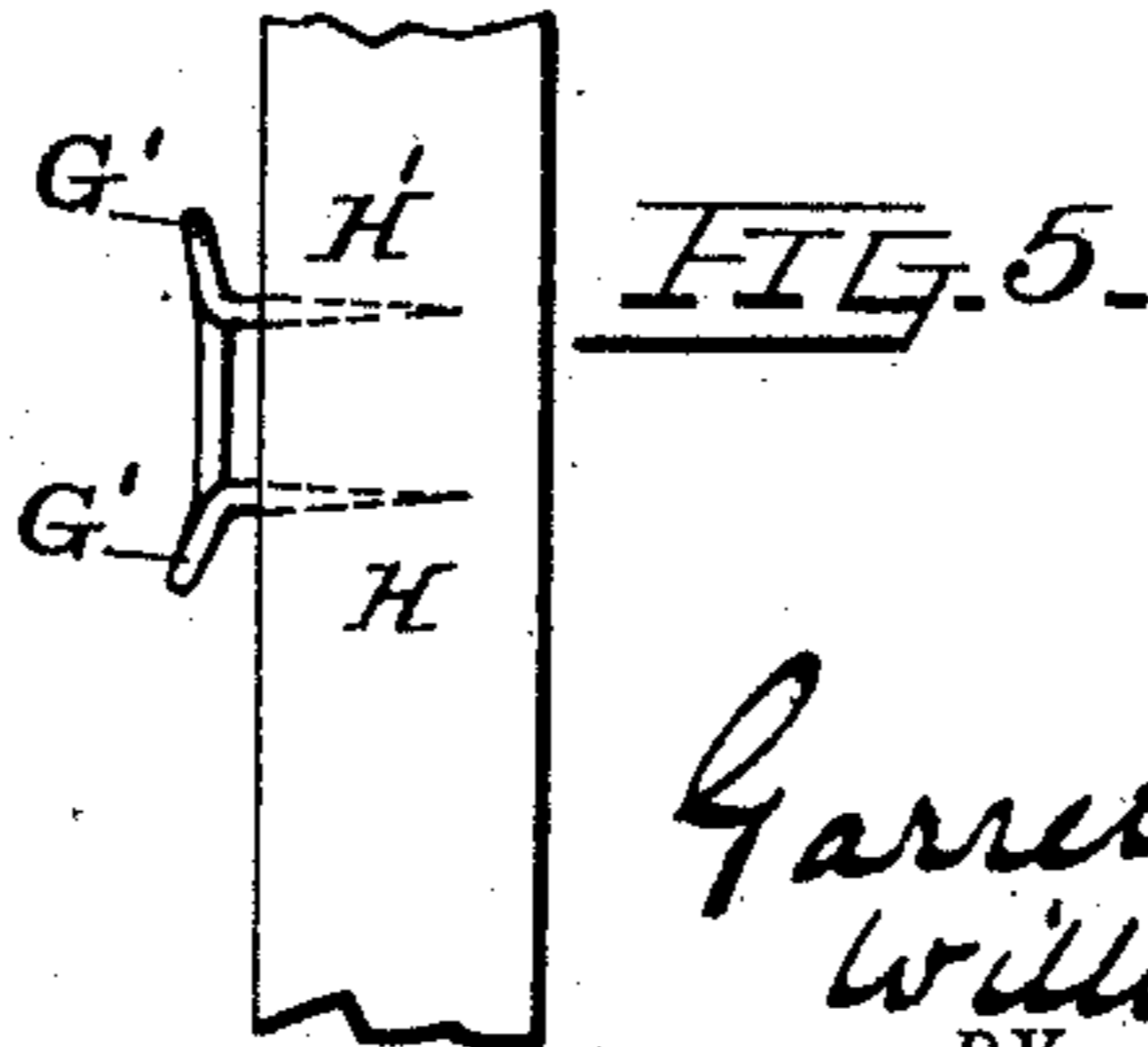
