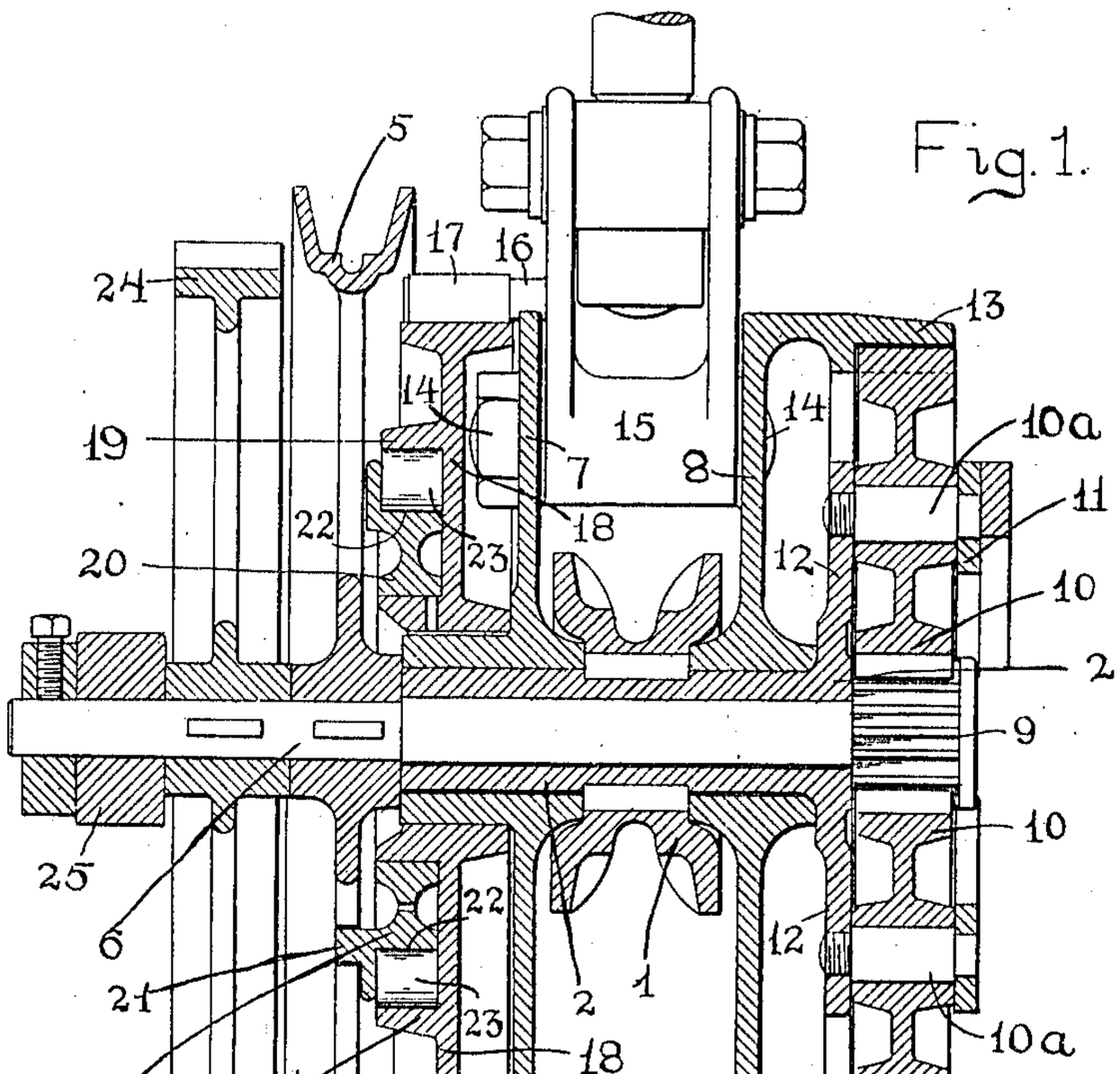
L. H. BRINKMAN.

HOISTING MECHANISM.

