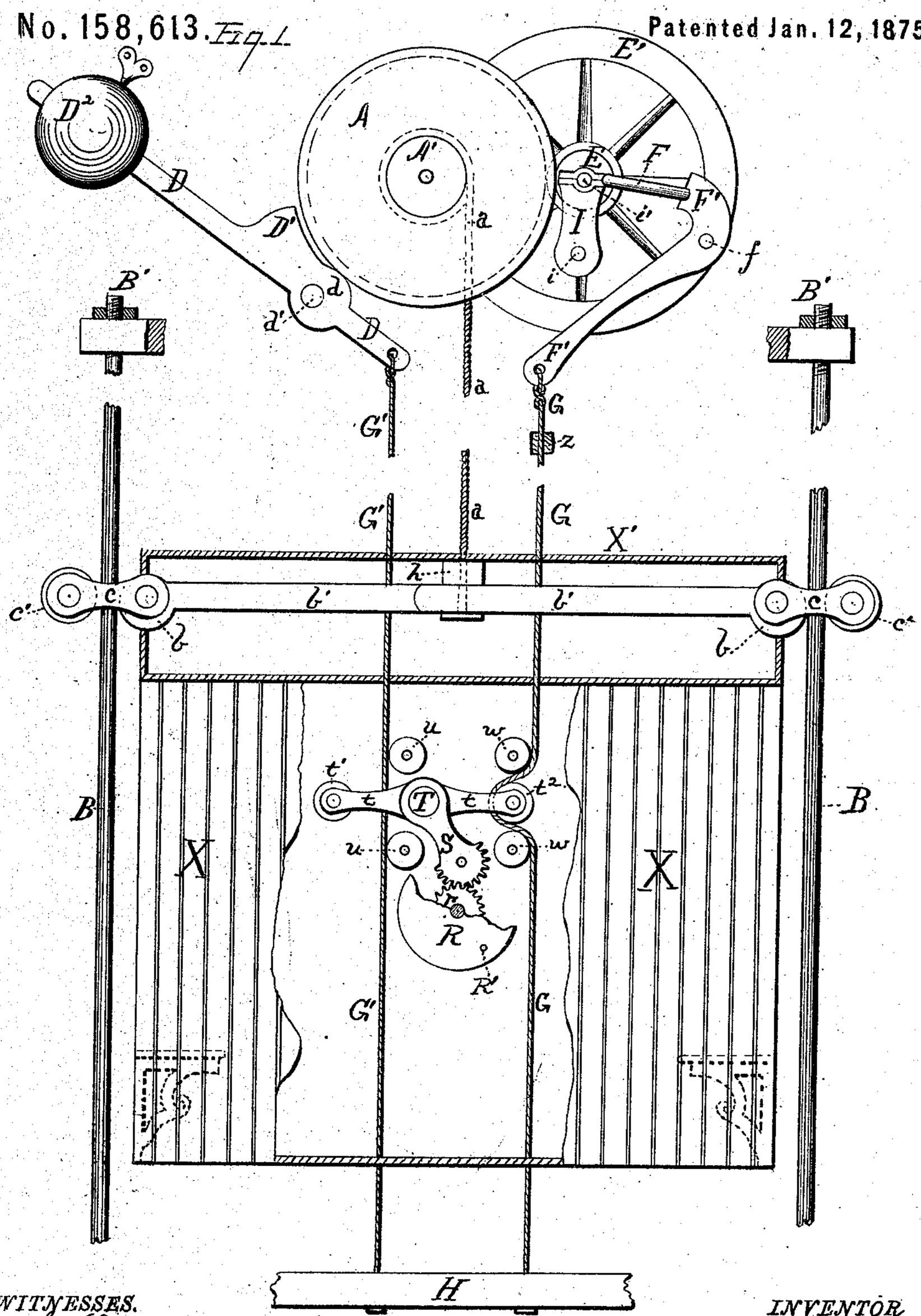
2 Sheets--Sheet 1.

L. L. WHITLOCK.

Elevators.

No. 158,613. Fig. 1. Patented Jan. 12, 1875.



WITNESSES.

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2 Sheets--Sheet 2.

L. L. WHITLOCK.
Elevators.

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Fig. 2.

