

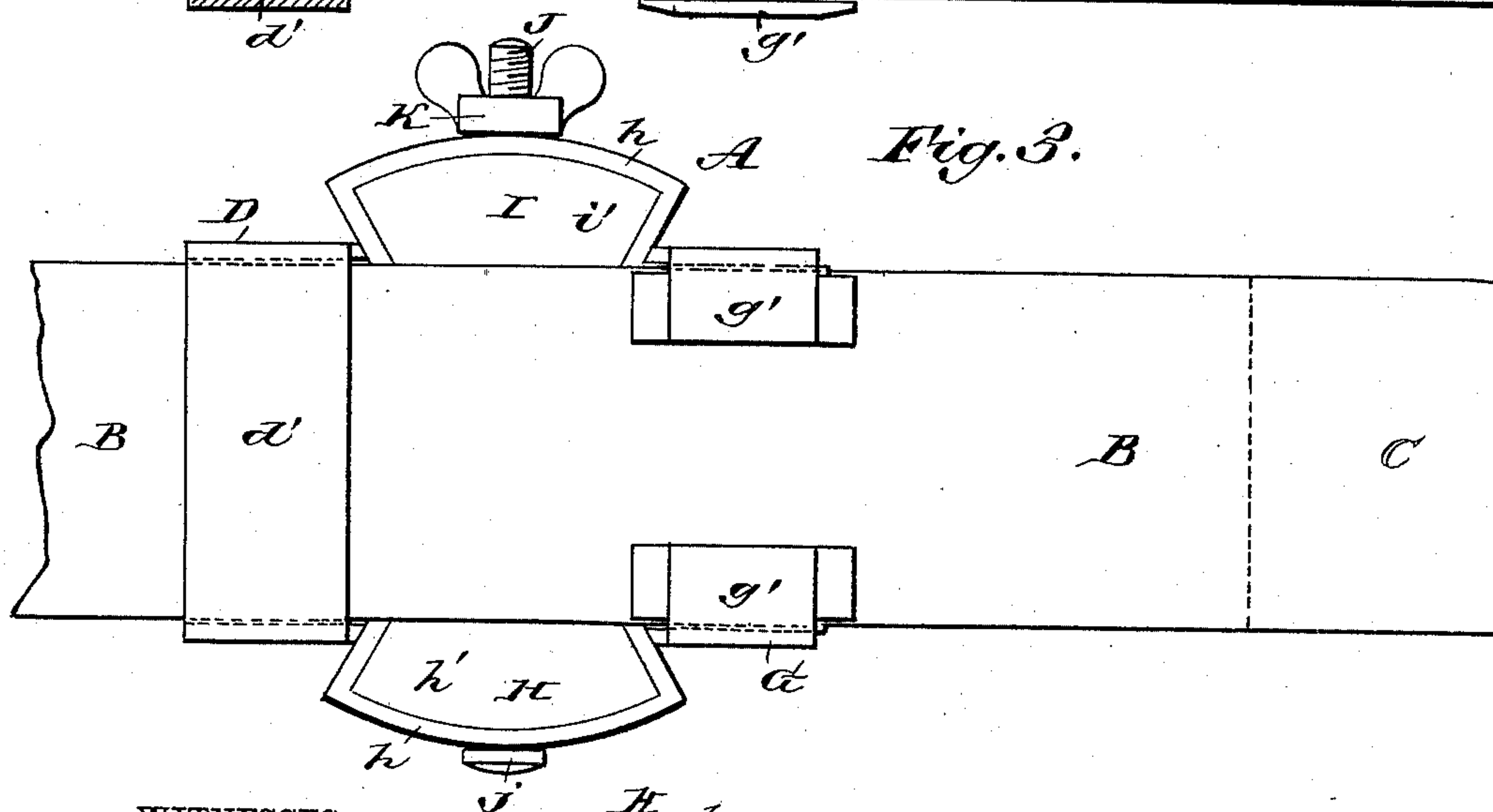
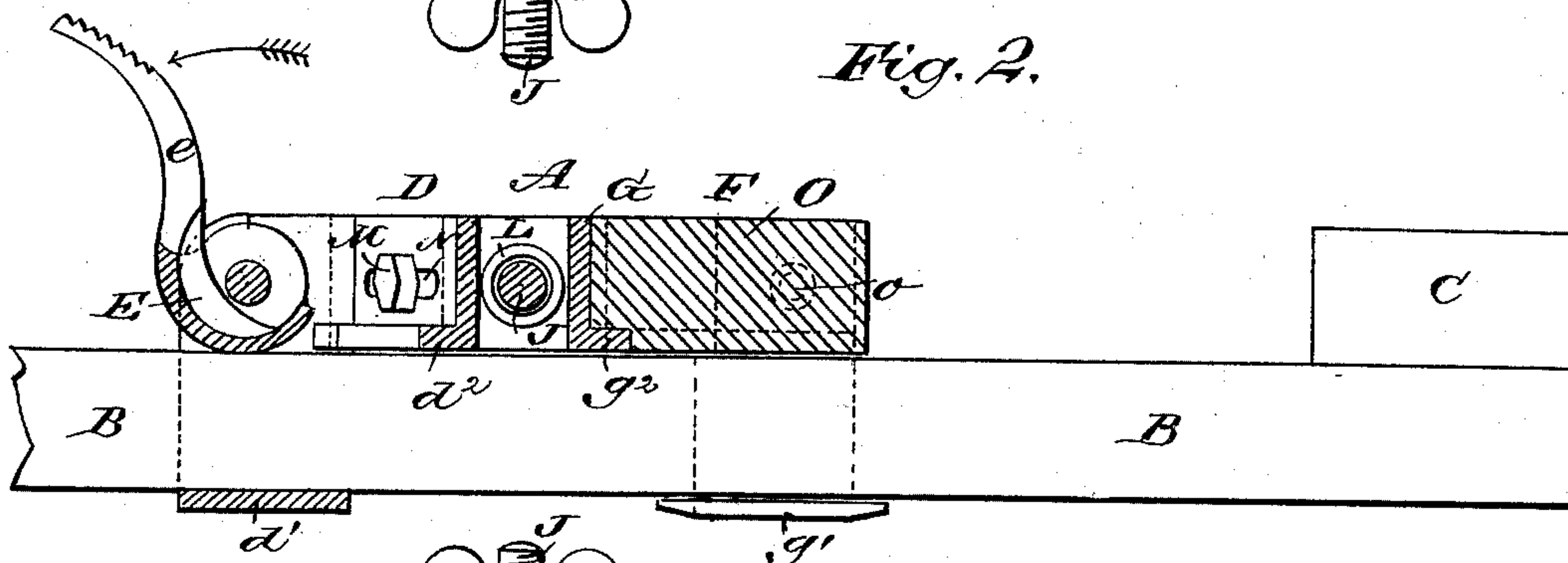
