

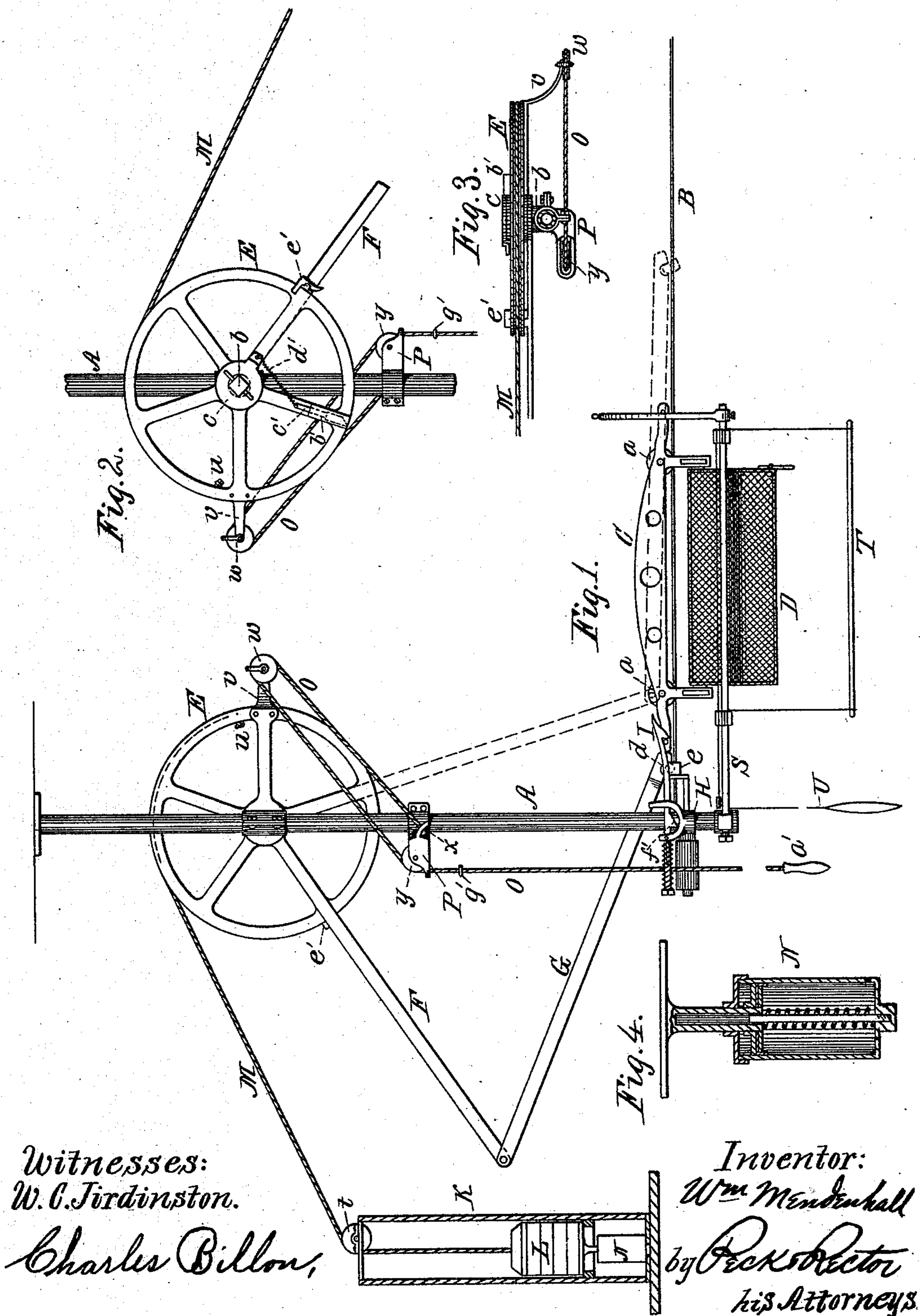
(No Model.)

4 Sheets—Sheet 1.

W. MENDENHALL.
STORE SERVICE APPARATUS.

No. 413,860.

Patented Oct. 29, 1889.



Witnesses:
W. C. Jirdinston.

