

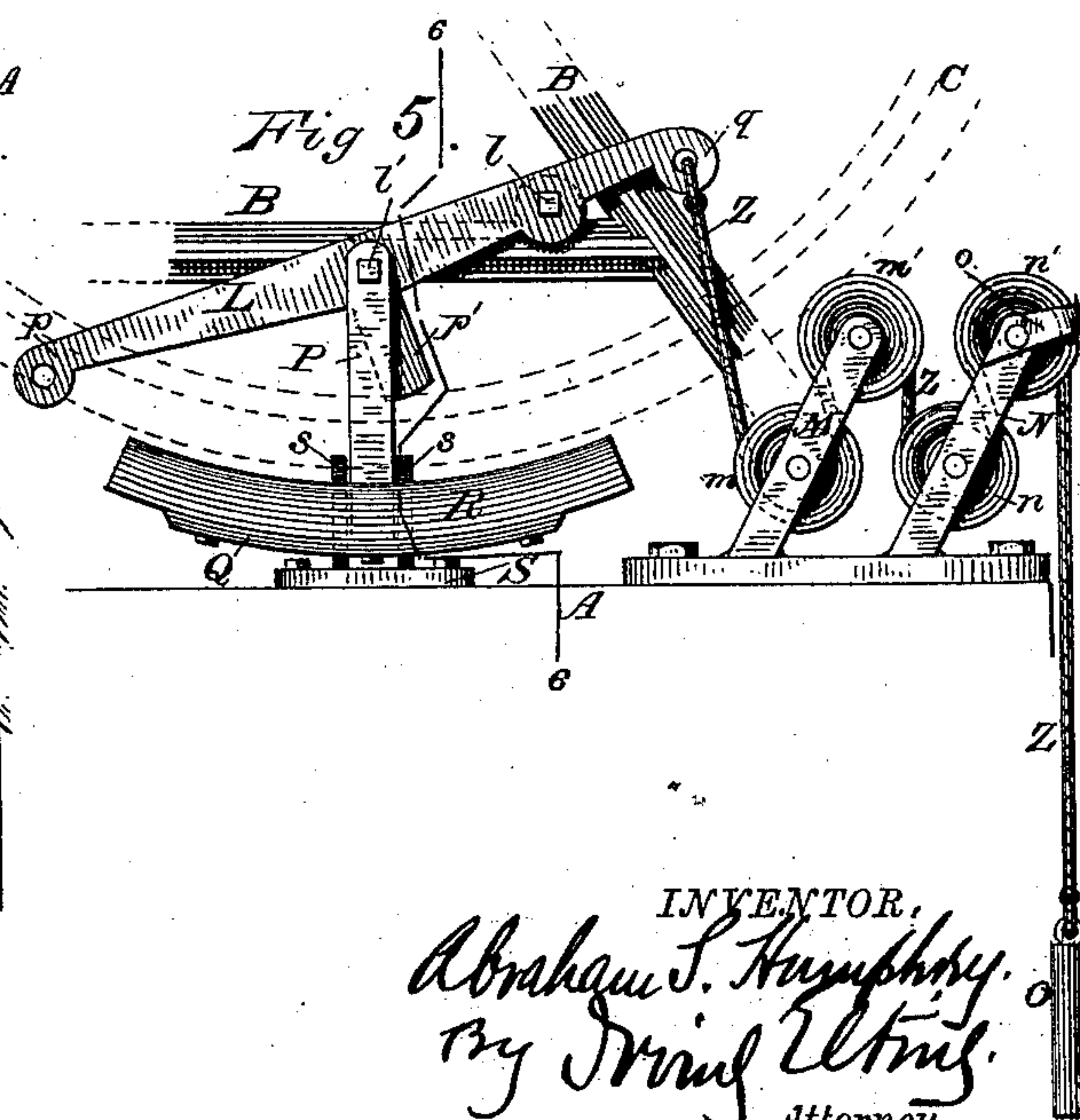
