Dec. 13, 1966 C. RAU ET AL 3,291,452

POWER WINCH CONTROL

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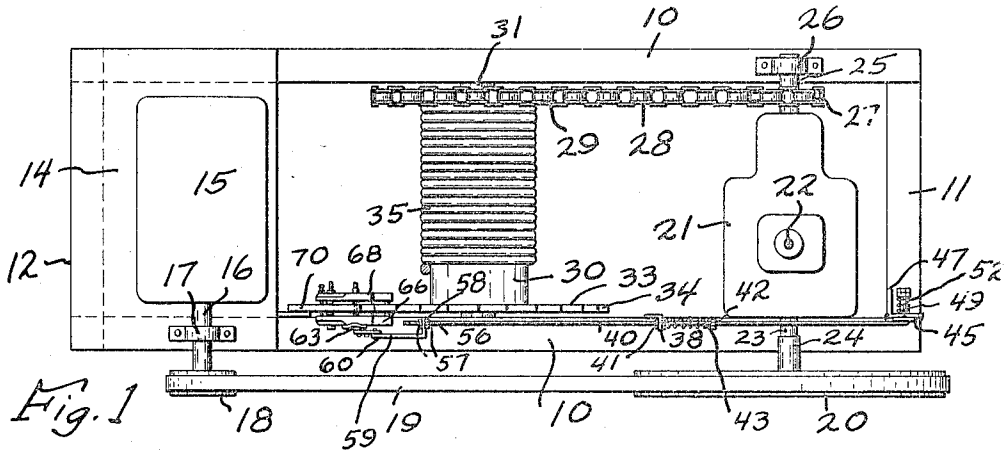


Fig. 1

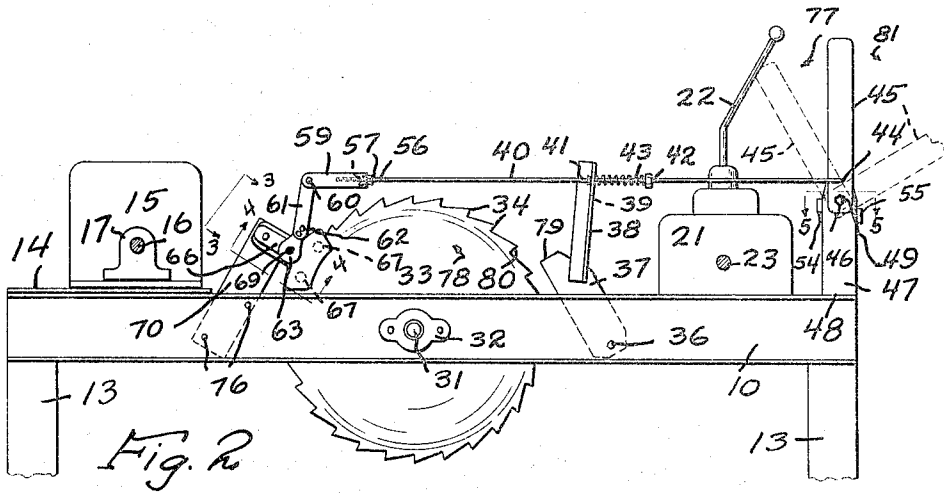


Fig. 2

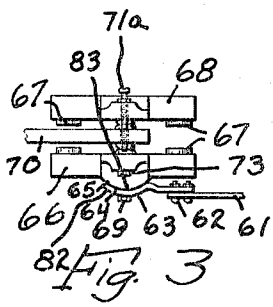


Fig. 3

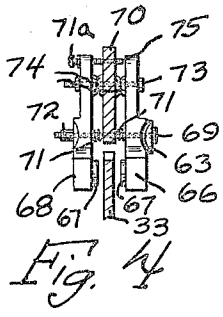


Fig. 4

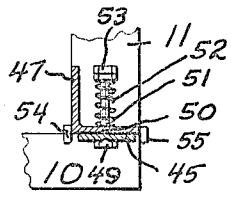


Fig. 5

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POWER WINCH CONTROL

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Our invention relates to a power winch control.

An object of our invention is to provide a control for a power winch wherein the winch can include a ratchet and pawl arrangement, and wherein the ratchet and pawl arrangement can be used to brake the winch as desired.

A further object of our invention is to provide a braking arrangement independently of the ratchet arrangement, and with means for providing a convenient control in the same mechanism.

A further object of our invention is to provide a simple arrangement which will allow effective operation of the winch as well as the control thereof.

