R. O. PEIRCE.

HOISTING APPARATUS.

No. 195,640. Patented Sept. 25, 1877.

Fig 1

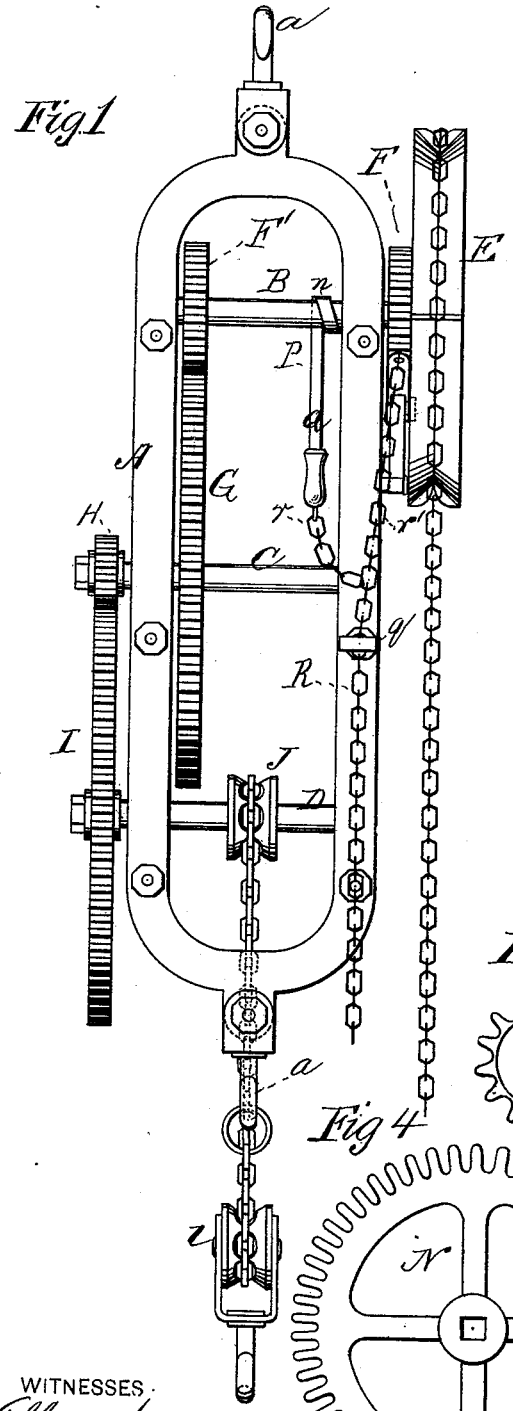


Fig 2

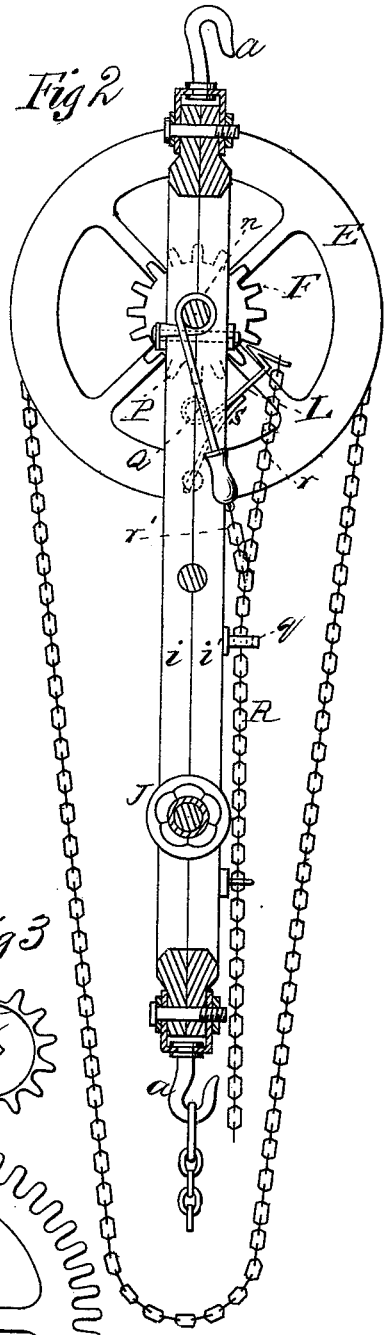


Fig 3

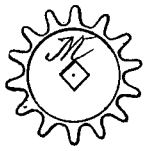
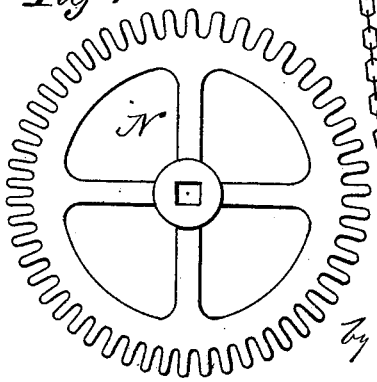


Fig 4



WITNESSES.

