

Aug. 27, 1963

R. H. GRAY

3,101,927

LOAD BINDING WINCH

Filed Nov. 21, 1960

FIG. 1

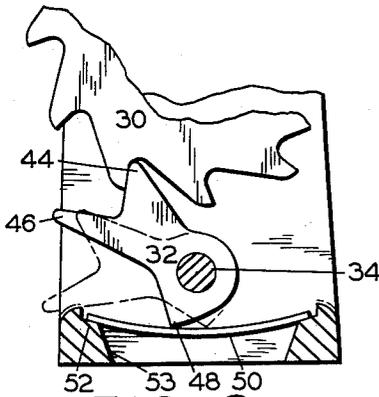
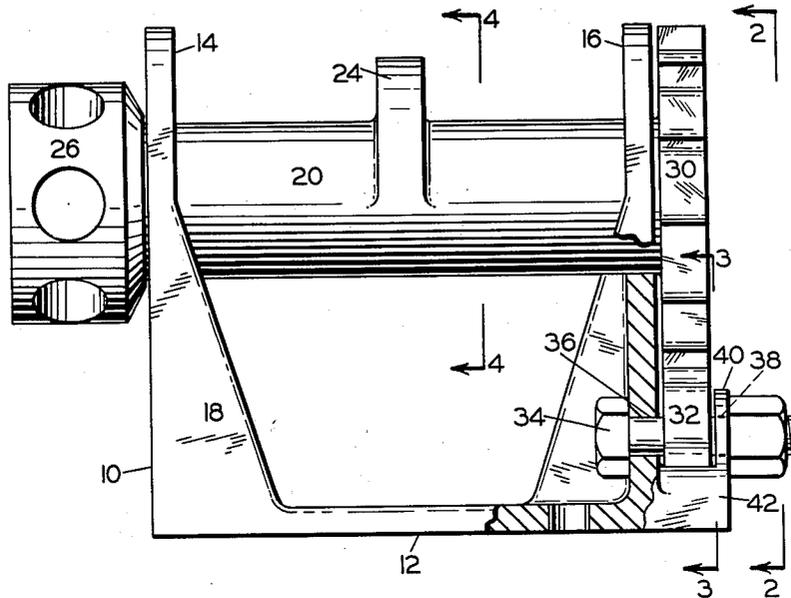


FIG. 3

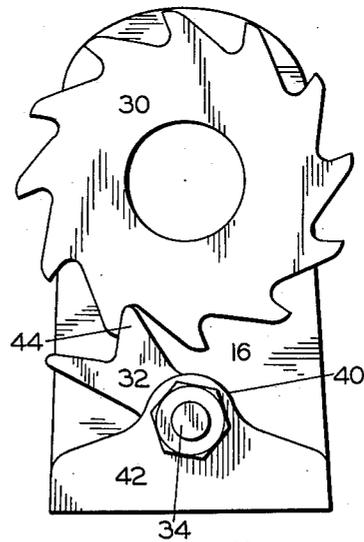


FIG. 2

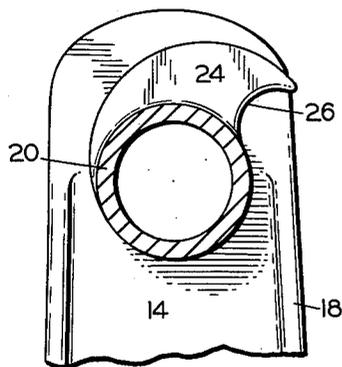


FIG. 4

INVENTOR.  
ROBERT H. GRAY  
BY *Eugene M. Eckelman*  
ATTORNEY

1

3,101,927

**LOAD BINDING WINCH**

Robert H. Gray, 4420 NE. Maywood Place,  
Portland, Oreg.

Filed Nov. 21, 1960, Ser. No. 70,744  
1 Claim. (Cl. 254—161)

This invention relates to improvements in load binding winches, and more particularly is concerned with a load binding winch adapted for cinching down loads on trucks, railcars, and the like.

It is a primary object of the present invention to provide a load binding winch having an improved structure facilitating its mounting on a vehicle in any number of different positions and yet to be capable of efficient operation.

More particularly, it is an object of the present invention to provide a binding winch of the type described employing a novel ratchet and pawl arrangement which functions in any position of mounting of the binding winch to operate a winding shaft in one direction.

Another object is to provide a load binding winch which is simple in structure, inexpensive to manufacture, and rugged in operation.

Briefly stated, the invention resides in a winch structure employing an integrated arrangement of elements comprising a U-shaped body portion, a winding shaft journaled in the body portion, and a ratchet and pawl assembly operative on the winding shaft to provide controlled rotation thereof.

The ratchet and pawl have an improved arrangement and structure whereby to facilitate the controlled rotation of the winding shaft in any position of mounting of the winch, and also to facilitate easy control of said ratchet assembly in setting and releasing the same.

The invention will be better understood and additional objects and advantages will become apparent from the following description taken in connection with the accompanying drawings which illustrate a preferred form of the device. It is to be understood, however, that the invention may take other forms and that all such modifications and variations within the scope of the appended claim which will occur to persons skilled in the art are included in the invention.

