

(No Model.)

F. A. PHILBRICK.  
DRAWBRIDGE GATE.

No. 486,793.

Patented Nov. 22, 1892.

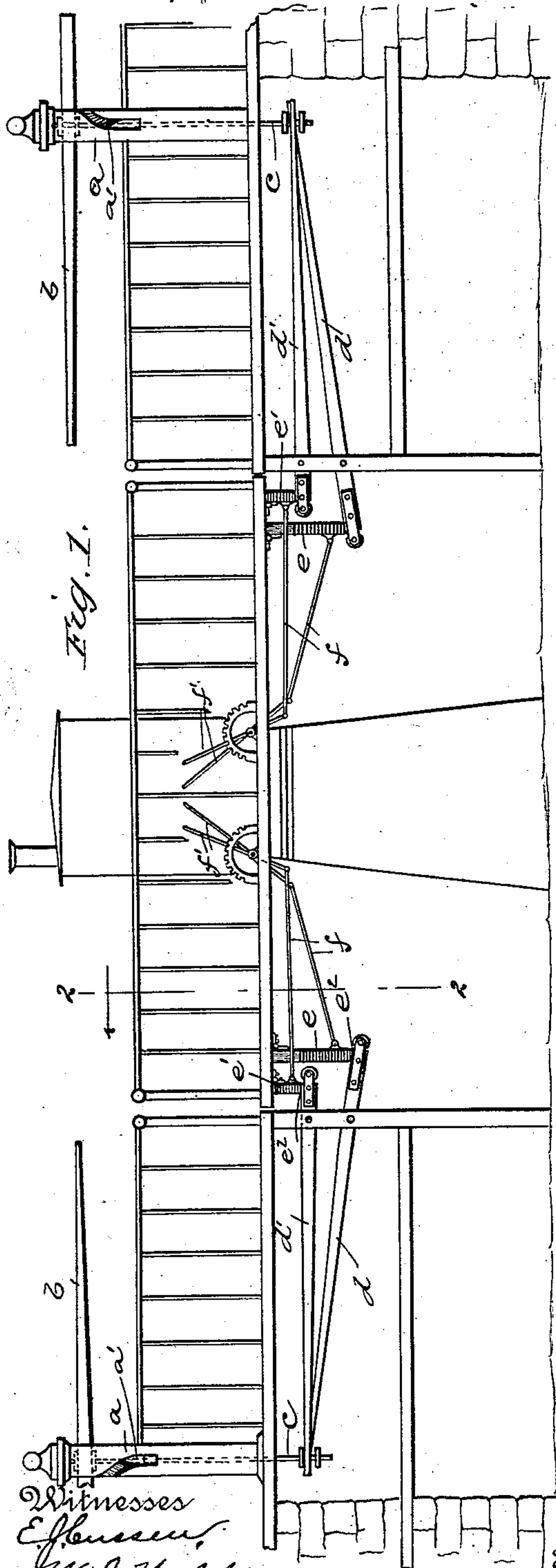


Fig. 1.

