A. W. WAERN.

MECHANICAL HOIST.

APPLICATION FILED MAR. 15, 1920.

1,419,181. Patented June 13, 1922.

2 SHEETS—SHEET 1.

Fig. 2.

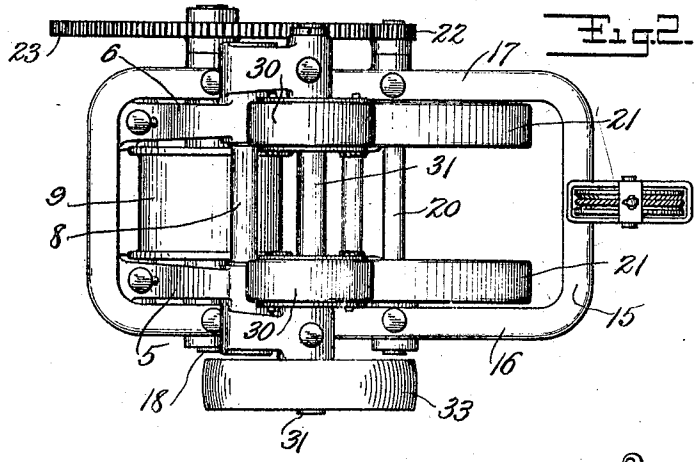
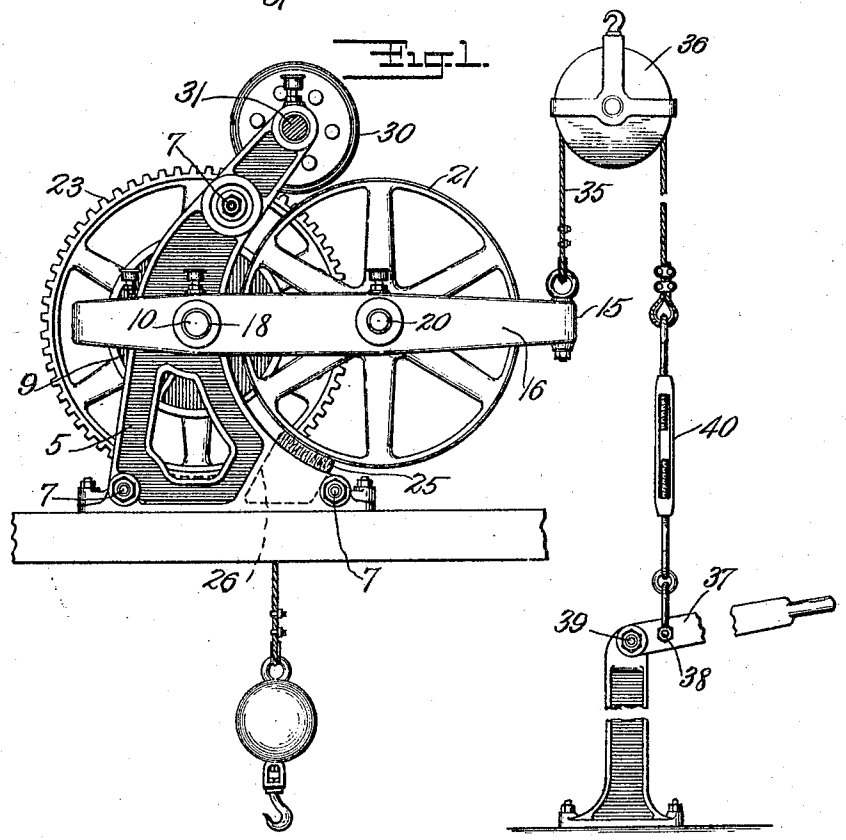


Fig. 1.



Inventor

Adolph W. Waern

By his Attorney

E. W. Marshall

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2 SHEETS—SHEET 2.

Fig. 3.

