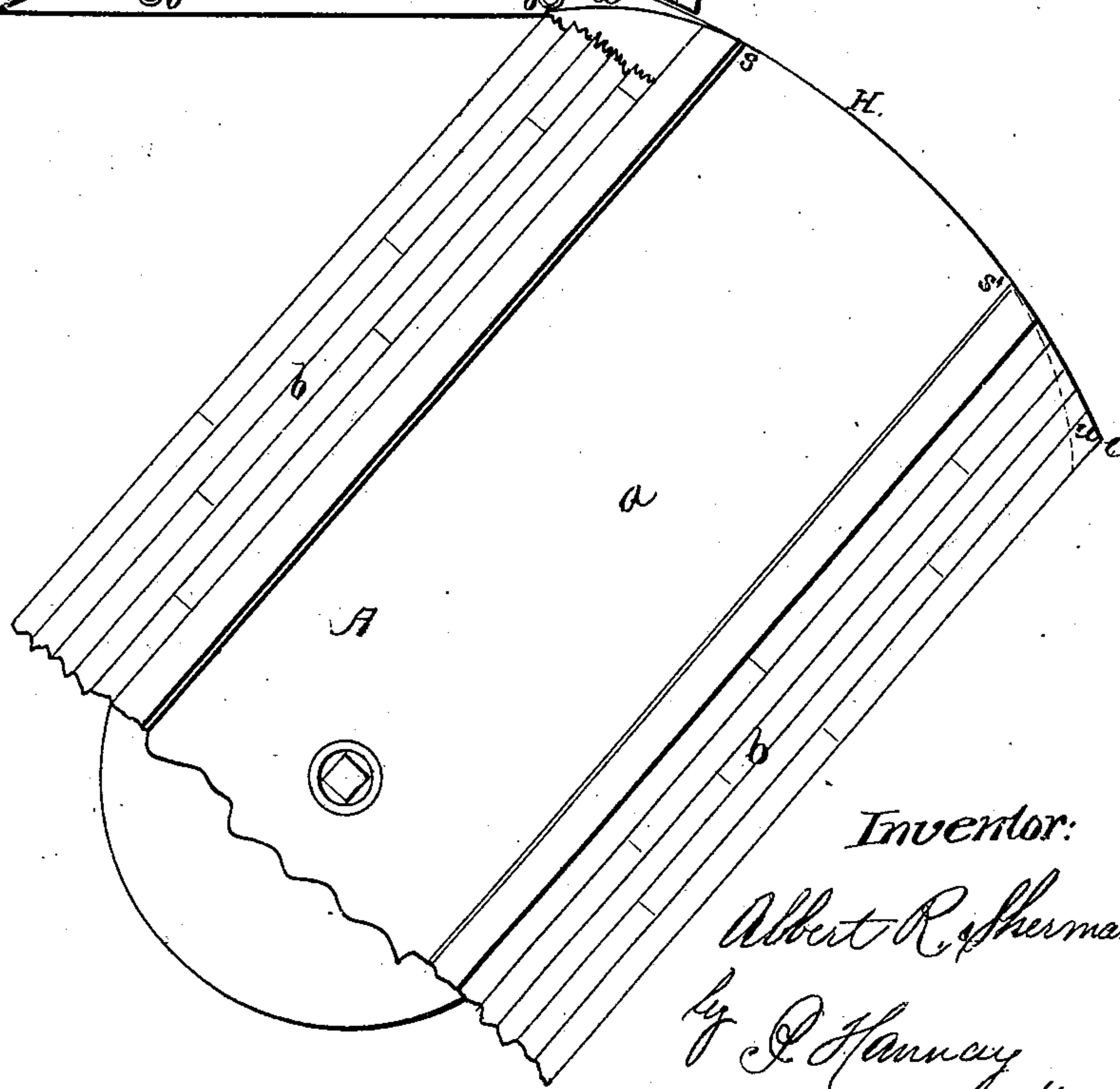
