

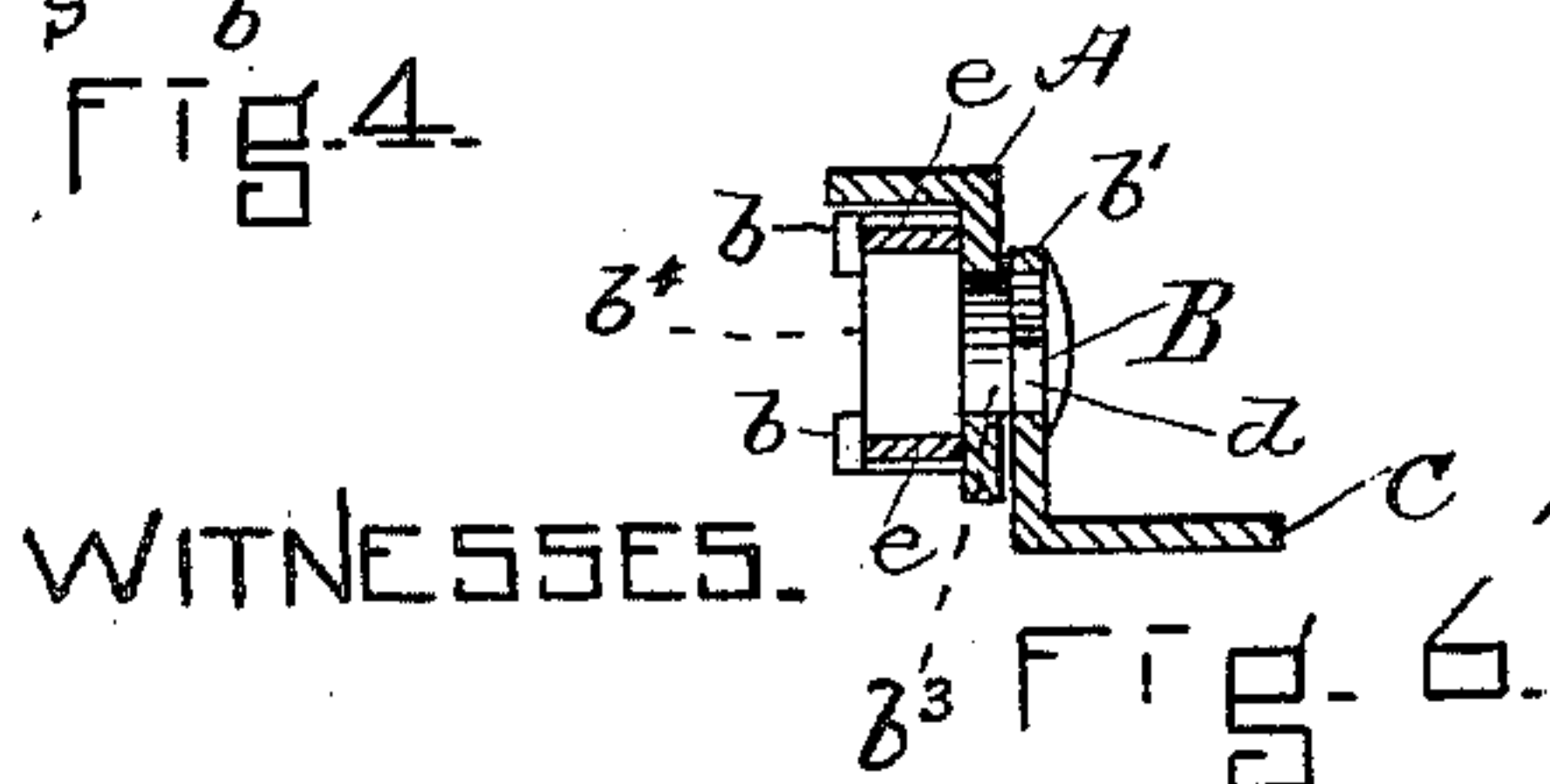