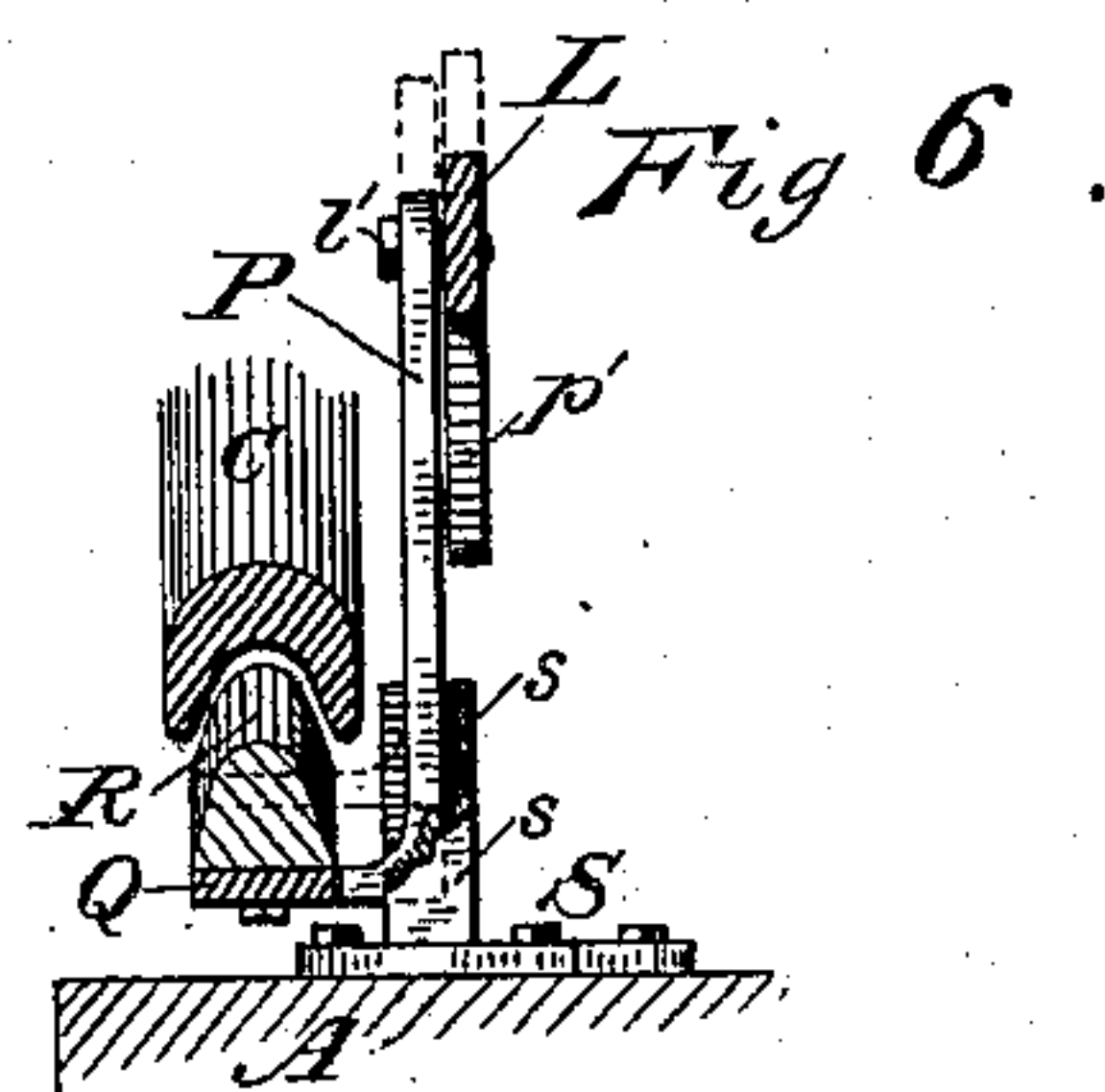
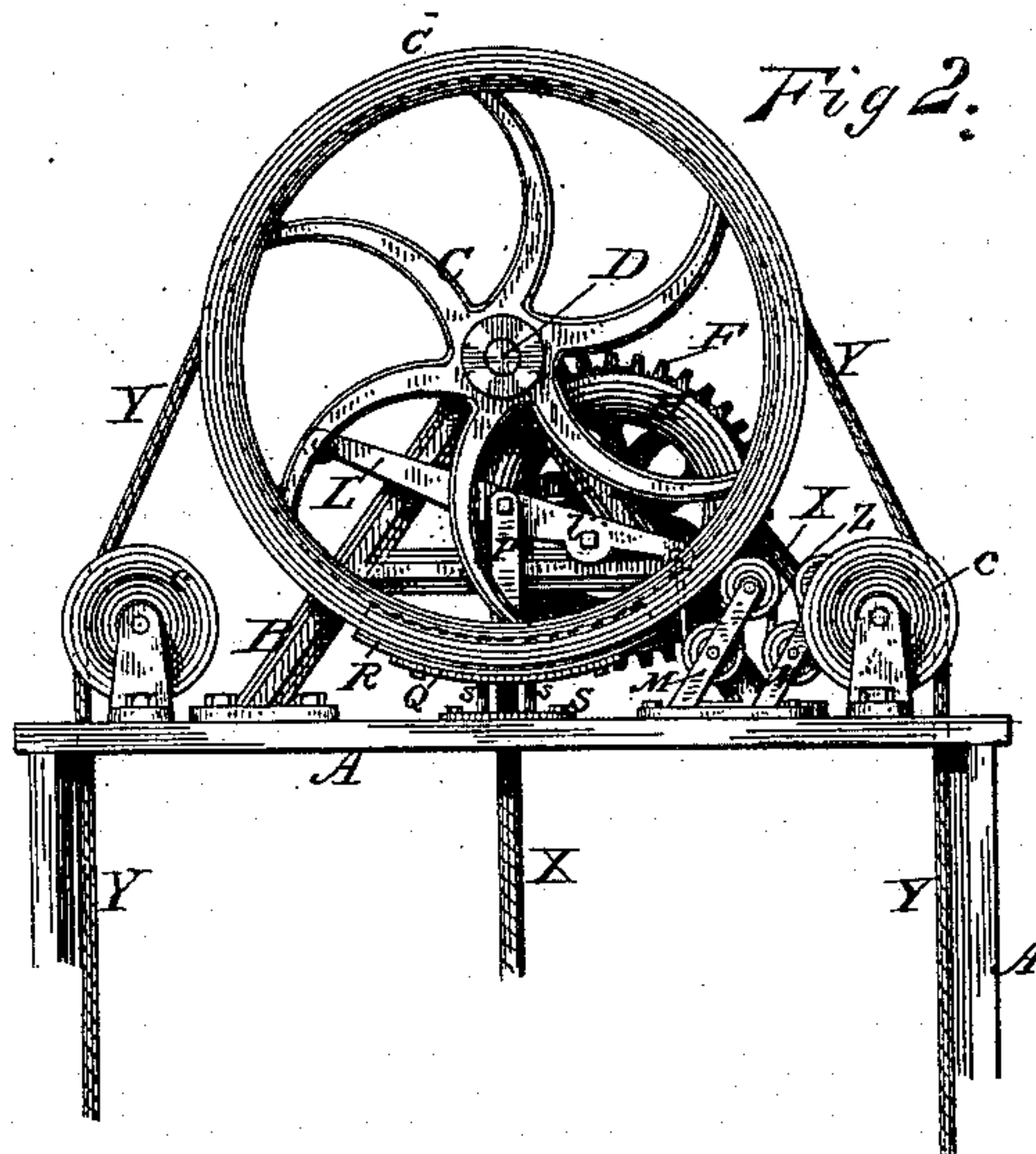
