

S. H. ROUNDS.  
HYDRAULIC HOIST.

No. 174,643.

Patented March 14, 1876.

Fig 1

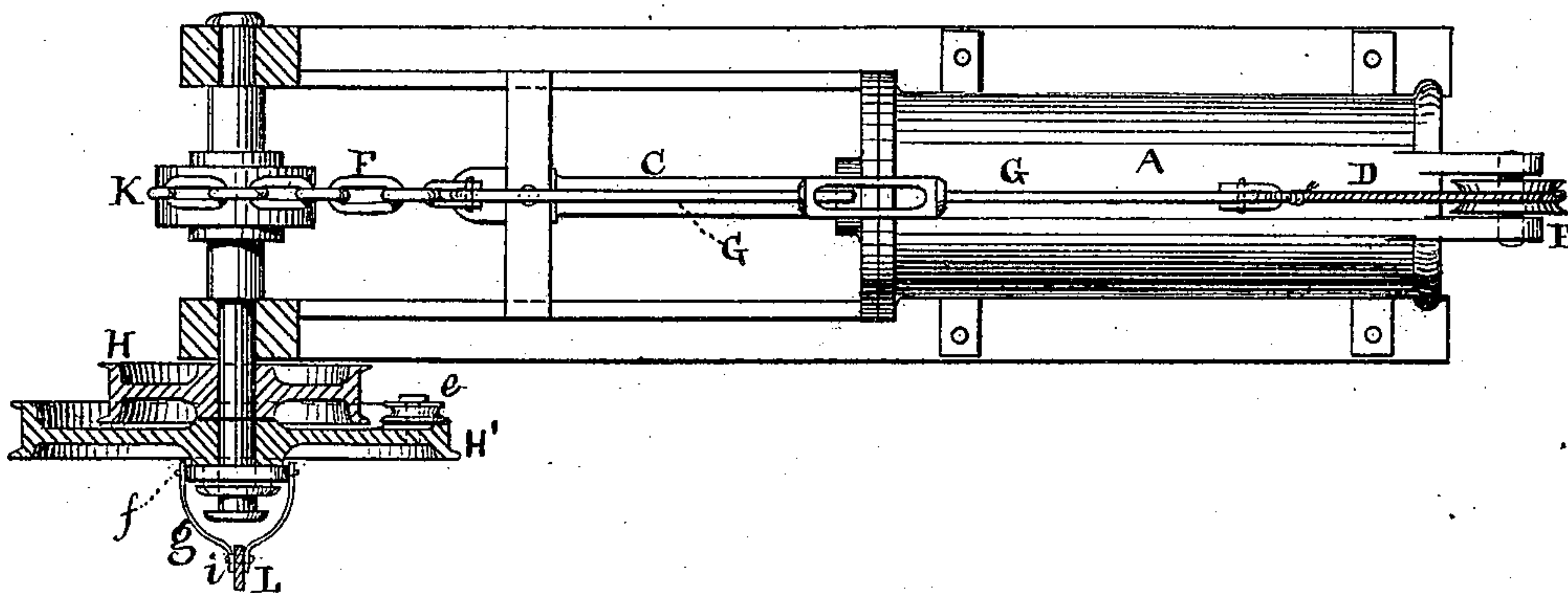


