

(No Model.)

3 Sheets—Sheet 1.

W. DEVERAUX.

GUARD FOR PIVOT OR SWING BRIDGES.

No. 354,105.

Patented Dec. 14, 1886.

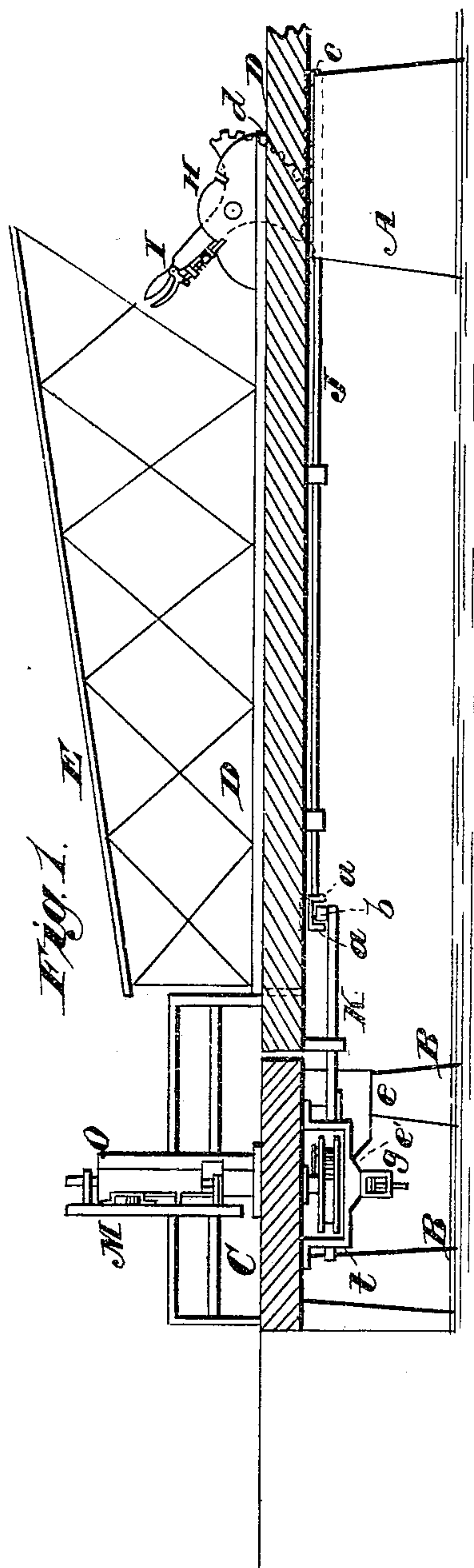


Fig. 1.