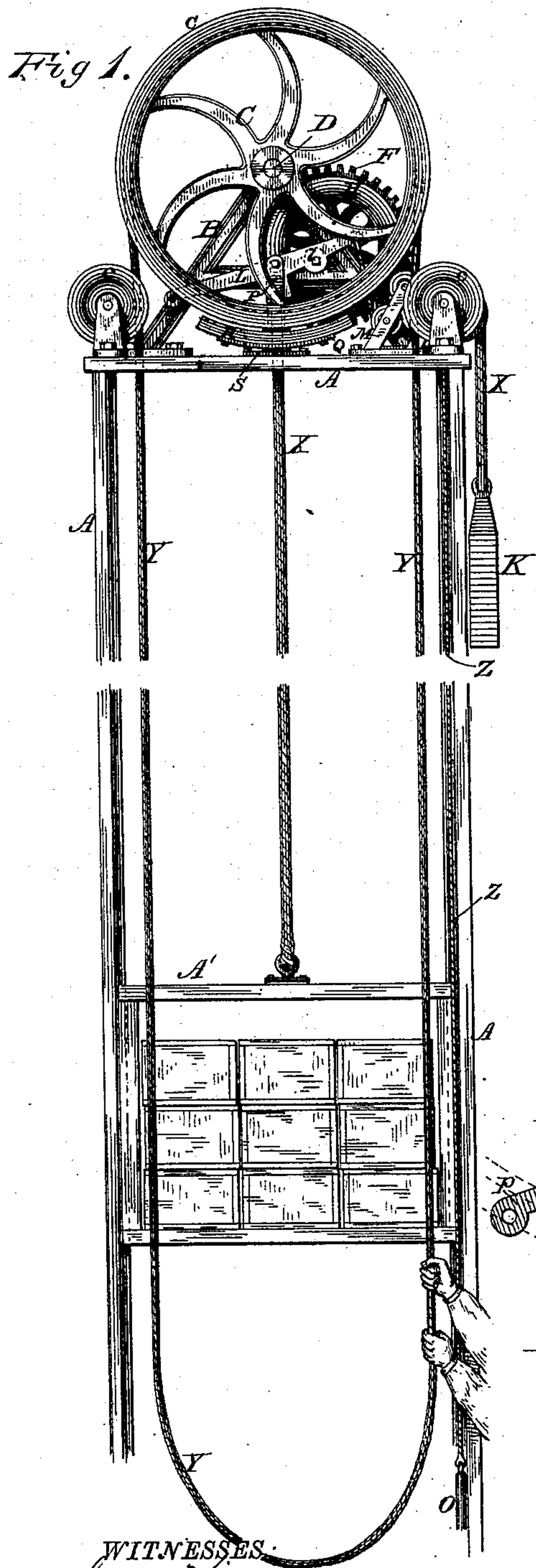
(No Model.)

