(No Model.) 2 Sheets—Sheet 1.

A. B. RONEY.

DRUM WIND ELEVATOR.

No. 603,599. Patented May 3, 1898.

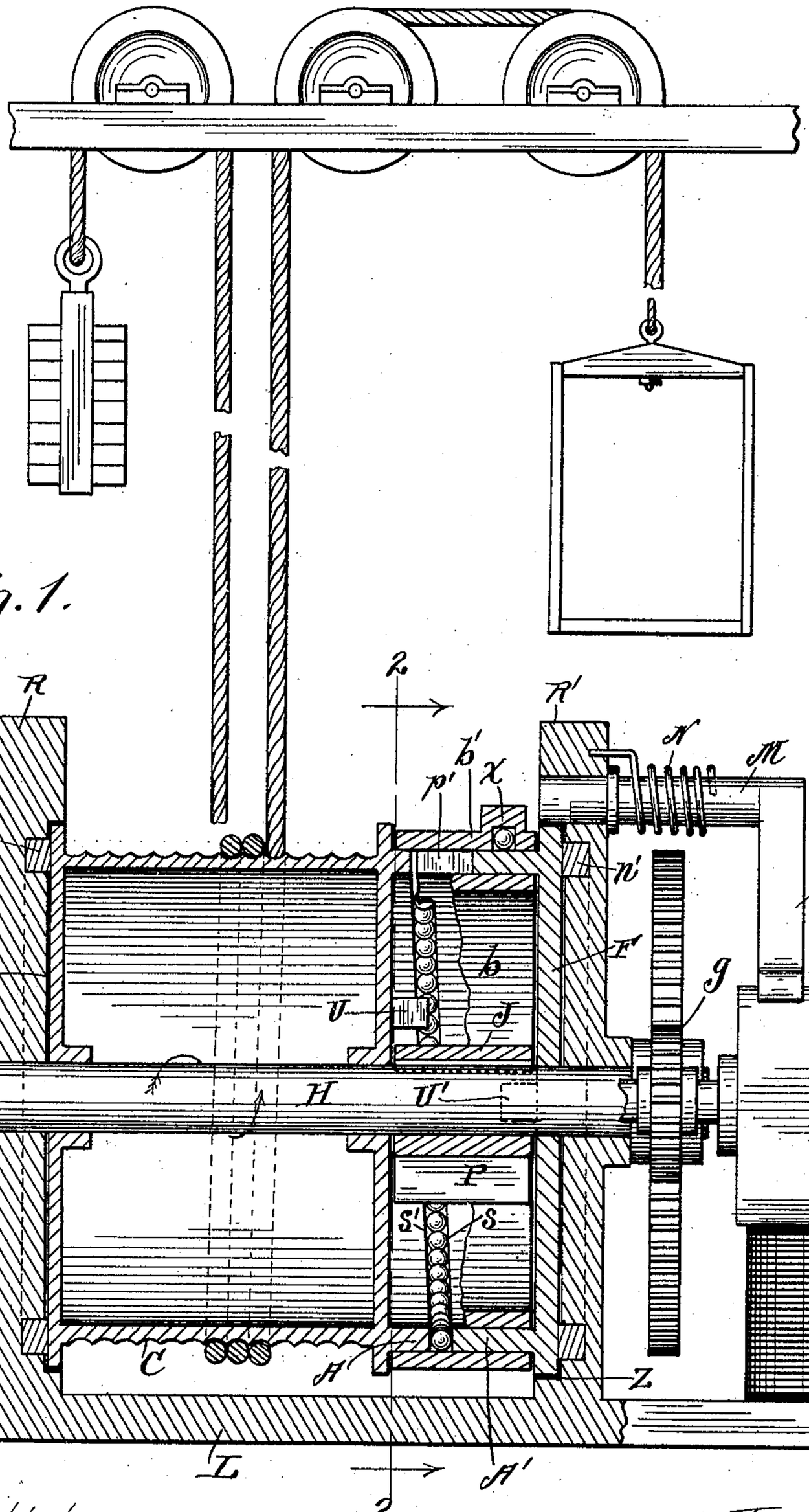

Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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DRUM WIND ELEVATOR.

No. 603,599. Patented May 3, 1898.

Fig. 2.

