

(No Model.)

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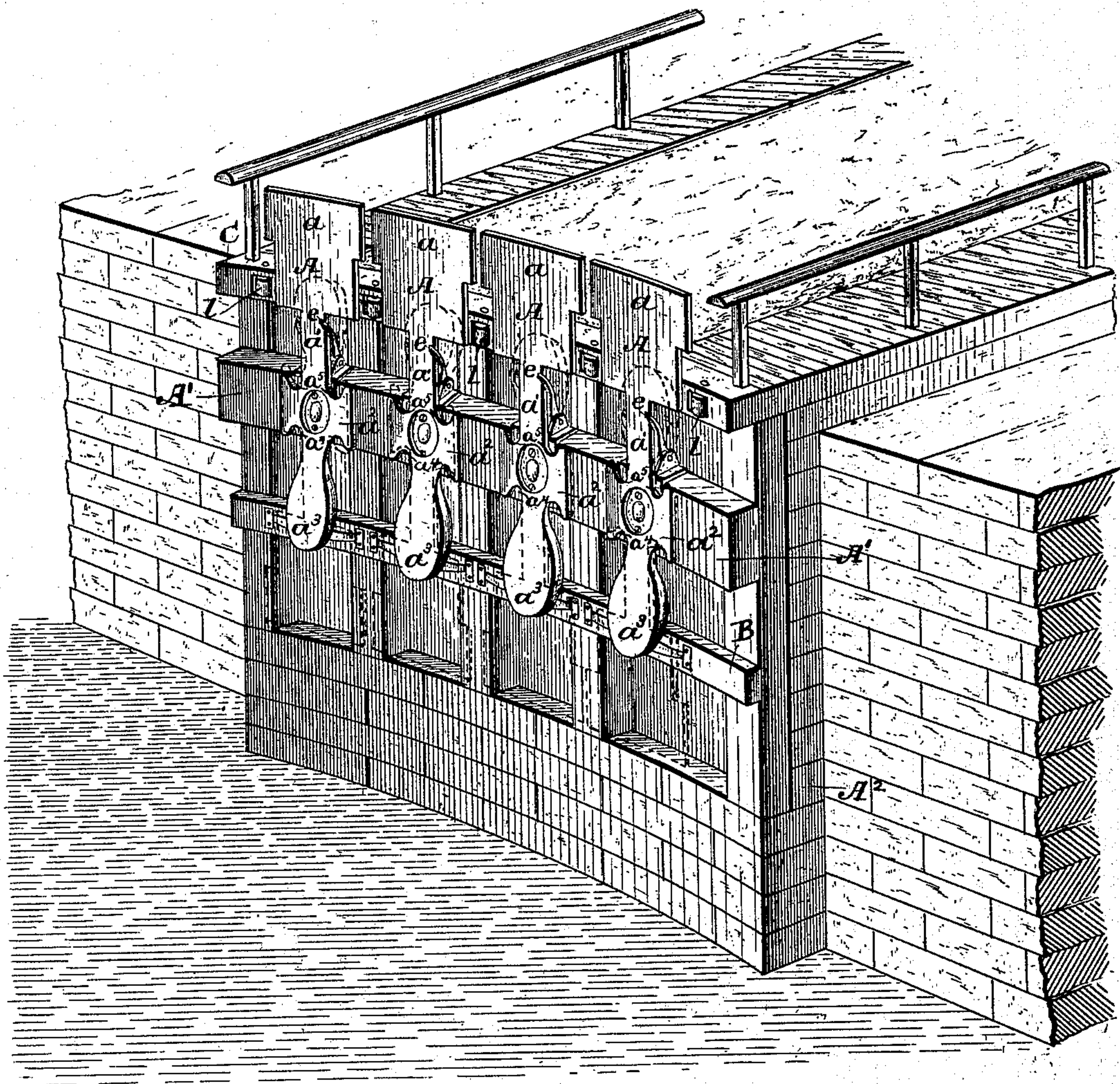
A. BOSCH.

GUARD FOR DRAW BRIDGES.

No. 325,905.

Patented Sept. 8, 1885.

FIG. 1.



ATTEST.

*J. Henry Kaiser*  
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INVENTOR.

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Attorney



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2 Sheets—Sheet 2.