Charles Billon,

Inventor:
Wm Mendenhall
by Peck & Spector
his Attorneys

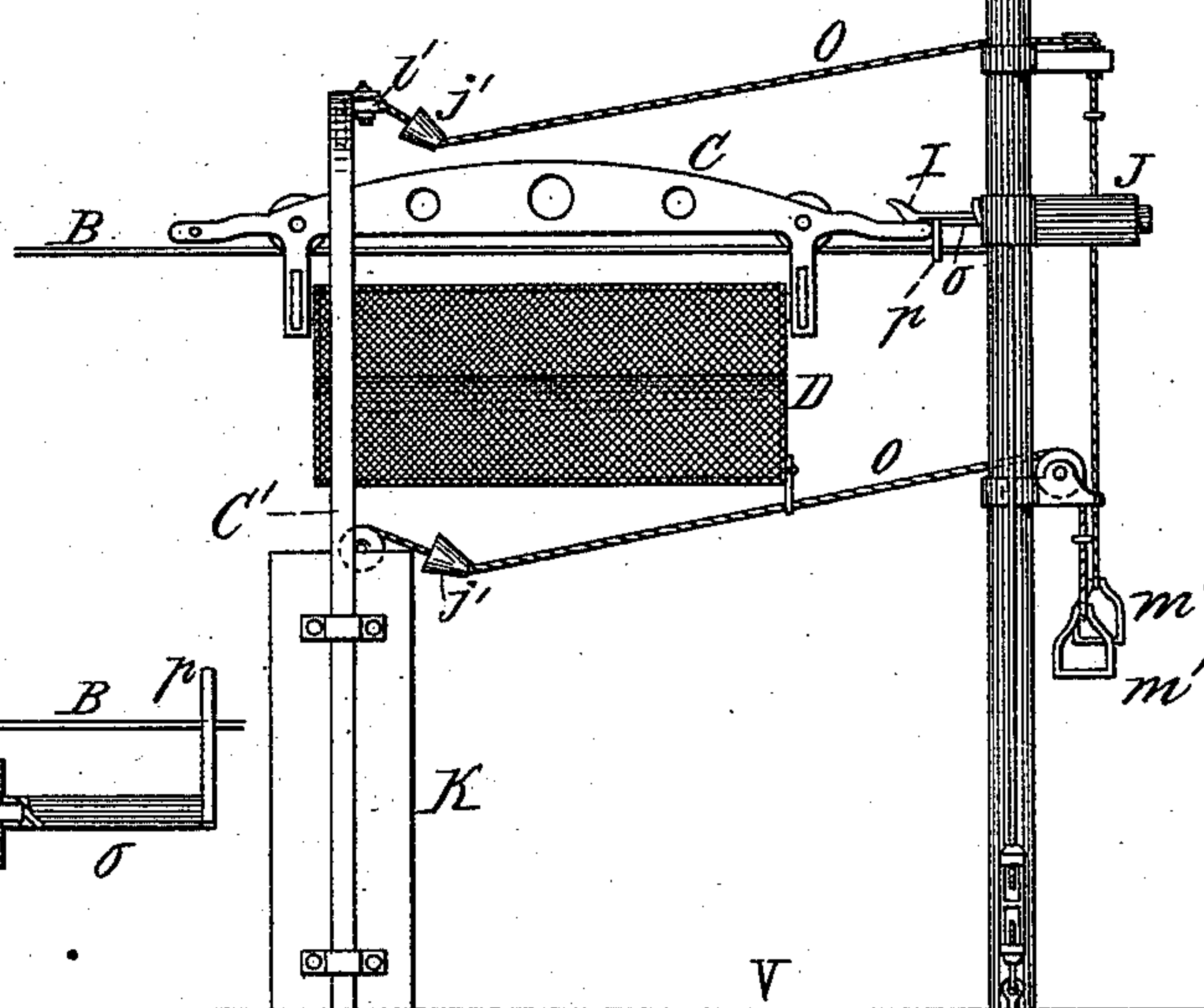