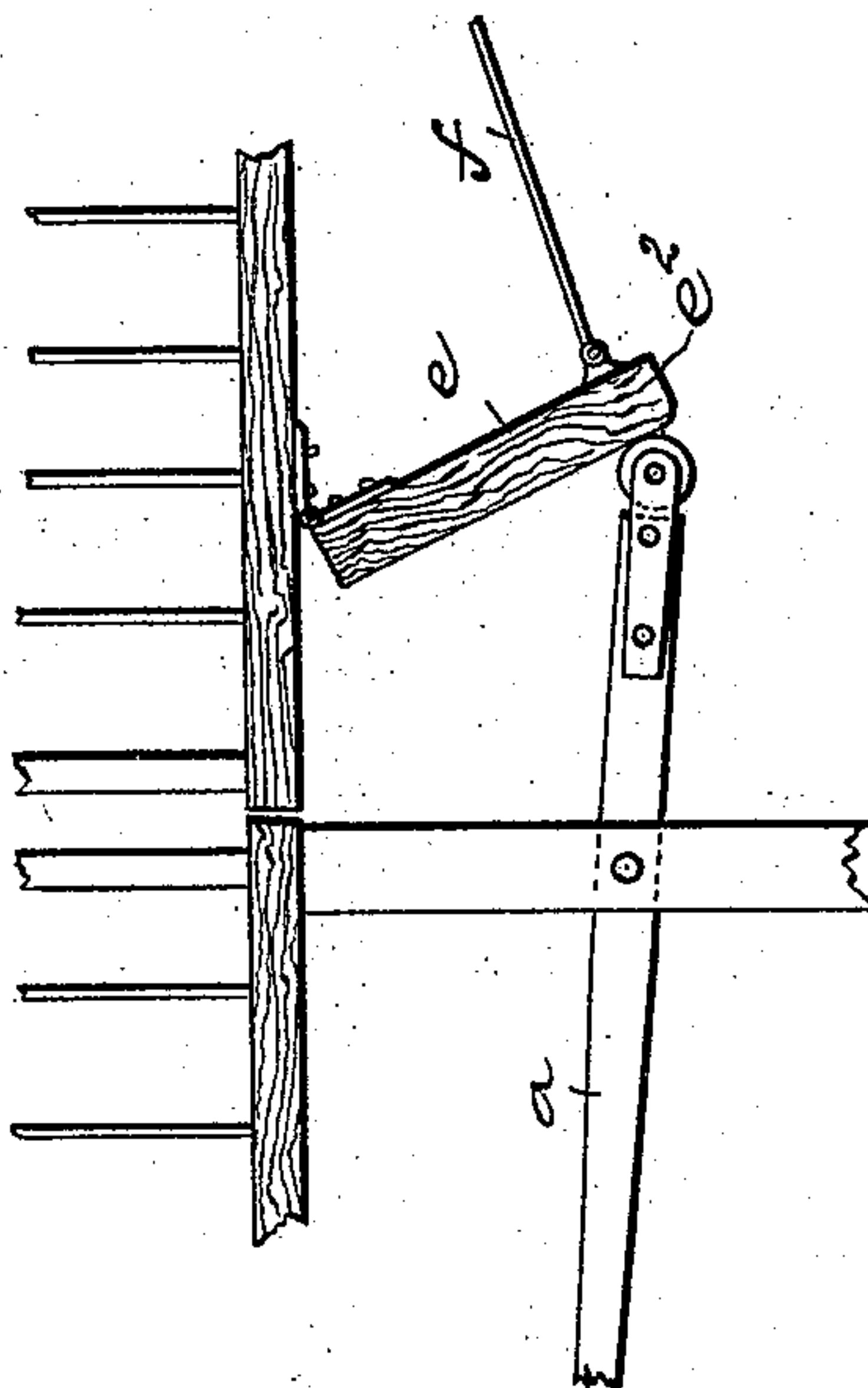


Fig. 3.

