

(No Model.)

2 Sheets—Sheet 1.

L. D. SHAW.

AUTOMATIC BRAKE MECHANISM FOR HAND POWER ELEVATORS.

No. 299,173.

Patented May 27, 1884.

Fig 1

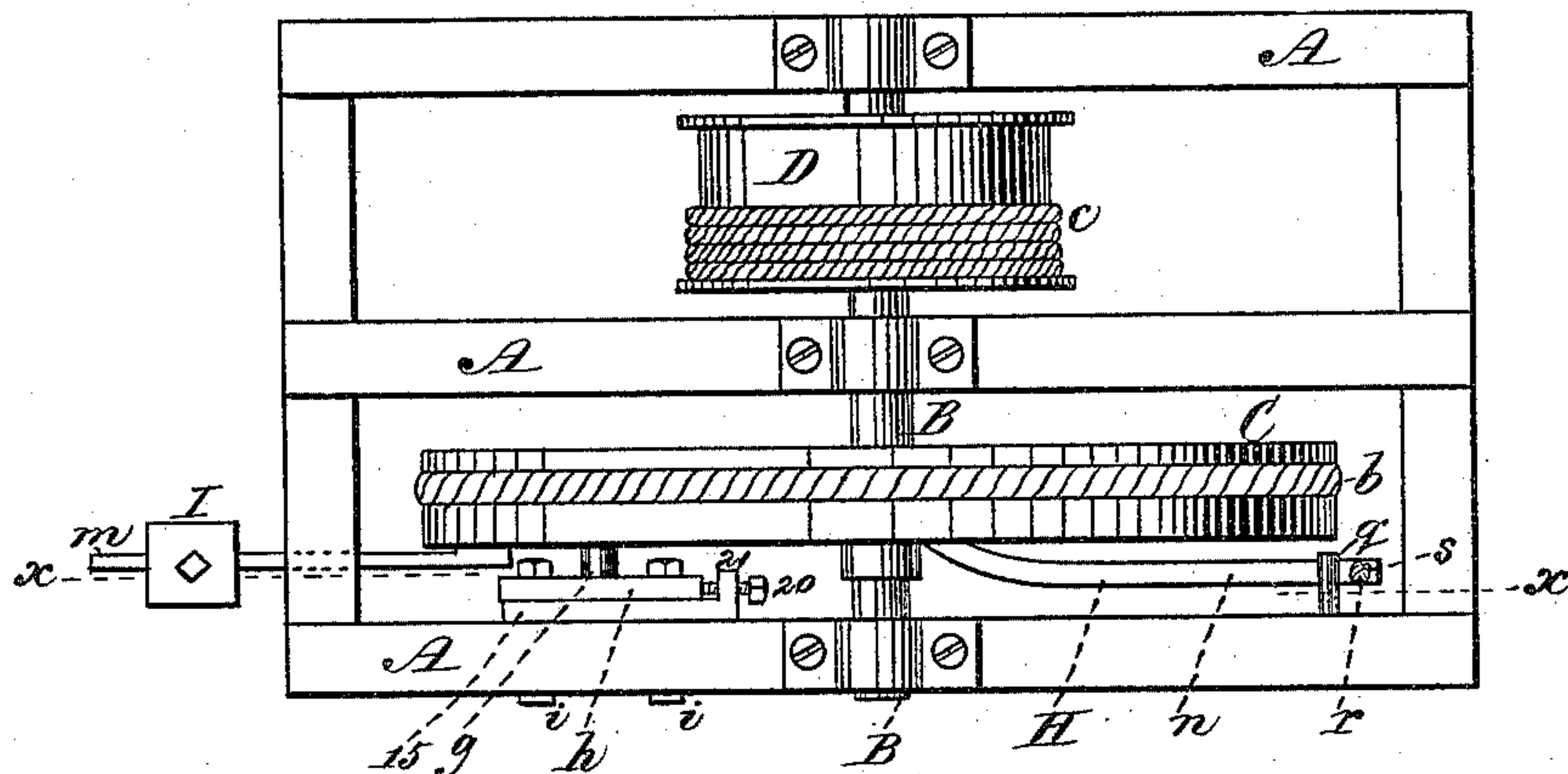
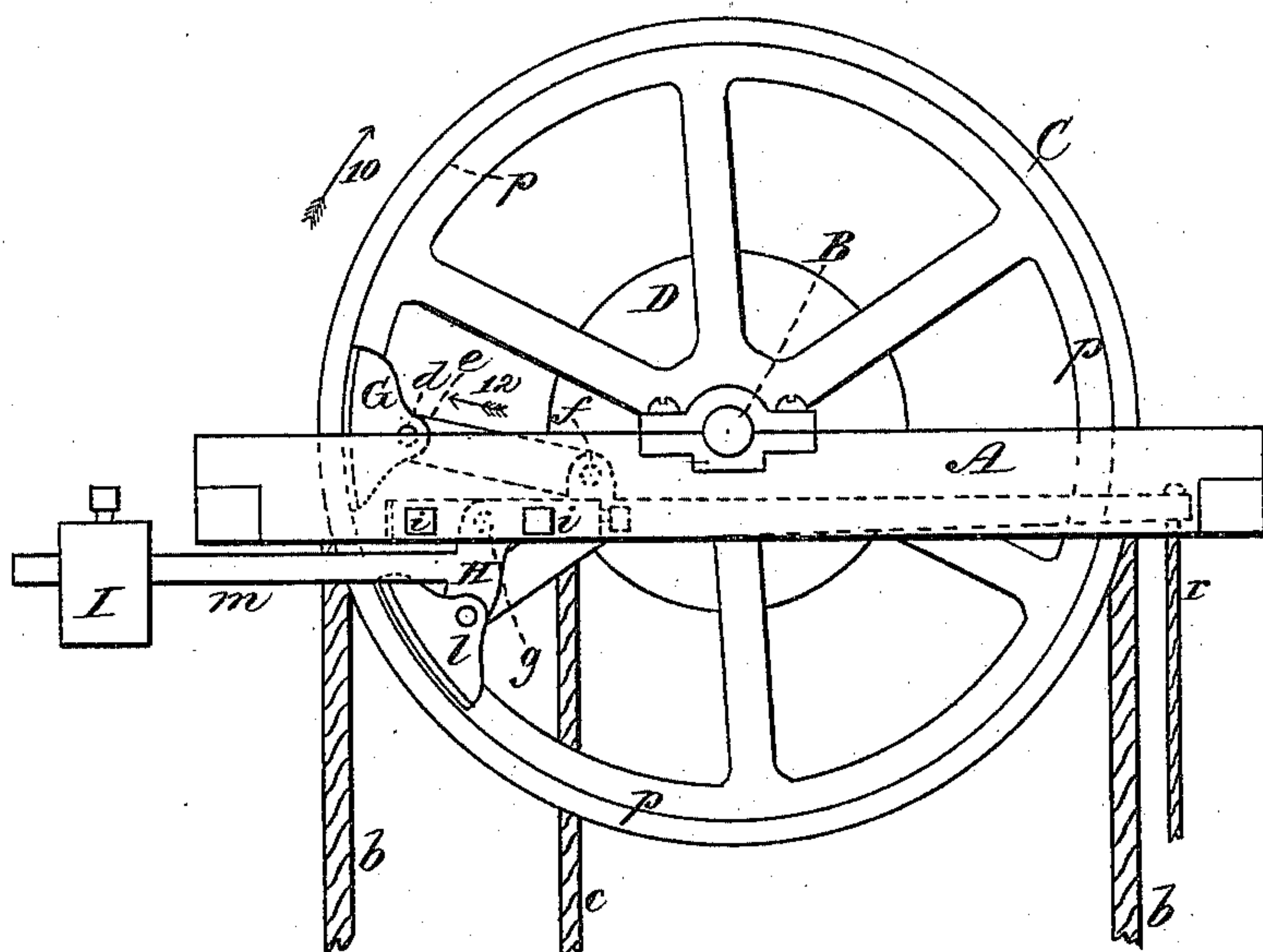