Fig. 2

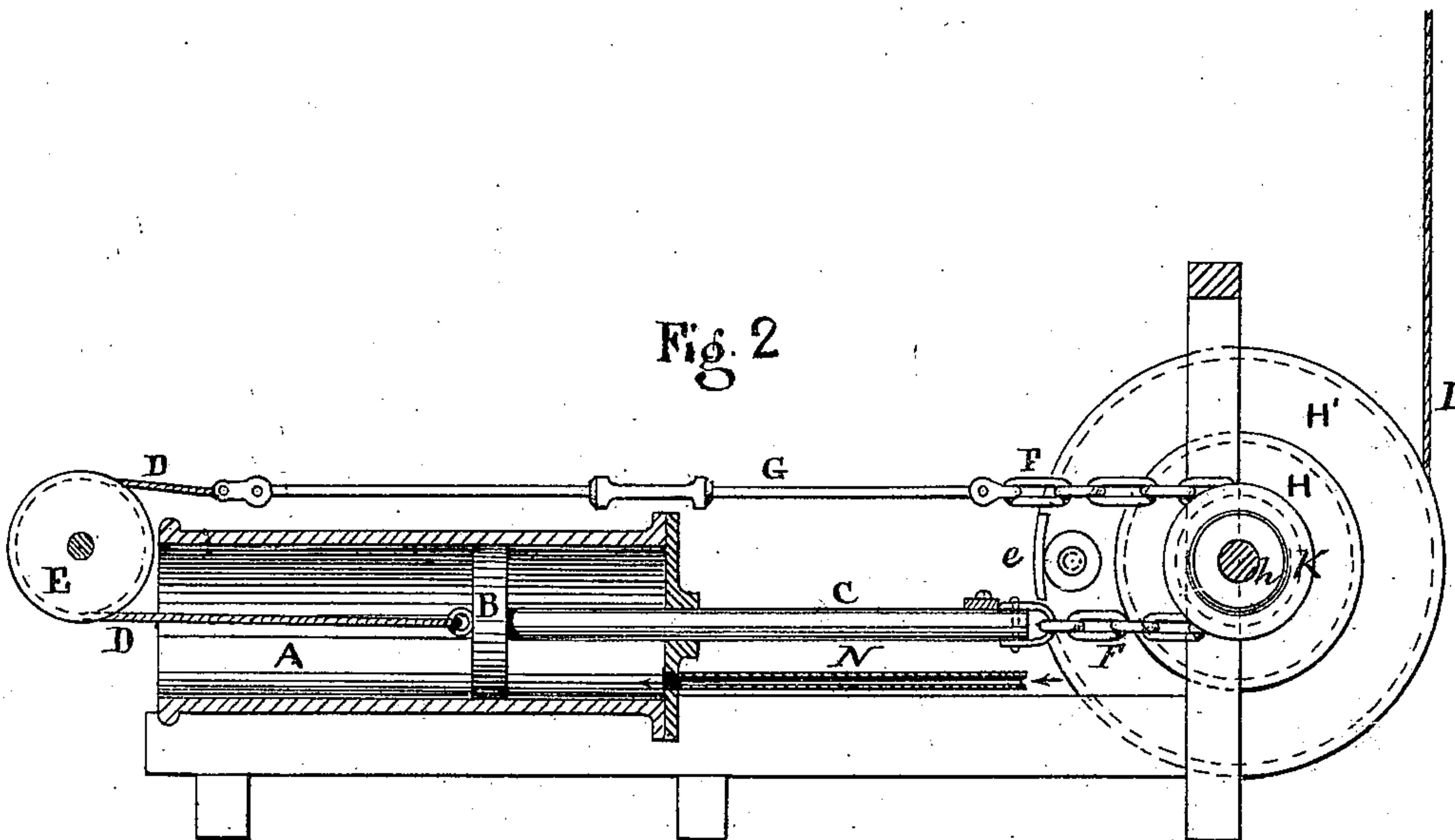
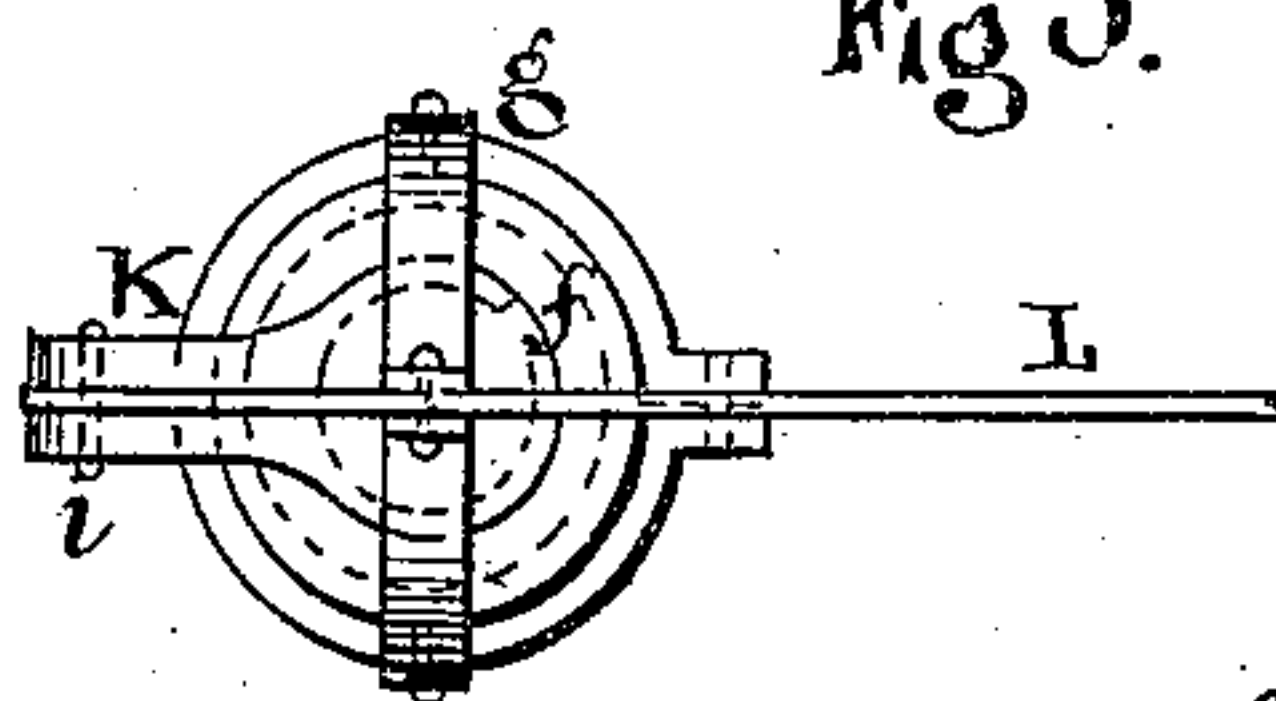


Fig 3.



