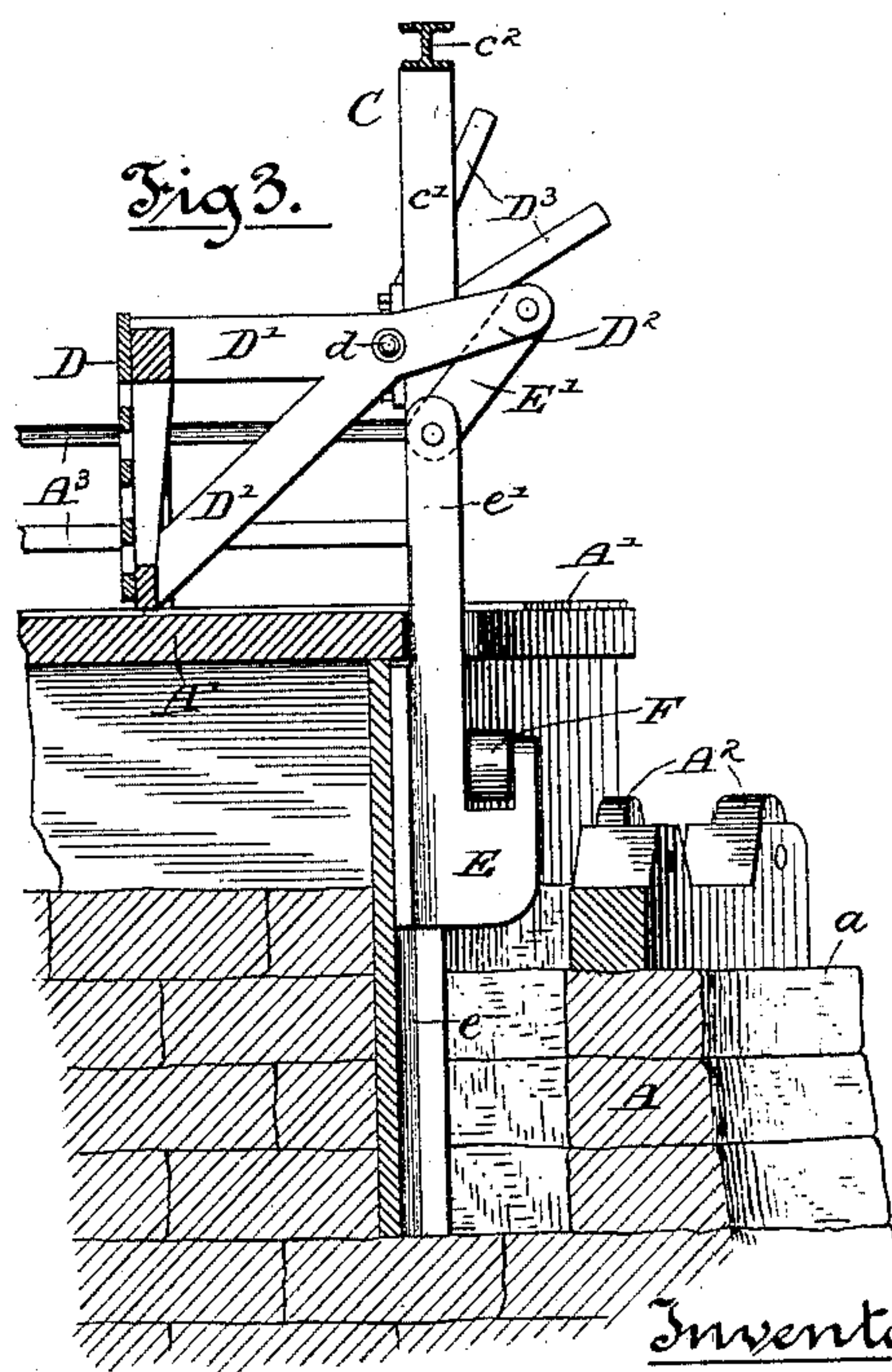
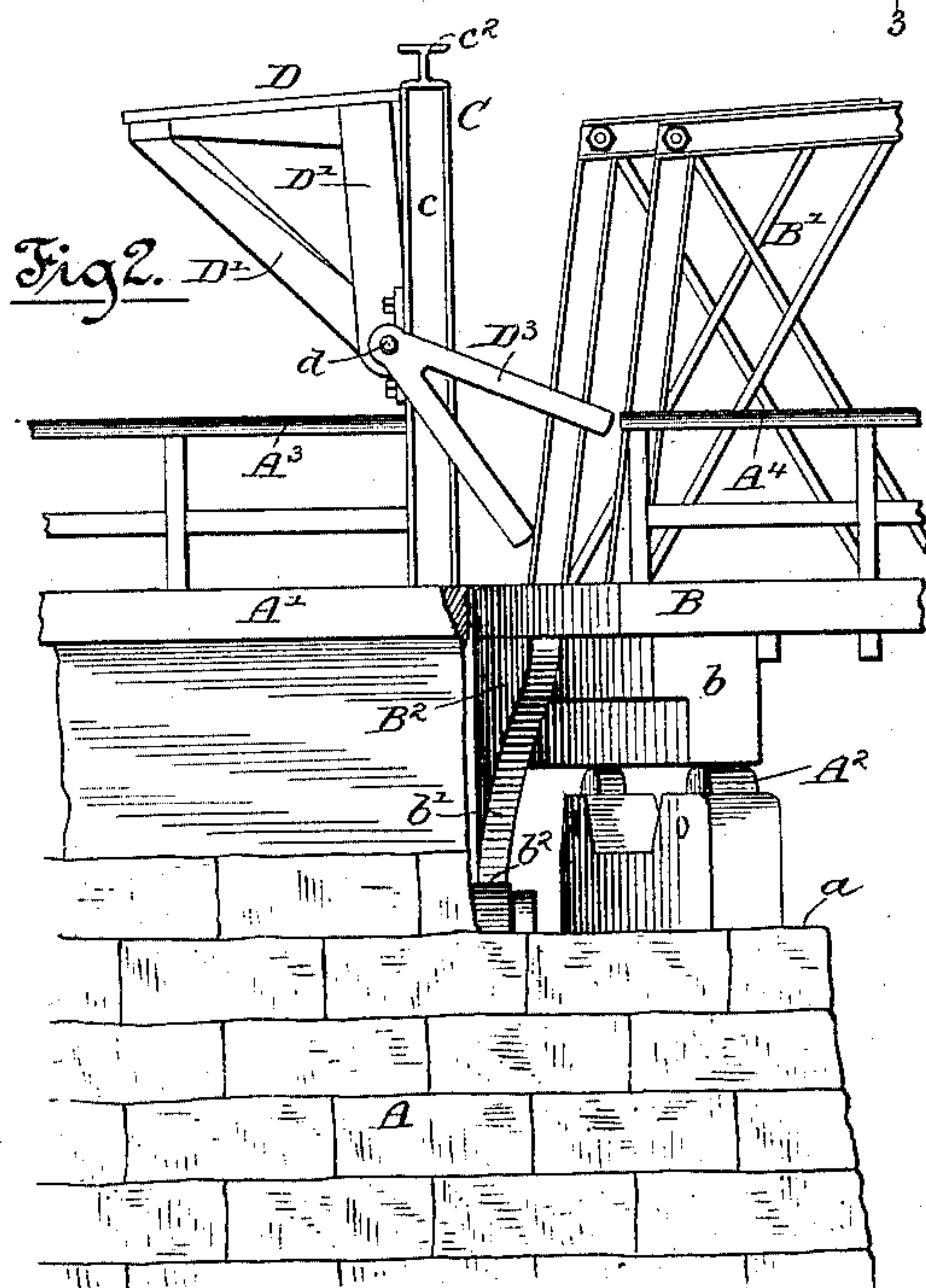