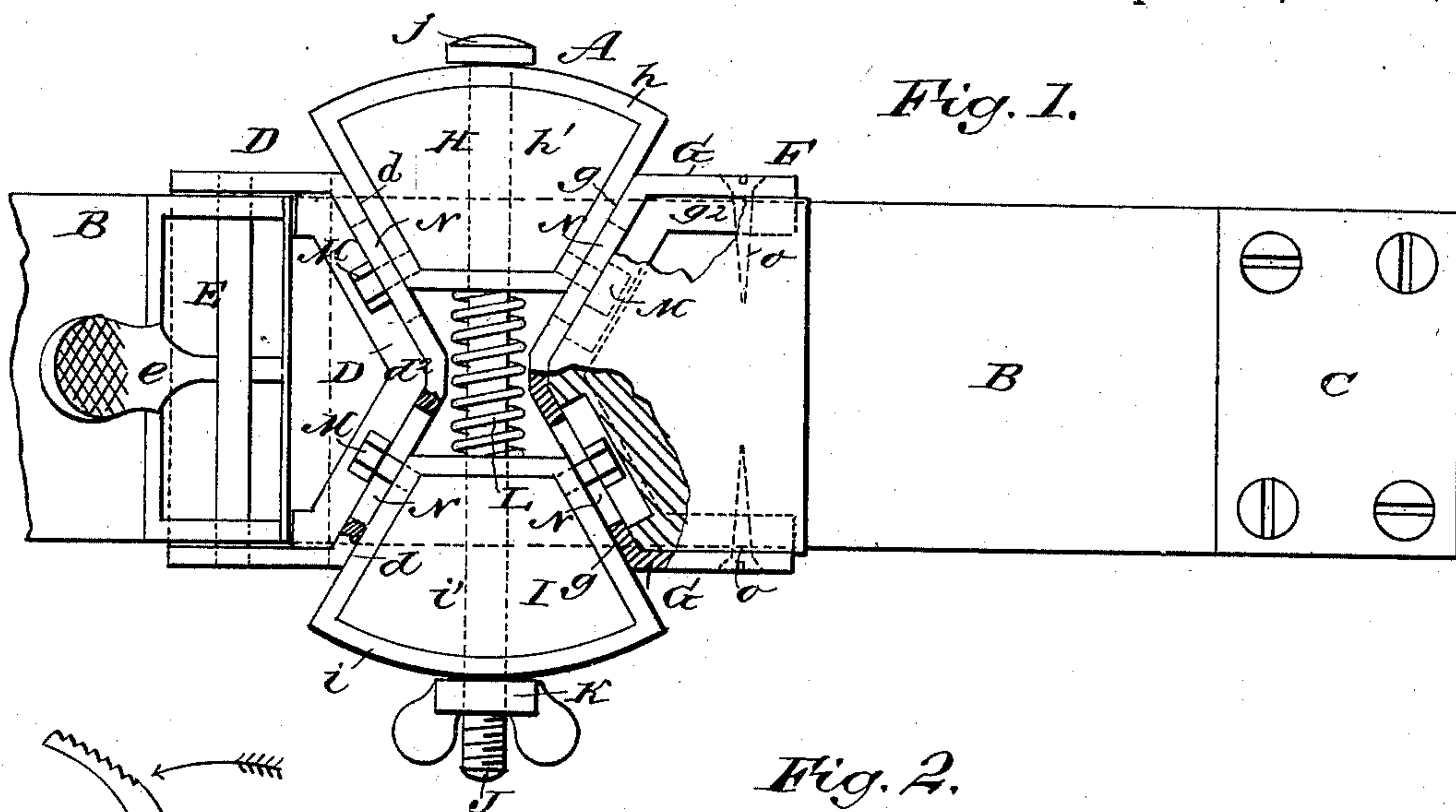
(No Model.)