APPLICATION FILED OCT. 29, 1904.

953,192. Patented Mar. 29, 1910.

Fig. 1.



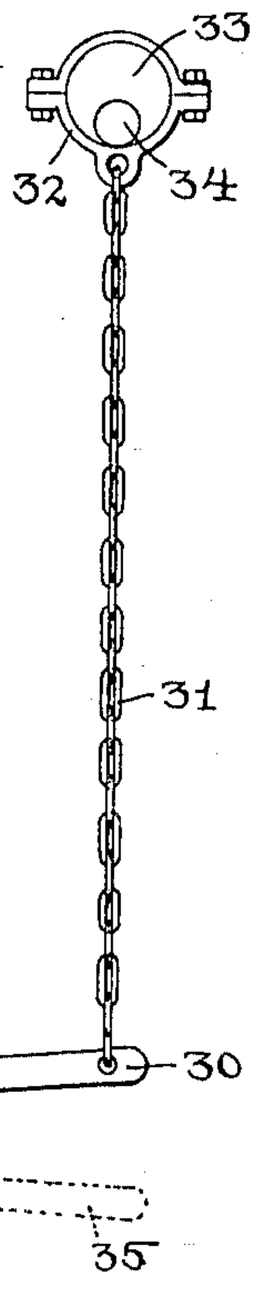




Fig. 2.