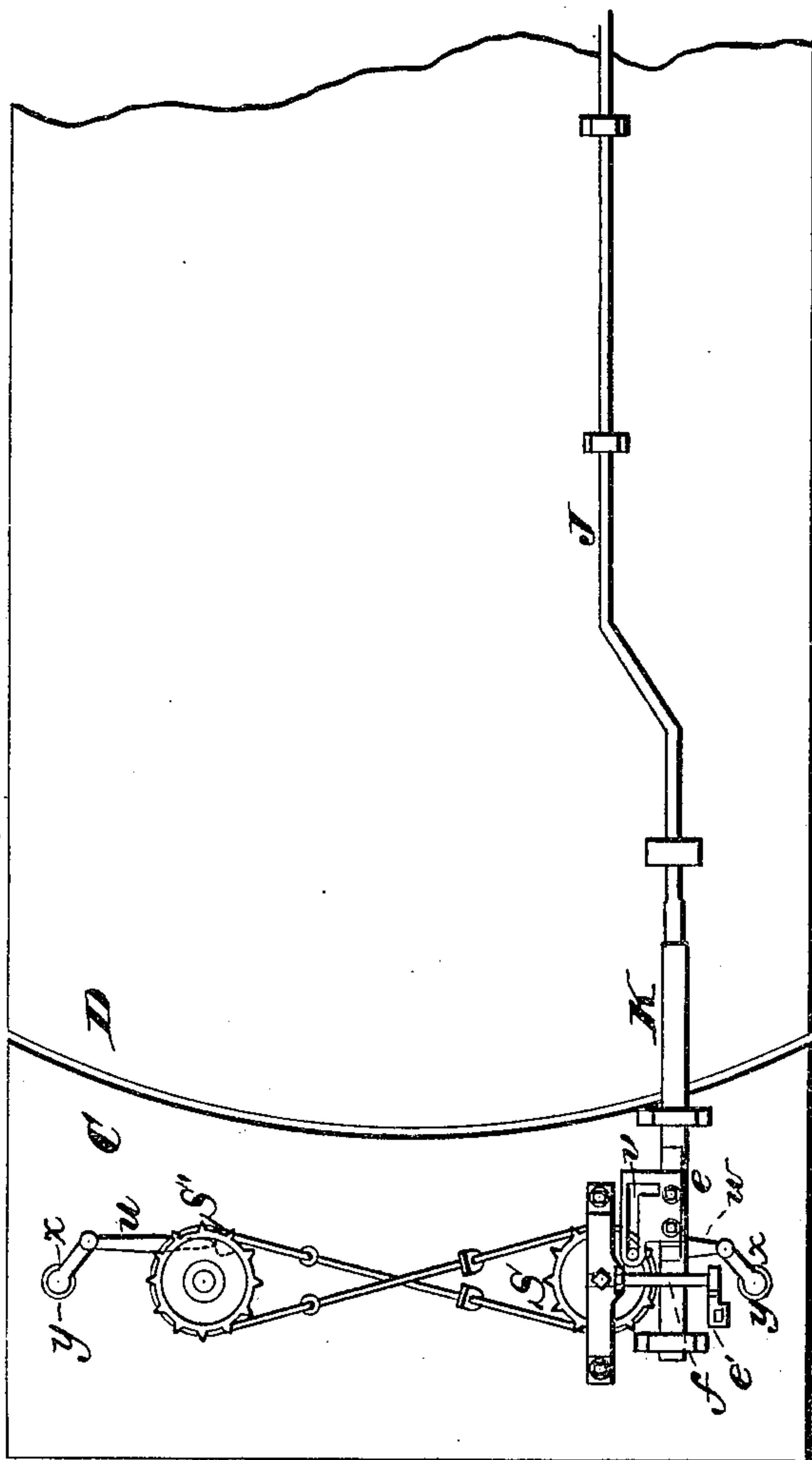


Fig. 2.

