

(No Model.)

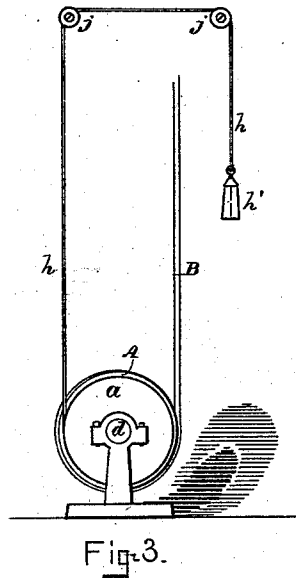
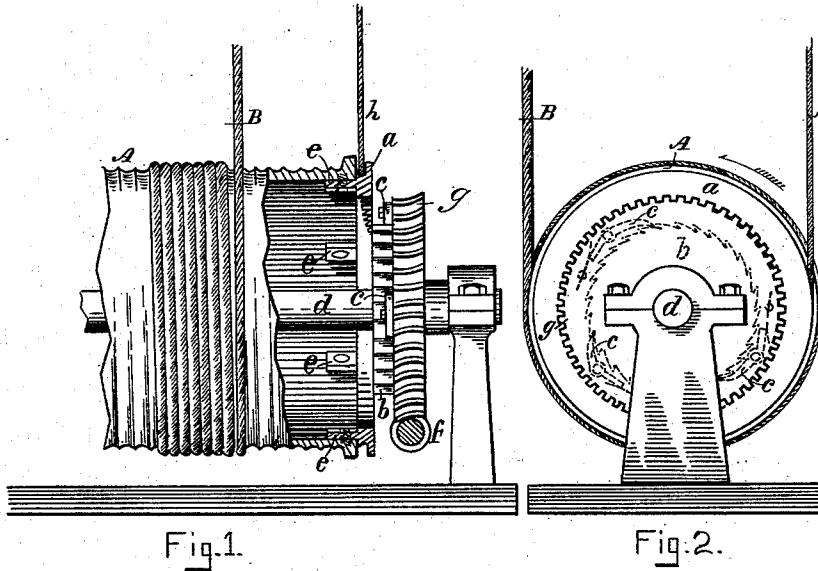
2 Sheets—Sheet 1.

G. DRYDEN.

DEVICE FOR STOPPING THE REVOLUTIONS OF THE DRUM IN ELEVATING
MACHINERY.

No. 252,085.

Patented Jan. 10, 1882.



Witnesses.

Ernst K. Frenkel, Jr.
Harold W. Frenkel

Inventor.

George Dykes.