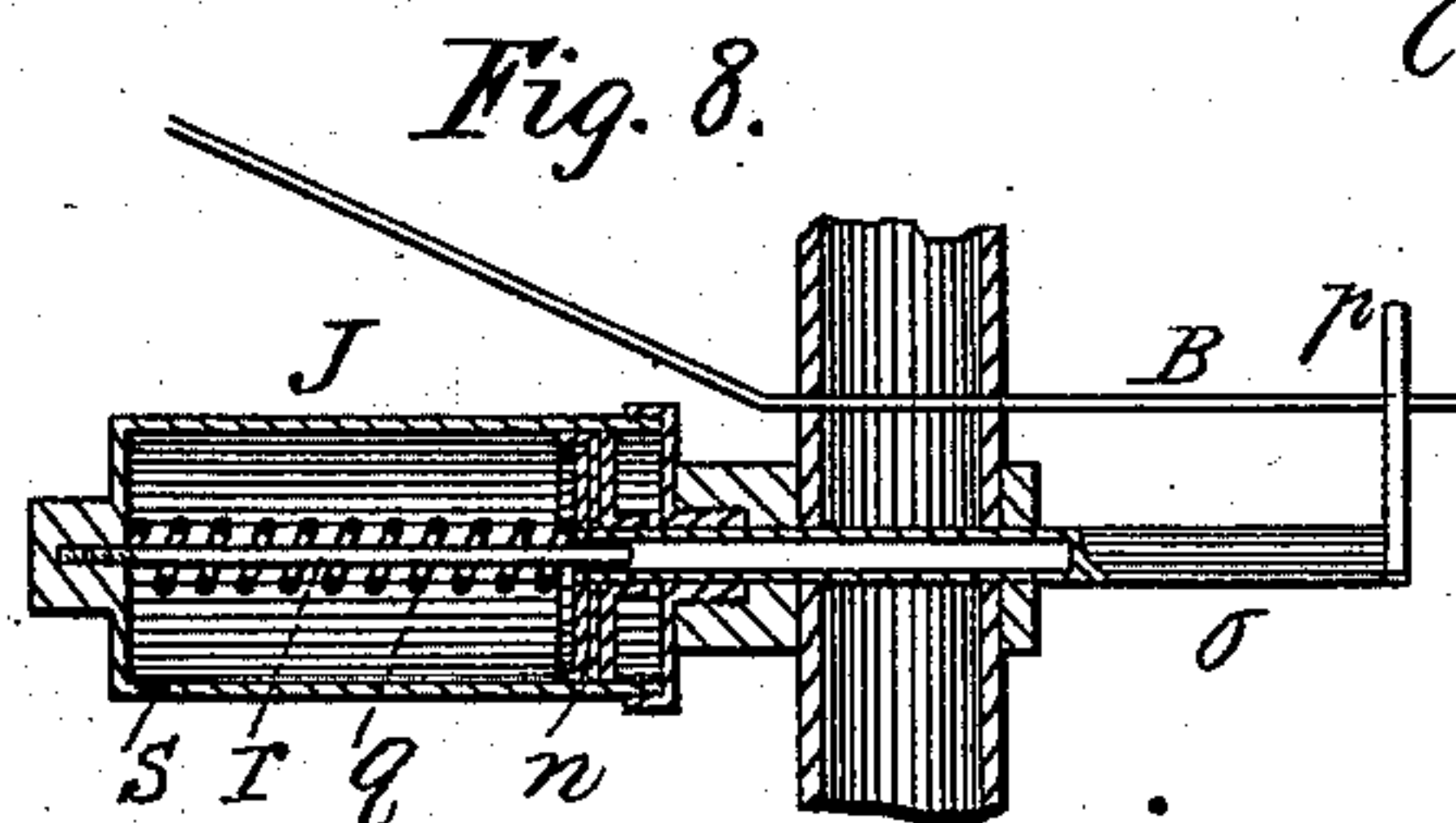
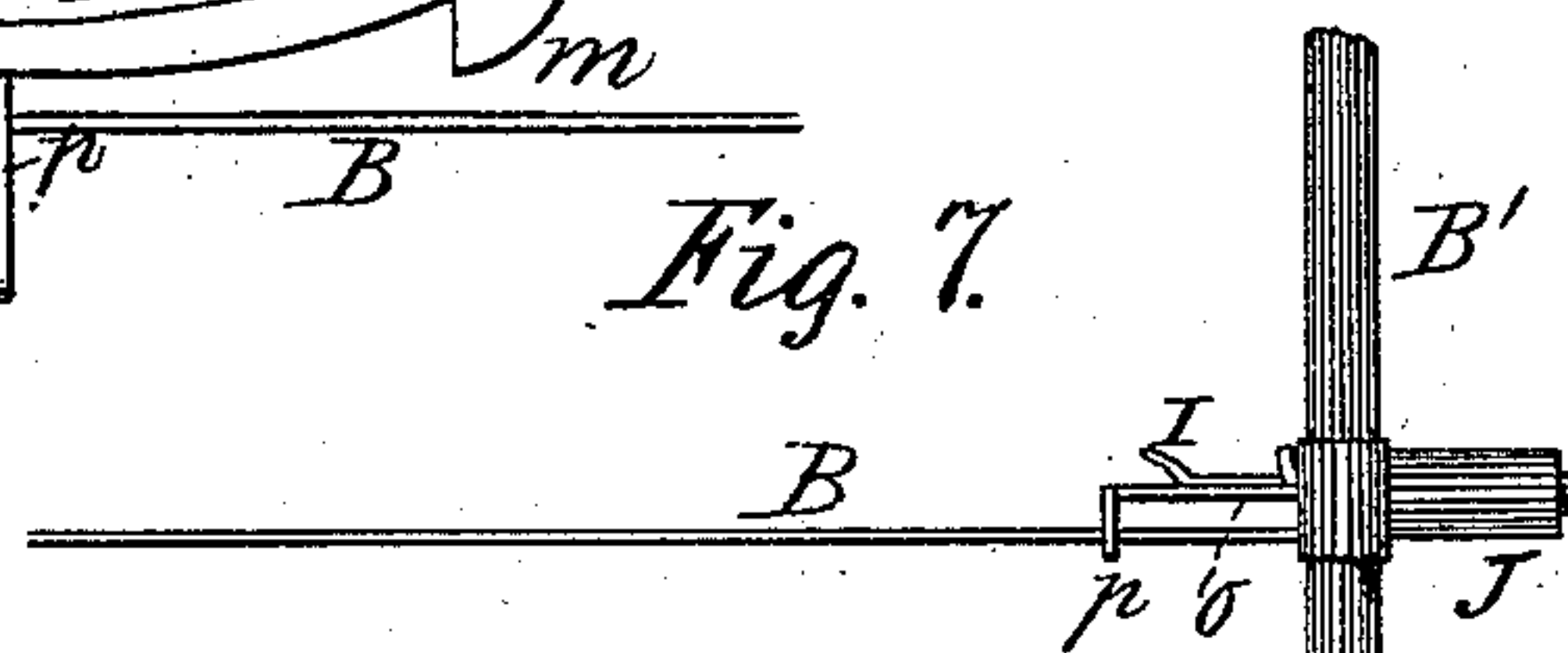
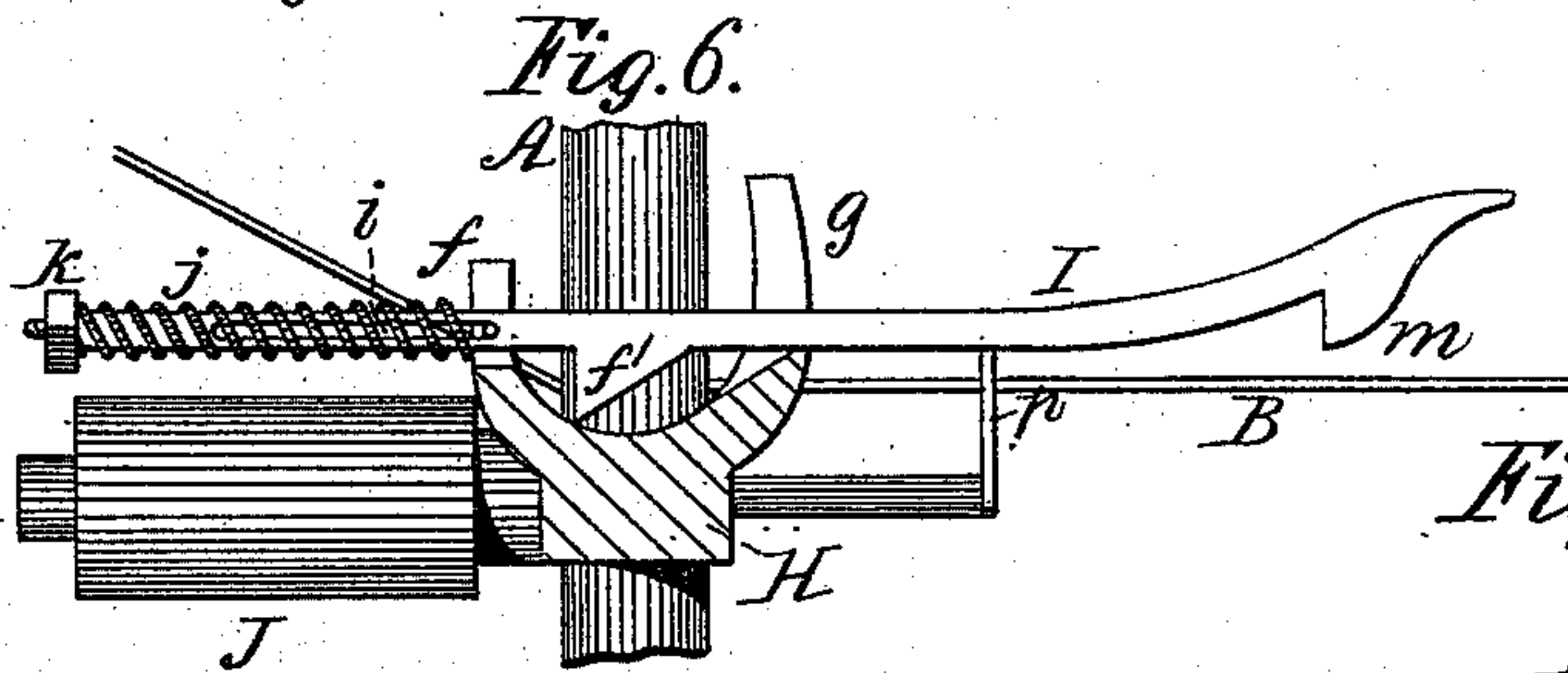