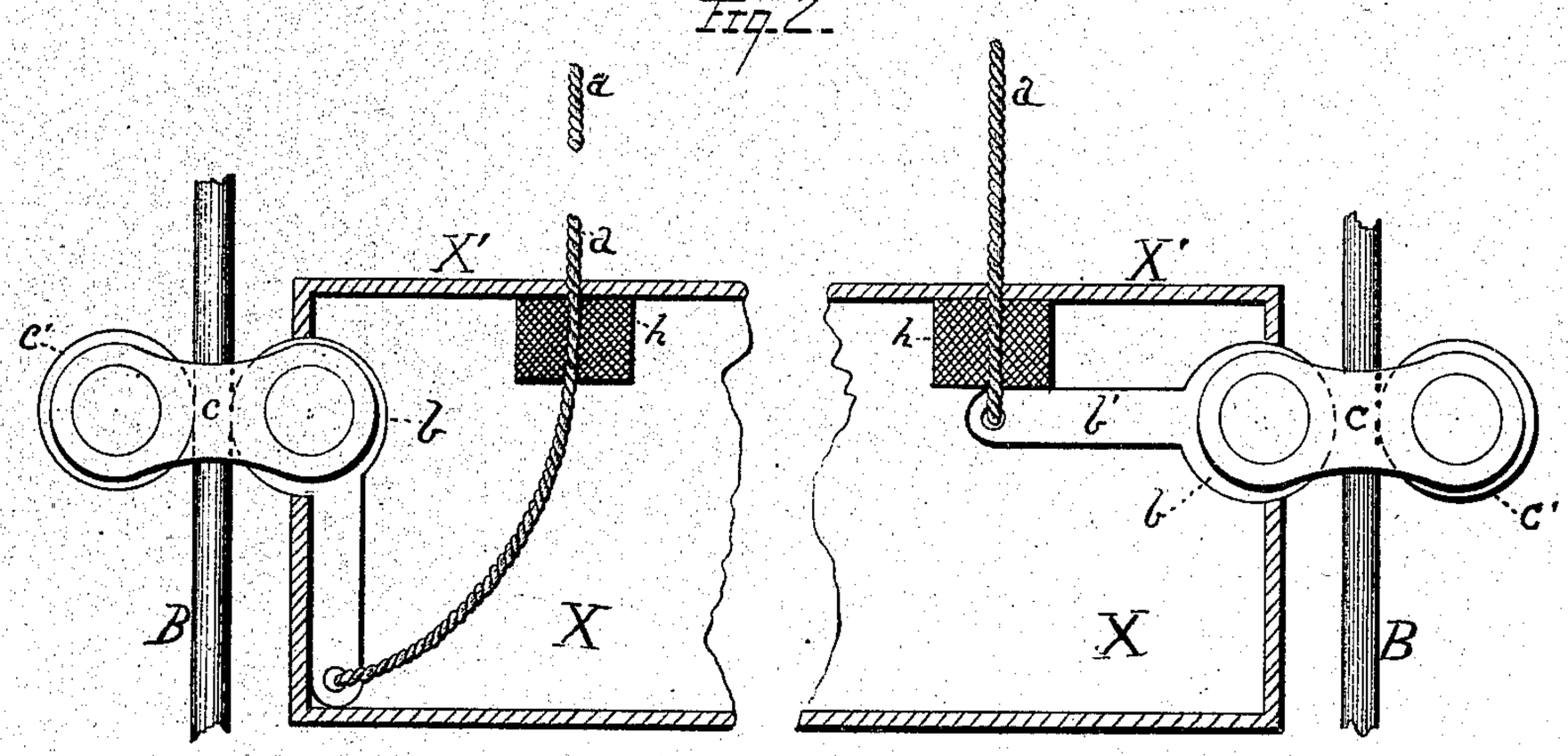
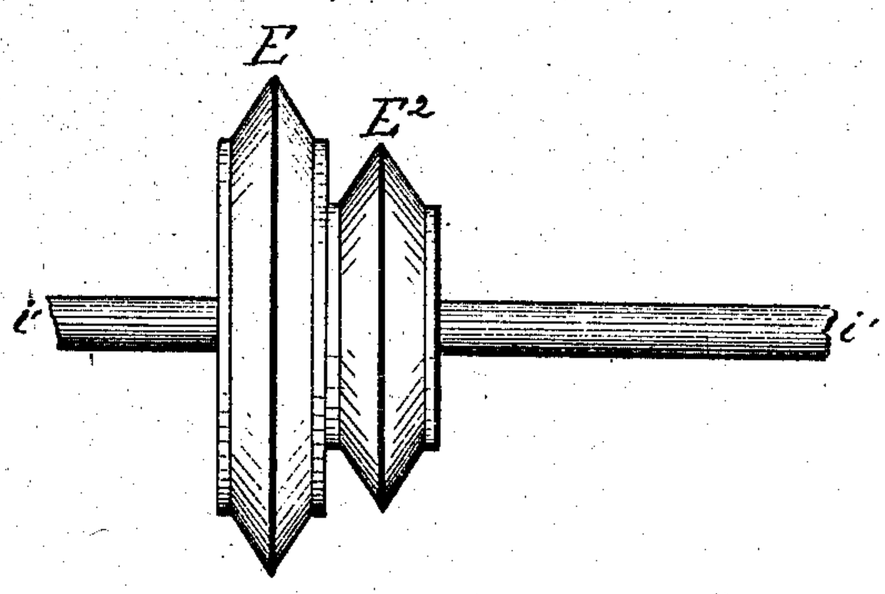


