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Patented Apr. 16, 1901.

H. H. BOGGS.
WINCH.

(Application filed July 5, 1900.)

(No Model.)

2 Sheets—Sheet 1.

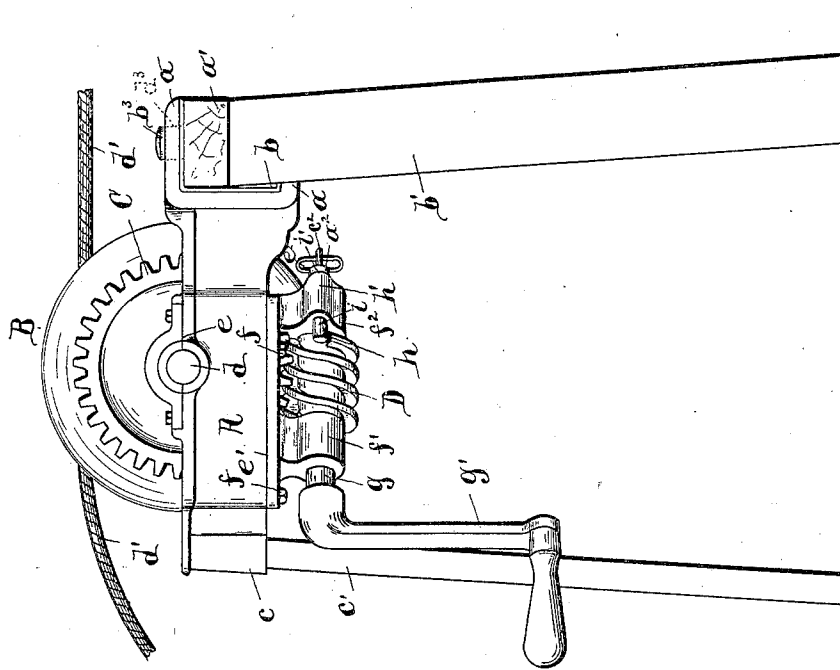


Fig. 1

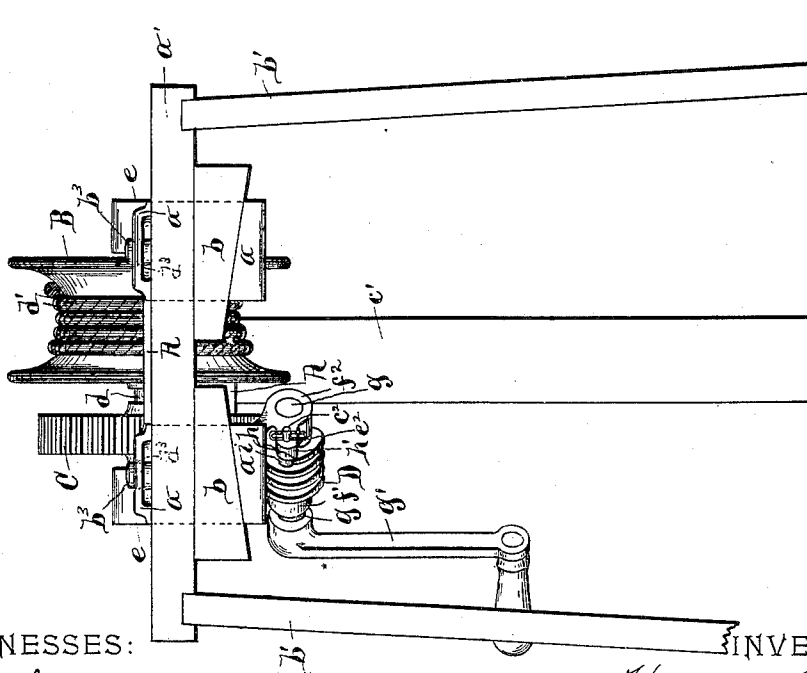


Fig. 2

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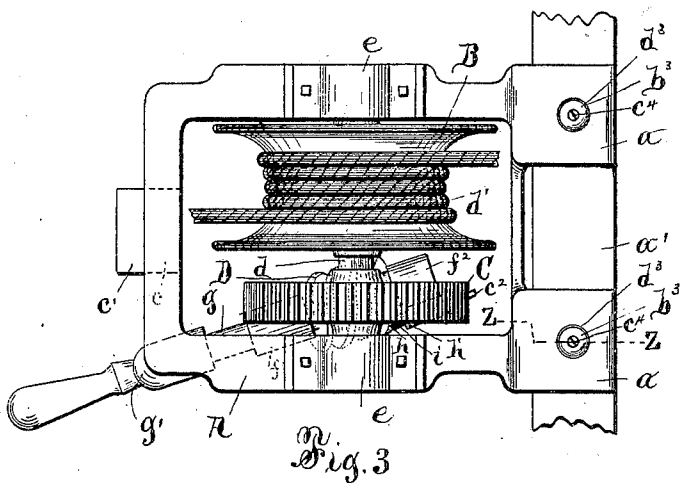
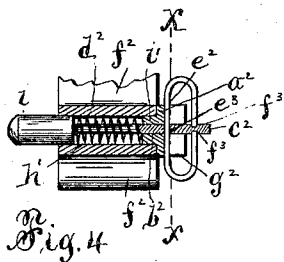
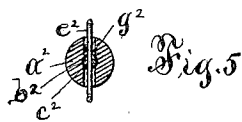
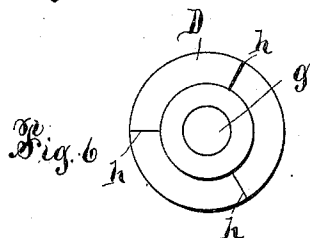
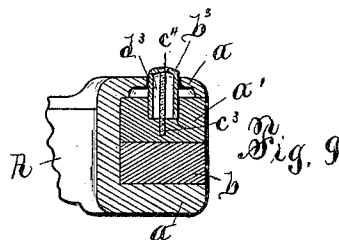
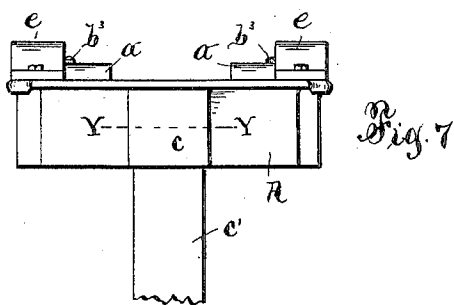
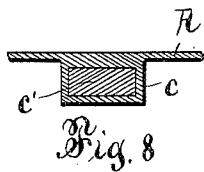
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UNITED STATES PATENT OFFICE.

HENRY H. BOGGS, OF SYRACUSE, NEW YORK.

WINCH.

SPECIFICATION forming part of Letters Patent No. 672,222, dated April 16, 1901.

Application filed July 5, 1900. Serial No. 22,467. (No model.)

To all whom it may concern:

Be it known that I, HENRY H. BOGGS, a citizen of the United States, and a resident of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Winches, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to mechanisms of various kinds in which a worm is employed for different purposes, and it has special reference to a winch in which a worm is combined with the usual and well-known gear to impart rotary motion to the winding-drum.

One of the objects of the invention is to arrange the worm in such relation to the other spur-gear as to produce a great amount of power in the winding-drum with the requirement of a small amount of labor on the part of the person operating the worm.