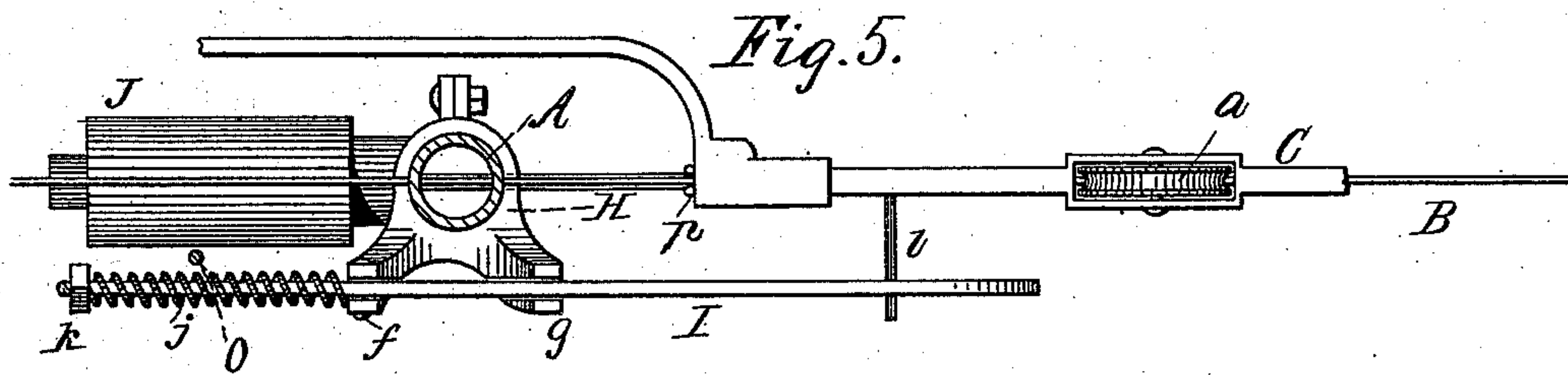
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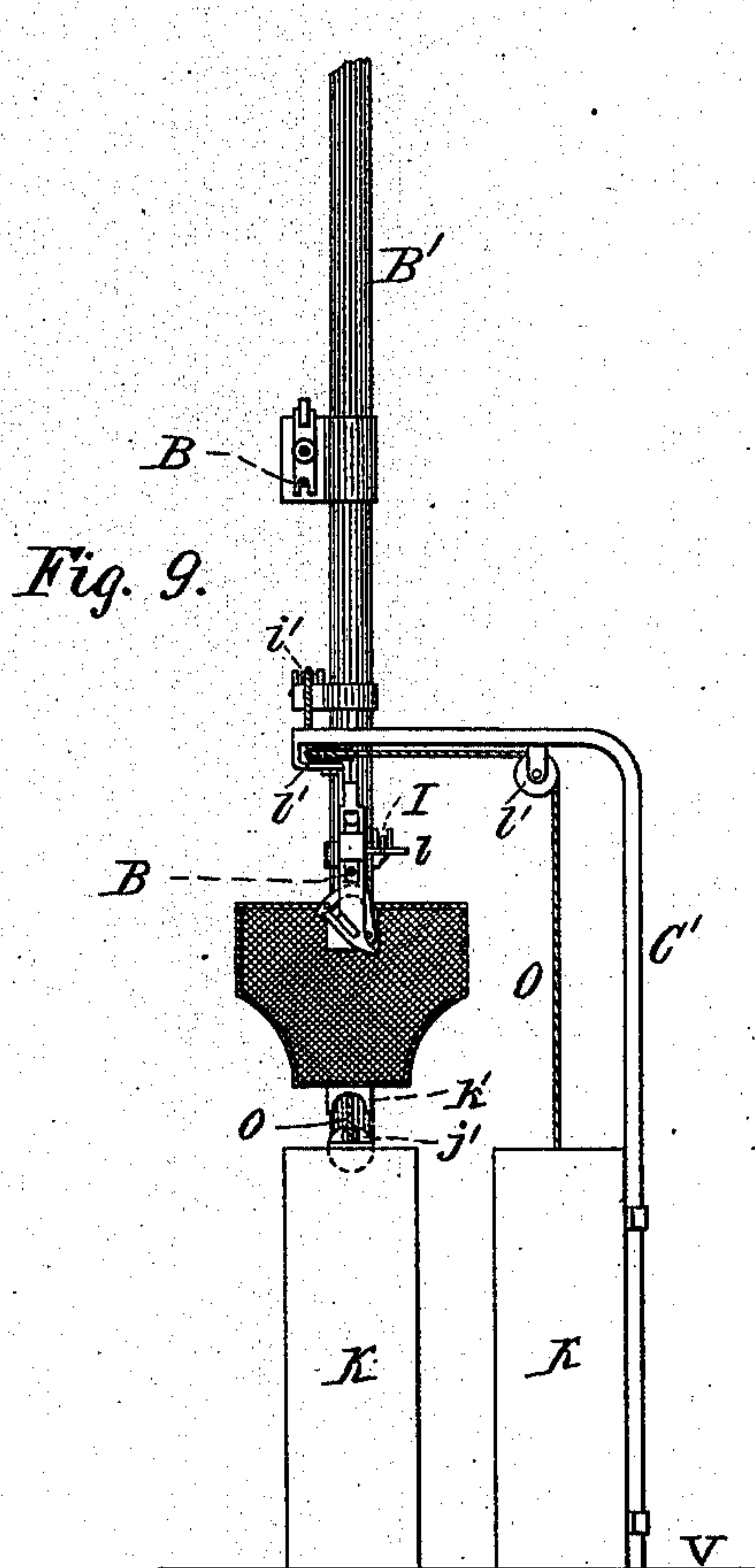