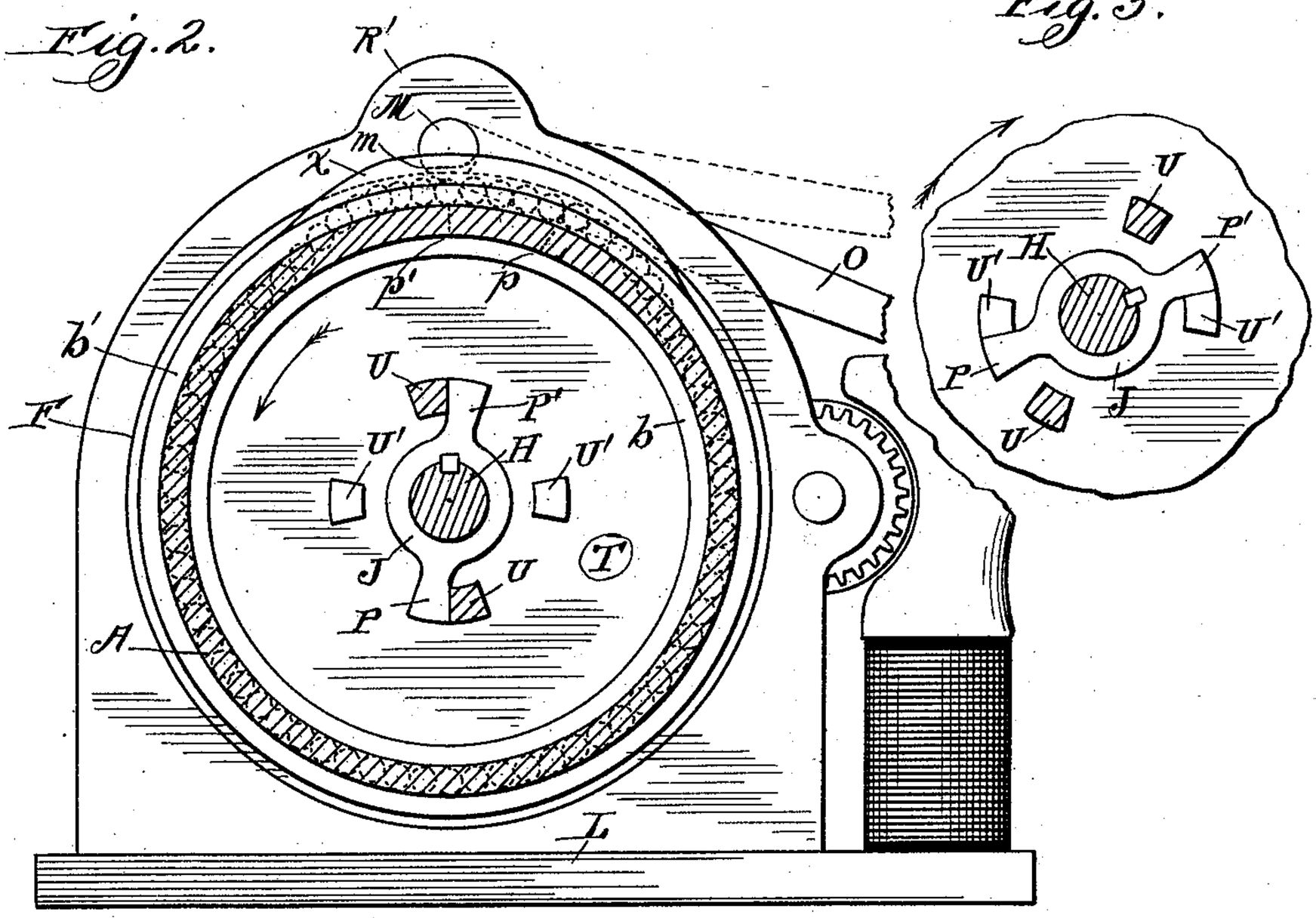


Fig. 3.

Fig. 4.