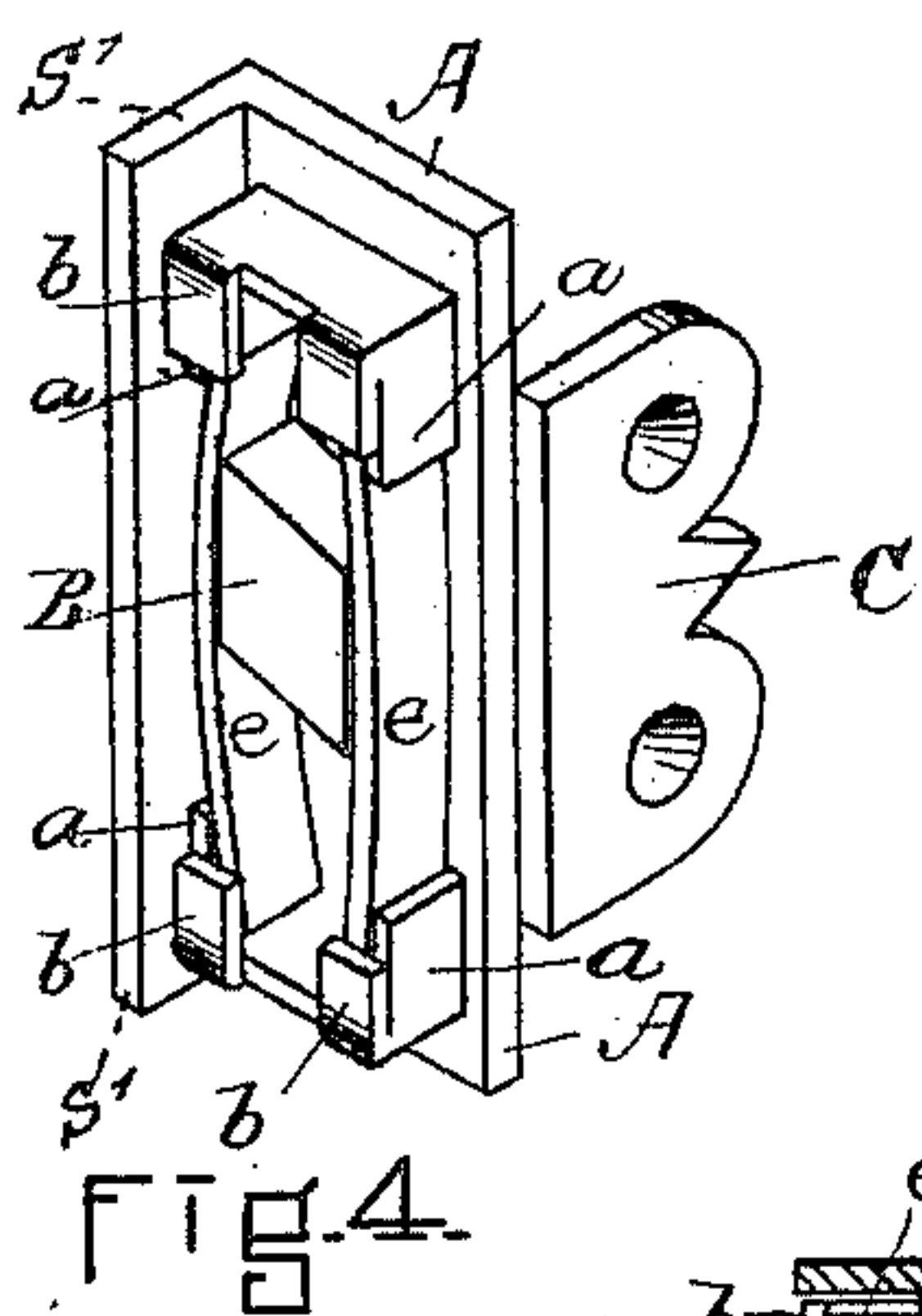
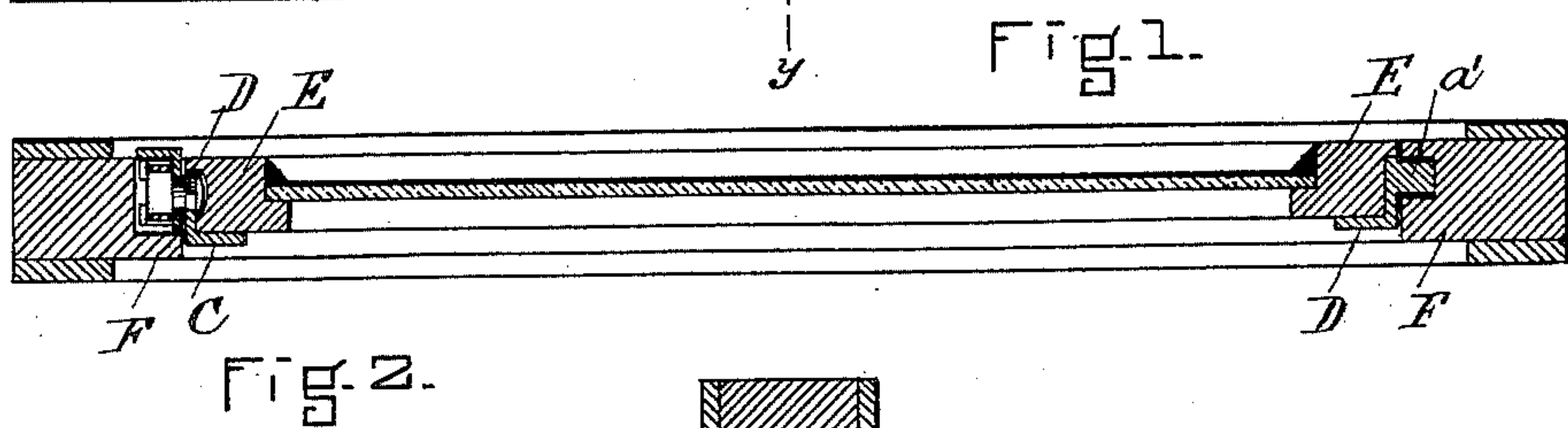