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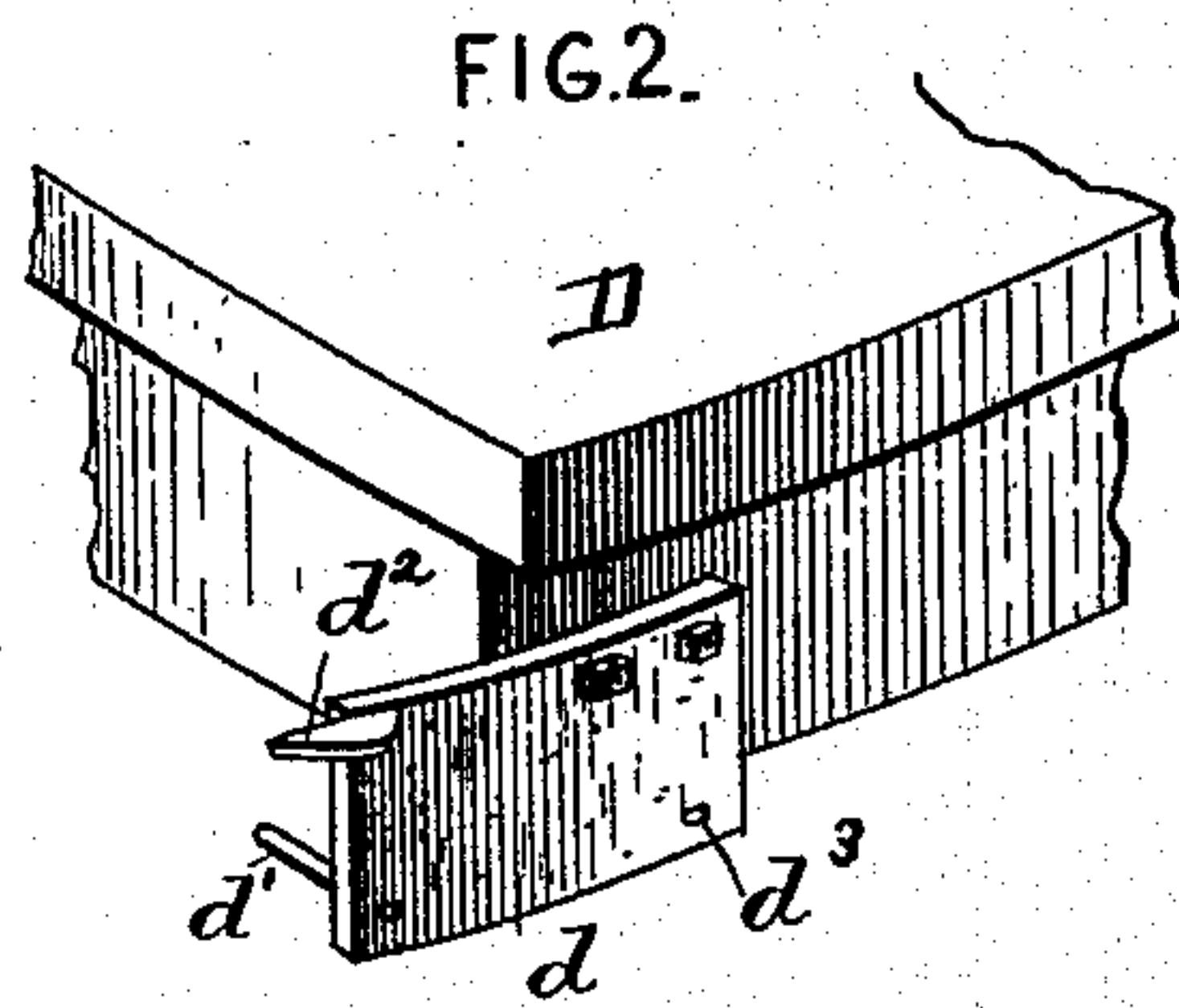
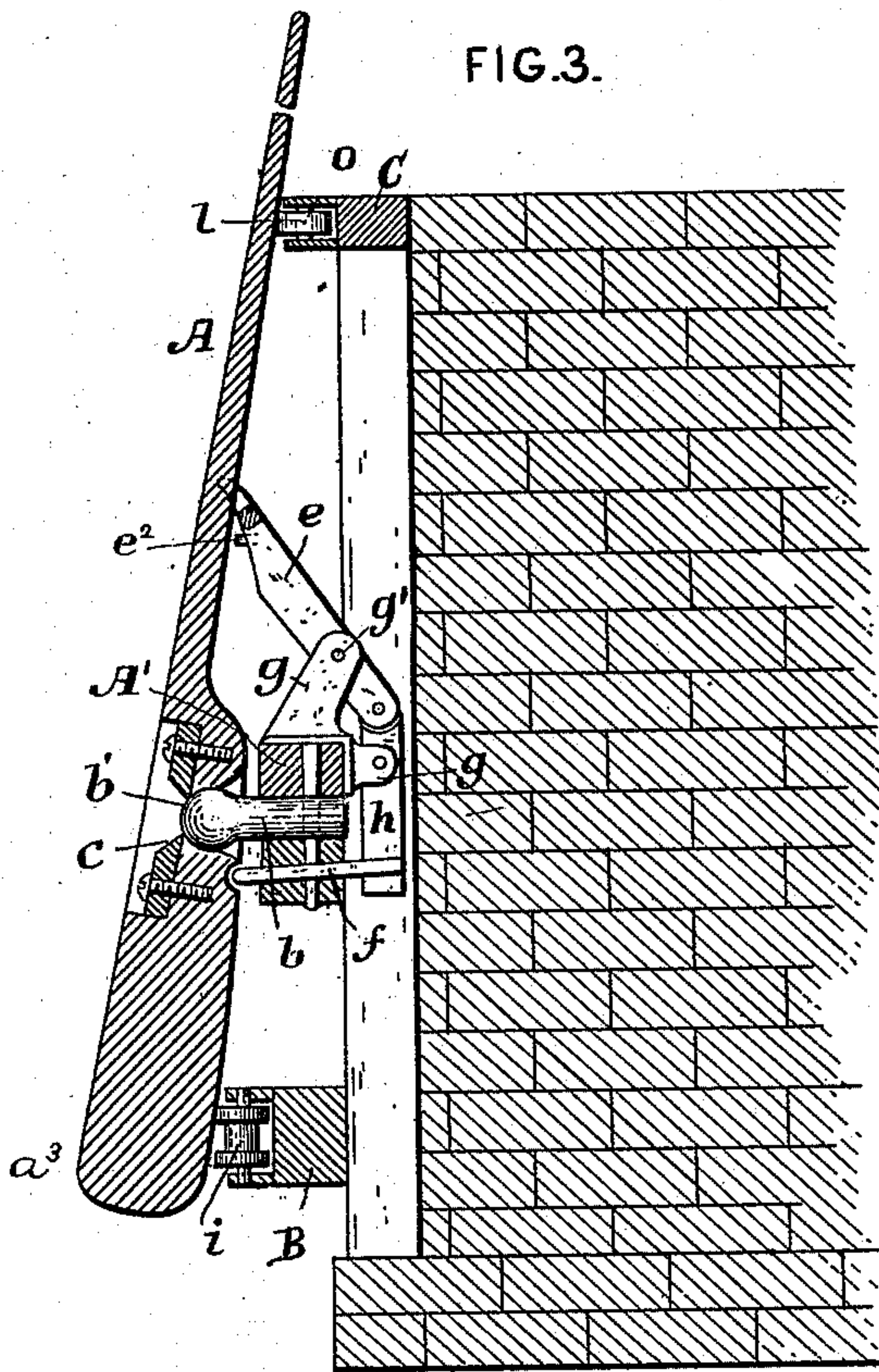