Fig. 9.

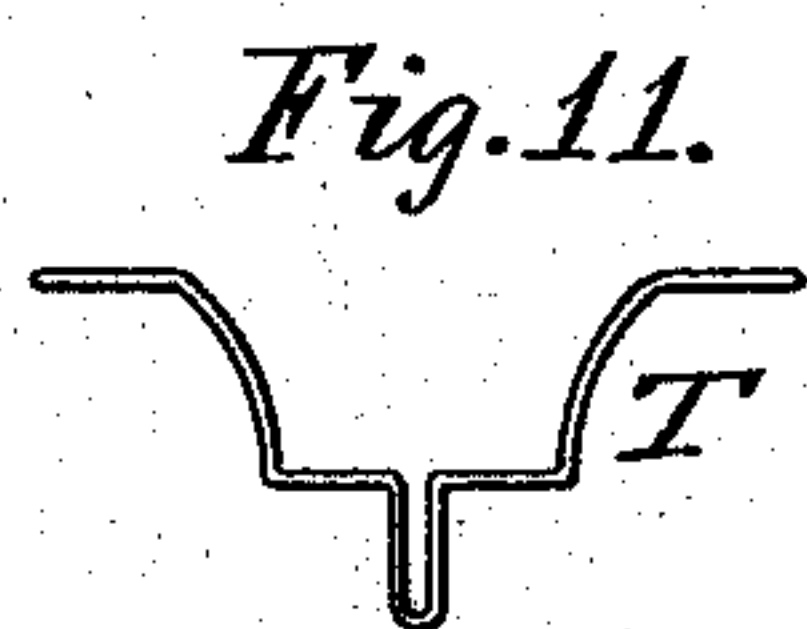


Fig. 11.

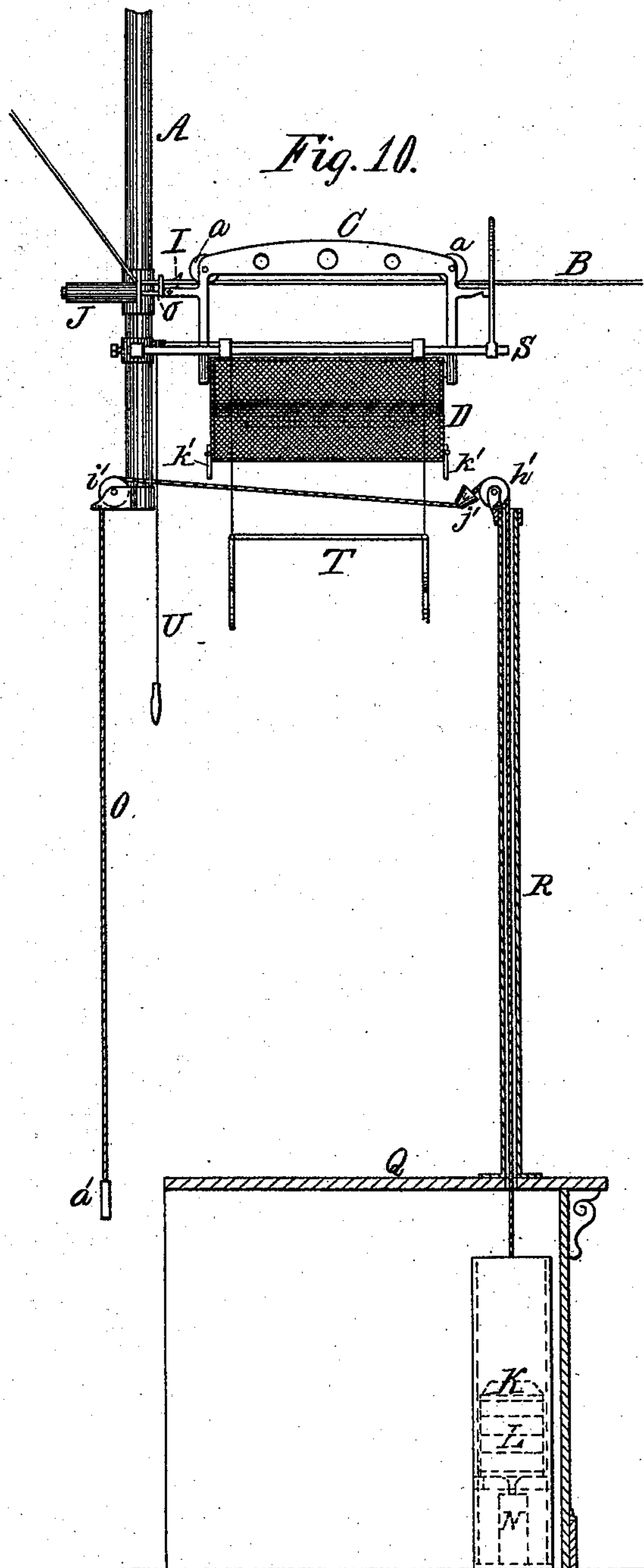


Fig. 10.

