

(No Model.)

2 Sheets—Sheet 1.

J. SATTES.  
PENDULUM HOIST.

No. 348,780.

Patented Sept. 7, 1886.

Fig. 1.

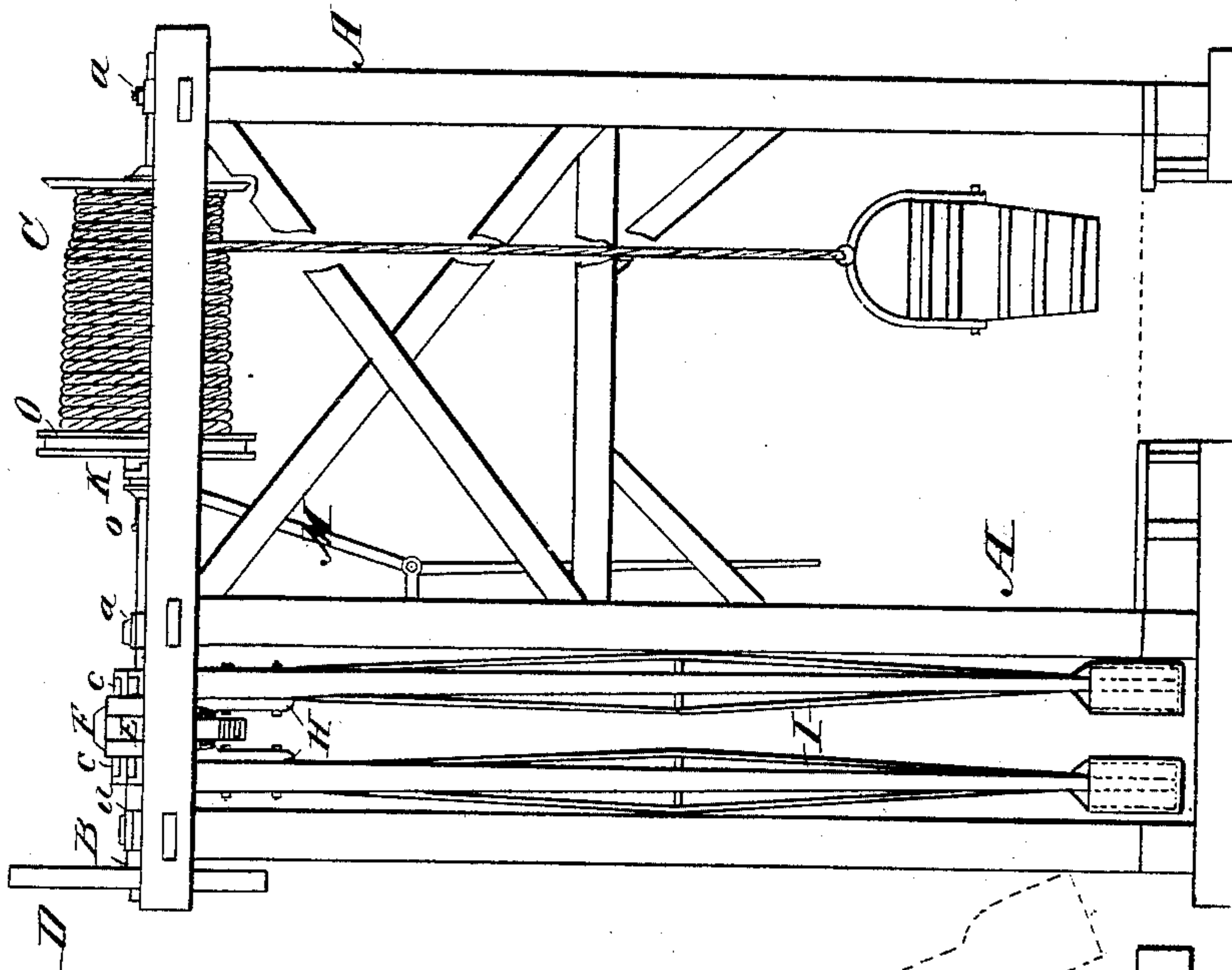
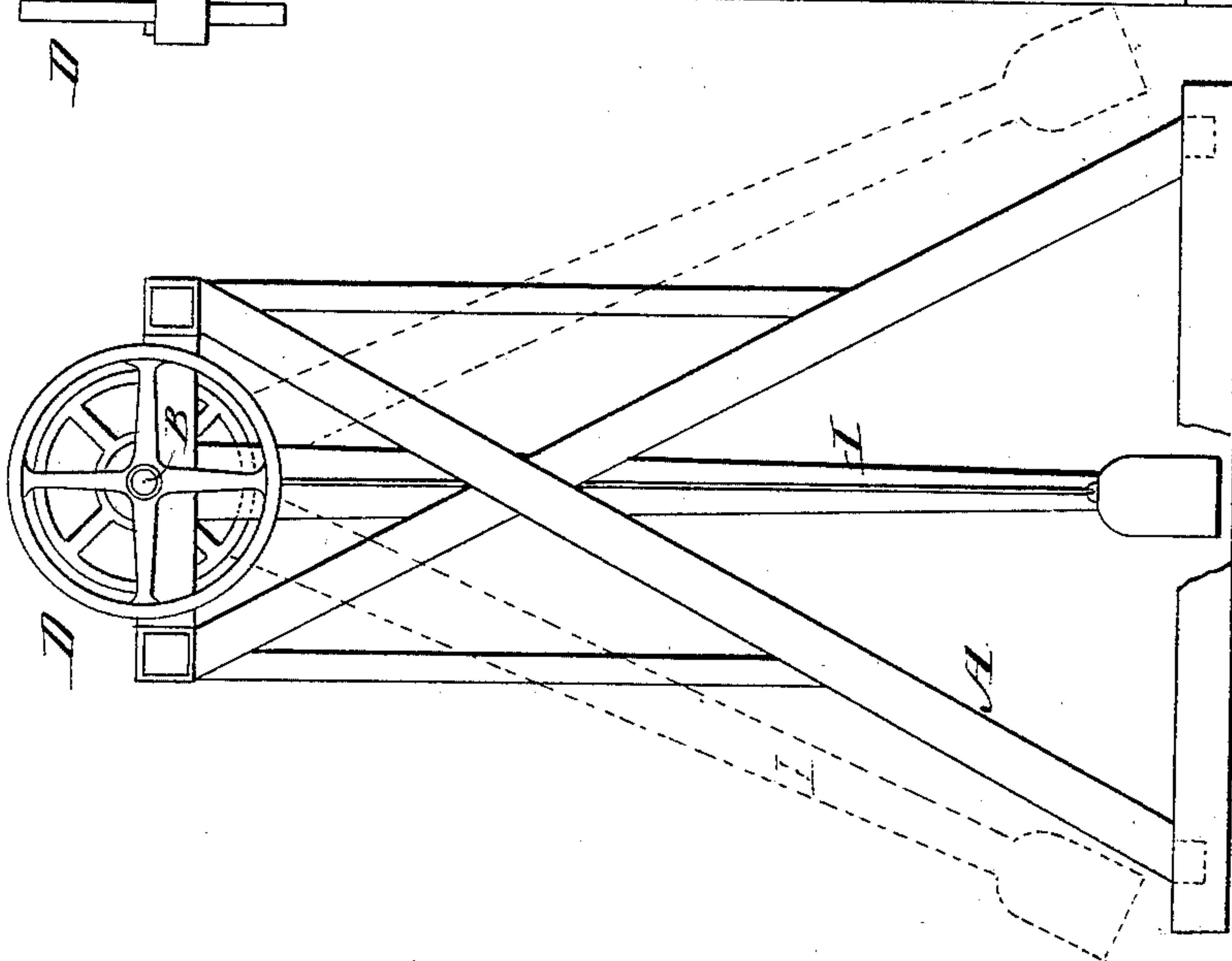