Fig. 3.



WITNESSES.

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UNITED STATES PATENT OFFICE.

LEWIS L. WHITLOCK, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN ELEVATORS.

Specification forming part of Letters Patent No. **158,613**, dated January 12, 1875; application filed December 27, 1873.

To all whom it may concern:

Be it known that I, LEWIS L. WHITLOCK, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Devices for Raising Weights, &c.; and I do hereby 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in devices for raising weights, such as elevators, &c.

In the drawings, Figure 1 shows a general view, in side elevation, of my invention. Fig. 2 is a detailed view, showing the operation of my safety stop device; and Fig. 3 is a detailed view in side elevation, showing double-grooved friction-wheels of different diameters, for the purpose of obtaining different degrees of speed.

My invention consists in the various parts and combinations, as hereinafter specified and claimed, wherein E is a friction-pinion, to whose shaft is applied the motive power. E^1 is its balance-wheel. I is a rocker-box, swinging upon a pivot, *i*, in which is journaled said friction-pinion E and its balance-wheel E^1. The shaft *i'* of the friction-pinion E is so placed in relation to the pivot *i* of the rocker-box I that the center of gravity of the wheels E E^1 shall fall sufficiently beyond the pivot *i*, that when the pressure of the lever F' is removed the friction-pulleys A E will be disengaged automatically by the weight of the wheels E E^1, operating the rocker-box I. A' is a drum or bull-wheel, attached to and operated with the friction-wheel A, upon which is wound the lifting-line *a*. F is a link transmitting motion between the rocker-box I of the friction-pinion E and the lever F', fulcrumed at *f*, and operated by the line G. D is a lever, fulcrumed at *d'*, provided with the adjustable weight D^2, friction-brake D^1, and eccentric *d*, said friction-brake D^1 and eccentric *d* engaging with the friction-wheel A. G' is a line, or its equivalent, for operating the friction-brake D. The weight D^2 automatically operates the eccentric *d*, as will hereinafter appear. To the lifting-line *a* is attached the weight X, which, in the drawings, is represented as a car. Said line *a* passes through the top X' of the car X, then through the spring *h*, which may be of rubber or other suitable material, and then through the arms *b'* of the eccentrics *b*, and is fastened to the arms *b'* in a suitable manner. The arms *b'* serve as weights to the eccentrics *b*. These eccentrics are connected by the link *c* and the idle-rollers *c'*. B B are bars, rods, or their equivalents, passing between the eccentrics *b b* and the idle-rollers *c'*. The rods B B are secured at each end to the building or suitable frame, as indicated at B'. Upon the car X is attached my device for operating the lifting mechanism. I do not limit myself to placing said device within or upon the car, as it may be separately placed upon any or all of the several stories or floors of a building, or in any suitable place outside the car. R is a disk or lever, operated by the handle R', which serves as a crank to the cog-wheel *r*, which engages with the cog-lever S. This lever is journaled at T to the bar *t*, at either end of which are attached the friction-pulleys t^1 t^2. *u w* are stationary friction-pulleys. The pulleys *u u* are fixed one above another, in a line parallel to and upon the inner side of the line G'; likewise the pulleys *w w* to the line G. The pulleys *u u* and t^1 and *w w* and t^2 may be reversed in their order to the lines G G'. The line G is arranged to pass down between the pulleys *w w* and t^2. Said lines G G' are fastened at their lower extremities to the frame H. *z* is a stop-piece placed in a suitable position upon the line G, so that the elevator will be prevented from rising above the point at which it is fixed by impinging upon it, and operating to stop the ascension of said elevator. The friction-pinion E (see Fig. 3) will be seen to be upon the principle of the cone-pulley, E^2 being a smaller friction-pinion than E. This cone friction-pinion is arranged to slide upon the shaft *i'*, so that either the pinion E or E^2 may be thrown into gear with the wheel A, for the purpose of giving different velocities to said wheel A.