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ROBERT O. PEIRCE, OF PORTLAND, MAINE.

IMPROVEMENT IN HOISTING APPARATUS.

Specification forming part of Letters Patent No. **195,640**, dated September 25, 1877; application filed August 11, 1877.

To all whom it may concern:

Be it known that I, ROBERT O. PEIRCE, of Portland, in the county of Cumberland and State of Maine, have invented a new and valuable Improvement in Hoisting Apparatus; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of front view of my invention. Fig. 2 is a longitudinal vertical section thereof, and Figs. 3 and 4 are details.

This invention has relation to improvements in hoisting-machines; and it consists in the arrangement and novel construction of the various devices used, as will be hereinafter more fully set forth and claimed.

In the annexed drawings, the letter A designates a strong metallic frame, having parallel sides and rounded ends, provided each with a vibrating hook, *a*. This frame affords bearings for three transverse metallic shafts, B C D. The shaft B is provided, outside of the frame, with a master or power wheel, E, and between the latter and frame with a ratchet-wheel, F. It has also an inside gear-wheel, F′, that engages a large gear-wheel, G, on the shaft C. This latter has upon its outer end a pinion, H, that meshes with a large gear-wheel, I, upon the outer end of the shaft D, which is provided with the chain-wheel J.

It is evident that by rotating the power-wheel power will be transmitted to the chain-wheel through the various gears and shafts.

The frame is suspended from any suitable support by means of its upper hook *a*. The hoisting-chain is then secured to its lower hook *a*, extended through a hook-block, *l*, to which the object to be lifted is secured, and is then passed up over the chain or rag wheel J.

Fig. 1 shows the pinion H of small diameter, and the gear-wheel comparatively very large. The gear-wheel actuating this pinion is large, and the gear-wheel upon the shaft of the power-wheel E comparatively small, by which means the greatest possible power is obtained, but with corresponding loss of speed.

The pinion H and gear-wheel I are removable from their respective shafts, and interchangeable with each. By shifting the gear-wheel to the pinion-shaft and the pinion to the gear-wheel shaft a great increase of speed is obtained in raising substances, with a corresponding loss of power, thus adapting the machine to the rapid elevation of light weights.

M N designate a pinion and gear-wheel of medium size, the former of greater diameter than pinion H, and the latter of less diameter than the gear-wheel I, whose places they are designed to take in raising moderately heavy weights at a comparatively high rate of speed.

I have thus constructed a machine that is adapted to be used with advantage in raising heavy, light, and medium weights.

The backward rotation of the power-wheel and the mechanism actuated thereby is prevented by means of a pawl, L, engaging the ratchet-wheel F, and held into engagement therewith by means of a suitable spring, S.

P designates a spring-brake, one end of which is rigidly bolted to the frame just below the level of the shaft. It then passes under and around said shaft, and terminates in a lever-handle, Q.

R represents a chain passing up through the loop *q*, and provided above said loop with branches *r r′*, secured the one to the lever-handle and the other to the pawl. By drawing down upon the chain R when the load is at the desired height, the pawl will be disengaged from the ratchet-wheel F and the looped portion *n* of the brake caused to bind upon the shaft of the power-wheel E, thus preventing the load from coming down by the run.

The frame may be made in two sections, *i i′*, securely bolted, or otherwise secured together, if I so elect.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the frame A, having shaft B, power-wheel E, and gear-wheel F′, and the shaft C, having the fixed gear-wheel G and removable pinion H, of the shaft D, having the chain-wheel J and removable gear-wheel I, engaging said pinion H, substantially as specified.

2. The combination, with the driving-shaft

B of a hoisting mechanism, having the ratchet-wheel F and a spring-actuated pawl engaging said ratchet, of a brake, P, secured at one end to the frame, then looped around the said driving-shaft, and extended beyond the same to form a handle, Q, and a chain, R, having branches *r r'* secured, respectively, to the brake and pawl, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

ROBERT O. PEIRCE.

Witnesses:
GEO. F. ALEXANDER,
Z. K. HARMON.