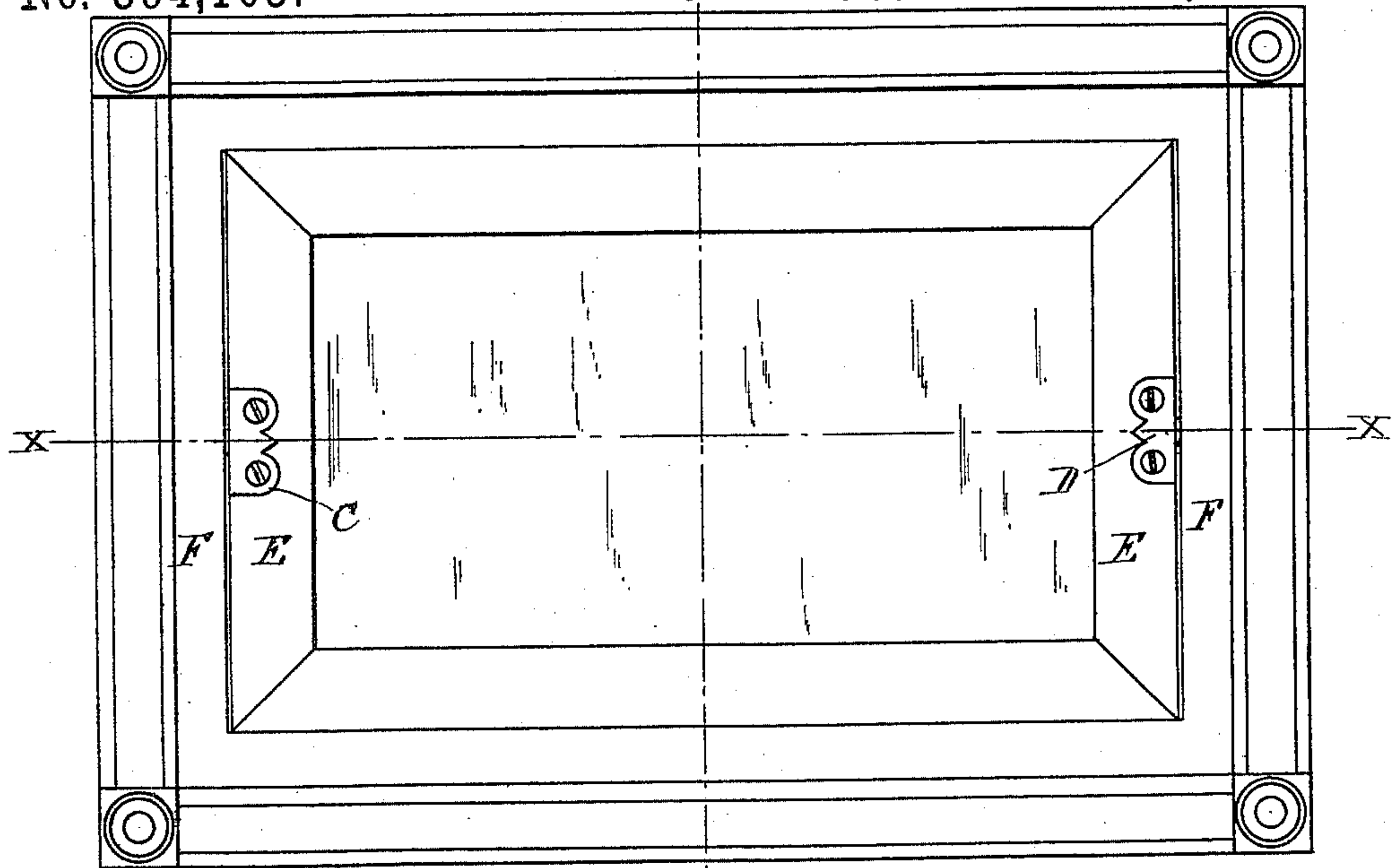
(No Model.)