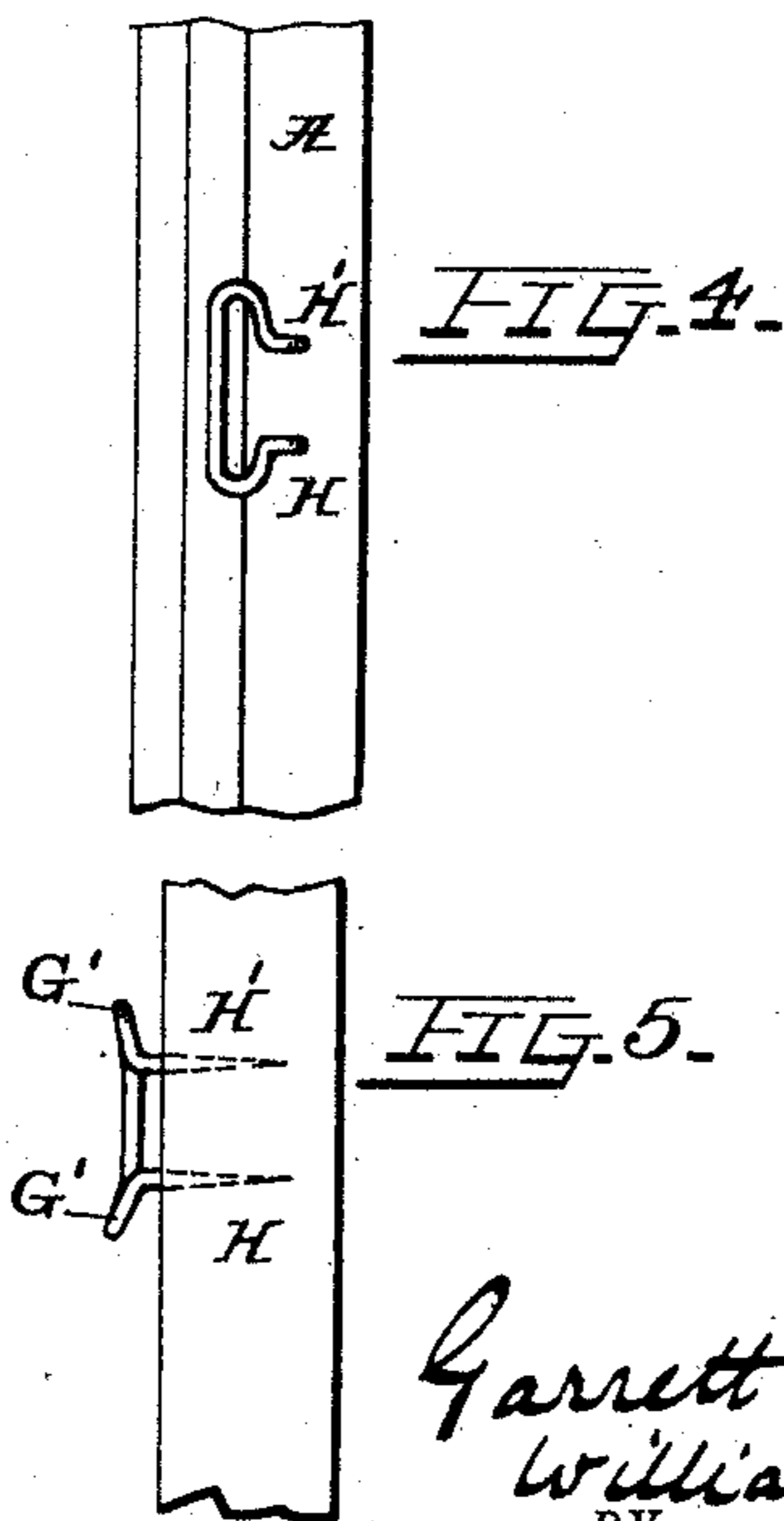
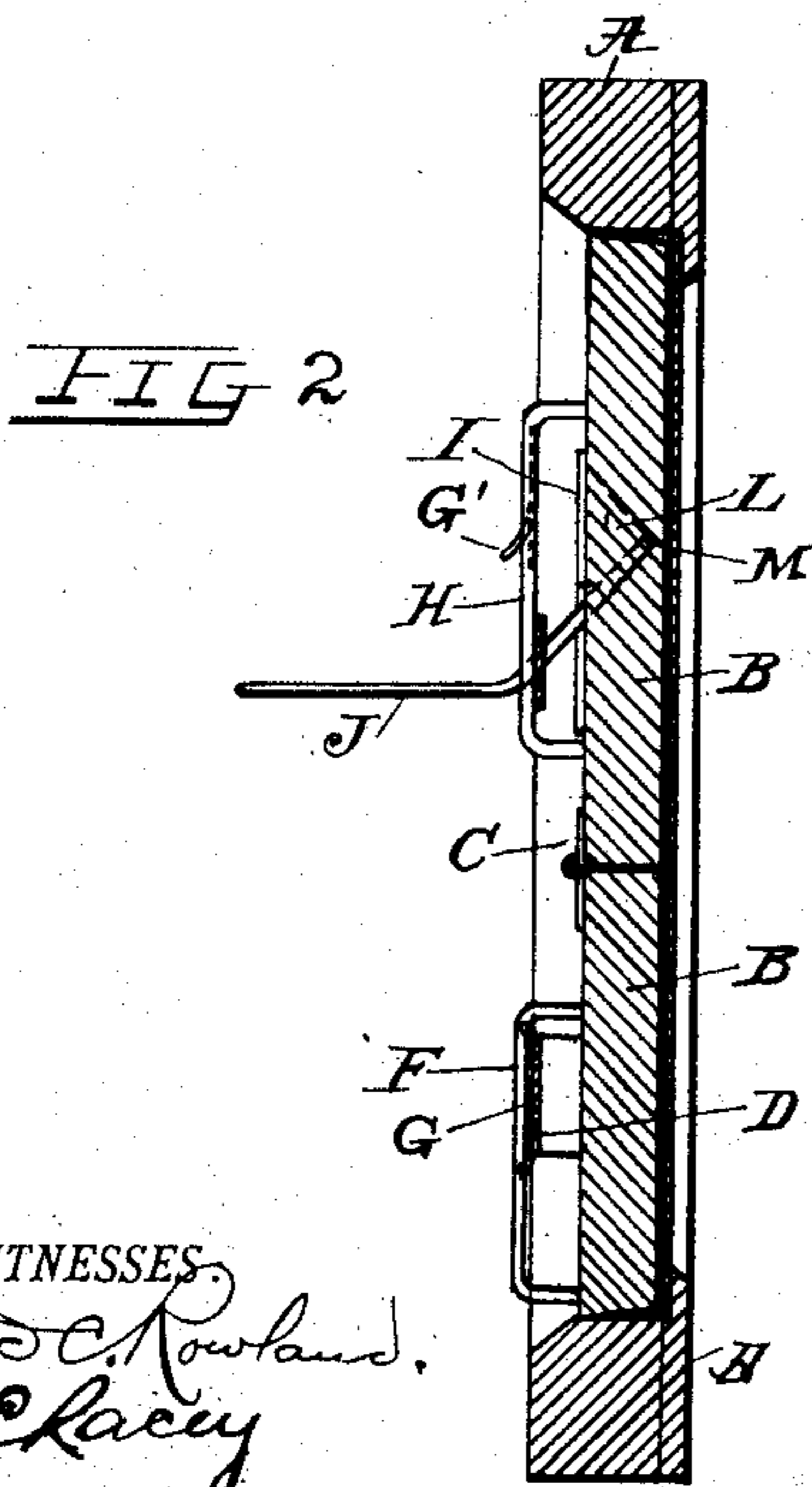