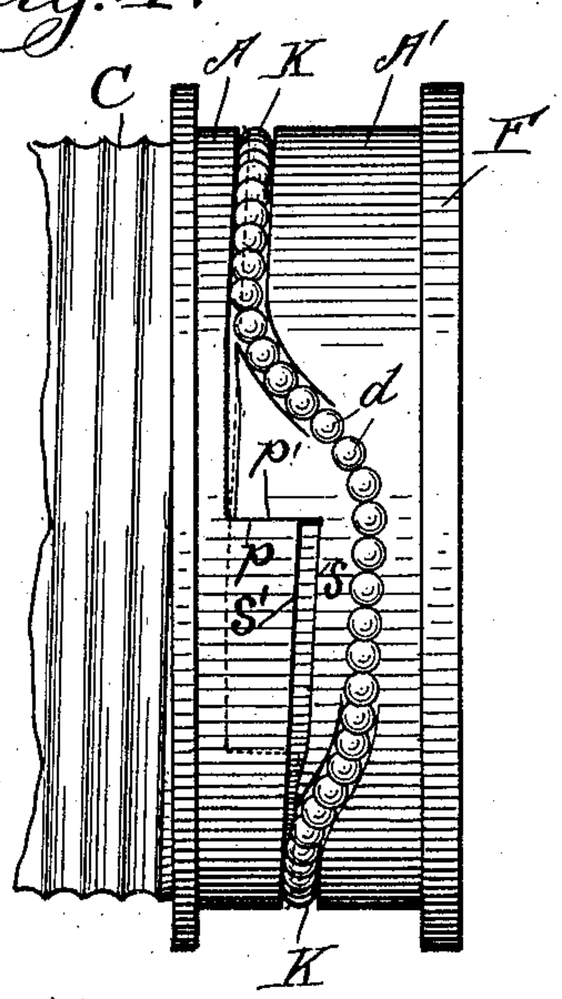
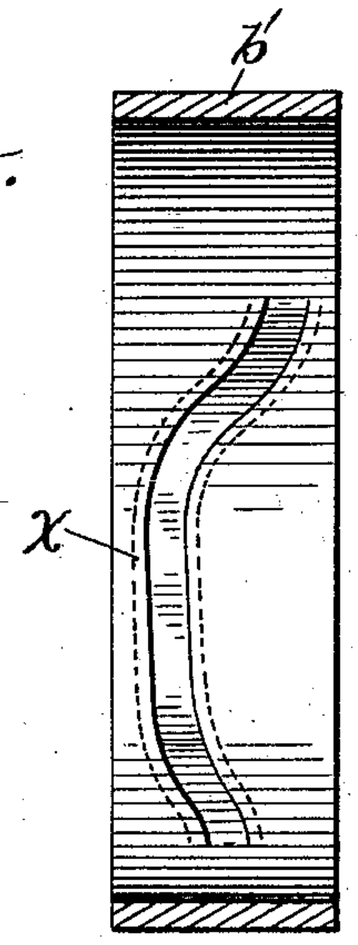


Fig. 5.



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UNITED STATES PATENT OFFICE.

ALEXANDER B. RONEY, OF CHICAGO, ILLINOIS, ASSIGNOR TO HIMSELF, AND JAMES RONEY, OF PITTSBURG, PENNSYLVANIA.

DRUM-WIND ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 603,599, dated May 3, 1898.

Application filed June 26, 1897. Serial No. 642,391. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER B. RONEY, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented new and useful Improvements in Drum-Wind Elevators for High Speed, adapted to be controlled and operated by electric power, of which the following is a specification.

The object of my improvement is to provide, in relation with a winding-drum actuated by a spur-gearing and operated by an electric motor, an automatic brake which performs the same function as the commonly-used worm-gearing does in holding the drum against reversal by the strain of the cable after the power is cut off.

My invention consists in certain novel features hereinafter described, and particularly pointed out in the claims.

I attain these objects by mechanism as illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section of the working parts of the machine. Fig. 2 is a vertical cross-section on the line 2 2, looking in the direction of the arrows. Fig. 3 is a view illustrating certain parts shown in Fig. 2. Fig. 4 is a fragmentary view of the winding-drum. Fig. 5 is a section of the outside sleeve-ring.

Similar letters refer to similar parts throughout the several views.

The bed-plate L and standards R R′, with recess Z and thrust-rings *n n′*, constitute the framework of the machine. In the standards revolves the driving-shaft H, provided with arms P P, shaft H supporting the drum *c*, which is loosely journaled thereon, and the tube A, which projects from the side of the drum, is shaped as a cam with a spiral wind S, that begins and ends in the shoulder *p*, that engages with the shoulder *p′* of the spiral wind S′ on the end of the opposite tube A′, which projects from the loose cam F. These spiral faces are held apart by antifriction-balls, to which attention is directed elsewhere. The periphery of the loose cam F is retained within the recess Z, which serves as a brake band or surface against which the periphery is thrust by the auxiliary brake M. Within the chamber T the radial arms P P′ of the driving-shaft H are inclosed in working relation to the projecting lugs U U and U′ U′, free to turn in either direction until arms P P′ engage with lugs U U on the drum in the direction indicated by the arrows in Figs. 1 and 3. Likewise in the reverse direction they engage with the lugs U′ U′ on the loose cam F. The tube A′ of the loose cam F is provided inside and outside with sleeve-rings *b b′*, which extend beyond its spiral end, (see Figs. 1, 4, and 5,) thus preventing the balls between the cam-faces from falling out. The outside sleeve-ring is provided with a tunneled roof that reaches across the shoulder *p′*, and through this tunnel the balls may pass from one side of the shoulder to the other, thus forming a continuous raceway for the balls.