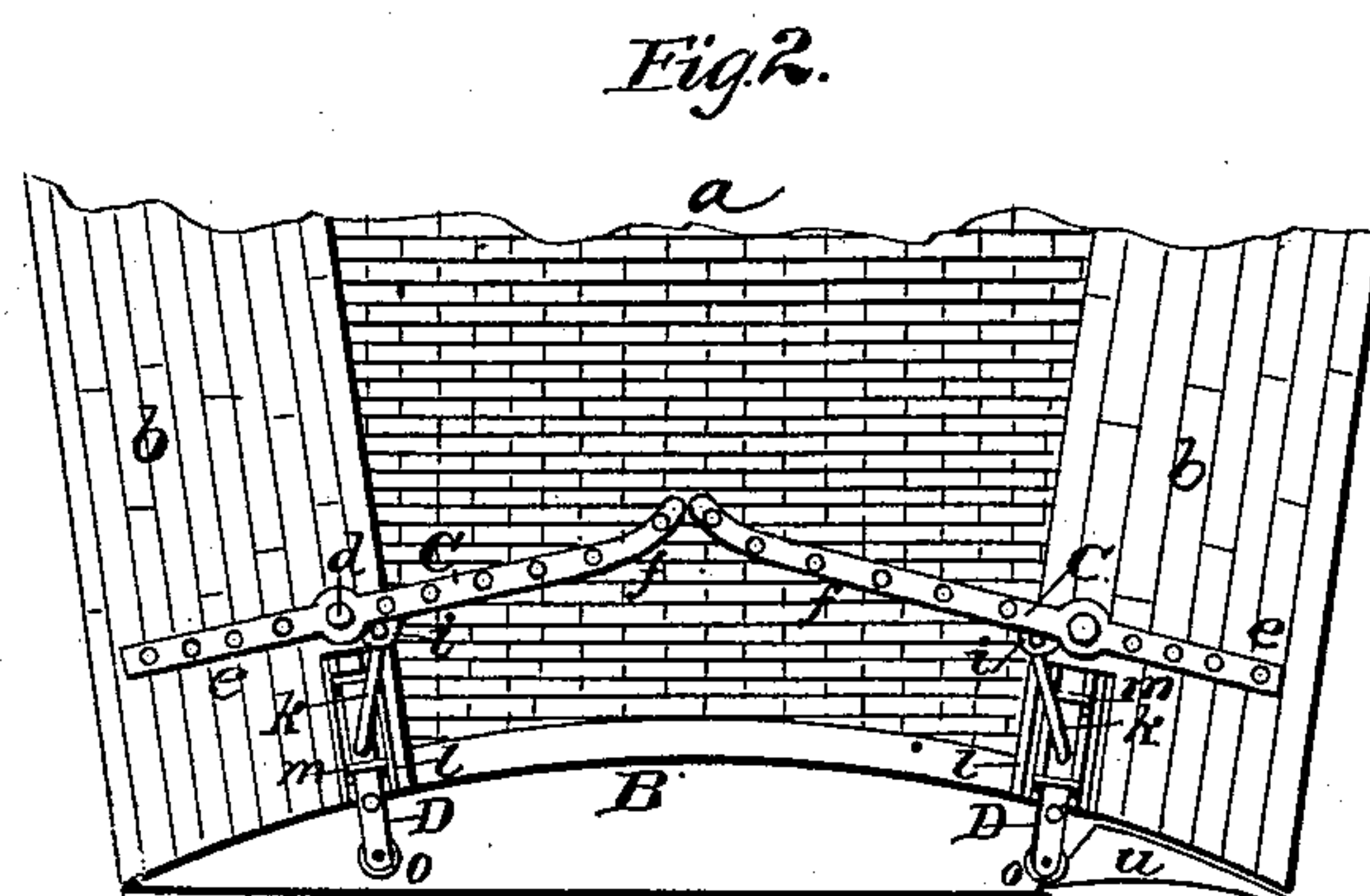
