

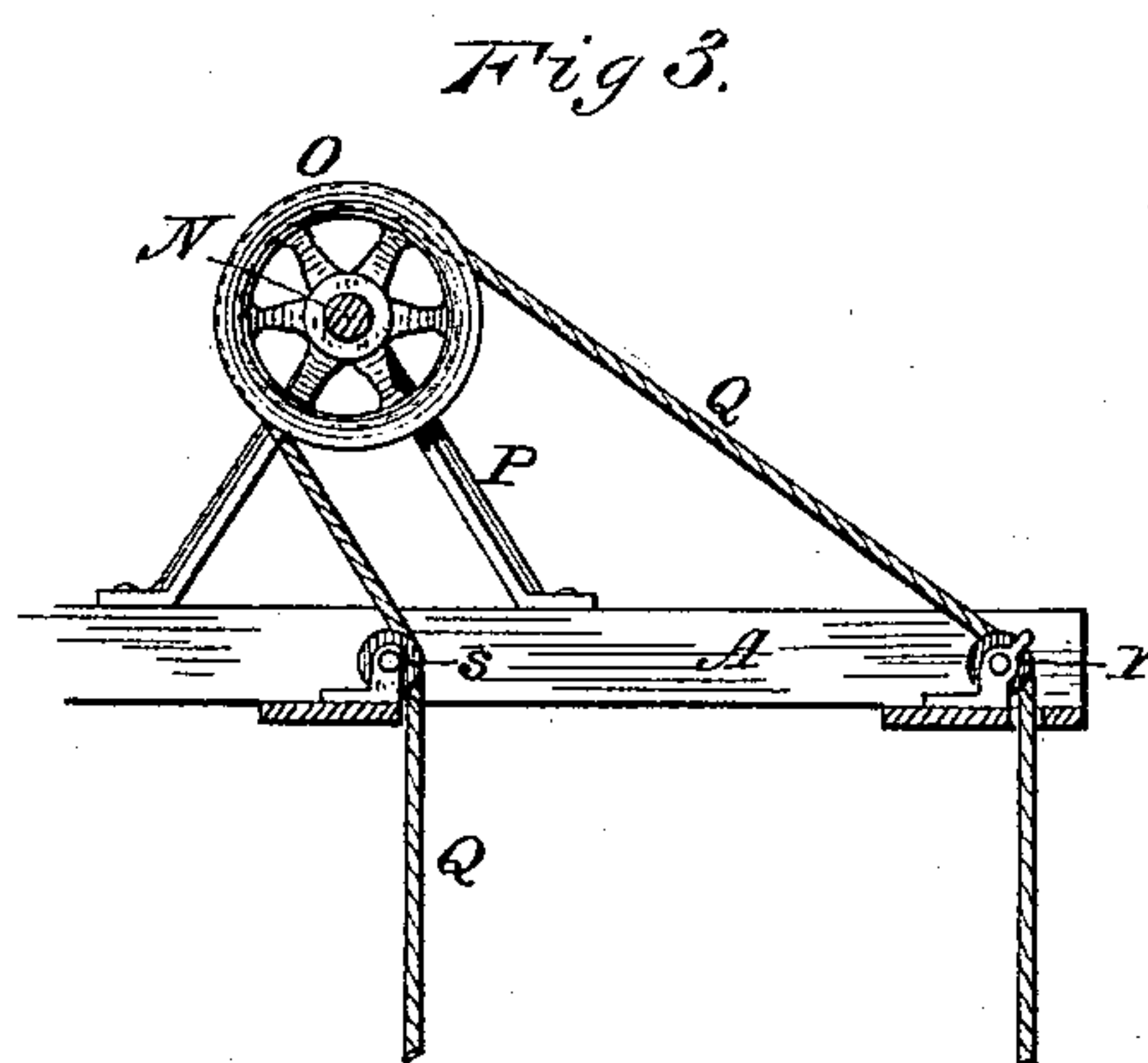
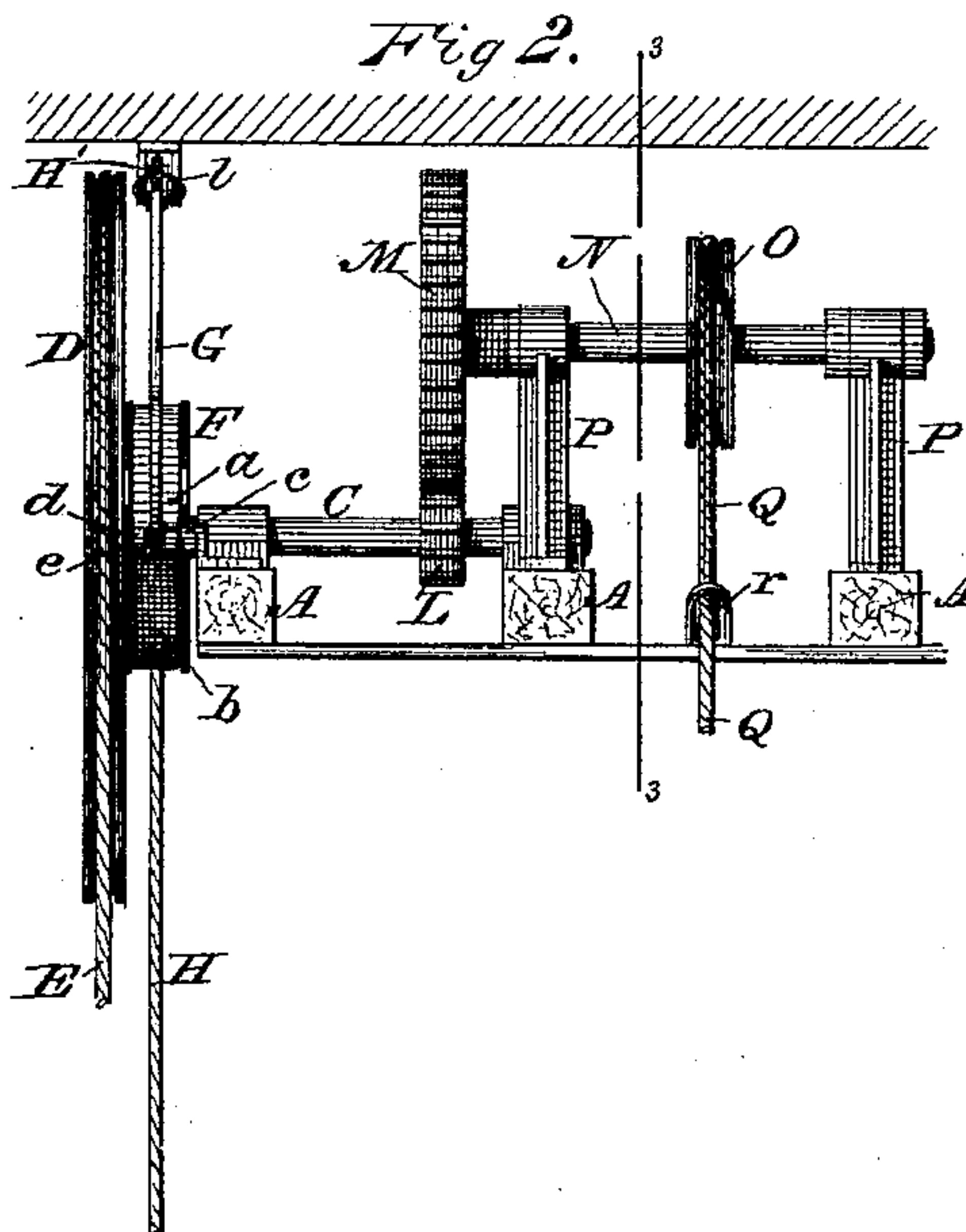