Fig 2



WITNESSES

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Fig 3

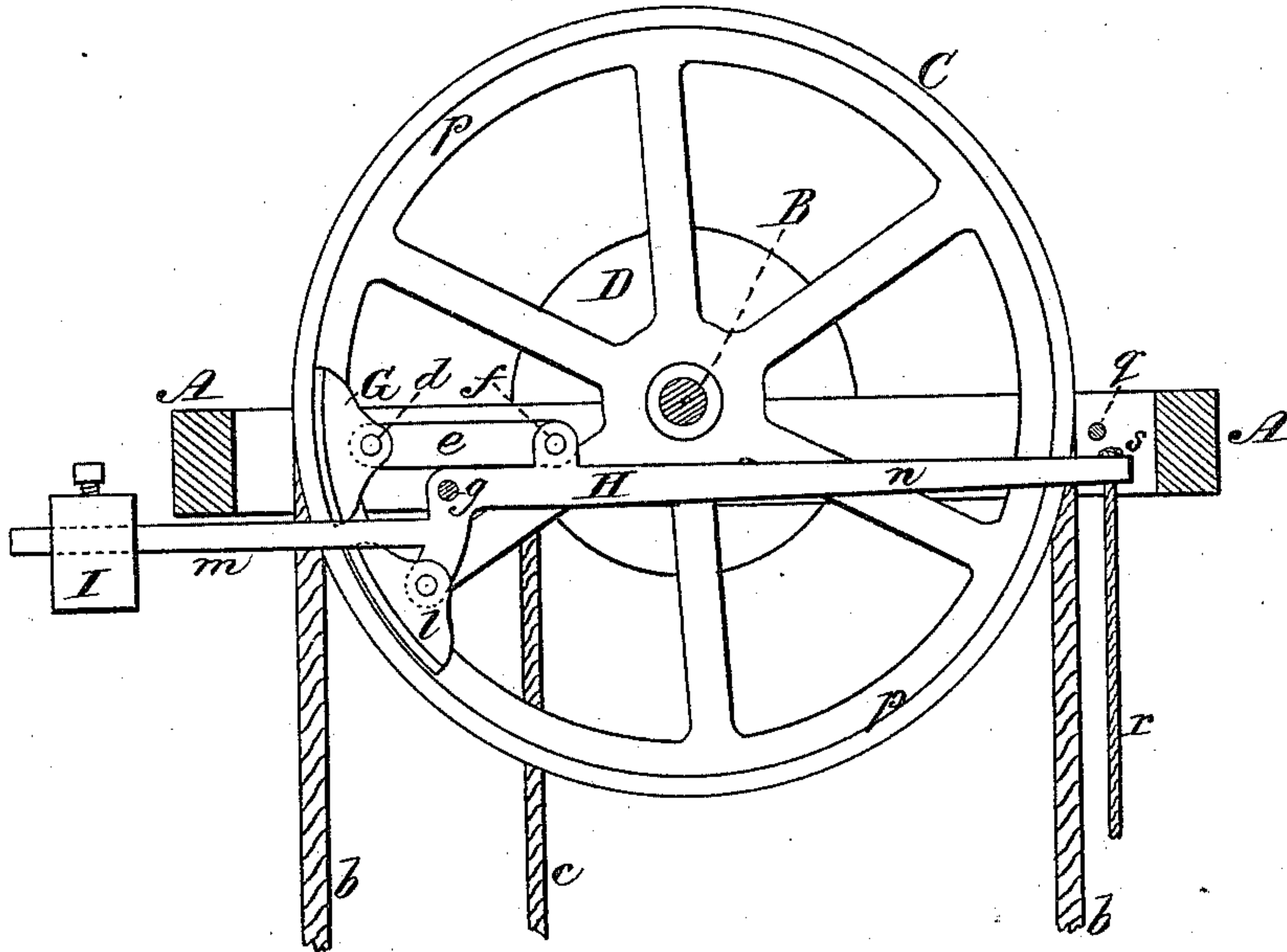