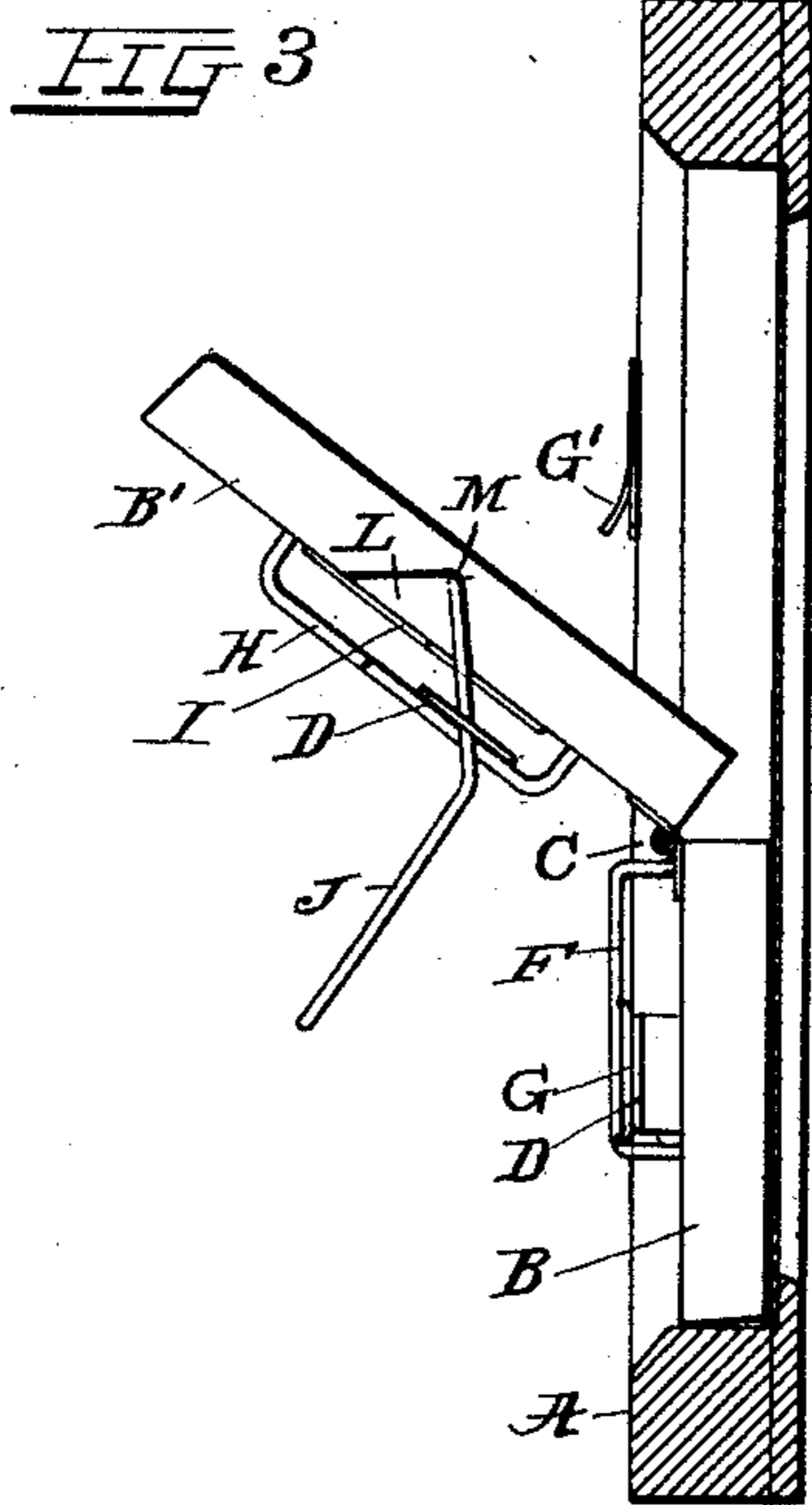