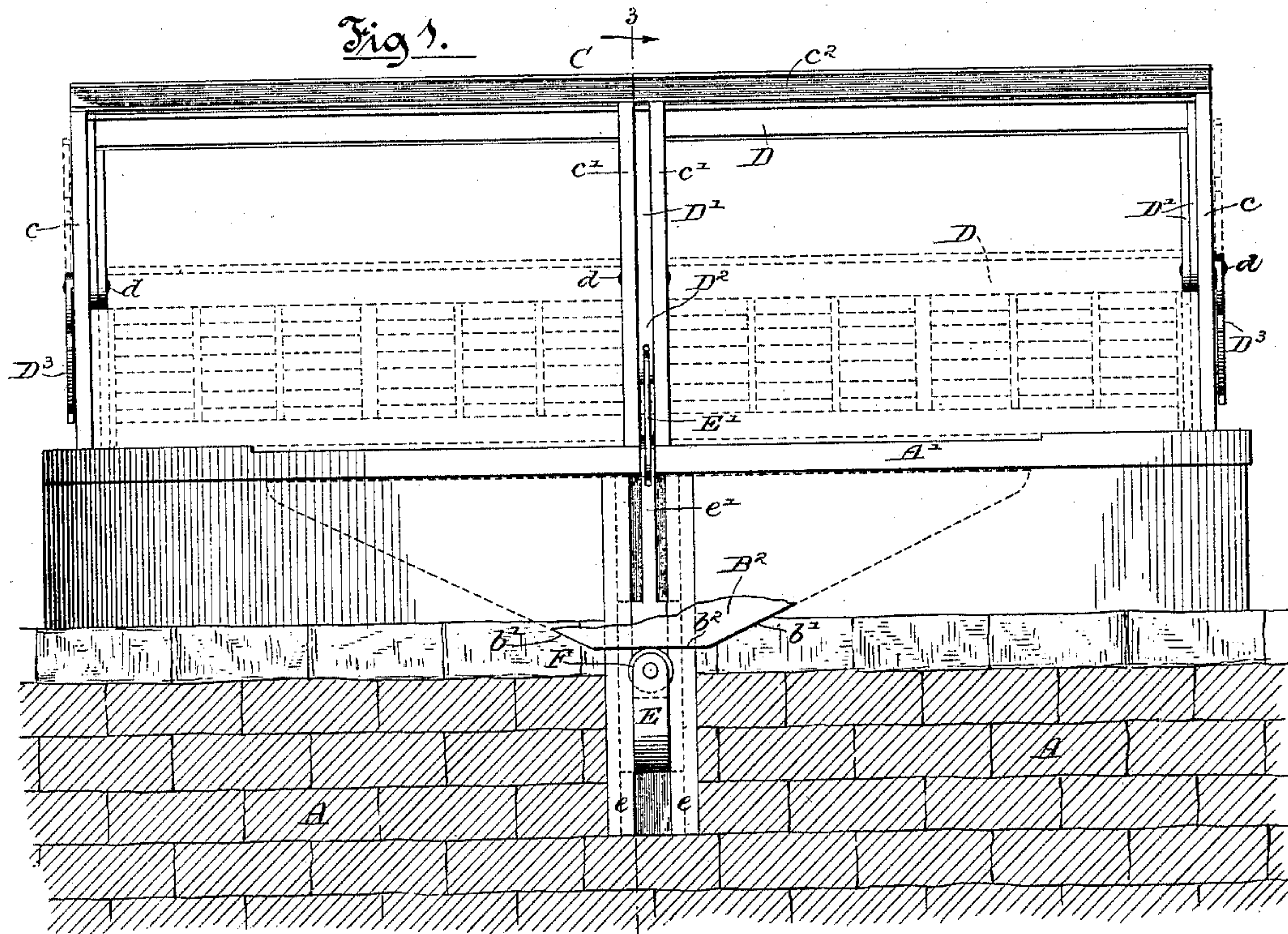