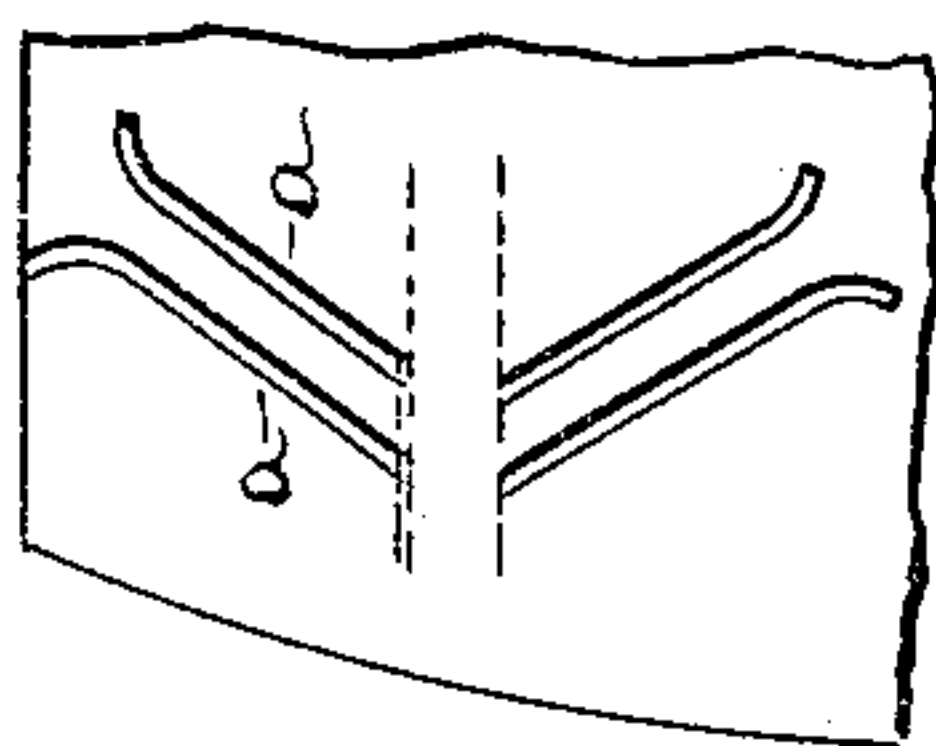
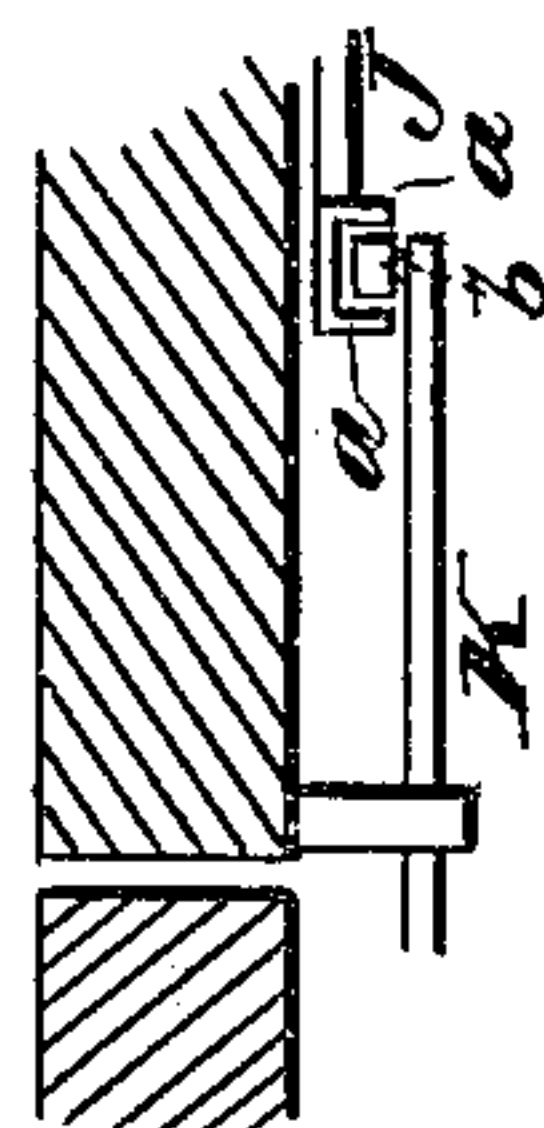