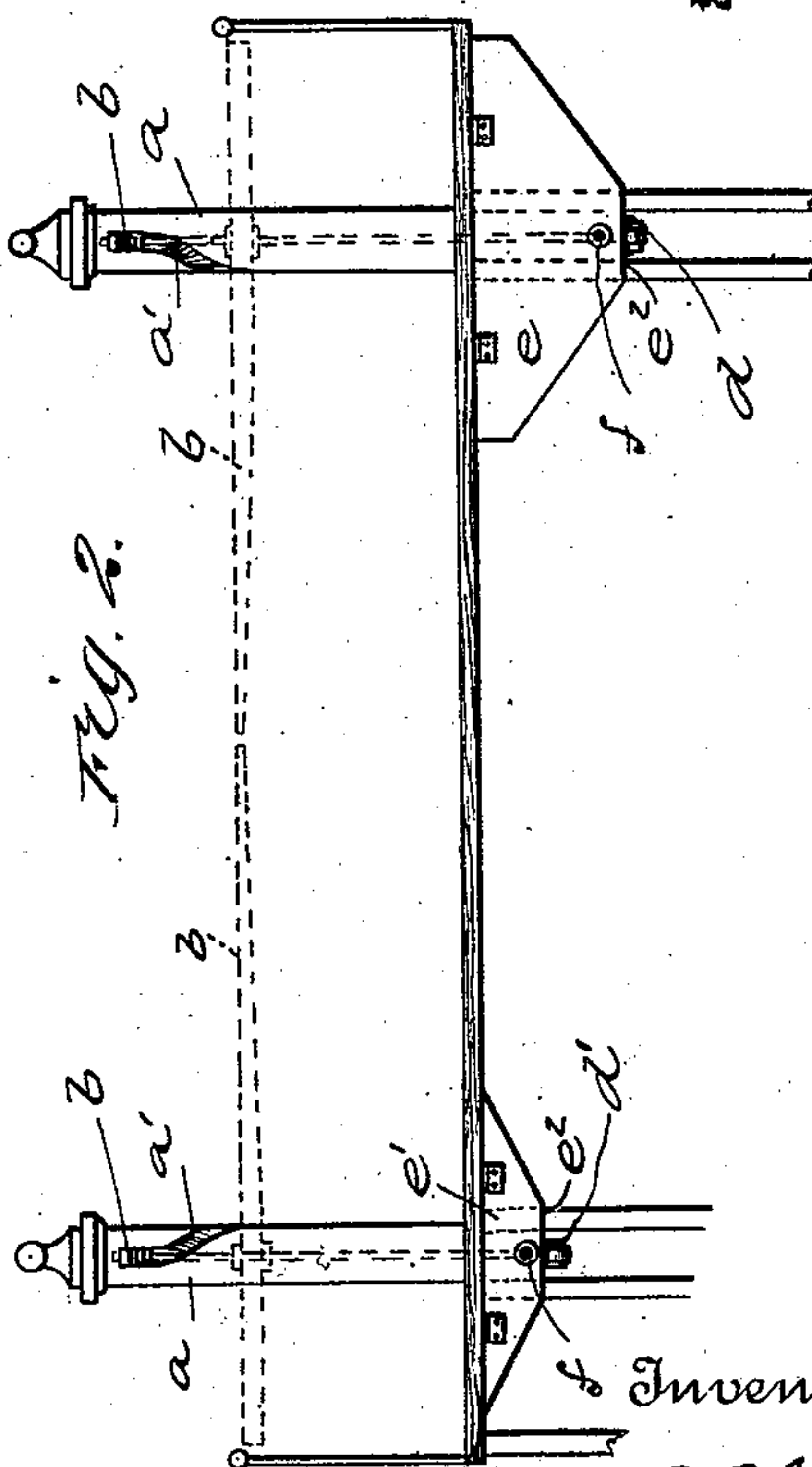


Fig. 2.

Witnesses  
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By his Attorneys  
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# UNITED STATES PATENT OFFICE.

FRANK A. PHILBRICK, OF CHICAGO, ILLINOIS.

## DRAWBRIDGE-GATE.

SPECIFICATION forming part of Letters Patent No. 486,793, dated November 22, 1892.

Application filed April 5, 1892. Serial No. 427,924. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK A. PHILBRICK, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Drawbridge-Gates, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

10 Figure 1 represents a side elevation of a drawbridge provided with my improvements; Fig. 2, a transverse sectional view of the same, and Fig. 3 a detail view hereinafter described.

This invention has for its object to provide 15 improved means for automatically closing and opening the gates of drawbridges; and it consists of certain features of construction hereinafter pointed out and claimed.

In the drawings annexed, *a* designates the 20 gate-posts, four in number, and each carrying a gravitating gate-bar *b* of suitable length. A pair of the posts is located, as usual, at each end of the draw, the posts of each pair being erected on opposite sides of the roadway leading to the draw. The inner ends of the gate- 25 bars work in spirally-formed slots *a'*, formed longitudinally of the posts and beginning at or near the upper ends of the posts and extending down a suitable distance. The slots 30 preferably extend entirely through the posts and each makes a quarter-turn from its upper to its lower end. The upper end of each slot is parallel with the roadway, and from thence it extends down and makes a gradual 35 spiral turn quarter-way around the post and terminates at right angles to where it started—that is, at right angles to the roadway. When the draw is closed, the inner ends of the gate-bars are supported in the upper ends 40 of the slots (the gate-bars being thereby held up out of the way at one side of and parallel with the roadway) by means of vertically-movable rods *c*, which loosely connect at their lower ends, below the roadway, to long levers 45 *d d'*, which extend inwardly and terminate under the respective ends of the draw, these levers being pivoted near their inner ends in the adjacent framework, as shown, and having their inner ends kept depressed by mechanism on the draw. One of the levers *d* of 50 each pair extends under the draw a short distance farther than the other and is pivoted

