

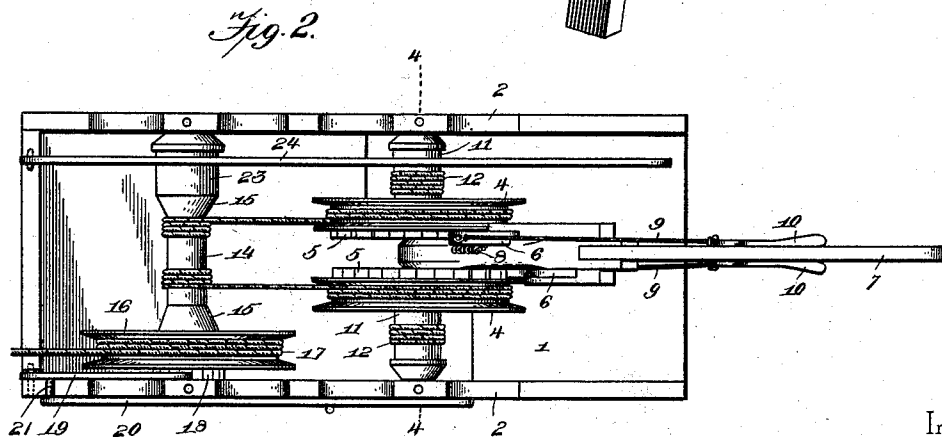
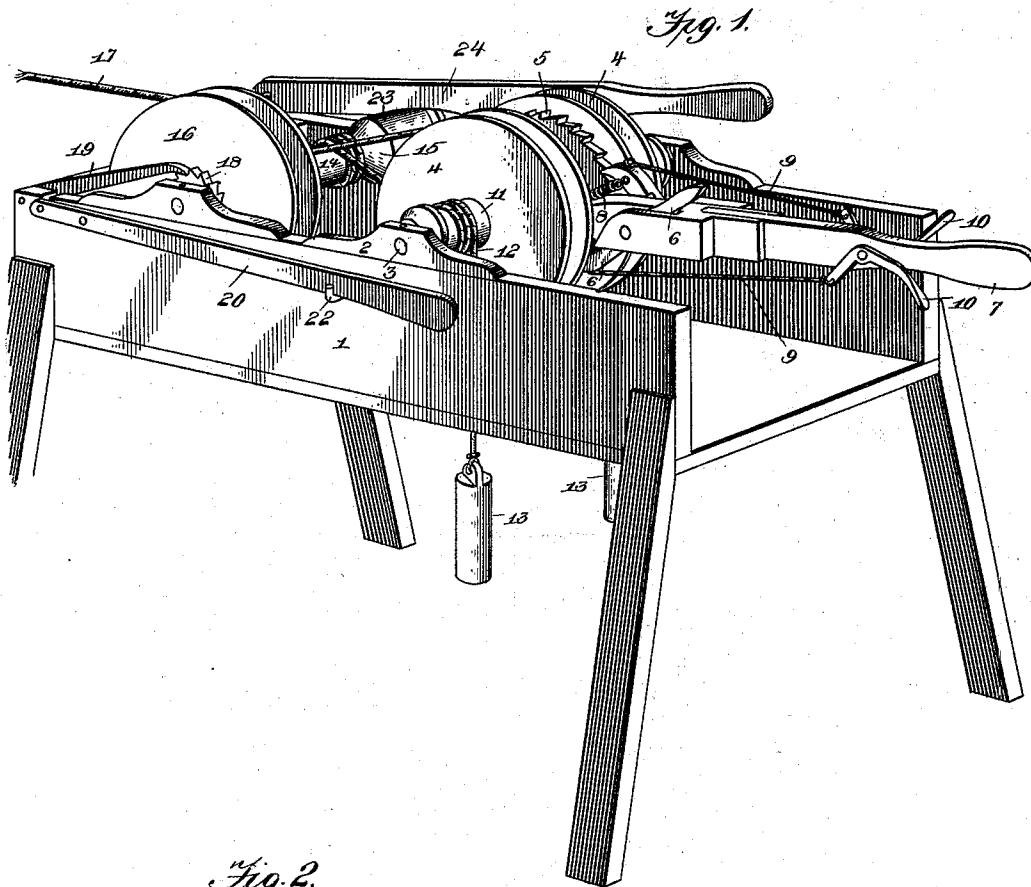
(No Model.)