(No Model.)

H. STROM.  
AUTOMATIC GATE FOR SWING BRIDGES.

No. 435,106.

Patented Aug. 26, 1890.



*Witnesses*  
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# UNITED STATES PATENT OFFICE.

HANS STROM, OF CHICAGO, ILLINOIS.

## AUTOMATIC GATE FOR SWING-BRIDGES.

SPECIFICATION forming part of Letters Patent No. 435,106, dated August 26, 1890.

Application filed April 22, 1890. Serial No. 349,028. (No model.)

*To all whom it may concern:*

Be it known that I, HANS STROM, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful  
5 Improvements in Automatic Gates for Swing-Bridges; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of  
10 this specification.

This invention relates to improvements in gates or guards placed upon the approaches of bridges, and which are automatically operated by opening and closing of the bridge.  
15

The invention relates more particularly to that class of gates which are pivoted to the approach above the line of travel thereon and adapted to be swung down across the  
20 approach automatically when the bridge is open.

One object of my invention is to produce such a bridge-gate in as simple construction as possible consistent with strength, durability, and ease of operation, and to this end the invention consists in the construction and arrangement of parts herein illustrated and described, and more particularly set forth in the appended claim.  
25

In the drawings, Figure 1 is a vertical elevation of my invention as applied to the approach of a bridge, looking at the same from the water side of the approach. Fig. 2 is a side elevation of the same, and Fig. 3 is a  
30 vertical sectional view taken upon lines 3 3 of Fig. 1.

In the drawings, A represents the stone abutment, and A' the floor of the approach, the edge of which is set back from the edge  
40 of the abutment, as will be readily understood, to form a step or shoulder *a*, upon which pulley-blocks or supporting-rollers A<sup>2</sup> are placed.

B represents the end of a swinging bridge,  
45 and B' the superstructure thereof.