FIG. 4.

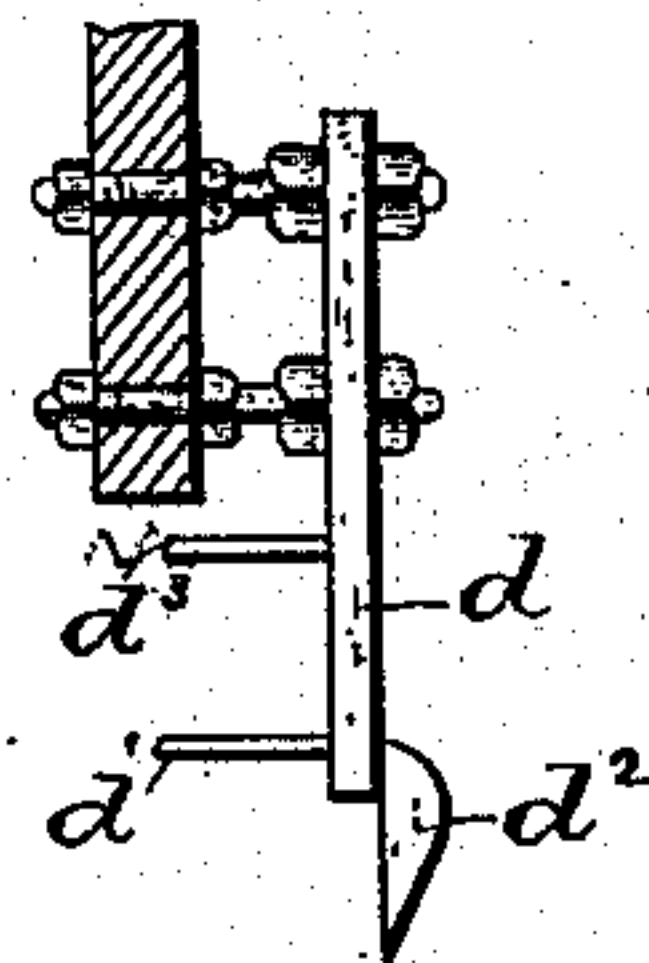


FIG. 5.