Another object is to provide means to lock the worm against rotation in one direction to prevent reverse motion of the winding-drum, and another object of the invention is also to provide the winch-frame with means for attaching the same to its support.

Furthermore, the object is to produce a winch which shall be simple, strong, and durable in construction and at the same time efficient in its operation and also inexpensive in its manufacture.

The invention consists, first and essentially, in the combination, with a supporting-frame, of a winding-drum and a spur-gear journaled on said frame and suitably connected, a worm imparting motion to the aforesaid spur-gear and formed with a plurality of abutments or shoulders, means for rotating said worm, and means automatically engaging said abutments for the purpose of preventing a reverse motion of the drum.

Furthermore, the invention consists in the novel details of construction and arrangement of the component parts, as hereinafter fully described, and specifically set forth in the claims.

In the accompanying drawings, Figure 1 is a side view of a winch embodying my improvements. Fig. 2 is a rear end view. Fig. 3 is a plan view of the same. Fig. 4 is an enlarged detail view of the dog which engages

the worm and the guide for the same and showing the means for holding said dog out of engagement with said worm. Fig. 5 is a vertical section on line X X in Fig. 4. Fig. 6 is an enlarged end view of the worm, showing the abutments or shoulders. Fig. 7 is a front end view of the winch-frame, showing the manner of attaching one of the supporting-legs. Fig. 8 is a transverse section on line Y Y in Fig. 7. Fig. 9 is a transverse section on line Z Z, Fig. 3.