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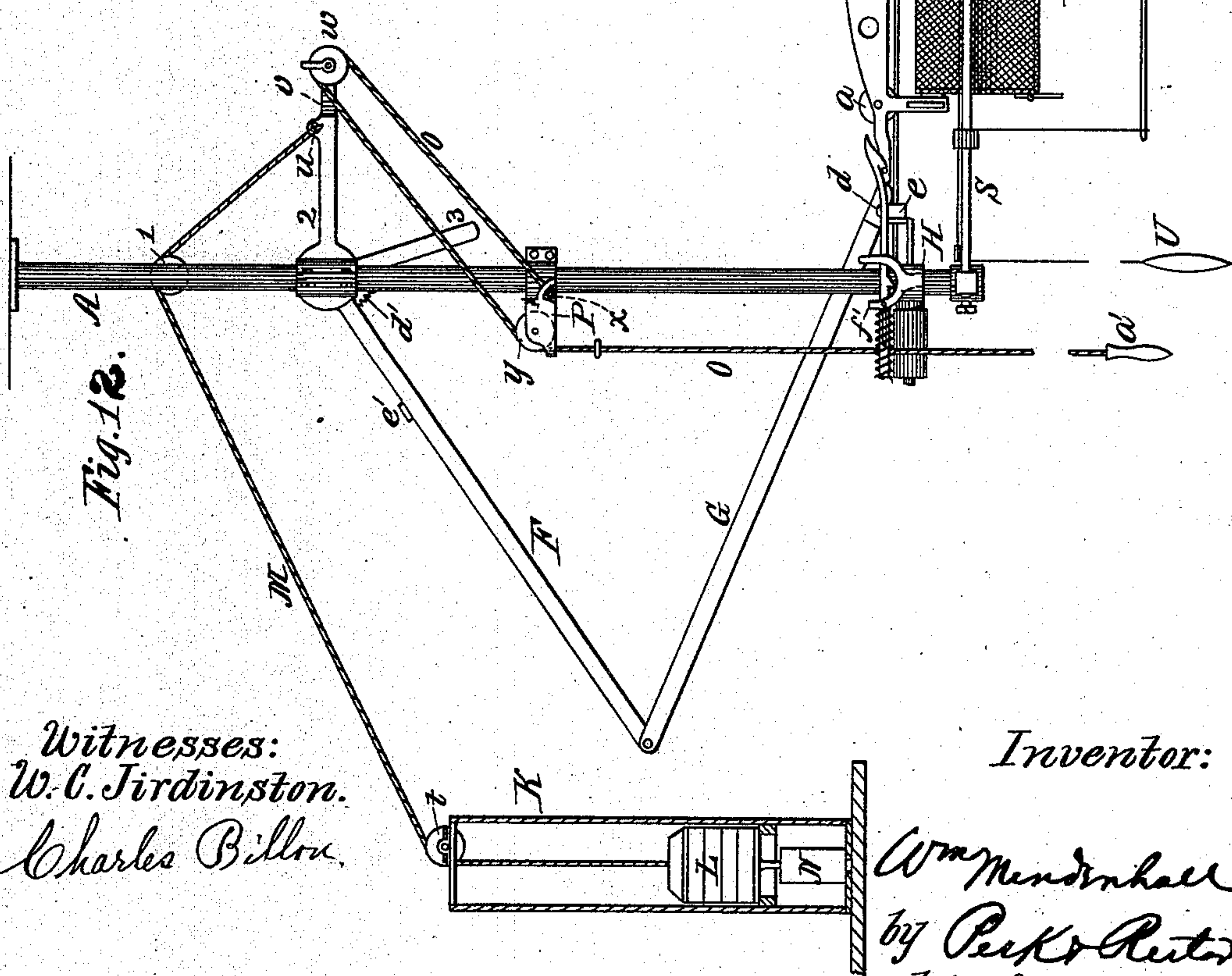
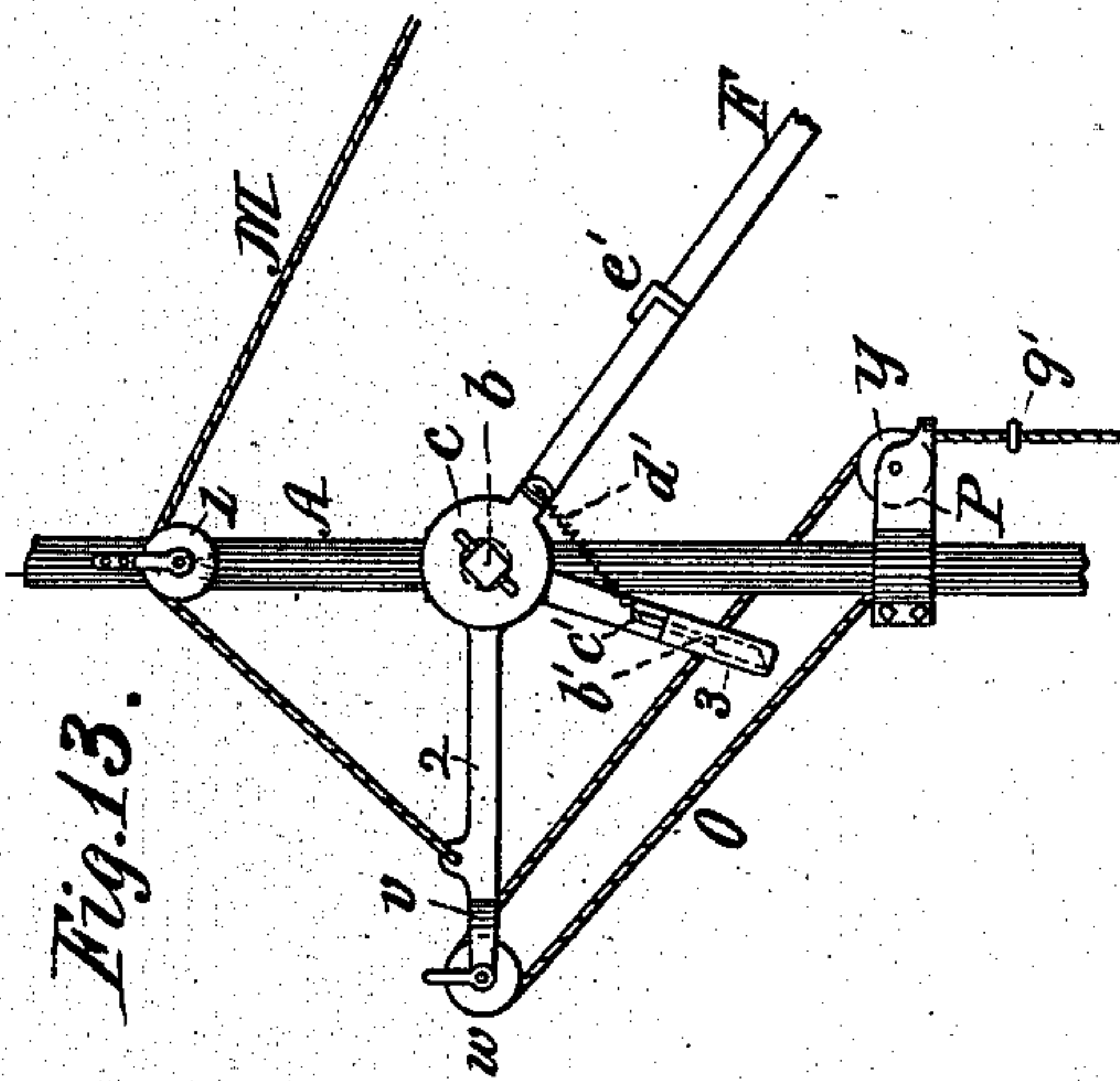
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UNITED STATES PATENT OFFICE.