2 Sheets—Sheet 1.

A. S. HUMPHREY.  
ELEVATOR.

No. 393,831.

Patented Dec. 4, 1888.



WITNESSES:  
*Harry King.*  
*Silas Woodell.*

INVENTOR,  
*Abraham S. Humphrey.*  
*By Irving Utting.*  
Attorney.

(No Model.)

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Fig 3.

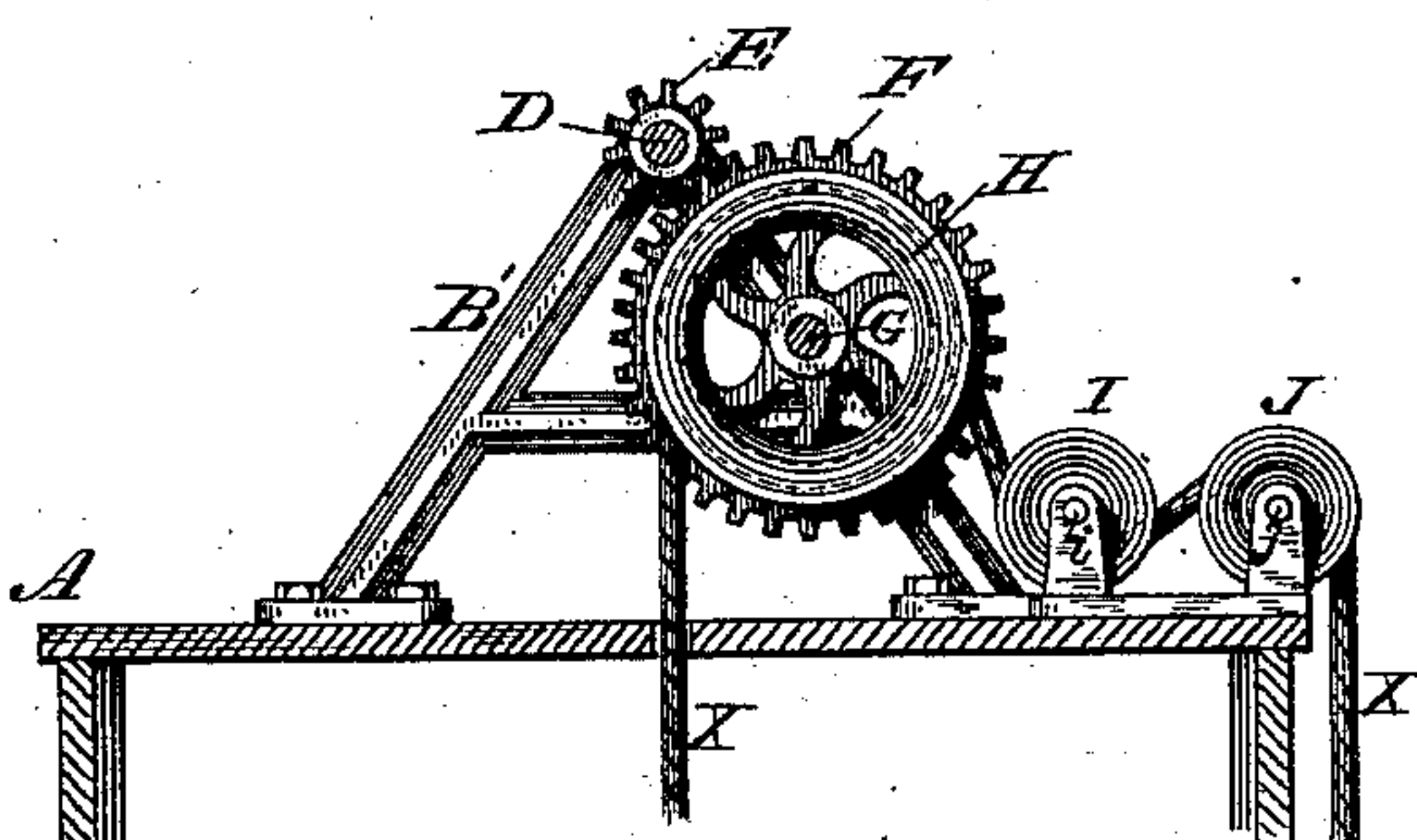


Fig 4.

