

(No Model.)

2 Sheets—Sheet 1.

W. C. ALSDORF.

MECHANICAL GEARING FOR HOISTING DEVICES, &c.

No. 305,877.

Patented Sept. 30, 1884.

Fig. 1.

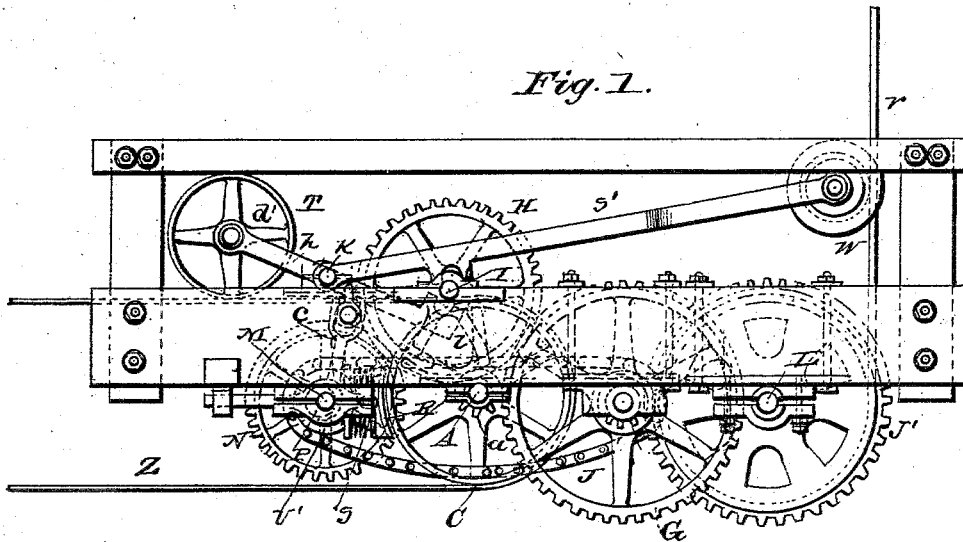
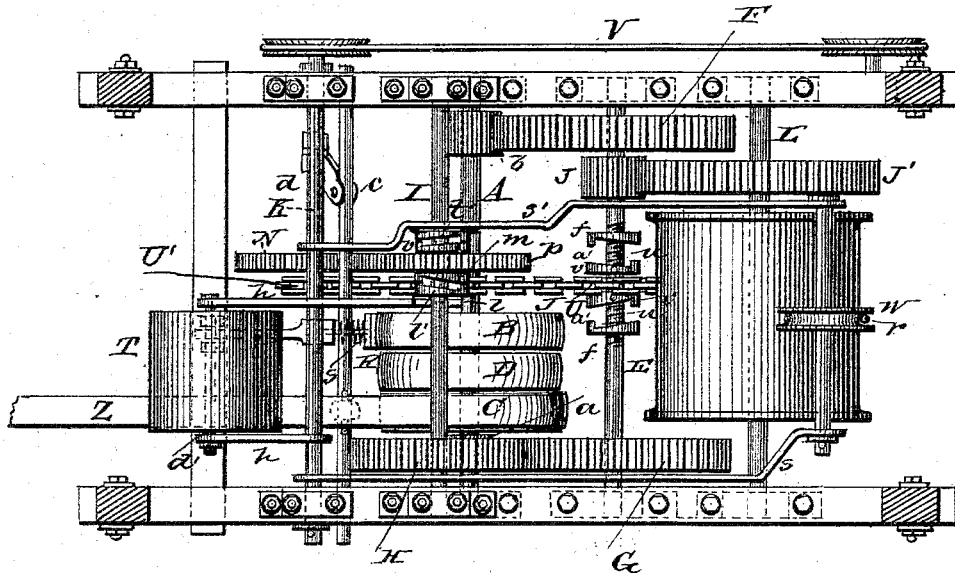


Fig. 2.