Fig. 3.



Witnesses.

Robert Everett.

J. A. Rutherford.

Inventor.

William Deveraux.

By James L. Norris.

Atty.

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Fig. 4.

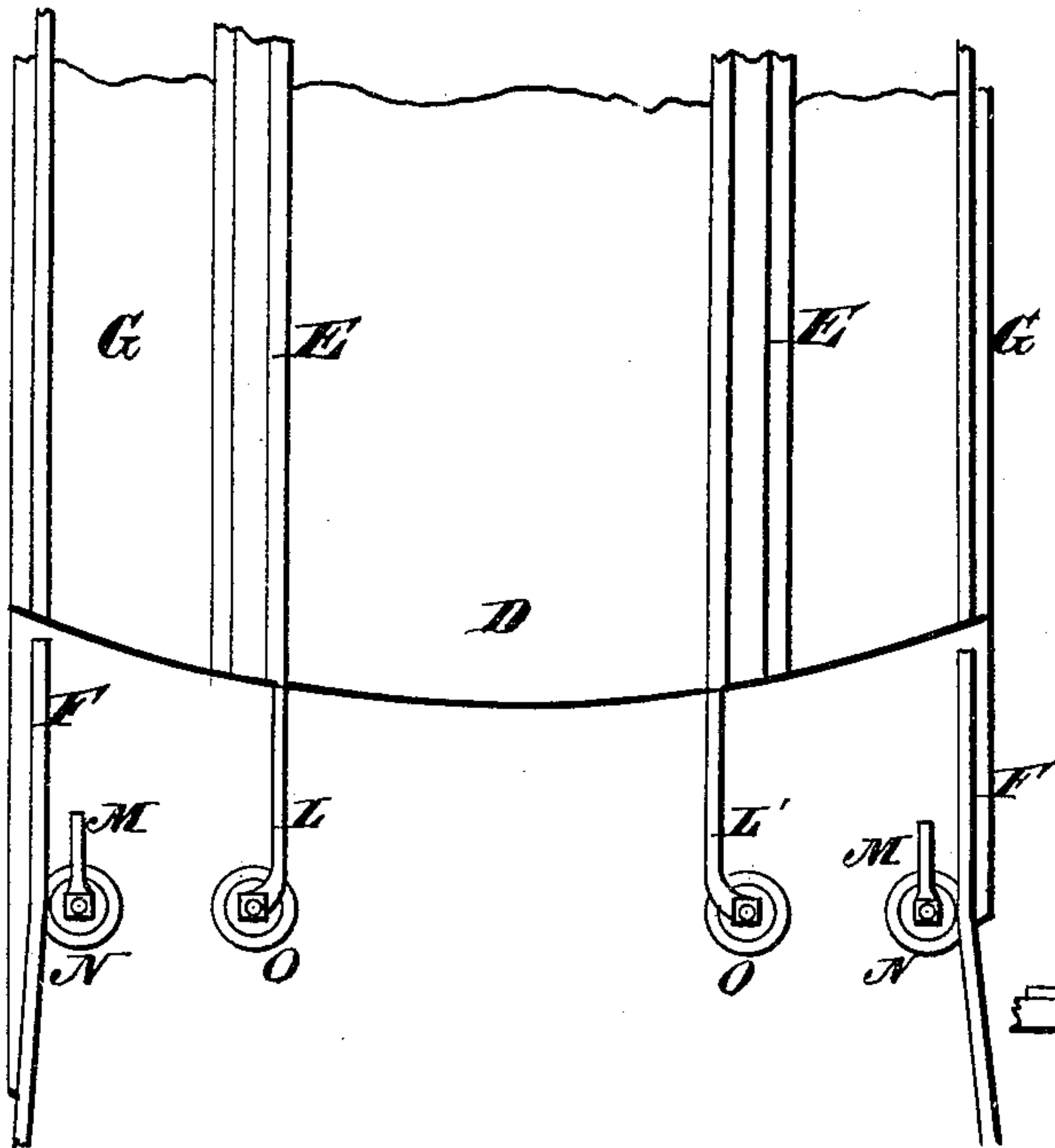


Fig. 7.