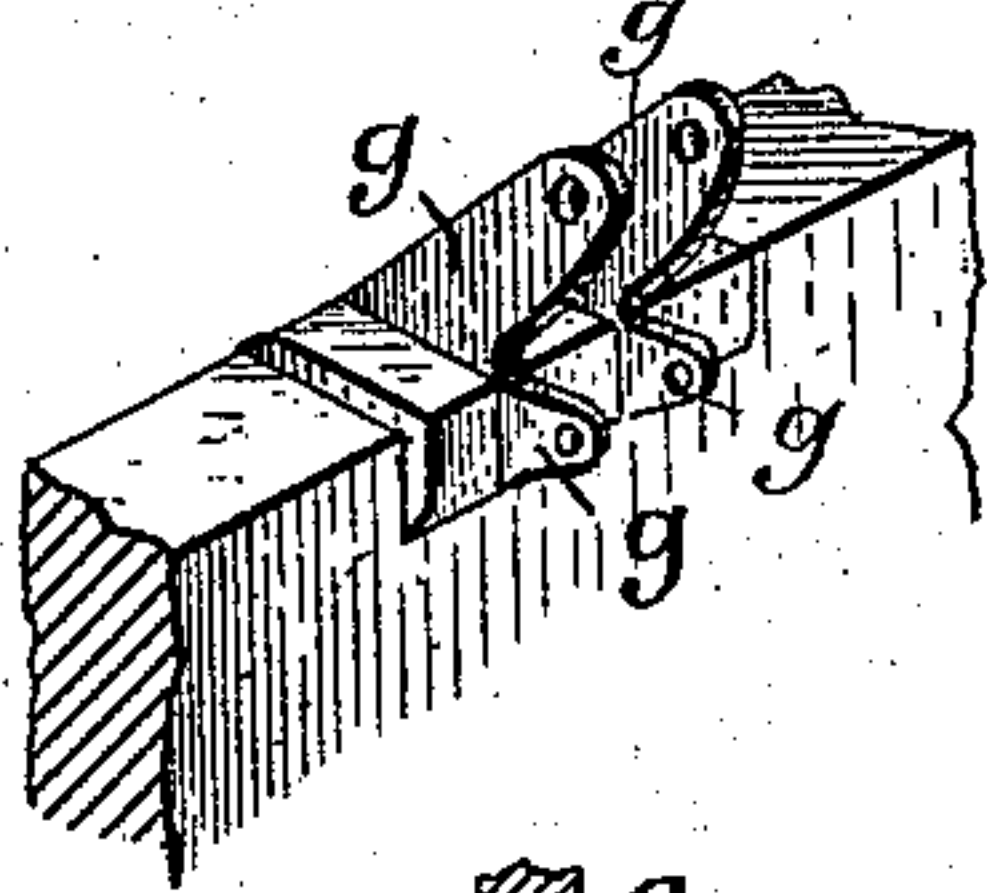


FIG. 7.