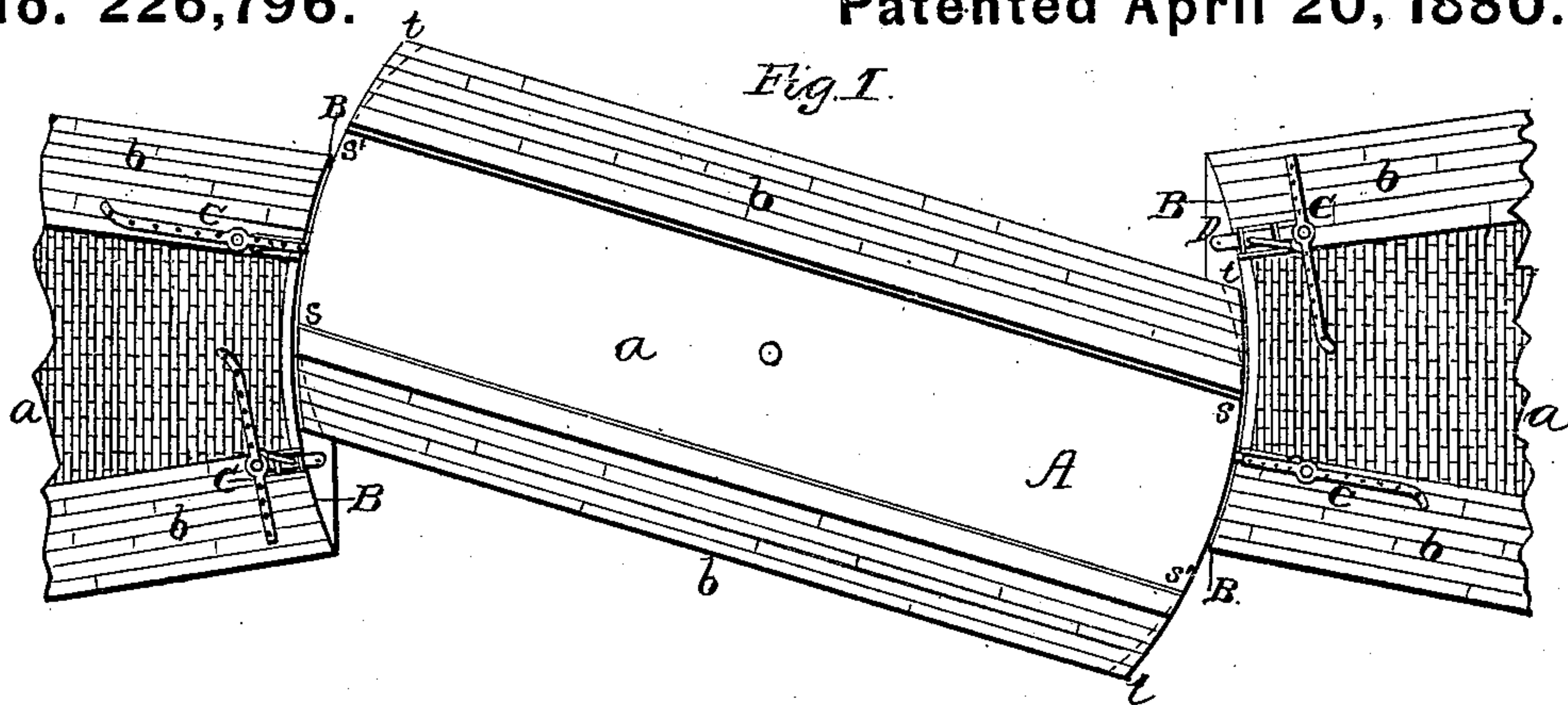