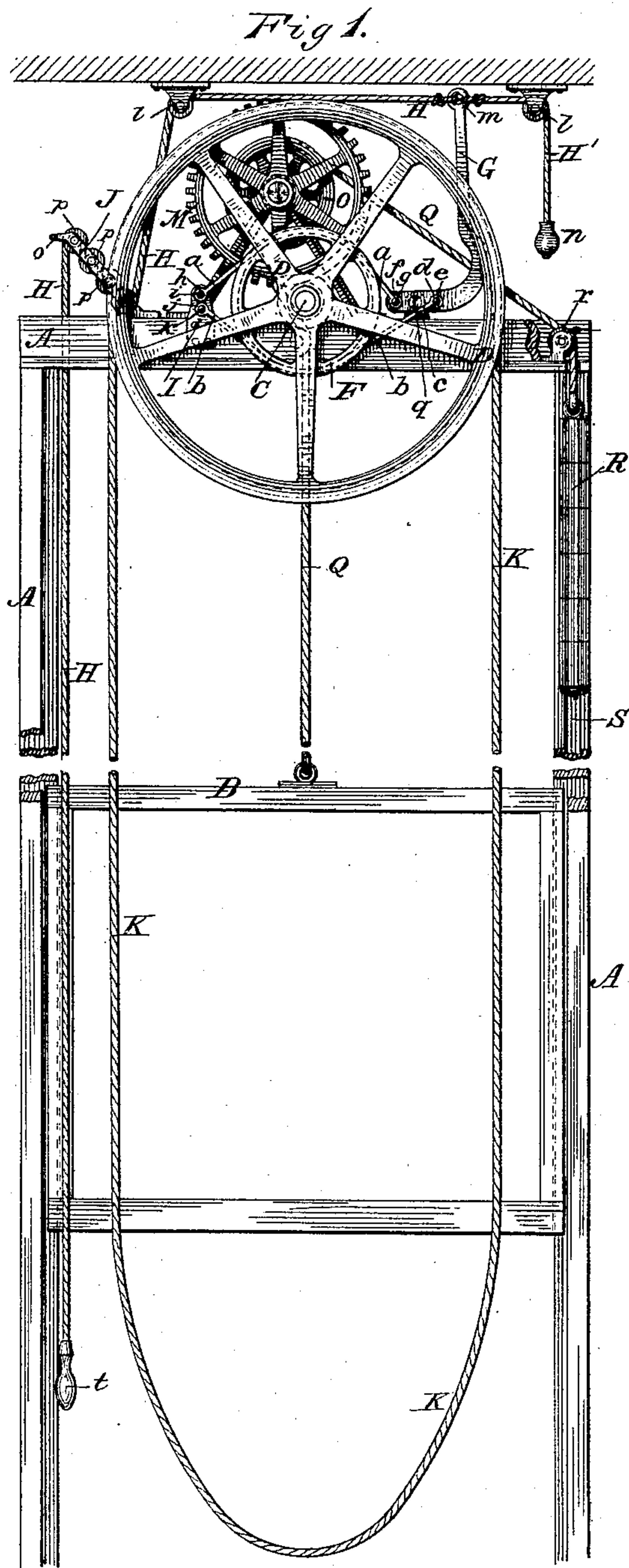
(No Model.)