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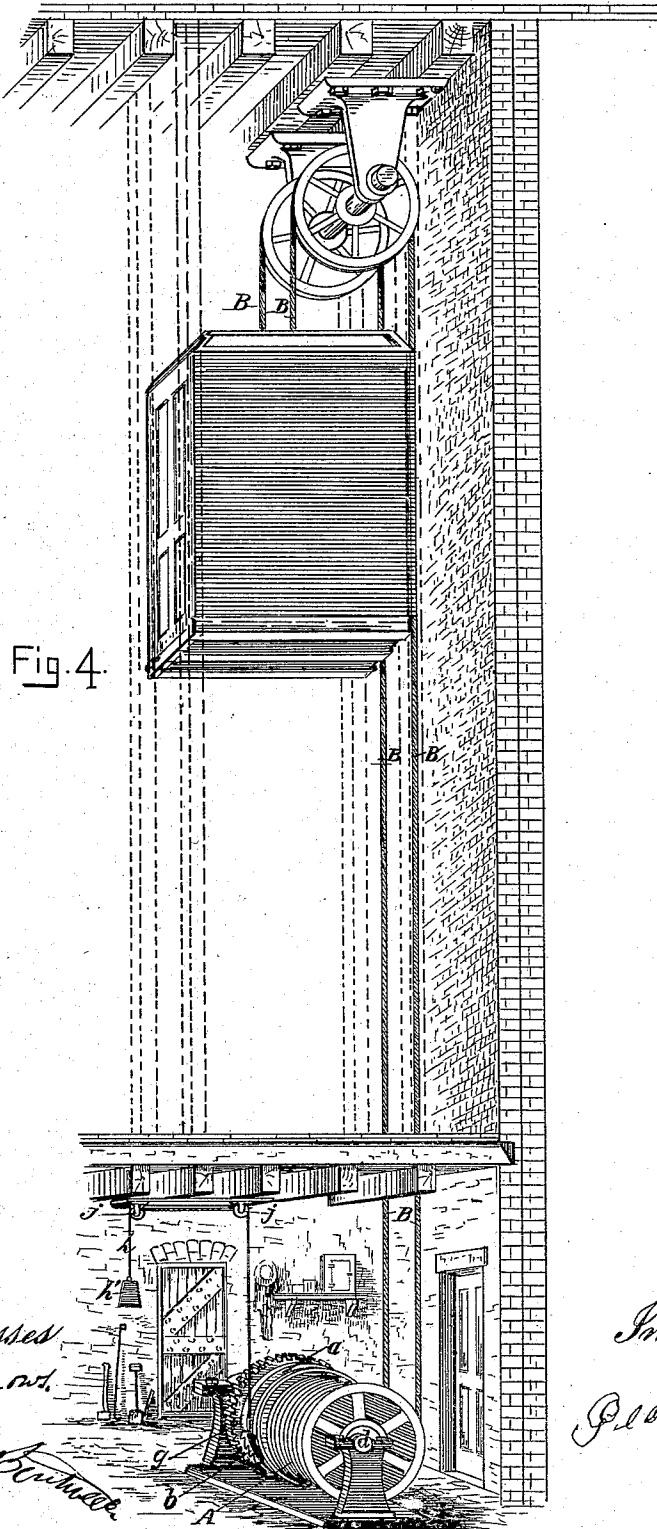


Fig. 4.

Witnesses
Chas. H. Barnard.
Almon C. Butler.

Inventor.
George Dryden

UNITED STATES PATENT OFFICE.

GEORGE DRYDEN, OF BOSTON, MASSACHUSETTS.

DEVICE FOR STOPPING THE REVOLUTIONS OF THE DRUM IN ELEVATING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 252,085, dated January 10, 1882.

Application filed October 17, 1881. (No model.)

To all whom it may concern:

Be it known that I, GEORGE DRYDEN, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful improved device to be applied to machinery for running elevators, which operates when an elevator is "hung up" by the application of any of the various devices in use upon elevator-cars to stop a car when falling, or whenever a car is hung up from any cause proceeding from the car itself, or from the cable by which it is held, to stop the revolution of the drum, and thus prevent the cable holding the car from becoming entangled in the machinery.

The accompanying drawings, which form a part of this specification, fully illustrate my invention and its application to elevating machinery. Figure 1 thereof is a side elevation in part section; Fig. 2 is an end elevation; and Fig. 3 is a diagram for the illustration of my auxiliary drum with weight attached. Fig. 4 illustrates in perspective the exact application of my invention in its relations to the elevator itself, to the drum, and to the lifting-cable, showing the elevator with the lifting-cable passing from the elevator up over the pulleys in the upper part of the building, and then down and over the drum in the basement, in the usual and well-known manner. Like letters of reference designate like parts in the different figures.

My invention consists in placing the worm-gear, which has heretofore been made fast upon the drum-shaft, loose upon said shaft, then a ratchet-gear is attached to the drum, over which drum the cable holding the car runs, or, rather, the ratchet-gear is attached directly to the auxiliary drum for holding a brake-cord, which auxiliary drum is attached to the main drum. A sufficient number (preferably three) of pawls are attached to said loose worm-gear, said pawls bearing upon said ratchet-gear, all operating to stop the movement of said main drum when the car is hung up, and thereby prevent the cable holding the car and wound around said main drum from becoming entangled in the machinery. The weight attached to said brake-cord operates to counteract the momentum of the drum, and thus secure a sudden stop of said drum after the cable slackens, and

the weight also serves as an aid to the revolution of the drum when the elevator is on its upward course, all of which is hereinafter fully described.