A. R. SHERMAN.
Draw-Bridge Gate.

No. 226,796.

Patented April 20, 1880.



Attest:
J. B. Brock
D. P. Cowl

Inventor:
Albert R. Sherman
by J. H. Hannon
Atty

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Fig. 3.

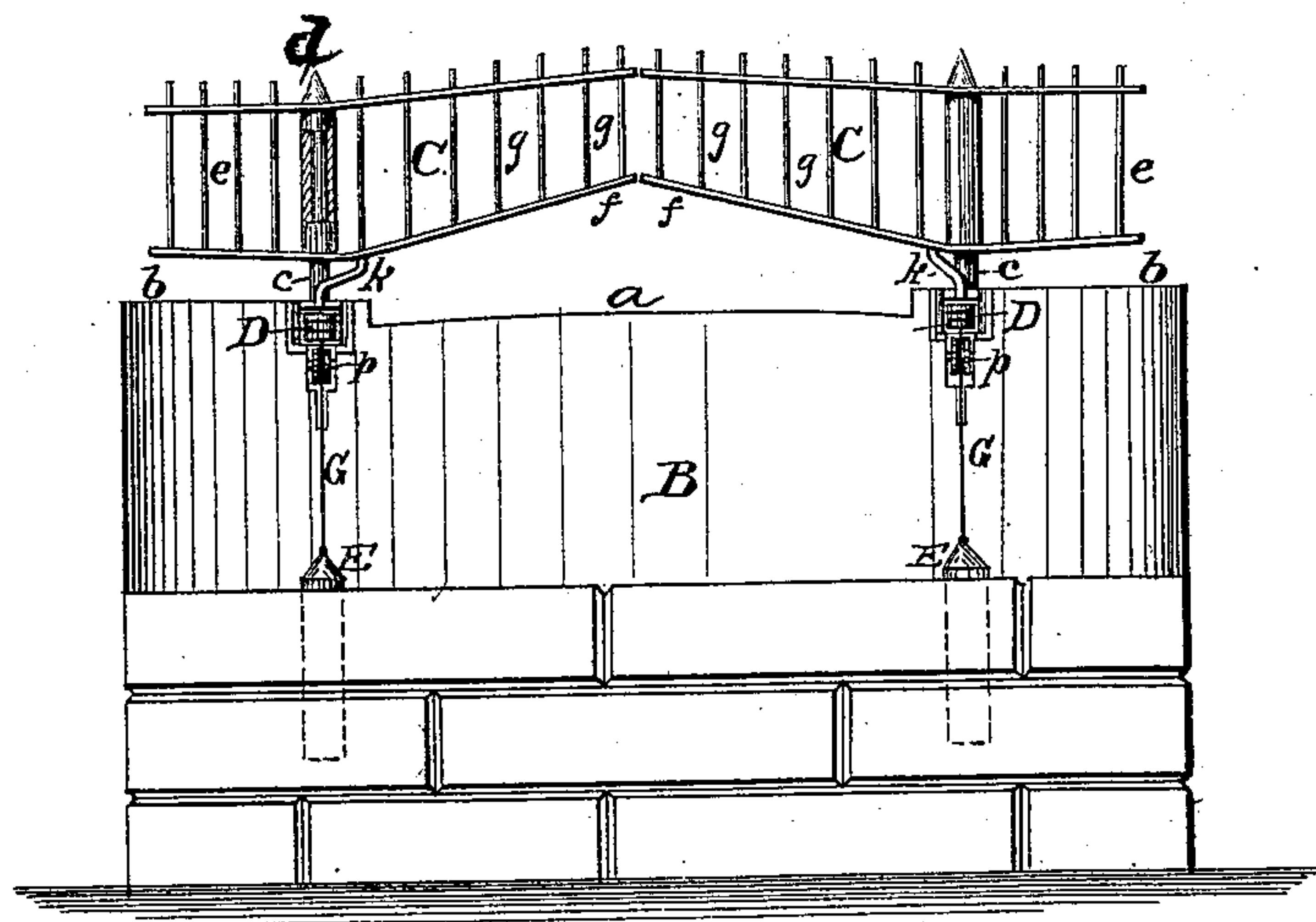
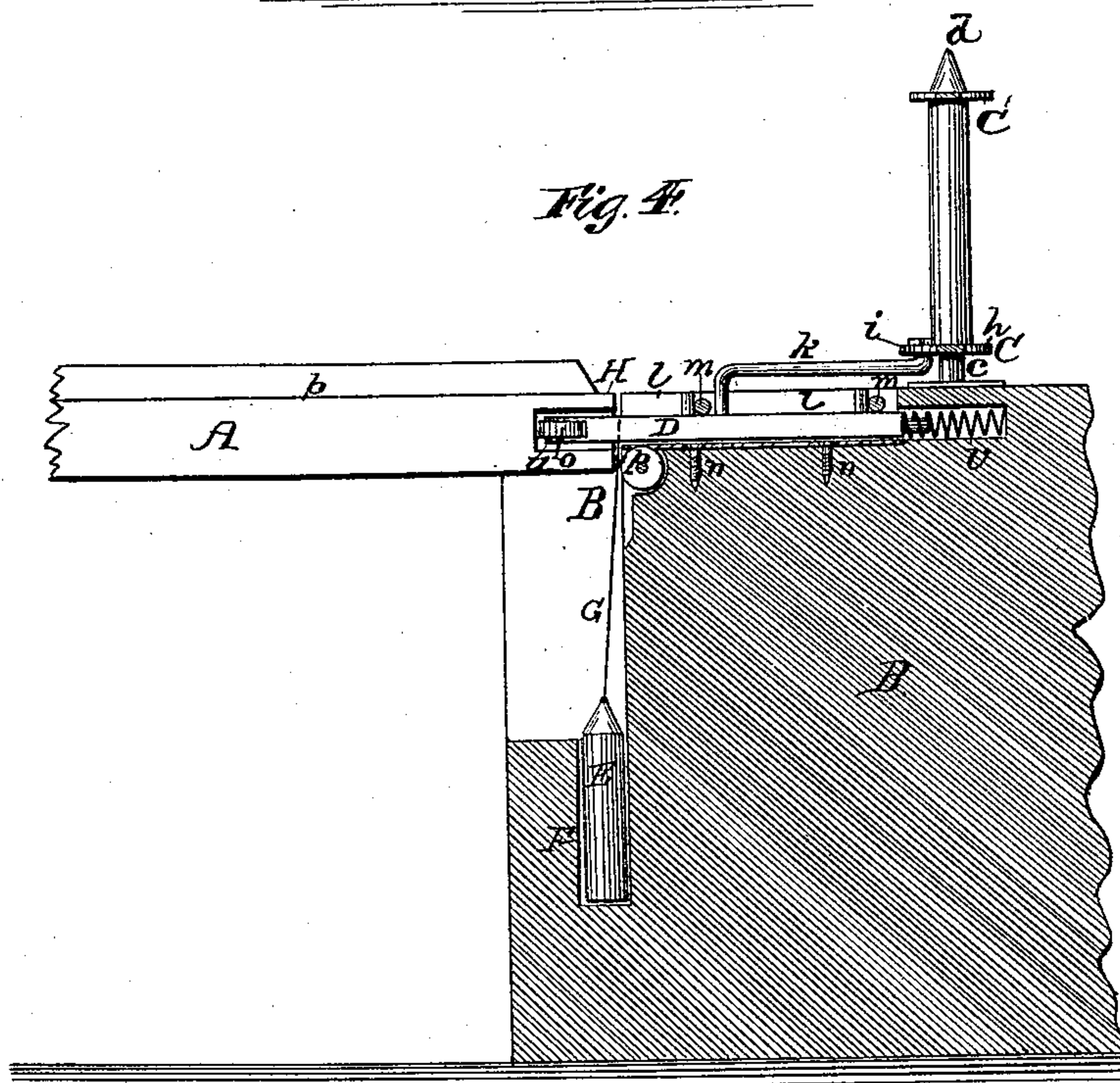