E. H. DUCHEMIN.

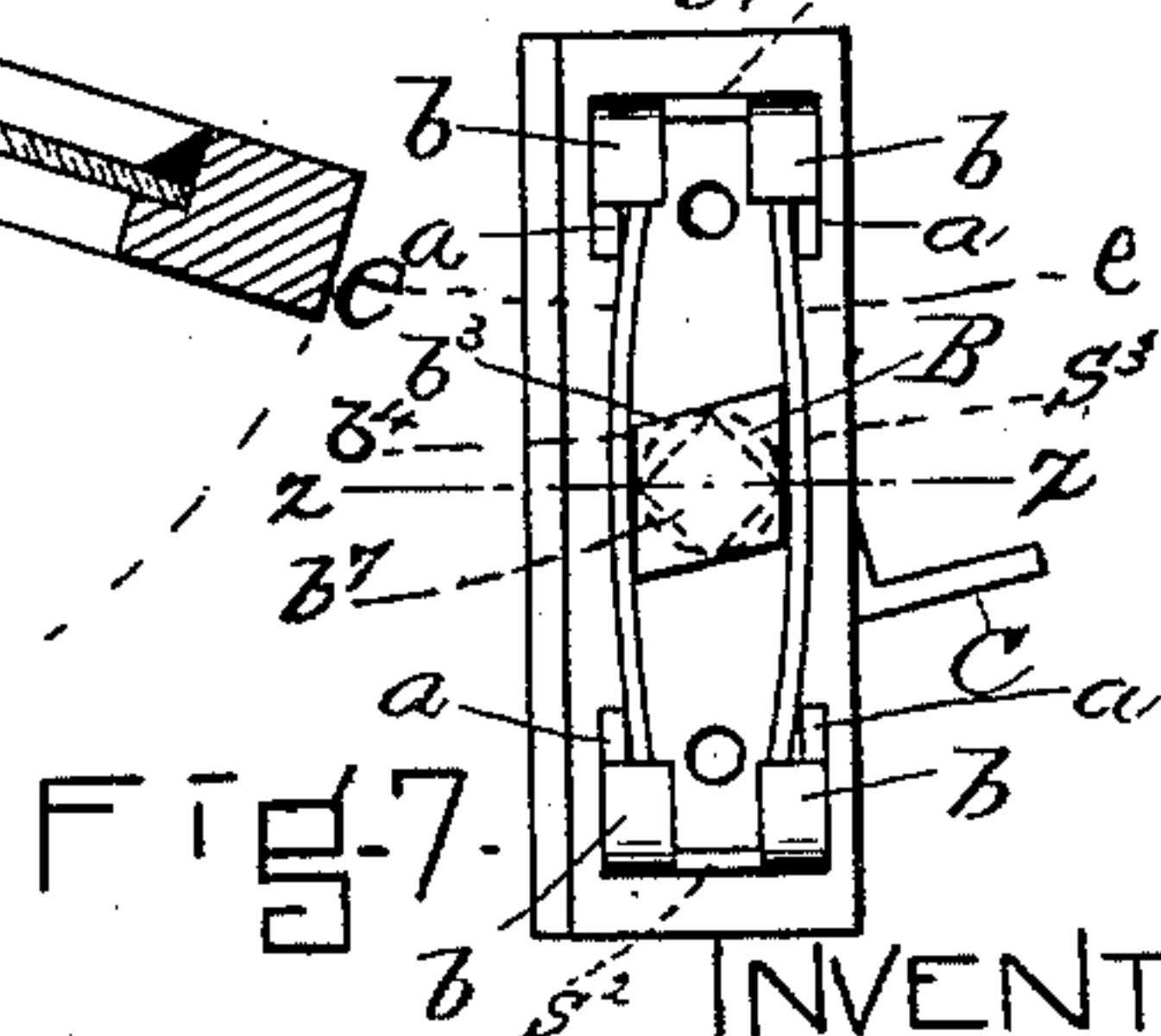