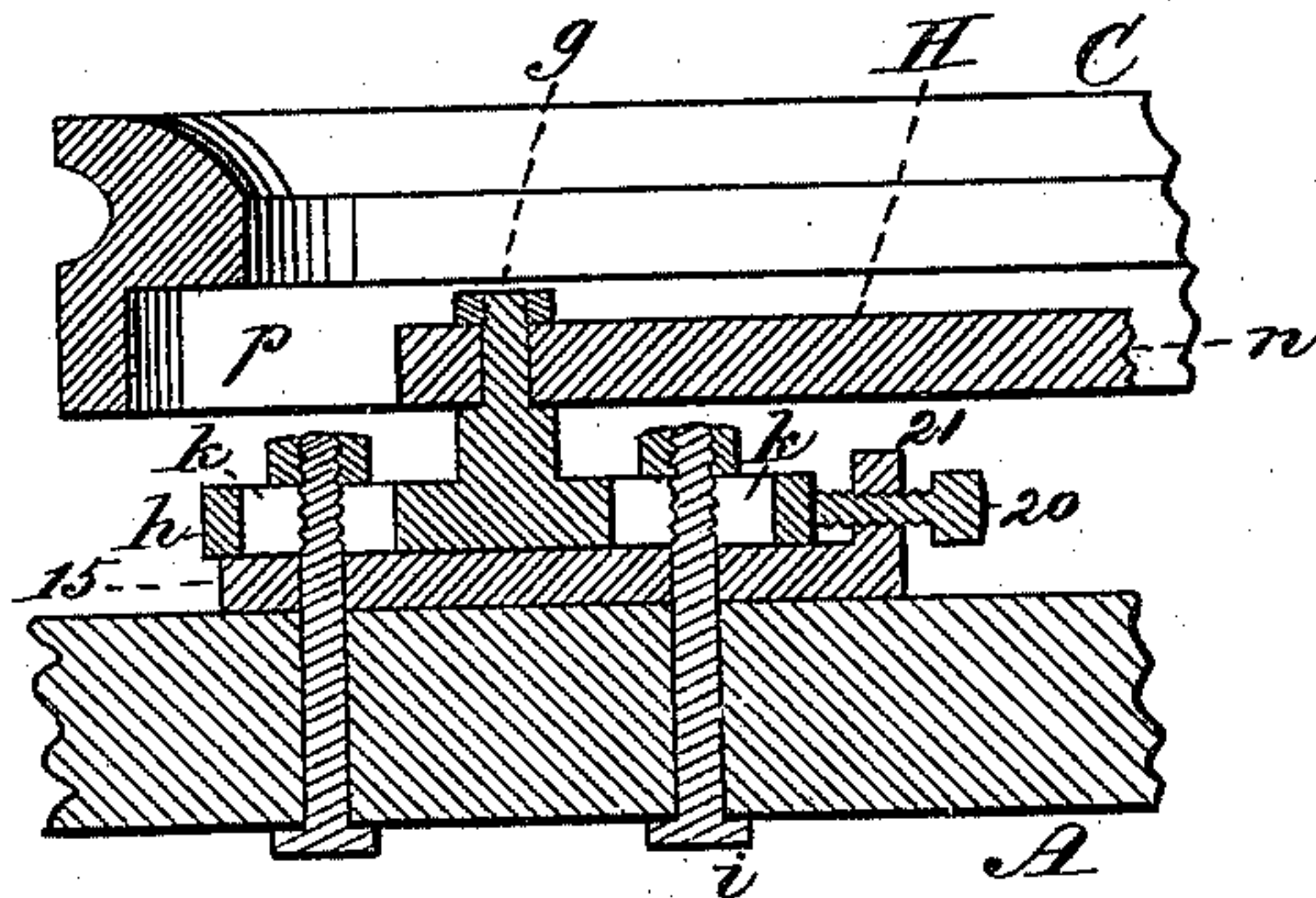


Fig 4



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UNITED STATES PATENT OFFICE.