Fig. 2.



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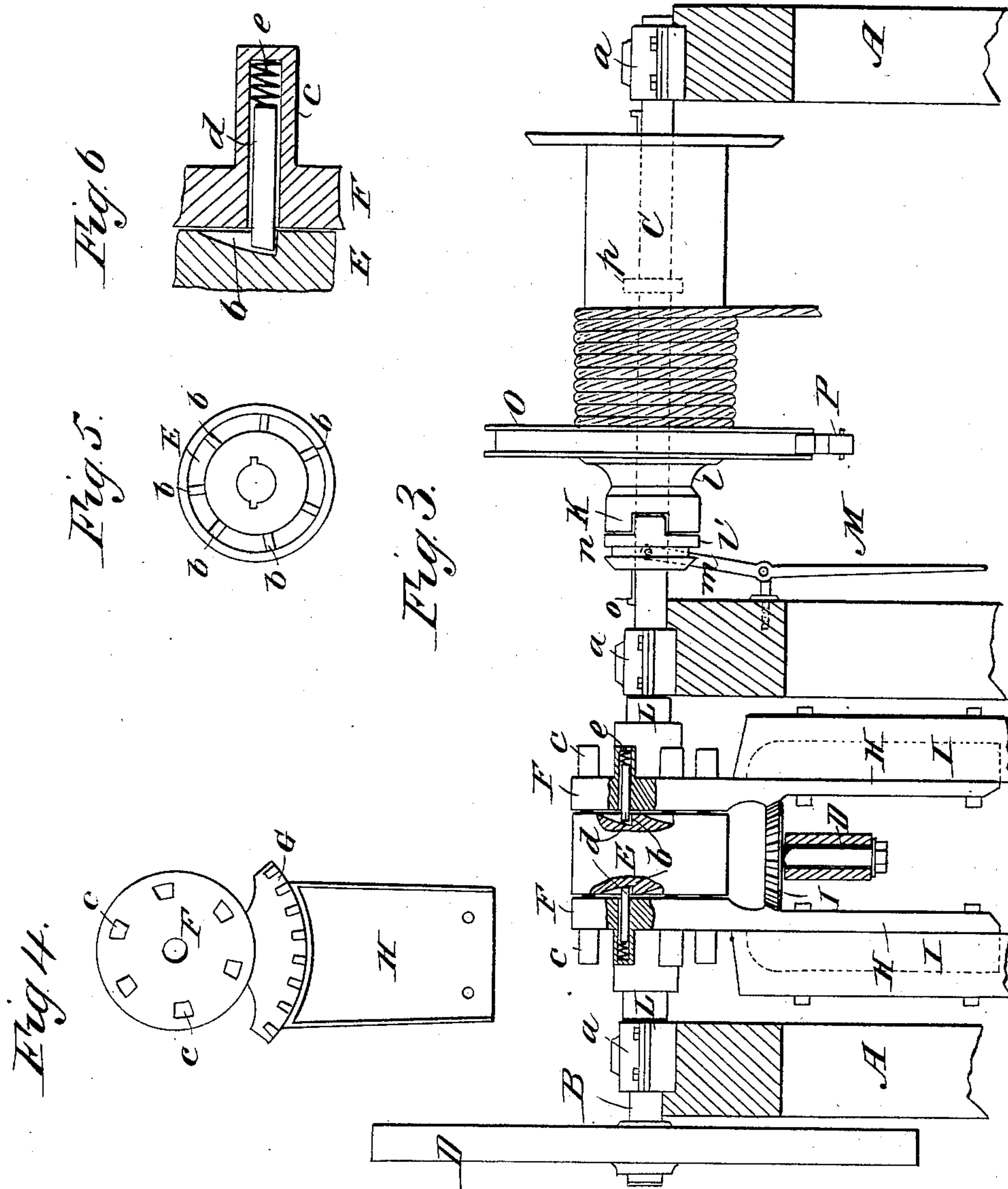
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# UNITED STATES PATENT OFFICE.

JOHN SATTES, OF BUTTE CITY, MONTANA TERRITORY.

## PENDULUM-HOIST.

SPECIFICATION forming part of Letters Patent No. 348,780, dated September 7, 1886.

Application filed April 14, 1886. Serial No. 198,807. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN SATTES, of Butte City, in the county of Silver Bow and Territory of Montana, have invented a new and improved Pendulum-Hoist, of which the following is a full, clear, and exact description.

The object of my invention is to provide a simple, cheap, and durable hoisting apparatus; and the invention consists, essentially, of two pendulums mounted on a shaft which carries a drum, the pendulums being arranged to impart a rotary motion to the shaft when moving in one direction, but not to cause a corresponding retrograde movement of the shaft when moving in the opposite direction, the two pendulums being so connected the one with the other that an impulse imparted to one will be transmitted to the other; and the invention further consists of certain details of construction and combinations of parts, to be hereinafter described, and specifically pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side view of my improved form of pendulum-hoist, parts being broken away. Fig. 2 is an end view of the same. Fig. 3 is an enlarged view of the main shaft and its connections, parts being broken out. Fig. 4 is a detail view illustrating the construction of the pawl-carrying disk, by means of which the pendulums are suspended from the shaft. Fig. 5 is a detail view illustrating the construction of the central collar that is keyed to the shaft. Fig. 6 is a detail sectional view showing the arrangement of the pawls.