Fig. 4.



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UNITED STATES PATENT OFFICE.

ALBERT R. SHERMAN, OF NATICK, ASSIGNOR TO STEPHEN A. JENKS, OF
PAWTUCKET, RHODE ISLAND.

DRAW-BRIDGE GATE.

SPECIFICATION forming part of Letters Patent No. 226,796, dated April 20, 1880.

Application filed March 18, 1879.

To all whom it may concern:

Be it known that I, ALBERT R. SHERMAN, of Natick, in the county of Kent and State of Rhode Island, have invented certain new and useful Improvements in Ferry-Guards; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification, in which—

Figure 1 represents a plan of the two ends of a roadway leading to a horizontally-revolving bridge to which my improvements have been applied, in which the two gates at each end of the roadway abutting the bridge are respectively shown as being open on one side and closed on the other. Fig. 2 represents a similar but enlarged view of one end of the roadway and of one-half of the bridge, showing both gateways closed, the bridge having swung around so as nearly to clear the abutment at the end of the roadway. Fig. 3 represents an end elevation of one of the abutments at the end of the roadway, both gates being closed, as in Fig. 2. Fig. 4 represents a longitudinal section of the gate-operating mechanism.

My invention relates to a new and improved mode of constructing and operating automatic gates for the protection of foot-passengers, teams, &c., from accidents at the approaches to landings or bridges when the latter are open to give passage to vessels, &c., and especially to that class of the latter which in opening turns horizontally on a vertical pivotal standard or support.

My improvement consists, first, in constructing a gate with a hollow or tubular supporting-post arranged in its central part, and with its inner end curved upwardly, in combination with a stationary pivotal standard; secondly, in an improved mode of constructing a gate adapted to guarding the approaches to a bridge, ferry, or railway-crossing, whereby it is not only rendered lighter and stronger, but forms

a better guard against the passage of horses, teams, &c., and at the same time allows foot-passengers to pass under it out of the way of danger; thirdly, in a new mode of operating the gates where two are used for guarding the approach to a bridge and the one is opened or closed before the other, according to the direction in which the bridge is moved, whereby the mechanism is much simplified and rendered less liable to get out of order, while the operation itself is much more easily effected; fourthly, in an improved construction of the ends of the bridge at both sides, by which the cam-shaped part, which actuates the slides that open the gates, and the receding or tapering parts, which allow the slides to be drawn out to close them, shall each commence at a point at or near the line on each side which divides the road-bed from the footwalk, whereby, by the movement of the bridge in either direction, the gates at both ends of the bridge on the opening sides of the draw will be the first to be closed, leaving the other gates open free for foot-passengers until the bridge has nearly left the abutments, and so the bridge, in closing the draw, will cause the gates first passed by it to open, leaving the others closed to guard the approach on the open sides of the draw until the bridge is nearly in its locked position, ready as well for the passage of teams as of passengers; fifthly, in a new and improved combination of devices for operating the gates; sixthly, in the combination of two slides and mechanism for respectively connecting the same with two gates, each gate and its operating mechanism working independently of the other, and all arranged on an abutment which forms the end of a roadway leading to or from a bridge, with a horizontally-swinging bridge the end of which adjoining the abutment is provided with a cam-face on its central part corresponding in length to the breadth of the roadway, or nearly so, and with a curved groove or recess at its sides corresponding in length to the width of the footwalks, or nearly so. Each of these curved recesses springs from a point in a line, or nearly so, with the

junction of the roadway with the footwalks, and gradually increases in depth until it reaches the outer side of the bridge.

To enable others skilled in the art to make, 5 construct, and use my improvements, I will now proceed to describe its parts in detail, omitting a particular description of such parts of the bridge, roadway, and abutments as are non-essential to a full understanding of the 10 invention.

In the drawings, A represents a horizontally moving or rotating bridge, and which for the purposes of this invention may, in its general construction, be built and operated in the 15 usual or in any approved or known way.

a represents the road-bed as well on the bridge as on the roadway leading to or from the abutments B. (See Fig. 1.)

b represents the foot ways or walks leading 20 to and from the bridge, as also the footways on the bridge.

At a point just inside the line of each of the footwalks *b*, adjoining the road-bed *a* on each of the abutments B, and at a short distance from the outer face of the latter, which 25 abuts the bridge, is firmly and securely erected at each side a stationary pivotal post or standard, *c*, in any suitable, known, and approved way, on which is mounted a gate, C, at a point 30 lying between its ends, and which point is regulated, as a rule, by the width of the footwalks for one side and the one-half of the width of the road-bed for the other. To this end, at the point thus fixed, a tubular or socketed post, *d*, open below and closed at top, is 35 secured to the upper and lower bars of the gate, and which is journaled or made to fit snugly, yet loosely, and rest upon the upper end of the pivotal standard *c*, upon which it 40 is hung and turns, as shown in Fig. 3, a part of the tubular suspension-post being broken off to illustrate that fact. The gate thus hung becomes, literally, two in one, the shorter part, *e*, forming the gate that guards the footways *b*, 45 and the longer part, *f*, forming, in connection with the corresponding half of the adjoining gate, the guard for the road-bed. That part which forms the gate *e*, that protects the footway, has its upper and lower rails running horizontally and parallel, or nearly so, with each 50 other, while the other part, *f*, has its upper and lower rails, and which are, preferably, a mere continuation of the rails of the part *e*, curved upwardly, the upper rail slightly so and the lower one much more curved, so that 55 the outer ends of the two gradually approach each other.