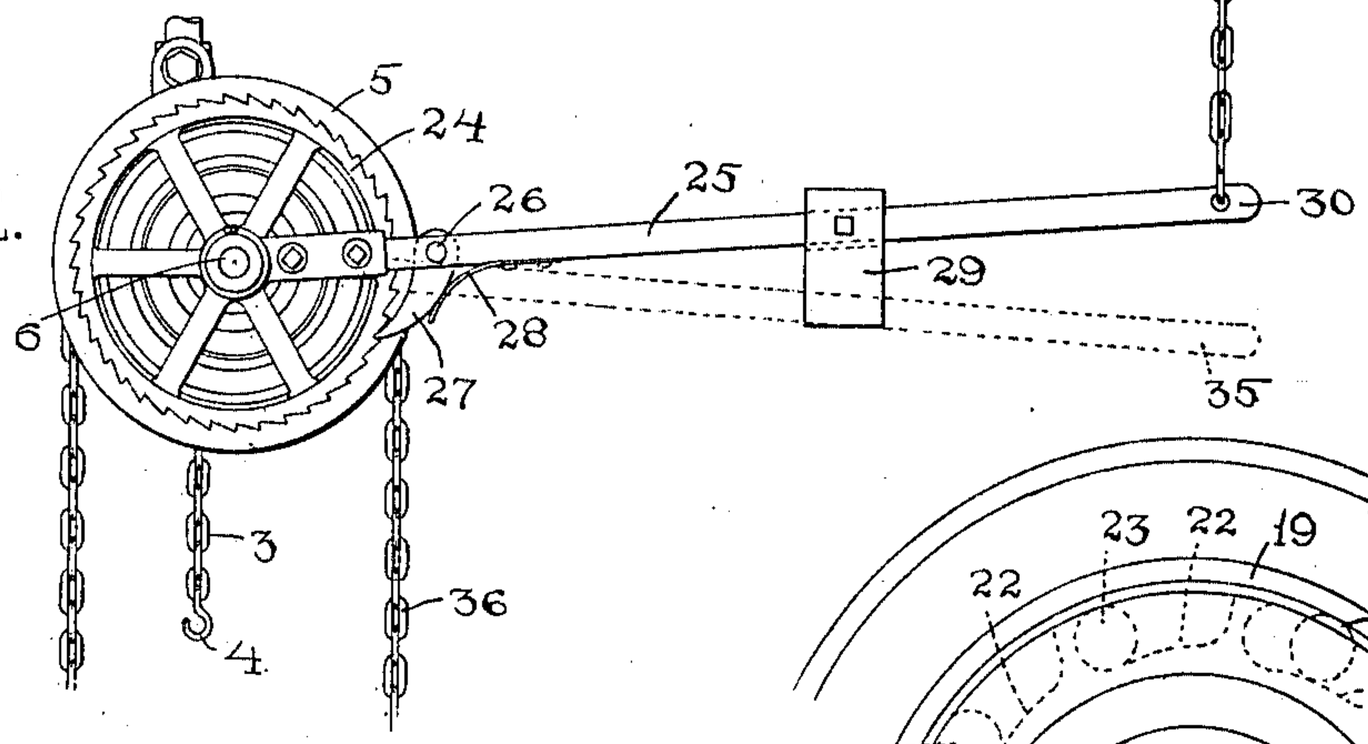






Fig. 3.

Witnesses.

Roy D. Tolman.

Penelope Comberback.

Inventor

Louis H. Brinkman

By Rufus B. Fowler

Attorney

# UNITED STATES PATENT OFFICE.

LOUIS H. BRINKMAN, OF WEST HARTFORD, CONNECTICUT, ASSIGNOR TO WHITLOCK COIL PIPE COMPANY, OF WEST HARTFORD, CONNECTICUT, A CORPORATION OF CONNECTICUT.

## HOISTING MECHANISM.

953,192. Specification of Letters Patent. Patented Mar. 29, 1910.

Application filed October 29, 1904. Serial No. 230,461.

*To all whom it may concern:*

Be it known that I, LOUIS H. BRINKMAN, a citizen of the United States, residing at West Hartford, in the county of Hartford and State of Connecticut, have invented a new and useful Improvement in Hoisting Mechanism of which the following is a specification, accompanied by drawings forming a part of the same, in which—

Figure 1 is a central vertical section of a hoisting mechanism embodying my invention. Fig. 2 is an end view on a reduced scale showing my method of applying a uniform force to the winding drum, and Fig. 3 is a diagrammatic view illustrating the cam surfaces on the check wheel 19.

Similar reference letters and figures refer to similar parts in the different views.

My invention relates to means for applying a uniform rotating force to portable and fixed hoists so that the winding drum may be rotated whenever the resistance of the load to be lifted is less than the force applied to it, and consists in the following described arrangement of parts.

The construction and operation of those parts of my hoisting mechanism by which the force applied is multiplied at the winding drum is well known and is similar to that in common use which may be described briefly as follows. Referring to the accompanying drawings 1 is a toothed winding drum, or sheave, attached to a hollow main shaft 2 and which has its periphery formed to engage with the links of a lifting chain 3, Fig. 2, having a hook 4 at its lifting end. 5 is the driving sheave which is keyed to the shaft 6 which latter turns within the shaft 2, and the shaft 2 carries the winding sheave 1 which runs in bearings in the frames 7 and 8. At the end of the shaft 6 is a pinion 9 which engages pinions 10, 10, rotating on studs $10^a$, $10^a$, held in a ring 11 and a flange 12 on the hollow shaft 2. The pinions 10, 10, also engage with the fixed internal annular gear 13 forming part of the frame 8. The frame 8 is connected with the frame 7 by studs, one of which is shown at 14. The stud 14 forms the pivot of the yoke 15, by which the connected frames 7 and 8 are suspended. The yoke 15 is provided with a side horn 16 to which is attached one end of the brake strap 17 which embraces the brake pulley 18, having a flange 19 inclosing the check wheel 20 clutched to the driving sheave 5 by an arm 21. The periphery of the check wheel has a series of short cam surfaces 22, as shown in Fig. 3, each provided with a friction roller 23, which allows the check wheel to turn in one direction, but prevents its opposite movement by the wedging action of the rollers 23.