WITNESSES

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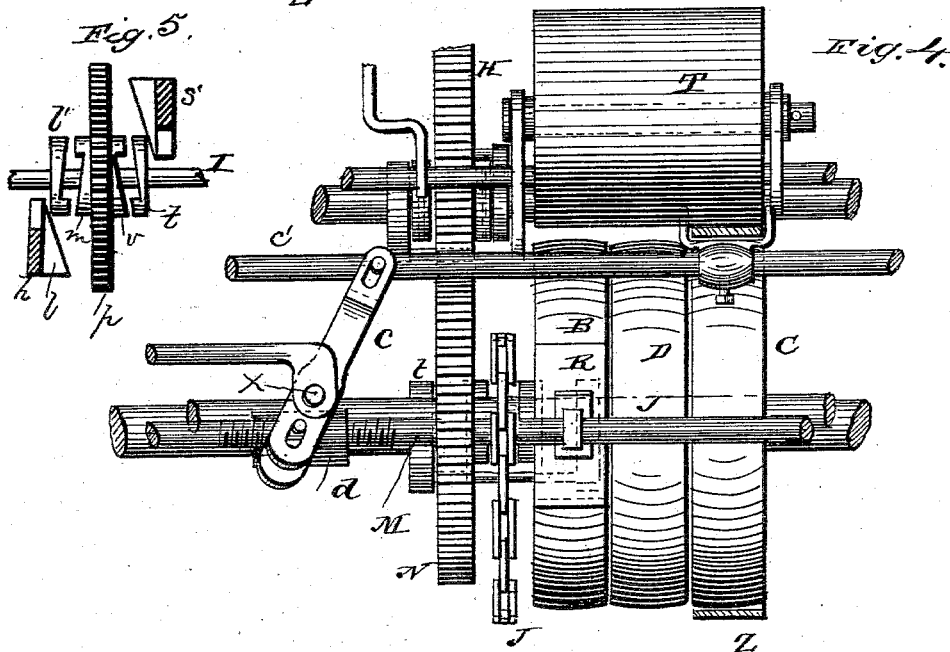
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2 Sheets—Sheet 2.

MECHANICAL GEARING FOR HOISTING DEVICES, &c.

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UNITED STATES PATENT OFFICE.

WILLIAM C. ALSDORF, OF ST. LOUIS, MISSOURI.

MECHANICAL GEARING FOR HOISTING DEVICES, &c.

SPECIFICATION forming part of Letters Patent No. 305,877, dated September 30, 1884.

Application filed January 3, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. ALSDORF, a citizen of the United States, residing at St. Louis, in the county of St. Louis and State of Missouri, have invented certain new and useful Improvements in Mechanical Gearing for Hoisting Devices, &c.; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a side view. Fig. 2 is a plan view. Fig. 3 is a detail view. Fig. 4 is a detail view, and Fig. 5 is a sectional detail view of the shaft I and its clutch mechanism.

This invention has relation to mechanical gearing for elevators and hoisting apparatus; and it consists in the construction and novel arrangement of devices, as hereinafter set forth, and pointed out in the appended claims.

In the accompanying drawings I have illustrated my invention in its application to a belt-gear elevator.

The letter Z indicates the driving-belt, moving continuously in the same direction.

Upon the shaft A is secured the fast pulley B. C is a loose-gear pulley on said shaft, having a pinion, *a*, and D is an idler-pulley between the pulleys B and C. The belt Z is designed to be shifted on these pulleys. On the shaft A is rigidly secured the pinion *b*.

On a parallel shaft, E, is keyed the spur-wheel F, which engages the pinion *b*, and a spur-wheel, G, which is designed to engage a spur-wheel, H, which is loose on a third shaft, I. The shaft E, acting through the gear F or G and the gearing J J', turns the shaft L, which carries the large drum on which the cable is wound. By means of a belt-shifting lever, *c*, pivoted on a fulcrum-bearing, *x*, operated by a moving nut, *d*, on a threaded part of a shaft, M, carrying a spur-wheel, N, the belt Z may be shifted. When the belt is shifted from the fast pulley B to the loose-gear pulley C, the direction of revolution of the shaft A remains unchanged; but as the pulley C is turned it is apparent that by the engagement

of its pinion *a* with the loose spur-wheel H, in gear with the driving spur-wheel G of the shaft E, the motion of the shaft E and its gearing is reversed, running the cable in the opposite direction. In this manner I am enabled by simply shifting the belt to reverse the gearing and the movement of the cable.

