

(No Model.)

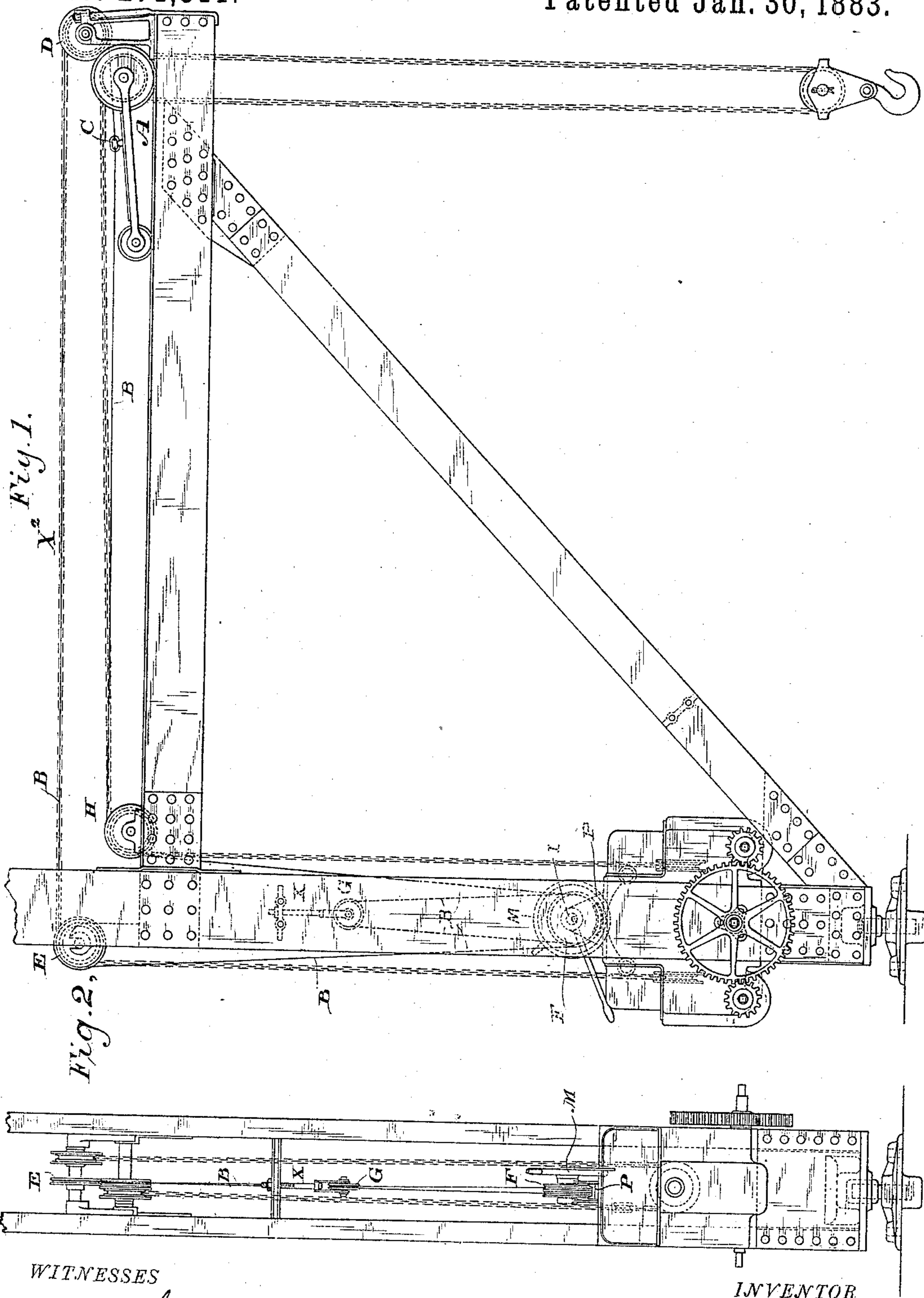
T. W. CAPEN.

3 Sheets—Sheet 1.

CRANE.

No. 271,311.

Patented Jan. 30, 1883.



WITNESSES

Wm. A. Skink
H. W. Elmore.

INVENTOR

Thomas W. Capen

By his Attorneys,

Baldwin, Hopkins, & Beaton.

(No Model.)