2 Sheets—Sheet 1.

W. W. MANGUM, Jr.
WINCH.

No. 547,273.

Patented Oct. 1, 1895.



Inventor

William W. Mangum, Jr.

Witnesses

John C. Shaw
[Signature]

By his Attorneys,

Chas. Snow & Co.

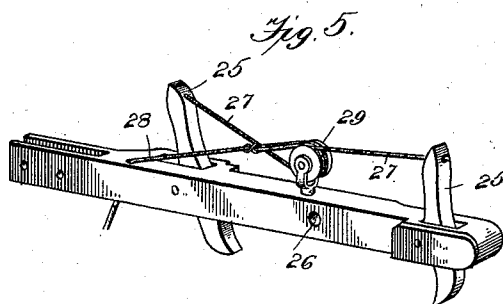
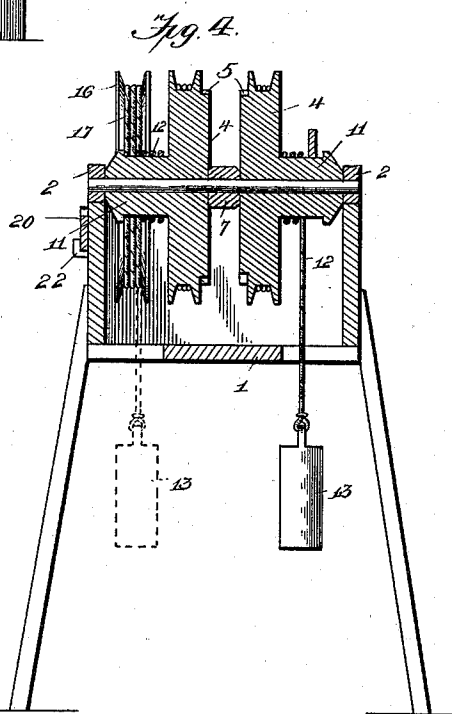
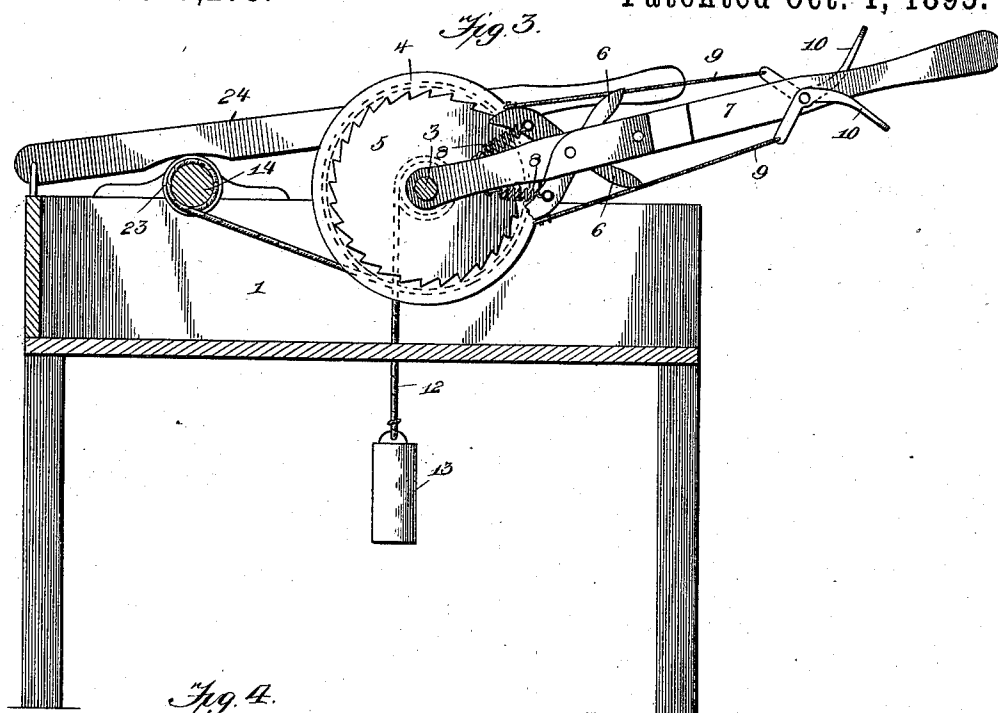
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W. W. MANGUM, Jr.
WINCH.