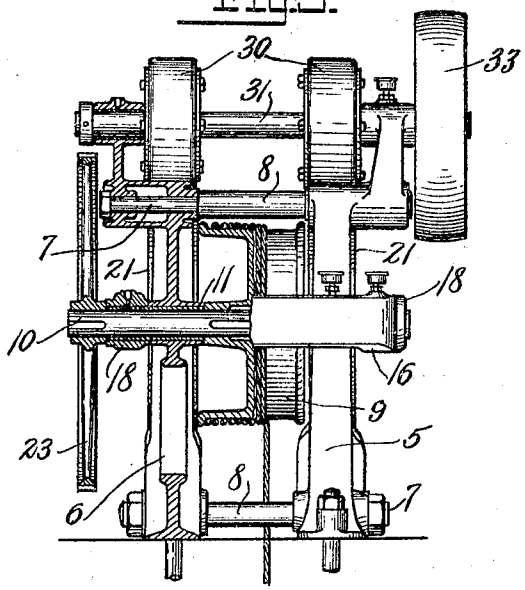
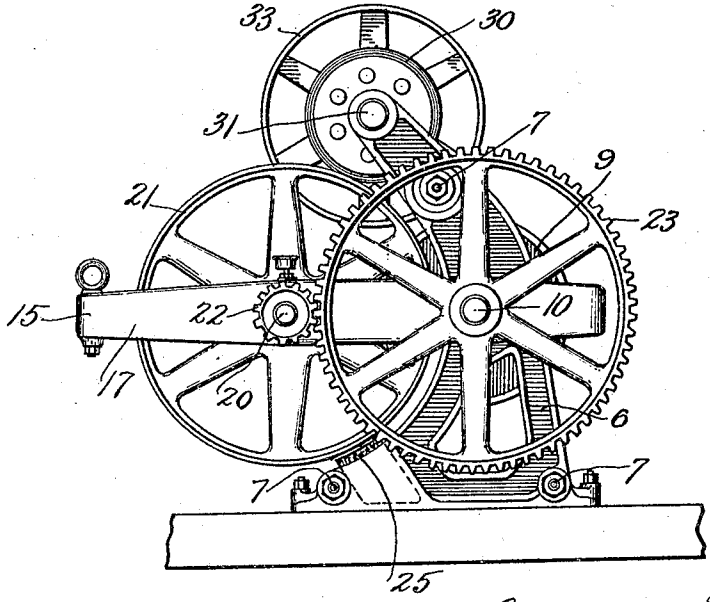


Fig. 4.



Inventor
Adolph W. Waern

By his Attorney
E. W. Marshall

UNITED STATES PATENT OFFICE.

ADOLPH W. WAERN, OF BROOKLYN, NEW YORK, ASSIGNOR TO JOSEPH H. WALLACE & CO., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

MECHANICAL HOIST.

1,419,181. Specification of Letters Patent. **Patented June 13, 1922.**

Application filed March 15, 1920. Serial No. 365,821.

To all whom it may concern:

Be it known that I, ADOLPH W. WAERN, a citizen of the United States of America, and a resident of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Mechanical Hoists, of which the following is a specification.

The present invention relates to hoisting apparatus, and the objects of the invention are to provide a powerful and quick operating device of this character which will be relatively simple in construction, efficient in operation and entirely practical.

In the accomplishment of these objects, I have developed a number of novel features of construction, combinations and arrangements of parts, all of which will be fully described in the course of the following specification, reference being had to the accompanying drawings, wherein I have illustrated the invention embodied in one of its simplest and most practical forms.

Figure 1 in the drawings referred to is a side elevation of the complete apparatus, parts being indicated as broken away.

Figure 2 is a plan view of the device.

Figure 3 is an end view with parts shown in section.

Figure 4 is a view of the reverse side of the machine from that shown in Figure 1.

The frame or base of the apparatus disclosed is made up of the two side frames 5 and 6, secured together in properly spaced relation by the through bolts 7 and the interposed spacing sleeves 8. Journalled between the sides of this frame is the hoisting drum 9 shown as carried by a shaft 10 supported in bearing hubs 11 carried by the side frames. These bearing hubs may be in the form of bushings inserted in the side frames, as indicated particularly in Figure 3.

15 designates a swinging frame in the form of a yoke having substantially parallel side arms 16, 17 embracing the sides of the supporting frame and fulcrumed at 18 on the outwardly projecting portions of the bearing hubs 11. These bearing hubs thus serve the double purpose of journals for the hoisting drum and pivotal supports for the swinging yoke.

20 designates a shaft journalled between the side arms of the yoke and carrying the friction wheel or wheels 21. This shaft is connected with the hoisting drum shaft by suitable gearing, the same being herein shown as a pinion 22 on shaft 20 which meshes directly with a gear 23 on the extended outer end of the drum shaft. These gears by reason of the fact that the yoke is pivoted on the axis of the drum, are maintained constantly in fully meshed relation irrespective of the swinging movement of the yoke.

When the hoist is not in operation, the friction wheel or wheels 21 rest on the brake shoes 25 seated in the pockets 26 provided in the side frames. The weight of the parts with addition of load on shoes, corresponding to load on cable, is sufficient to hold the friction wheel firmly in engagement with the brake shoe. The more the hoist cable is loaded the larger the braking effect.

The friction wheel or wheels 21 are driven by friction wheels 30 carried by a shaft 31 journalled between the upper portions of the side frames and provided with suitable means for the application of power thereto, such as drive pulleys 33.