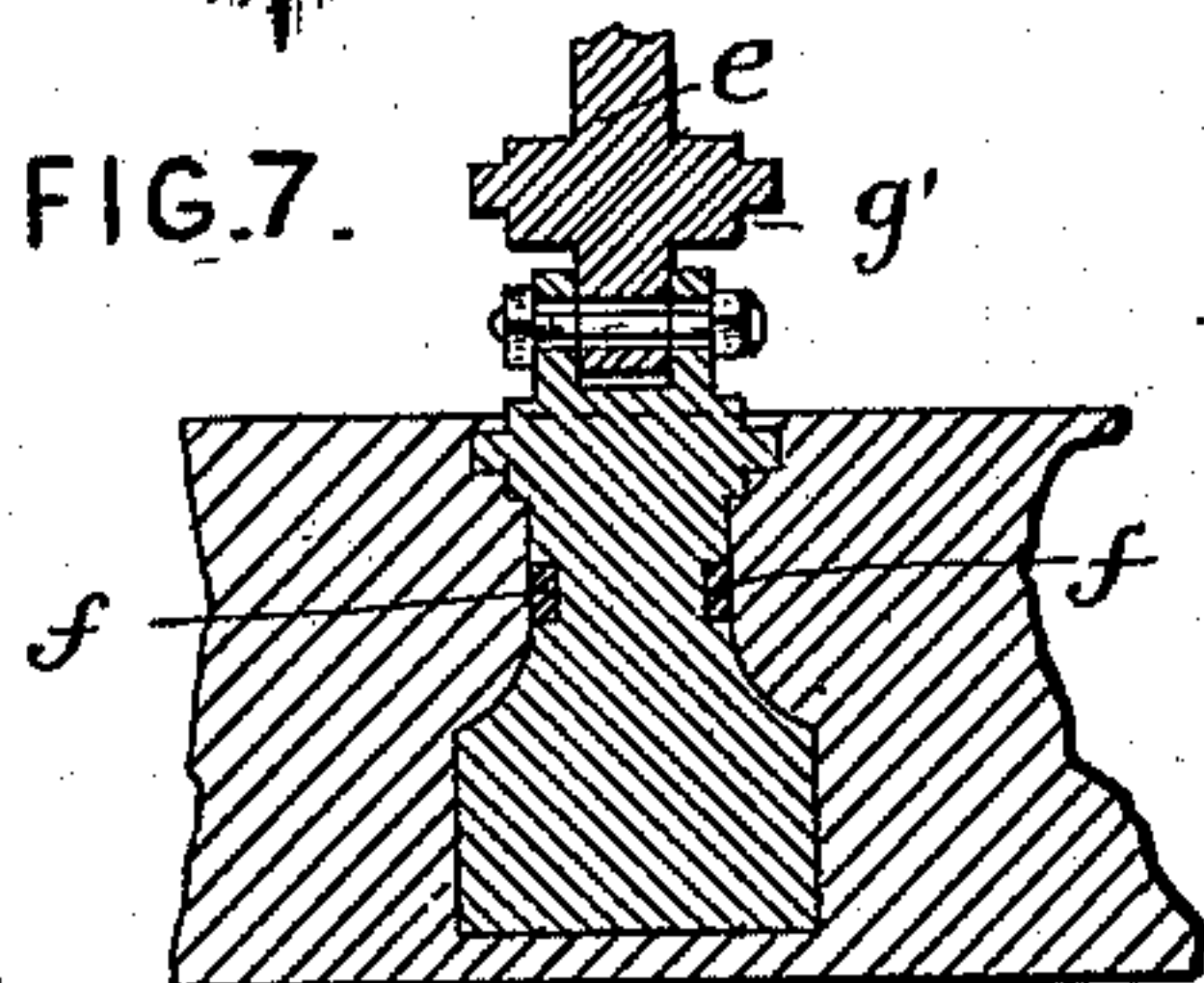


FIG. 8.

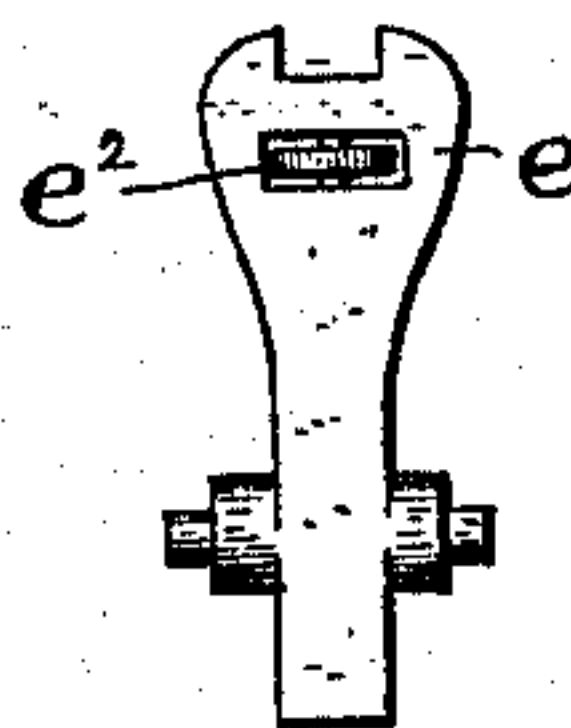


FIG. 6.