On the brake-shaft M is keyed fast an eccentric, P, engaging the arm *e* of the brake R, which is provided with springs S. The arm *e* of this brake works in a box, *g*, whereby it is prevented from revolving. When the check-line V is pulled, turning the shaft M, the eccentric is turned, putting on the brake, and at the same time the shifter is operated to move the belt over upon the idler-pulley; or, when the belt is on the loose-gear pulley and the shifter is moved to throw the belt over on the idler, the springs of the brake will give, allowing the eccentric to revolve one-half turn more.

T represents a pulley which is equal in width to the three pulleys B, C and D, and is journaled to a lever-arm, *h*, pivoted at *k* and provided with a bearing, *d'*. The pulley T is designed to lie upon the running belt, revolving with the motion thereof. If the belt should break, the pulley T will fall, and its arm will, by its end bearing, *l*, intersect the counter-shaft I, and at the same time will move the loose clutch-collar *l'* to engage the tight clutch-collar *m*, which operates the cog-wheel N, and thereby turns the cog-wheel *p* and the brake shaft to which the cog-wheel *p* is keyed, throwing the belt and putting on the brake at the same time.

W indicates a pulley on the lever *s'*, which is continuously held up by the strain of the cable *r*. Should this cable break, or anything come in contact with the elevator-platform while descending, causing the cable to become slack, the machinery will be instantly stopped by the fall of the pulley W and its lever, which, intersecting the shaft I, causes the loose clutch-collar *t* to engage the clutch-collar *v*, turning the wheels *n* and *p* and automatically putting on the brake and shifting the belt, as before described.

In order to operate the shifter and brake automatically when the elevator-platform is at its highest or lowest point, the shaft E is threaded on each side of a chain-wheel, U, as indicated at *u u*, to engage the loose clutch-

collars *f f*, which are provided with threaded bearings to engage the threaded portions *u u* of the shaft. The chain-wheel is loose on the shaft, and the clutch-collars *v v* on each side of said wheel are keyed or pinned fast to the hub of the wheel. The traveling collars *f f* are held from turning by connections at *a'*, which, however, allow them to travel back and forth on the shaft E, according to its direction of revolution. When this shaft turns in one direction or the other, one of the traveling collars is moved up to engage the clutch-collar on the same side of the chain-wheel, turning the latter and operating the chain J, which turns the chain-wheel U' on the brake-shaft M, throwing the shifter and operating the brake.

Having described this invention, what I claim, and desire to secure by Letters Patent, is—

1. The pulley T, as wide as the belt-pulleys B, C, and D, and having a lever-arm adapted to operate a loose clutch-collar on a counter-shaft, in combination with a tight clutch-collar and a spur-wheel engaging a spur-wheel on the brake-shaft, and adapted to turn the latter, substantially as specified.

2. The pulley W, held up by the strain of

the cable, and having a lever-arm adapted to operate a loose clutch-collar on a counter-shaft, in combination with a tight clutch-collar and a spur-wheel engaging a spur-wheel on the brake-shaft, substantially as specified.

3. The reversing-shaft E, having threaded portions and traveling collars thereon, in combination with a chain-wheel loose thereon and having lateral clutch-collars, a chain-connection, and a chain-wheel on the brake-shaft, substantially as specified.

4. A brake-shaft having an eccentric, in combination with a brake having springs, and an arm working in a bearing to prevent rotation, substantially as specified.

5. The combination, with the brake-shaft, of an eccentric brake, and a belt-shifter adapted to operate in connection with pulleys B, C, and D, and a belt running continuously in the same direction, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM C. ALSDORF.

Witnesses:

L. H. CAPEN,

G. M. BARTLETT.