2 Sheets—Sheet 1.

A. S. HUMPHREY.  
ELEVATOR.

No. 434,599.

Patented Aug. 19, 1890.



WITNESSES

*Harry King.*  
*N. Heddle.*

INVENTOR

*Abraham S. Humphrey*  
*By Irving Elting*  
Attorney

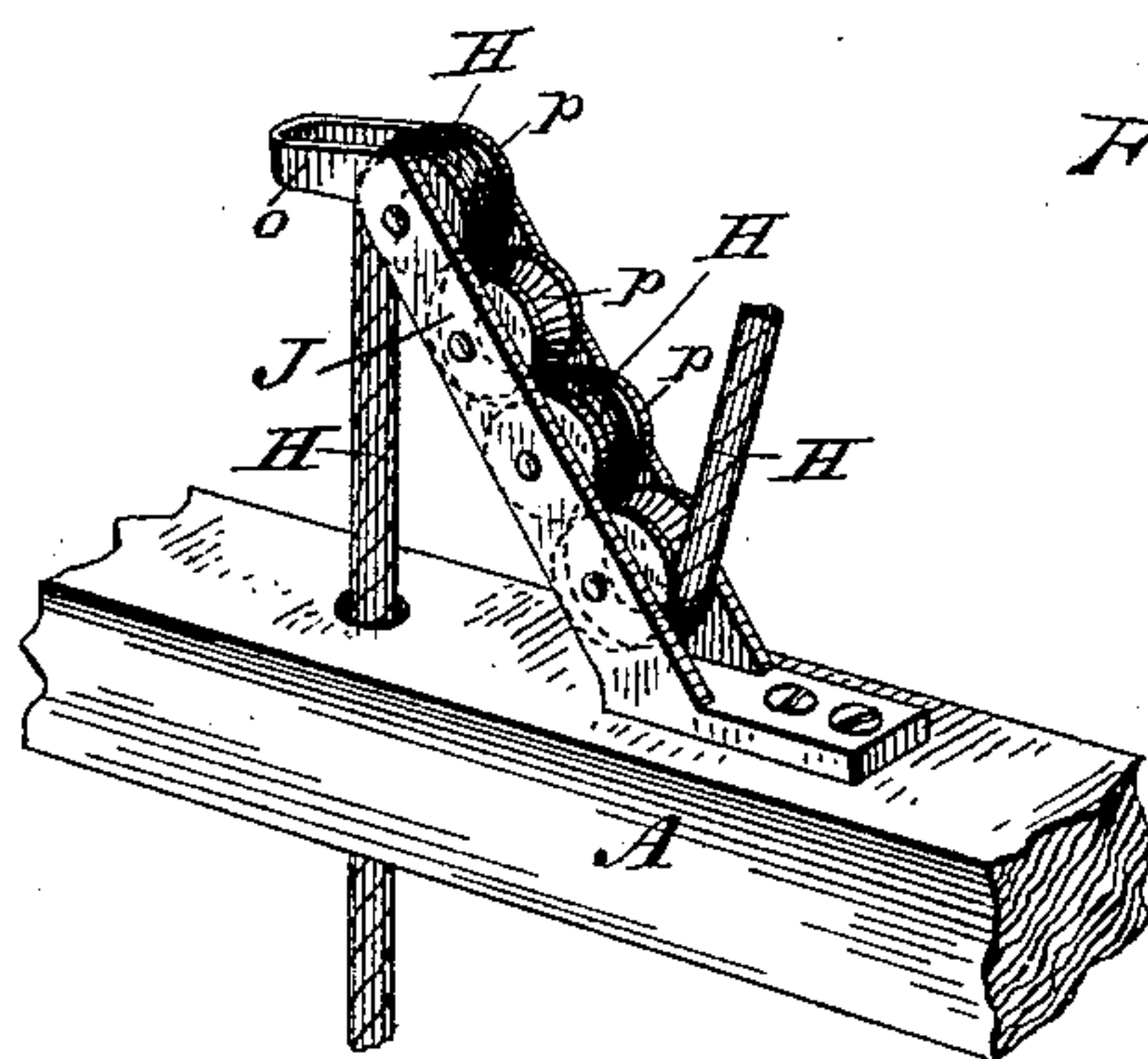
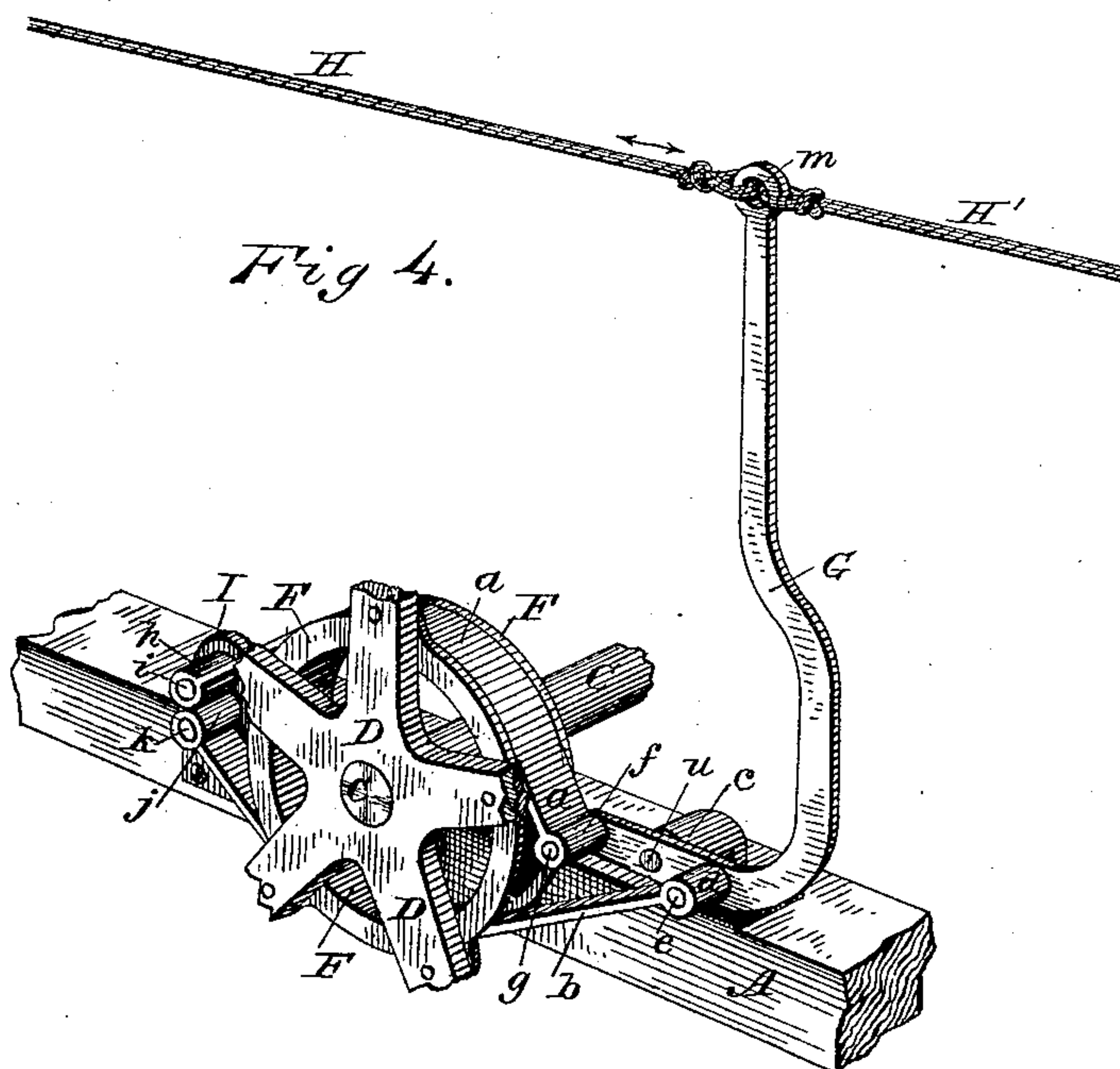
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INVENTOR