In constructing such an apparatus as is illustrated in the drawings above referred to, I provide a main supporting-frame, A, upon which I mount a shaft, B, which carries a loosely-mounted drum, C, a balance-wheel, D, and a fixed collar, E, the shaft being mounted in appropriate bearings, *a a a*, as clearly shown in Fig. 3. Each vertical face of the collar E is formed with a number of stops or ratchet-teeth, *b b b*, as shown best in Fig. 5. Upon each side of the collar E there is arranged a disk, F, formed with a segmental rack, G, and a downwardly-extending arm, H, to which there is secured a pendulum, I, the parts be-

ing bolted together, as clearly shown in Figs. 1 and 3. A beveled pinion, J, is mounted in a sleeve, J', that is carried by a bracket which is fixed to the stationary frame of the hoist, the pinion J being arranged to mesh with each of the segments G.

The disks F F are provided with a number of outwardly-projecting housings or boxes, *c*, in which there are mounted stops or pawls *d*, that are forced outward against the ratchet-teeth *b b* of the collar E by means of springs *e*, the number of stops or pawls being less by one than the number of ratchet-teeth *b b*. In order that the disks F F may be held in close contact with the collar E, I arrange sleeves L L between each of the disks and the nearest bearings of the shaft B. In order that the motion of the shaft B may be imparted to the loosely-mounted drum C, I provide a clutch, K, of which the section *l* is carried by the drum, while the section *l'* rides on the shaft B, connection between the shaft and the section *l'* being established by means of a feather, *o*. When it is desired that the motion of the shaft should be imparted to the drum, the section *l'* is moved forward into engagement with the section *l* by means of a lever, M, that is pivotally connected to the frame A and provided with a bifurcated end, *m*, which rides in a groove, *n*, formed in the section *l'*.

As indicated in dotted lines in Fig. 3, the drum C is held against lateral displacement by means of a collar, *p*, that is secured to the shaft B and arranged to ride in a groove formed in the drum, and in order that the motion of the drum may be checked at the will of the operator, I provide the drum with a brake-wheel, O, against which a brake-shoe, P, may be thrown by means of appropriate connections.

In operation, one of the pendulums is started by the operator, who, by a proper application of force, gradually increases the arc in which the pendulum is swinging until the pendulum has been made to swing in the arc required, and it will be understood that through the connection established between the two pendulums by means of their segments G and the interposed pinion J, any force exerted upon either pendulum will be transmitted to the opposite pendulum, and it will also be understood that as the pendulums swing their stops



or pawls *d* will engage with the ratchet-teeth *b* of the collar E, and that the collar E will be moved forward by one swing of the pendulum, but will not be affected by the motion of the pendulum in the opposite direction, and as the pendulums vibrate to and fro a constant motion will be imparted to the shaft B and, if desired, to the drum C, this motion being regulated and steadied by the balance-wheel D.

10 Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a pendulum-hoist, the combination, with a shaft carrying a fixed collar formed with two sets of ratchet-teeth, of pendulums carrying stops engaging with said ratchet-teeth, substantially as described.

2. In a pendulum-hoist, the combination, with a shaft, of a collar keyed thereto and formed with two sets of ratchet-teeth, and two pendulums supported by disks and swinging upon said shaft as an axis, the said disks being provided with stops or pawls, substantially as described.

25 3. In a pendulum-hoist, the combination,

with a shaft carrying a fixed collar that is provided with two sets of ratchet-teeth, of pendulums supported by disks carrying stops or pawls and formed with toothed segments, and a pinion mounted between and engaging with said segments, substantially as described. 30

4. In a pendulum-hoist, the combination, with a shaft, B, carrying a collar, E, formed with ratchet-teeth *b*, of pendulums I, carried by disks F, that are provided with pawls *d* and formed with segmental racks G, and a pinion, J, mounted to engage with each of the segments G, substantially as described. 35

5. In a pendulum-hoist, the combination, with a shaft carrying a fixed collar formed with two sets of ratchet-teeth, of pendulums I, supporting-disks F, provided with pawls *d*, sleeves L, segmental racks G, carried by the disks F, a clutch, K, and a drum, C, substantially as described. 40

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Witnesses:

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