F. F. HOUSTON.

CLAMP.

No. 370,541.

Patented Sept. 27, 1887.



WITNESSES:  
*W. Beyer*  
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Fig. 5.

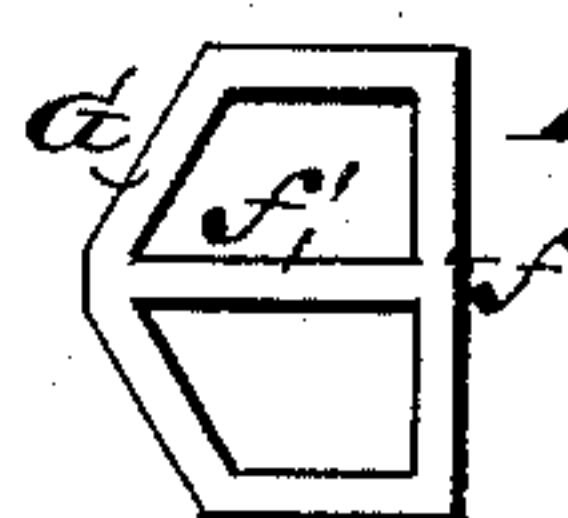
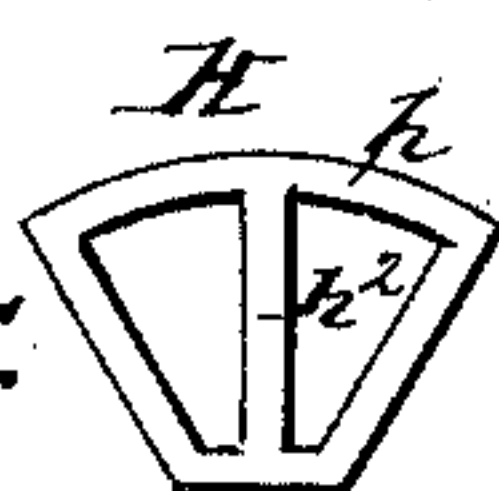


Fig. 4.