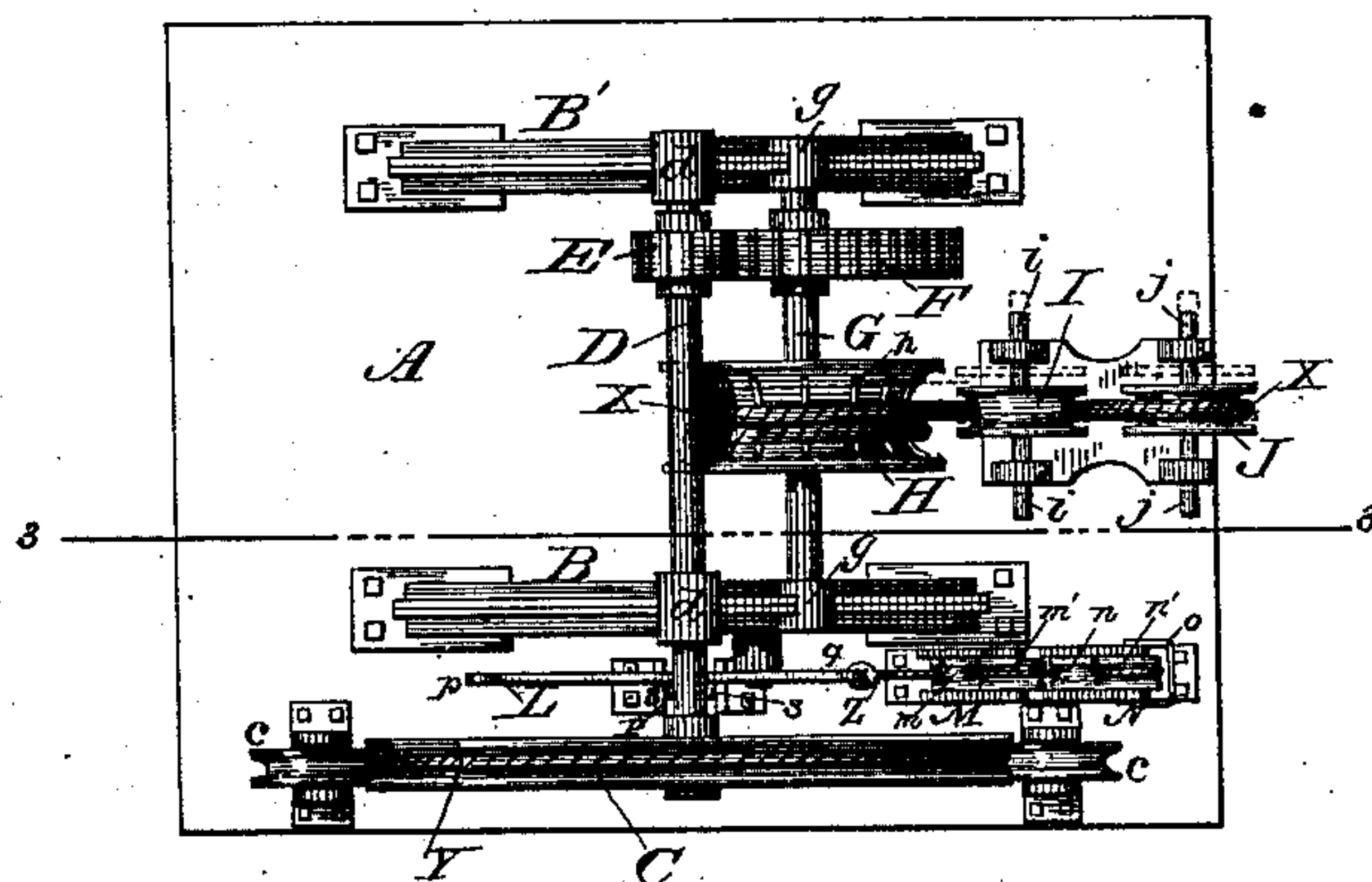