By this construction the rods or bars *g*, which connect the two rails on the part *f*, as they 60 recede from the standard *c*, which supports the gate, gradually grow shorter and shorter, while those on the part *e* are made of uniform length, or nearly so.

This construction materially lightens the 65 part *f*, (the longer part,) and enables part *e* the more nearly to counterpoise it, and thus

give greater steadiness and less friction to the gate from a more uniform balance upon its standard, and which can be completely effected by adding enough weight, in an ornamental manner or otherwise, to the shorter 70 part, *e*.

This construction of the gate by elevating the lower rails of the two gates *f* also furnishes passage to foot-travelers who may have 75 been inclosed between the end of the abutment and the gates when the latter were closed, as they can readily slip under them, while it, at the same time, by its increased elevation, serves a better purpose for arresting the passage of horses and teams. These features 80 can be well understood from an inspection of Fig. 3.

Now, by reference to Figs. 2 and 4, it will be seen that the enlargement *h* of the lower 85 bar of each gate, formed for the reception of the tubular support *d*, by which the gates are suspended or pivotally mounted, is provided with a projecting arm or lug, *i*. This lug I prefer to arrange on the side of the support 90 next the longer part, *f*, of the gate. Near the outer end of this arm or lug *i*, I make an opening to receive the pivotal end of a crank-rod, *k*, the other end of which is pivotally connected to a slide-bar, D, its end for this purpose being bent downwardly and taking into a hole 95 pierced vertically into or through slide-bar D. The connection through the crank or connecting rod *k*, between the gate C and the slide-bar D, is well illustrated in Fig. 3. 100

Slide-bar D is arranged in a box, *l*, the sides of which are connected together at their front and rear ends by a cross-bar, *m*. These cross-bars serve the double purpose of giving 105 strength to the box and of forming stops for the inward and outward throw of the slides as they are pushed in to open the gates and drawn out to close them.

Immediately in front of the two bars *m* on the inside of the box, and which pass through 110 holes in the bottom of the box and into the abutment, are driven strong bolts *n*. These serve the purpose of firmly securing the box to the abutment B.

The outer end of each slide-bar D is bifurcated and provided with a friction-roll, *o*, to 115 lessen friction between bar D and the face end H of the bridge A as the latter operates upon the former.

To the under side of the box *l*, or to the 120 abutment proper, is secured in suitable bearings a small grooved friction-pulley, *p*, over which passes a strong cord or rope, *G*, preferably of wire, the inner end of which passes underneath and in a line with the bar D, and 125 is secured in any suitable way to the under side of said bar at or near its inner end. To the outer end of this cord *G* is attached a weight, *E*, of weight sufficient, when the pressure of the bridge is removed from bar D, to 130 drag it outward, and with it the gate, so as to close the latter.

Box *l* is provided with a suitable cover, which incloses it, and also the crank-lever *k*, to protect the mechanism from injury, an opening being left at one end to give free passage to that end of the crank-lever which connects with the gate. This cover can be securely but removably fastened to box *l*, or locked to it, if desired.

Each gate is provided with a separate set of the mechanism and the box described, so that each one of the two gates arranged on each abutment is acted upon separately and alternately.

The outer sides of the footwalks are preferably provided with parapets, although not represented in the drawings, and so with the bridge.

The end faces, *H*, of the bridge are curved to correspond with the curve of the circle in which they turn, the ends of the abutments being also curved to correspond therewith.

