce the friction generally present in mechanism of this character.

A still further object is to provide grappling structure wherein the parts therefor are so designed as to allow ease in assembly with especial strength and durability.

More specific objects and advantages will appear in the following description, the invention consisting in the novel construction, adaptation and combination of parts hereinafter described and claimed.

In the drawing:

Figure 1 is a longitudinal vertical section, parts being shown in side elevation, of my improved grappling hook, representing the same in the form now preferred by me; and

Figure 2 is a transverse vertical section thereof, taken substantially on line 2—2 of Figure 1.

Reference being had thereto, the housing proper comprises a medial plate member 5 having a general horseshoe configuration, inner facing surfaces 6, 7 of the terminals being disposed in planes oppositionally inclined from the perpendicular. As indicated, said planes converge downwardly towards a throat, the side walls 8, 9 of which are arranged parallel, or nearly so, one with the other. Side plates 10, 11 are rigidly attached through the medium of bolts 12 passing through the plate 5, supporting at opposite sides, trunnions 13 for the engagement of a bail 14. 15 indicates a suitable cable-connecting ring for elevating said bail.

Projected through the aforesaid throat portion and having their opposite ends seating in the plates 10, 11, I provide a pair of pivot pins 16 disposed at opposite sides of a vertical center line to serve as fulcrums for respective lever members 17, the lower terminals of which form oppositionally arranged companion jaws 18. Supported in communicating sockets formed in the meeting faces of said jaws, I represent an extension spring 19 sleeved over stud elements 20 which may be suitably engaged, as by thread reception, to locate the same centrally of the sockets.

Reverting to the power arms 21 of said levers, the same are formed with parallel inner and outer faces, the latter normally seating against the inner walls 6, 7 of plate 5 and the inner faces receiving therebetween a vertically-movable wedge member 23 normally serving to force the lever arms 21 outwardly under the influence of a spring 24. 25 indicates rollers supported by said wedge for tracking said levers. A bolt 26 integral with the wedge and passing through the head of plate 5 for attachment to a release line 27 retracts the wedge, said bolt, moreover, providing a bearing cooperatively with a transverse pin 28 arranged for riding engagement in a vertical slot 29 of the wedge.

I represent a ring 30 received between the lever jaws 18, the arrangement allowing engagement of the work by means of a sling 31, said sling permanently supported through a line 32 received over the elbow of a clevis 33. It is, however, not the intention to confine the invention in any way, as the jaws proper might obviously be altered, as the demand might be, to accommodate various characters of work.

The operation should be clear from the foregoing, the wedge being retracted to allow an engagement of the work, subsequent slacking of the release line compressing the jaws through movement outwardly of the lever power arms. The work may be engaged, transported and released as desired.

What I claim is:

1. In apparatus of the character described, a frame providing a chamber open at its lower end to form a throat the side walls of which are parallel, the end walls of said chamber converging downwardly toward said throat, a pair of fulcrum pins supported by said

frame and located at opposite sides of a transverse vertical center line taken through said throat, a pair of lever arms fulcrumed approximately medially of their lengths on said pins, the lower ends of said lever arms providing companion jaws adapted to engage the work and the upper portions providing power arms for closing said jaws, said power arms arranged for normal engagement against said chamber end walls, a wedge member supported in said chamber for vertical movement in the space between said power arms, rollers supported by said wedge for tracking engagement with said power arms, a spring serving to depress said wedge for actuating said power arms outwardly to normally compress said jaws, a spring oppositionally arranged thereto for spreading said jaws responsive to retraction of said wedge, a bail secured to said frame for elevating the same, and a control line operatively engaging said wedge for retracting the same in opposition to said first named spring.

2. The structure as defined in claim 1, said frame comprising an inner member of an approximate horseshoe configuration and side plates boltably attached to said inner member.

3. In hoisting apparatus, a block having a bail attached thereto for elevating the same, a pair of horizontally spaced pivot pins supported by said block, levers fulcrumed on said pins to provide companion jaws at their lower ends and power arms at their upper ends, a wedge member supported for vertical movement in the space between said power arms and providing rollers arranged for tracking engagement on the same, a spring engaging said wedge and serving to influence said power arms outwardly in closing said jaws, means for contracting the spring, and a second spring serving to spread said jaws responsive to contraction of said first named spring.

4. The structure as defined in claim 3, said wedge being vertically slotted, and said block supporting a pin engageable in said slot, a bolt integral with the wedge, and a bearing for the bolt.

5. In a hoisting block, a pair of lever members fulcrumed for movement about a respective horizontal axis, said axes horizontally spaced, one from the other, said levers being formed to extend outwardly from one another in providing power arms above the respective fulcrums and oppositionally disposed jaws below the respective fulcrums, a wedge member supported by said block for vertical movement in the space between said power arms, a spring for said wedge serving to spread said power arms in closing said jaws, means for contracting said spring, and a second spring serving to spread said jaws responsive to contraction of said first named spring.

6. In a hoisting block, a pair of lever members fulcrumed for movement about a respective horizontal axis, said axes horizontally spaced, one from the other, said levers being formed to extend outwardly from one another in providing power arms above the respective fulcrums and oppositionally disposed jaws below the respective fulcrums, a wedge member supported by said block for vertical movement in the space between said power arms, a spring for said wedge normally serving to spread said power arms in closing said jaws, and means for contracting said spring to allow an opening of said jaws.

7. In a hoisting block, a pair of lever members supported to provide power arms and jaws above and below the point of suspension of the same, said power arms diverging outwardly from one another, a wedge supported for vertical movement in the space between said power arms, a spring serving to influence said arms outwardly in closing said jaws, means operatively connected to said wedge and adapted for the attachment of a control line thereto for contracting said spring, and means responsive to said contraction for opening the jaws.

8. In grappling structure, a pair of lever members supported to provide respective jaws and control arms below and above the point of pivotal suspension, a wedge member having its wedge face engaging said power arms throughout the range of movement of the latter, a spring for said wedge serving to normally close said jaws, and means for retracting the wedge in opposition to said spring.

9. In grappling structure, levers collectively providing work-engaging jaws, a wedge engageable with said levers, a spring serving to force said wedge downwardly in closing said jaws, and means for opening said jaws responsive to retraction of said wedge.

10. In grappling structure, lever members, a pair of jaws controlled by the movement of said levers, a wedge for closing said lever members, rollers supported for tracking engagement between said wedge and lever members, and means for controlling the wedge.

Signed at Seattle, Washington, this 27th day of October, 1931.

MATTI NIEMI.