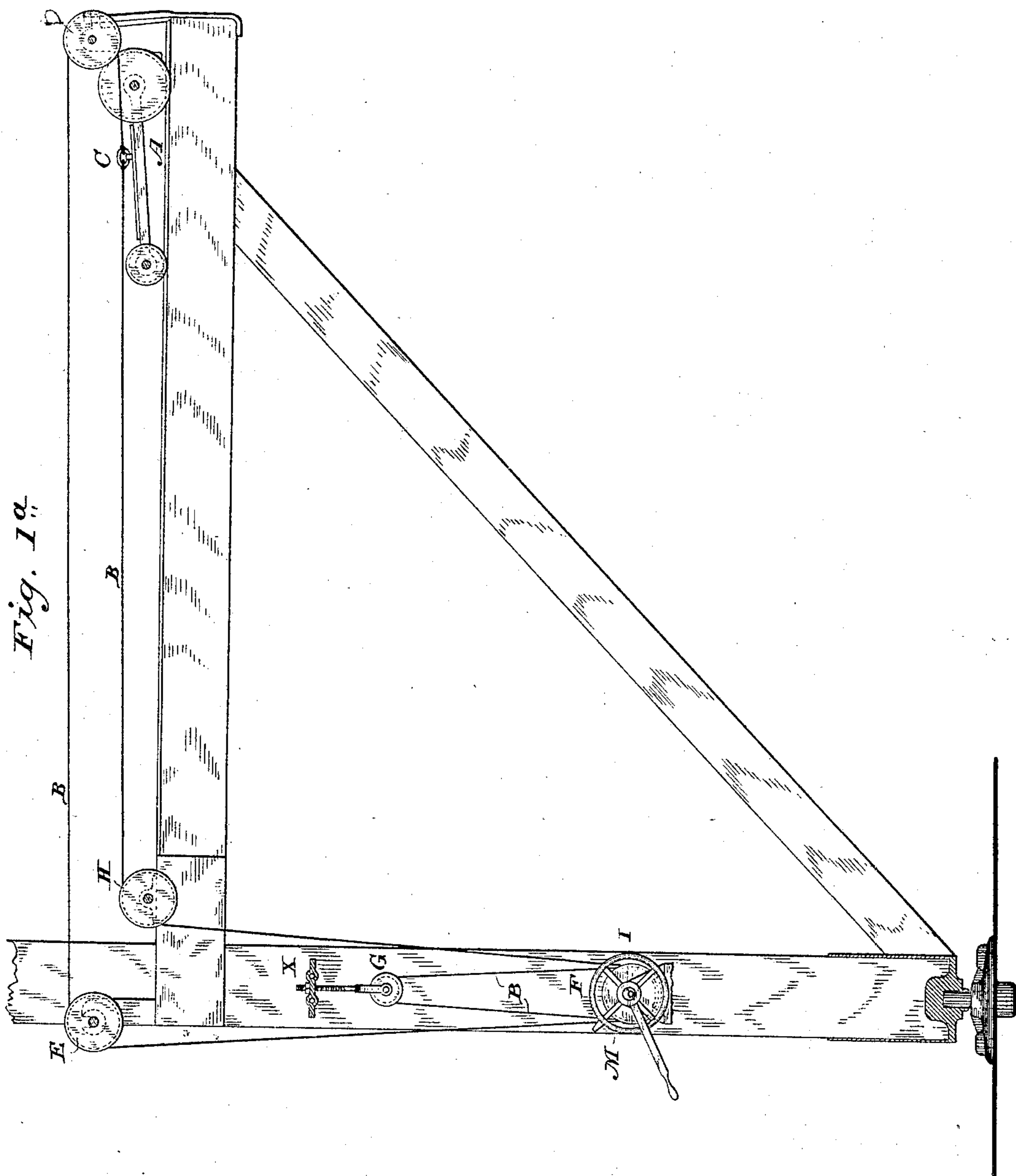
T. W. CAPEN.

3 Sheets—Sheet 2.

CRANE.

No. 271,311.

Patented Jan. 30, 1883.



WITNESSES

Wm A. Skinkle
Edwin A. Newman

INVENTOR

Thomas W. Capen

By his Attorneys

Edwin Hopkins & Beaton

(No Model.)

T. W. CAPEN.

3 Sheets—Sheet 3.

CRANE.

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Fig. 4.