2 Sheets—Sheet 2.

No. 547,273.

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Inventor

William W. Mangum, Jr.,

By his Attorneys,

Cash & Co.

Witnesses

John C. Shaw
J. E. K. K.

UNITED STATES PATENT OFFICE.

WILLIAM W. MANGUM, JR., OF NIXON, TENNESSEE, ASSIGNOR OF ONE-HALF
TO J. C. MARTIN, OF SAME PLACE.

WINCH.

SPECIFICATION forming part of Letters Patent No. 547,273, dated October 1, 1895.

Application filed July 2, 1895. Serial No. 554,739. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. MANGUM, Jr., a citizen of the United States, residing at Nixon, in the county of Hardin and State of Tennessee, have invented a new and useful Winch, of which the following is a specification.

My invention relates to winches, and has for its object to provide a simple and efficient device of the class named in which a uniform motion in the desired direction may be imparted to the drum upon which a hoisting-cable is reeled, the motion being imparted thereto by an oscillatory operating-lever.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a winch constructed in accordance with my invention. Fig. 2 is a plan view of the same. Fig. 3 is a longitudinal section. Fig. 4 is a transverse section on the line 4 4 of Fig. 2. Fig. 5 is a detail view of a modified form of operating lever.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates a frame, in suitable bearings 2 of which are mounted the extremities of a transverse spindle 3. Mounted upon said spindle are the coaxial operating-reels 4, one of which may be secured to the spindle, the same being capable of free rotation in either direction. These operating-reels carry ratchet-wheels 5, of which the teeth are adapted to be engaged by pawls 6, carried by an operating-lever 7, said lever being fulcrumed upon the spindle between the planes of the ratchet-wheels and the pawls being inclined in opposite directions to agree with the opposite inclination of the teeth of said ratchet-wheels, whereby rotation in opposite directions is imparted to the operating-reels. Actuating-springs 8 are connected to the pawls and normally hold them in operative relation with the ratchet-wheels, and the free ends of said pawls are connected by means of cords 9 with releasing-levers 10, fulcrumed upon the oper-

ating-lever within reach of the hand by which the operating-lever is grasped.

The operating-reels are constructed with laterally-extending hubs, forming counterbalancing drums 11, and upon these drums are reeled weight-cords 12, from which are suspended the counterbalancing-weights 13. The weight-cords are reeled in opposite directions upon the counterbalancing-drums and are adapted to assist the rotation of the operating-reels in the direction in which they are turned by the positive engagement therewith of the pawls carried by the operating-lever, for a purpose hereinafter explained.

Mounted in suitable bearings on the frame parallel with the axes of the operating-reels is a spool 14, to which are attached the extremities of operating-cables coiled upon the operating-reels, said operating-cables being reeled in the same direction upon said spool, whereby the rotation of either operating-reel will cause the rotation in a uniform direction of the spool. The ends of the spool are tapered or conical in construction, as shown at 15, to prevent displacement of the operating-cables and increase the relative speed of rotation of the spool as the reeling of the operating-cords upon the spool progresses. The spindle of the spool also carries a hoisting-drum 16, upon which is reeled the hoisting-cable 17, a stop-ratchet 18 being fixed to said spindle and being normally engaged by a stop-pawl 19 to prevent backward rotation. Arranged in operative relation at one end with said stop-pawl is a trip-lever 20, fulcrumed upon the side of the frame and having at the extremity of its short arm a pin 21 to engage the stop-lever and elevate it at its free end from engagement with the stop-ratchet when the long arm of said lever is depressed. The lever 20 is normally held out of engagement with the stop-pawl in a clip or keeper 22, supported by the frame. At the opposite end of the spool from the hoisting-drum is a brake-wheel 23, with which co-operates a brake-lever 24, fulcrumed at one end upon the frame and adapted to be compressed to bear upon the surface of said wheel to check the rotation of the hoisting-drum when the stop-pawl 19 has been disengaged from the