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# UNITED STATES PATENT OFFICE.

ABRAHAM S. HUMPHREY, OF POUGHKEEPSIE, NEW YORK, ASSIGNOR TO  
GEORGE W. STORM, OF NEWARK, NEW JERSEY.

## ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 434,599, dated August 19, 1890.

Application filed May 13, 1890. Serial No. 351,628. (No model.)

*To all whom it may concern:*

Be it known that I, ABRAHAM S. HUMPHREY, a citizen of the United States, residing at Poughkeepsie, in the county of Dutchess and State of New York, have invented certain new and useful Improvements in Elevators; 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 appertains to make and use the same.

My invention relates to improvements in hand-elevators, and more especially to brake attachments for such elevators, whereby the driving-wheel may be stopped and the load sustained at any point without effort on the part of the operator; and the objects of my improvements are, first, to bring the action of the brake into play at a convenient point for its attachment to the shelf, while it permits the driving or hoist wheel to project downward into the well-hole, thus economizing the vertical shelf-space required for the fixtures more than was possible with the form of brake attachment shown in Letters Patent No. 393,831, granted to me December 4, 1888; second, to increase the extent of the friction-surface of the brake to a greater degree than usual, thereby both adding to the quickness and certainty of the action of the brake and diminishing the wear upon the friction-surfaces; third, to provide a lever-adjustment more easily and quickly operated by the brake-cord for holding or retaining the loaded car; and, fourth, to unite this friction-brake with certain features of the general mechanism, as hereinafter specified, so as to make a hand-elevator at once simple and efficient. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a front view of the elevator hoisting mechanism and well, showing the brake mechanism with the lever in a vertical position, which allows the driving-wheel to run freely. Fig. 2 is a side plan view of the hoisting and brake mechanism in position upon the shelf-beams. Fig. 3 is a vertical cross-section cut on line 3 3 of Fig. 2, showing the position and adjustment of the lift-rope between the car and the counterpoise-weight. Fig. 4 is a separate enlarged perspective view of my brake attachment or clutch mechanism,

showing its action upon the hoist-wheel and its mode of attachment to the shelf-beam; and Fig. 5 is a separate enlarged perspective view of the friction-wheels for holding the brake in place and showing the method of passing the brake-cord between them for the purpose of holding the brake-lever in a given position.

Similar letters refer to similar parts throughout the several views.

A represents the elevator-well, on the top beams of which rest the fixtures of the hoisting apparatus.

B is the car attached to one end of the lift-rope Q.

D is the large driving or hoist wheel moved by the hoist-rope K and attached to the forward end of the shaft C, which revolves in bearings on the beams of the shelf A.

Fast to the shaft C is the small cog-wheel L, geared in the usual way with a larger cog-wheel M, which is fast to the shaft N. The shaft N revolves in bearings of the upright supports P P, which rest upon the beams of the well-shelf A A.

Fast to the shaft N is the sheave or lift wheel O, over which the lift-rope Q passes from the car to the counterpoise-weight R. This weight R for balancing the weight of the car may be arranged to work on either side of the well, as is most convenient, in the opening or guide S, and gives the best results, perhaps, in working the elevator when it is about one-third heavier than the weight of the empty car B.