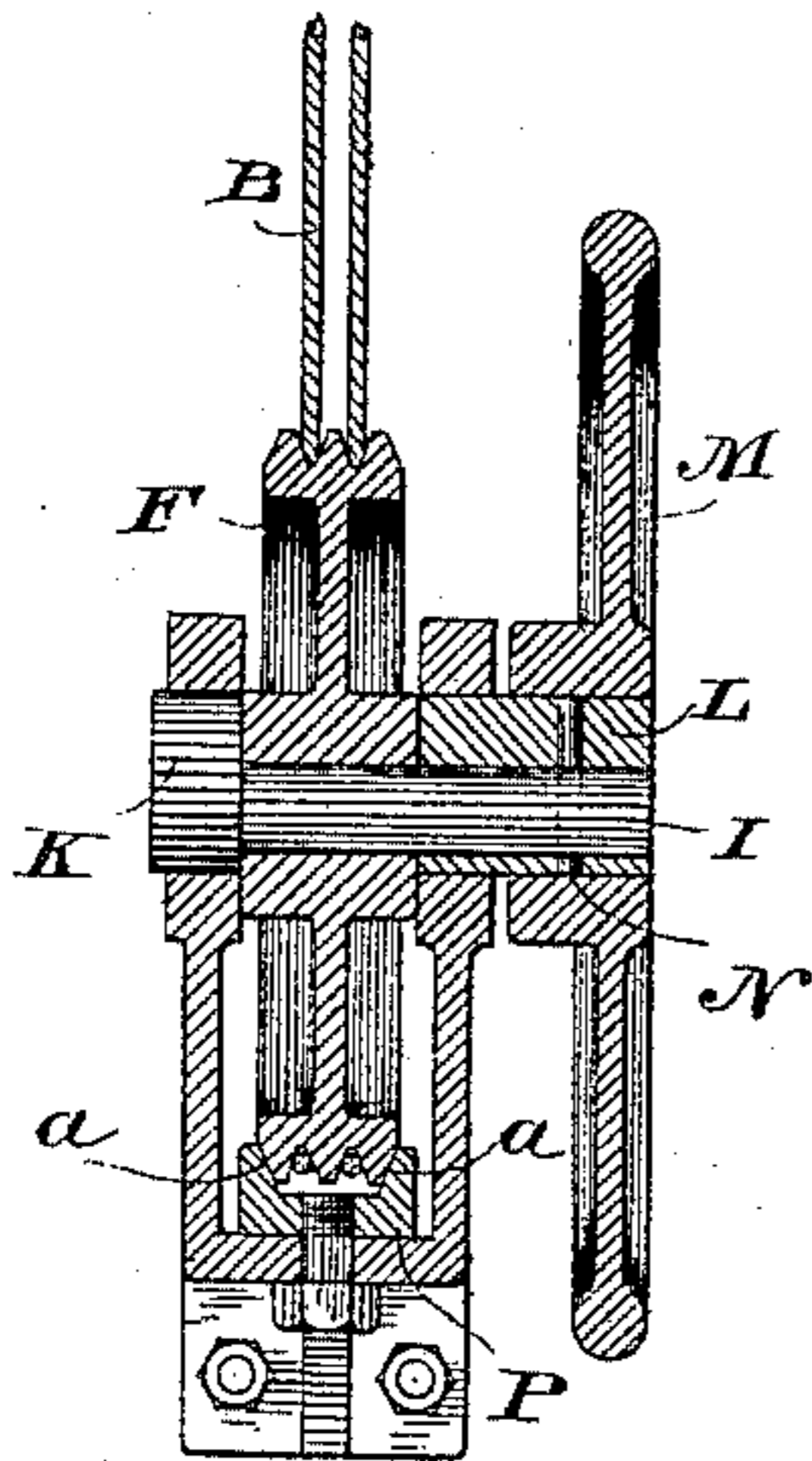


Fig. 3.