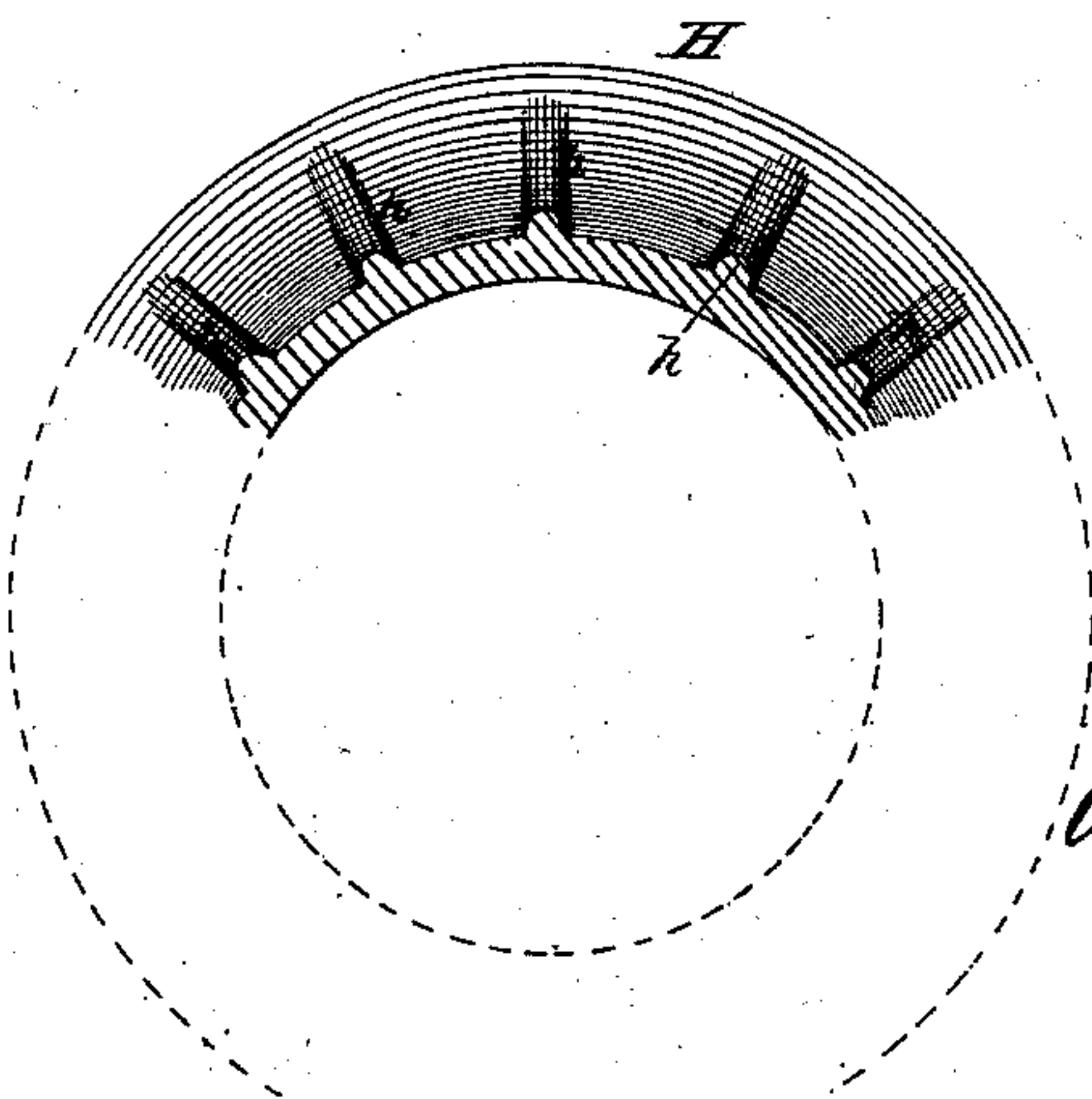


Fig 7.