LORING D. SHAW, OF MELROSE, ASSIGNOR OF ONE-EIGHTH TO EDWARD HOWARD, OF BOSTON, MASSACHUSETTS.

AUTOMATIC-BRAKE MECHANISM FOR HAND-POWER ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 299,173, dated May 27, 1884.

Application filed December 3, 1883. (No model.)

To all whom it may concern:

Be it known that I, LORING D. SHAW, a citizen of the United States, residing at Melrose, in the county of Middlesex and State of Massachusetts, have invented certain Improvements in Automatic-Brake Mechanism for Hand-Power Elevators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a plan of a hand-power elevator-wheel having my improved brake mechanism applied thereto. Fig. 2 is a side elevation of the same. Fig. 3 is a vertical section of the same on the line *xx* of Fig. 1. Fig. 4 is a sectional detail enlarged.

My invention has for its object to provide a simple and reliable automatic-brake mechanism for hand-power elevators; and it consists in the combination, with the elevator-wheel, of a brake-shoe hinged to an arm pivoted below the center of rotation of the wheel to a lever fulcrumed upon the frame-work, and having a weighted arm or spring for keeping the brake-shoe in contact with the inside of the rim of the wheel, by which construction the brake-shoe is prevented from acting on the wheel while the load is being raised, while the backward movement of the wheel will cause the brake to be automatically set to retain the load in any desired position, a suitable stop being provided to prevent the brake lever from being raised out of its proper operative position by its weighted arm or spring.

My invention also consists in the combination, with the above-described brake shoe, arm, and lever, of an auxiliary brake-shoe hinged to or forming a part of the said lever, and adapted to be brought into contact with the inside of the rim of the elevator-wheel by depressing the lever against the resistance of its weight or spring, which movement also releases the main brake, whereby the load can be gradually lowered or eased down when required.

My invention also consists in certain details of construction, as hereinafter set forth and specifically claimed.

In the said drawings, A represents the frame-work which supports the elevator mechanism, and in which are placed the usual bearings for the main shaft B, which carries the main or power wheel C, grooved to receive the endless hoisting-rope *b*, which is pulled by hand to turn the wheel in the direction of the arrow 10, Fig. 2, to raise the load or elevator-platform attached to the rope *c*, which is wound around a drum, D, secured to or connected with the shaft B.

G is the main brake-shoe, which is preferably faced with leather or other suitable material, and is hinged at *d* to an arm, *e*, which is pivoted at *f*, below the level of the axis of rotation of the shaft B, to a long lever, H, fulcrumed on a stud, *g*, projecting from a plate, *h*, sliding upon a plate, 15, secured to the frame-work A, the plate *h* being made adjustable horizontally on the plate 15 by means of bolts *i*, passing through slots *k*, Fig. 4, and a set-screw, 20, passing through a lug, 21, on the end of the plate 15, the stud *g* being also located below the level of the axis of the shaft B.

From the end of the lever H, near its fulcrum *g*, projects an arm, *m*, upon which is placed a weight, I, preferably made adjustable thereon, and to this end of the lever H is pivoted an auxiliary brake-shoe, *l*, the purpose of which will be hereinafter particularly described. The weight I raises the long arm *n* of the lever H, and moves the pivoted arm *e* in the direction of the arrow 12, Fig. 2, thus causing the main brake-shoe G to be kept in contact with the inner periphery *p* of the rim of the wheel C, a suitable stop, *q*, being provided to limit the upward movement of the long arm of the lever H, and prevent the weight I from carrying it up out of its proper operative position. The rotation of the wheel in the direction of the arrow 10 in raising the load causes the outer end of the arm *e* to be raised away from the lever H, as seen in Fig. 2, whereby the pressure of the brake-shoe G upon the rim of the wheel is relieved, thus allowing of the free rotation of the latter, as desired. The moment, however, that the direction of motion of the wheel C is reversed, its inner periphery, *p*, will at once act upon the brake-