Witnesses:  
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Atty.

# UNITED STATES PATENT OFFICE.

SAMUEL H. ROUNDS, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO WALES L. PALMER AND ISRAEL W. KNOX, OF SAME PLACE.

## IMPROVEMENT IN HYDRAULIC HOISTS.

Specification forming part of Letters Patent No. **174,643**, dated March 14, 1876; application filed December 17, 1875.

*To all whom it may concern:*

Be it known that I, SAMUEL H. ROUNDS, of the city of San Francisco, State of California, have invented an Improved Hydraulic Hoisting-Machine, of which the following is a specification:

My invention relates to certain improvements in hydraulic hoisting apparatus for elevators, &c.; and it consists in the combination, with the water-cylinder and hoisting-drum, of an improved means or mechanism for transmitting the power from the piston to the drum; also, in the arrangement of means for varying the application of the power according to the weight of the load to be raised, the same consisting in the use of two drums of different diameters.

The object of my invention is to construct a simpler and more effective hoisting apparatus than those heretofore made.

The accompanying drawing, referred to for a better explanation of my invention, shows in Figure 1 a top view of my improved hoisting apparatus. Fig. 2 shows a vertical longitudinal section through the center of the cylinder; Fig. 3, a detail view of the means employed to throw the large drum into and out of gear.

The cylinder A is open at the rear end and closed at the front end. Its piston B is secured to the end of the rod C, that works through a stuffing-box in the cylinder-head. The end of this rod within the cylinder passes through the piston, and is connected with the end of a rope or chain, D, that runs out through the cylinder and around a grooved pulley, E. The opposite end of the piston-rod C is connected with a section of chain or rope, F, and this chain or rope is joined to the rod G, that connects it with the rope or chain. These parts thus form an endless belt, transmitting any movement of the piston within the cylinder to the drum H on the shaft *h*, and causing the hoisting-rope I, attached to the cage or load, to be wound upon the drum as the piston moves back within the cylinder. The rotation of the shaft *h* is produced by the wheel chain-sheave or gripe-pulley K, that engages with the chain or rope, and revolves as

the piston and its rod move under the pressure of the water admitted to the cylinder.

The drum H is fixed on the shaft *h*, and acts upon the hoist-rope I, to raise or lower the cage; but where additional speed is required the auxiliary drum H' is employed. This drum is of larger diameter than the other, and moves upon the shaft toward and away from the smaller drum H on a feather or feathers, and turns with the shaft. It is moved on its shaft by the arrangement of mechanism shown in Fig. 3 of the drawing. The lever L is held in a bracket, *k*, secured on the end of the shaft, but not turning with it, and is pivoted to the bracket at *l*. Above this pivot, that forms the fulcrum, is a stirrup, *g*, that is fixed to the loose collar *f* on the hub of the larger drum. Thus, while the drums and shaft revolve, the bracket, with its lever, and the stirrup and collar *g f*, are stationary, and by moving the upper end of the lever L the larger drum will be moved toward or away from the small drum H.

The flange on the inner face of the drum H is cut away at one point of the circumference, and a small sheave, *e*, is placed against the face of the drum, with its groove in line with the face of the flange, upon which the rope is coiled, and thus, when this drum is moved and held against the small drum H, the sheave will lie over the small drum, and will engage with the rope that is being coiled upon it, and will guide it into the slot cut in the large drum, and cause this drum to take up and act upon the rope without abrasion or cutting.

By this means greater speed upon the hoisting-rope is obtained, whenever desired, by throwing the large drum H' toward the small drum, so that it may engage with and take up the hoisting-rope.

The water is forced into and drawn from the cylinder through the pipe N, which is provided with suitable valves and gearing for governing the flow of the water into the pipe, and by this arrangement but one opening into the head of the cylinder is required.

I claim—

1. In a hydraulic hoisting-machine, the combination, with the cylinder, open at one end,



and its piston and piston-rod, of the endless belt, formed partly of a flexible rope or chain, and partly of inflexible rod, the said belt passing around a pulley at one end of the cylinder, and around a chain sheave-wheel or gripe-pulley on the hoisting-shaft, substantially as described and specified.

2. In a hydraulic hoisting-machine, the arrangement and use of the main drum H and auxiliary drum H' with the sheave e, in the manner shown and described, when combined with mechanism, substantially as described,

for moving the auxiliary drum upon the shaft toward and away from the main drum, for the purposes specified.

3. The combination, with the shaft h and drum H, of the drum H', bracket k, stirrup g, and lever L, substantially as described and shown.

S. H. ROUNDS. [L. S.]

Witnesses:

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