WILLIAM MENDENHALL, OF CINCINNATI, OHIO, ASSIGNOR TO THE MENDENHALL STORE SERVICE COMPANY, OF SAME PLACE.

STORE-SERVICE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 413,860, dated October 29, 1889.

Application filed October 19, 1888. Serial No. 288,577. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM MENDENHALL, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Store-Service Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to that class of store-service apparatus in which a carrier is propelled upon a way or wire and carries beneath it a detachable receptacle for the articles to be transported; and it has for its object the improvement in the construction and mode of operation of the apparatus.

The novelty of my invention will be herewith set forth and specifically pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of a store-service apparatus embodying my invention. Fig. 2 is a detail showing the reverse of the propelling-wheel of Fig. 1. Fig. 3 is a plan view of the propelling-wheel of Fig. 1. Fig. 4 is an enlarged sectional elevation of the air-cushion. Fig. 5 is an enlarged detail plan view of the latch and connected parts. Fig. 6 is an elevation of the same. Fig. 7 is a side elevation of the apparatus at the receiving or cashier's end of the lines. Fig. 8 is an enlarged sectional detail to be referred to hereinafter. Fig. 9 is a front elevation of Fig. 7. Fig. 10 is a side elevation of the apparatus, representing a modification in the construction. Fig. 11 is a detail end elevation of the elevator. Fig. 12 is a corresponding view to Fig. 1, representing an equivalent construction for the wheel. Fig. 13 is a corresponding view to Fig. 2, representing the construction of Fig. 12.

The same letters are used to indicate identical parts in all the figures.

Referring to Figs. 1, 2, and 3, A is the usual upright or post, to which the way or wire B is secured in the usual or any suitable manner. C is the carrier, of the usual or any suitable construction, supported upon the wire by its rollers *a*, and to which is removably attached the receptacle D—in this instance a basket. Extending from the post A above the way is

a horizontal spindle *b*, upon which is journaled so as to turn freely a grooved wheel E, held in place in this instance by a washer *c*, fitted upon the squared end of the spindle, so as not to turn thereon. Likewise loosely hung upon the spindle *b* is an arm F, to the lower end of which is pivoted a second arm G, the two arms F G constituting a jointed propelling-arm or pusher. The forward end of the arm G is carried upon the wire B by means of a grooved roller *d*, pivoted in a slot in the arm G, and having a stirrup *e* extending under the wire to prevent the disengagement of the roller *d* therefrom and to communicate the blow of an incoming carrier to an air-cushion.

Secured to the post A, just under the wire B, is a forked bracket H, (see Figs. 5 and 6,) between the rear slotted arm *f* of which is pivoted the latch-bar I, which extends forward between the forward slotted arm *g*. The pivot for the bar I extends through a slot *i* in the latter, and a coiled spring *j* surrounds the bar I between a nut or projection *k* on its rear end and the arm *f*. Each end of the carrier has a lateral projection or pin *l*, which, as the carrier is driven in toward the post A, is caught and engaged by the forward hooked end *m* of the latch-bar. As the carrier comes in with considerable force, the arms G F are driven back to the position shown by the solid lines, Fig. 1, and to receive and lessen the blow of the carrier I have provided an air-cushion (see Fig. 8) composed of a cylinder J, secured to the bracket H, and having fitted therein a piston *n*, with a hollow rod *o* extending through its head and the post A, and having at its forward end a vertical extension *p*, whose end is slotted and loosely embraces the wire B in the rear of the stirrup *e*. A coiled spring *q* is placed in the cylinder J, and is supported by a rod *r*, whose forward end passes through the piston *n* into the hollow rod *o*, as shown. The only purpose of the spring *q* is to throw out or reset the rod *o* and piston *n* after the carrier has been propelled, as presently explained. When the carrier is driven in toward the post, the arm G is first struck and driven back, as before explained, until the stirrup *e* strikes the projection *p*, whereupon the force of the blow is communicated to the piston *n* and drives it back, thereby

compressing the air in the cylinder J, which air gradually escapes through the vent s. In this way the carrier is arrested gradually and without shock or rebounding force, and is caught and held by the latch I, as will be readily understood. The carrier is now in position to be propelled, and the means for propelling it (shown in Figs. 1, 2, and 3) may be thus described.

K is a weight-box, suitably located on the shelving or elsewhere in rear or to one side of the post A, and containing a weight L, having a rope or cable M extending from its upper side over a pulley t and forward to the wheel E, along whose groove it extends and is secured, as at u. To receive and lessen the jar of the falling weight, I preferably secure in the bottom of the box K an air-cushion N, constructed in all respects like the air-cushion for the carrier, and which is shown in section in Fig. 4.

Extending from the wheel E is an arm v, to which is pivoted a grooved pulley w, around which a cord or rope O extends, with one end attached, as at x, to a bracket P upon the post A, and with the other end extending down over a guide-pulley y, pivoted in the bracket P, and having at its bottom a grasping-handle a'. Secured in a guide-housing b' upon one of the spokes of the wheel E is a spring latch-bolt c', whose upper end is connected by a coiled spring d' to a lug upon the washer c. Projecting from the arm F, just below the periphery of the wheel E, is a recessed lug e, into the recess of which the bolt c' is caught when the wheel is turned by pulling upon the cord O, thereby locking the wheel E to the arm F and raising the weight L. Upon releasing the cord O the weight in descending turns the wheel E and throws forward the arms F and G, and consequently the carrier, which, being locked to the latch I, draws the latter forward until an inclined lug f', Figs. 1 and 6, upon the lower side of the bar I, between the arms f g, strikes the inclined bottom wall of the slot in the arm g and lifts the latch, which thus becomes disengaged from the carrier. The arms F G then continue forward with the gradually-increased velocity imparted by the falling weight until, the frictional contact between the bolt and its recess being broken by the arresting of the weight, the spring d' comes into action and retracts the bolt c', whereupon they continue forward and assume the position shown by the dotted lines, Fig. 1, and propel the carrier with sufficient force across the wire B, as will be readily understood. They then fall back by the gravity of the arm F until the latter assumes a vertical position. The moment the latch I is released it is drawn back and reset by its spring j, and the piston n, with its rod o, is projected forward by the spring q, as will be readily understood. Any suitable stop—such as the button g' upon the rope O—prevents the wheel

E from being carried by its momentum further than desired.