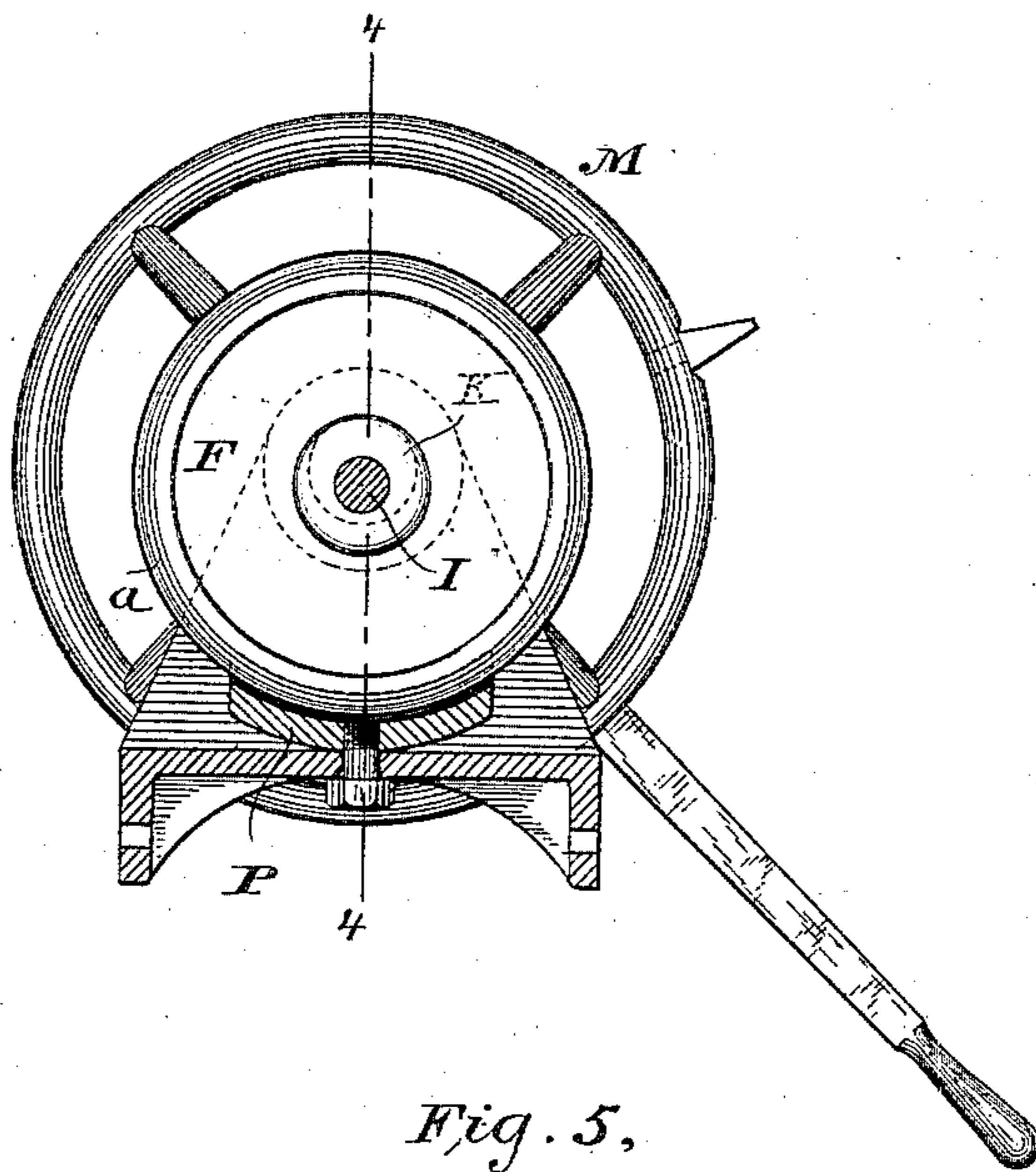


Fig. 6.