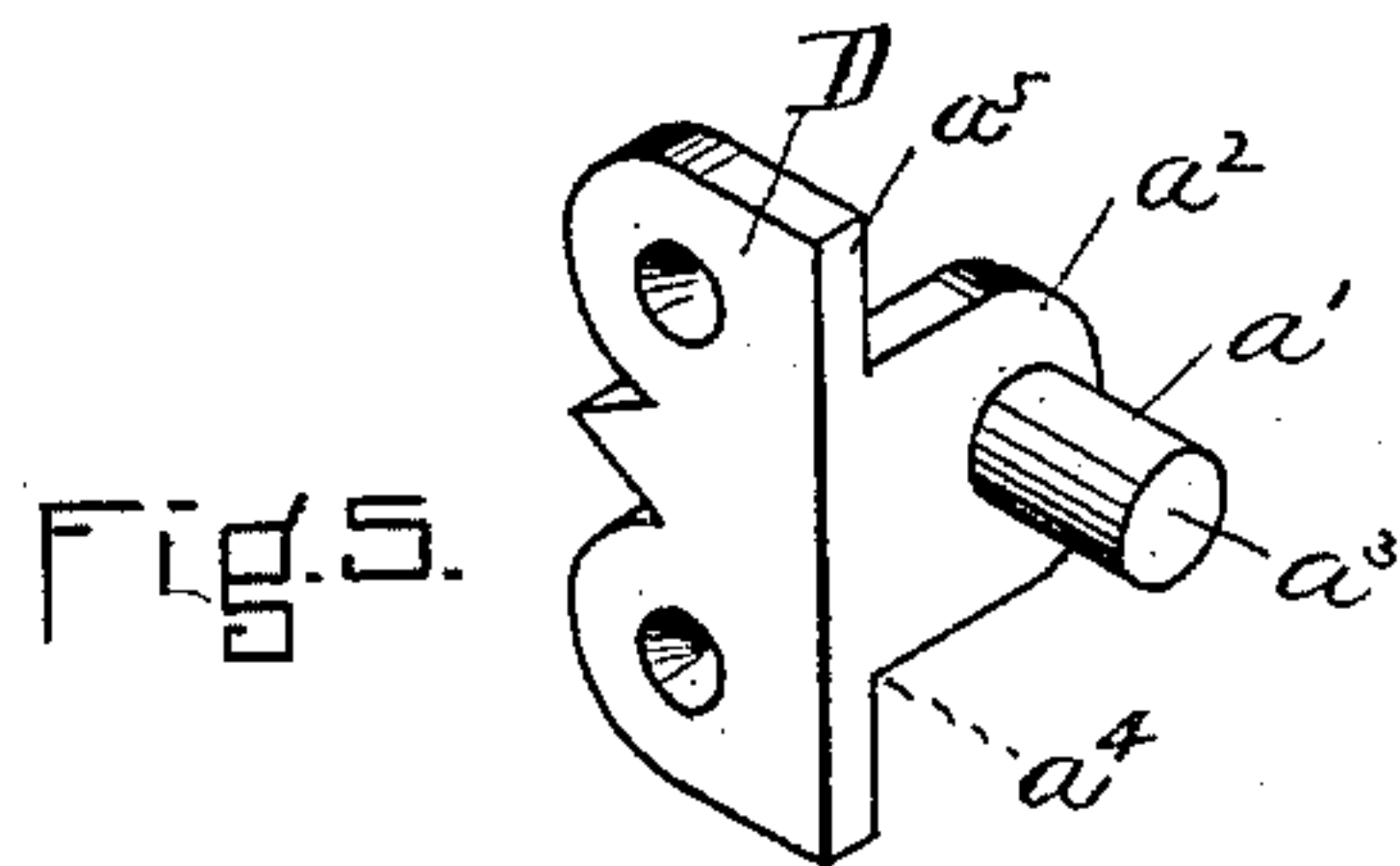