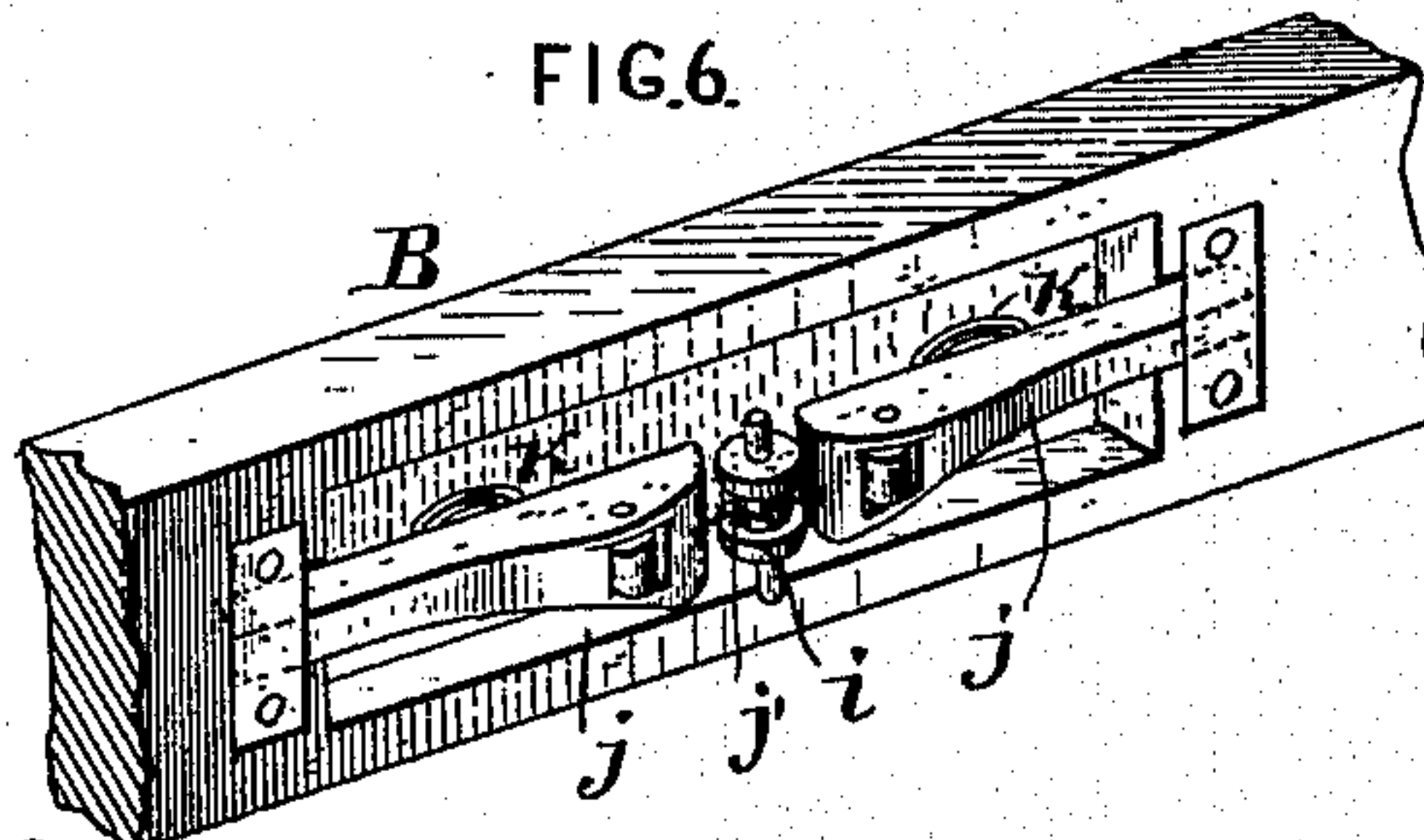
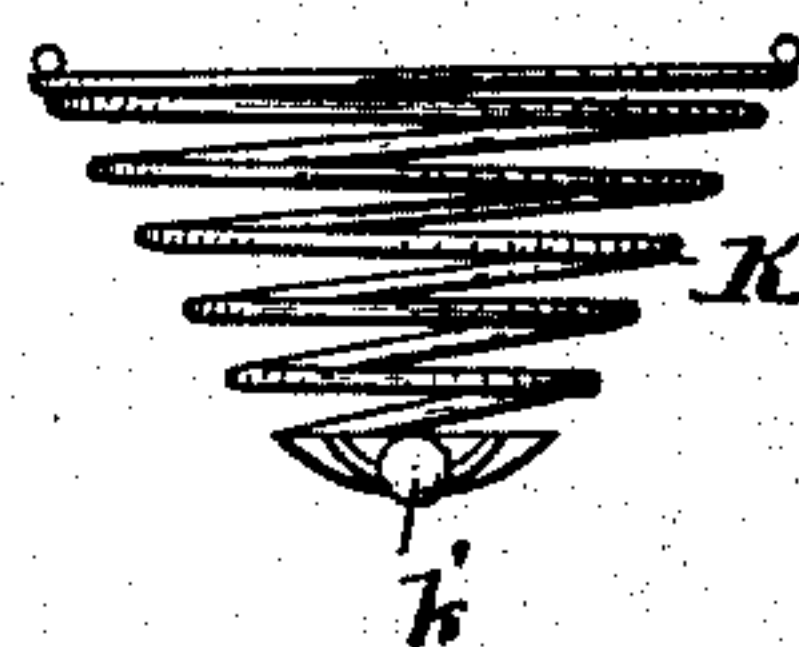


FIG. 9.