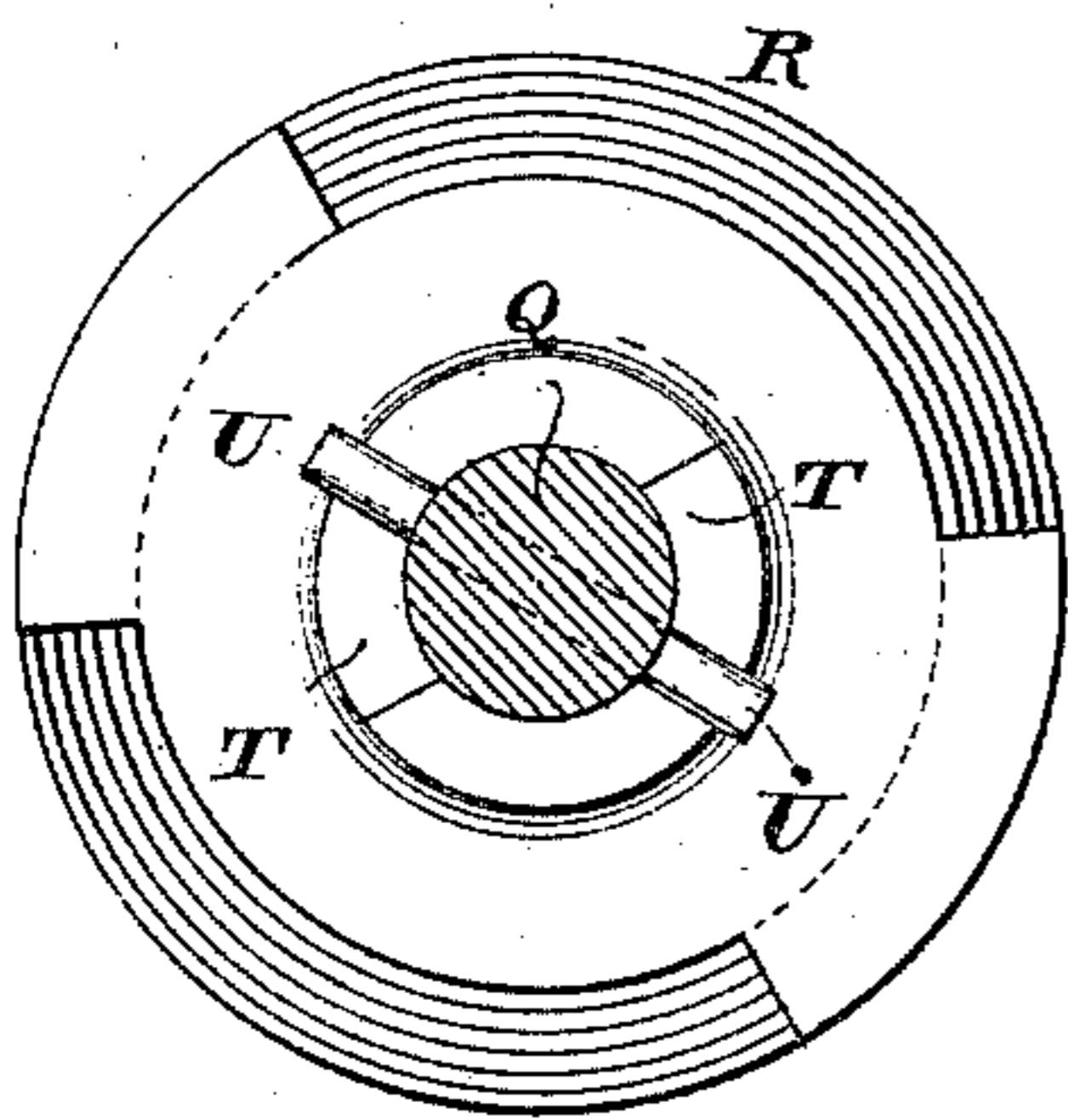


Fig. 5.