The face of the central part of the bridge from side to side of the roadway—*i. e.*, from *s* to *s'*—is formed vertically flush with and in the same general curve of the outer end and upper side of the bridge; but from the points *s* and *s'* to the points *t* on both the outer sides and ends of the bridge the ends are provided with curved recesses *u*, (shown in Fig. 2,) which, commencing at *s* or *s'*, gradually recede from or become eccentric to the general curve of the end of the bridge until they terminate at a point on the outer sides of the bridge, which will allow the bars *D* and their friction-rolls *o* to be drawn fully out by the weight *E* without bringing a sudden or violent strain upon the stop-bars *m*, but which, on the contrary, will allow them to be evenly and gradually drawn out until they quietly rest or bear against said stop-bars *m*.

Instead of weights for dragging out the bars to close the gates, springs *v* may be used; but I much prefer the weights and their mode of attachment and operation of the bars *D* as much more simple and effective and much less liable to get out of repair.

Weights *E*, if desired, can find lodgment and protection by passing, as they descend, into suitable receptacles *F*, formed in the end of the abutment.

The operation is simple and easily understood.

Let us suppose the bridge *A* is in position to receive both teams or horses and foot-passengers, and in which position I prefer to have it locked while being used for their passage across, and which may be done in any of the usual and known ways. The lock is first unlocked, and the bridge, by the usual or other known means, moved to one side. As it moves, the bars *D*, next the opening sides of the draw, by the action of the weights *E*, become drawn out, gradually closing the gates on those sides until that operation for those gates is perfected. This movement of the bridge continues, the passengers meanwhile

having free access to or egress from the bridge, until the same recessed ends of the bridge have reached the slide-bar *D* of the other gates, when, as the recesses gradually pass these bars, the remaining gates gradually become closed as the ends of the bridge finally leave the abutments, the double gates thus closing separately and successively.

On the passage of the vessel or vessels for which the bridge was opened, and as the operation of closing the bridge commences, the gates next the sides of the approaching bridge are first gradually opened by the action of the recessed cam-abutments of the bridge on the bars *D* until finally opened. Then these remain open, giving passage to the foot-passengers, until the same recessed ends act upon the remaining slide-bars *D* on the opposite sides of the abutments, when their gates commence to gradually open, and which finally fully open when the bridge has reached its locking position, and thus give free passage as well to teams or horses as to foot-passengers.

If desired, slide-bars *D* may be operated to force them outward by the combined use of weights and springs, substantially as shown in Fig. 4; but as a rule I prefer to use the weights and cords alone.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A gate having a hollow or tubular supporting-post, *d*, arranged in its central part, and whose inner end, *f*, is curved upwardly, in combination with a stationary pivotal standard, *c*, as and for the purpose set forth.

2. A gate having a hollow or tubular supporting-post, *d*, arranged in its central part, and whose inner end, *f*, is curved upwardly, as and for the purpose substantially as set forth.

3. The double gates *e f*, centrally pivoted and arranged on the ends of the abutments, and provided with a slide-bar, *D*, and actuating-rod *k* for each double gate, combined with the bearing end of the draw-bridge, whereby each of the centrally-pivoted double gates is separately, independently, and successively closed by its own mechanism, substantially as described, and for the purpose set forth.

4. A horizontally rotating or swiveling bridge whose ends are provided with a curved face, *H*, and cam-recesses *u* at each side of the end of the bridge, in combination with the slide-bar *D* and rod *k*, directly connected with a centrally-pivoted double gate, *e f*, substantially as described, and for the purpose set forth.

5. A suspended gate, *C*, constructed substantially as described, in combination with a slide-bar, *D*, and crank-rod *k*, directly connecting the slide-bar with the gate, substantially as and for the purpose set forth.

6. In combination with a horizontally-swinging draw-bridge having on its end a cam-face,

H, and two grooves or recesses, *u*, at its sides, an abutment, B, provided with two gates, C, and two slide-bars, D, arranged and operating in the manner and for the purpose set forth.

5 7. In combination with an abutment leading to or from a bridge, two gates, C C, separately, independently, and alternately operated each by means of its own slide-bar D and crank-rod

k, in the manner substantially as and for the purpose set forth. 10

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

ALBERT R. SHERMAN.

Witnesses:

F. J. RABBETH,

ALONZO L. JENKS.