in a lower plane thereof. The pivoted draw, which is of the usual or any improved construction, is provided at each end, on its under side, with a pair of depending cams or wings *e e'*, which are arranged at right angles 55 to the roadway and near enough to the ends of the draw to engage and depress the inner ends of the levers *d d'* when the draw is closed. 60 The lower edge of each cam is double inclined, so that whichever way the draw turns in closing the inclined edges will strike the ends of the levers and depress them without undue friction or jar. Between the oppositely-in- 65 clined edges of each of the cams its lower edge is straight, as at *e<sup>2</sup>*, which horizontal parts serve to hold the levers in their depressed position while the draw is closed. It will be observed that one *e'* of the cams of each pair is 70 smaller and shorter than the other and secured a little to one side of the same vertical plane thereof, the object of this arrangement being to enable each cam to operate its own lever irrespective of the direction in which 75 the draw swings.

The operation of the foregoing devices is evident. While the draw is closed the cams hold the inner ends of the levers depressed, and these levers through the medium of the 80 vertical rods hold the gate-bars in the upper ends of the spiral slots, the slots holding the gate-bars to one side and parallel with the roadway. When the draw is swung open in either direction, the cams release the levers 85 and the gate-bars are permitted to descend by gravity. In falling the bars are turned a quarter-revolution by the spiral slots, so as to bring them around across the roadway, as shown, the bars of each pair nearly touching in the center of the roadway. In closing the draw the 90 cams automatically raise the gate-bars and turn them to one side by depressing and holding down the inner ends of the levers. In the operation of closing and opening the draw it 95 will be observed the larger cam will not interfere with the shorter levers, nor will the smaller cams engage the longer lower levers. If desired, the cams may be hinged to the under side of the draw, so as to be capable of 100 swinging inwardly, and the adjacent ends of the levers may be provided with antifriction-rollers, as shown. The cams are connected to inwardly-extending rods *f*, which are piv-



otally connected at their inner ends to the lower ends of vertical levers  $f'$ , pivoted on the draw within easy reach of the operator. The object of this arrangement is to enable  
 5 the attendant to lower the gate slowly before the draw is opened, it being evident that when the hinged cams are swung inwardly by the rods and levers the inner ends of the levers will be free to swing upwardly and permit the  
 10 gate-bars to descend. If the cams are swung in gradually, it will be observed the rollers on the ends of the levers will run slowly up the outer inclined faces of the cams, as shown in Fig. 3, and thereby permit the gate-bars to  
 15 slowly descend to a closed position. Then by swinging the inclined cams outwardly again by means of the levers the inner ends of the levers may be forced downwardly under the lower edge of the cams and the gate-bars  
 20 opened, this action being facilitated by the antifriction-rollers, which bear against the outer inclined faces of the cams, as is evident.

Having thus fully described my invention, what I claim, and desire to secure by Letters  
 25 Patent, is—

1. The combination of the draw and the adjacent framework, the posts supporting horizontally-swinging and vertically-moving gate-bars, levers pivoted in the framework and  
 30 having their outer ends connected to the gate-bars and their inner ends extending under the draw, and cams on the draw, adapted to depress the inner ends of the levers, substantially as described.

35 2. The combination of the posts provided with longitudinal spiral slots, the gate-bars having their inner ends working in said slots,

and means for vertically moving the gate-bars in the slots, substantially as described.

3. The combination of the draw and adjacent framework, the posts carrying vertically-movable gate-bars working in spiral slots in the posts, pivoted levers connected to the inner ends of the gate-bars by vertical rods and having their inner ends terminating under  
 45 the draw, and cams on the draw, adapted to depress the inner ends of the levers, substantially as described.

4. The combination of a draw and the adjacent framework, the posts carrying horizontally-swinging and vertically-movable gate-bars, levers pivoted in the framework and connected at their outer ends to the gate-bars and having their inner ends extending in under the draw, one lever of each pair extending  
 55 in farther than the other and pivoted below it, and the inclined cams on the draw, one of the cams being smaller than the other and located nearer the end of the draw, substantially as described.

5. The combination of the draw and the adjacent framework, the posts and gate-bars, and the long levers for operating the bars, the inner ends of these levers being provided with rollers, the hinged inclined cams on the draw,  
 65 and means for swinging them inwardly, substantially as described.

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

FRANK A. PHILBRICK.

Witnesses:

FRED H. VAN WAGMEN,  
 HENRY H. SALUSBURY.