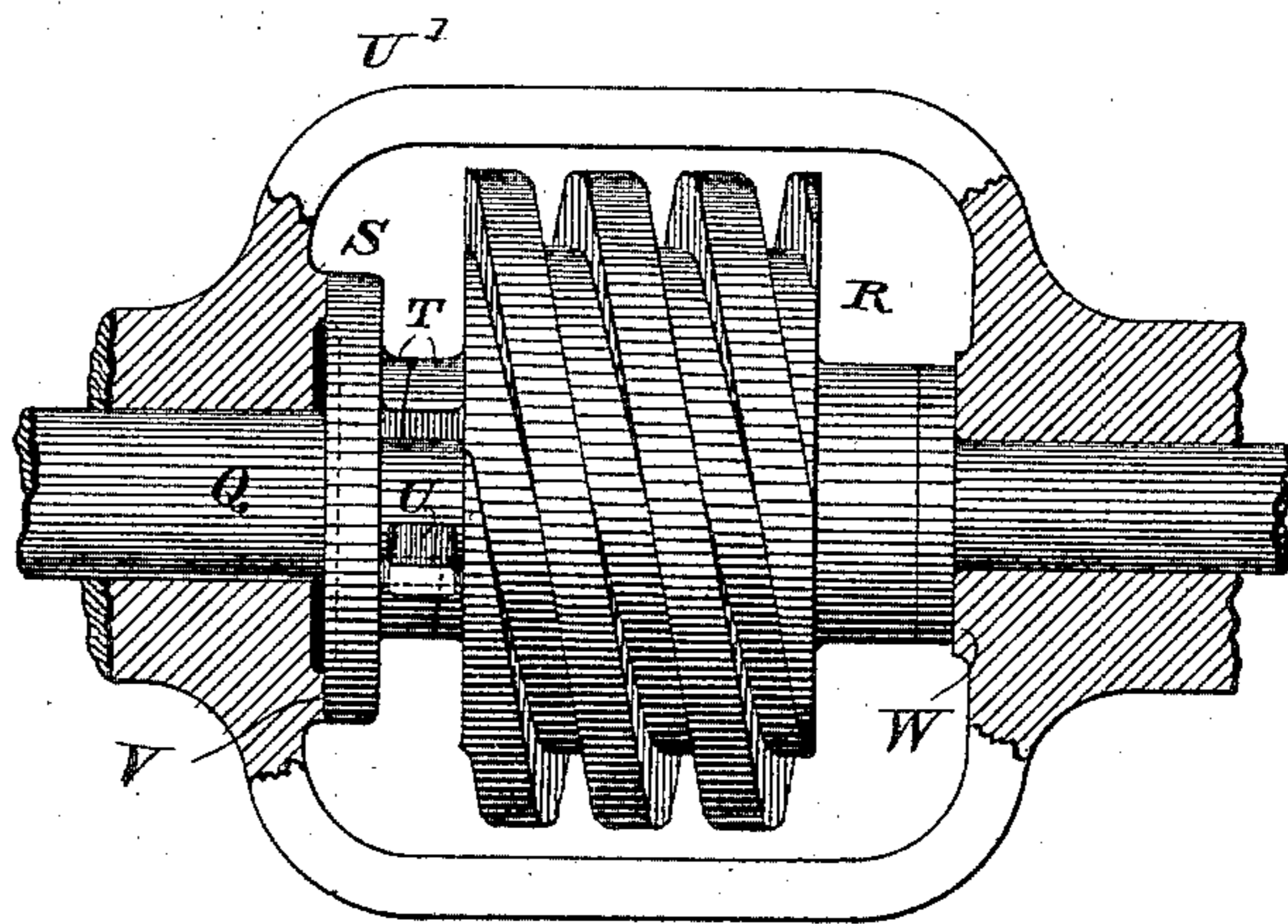
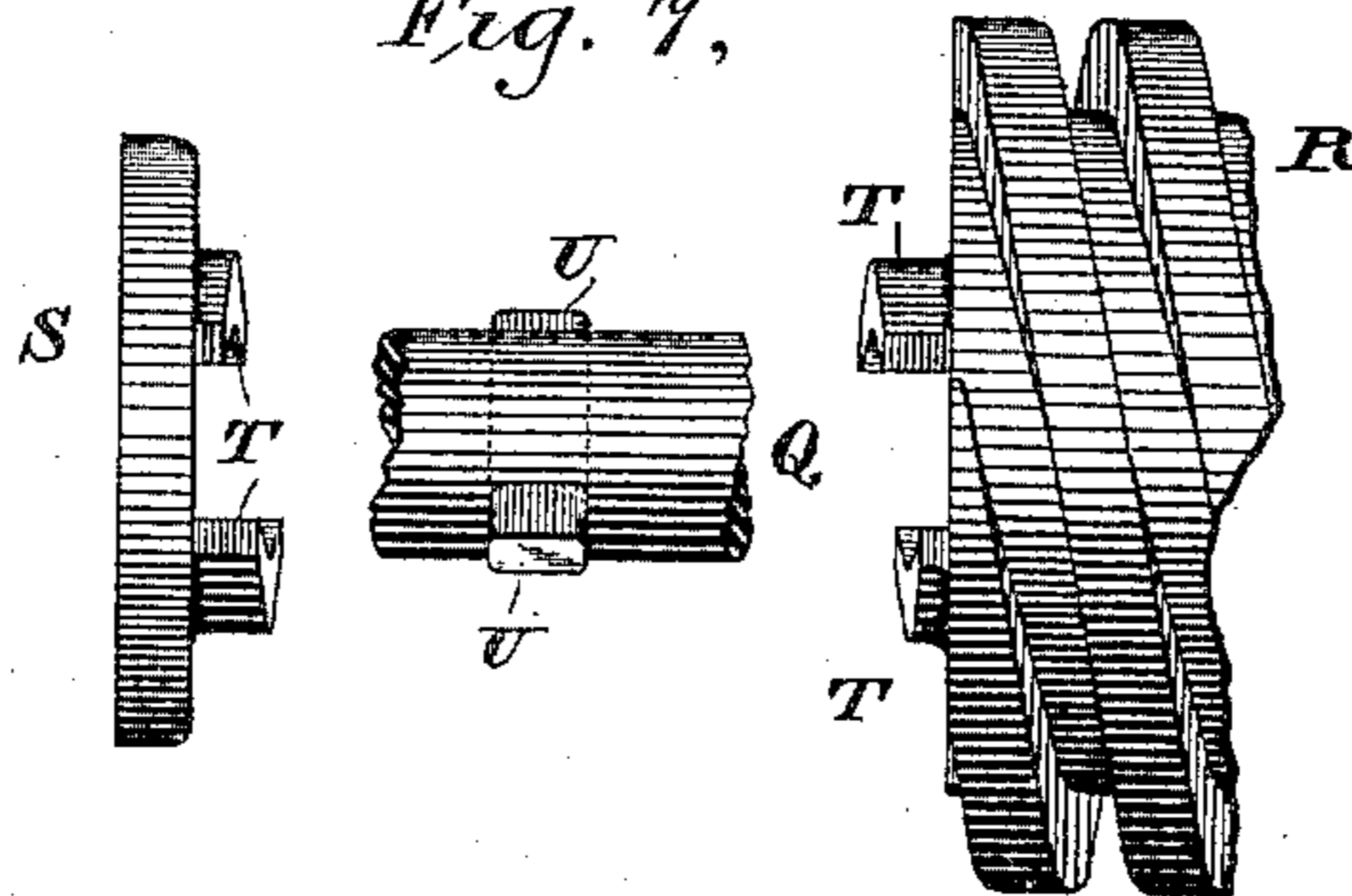