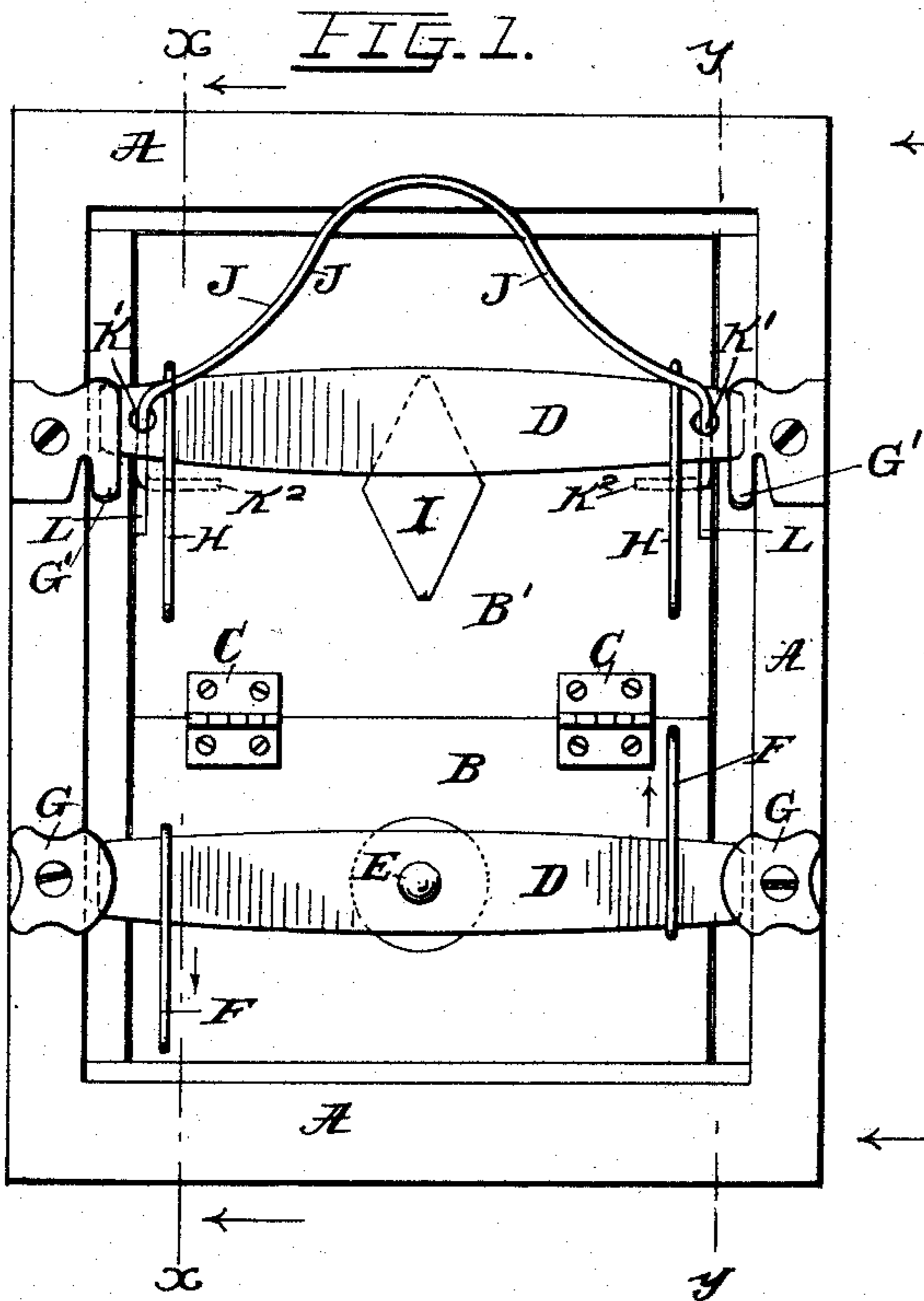