The loose pulley-wheels r and s (best shown in Fig. 3) serve to direct the lift-rope Q to the counterpoise-weight and the car, respectively.

The push-wheel s, by serving to bring the lift-rope directly over the center of the well for attachment to the car B, accomplishes two purposes. It increases the friction upon the sheave or lift-wheel O by allowing a larger portion of the wheel to be brought into contact with the lift-rope Q, and it also permits the placing of the shelf fixtures vertically nearer together than would be possible if it were necessary to have the shaft O directly over the center of the well in the same vertical plane with the shaft C.

To move the hoisting mechanism it is only necessary to start the large driving or hoist



wheel D in either direction desired by pulling the rope K, which passes over D and drops to the bottom of the well for use in working the elevator on any floor. The motion is imparted from D to the sheave or lift-wheel O by the usual gearing of L and M. Thence the motion is imparted by O to the lift-rope Q, attached to the car B, the frictional contact of Q upon O, which has a sharp V-shaped groove, being sufficient to raise or lower from five to seven hundred pounds in weight, as may be required.

In order to enable one operating my elevator to stop the load quickly and easily at any desired point, and to hold it there securely, I use my novel lever-brake attachment. (Shown in the drawings, more particularly in Fig. 4.)

F represents a circular shoulder or brake-wheel either attached to or cast integral with the large driving or hoist wheel. Shaped to conform with this brake-shoulder are the metal bands *a* and *b*, pivoted to the shelf fixture I through band-eyes *h* and *k* by pivots *i* and *j*. On the other side of the brake-wheel F these metal bands are pivoted to the horizontal arm of the lever G through band-eyes *d* and *f* by pivots *e* and *g*. *a* is pivoted at the end of the horizontal lever-arm, and *b* is pivoted at the farthest extremity of the horizontal arm, the fulcrum of which is between these two points at pivot *a*, attached to shelf-fixture *c*. The upright portion of the lever-arm G may be carried to about the height of the upper part of the driving or hoist wheel D, where, at the eye *m*, are attached to it the brake-cords H H', the latter cord passing over the loose pulley I, and having at its free end the small balance-weight *n*. H, on the other side of the lever-arm, passes over a similar loose pulley I and down to the lower one of a series of four loose pulleys *p p*, which are placed near together and at an angle in bearings of the shelf fixture J, as shown in Fig. 5. The brake-cord H passes under the lower friction-pulley, over the second, under the third, and over the fourth, the guard-rod serving to keep the brake-cord in place. From the upper friction-pulley the brake-cord H passes down through the shelf-beam and along the side of the well, having a small weight *t* at the end of the brake-rope within a convenient distance of the bottom of the well.

The simple operation of my brake attach-

ment may be readily noted by reference to Figs. 1 and 4. If it be desired to stop and hold the loaded car at any point, the operator pulls down upon the brake-rope H. This has the effect of drawing the lever G to a position where the brake-bands *a* and *b* are clamped tightly about the brake-wheel F of the large driving or hoist wheel D, effectually and quickly arresting its motion. Preferably, the inner faces of the brake-bands are covered with leather, which creates the friction noiselessly and which may be readily renewed as often as required. Once the brake is brought into the clamping position the friction-pulley wheels *p p p p* serve to retain the brake in that position. Ordinarily, when it is desired to release the load, however, the weights *t* and *n* are so adjusted that the raising of the brake-rope H will serve to disengage the brake, which then is released entirely by the weight of *n* at the end of H'; but if for any reason a positive movement be preferred for releasing the brake it may be imparted by extending the cord H' down along the side of the well opposite to H, where the operator may readily reach and pull it.

It will be seen that the novel features of my invention as above described are improvements over the ordinary hand-elevator, and even over my elevator secured to me by Letters Patent No. 393,831, by reason of the greater economy of shelf-room and the greater simplicity and less cost of the fixtures made possible by my invention.

What I claim, therefore, and desire to secure by Letters Patent, is—

A hand-elevator comprising the driving-wheel D, geared, as shown, with the grooved lift-wheel O, the guide or push wheel *s*, as and for the purpose set forth, the brake-lever G, the brake-bands *a* and *b*, pivoted thereto and to the shelf-fixture I, the brake-wheel F, and the friction-wheels *p p p p* for holding the lever in a position to securely clamp the brake-bands about the brake-shoulder F, substantially as described.

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

ABRAHAM S. HUMPHREY.

Witnesses:

HENRY W. GILBERT,  
IRVING ELTING.