Fig. 7.



WITNESSES

Wm. A. Shunk
H. W. Elmore

INVENTOR

Thomas W. Capen

By his Attorneys

Baldwin, Hopkins, & Peyton.

UNITED STATES PATENT OFFICE.

THOMAS W. CAPEN, OF STAMFORD, CONNECTICUT, ASSIGNOR TO THE YALE
LOCK MANUFACTURING COMPANY, OF SAME PLACE.

CRANE.

SPECIFICATION forming part of Letters Patent No. 271,311, dated January 30, 1883.

Application filed November 28, 1882. (No model.)

To all whom it may concern:

Be it known that I, THOMAS W. CAPEN, of Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and
5 useful Improvements in Cranes, of which the following is a specification, reference being had to the accompanying drawings.

The object of one part of my invention is to prevent the crawling of a trolley of a crane
10 when the load is being hoisted; and the object of another part of my invention is to prevent running down of the load. My invention therefore consists in a locking mechanism for a trolley, and in a brake mechanism applied, in
15 connection with the hoisting apparatus, to prevent running down of the load.

In the accompanying drawings, Figure 1 is a side elevation of a jib-crane with my improvements applied. Fig. 1^a is an elevation partly
20 in section, with the hoisting-chains omitted to show the trolley holding rope. Fig. 2 is a rear end elevation of the same. Fig. 3 is an enlarged view of part of my trolley locking mechanism detached. Fig. 4 is a vertical section of
25 the same on the line 4 4 of Fig. 3. Fig. 5 shows an automatic brake mechanism to prevent the load from running down. Figs. 6 and 7 are details of the same, showing parts detached.

The jib-crane and its operating mechanism
30 are of the kind set forth in my United States Patent No. 242,271, granted May 31, 1881, and need not therefore be described in detail.

In connection with the trolley A, I provide a trolley holding rope or cable, B, secured at its
35 opposite ends to the trolley at C, passing over guide-sheaves D and E, down around the double-grooved sheave F, thence up over the sheave G, thence down around the other part of the double-grooved sheave F, thence up over the guide-
40 sheave H to the trolley, thus forming practically an endless band to which the trolley is attached. Sheaves D, E, and H are on the same shafts that carry the chain-wheels of the operating-chain X², as appears by the drawings,
45 and these sheaves are loose upon those shafts, so as to turn freely, or to stand at rest independently of the shafts. The double-grooved sheave F is secured loosely upon a shaft, I, which is an eccentric extension from the short shaft K.