ratchet-wheel 18 to allow the object—as, for instance, a well-bucket—to descend.

This being the construction of the apparatus, the operation thereof is as follows: A swinging
5 or oscillatory motion is imparted to the operating-lever between the planes of the operating-reels to cause the rotation alternately in opposite directions of said reels. During the
10 rotation of one of the reels by the direct engagement therewith of one of the pawls 6 the spool, and hence the hoisting-drum, are turned to reel the hoisting-cable. This rotation of the spool has the effect of loosening the operating-cable which is wound upon the other
15 operating-reel; but said second operating-reel is turned to take up this slack of the operating-cable and thus rotate a distance corresponding with the first-named operating-reel by means of the counterbalancing-weight.
20 When the operating-lever is moved in the opposite direction, the previously idle operating-reel receives the positive movement imparted by the operating-lever, and hence imparts motion through the operating-cable to the
25 spool, and the first-named operating reel is turned to take up the slack by means of its attached counterbalancing device.

From the above description it will be seen that the improved winch is adapted for a
30 variety of uses—as, for instance, in connection with wells and for hoisting objects under other conditions.

In Fig. 5 I have shown a modified form of operating-lever in which the pawls 25 are arranged upon opposite sides of the fulcrum-point 26, and to their other extremities are attached the branches 27 of a releasing-cord 28, passing around a pulley 29, arranged at a point between the pawls, said cord being
40 designed to facilitate the disengagement of the pawls from the ratchet-wheels when it is desired to allow a hoisted object to return by gravity to its former position.

Various changes in the form, proportion, and the minor details of construction may be
45 resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described my invention, what I
50 claim is—

1. In a device of the class described, the

combination with a hoisting drum and cable, a spool fixed to and rotatable with said drum, co-axially mounted operating reels having operating cables reeled thereon in opposite directions and attached to said spool to reel thereon
55 in the same direction, means for rotating said reels alternately in opposite directions, such means including ratchet-wheels and an operating lever fulcrumed between the planes of
60 said reels and having pawls to alternately engage the ratchet-wheels, and counterbalancing devices including drums fixed, respectively, to the operating reels, ropes and counterbalancing weights, said ropes being reeled upon the
65 drums to impart motion to the operating reels in the direction in which said reels are turned by the positive engagement therewith of the operating lever, whereby the slack of an operating cable attached to one of the reels during
70 the positive rotation of the other reel is taken up by the counterbalancing device, substantially as specified.

2. A winch having a frame, a hoisting drum and cable, a stop-ratchet fixed to the drum, a
75 stop-pawl arranged in operative relation with the stop-ratchet, and a trip-lever fulcrumed upon the frame and having a pin to engage the stop-pawl to disengage it from the stop-ratchet, a spool secured to and adapted to
80 rotate with the hoisting drum, a brake-wheel carried by the spindle of the spool, a brake-lever co-operating with the brake-wheel, co-axial operating reels carrying ratchet wheels, an operating lever provided with pawls for
85 engaging said ratchet wheels and imparting motion in opposite directions alternately to the operating reels, operating cables reeled in opposite directions upon the operating reels and in the same direction upon said spool, and
90 counterbalancing devices including drums fixed upon the operating reels, and cables reeled in opposite directions upon said drums and carrying weights, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILLIAM W. MANGUM, JR.

Witnesses:

G. T. SHANNON,
J. E. WHITE.