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# UNITED STATES PATENT OFFICE.

FREDERICK FREEMAN HOUSTON, OF CHICAGO, ILLINOIS.

## CLAMP.

SPECIFICATION forming part of Letters Patent No. 370,541, dated September 27, 1887.

Application filed December 28, 1886. Serial No. 222,785. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK FREEMAN HOUSTON, of Chicago, in the county of Cook and State of Illinois, have invented a new and Improved Clamp, of which the following is a full, clear, and exact description.

My invention relates to wood-workers' clamps adapted for use in holding work while gluing or otherwise joining parts of it; and the invention has for its object to provide a substantial and effective tool of this character.

The invention consists in certain novel features of construction and combinations of parts of the clamp, all as hereinafter fully described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of my improved clamp, partly broken away and in section. Fig. 2 is a side elevation thereof, partly in section. Fig. 3 is a bottom plan view of the clamp, and Figs. 4 and 5 represent modified forms of parts of the clamp.

The clamp-head proper, A, is fitted upon a stick of timber, B, to which a stationary foot-block, C, is fixed, thus allowing the work to be clamped between the moving follower of the clamp-head and the foot-block, as hereinafter more fully explained. The clamp-head is made with a metal rear portion or thrust-block, D, which has reversely and backwardly inclined front faces,  $d\ d$ , and has side parts which extend down the sides of the timber B, and are united by a broad metal band or strap,  $d'$ , which crosses the lower face of the timber. In the sides of the block D, and preferably directly above the lower band,  $e'$ , there is journaled a cam-lever, E, which has a handle,  $e$ , by which it may be turned conveniently for drawing the band  $d'$  tightly to the timber B to hold the thrust-block securely thereto.

Opposite and in front of the thrust-block D a follower, F, is arranged to slide freely on the timber B. This follower is made with a metal frame, G, having reversely-inclined faces  $g\ g$  opposite those  $d\ d$  of the thrust-block D. The sides of the follower-frame extend down opposite sides of the timber B and bend inward, forming flanges  $g'\ g'$  at each side, which under-

lap the bottom of the timber. Flanges  $d^2\ g^2$  of the block D and frame G respectively overlap the top face of the timber and form, with the band  $d'$  and flanges  $g'$  sockets, which the timber loosely fits, and whereby the entire clamp-head is guided on or along the timber and is held in proper operative position.

The spaces between the faces  $d\ g$  at each side of the clamp-head have an outwardly-flaring form to receive opposite wedge-blocks H I, through which, transversely of the clamp, is passed freely a screw or bolt, J, the head  $j$  of which stands outside of the block H, while a nut, K, threaded onto the end of the screw, stands outside of the block I. A spring, L, which normally expands is placed on the screw J, between the wedge-blocks H I, and separates them as the nut K is turned backward on the screw.

Into the faces of the wedge-blocks which bear against the inclined faces  $d\ g$  of the thrust-block and follower frame D G there are screwed bolts M, which pass through slots N, made in the parts D G, the heads of the bolts standing at the outer faces of the front parts of the thrust-block and follower, and whereby the wedge-blocks will be held to the thrust-block and the follower will be held to the wedge-blocks, and the necessary freedom of movement is allowed the wedge-blocks and follower when the thrust-block is clamped by the cam-lever to the timber.

The follower F may be made with a wooden facing-block, O, held to its metal frame G by screws  $o$  passed through the frame into the block, as shown in Figs. 1 and 2; or the follower-frame may have a metal face,  $f$ , braced to the inner wall of the frame by a web,  $f'$ , as shown in Fig. 4.

The wedge-blocks H I may be made with an outer metal frame, as at  $h\ i$ , respectively, strengthened by wooden filling-blocks  $h'\ i'$ , as shown in Fig. 1; or the wedge-blocks may be made without the wooden filling and be provided with a metal web, as shown at  $h^2$  in Fig. 5 of the drawings.

