

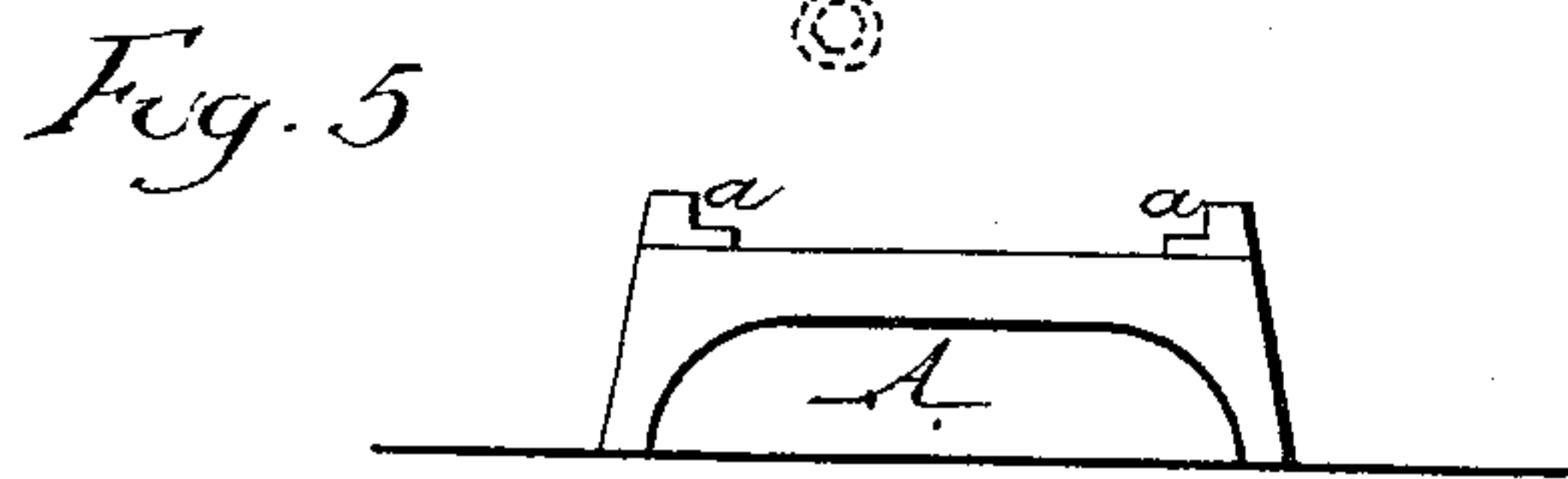
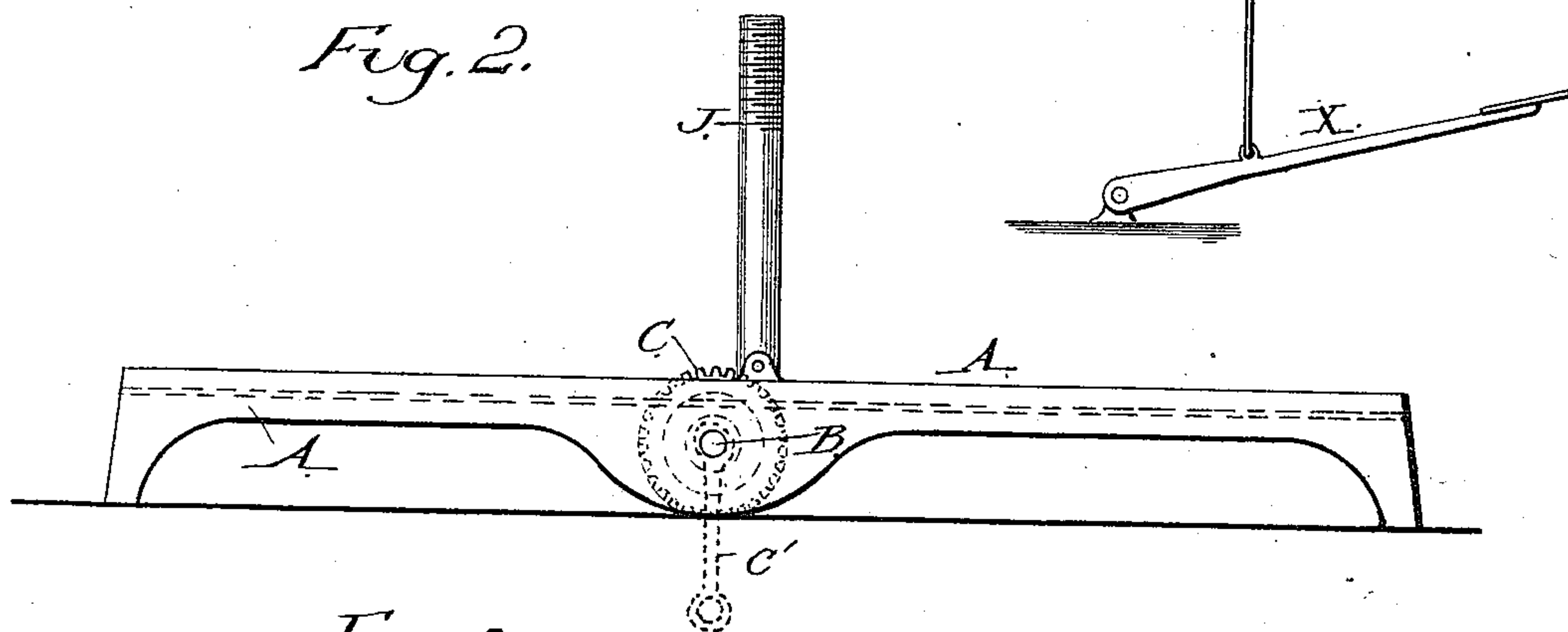