The operation is as follows: Motive power is applied to the shaft *i'*, moving the friction-pinion E and its balance-wheel E^1. The balance-wheel E^1 is made of suitable weight, and driven at such a velocity as to store in itself

sufficient power to raise the weight without material assistance from the motive force. The wheels E E¹ are journaled and swung in the rocker-box I, so pivoted at *i* as to automatically disengage from the wheel A when not desired to be employed. When it is desired to lift the weight or car X, the friction-wheel A, with its drum A¹, operated by tension upon the line G, operates, through the lever F′ and the link F and rocker-box I, to throw the friction-pinion E into and out of gear with the wheel A. Tension upon the line G is accomplished by turning the handle R of the cog-wheel *r* in such a direction as to draw the friction-pulley t^2 between the friction-pulleys *w w*, kinking and thereby shortening said line G, which is made to pass between them, as hereinbefore stated. When the car or weight X is descending, the brake D^1 is operated by reversing the handle R′ and shortening the line G′ by kinking it between the rollers *u u*. In case of rupture of the line G′, the weight D^2 would automatically operate the eccentric stop *d*. This is likewise true while the elevator is at rest, or in the event of accident to the line G′. The cam-stop *d* serves an additional purpose in holding the elevator at rest, while the lever is at its neutral point when being reversed. Should the lifting-line *a* break, the car or weight X would be stopped in the following way, (see Fig. 2:) The lifting pressure being relieved from the ends of the eccentric arms *b′*, said arms of their own weight would fall, thereby operating the eccentrics *b*. It will be seen that the rods B would thus be powerfully griped between the eccentrics *b* and the idle-rollers *c′*, and downward motion of the car or weight X be effectually stopped.

What I claim as my invention is—

1. The combination of the friction lifting-wheel A with the driving friction-wheel E, the latter poised upon a rocker-frame, I, and arranged to be disengaged at pleasure by mechanism situated in the car X, substantially as described and shown.

2. The double-grooved conical friction-pinions E E^2, of different diameters, keyed to the stationary shaft *i′*, and sliding loosely longitudinally thereon, so that either the pinion E or E^2 may be brought into gear with the V-grooved lifting-wheel A by being slid backward or forward on the shaft, for the purpose of giving different velocities to said wheel A, substantially as and for the purposes set forth.

3. In combination with the friction lifting-wheel A and drum A′, the lever D, said lever provided with a friction-brake, D^1, and adjustable weight D^2, and an eccentric stop, *d*, whereby the speed of the wheel A may be gradually stopped by the friction-brake, or, in case of accident, the wheel may be instantly checked by the stop, substantially as described.

4. The combination of the friction-pulley E, rocker-box I, link F, lever F′, line G, stationary friction-pulleys *u w*, and movable friction-pulleys t^1 t^2, substantially as and for the purposes shown.

5. In combination with the lines G G′, the horizontal bar *t*, adapted to be oscillated from side to side, so as to operate on either or neither of the lines G G′, substantially as and for the purposes described.

6. The combination of the lines G G′, lever S T, bar *t*, provided with the friction-rollers t^1 t^2 at its ends, stationary friction-rollers *u w*, pinion *r*, disk R, and handle R′, all constructed, arranged, and adapted to operate substantially as and for the purposes described.

7. In combination with the car X, weighted eccentrics *b b′*, links *c*, and idle-pulleys *c′ c′*, the stationary rods B B′, said rods passing between the idle-rollers *c′ c′* and the eccentrics *b b′*, and forming guides and stops for the car, as described.

In testimony that I claim the foregoing I have hereunto set my hand this 24th day of December, 1873.

LEWIS L. WHITLOCK.

Witnesses:

J. TYLER POWELL,

WM. H. BRERETON, Jr.