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# UNITED STATES PATENT OFFICE.

ABRAHAM S. HUMPHREY, OF POUGHKEEPSIE, NEW YORK, ASSIGNOR TO THE  
EDWARD STORM SPRING COMPANY, (LIMITED,) OF SAME PLACE.

## ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 393,831, dated December 4, 1888.

Application filed March 30, 1888. Serial No. 269,000. (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 Hand-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, in which the lift-rope is attached to a grooved and ribbed hoisting-drum, and is made to run under and over two laterally-adjustable guide and friction wheels toward the weight in the weight-box. The hoist or drive wheel is supplied with an adjustable brake-lever attachment, operated by a cord running over friction-wheels, and the hoist-wheel rope is spread apart or narrowed by adjustable pulley-wheels to any extent desired.

The objects of my improvements are, first, to prevent any slipping of the rope around the hoist-drum by reason of its ribbed form; second, to guide the rope smoothly around this drum by means of the laterally-slidable guide-pulley for directing the weight end of the hoist-rope and increasing the friction; third, to furnish a brake attachment by means of which the large hoist or drive wheel may be stopped and held firmly to place, so as to sustain the load at any desired point; fourth, to provide for the running of the hoist-rope in any sized well-hole by means of guide-pulley wheels for narrowing or spreading the rope after it passes over the large hoist-wheel; and, finally, by the combination of these improvements to furnish an inexpensive and convenient hand-elevator for light, store, factory, dwelling, tenement, or other use, which may be used as readily as a dumb-waiter and yet possesses many times the lifting capacity. 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 hoist-rope mechanism adjusted for a narrow elevator-well, and also showing the friction-

clutch of the brake-lever attachment in an open state. Fig. 2 is a front view of the hoisting mechanism, showing the spreading of the rope over the pulleys adjusted for a broad well, the friction-clutch being shown as clamping the large hoist or drive wheel. Fig. 3 is a transverse section of the hoisting mechanism, cut through line 3 3 of Fig. 4. Fig. 4 is a top plan view of the hoisting mechanism. Fig. 5 is an enlarged front view of the clutch mechanism, operated by the brake-lever rope running over friction-pulleys. Fig. 6 is an enlarged vertical section of the same cut through line 6 6 of Fig. 5, and Fig. 7 is an enlarged transverse section of a portion of the hoisting-drum.

Similar letters refer to similar parts throughout the several views.

A represents the elevator-well, on the top or shelf of which are placed the fixtures of the hoisting apparatus.

A' is the car attached to one end of the lift-rope.

B B' represent the frame for supporting the mechanism.

C is the large drive or hoist wheel revolving on the shaft D, on which the small cog-wheel E is fast. E is geared in the usual way with a larger cog-wheel, F, and that is fast to the shaft G, on which the ribbed hoist-drum H is also fast. Over this drum H the lift-rope is given one or more turns as it comes from the top of the car A', and is then passed under the pulley-wheel I and over the pulley J down to the weight K, which is at the outer end of the lift-rope, and serves to counter-balance the weight of the car. This counterpoise-weight K gives about the right adjustment for working when it is fifty per cent. heavier than the weight of the car when empty. The ribs *h* of the drum H serve to prevent the lift-rope from slipping when it is wound once or twice around the drum, and the position of the pulley-wheels I and J presents increased friction of the lift-rope X, and furnishes a nicer adjustment for working the elevator. These pulley-wheels I and J are made loose, so as to slide freely laterally on the shaft-pins *i j*, and thus accommodate themselves to the position of the lift-rope X as it turns about the revolving hoist-drum.



This arrangement effectually prevents any riding or overlapping of the rope, such as would result if the friction-pulleys were rigid laterally.