Referring to the drawings, A represents the winch-frame, which is constructed of metal and is substantially of rectangular shape, although the same may be of any other desired form or design. Said frame is formed at one end with two pairs of rigid jaws *a a* for the reception of a horizontal supporting-bar *a'*. The face of each lower jaw is inclined, and between said lower jaws and the aforesaid bar are placed wedges *b b*, whereby the frame is firmly attached to the bar, and to said bar is secured a pair of supporting-legs *b' b'*. The bar *a'* is provided on its top with two thimbles *b³ b³*, which are firmly secured in recesses *c³ c³* by means of screws *c⁴ c⁴*. Said thimbles are adapted to enter holes *d³ d³*, formed in the respective upper jaws *a a*, and serve as guides in attaching the winch-frame to the bar. The opposite end of the frame A is formed at its center with a vertical socket *c*, in which is secured another supporting-leg *c'*.

It will be seen that the winch-frame readily be attached to a wagon, in which case the bar *a'* and supporting-leg *c'* are dispensed with, as the aforesaid jaws *a a* receive the end of the platform of the wagon and the wedges *b b* are placed between the platform and lower jaws in the manner hereinbefore described, and the draft of the rope or cable on the winding-drum B, hereinafter referred to, will effectually hold the frame in its position.

Extending across the top of the frame A is a shaft *d*, mounted in suitable journal-boxes *e e*, and to said shaft are secured the winding-drum B and a spur-gear C, and on said drum is wound the usual rope or cable *d'*.

To the under side of the frame A is secured a horizontal plate *e'*, which is made detachable by means of bolts *f f*. Said plate *e'* is formed with a pair of journal-boxes *f' f'*, which are axially in line, and in said boxes is

mounted a shaft g , which is under the aforesaid gear C and is disposed with its axis at an angle to the axis of the shaft d .

To the shaft g is secured the worm D , which is located between the journal-boxes $f^1 f^2$ and is thereby sustained against longitudinal movement. Said worm meshes with the gear C to impart rotary motion to the aforesaid drum B , and to one end of said shaft g is applied a hand-crank g' for rotating said worm. The threads of said worm are terminated abruptly, thus forming a plurality of abutments or shoulders $h h$, as shown in Figs. 1 and 6.

The aforesaid journal-box f^2 is formed on its outer side with a longitudinal guide h' , which is parallel to the axis of the worm, and in said guide slides a dog i , which is preferably of the form of a bolt and has its engaging end facing the walls of the threads of said worm. In the rear end of the guide h' is secured a bushing i' , which is formed with a head a^2 , bearing against the end of the guide and is provided with a longitudinal hole b^2 . Extending from the inner end of the dog i and rigidly secured thereto is a longitudinal rod c^2 , which passes through the guide and through the aforesaid hole b^2 in the bushing. Between the dog and bushing is located a coil-spring d^2 , which serves to force the dog outward, whereby its outer end is held against the threads of the worm and is thus made to engage the abutments formed on said threads to lock the worm against a reverse movement, and thereby prevent the unwinding of the drum B . Through a transverse hole e^3 in the rod c^2 passes a pin e^2 , which is seated in a transverse notch g^2 , formed in the head a^2 of the bushing when the dog i is in position to engage the abutments on the threads of the worm. The pin e^2 is bent to form a link and has its ends secured in recesses $f^3 f^3$, formed diametrically opposite in the rod c^2 , whereby the pin is prevented from dropping out of the hole e^3 . Said link forms a thumb-piece by which to operate the dog by hand, whereby the same can be retracted sufficiently to allow the abutments $h h$ to clear it. By thus retracting the dog the pin is moved out of the notch g^2 , and the rod c^2 can then be turned and the pin made to bear on the face of the head a^2 , whereby the dog is locked in said position.

What I claim is—

1. The combination with a suitable frame, of a transverse shaft journaled thereon, a winding-drum and a gear secured to said shaft, a suitably-journaled worm imparting motion to the gear, means for rotating said worm, and means adapted to directly engage the worm to prevent its rotation in one direction substantially as described.

2. The combination with a suitable frame, of a winding-drum and a gear journaled on said frame, a suitably-journaled worm disposed at an angle to the gear and imparting motion to the same and formed with abut-

ments or shoulders, means for rotating said worm, and a dog adapted to engage said abutments for the purpose specified.