(No Model.)

G. W. LOW & W. SHAKESPEARE, Jr.
PHOTOGRAPHIC PRINTING FRAME.

No. 505,111.

Patented Sept. 19, 1893.



WITNESSES:
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UNITED STATES PATENT OFFICE.

GARRETT W. LOW AND WILLIAM SHAKESPEARE, JR., OF KALAMAZOO,
MICHIGAN.

PHOTOGRAPHIC-PRINTING FRAME.

SPECIFICATION forming part of Letters Patent No. 505,111, dated September 19, 1893.

Application filed April 5, 1893. Serial No. 469,102. (No model.)

To all whom it may concern:

Be it known that we, GARRETT W. LOW and WILLIAM SHAKESPEARE, Jr., citizens of the United States, and residents of Kalamazoo, in the county of Kalamazoo and State of Michigan, have jointly invented certain new and useful Improvements in Photographic-Printing Frames, of which the following is a specification.

Our invention relates to improvements in photographic printing frames whereby the springs are confined at their ends and also one or both of them are combined with a lever or levers in such manner that the levers not only lock and unlock the springs but also tilt or open and again close the halves of the back plate to which they are attached.

In the drawings, Figure 1, illustrates a plan of one form of our invention, the back plate being in position within the frame and both the springs locked. Fig. 2, illustrates an edge view in section on the line, x, x , of Fig. 1. Fig. 3, illustrates an edge view, the frame being sectioned on the line y, y , of Fig. 1. Fig. 4, illustrates a plan view, and Fig. 5, an edge-wise elevation of a modified form of clip attached to the frame for confining the ends of the springs.

A, is the frame.

B, B are the two halves of the back plate.
C, C, are the hinges.

D, D, are the springs. The lower one, see Fig. 1, is pivotally attached to that half of the back plate at E, as usual.