A is a drum, over which the cable B, which holds the elevator-car, is carried, said drum A being fast on the drum-shaft D. The auxiliary drum *a* is held fast to the main drum A by means of the spurs *e*, bolted to said main drum, as shown in Fig. 1, or by other equivalent means. The brake-cord *h* passes over the periphery of the auxiliary drum *a*, then over the two pulleys *j*, and at the end of said cord *h* is attached the weight *h'*. The ratchet-gear *b* is made fast to the side of the auxiliary drum *a*, so that said ratchet-gear moves with the drum A. The worm-gear *g* is loose upon the drum-shaft *d*, as before stated, and attached to the side of said worm gear are the pawls *c*, preferably three in number, as shown. The worm-shaft passes under said worm-gear *g* at the point *f*, as shown in Fig. 1, the worm of said worm-shaft meshing into and carrying said loose worm-gear *g*.

Having described the construction of my device, and its application to elevating machinery, its operation may be described as follows: When the car is moving upward the worm-gear *g*, and with it the drum A and the device attached thereto, is turning to the right, when looking at Fig. 2, and when the car is moving downward said machinery is of course turning in the opposite direction, as indicated by the arrow in Fig. 2. When the elevator-car is going up and the worm-gear *g* is turning in the direction before indicated the pawls *c*, attached to said worm-gear, hold in the ratchets of the ratchet-gear *b*, as clearly shown in Fig. 2, and as said ratchet-gear is held fast to the auxiliary drum *a*, and said auxiliary drum is attached to the main drum A, said main drum of course turns in the same direction with said worm-gear, and the car being connected with the drum A by the cable B, the car moves upward, as above stated.

It is obvious that it is never necessary to hang a car up unless the car be falling. Now, when the car is moving downward in the usual and regular manner the weight of said car will of course carry the drum A, the speed being

regulated by the pawls *c* bearing upon the ratchet-gear *b*, said pawls being attached to the worm-gear *g*. Upon the worm-shaft connecting with said worm-gear are placed the pulleys, over which pass the belts which connect said worm-shaft with the source of power. But when the car is hung up the cable B is thereby slackened, relieving the drum A of the weight of the car, and said drum therefore stops. The worm-gear *g*, being loose upon the drum-shaft, continues its revolutions, and the pawls *c*, being attached to said worm-gear, move along over the ratchet gear without effect upon the drum, while in going up the pawls bear against the ratchets and thus turn the drum. It is obvious that the momentum acquired by the drum A would keep it in motion certainly for a part of a revolution after the slackening of the cable B, and to obviate this, and to render the stopping of the drum A more sudden, the cord *h* is carried around the auxiliary drum *a* and over the two pulleys *j*, and is provided with the weight *h'* at its end, and as said auxiliary drum is attached to the main drum A it is obvious that the weight *h'* will, when the car is hung up and the drum A is relieved of the weight of said car, act instantly as a brake and counteract the momentum above described. It will also be readily seen that when the car is running up the weight *h'*

acts as a counter-balance, and thereby aids the revolutions of the drum A.

Having fully described my invention and the mode of carrying the same into effect, what I claim as new, and desire to secure by Letters Patent, is—

1. In an elevating-machine, the mode of stopping the revolving of the drum upon the elevator-car being hung up and the cable holding said car becoming loose, by means of a loose worm-gear upon the drum-shaft, with pawls attached to said worm-gear, said pawls operating in connection with a ratchet-gear, said ratchet-gear being attached to an auxiliary drum, said auxiliary drum being made fast to the main drum and operating a brake, substantially as described.

2. In combination with an elevator-car, the drum A, the cable B, the drum-shaft *d*, the loose worm-gear *g*, with pawls *c* attached thereto, the ratchet-gear *b*, the auxiliary drum *a*, with brake-cord *h*, pulleys *j*, and weight *h'*, and the worm-shaft shown at the point *f*, constructed and arranged substantially as described and shown, and for the purpose set forth.

GEORGE DRYDEN.

Witnesses:

CHARLES H. BARROWS,
FRANCIS M. BOUTWELL.