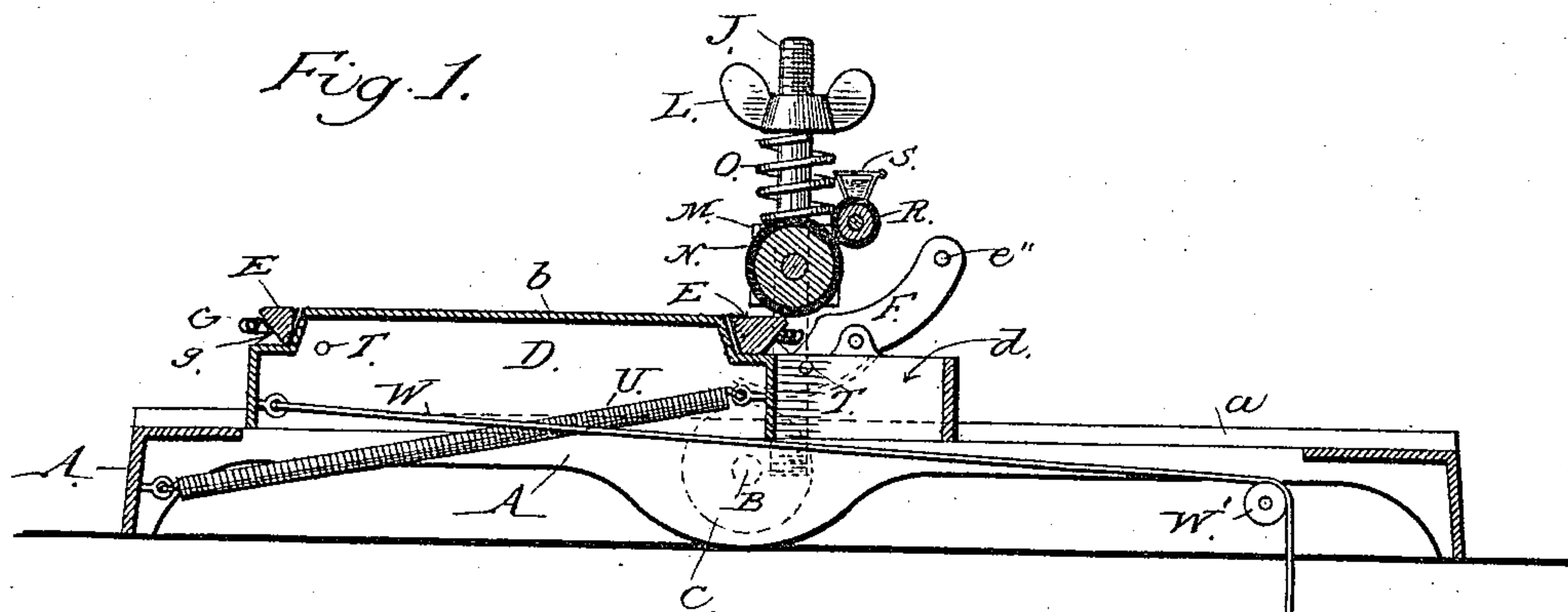
(No Model.)