This extension passes eccentrically through
50 another shaft, L, and the hand-wheel M (or it may be a lever) and shaft L and the shaft I are secured together by means of a bolt, N, or otherwise. The result is that by rotating the
55 hand-wheel the shaft I and the double-grooved sheave F will be raised and lowered, and will consequently either strain or loosen the cable B. The annular grooves in the sheave F are
60 preferably made V-shaped, as illustrated, so that when the sheave is lowered the rope will in a measure wedge into the grooves, and they will grip it firmly. The number of sheaves
65 and number of turns in the endless cable may be varied, and I might use a single-grooved sheave F. However, a double-grooved sheave
is much preferable, because the friction on the
cable B is doubled and the movement of the
eccentric slackens the rope twice as much as
70 with a single sheave. This is advantageous, because when the trolley is to move it is necessary that the cable should pass freely over the
sheave. I bevel the outside edges of the sheave
F at *a a*, as shown in Fig. 4, and provide a cor-
75 respondingly beveled brake-block, P, to engage with the beveled edges of the sheave.
When the shaft I and sheave F are thrust
downward to bring the rope B taut, so that it
will not slip, the brake-block engages with the
sheave at the same instant and prevents the
80 sheave from turning. The operator can always, therefore, conveniently stop the trolley
and hold it securely in any position upon its
track. The sheave G operates as an adjusting
device, being attached to the frame by means
85 of a screw-bolt, X, so that by turning the nut
on the screw the rope B may be tightened or
loosened, as desired.

Referring, now, to my brake for the hoisting
mechanism, as illustrated in Figs. 5, 6, and 7, I
90 will say that it is similar in principle to that described and claimed in my United States Patent No. 263,479, granted August 29, 1882.
Upon the shaft Q of the hoisting mechanism I provide a loose worm, R, and a loose collar, S.
Through the shaft runs a metallic cross-key,
95 preferably steel, which projects from opposite sides of the shaft, as shown in Fig. 7, and is located between the loose collar and the loose

worm. The collar and the worm are each provided with lugs T with inclined adjacent faces standing normally in the rotary path of the projections U of the cross-key. When the shaft is turned in either direction these projections impinge against the lugs T of the collar and worm and cause them to turn with the shaft, preserving their relative positions, as illustrated in Fig. 5. If, however, when a load is on the crane, there is a tendency to turn the worm-wheel (not illustrated, but to be the same as shown in my last-mentioned patent) and the worm, the latter will move independently of the loose collar and shaft Q, and the result will be that the lugs T of the worm will mount the lugs of the collar and cause a pinch, which will drive the extreme bearing ends of the worm and collar against the surfaces of the bearing U' at the points V and W and stop all motion. It will thus be seen that whenever the shaft Q is turned normally, so as to operate in the usual manner, there will be no locking; but whenever the weight of the suspended load operating upon the worm-wheel and worm causes them to turn by the running down of the load, locking will instantly take place automatically to stop the running down. This form of brake is equally applicable to cranes or hoists where spur-gearing is used, in which latter case a loose pinion would take the place of the loose worm with exactly similar results.

Having thus described my improvements, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination, with the trolley, of an

endless rope or cable to which the trolley is secured, and a brake mechanism for stopping and holding the trolley by the aid of the cable, substantially as described.

2. The combination of the trolley, the endless cable, the sheaves, the brake-block, and the hand wheel or lever, substantially as described.

3. The combination, with the hoisting mechanism, of the shaft Q, the loose worm, the loose collar, the cross-key projecting between them, and the lugs with inclined adjacent faces in the rotary path of the projecting ends of the cross-key, substantially as described.

4. In combination with a brake rope or cable, a double-grooved sheave, F, whereby the action of the eccentric is rendered more effective, substantially as described.

5. In combination with a brake rope or cable, an adjusting device, substantially as described.

6. The combination of the eccentric shaft I, the sheave F, the cable B, and the brake-block P, so constructed that when the eccentric is turned the rope is gripped by the sheave F and the sheave is gripped by the brake-block, substantially as described.

In testimony whereof I have hereunto subscribed my name this 25th day of November, A. D. 1882.

THOS. W. CAPEN.

Witnesses:

SCHUYLER MERRITT,
GEO. E. WHITE.