A further object of our invention is to provide a simple control method wherein the braking arrangements, as well as the ratchet arrangement, are operated by means of a single control rod and control lever.

With these and other objects in view, our invention consists in the construction, arrangement, and combination of the various parts of our device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in our claims, and illustrated in the accompanying drawings, in which:

FIGURE 1 is a plan view of the winch and control,

FIGURE 2 is a side view of FIGURE 1, partially in section,

FIGURE 3 is an enlarged view taken along the lines 3—3 of FIGURE 2,

FIGURE 4 is an enlarged sectional view taken along the lines 4—4 of FIGURE 2, and

FIGURE 5 is an enlarged sectional detail taken along the lines 5—5 of FIGURE 2.

Our invention contemplates the provision of a conveniently operated arrangement by which a power winch can be selectively controlled either as a ratchet arrangement or as a braking arrangement, or a combination of both.

In describing our invention we have used the character 10 to designate side channel members, the character 11 indicating an end channel member, and the character 12 indicating further end channel members, these members being secured together as shown to provide a supporting framework, the character 13 indicating suitable legs.

Attached to one end of this framework is a platform 14 upon which is mounted a gasoline engine 15 or other engine of any type, which drives a shaft 16 journalled in the bearing 17, the shaft 16 driving the pulley 18, which in turn drives a V-belt 19, the V-belt 19 engaging a larger pulley 20, the character 21 indicating a transmission housing having a shift lever 22 by which the power and speed can be changed as desired, the character 23 indicating a shaft passing into the transmission housing, the shaft 23 being attached to a suitable connection 24 which is attached to the pulley 20, and the transmission 21 includes a further shaft 25 which is journalled within the bearing 26 which is attached to one of the members 10, the character 27 indicating a sprocket driven by the shaft 25, the said sprocket engaging a sprocket chain 28 which engages a larger sprocket 29 which is rigidly attached to a reel 30, which reel 30 is attached to a shaft 31 which is suitably journalled within the members 10 as at 32.

Securely attached to one end of the reel 30 is a ratchet member 33 having the teeth 34. Wound upon the reel 30 is the cable 35 which is adapted to be used for lifting or any other purpose, and pivotally secured at 36 to a member 10 is the angle plate 37 to which is welded the angle member 38 having a slot 39 therein, through which

slot passes the rod 40, the character 41 indicating a collar attached to the rod 40, the character 42 indicating a further collar attached to the rod 40.

Positioned between the collar 42 and the angle member 38 is a coiled helical spring 43 which receives the rod 40, the rod 40 being pivotally attached at 44 to a control lever 45 which is pivoted at 46 to an angle member 47 which is secured at 48 to one end of one of the members 10, the pivoting point at 46 comprising a suitable bolt 49 passing through the lever member 45, the lever member 45 including a small extending nipple 50 which is adapted to be received in an indented portion 51 in the angle member 47 when the lever is in neutral position, the character 52 indicating a helical compression spring bearing against the angle member 47, the character 53 indicating nuts attached to the end of the bolt 49, this arrangement serving to keep the lever 45 in a tensioned condition.

The character 54 indicates a stop member which is welded to the angle member 47, the character 55 indicating a further stop member.

The rod 40 is threaded as at 56 and includes the nuts 57 attached thereto at either side of a bent portion 58 which terminates the link 59, the link 59 being pivotally attached at 60 to a lever 61 which is secured at 62 to a member 63, the member 63 being concave as at 64 and being snugly engaged with the further convex surface 65 of a braking element 66, which element 66 includes the circular braking discs 67, the character 68 indicating (see FIGURES 3 and 4) a further braking member having similar discs.

The portion 63 is suitably pivoted on the bolt 69, which bolt passes through a supporting bracket 70, the character 71 indicating compression springs receiving the bolt 69, the bolt 69 being further secured at 72 to the further member 68.

The character 73 indicates a further bolt passing through the members 66 and 68 and including the compression washers 74 bearing against the bracket member 70. The character 71*a* indicates a machine screw threadably engaged with the member 68 and which machine screw passes through the member 70 and bears against the member 66 at 75 so as to provide adjustment at this point. The bracket 70 is suitably secured as at 76 to the member 10.

The device operates in the following manner. Since the motor 15 will drive the pulley 20 and the transmission 21, which in turn will drive the sprockets 27 and 29 to thereby drive the reel 30, the reel thence exerting the proper lifting effort on the cable 35, the arrangement will then function for whatever purpose desired.