The above described hoisting mechanism is substantially like that shown in the United States Letters Patent to Thomas A. Weston, No. 413,004, dated October 15, 1889, to which Letters Patent reference is hereby made for a more detailed description. In my improvement I place on the outside of the driving sheave 5 a ratchet wheel 24 also keyed to the shaft 6, and I pivot on the shaft 6 a lever 25 to which I pivot at 26 a pawl 27 held in engagement with the teeth of the ratchet wheel 24 by the spring 28. Adjustably fastened to the lever 25 is a weight 29, which weight may be varied as desired both in size and position. To the end 30 of the lever 25 is attached a chain 31, the other end of which is attached to an eccentric strap 32 on an eccentric 33 on a rotating shaft 34. By the revolution of the shaft 34 and eccentric 33, the end 30 of the lever 25 may be raised, thereby raising the pawl 27 against the downward strain exerted by the weight 29 and without movement of the ratchet wheel 24. On the further revolution of the eccentric 33, the chain 31 is lowered, thereby slackening the chain between the eccentric 33 and the lever 25, allowing the weight 29 to exert a force to rotate the ratchet wheel 24 through the pawl 27. If the force applied to rotate the ratchet wheel 24 is in excess of the resistance offered by the load attached to the hook 4, the shaft 6 will be turned and the hoisting mechanism will be put in action to raise the load. The lever 25 will be carried down by the weight 29 to the end of the slack chain 31 and will assume the position shown by the dotted lines 35 from whence it is again raised by the continued revolution of the eccentric 33 causing the pawl 27 to engage another tooth on the ratchet wheel 24, and the operation is repeated. If the load on the hook 4 exerts a greater resistance than the force exerted by the weight 29 the ratchet wheel 24 will not be rotated and the eccentric 33 will rotate without result. The force of the weight 29, however, will be exerted on the ratchet wheel 24 uniformly, and the movement of

the ratchet wheel will take place whenever the force of the weight 29 exceeds the load on the hook 4. A chain 36 is applied to the sheave 5 so that the hoisting mechanism may be rotated by hand if desired in order to quickly take up any slack in the lifting chain 3.

My improved hoisting mechanism is adapted for use whenever it is desired to exert a uniform lifting force on the chain 3, and the amount of force exerted may be adjusted at will by varying the position of the weight 29 on the lever 25.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a hoisting mechanism, the combination with a winding drum or sheave, of a ratchet wheel operatively connected with said winding drum, a pivoted lever, a pawl on said lever to engage said ratchet wheel, means for exerting a uniform downward strain on said lever, said means located on the same side of the pivot of said lever as said pawl, whereby said ratchet wheel is rotated by said downward strain, and means for intermittently lifting said pawl against said downward strain without movement of said ratchet wheel.

2. In a hoisting mechanism, the combination with a winding drum or sheave, of a ratchet wheel operatively connected with said winding drum, a lever pivoted concentrically with said ratchet wheel, a pawl on said ratchet lever to engage said ratchet wheel, means for exerting a uniform downward strain on said lever, said means located on the same side of said pivot as said pawl, whereby said ratchet wheel is rotated by said downward strain, a rotating shaft and means actuated by said rotating shaft for lifting said lever against said downward strain to provide for the engagement of another tooth of said ratchet wheel by said pawl.

3. In a hoisting mechanism, the combination with a winding drum or sheave, of a pivoted lever arranged to revolve said winding drum by a downward movement of said lever, means for exerting a uniform downward strain on said lever to revolve said drum, and means for lifting said lever at regular intervals against said downward strain without movement of said drum.

4. In a hoisting mechanism, the combination with a winding drum or sheave, of a ratchet wheel operatively connected with said winding drum, a pivoted lever, a pawl pivoted to said lever to engage said ratchet wheel, a weight adjustably attached to said lever, and a rotating shaft provided with an eccentric having an eccentric strap connected with the end of said lever.

5. In a hoisting mechanism, the combination with a winding drum or sheave, of a ratchet wheel operatively connected with said winding drum, means for intermittently rotating said ratchet wheel, means acting automatically for holding said ratchet wheel from backward rotation, comprising friction rollers arranged to prevent the backward rotation of said ratchet wheel.

Dated this 25th day of October 1904.

LOUIS H. BRINKMAN.

Witnesses:

E. D. REDFIELD,

F. B. SMITH.