shoe G and carry it and the arm *e* downward upon the lever H, as seen in Fig. 3, when, by reason of the location of the pivot *g* below the center or axis of the shaft B, the brake-shoe G will be tightly wedged against the inner periphery of the wheel C, thus almost instantly arresting its motion, the brake being thus automatically set or caused to apply itself instantly by the backward movement of the wheel, whereby the load is securely held in any desired position the moment the hoisting-rope *b* is released by the hand of the operator. The brake-shoe G, under the arrangement described, is only forced up against the rim of the wheel C with sufficient friction to overcome the weight of the load, and will allow the wheel to slip slightly as it is being applied, thereby avoiding a sudden shock and the liability of breakage of the mechanism. As soon as the wheel C commences to be again turned in the direction of the arrow 10, to further raise the load, the shoe G will be instantly raised into the position seen in Fig. 2, and the wheel thus relieved of the pressure of the brake, when it will be free to rotate in the direction of the arrow 10. When it is desired to gradually lower or ease down a load, the long arm *n* of the lever H is drawn down by means of a check-rope, *r*, attached thereto at *s*, and extending down parallel with the endless hoisting-rope *b*. This depression of the arm *n* of the lever H causes the arm *e* to be slightly drawn back in a direction contrary to the arrow 12, thus releasing the main brake G, and at the same time causing the auxiliary brake *l* to be forced against the inner periphery *p* of the rim of the wheel C with a force in proportion to that exerted upon the rope *r*, whereby the rotation of the wheel C can be entirely stopped, or sufficient friction applied thereto to cause the load to be eased down or lowered at any speed desired.

The weight I must be sufficiently heavy to overbalance the weight of the long arm *n* of the lever H, and that of the check-rope *r*, attached thereto; and it is evident that a suitable spring may be substituted for the weighted arm *m*, if desired, without departing from the spirit of my invention.

By making the plate *h*, which carries the stud *g*, adjustable horizontally on the framework, as described, by means of the bolts *i* and slots *k* and set-screw 20, the wear of the brake-shoes G *l* may be taken up or compensated for, while it also facilitates the operation of setting the parts and always maintaining them in their proper operative positions.

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

1. The combination, with the wheel C, of the brake-shoe G, hinged to an arm, *e*, pivoted to the lever H, means, substantially as described, for operating the said lever to keep the shoe G in contact with the inner periphery of the wheel, and a stop, *q*, for limiting the movement of the lever in one direction, all operating substantially in the manner and for the purpose set forth.

2. The combination, with the wheel C, of the adjustable lever H, provided with an arm, *m*, and weight I, and having pivoted thereto at *f* the arm *e*, carrying the brake-shoe G, adapted to be brought against the inner periphery of the rim of the wheel, and the stop *q*, for limiting the movement of the lever in one direction, all constructed to operate substantially as described.

3. The combination of the main brake-shoe G, arm *e*, and the lever H, provided with an auxiliary brake-shoe, *l*, adapted to be brought against the inner periphery of the rim of the wheel C when the lever is operated to release the main brake, substantially as and for the purpose set forth.

4. The combination, with the wheel C, of the lever H, having pivoted thereto the arm *e*, carrying the brake-shoe G, and having its fulcrum *g* made adjustable upon its support toward and from the periphery of the wheel, substantially in the manner and for the purpose described.

Witness my hand this 1st day of December, A. D. 1883.

LORING D. SHAW.

In presence of—

P. E. TESCHEMACHER,
W. J. CAMBRIDGE.