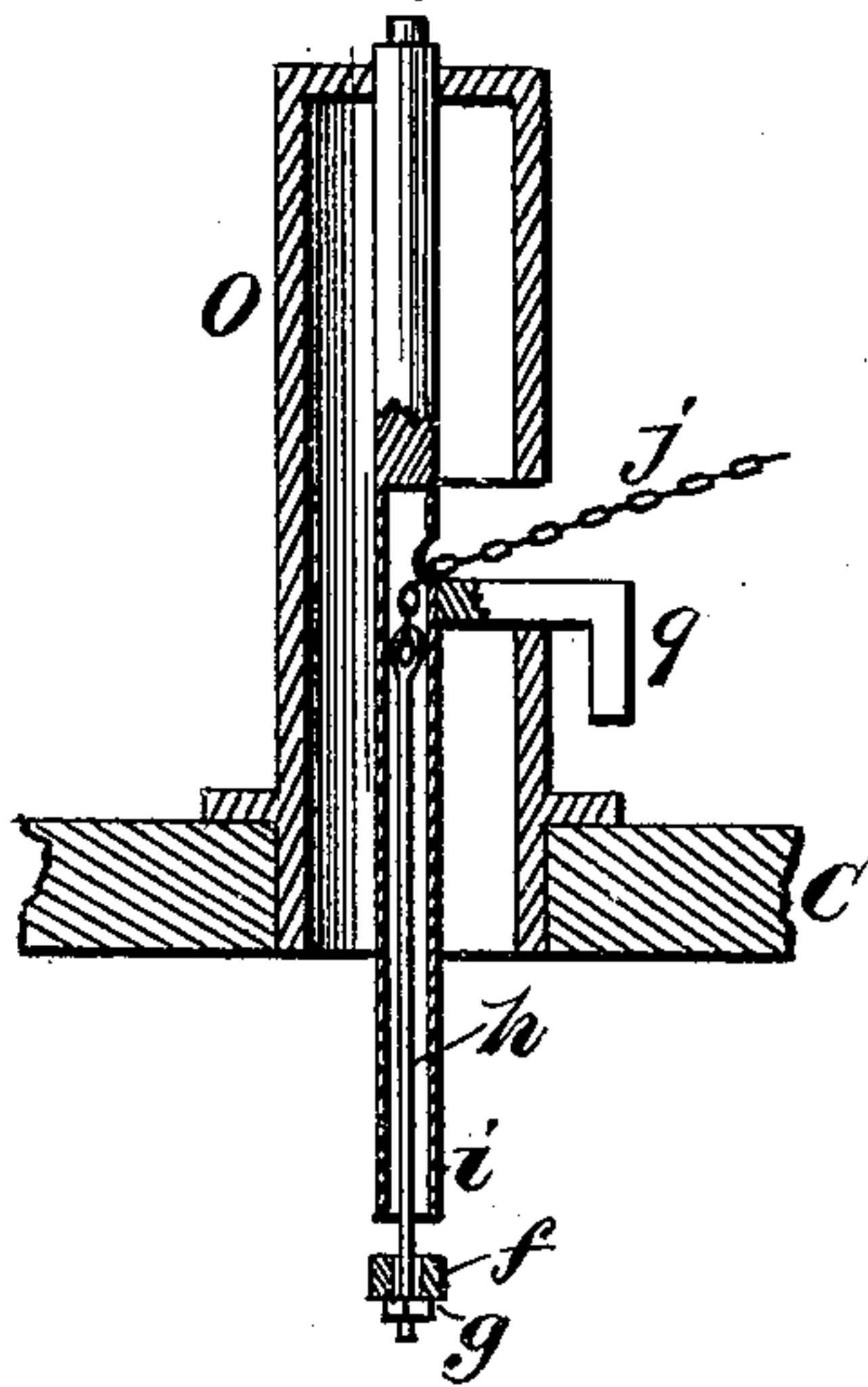
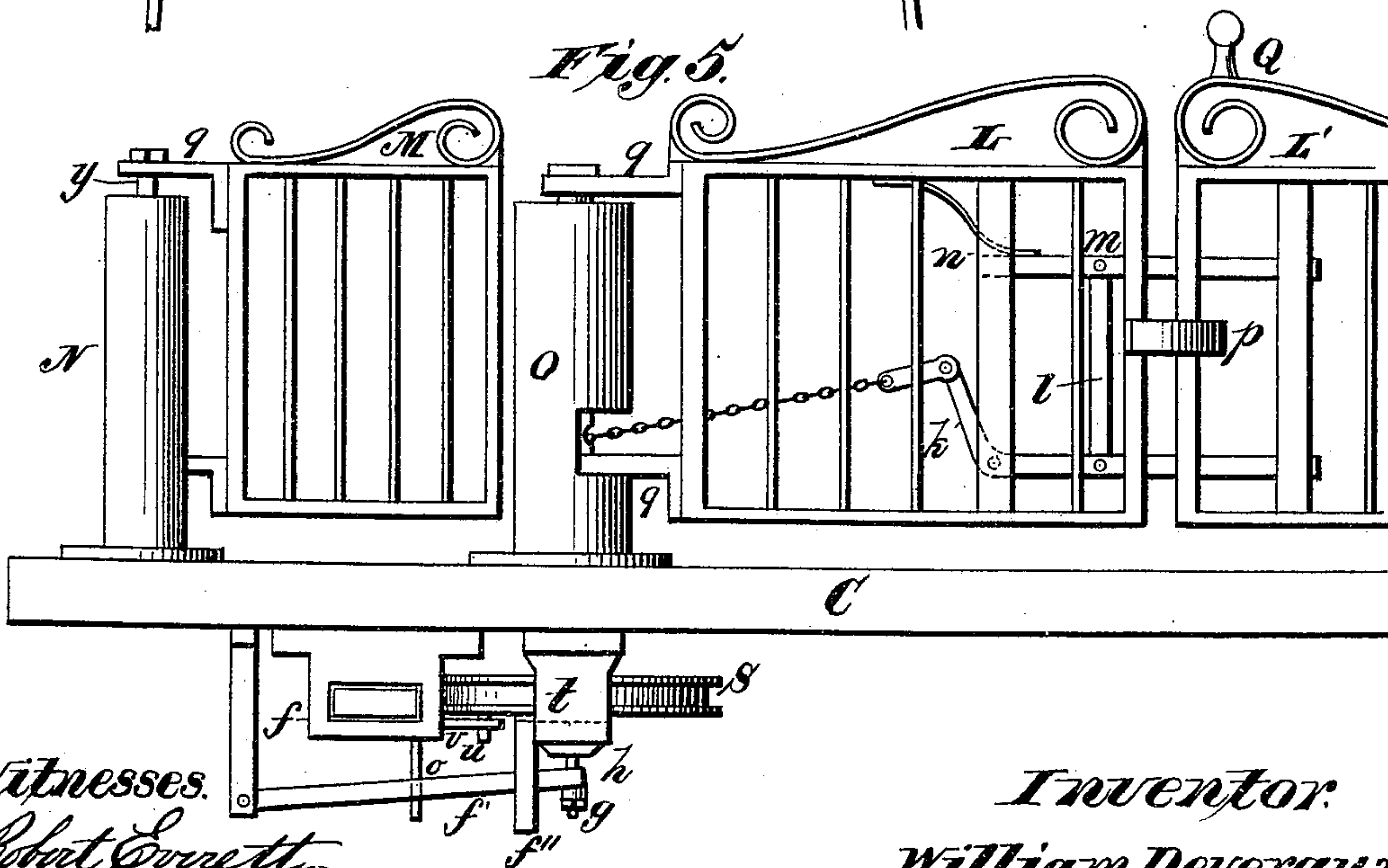