5 To move the hoisting mechanism, it is only necessary to start the large driving-wheel in either direction desired by pulling the rope Y, which runs over the wheel C. The motion is from it imparted to the hoist-drum H  
10 by the usual gearing of E and F. The motion is then imparted by the ribbed drum H to the hoist-rope attached to the car A', and the weight of the car and load only serves to make the friction against the ribbed drum greater,  
15 so that it is possible to use a single lift-rope without attaching it to the hoist-drum except by frictional contact. The novel position and use of the frictional laterally-adjustable pulley-wheels I and J make the lift-rope work  
20 smoothly and easily in connection with the counterpoise-weight K.

In order to enable the one operating the elevator to stop it quickly and easily at any point where it is desired to hold the load, I  
25 use my novel lever-brake attachment shown in the drawings.

L represents the lever-arm pivoted on the supporting-frame B at *l*, and having at either end the rings *p q* for attaching operating-  
30 cords.

P is an upright lever-arm pivoted to L at *l'*, having at the bottom a metal piece, Q, shaped to correspond with the circumference of the drive-wheel C.

35 On Q may be fastened a wooden shoe, R, fitted so as to engage firmly and evenly with the grooved surface of the drive-wheel C.

S is a metal fixture on the well-shelf with upright guide-arms *s s*, which serve to prevent  
40 the lever-arm P from being thrown out of a vertical position when the brake is brought up against the revolving wheel C.

*p'* is a supplementary guide-arm to make the lever-arm P work true.

45 The brake-cord Z is fastened in the eye *q* of the lever L, and may be used directly or made to pass alternately under and over the pulley-wheels *m m' n n'*, which work in bearings of the frames M N, *o* being a metal  
50 guard fastened to the frame N, so as to prevent the brake-cord Z from being displaced from the outer pulley, *n'*. The cord Z passes onto the small weight O, which is heavy enough, in connection with the frictional  
55 wheels *m m' n n'*, to keep the brake in place when once it is brought to engage with the driving-wheel. Ordinarily a slight movement of the wheel C, by means of the rope Y, in the direction opposite to that in which  
60 it was turning when the brake was applied will serve to disengage the brake, which then, by slightly raising the brake-weight O, drops down free of the wheel by reason of its own weight, so nicely may the friction-wheels *m*  
65 *m' n n'* and the weight O be adjusted to

counterbalance the longer arms of the brake-lever; but if it should be found necessary, for any reason, the brake may be released by the positive movement imparted by a pull  
70 upon an opposite cord attached to the long arm at *p* and operating without the intervention of frictional pulley-wheels.

The details of the lever-brake attachment, as above described, are best shown in Figs. 5  
75 and 6 of the drawings.

In order to adapt my mechanism conveniently to any size of well-hole, I have devised the guide-wheel pulleys *c c*, by means of which the rope Y, for moving the driving-wheel C, may be spread so as to run near the  
80 sides of a broad well, as in Fig. 2, or may be drawn together for use in a narrow well, as shown in Fig. 1. In one case the rope is made to pass outside and in the other case inside  
85 of the pulley-wheels *c c*.

It will be seen from the above description that the combination of the novel features of my invention affords a cheap, compact, but very efficient mechanism for hoisting and  
90 stopping a load much heavier than can be lifted and regulated by an ordinary dumb-waiter, it having a lifting capacity of at least five hundred pounds and being more easily  
95 operated than the ordinary dumb-waiter.

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

1. A brake attachment for hand-elevators, consisting of a brake-lever, L, having a vertical arm, P, and a brake-shoe attached to  
100 said vertical arm, stationary guides *s s*, in which the arm P works, a brake-cord, Z, attached at one end to the lever L, and the friction-wheels *m m' n n'*, over which the brake-cord passes to control the same, all combined  
105 substantially as described.

2. A hand-elevator comprising the driving-wheel C, geared as shown, with a concaved ribbed revolving hoist-drum, H, the brake-lever L, having a vertical arm, P, carrying a  
110 brake-shoe, R, and the stationary guides *s s*, the arm P, adapted to work in the guides, and the brake-shoe to engage the wheel C, all substantially as described.

3. A hand-elevator comprising the frame B, the driving-wheel C, geared as shown, with  
115 the concaved ribbed hoist-drum H, the laterally-slidable friction and guide wheels I and J, the brake-lever L, having the vertical arm P and brake-shoe R, operating as described, and the friction-wheels *m m' n n'*, for adjusting  
120 the brake-cord, all arranged for the purpose of raising or lowering by hand a loaded car, A', substantially as described.

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

ABRAHAM S. HUMPHREY.

Witnesses:

J. A. TUFTS,

HENRY W. GILBERT.