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# UNITED STATES PATENT OFFICE.

ANDREAS BOSCH, OF PRAIRIE DU CHIEN, WISCONSIN.

## GUARD FOR DRAW-BRIDGES.

SPECIFICATION forming part of Letters Patent No. 325,905, dated September 8, 1885.

Application filed April 15, 1885. (No model.)

*To all whom it may concern:*

Be it known that I, ANDREAS BOSCH, a citizen of the United States, residing at Prairie du Chien, in the county of Crawford and State of Wisconsin, have invented certain new and useful Improvements in Guards for Draw-Bridges, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a perspective view indicating the approach to and the abutment of a horizontally-swinging bridge having my improved guard-fence applied, the guard-sections being in an elevated position in full lines, and in a depressed position in dotted lines. Fig. 2 is a perspective view of one corner of the draw. Fig. 3 is a vertical section through the abutment, indicating one of the loaded guard-sections and its bearings and jointed connections with the frame-work of the abutment. Figs. 4, 5, 6, 7, 8, and 9 are views in detail of certain parts which are necessary to be used in connection with the draw, the abutment, and the loaded guard-sections for the purpose of actuating the latter.

My invention relates to draw-bridges wherein the draw swings about a vertical fulcrum or king-bolt, and it has especial relation to improvements on my draw-bridge for which Letters Patent were granted to me, bearing date on the 11th day of March, 1884, and numbered 295,104.

The following description of my invention, when taken in connection with the annexed drawings, will enable those skilled in the art to fully understand it.

In said Letters Patent I have described guards having flanged shanks or cams which were movable about fulcrum, for the purpose of causing them to be moved by the closing and opening of a horizontally-swinging draw into position for guarding (or fencing) the roadway or leaving the same clear, depending upon the position of the said draw-bridge.

My guard-fence consists of independent sections A, as illustrated in the annexed drawings, each individual section consisting of a broad fence-guard, *a*, a narrow shank, *a'*, a cam-flange, *a''*, and a loaded portion, *a'''*, as shown. Each one of these fence or guard sections is pivoted to a timber, *A'*, of the abutment *A*²

by means of a king-bolt, *b*. The end of this king-bolt, to which each section A is attached, consists of a ball, *b'*, fitted into a socket in the section, and operating practically like the well-known ball-and-socket joint. The said king-bolt *b* is inserted from the back part of each section A, and a plate, *c*, is fastened on the back part of this section for the purpose of completing the joint. One portion of this section is provided with cams, wings, or flanges, above referred to, for a purpose hereinafter explained.

When the several sections constituting the fence or bridge-guard are upright, as shown in Fig. 1 in full lines, each section A is held in its place by means of a double key in combination with certain springs, hereinafter again referred to. This double key consists of an upper key, *e*, and a lower key, *f*. The key *e* has a bifurcated upper end, in which the section A rests. The lower key, *f*, is simply a bolt working through timber *A'* and entering a depression in the section A. The key *e* is fastened to the timber to which the section A is attached by means of a device consisting of two pairs of arms, *g*, the upper pair of arms being secured to the upper key, and the lower pair of arms to plate *h*, to which latter the two lower keys are fastened. The object of these two pairs of arms *g g* and the plate connecting the two keys is this: when the top of the upper key is forced back from the section A, the top of the plate *h* is forced forward, and the lower part of this plate is forced backward, thus drawing the two lower keys (which are fastened to the same) from the section A and releasing the same.

Fastened to the second and lower timber, B, is a grooved roller, *i*, and on each side of this roller is a movable block, shaped as shown in the drawings and lettered *j*. These blocks have grooves at their ends, and they are connected together by a chain, *j'*, passing over an annular depression in the said roller. Behind each block is a spiral spring, *k*, upon which the blocks rest, this spring being fastened to the timber B. On top of the spring *k* is a small roller, *k'*, so that the block can move on the spring without displacing the same. This arrangement is just behind the lower end of the section A when the latter is upright, as shown in Fig. 1 in full lines.



Secured to the third timber, C, near the top of the bridge, between the sections A, are rollers *l*. (Shown clearly in Figs. 1 and 3.)