Fig. 6.



Fig. 5.



Witnesses.

Robert Everett.

J. A. Rutherford

Inventor.

William Deveraux.

By James L. Norris.
Atty.

(No Model.)

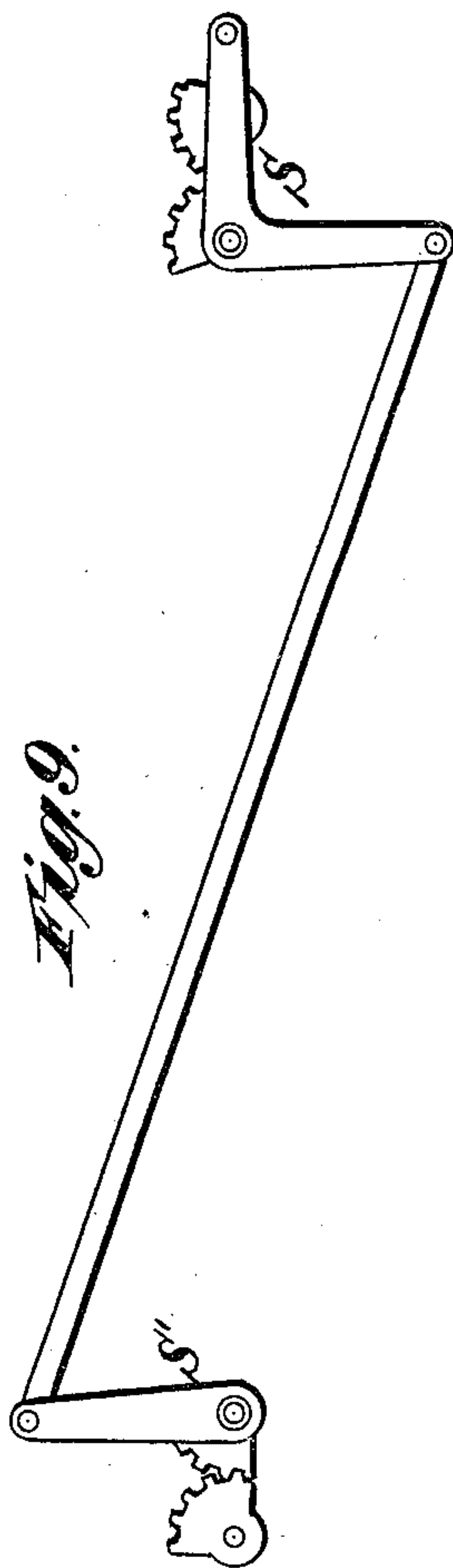
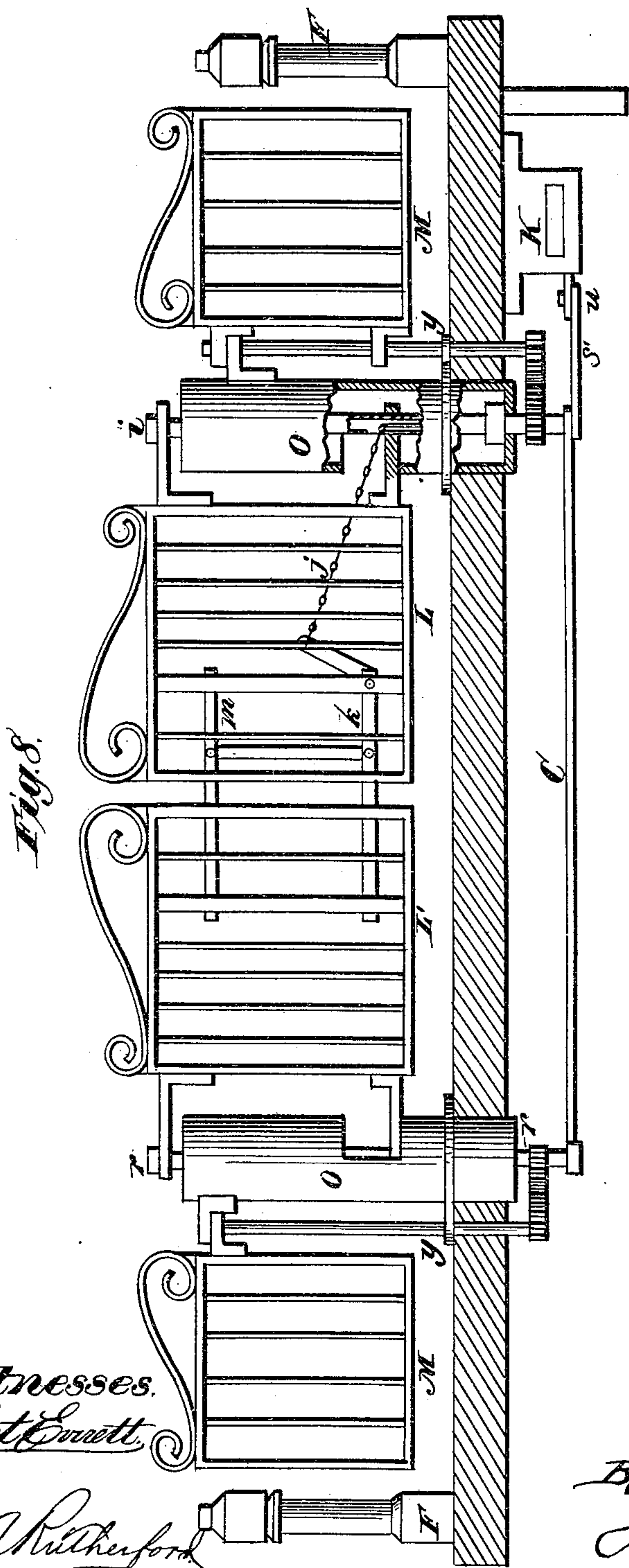
3 Sheets—Sheet 3.

W. DEVERAUX.

GUARD FOR PIVOT OR SWING BRIDGES.

No. 354,105.

Patented Dec. 14, 1886.



Witnesses.

Robert Emmett.

J. A. Rutherford.

Inventor.
William Deveraux.

By
James L. Norris,
Atty.

UNITED STATES PATENT OFFICE.

WILLIAM DEVERAUX, OF CHICAGO, ILLINOIS, ASSIGNOR TO HIMSELF AND MAURICE MURPHY, OF SAME PLACE.

GUARD FOR PIVOT OR SWING BRIDGES.

SPECIFICATION forming part of Letters Patent No. 354,105, dated December 14, 1886.

Application filed April 7, 1885. Serial No. 161,519. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM DEVERAUX, residing at Chicago, in the county of Cook and State of Illinois, and a citizen of the United States, have invented certain new and useful Improvements in Guards for Pivot or Swing Bridges, of which the following is a full description, reference being had to the accompanying drawings, in which—

10 Figure 1 is a vertical longitudinal section; Fig. 2, an under view; Fig. 3, detail of a modification; Fig. 4, a top or plan view of one end of the bridge and its pier or approach; Fig. 5, a partial section across the street, showing the guard closed; Figs. 6 and 7, details of the guard; Fig. 8, a cross section of the pier, showing all of the gates forming the guard with a modification of the under connecting devices; Fig. 9, a plan view of the connecting-rod for swinging the gates in opposite directions. Fig. 10 is a detail view of the connecting-rod and sliding bar, showing the manner of their engagement and by which the gate actuating and locking mechanism are operated.