The auxiliary brake is a kind of magneto-mechanical brake provided with an all-iron arm O, that can be attracted by the poles of the electric motor and is referred to elsewhere.

The electric motor is of the usual kind, with its journal-bracket removed, so as to simplify the illustration, and is connected with the shaft by means of spur-gearing *g*, the cables from the drum to the cage on the one hand and counterweight on the other.

The entire mechanism when assembled and viewed as a whole is seen to consist of a winding-drum with a side cam associated screw-wise with another cam, which is loose, both of them adapted to exert friction against the standards R R′ of the frame, the loose cam F supported within the recess Z of the standard R′, while the drum is supported loosely upon shaft H, and the radial arms P P′ of the driving-shaft serve to unscrew the drum from off the loose cam to release the end thrust and turn it in the winding direction. Then in the reverse direction it lets go of the drum and takes hold of the loose cam and unscrews it against the force of the reversing drum to keep it set.

To elevate the cage, the motor is energized

instantly. The lever O is attracted up to the poles of the motor against the tension of the coiled spring N, thus releasing the auxiliary brake from off the loose cam, the motor revolving shaft H, with its arms P P′, by means of gearing *g*, through the distance between lugs U U and U′ U′ (see Fig. 2) until arms P P′ engage lugs U U on the drum and force it around, thereby releasing the end thrust against the standards, and the shoulder *p* of the drum-cam clutches with the shoulder *p* of the loose cam and drags it around with the drum, thus winding in the cable to elevate the cage. When the current to motor is cut off, the lever is at once liberated under the force of the coiled spring N, which sets the auxiliary brake up against the loose cam to hold it, (see Fig. 2,) and simultaneously the drum reversing under the strain of the cable its shoulder *p* retreats from the shoulder *p′* of the loose cam, as indicated by dotted lines *p p′* in Fig. 2, while lugs U U draw around closer to lugs U′ U′, (see Fig. 3,) and spiral wind S′ of the drum-cam advancing screwwise against the spiral wind S of the loose cam, thus lengthening out into an end thrust against the standards R R′ as a brake to hold the drum.

To lower the cage, the motor is reversed, the shaft revolving in the reverse direction until its arms P P engage the lugs U′ U′ on the loose cam, forcing it around and unscrewing it; but the reversing drum, with its spiral cam acting screwwise against the spiral of the loose cam, keeps both of them automatically end-thrusted against the standards. Thus during the descent of the cage there is a sliding brake action against the standards, which retards the reversing drum in proportion to the speed at which the loose cam is revolved by the motor. Without the balls between the face of the cams it would be difficult to release the end thrust, because of their frictional tendency to stick. The current to motor is cut off, the motor stops, so does the loose cam, because of the auxiliary brake, which prevents any tendency of the reversing drum to move it. Thus the reversing drum screws itself around on the loose cam, thus being end-thrusted against the standards and stopped, and at the same time the auxiliary brake dissipates the momentum of the revolving armature to secure an even floor stop.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination with a pair of upright standards of a driving-shaft journaled in said standards, radial arms projecting from said shaft, a winding-drum mounted loosely on said shaft and having one end adapted to bear against one of said standards, a spiral cam projecting from the opposite end of said drum, the spiral of said cam ending in a shoulder, lugs projecting from said drum and adapted to be engaged by said radial arms, a cam loose on said shaft and having a spiral end facing the spiral end of said drum and ending in a shoulder, said cam having its opposite end adapted to bear against one of said standards, the shoulders of said spirals being adapted to engage each other, a series of anti-friction-balls between said spirals, said series forming a complete, continuous circuit extending around said shoulders, and lugs on said cam adapted to be engaged by said radial arms, substantially as described.

2. The combination with a pair of upright standards of a driving-shaft journaled in said standards, a winding-drum and a cam, both loosely mounted on said shaft adjacent to each other, means whereby said drum and cam are separated and made to bear against said standards when the rotation of the driving-shaft is stopped and are brought together and released from said standards when said shaft is rotated in either direction, and a brake adapted to bear on said cam when the rotation of said shaft is stopped, substantially as described.

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Witnesses:
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