To the end of the draw-bridge D is secured a plate, *d*, to which are attached driving-bolts *d'* and *d''* and an opening-key, *d''*. The plate *d*, with key *d''*, is preferably so arranged that it can be adjusted by means of screws for the purpose of compensating for expansion and contraction of the bridge. The object of the driving-bolt *d'* is to strike the cams of the several fence-sections A and to raise and lower the same. The object of the opening-key is to strike the upper key, (marked *e*,) which holds the section A in place when upright, as shown in Figs. 1 and 3, and force said key back, by which operation the two lower keys are drawn from the holes in said section, and the latter is released and free to move.

The operation is as follows: When the draw-bridge is opened, the sections A are upright, as shown in Figs. 1 and 3, and are held firmly in this position by the double key above described, in combination with the spiral springs, the rollers and blocks pressing upon the lower parts of the sections A. In closing the draw D the opening-key *d''*, attached to plate *d* on this draw, first strikes the upper key, *e*, which holds the section A in place, and moves this key back, by which operation the two lower keys are drawn back and the sections are free to move. Near the upper end of key *e*, just beneath the notch in the top of the same, in the center of the key, and projecting from the side near the section A, is a friction-roller, *e'*, (see Figs. 3 and 8,) which strikes against the face of plate *d*, thus preventing any abrasion of the key upon said plate or the timbers of the bridge, &c., as the draw is operated. The driving-bolt *d'*, which is attached to the plate on the draw of the bridge, striking the section A, forces it over. The top part of the section strikes the rollers *l*, which are mounted in the upper timber on the abutment, and these rollers force the upper part of the section out so that it does not strike the next section, which is still upright, the ball-and-socket joint of the section with the king-bolt allowing the section to move freely in all directions, so that the roller *l* easily moves the top of the section over so as to pass the next section without interference. As the draw continues closing, a second driving-bolt, *d''*, strikes the cam of a section A at *A'*, and forces said section still further over to an inverted perpendicular position, where it hangs suspended out of the way, as shown in dotted lines in Fig. 1, and the draw, moving on, performs the same operation with each section successively until the draw is closed and the roadway left clear. The cam *a'* is so shaped that the two driving-bolts have the effect to easily pass the section over, as described.

In opening the draw the driving-bolt *d'* strikes a cam *a'* at *A'*, and raises a section to a horizontal position. Then the second driving-

bolt, *d''*, strikes another part of the cam *a'* at *a'* and continues to raise the section. As the section is thus raised, the lower part, *a'*, passes upon one of the blocks behind which is the spiral spring attached to the lower timber on the bridge-abutment, and passes over the roller between said blocks, the latter and the spring press the bottom of the section outward, and the section is raised into an upright position. (Shown in Figs. 1 and 3.) As the section arrives at its upright position the two lower keys, which have been held back by the section, now enter the holes in the section, and by the weight of the double key and plate joining the same the two lower keys are adjusted as above stated, and the upper key falls forward to its place, the section resting in its groove, and the double keys with the spiral springs and blocks hold the section firmly in place, as shown in Figs. 1 and 3.

My invention may be applied to all bridges, whether with abutments or spiles, and its superiority especially consists in the fact that the fence guards or sections A are operated by the mere opening and closing of the draw and without extra machinery outside of the bridge itself.

If desired, at night lights can be attached to the several sections or in any convenient manner to the movable parts, so as to signal by their position whether the draw is open or shut.

In practice I prefer to suitably pivot the outer ends of the blocks *j j*, and to provide their free ends with anti-friction rollers, against which the ends of the guards A abut. The guards are thus freely movable.

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

1. In a draw-bridge, a fence consisting of a series of guard-sections, A, loaded at *a'*, and provided with cams or wings *a'*, in combination with ball-and-socket joints and devices described for actuating and holding said sections, substantially as described.

2. The combination of loaded guard-sections, connected to a supporting-timber by ball-and-socket joints, with the blocks, springs, and intermediate rollers, as described, for the purpose of arresting the said sections and aiding in holding them upright, as specified.

3. The combination of the upper and the lower rollers with the section having intermediate ball-and-socket connection and devices applied to the draw for actuating said sections, substantially as described.

4. The combination, with the guard-sections and their ball-and-socket connections, of the blocks and their intermediate rollers and chain, substantially as described.

5. The combination, with the pivoted guard-sections, as described, of the pivoted bifurcated keys *e*, and latches *f*, and releasing devices therefor applied to the end of the draw, substantially as described.



6. The combination of the keys having rollers  $e^2$  and latches, their connections, and guard-sections A, substantially as described.

5 7. The combination, with the loaded guard-sections, latching devices, and opening devices, as described, of the spring-actuated bearings K, substantially as and for the purposes described.

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

ANDREAS BOSCH.

Witnesses:

A. J. MESTON,  
O. B. THOMAS.