25 The object of this invention is to provide guards on the street approaches for pivot or swing bridges, so as to close the street and walks when the bridge is open. I am aware that many devices have been devised and patented for this purpose; and I am also aware that there are many difficulties to be overcome in making a practical guard for this purpose, for when the guard is located in the joint between the end of the bridge and the pier it adds greatly to the labor of operating the bridge, especially in starting, which aggravates the difficulty of opening the bridge, as all of these bridges are heavy and require considerable power to overcome their inertia, and many of the devices are more like traps than guards, as they are liable to impede or entrap both teams and foot-passengers, and when located sufficiently far away from the end of the bridge not to be dangerous there has been great difficulty in operating them from the bridge.

My invention overcomes these and other difficulties; and its nature consists in the several parts and combinations of parts hereinafter described and claimed as new.

In the drawings, A represents the center or pivot pier; B, the abutment or approach; C, the flooring or roadway of the approach; D, the foundation and flooring of the bridge; E, one of the arches with its trusses; F, outer sidewalk guard or fence; G, outer footwalk-guard of the bridge; H, housing and pivot-support for the operating-lever; I, operating-lever; J, connecting rod or bar; K, sliding bar; L L', street-gates; M, side or foot walk gates; N, gate-posts for gates M; O, posts for the street-gates; P P', rod or chain connecting the operative parts of the street-gates; a, ledges or projections on the outer end of the bar J; b, pin or roller on the sliding bar K; c, rack on the inner end of the bar J; d, toothed segment on the lower end of the lever I, engaging the rack c; e, cam or projection on the slide K; f, hinged bar for operating the latch or catch; g, adjusting-nut; h j, sliding rod and chain for connecting the bar f with the latch; i, tubular shaft located centrally within the posts O; k l m, latch; n, spring; o, catch; p, guide or bar for bringing the inner ends of the gates into line when closed; q, gate-hinges; r, shaft; s s', sprocket-wheels; t, supporting-bridges for the wheel s; u, pin on the wheel s; v, slotted plate on the sliding bar K; w, links connected by pivot-pins with the wheels s s'; x, cranks on shafts y; y, shafts for turning the foot-path gates.

The center pier, A, is made in any of the well-known forms of masonry and piling, or partly of both, and the abutment B may be made in any of the well-known forms, and if made of masonry sufficient space will be left under the covering or flooring C for the location and operation of the devices for swinging the gates of which the guard is formed. The bridge D E is also made in any of the usual forms, both as to its base and flooring, and its arches and trussing, which are made in any suitable manner for sustaining the ends of the bridge when unsupported, as my improvements are designed to be applied to any swing or pivot bridge.

At the middle of the bridge I place the housing or support H, and upon this mount the lever I, which is provided with suitable catches or fastenings to hold it in a position in

which it may be thrown, and I operate its lower end with a toothed segment, *d*, which engages with the toothed rack *c* on the inner end of the bar J. The segment and rack are to have sufficient length to give this bar its proper endwise movement.

The outer end of the bar J is provided with ledges *a*, having a sufficient space between them for the free passage of the pin *b*, which pin may be provided with an anti-friction roller or not, as may be desired.

The pin *b* is located at the end of the sliding bar K, and when the bridge is in line the pin stands between the ledges or projections *a*, so that the sliding bar K takes the same movement as the bar J when it is operated by the lever I. The sliding bar K is provided with a cam or plate, *e*, Figs. 1 and 2, having an inclined or beveled portion, *e'*, for engaging with and actuating the hinged bar *f*. When the bar K is pushed in, the incline strikes against and depresses the bar *f*, causing the latches to be disengaged from their catches through the medium of the rod *h* and chain *j*, connected with the bar *f*. Upon a reverse movement of bar K the plate *e* will be drawn back and the incline *e'* released from engagement with the bar *f*. The latter will then rise to allow the latches to fall into engagement with the catches on the guards and lock them in place. This bar is also provided with a horizontal grooved plate, *v*, Fig. 2, which groove engages with a pin on the wheel *s*, so as to leave some free movement of the slide, and to rotate the wheel *s* one-fourth of its circle for operating the gates of the guard in both directions.

The wheel *s* is firmly attached to the hollow shaft *i*, as are also the hinge-bars *q* of the gate L, so that the turning of the wheel *s* directly opens or shuts the gate L, in accordance with the movement of the sliding bar K. The gate L' is attached to the shaft *r* in the same manner. This shaft may be hollow or solid, as may be desired. The wheel *s'* is attached to the shaft *r*, and, in the form shown in Fig. 2, the wheels *s s'* are connected together by the chain P, which chain is composed partly of links and partly of rods, the rods being at the crossing to avoid any catching in the movement of the chain. In the form shown in Figs. 8 and 9 it is a simple cross-bar, which may be connected with the wheels *s s'* on opposite sides, or with arms, as shown in said figures. By this arrangement the wheel *s* communicates corresponding but reverse motion to the gate L', so that the gates open and close together. On the outer sides of the wheels *s s'*, and near their edges, are pivoted the links or pitmen *w*, which connect with cranks *x* from the shafts *y*, to which the gates M are attached, and by this arrangement and connection the sliding bar, through the plate *v* and pin *u*, opens and closes all of the gates of the guards simultaneously.