It is of course obvious that the wheel E, as a wheel, may be dispensed with and its equivalent be found in a pivoted bell-crank lever with two or more arms, to the upper arm of which the weight-cord and cord O would be secured, and to the other of which the locking-bolt c' would be secured. For instance, in Figs. 12 and 13 I have shown such a construction, where the weight-cord M passes over a grooved pulley 1, journaled on a stud projecting from the post A, and is secured to an arm 2 of a bell-crank, pivoted similarly to the wheel E, and whose other arm 3 is provided with the spring-latch c' for engaging the propelling-arm F. The other parts and mode of operation of the device are identical with those of Figs. 1, 2, and 3.

To dispense with the wheel E and propelling-arms F G, and yet obtain the advantages of the wheels as a means for propelling the carrier and its receptacle, I employ the modification represented in Fig. 10, where the weight is contained under the counter Q, and its rope passes up, preferably, through a hollow post R upon the forward edge of the counter and over a grooved pulley h', pivoted upon the top of the post, and thence back under the basket D, over a second pulley i' upon the lower end of the post A, and down, as shown. A button j', preferably frusto-conoidal in shape, constituting the pusher, is secured upon the rope O, and when the weight is down occupies a position close to the pulley h'. The latch I and its attachments and the air-cushion are the same as before described, and at each end of the basket D, at its lower edge, I secure a plate k', hinged so as to open outwardly only, and preferably with a notch in its lower edge. (See Fig. 9.) The rope between the pulleys h' i' is substantially horizontal, though the weight of the button j' causes it to sag sufficiently to be out of the way of the incoming basket. Now, upon pulling down the rope O and lifting the weight L, the button j' is drawn back and tilts the rear plate k', which, when the button has passed back of it, drops down in front of the same, so that upon releasing the rope the weight in falling draws the button into engagement with the rear plate k' and causes the basket and carrier to be propelled forward across the wire B, as will be readily understood.

S is the usual or any suitable frame for the basket-elevator T, which is drawn up and lowered by the cord U, to attach and release the basket from the carrier, as described in my prior application filed July 13, 1888, Serial No. 279,811, or in any other suitable manner.

Having thus fully described my invention, I claim—

1. In store-service apparatus, the combination, with a way and a carrier and receptacle adapted to move on said way, of a propelling-weight and a pusher arranged paral-

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lel to said way and connected to said weight, whereby upon lifting and releasing said weight the carrier and receptacle are given a gradually-increasing initial impetus for the purpose of propelling them on said way, substantially as described.

2. In store-service apparatus, the combination, with a way, a carrier and receptacle adapted to move on said way, and a catch for holding the carrier, of a propelling-weight and a pusher arranged parallel to said way and connected to said weight, whereby upon lifting and releasing said weight the catch is thereby disengaged and the carrier and receptacle are given a gradually-increasing initial impetus for the purpose of propelling them upon said way, substantially as described.

3. In store-service apparatus, the combination, with a way, a carrier and receptacle adapted to move on said way, a propelling-wheel or its equivalent, and a propelling-arm connected to said wheel and carried on said way, of a weight united by a rope to said wheel, whereby upon turning said wheel and lifting the weight and then releasing the same the carrier and receptacle are given a gradually-increasing initial impetus for propelling them upon said way, substantially as described.

4. In store-service apparatus, the combination of a way, a carrier and receptacle adapted to move on said way, a propelling-wheel, a propelling-arm connected to said wheel and carried on said way, a latch for said carrier, and a weight united by a rope to said wheel, whereby upon turning said wheel and lifting the weight and then releasing the same the latch is disengaged and the carrier and receptacle are given a gradually-increasing initial impetus for propelling them upon said way, substantially as described.

5. In store-service apparatus, the combination of a way, a carrier and receptacle adapted to move on said way, a propelling-wheel or its equivalent provided with an automatic spring locking and releasing bolt, a propelling-arm hung loosely by the side of said wheel, resting on said way, and a cord

for rotating said wheel in one direction to cause its engagement with said arm and then in the opposite direction to propel the carrier and receptacle along the way and to effect the disengagement of the wheel and arm, substantially as described.

6. In store-service apparatus, the combination of a way, a carrier and receptacle adapted to move on said way, a propelling-wheel provided with an automatic spring locking and releasing bolt, a propelling-arm hung loosely by the side of said wheel and resting on said way, a weight secured by a rope to said wheel, and a cord for rotating said wheel in one direction to first cause its engagement with said arm and to lift the weight, whereby upon releasing said cord the weight rotates said wheel in the opposite direction and propels the carrier and receptacle along said way and causes the disengagement of the wheel and arm, substantially as described.

7. In store-service apparatus, the combination of a way, a carrier and receptacle adapted to travel on said way, and means for propelling the same, of the forked bracket H, with slotted arms *f g*, and the latch I, provided with the hook *m*, releasing-lug *f'*, slot *i*, and resetting-spring *j*, substantially in the manner and for the purpose specified.

8. A store-service apparatus comprising the weight L, air-cushion N, rope M, grooved wheel E, the jointed arms G F, the lug *e'*, secured to the arm F, the spring-bolt *c'* upon the wheel E, washer *c*, spring *d'*, and lifting-cord O, attached to the wheel E, substantially as and for the purpose specified.

9. A sliding pivoted spring-retracted latch-piece having an inclined lug, in combination with a bearing for said latch-piece, whereby the drawing forward of said latch-piece causes it to be tilted to effect its disengagement, substantially as described.

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