3. In a winch, the combination of a winding-drum, a gear rotating said drum, a worm imparting motion to the gear and having its threads terminated with a plurality of abutments, means for rotating said worm, a sliding dog having its engaging end facing the walls of the threads to engage said abutments, and a spring actuating said dog substantially as described.

4. In a winch, the combination of a winding-drum, a gear rotating said drum, a worm imparting motion to the aforesaid gear, means for rotating the worm, a dog engaging the worm to prevent its rotation in one direction, a spring holding the dog in its engagement, and a lock adapted to hold said dog out of engagement substantially as described.

5. The combination with a supporting-frame, of a transverse shaft journaled thereon, a winding-drum and a gear secured to said shaft, a pair of journal-boxes secured to the frame, a second shaft mounted in said journal-boxes, a worm secured to the latter shaft, means to rotate said latter shaft, a guide formed on one of said journal-boxes, a dog sliding in said guide to prevent the rotation of the worm in one direction, a spring in said guide and actuating said dog, and means adapted to hold the dog out of its engagement substantially as described.

6. The combination with the worm having its threads terminated abruptly to form abutments, of a spring-actuated dog engaging said abutments for the purpose set forth.

7. The combination with the worm formed with a plurality of abutments, a suitably-supported guide, a dog sliding in said guide and engaging said abutments, and means adapted to hold said dog out of its engagement substantially as described.

8. The combination with the worm having its threads terminated abruptly to form abutments at one end of the worm, of a sliding dog disposed parallel with the axis of the worm and having its engaging end facing the walls of the threads as set forth.

9. The combination with a pair of suitably-supported journal-boxes, a shaft mounted in said journal-boxes, a worm secured to said shaft between the said journal-boxes and having its threads terminated abruptly to form a plurality of abutments at one end of the worm, a guide formed on one of the journal-boxes parallel to the axis of the worm, a dog sliding in said guide and engaging the aforesaid abutments, a spring in the guide actuating said dog, and a lock at one end of the guide adapted to hold said dog out of its engagement substantially as described.

10. The combination with a pair of suitably-supported journal-boxes, of a shaft mounted in said journal-boxes, a worm secured to said shaft and having its threads terminated abruptly to form abutments at one

end of the worm, a guide formed on one of said journal-boxes parallel to the axis of the worm, a bushing secured in one end of the guide and formed with a head provided with a transverse notch, a dog sliding in the opposite end of the guide and provided with a rod extending through the guide and bushing, a spring surrounding said rod and disposed between the dog and bushing to hold the dog in engagement with the aforesaid abutments, and a pin passing through the rod and seated in the aforesaid notch and adapted to be removed from said notch and to bear on face of the head to hold said dog out of its engagement substantially as described.

11. The combination of a guide, a bushing secured in one end of said guide and formed with a head provided with a transverse notch, a dog sliding in the opposite end of the guide, a rod extending from the dog through the guide and bushing and provided with a hole adjacent to the aforesaid notch, a spring disposed between the dog and bushing, a pair of recesses formed diametrically opposite in said rod, and a pin passing through said hole and seated in said notch, said pin being bent to form a link and having its ends secured in the aforesaid recesses substantially as described.

12. The combination with the frame, of a plate detachably secured to said frame and formed with a pair of journal-boxes, a worm supported in said journal-boxes, a guide formed on one of said journal-boxes parallel to the axis of said worm, and a spring-actu-

ated dog sliding in said guide and engaging said worm to prevent its rotation in one direction substantially as described.

13. The combination of a support, a winch-frame formed at one end with two pairs of rigid attaching-jaws for the reception of said support, the faces of the lower jaws being inclined in opposite directions, wedges inserted between said lower jaws and the support, there being a socket formed at the opposite end of the frame, and a supporting-leg secured in said socket as set forth.

14. The combination with the supporting-bar provided on its top with a pair of upwardly-extending thimbles, of the winch-frame formed with two pairs of rigid jaws receiving said supporting-bar, the upper jaw of each pair formed with an opening for the reception of the aforesaid thimbles, the lower jaws each being inclined, and wedges placed between said lower jaws and the supporting-bar as set forth.

15. The combination with a bar provided with a pair of supporting-legs, of a winch-frame formed at one end with two pairs of rigid jaws by which it is supported on said bar, a socket formed at the opposite end of said frame, and a supporting-leg secured in said socket as set forth.

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Witnesses:

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J. J. LAASS.