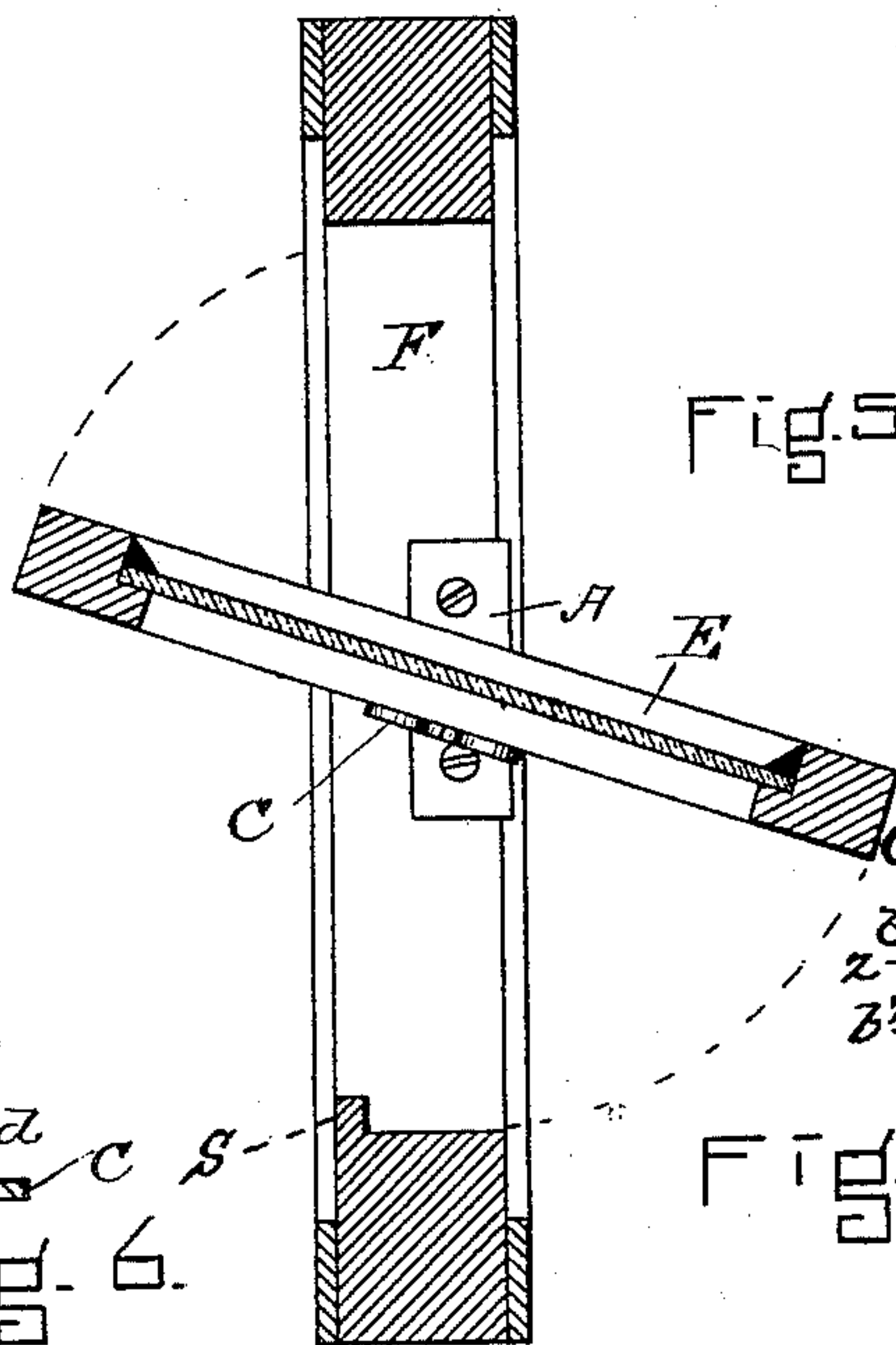
TRANSOM PIVOT.