The operation of the clamp is very simple and effective, and as follows: The nut K will be turned back nearly to the edge of the screw J, allowing the spring L to separate the wedge-blocks H I and carry the follower F toward the



thrust-block D, and when the cam-lever E is thrown forward or loosened the entire clamp-head A will be slid along the timber B until the face of the follower or its block O stands the proper distance from the foot-block C to admit the work to be clamped between them, and the clamp-head A will then be fastened to the timber B by throwing the lever E backward in direction of the arrow in Fig. 8 of the drawings. When the work is laid on the timber B, or the timber is laid over the work to inclose the work between the follower and foot-block, the nut K will be turned inward on the screw J, which will draw the wedge-blocks toward each other and force the follower forward to clamp the work between it and the foot-block, and on turning back the nut the follower will be moved backward by the expansion of the spring L, ready for action on the next piece of work placed in the clamp.

It is obvious that, instead of placing the cam-lever to operate on the upper face of the timber B, it may be arranged to act against the lower face thereof or at either side thereof; but the arrangement shown is preferred in practice. It will also be understood that a series of clamp-heads made as herein described may be used in connection with a frame of bars as described in Letters Patent No. 357,387, granted me on the 8th day of February, 1887, and for the purpose of clamping framed structures at all sides at once, this bar-frame carrying the clamps may be mounted on a suitable support or base-frame, allowing work much deeper than the height of the clamp-frame bars to be clamped at any desired place.

I do not claim, broadly, in this application anything shown in said prior patent, but only the improved construction and combinations pointed out in the claims.

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

1. A clamp-head comprising a thrust-block and follower having opposing inclined faces, opposite wedge-blocks fitted between them and provided with means for drawing one of the wedge-blocks toward the other, and a cam-lever fitted to the thrust-block and adapted to bind the latter to a timber, substantially as described, for the purposes set forth.

2. A clamp-head comprising a thrust-block and follower having opposing inclined faces, opposite wedge-blocks fitted between them, means for securing the thrust-block and for drawing one of the wedge-blocks toward the other, and bolts passed through slots in the thrust-block and follower into the wedge-blocks, substantially as described, for the purposes set forth.

3. A clamp-head comprising a thrust-block

and follower having opposing inclined faces, opposite wedge-blocks fitted between them and attached to them by pin-and-slot connections, means for securing the thrust-block and for drawing the wedge-blocks toward each other, and a spring forcing the wedge-blocks apart and drawing back the follower, substantially as described, for the purposes set forth.

4. The combination, in a clamp-head, of a thrust-block, as D, means for securing it, a follower, as F, said parts D F having inclined faces  $d$   $g$ , respectively, wedges, as H I, fitted between the wedge-blocks, a screw, J, passed through the wedge-blocks and having a head or stop at one end and a nut, K, at the other end, and attachments connecting the follower to the wedge-blocks and the latter to the thrust-block, substantially as shown and described.

5. The combination, in a clamp-head, of a thrust-block, D, having inclined faces  $d$   $d'$ , a cam-lever, E, pivoted thereto, a follower, F, having inclined faces  $g$   $g'$ , wedge-blocks H I, fitted between the parts D F and held thereto by pin and slot connections, as M N, a screw, J, passed through the blocks H I, a nut, K, on the screw, and a spring, as L, interposed between the blocks H I, substantially as shown and described.

6. A clamp-head comprising a thrust-block, D, follower F, wedges H and I, screw J, passed longitudinally through the wedges, nut K on the outer threaded end of the screw, and spring L, surrounding the bolt and bearing at its ends against the inner adjacent ends of the wedges, the said block D provided with a strap or part,  $d''$ , adapted to underlap a clamp-timber, and said follower F provided with flanges or parts  $g'$ , also adapted to underlap a clamp-timber, and said parts D F having flanges  $d^2$   $g^2$ , respectively adapted to overlap the upper face of a clamp-timber, substantially as set forth.

7. The combination, in a clamp, of a clamp-head, A, comprising a thrust-block, D, and follower F, provided with parts or flanges  $d'$   $g'$   $d^2$   $g^2$ , a cam-lever, E, on the block D, wedge-blocks H I, fitted between inclined faces of the parts D F, a screw, J, passed through the blocks H I, a nut, K, on said screw, a spring, L, interposed between the wedge-blocks, and said parts D F H I attached by pin-and-slot connections, as M N, a timber, B, on which the head A is fitted, and a foot-block, C, on said timber, substantially as described, for the purposes set forth.

FREDERICK FREEMAN HOUSTON.

Witnesses:

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P. J. CONNOR.