In the drawings:

FIGURE 1 is a side elevational view with parts broken away of the present load binding winch;

FIGURE 2 is an end elevational view thereof taken on the line 2—2 of FIGURE 1;

FIGURE 3 is a sectional view showing in particular the ratchet and pawl assembly, taken on the line 3—3 of FIGURE 1; and

FIGURE 4 is a sectional view taken on the line 4—4 of FIGURE 1.

Referring now in particular to the drawings, the present load binding winch comprises a body portion 10 which is U-shaped in configuration, having a base 12 and a pair of integral spaced and parallel side walls or arms 14 and 16. The juncture between the side walls and base is reinforced by triangular web portions 18. Base 12 has bottom apertures for the reception of fastening means if desired to attach the winch to a vehicle bed.

Journaled in the side walls 14, 16 is a winding shaft 20 which projects beyond the outer ends of said walls, the latter having suitable apertures for the journaled reception of the shaft ends. The shaft carries a hook 24 intermediate its ends which, as best seen in FIGURE 4, has a recessed front edge 26 for engagement by the end portion of a cable.

One projecting end of the winding shaft 20 integrally carries an apertured lever engaging drum 26 for rotating the winding shaft. The opposite end of the shaft 20 in-

2

tegrally carries a ratchet wheel 30 associated with a pawl 32 journaled on a headed pin 34 such as a bolt supported at opposite ends in an aperture 36 in the wall 16 and in an aperture 38 in an upwardly projecting tab 40 of an end housing 42.

As best seen in FIGURE 3, the pawl element 32 has a tooth 44 engageable with the teeth of the ratchet wheel. This tooth is directed laterally and offset from the axis of pin 34 whereby when it engages the front edge of a tooth on the ratchet wheel 30, the latter is anchored against rotation in the one direction. Pawl element 32 also has an outwardly projecting finger grip or handle 46 by which it is rotatably operated between operative and inoperative positions.

Pawl element 32 also has a downwardly projecting edge portion 48 engageable with a leaf spring 50 supported at its opposite ends on confining shoulders 52 interiorly of the housing 42. Housing 42 has an opening 53 intermediate the shoulders 52 to permit downward flexing of the spring 50.

The arrangement and structure of the pawl element 32 and spring 50 are such that said pawl element is movable between a pair of over-center positions, shown in full and dotted lines in FIGURE 3. In the full line position of the pawl, the spring 50 maintains it in operative engagement with the ratchet wheel 30 to permit the latter to rotate in one direction and lock it against rotation in the other direction. Such is the set position of the pawl element when the shaft 20 is being wound to cinch a cable around the load. When it is desired to release the shaft 20 for unwinding of the cable the shaft is rotated sufficiently to clear the pawl tooth 44 from the ratchet wheel and the pawl element 32 rotated to its other over-center position, shown in dotted lines.

The spring 50 thus is adapted to hold the pawl element in its operative position with the ratchet wheel regardless of the mounted position of the binding winch on the vehicle bed. That is, the winch may be located in either a horizontal or vertical position and yet be positive in operation. Also, when the winding shaft is being unwound the pawl upon being moved to its other over-center or inoperative position will remain in an out-of-the-way position.

It will thereby be seen that the present invention comprises a simplified and relatively inexpensive load binding winch which is convenient to operate and positive in operation. The body portion 10, together with the end housing 42, are preferably cast as one piece to provide a rigid and rugged winch frame.

Having now described my invention and in what manner the same may be used, what I claim as new and desire to protect by Letters Patent is:

A load binding winch adapted for mounting on a vehicle bed comprising a base adapted to be attached to the vehicle bed, a pair of spaced arms integrally projecting from said base, a winding shaft journaled in said arms, means on said shaft for rotating the same, a ratchet wheel secured to said shaft, a housing on said base having a portion aligned with said ratchet wheel, said housing having a pair of spaced shoulders thereon separated by an opening in the portion aligned with said ratchet wheel, a leaf spring spanning said opening and supported at its ends on said shoulders, a pawl on said base between said leaf spring and said ratchet wheel and having a tooth portion operatively engageable with said ratchet wheel, said pawl being pivotally mounted for movement between a ratchet engaging position and a ratchet release position, a first projection on said pawl extending laterally therefrom and comprising a finger engaging portion for manually pivoting the pawl, a second projection on said pawl extending toward said leaf spring in a direction opposite from said tooth portion, said sec-

3

ond projection terminating in an edge portion, said leaf  
 spring being engaged by the edge portion of said pawl,  
 said pawl being positioned operably by said spring either  
 in said ratchet engaging position or said ratchet release  
 position.

1,172,480  
 1,175,659  
 1,177,767  
 2,990,159

5

## References Cited in the file of this patent

UNITED STATES PATENTS  
 1,106,995 Verner ----- Aug. 11, 1914

22,579  
 50,874

4

Napier et al. ----- Feb. 22, 1916  
 Pahlke ----- Mar. 4, 1916  
 Eggleston ----- Apr. 4, 1916  
 Haferkorn ----- June 27, 1961

## FOREIGN PATENTS

Germany ----- June 14, 1883  
 Austria ----- Nov. 25, 1911