No. 394,103.

Patented Dec. 4, 1888.



WITNESSES.



INVENTOR.

George A. Movill.
William Duchemin.

Fig. 5. E. H. Duchemin.

UNITED STATES PATENT OFFICE.

EDMUND H. DUCHEMIN, OF NEWBURYPORT, MASSACHUSETTS.

TRANSOM-PIVOT.

SPECIFICATION forming part of Letters Patent No. 394,103, dated December 4, 1888.

Application filed September 7, 1888. Serial No. 284,812. (No model.)

To all whom it may concern:

Be it known that I, EDMUND H. DUCHEMIN, of Newburyport, in the county of Essex and State of Massachusetts, have invented certain
5 new and useful Improvements in Spring Pivot-Hinges for Windows, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to improvements in
10 hinges of that class used in windows wherein the sashes are secured in the frames by a central horizontal pivot; and the objects of my improvements are to provide a hinge of such a nature that the sash will spring into and be
15 held firmly in position when open, and when closed will be kept in place with sufficient pressure to prevent the sash from rattling, or accidental opening or closing by the action of the wind without using guy or stop. I attain
20 these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a front surface view of the window-frame, showing the position of the hinges when the sash is closed; Fig. 2, a transverse
25 section of the frame and sash on line $x x$, Fig. 1, showing the spring and plain pivot-hinge in position; Fig. 3, a transverse section of the same on line $y y$, showing the position of the sash when open; Fig. 4, a view in perspective
30 of the spring pivot-hinge; Fig. 5, a view in perspective of the plain pivot-hinge; Fig. 6, a transverse section on line $z z$, Fig. 7, showing the connection of the parts comprising the spring pivot-joint hinge and mode of securing them; and Fig. 7, a reversed view for reference.

Similar letters refer to similar parts throughout the several views.

F F, Fig. 1, represent the window-frame, in
40 which, by means of the hinges C D, the sash E is held in position. The flange a^5 , Fig. 5, is simply a thin sheet of metal made in any desired form or proportion and having a right-angular stem, a^2 , at the center of the
45 lower end of which projects the round bar a' , which is the pivot on which the sash E rotates.

The spring pivot-joint hinge, Fig. 4, is of the following construction: The body consists
50 of a thin metallic plate, A A, rectangular in form and of any required proportion. Its in-

ner side edge terminates in a right-angular parallel strip, s' , and on its under surface are four parallel studs, $a a a a$, which are connected at their inner marginal edges by trans-
55 verse bars s^2 a short distance from the extreme ends of the plate A A, (see $s^2 s^2$, Fig. 7,) and are so formed that their extreme ends can be bent inward and overlap the ends of the spring-bars $e e$, thus keeping them in position, as
60 shown at $b b b b$, Figs. 4 to 7. The plate is provided with a round hole, s^3 , Fig. 7, for the reception of the shaft b^3 of the pivot B. The extreme inner end of this pivot terminates in a flathead, b^4 , rhomboidal in outline, and its other end in
65 a square stub, b^7 , leaving an intervening space which is circular, and is the rotating shaft b^3 of said pivot B. The flange c , Fig. 4, is made in the same shape and proportion as the flange a^5 , Fig. 5, except that it has a square hole, d ,
70 Fig. 6, for the reception of the square stub d at the lower end of its right-angular stem b' . The spring-bars $e e$ are simply parallel bars of tempered steel of the required length, width, and thickness.