The friction drive pulleys and brake shoes are so disposed at opposite sides of the friction gears that only a relatively slight movement of the swinging yoke will be necessary to carry the friction wheels from engagement with the brake shoes, for instance, into engagement with the drive wheels. The means for effecting this movement are shown as a flexible cable 35 connected with the free end of the yoke and extended over a pulley 36 to hand lever or controlling member 37. The cable is shown as connected at 38 with said control lever at a point relatively close to the fulcrum 39 of the lever so as to enable the yoke to be shifted with but slight exertion on the part of the operator. The flexible connection 36 may have interposed in it a turn-buckle or other adjustable device 40 for the purpose of taking up wear and for regulating the position of the control lever.

The mechanism described is relatively simple and inexpensive and provides a quick acting hoist which is easily controlled and is adapted for a wide variety of uses.

What I claim is:

1. In a mechanical hoist, the combination with a hoisting drum provided with a gear, of a swinging lever, a friction wheel supported by said lever and provided with a pinion in mesh with the drum gear, a fric-

tion drive wheel and a brake shoe disposed at opposite sides of the first mentioned friction wheel and said brake shoe being arranged to form a rest for the said friction wheel, and means for swinging the lever to carry said first mentioned friction wheel from engagement with the brake shoe into engagement with the drive wheel.

2. In a mechanical hoist, the combination with a hoisting drum provided with a gear, of a swinging lever, a friction wheel supported by said lever and provided with a pinion in mesh with the drum gear, a friction drive wheel pinion and a brake shoe disposed at opposite sides of the first mentioned friction wheel and said brake shoe being arranged to form a rest for the said friction wheel, and means for swinging the lever to carry said first mentioned friction wheel from engagement with the brake shoe into engagement with the drive wheel, said means including a pivoted lever and a flexible connection extending from a point adjacent the fulcrum of said lever to the free end of the swinging lever.

3. In a mechanical hoist, a hoisting drum provided with a wheel, a lever fulcrumed on the axis of said drum, a friction gear carried by said lever and provided with a pinion constantly in mesh with the drum gear, a friction drive wheel and a brake shoe disposed at opposite sides of the first mentioned friction wheel, and means for swinging the lever to carry the first mentioned friction wheel from engagement with the brake shoe into engagement with the drive wheel.

4. In a mechanical hoist, a supporting frame provided with a hub, a hoisting drum journalled in said hub, a lever pivoted on said hub, a friction wheel carried by said lever, connecting gearing between said friction wheel and the hoisting drum, a friction drive wheel and a brake shoe disposed at opposite sides of the first mentioned friction wheel, and means for swinging the lever about the supporting hub to carry the first mentioned friction wheel from engagement with the brake shoe into engagement with the drive wheel.

5. In a mechanical hoist, a supporting frame provided with hubs, a shaft journalled in said hubs and carrying a hoisting drum, a swinging yoke having side arms pivoted on the hubs of the frame, a shaft journalled between said side arms, a friction wheel on said shaft, connecting gearing between said shaft and the drum shaft, means for swinging the yoke about the hubs, and a friction drive wheel and a brake shoe disposed at opposite sides of the first mentioned friction wheel.

6. In a mechanical hoist, spaced side frames, a hoisting drum journalled between said side frames, a yoke embracing the side frames and pivotally supported thereby, a friction wheel journalled in said yoke, connecting gearing from said friction wheel to the drum, a friction drive wheel and a brake shoe disposed at opposite sides of the first mentioned friction wheel, and means for swinging the yoke to carry the first mentioned friction wheel from engagement with the brake shoe into engagement with the drive wheel.

7. A mechanical hoist comprising side frames, a drive shaft journalled between the upper portions of said side frames and provided with means for the application of power thereto, a friction drive wheel on said shaft, a hoisting drum journalled between the said frames below the drive shaft, a yoke pivotally supported by the side frames on an axis substantially concentric to the axis of the hoisting drum, a shaft journalled in the yoke, gearing between said shaft and the hoisting drum, a friction wheel on the shaft arranged for engagement with the friction drive wheel and a brake shoe supported at the lower portion of one of the side frames for enagagement with the friction wheel.

8. A mechanical hoist comprising side frames, a drive shaft journalled between the upper portions of said side frames and provided with means for the application of power thereto, friction drive wheels on said shaft, a hoisting drum journalled between the said frames below the drive shaft, a yoke pivotally supported by the side frames on an axis substantially concentric to the axis of the hoisting drum, a shaft journalled in the yoke, gearing between said shaft and the hoisting drum, friction wheels on the shaft arranged for engagement with the friction drive wheels and brake shoes supported at the lower portion of the side frames for engagement with the friction wheels.

In witness whereof, I hereunto set my hand this 11th day of March, 1920.

A. W. WAERN.