For engaging the member 37 with the ratchet teeth 34, the lever 45 is swung in the direction of the arrow 77 to the dotted position shown in FIGURE 2, where the lever will abut against the stop member 54, and in this position, the member 37 will act as a pawl against the ratchet teeth 34 which are rotating in the direction of the arrow 78, and the spring 43 will also exert pressure against the angle member 38 to provide the proper tension to maintain the pawl and ratchet arrangement, and the arrangement will also provide means for preventing, reverse motion of the ratchet 33 since the portion 79 of the member 37 will engage the surfaces 80 of the teeth for this purpose, to thereby provide a safety feature, etc.

For providing a braking action against the ratchet 33, the lever 45 is swung in the direction of the arrow 81 to the dotted position shown whereby the lever 45 will abut against the abutment portion 55 and at this stage the curved portion 63 will be rotated sufficiently so that the end 82 of the curved portion 63 will be spring urged against the raised portion 83 of the convex surface 65,

which will thereby force the braking member **66** toward the ratchet **33** whereby the surfaces **67** will bear against the outer periphery of the member **33** to provide the braking action when desired, which can be regulated by the operator, who can force the lever **45** in the direction of the arrow **81** to whatever extent he desires. As a result, it will be noted that the operator has a control member which can be positioned in a neutral position, in a ratchet-engaging position, or a braking position by the use of the single mechanism described, and he can then control the winch in this manner effectively.

It will now be seen that we have provided the advantages mentioned in the objects of our invention with further advantages being apparent.

Some changes may be made in the construction and arrangement of the parts of our invention without departing from the real spirit and purpose of our invention, and it is our intention to cover by our claims any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

We claim as our invention:

1. A power winch control comprising a framework, a toothed ratchet mounted in said framework, a reel attached to said ratchet, a pawl pivotally secured to said framework and adapted to engage said ratchet, said pawl including an extending portion attached thereto, a rod passing through said extending portion, a spring receiving said rod, a collar attached to said rod bearing against said spring for urging said pawl against the teeth of said ratchet, a braking element adapted to engage said ratchet, said rod being secured to said braking element, a lever pivotally attached to said rod, a post to which said lever is pivoted, abutment members attached to said post for limiting movement of said lever, movement of said lever toward said pawl causing said pawl to engage said ratchet teeth, movement of said lever away from said pawl causing braking action of said braking element with said ratchet.

2. A power winch control comprising a framework, a toothed ratchet mounted in said framework, a reel attached to said ratchet, a pawl pivotally secured to said framework and adapted to engage said ratchet, said pawl including an extending portion attached thereto, a rod passing through said extending portion, a spring receiving said rod, a collar attached to said rod bearing against said spring for urging said pawl against the teeth of said ratchet, a braking element adapted to engage said ratchet, said rod being secured to said braking element, a lever pivotally attached to said rod, a post to which said lever is pivoted, abutment members attached to said post for limiting movement of said lever, movement of said lever toward said pawl causing said pawl to engage said ratchet teeth, movement of said lever away from said pawl causing braking action of said braking element with said ratchet, said braking element including a convex surface, a further lever attached to said rod including a concave portion receiving said convex portion, said braking element including a pair of opposed braking members including braking surfaces adapted to engage said ratchet, a bracket supporting said braking element.

3. A power winch control comprising a framework, a toothed ratchet mounted in said framework, a reel attached to said ratchet, a pawl pivotally secured to said framework and adapted to engage said ratchet, said pawl including an extending portion attached thereto, a rod passing through said extending portion, a spring receiving said rod, a collar attached to said rod bearing against said spring for urging said pawl against the teeth of said ratchet, a braking element adapted to engage said ratchet, said rod being secured to said braking element, a lever pivotally attached to said rod, a post to which said lever is pivoted, abutment members attached to said post for limiting movement of said lever, movement of said lever toward said pawl causing said pawl to engage said ratchet teeth, movement of said lever away from said pawl causing braking action of said braking element with said ratchet, said braking element including a convex surface, a further lever attached to said rod including a concave portion receiving said convex portion, said braking element including a pair of opposed braking members including braking surfaces adapted to engage said ratchet, a bracket supporting said braking element, means for driving said reel including a sprocket attached thereto, a sprocket chain engaging said sprocket, a further sprocket engaging said sprocket chain, means for driving said further sprocket.

References Cited by the Examiner

UNITED STATES PATENTS

2,671,880	3/1954	Symonds	254—186
3,083,675	4/1963	Rice	254—186

FOREIGN PATENTS

600,714	12/1959	Italy.

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