It is not important that the guards for the footwalk be latched or otherwise secured, while it is important that the gates crossing

the street or carriage way be locked or fastened together when closed, and in order to accomplish the locking and unlocking of these gates by the same movement of the sliding bar K, I attach to the flooring or covering C the bar *f*, by means of the hanger *f'* and guide *f''*, which guide is supported by the bridge *t*, as shown. The bar *f* is pivoted to the hanger *f'*, and its opposite end is connected with the rod *h*, which passes through it and is fastened by means of the nut *g*, and by means of this nut the position of the latch or extent of its movement can be adjusted. The rod passes up through the center of the hollow shaft *i*, which shaft is partly cut away about midway of its length, and the chain or wire cord *j* is attached to it and to the bent arm *k* of the latch. Both of the bars *k* and *m* connect with suitable catches on the gate L', and they are made to move together by means of the link *l*, and in case these latch-bars *k m* are not sufficiently heavy to return or drop the latches when the cam *e* is withdrawn from the bar *f* the spring *n* may be used to insure the returning or dropping of the latches. By this arrangement and combination of the parts a single movement of the lever I is made to lock or unlock the gates and open or close them, according to the direction of its movement, and the operation, supposing the gates to be open and the bridge-tender desires to close them, is to move the lever so that the bar J will pull toward the center. This movement pulls out the sliding bar K to the limit of the slot in the plate *v*, and the pin *u* strikes the opposite end and rotates the wheels *s s'*. The continuation of the movement brings the gates to position, when the bridge can be swung, and the swinging of the bridge leaves the bar K in position to be re-engaged when it is returned.

In closing the gates the movement of the lever I is reversed, and before the bar K reaches its limit the cam or incline *e'* passes off from the lever *f* and allows the latches to drop, so as to lock the gates firmly in position.

I have only shown one lever, I. It will be understood that a similar one is located on the opposite side and connects with similar devices for operating a similar guard at the opposite end of the bridge, and if it should be desired, four levers may be applied, so as to work a half of the guard at a time, which might in some situations be desirable in order to let teams off which are on the bridge.

It will be understood that the movement of the lever I may be readily reversed in case there should be objection to the projection of the sliding bar K, and it will also be understood that the pin *b* and the projections *a* may also be reversed—that is, the projections may be on the bar K and the pin on the bar J—and it will also be understood that in case a wire rope is used the parts *h j* may be made of one continuous piece.

Where it is desired to make the device automatic—that is, operated by the movement of the bridge—a plate similar to that shown in

Fig. 3 may be placed beneath the bridge in proper position to have the cams or projections *a*, which in this case are made longer and inclined, properly located to engage with the pin *b*, and by cutting this plate through, as indicated by dotted lines in Fig. 3, both systems may be combined—that is, may be operated by the movement of the bridge or by the lever I, the only change required being to cut away the portion between the dotted lines for the proper movement of the bar J at this point, and in the modification shown in Fig. 6 the gates are all attached to two posts, and in this form I apply gear-wheels, as shown in said figure, to operate the side gates, and in this form arms or levers *s* may be used in place of the sprocket-wheels *s s'* in the first form, otherwise they are substantially alike, and the apparatus connecting the device with the bridge is the same.

One of the gates may be provided with a light or lantern, as at Q, Fig. 5, displaying a colored light, which will show on the street when the guard is closed and on the river or stream when it is open.

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

1. The lever I and rod or bar J, having the ledges or projections *a*, in combination with the bar K, having the pin *b*, substantially as specified.

2. The bar K, having the slotted plate *v*, in combination with the wheel or arm *s*, having the pin *u*, substantially as described.

3. The bar K, having the cam or inclined plate *e*, in combination with the hinged bar *f*, substantially as set forth.

4. The combination, with the bar K, plate *e*, having incline *e'*, and bar *f*, of the rod *h*, chain or cord *j*, and latch-bar *k*, substantially as described.

5. The combination of the bar *f*, rod or cord *h j*, and adjusting-nut *g*, whereby the movement of the latch may be adjusted for any raising or sagging of the gate, substantially as specified.

6. The combination and arrangement of the lever I, bars J and K, plates *v* and *e* with the wheels *s s'*, chain or rod P, links *w*, and arms *x*, substantially as described.

7. The combination of the bar K, having the plate *v*, with the wheels *s s'*, shafts *i r*, and guard-gates L L', substantially as specified.

8. The combination and arrangement of the guard-gates L, L', and M, posts *o*, shafts *i r*, wheels or arms *s s'*, connecting chain or link P, slide K, connecting with wheel *s*, whereby all of the gates are opened or closed simultaneously, substantially as described.

9. The combination, with the bar K, plate *e*, having incline *e'*, rod *h*, and bar *k*, of the hollow shaft *i*, forming shaft for the wheel *s* and gate L and a passage for the rod *h*, substantially as described.

WILLIAM DEVERAUX.

Witnesses:

L. L. BOND,

HARRY T. JONES.