To construct the spring pivot-joint hinge C, the spring-bars $e e$ are placed edgewise under the caps $b b b b$, their flat surfaces bearing against the studs $a a a a$. The pivot B is then placed in position between the springs $e e$,
80 the apex b^4 of the rhomboidal head and the flange c , being in the position shown at b^4 and c , Fig. 7, and the shaft b^3 of the pivot B in the hole s^3 in the plate A A. The square stub b^7 projecting through it is passed into the
85 square hole d in the stem b' of the flange c , and is there riveted, as shown at B, Fig. 6. The hinge is placed in the jambs of the frame F in the same manner as the ordinary pivot-hinge.

In practice to open the window the lower
90 side of the sash E is pushed outward until the apex b^4 has passed the center, when by the action of the springs $e e$ it is carried the remaining distance and is held in position
95 by pressure of said springs against the parallel planes of the head b^4 , (see b^4 and B, Fig. 7,) the spring-bars $e e$ performing the separate functions of sending the window the last half of the
100 distance out or in, and then retaining it in the desired position in the following manner: When the window is pushed outward, the

spring-bars *e e*, by reason of the greater distance between the diagonal and transverse diameter of the rhomboidal head *b⁴*, is forced apart, and when the apex *b⁴* or greatest diameter is passed the tension of the springs in coming together forces the window the remaining part of the distance, when the pressure of the bars *e e* on the parallel planes of said head is sufficient to hold it firmly in the desired position when open, and when closed to press the lower side of the sash against the seat *s* in the sill of the frame *F*, Fig. 3, with sufficient firmness to insure against the window rattling or being blown open, which pressure is obtained by proportioning the space between the studs *a a a a* more or less narrower than the transverse diameter of the rhomboidal head *b⁴* of the pivot *B*, as the required pressure may be light or heavy. Thus when said head is forced in between the bars *e e* they become slightly concaved, which causes, their heaviest nip to operate at the extreme ends of the parallel planes, which tends to hold the sash more firmly than it would be held if the said bars were in a straight line.

It will be observed that by the operation of this device the window is always opened to the same distance. Consequently the rhomboid must be made more or less oblique, as the distance the window is intended to remain open varies in extent. This result, however, can be changed by increasing the squares on the head *b⁴* to any practical number; but as in so doing the head would have to be larger in diameter and the parallel planes shorter, which would proportionately lessen the nip of the spring-bars *e e* thereon, I prefer the herein-described form as the most positive in results when applied to heavy windows.

The principle involved in this device is: The spring-bars *e e*, by their action on the parallel planes of the head *b⁴*, force the window one-half of the required distance out or in, and,

further, hold it in the intended position. Consequently the longer the parallel planes are made the stronger will be their retaining-power in holding the window open or keeping it in position when closed.

D, Fig. 5, represents the plain pivot-hinge used in connection with the herein-described device, of which only one is used for each window. Its pivot *a'* rotates in the jamb of the window-frame *F*, as shown at *a'*, Fig. 2; but is not claimed as part of this invention.

It will be understood that I do not confine myself to the exact mode of construction herein described, as there are many other ways of constructing the device, having the same results in view; nor do I claim the device as exclusive of spring-hinges, but simply for the purposes set forth in the preamble of this specification; but

What I do claim as new, and desire to secure by Letters Patent, is—

1. The herein-described spring pivot-joint hinge, consisting of the plate *A A*, having the hole *s³* and studs *a a a a*, the flange *c*, pivot *B*, with the head *b⁴*, and spring-bars *e e*, constructed and arranged substantially as described, for the purposes specified.

2. In a spring pivot-hinge for windows, the plate *A A*, having the hole *s³*, the parallel studs *a a a a*, the caps *b b b b*, and spring-bars *e e*, in combination with the pivot *B*, the rhomboidal head *b⁴*, shaft *b³*, and flange *c*, constructed and arranged substantially as and for the purposes described and set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 5th day of September, A. D. 1888.

EDMUND H. DUCHEMIN.

Witnesses:

GEORGE A. MORRILL,
WILLIAM DUCHEMIN.