*b* is a depending portion or plate which bears or rests upon the roller-bearings A<sup>2</sup> when the bridge is closed. Depending from each end of the bridge, outside of the plate *b*,  
50 is the arm or bar B<sup>2</sup>, provided with inclined surfaces *b'* extending at equal angles on each

side of the center and horizontal portion *b*<sup>2</sup> of the bar, thus forming a double cam of said bar B<sup>2</sup>.

C is the gate-supporting structure, consisting of an upright post *c* at each end and two  
55 upright posts *c'* in the center secured together by a top rail *c*<sup>2</sup>.

D is a gate which may be of any ordinary pattern or style and which is of sufficient  
60 length to extend transversely across the width of the approach.

D' D' are arms extending from the gate. Said arms are pivotally secured at *d* to the uprights or posts *c c'* by any suitable or convenient means. I prefer to pivot the end  
65 arms D' to the inside of the uprights *c c'*, but the central arm D', I prefer to secure centrally between the two uprights *c'*. The central arm D' is provided with a horizontal extension D<sup>2</sup> rigidly secured thereto, said extension being in the direction of the bridge.  
70 The pivotal connections of the arms D' with the uprights *c c'* are of such height as to bring the lowermost portion of the gate D  
75 about on a level with the cross-rails *c*<sup>2</sup> when the said gate D is raised.

Located centrally of the approach and in the front face thereof are the guideways *e e*, in which a vertical movable slide E is secured. The upper portion or arm *e'* of said  
80 slide passes upwardly through the floor A' of the bridge-approach and into the space between the two uprights or supports *c'*. A link E' pivotally joins the upper end of the  
85 slide E to the outer end of the rigid extension D<sup>2</sup>. The lower end of the slide E is provided with a roller or spool F, movably secured thereto outside of the outer face of the  
90 abutment and in such position as to be engaged by one or the other of the inclined surfaces *b'* of the depending cam-bar B<sup>2</sup> when the bridge is being closed.

From the above description of the construction of my invention, the operation of  
95 the same will be readily understood to be as follows: If the bridge is closed, as illustrated in Fig. 1, the central horizontal portion *b*<sup>2</sup> of the depending cam-bar B<sup>2</sup> rests upon the  
100 roller F and causes the slide E to assume its lowermost position, thus bringing the link E' vertically between the two supports *c'* and



causing the gate D to be raised to the positions illustrated in full lines in Figs. 1 and 2. When the bridge is opened, either to the right or to the left, the weight of the gate D is such as to cause an upward strain upon the outer end of the extension D<sup>2</sup> as soon as the inclined or cam portion b' of the depending bar B<sup>2</sup> comes opposite to the vertical movable guide E and roller F, whereupon said guide will move upwardly as fast as the bridge continues its swinging movement to the right or left. The gate thus drops by its own specific gravity and will stand across the approach to the bridge, as shown in dotted lines in Fig. 1 and in full lines in Fig. 3. The gate is raised automatically by the closing of the bridge, because the cam-edge of the depending bar B<sup>2</sup> will ride upon the roller F and depress it and the slide E on which it is carried, which movement brings the outer end of the rigid extension D<sup>2</sup> down into the position first described and raises the gate D, as will be readily understood.

By reason of the extension D<sup>2</sup> and the link E' standing out from the frame or posts c' toward and in the path of the end of the swinging bridge, it may be deemed advisable not to extend the superstructure B' of said bridge entirely to the end of the floor of the bridge. In such case the spaces between the hand-rail A<sup>3</sup> on either side of the bridge-approach and the end of the hand-rails A<sup>4</sup> on

the bridge may be spanned, when the gate D is up or opened, by arms or bars D<sup>3</sup> which extend from the end bars D' in the direction of the bridge. In the present instance the arms D<sup>3</sup> are rigidly secured to one end of the rotating spindle d, by which the arms D' are pivotally secured to the standards c. When the gate is up, the space between the hand-rails is closed by said arms D<sup>3</sup>, and when the gate is down the said space is opened, the arms D<sup>3</sup> being up in the air, as shown in Fig. 3.

I claim as my invention—

The combination of a frame, as C, secured transversely upon the approach to a bridge, a gate, as D, pivotally secured to said frame, a vertical movable slide, as E, the upper end thereof being pivotally connected to said gate, and a roller, as F, secured to the lower portion of said slide, with a bridge provided at the end of its swinging section with a depending two-part cam, as B<sup>2</sup>, adapted to engage said roller and thus automatically actuate the gate, substantially as described.

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

HANS STROM.

Witnesses:

TAYLOR E. BROWN,  
S. GRIMSTAD.