F, F, are two bent pieces of metal, preferably wire, made in the form of wide staples, their ends being firmly secured in the wood of the back plate, and they are located near the edge of the back plate and over the ends of the springs, and they have such elevation from the back plate that the ends of the springs are confined under tension by them, and they are a little higher or farther from the back plate, than the under side of the clips, G, G, are, so that the clips will take the strain when the ends of the spring are pressed under them, or the ends of the springs may be turned up to effect the same result.

It will be noticed that the staples are set one forwardly and the other rearwardly; this is so that the springs can be swung in one

direction only, and so that when moved back again to normal operative position as shown in the drawings, the ends of the staples will act as stops and adjust the spring to its proper position relative to the clips, and the side or edge of the clips, beneath which the ends of the springs slide should preferably be turned up, as at G', to give the effect of an inclined surface beneath which the ends of the springs will smoothly slide, or the edges of the springs may be turned down for the same purpose.

In Figs. 4 and 5, we show a new construction of the clips, that is to say, they are not flat plates of metal fastened by screws as usual, but are bent up into the desired form from wire or like metal, and the ends of the wire, H', H', are forced into the wood of the frame, whereby they are held in position without screws or other fasteners.

At the right hand end of Figs. 1, 2 and 3, we show the improved lever attachment above referred to. In this construction the spring is not pivoted to the back plate, but is disconnected therefrom, excepting that it is held to the back plate by the staples, H, H, which are or may be the same in construction as those before explained; they, however, are not zigzagged in position but are directly opposite each other and they confine the ends of the spring in the same manner that the other one does.

I, is a metallic plate fastened to the back plate, over which the spring slides and J, is a lever which may be bent into substantially the form shown, the ends whereof, after passing through two holes, K', K', in the spring, are turned at substantially right angles, as at K², K², see Fig. 1, and enter the edges of the back plate, so that they are fulcrumed on it at that point. The ends of the wire where they pass over the edge of the back plate are located in V shaped recesses, L, L, so that they will not project laterally beyond the line of the back plate. And the V shaped recesses do not extend entirely through the back plate; on the contrary, a portion of it, as at M, Figs. 2 and 3, is left to exclude light. The holes, K', K', are so large that the lever can freely rock therein and assume its extreme forward and rearward positions without exerting any jamming action on the edges of these holes,

but will only effect bodily movement, forwardly or rearwardly of the spring.

It will be observed that an important and valuable result is common to both constructions of our invention, *i. e.*, that the springs may be operated by one hand and that no compression of the ends of the springs by the thumbs of the operator is necessary, which frequently, especially with amateurs, results in injury to the thumbs they being liable to be squeezed between the springs and the clips; also that when the springs are manipulated with one hand, their ends will not snap up when they move out from under the clips, but will pass smoothly and without shock from under them and will be caught and confined by the staples. And it will be further observed, that when our invention is made in the form shown at the right in Figs. 1, 2 and 3, then the simple rocking of the lever from its forward position, shown in Fig. 1, to that shown in Figs. 2 and 3, will move the spring out from under the clips and into engagement with the staples, and that when the spring strikes against the rear ends of the staples, then the lever acts as a handle and tips that half of the back plate backwardly, thus exposing the print beneath; this is a very convenient and useful feature, and also, when this form of the invention is used, there are no roughnesses formed on the front side of

the plate which are apt to occasion defects in the prints—because all the devices are attached to the back of the back plate and preferably do not extend through to the front side.

It will be understood that the devices may be arranged as shown in Fig. 1, *i. e.*, with the lever form at one end of the back plate and the other form at the other end, or either form may be duplicated at both ends.

We claim—

1. The combination in a printing frame of a spring and confining devices for the spring attached to the back plate at or near the ends of the spring, which hold it under tension when removed from the clips, substantially as set forth.

2. The combination in a printing frame of a spring, a lever pivoted to the back plate and which engages with the spring, confining devices for the ends of the spring and clips on the frame, substantially as set forth.

Signed at Kalamazoo, in the county of Kalamazoo and State of Michigan, this 31st day of March, A. D. 1893.

GARRETT W. LOW.

WILLIAM SHAKESPEARE, JR.

Witnesses:

WILLIAM SHAKESPEARE,

ANDREW J. SHAKESPEARE, JR.