3. Sheets—Sheet 1.

W. G. FUERTH.
REDUPLICATING APPARATUS.

No. 440,756.

Patented Nov. 18, 1890.



WITNESSES.

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(No Model.)

3 Sheets—Sheet 2.

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Fig. 3.

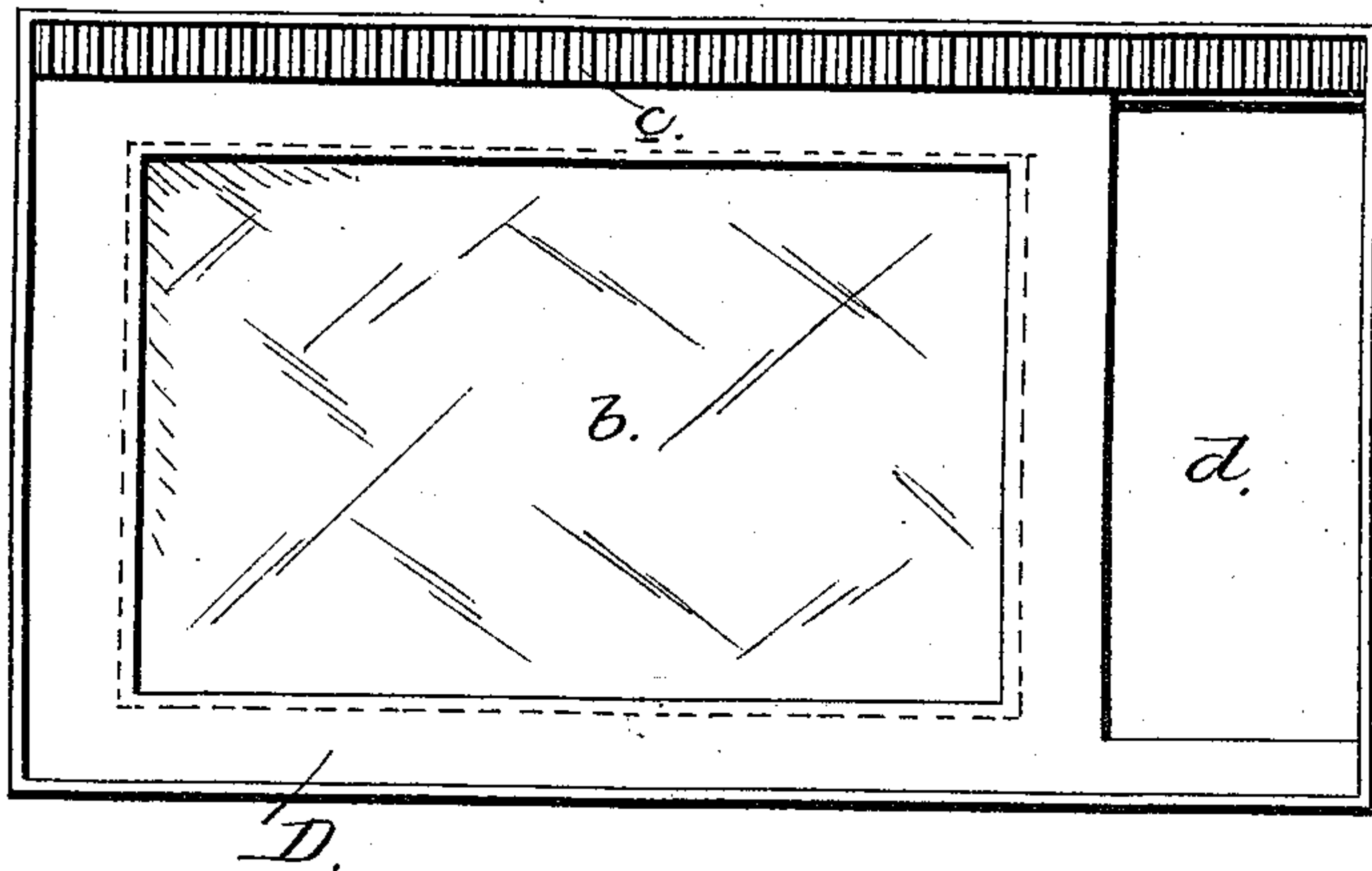


Fig. 4.

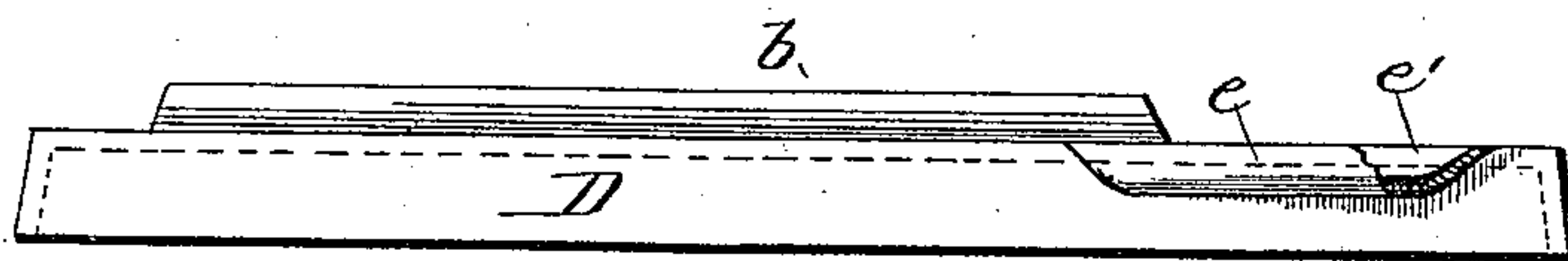
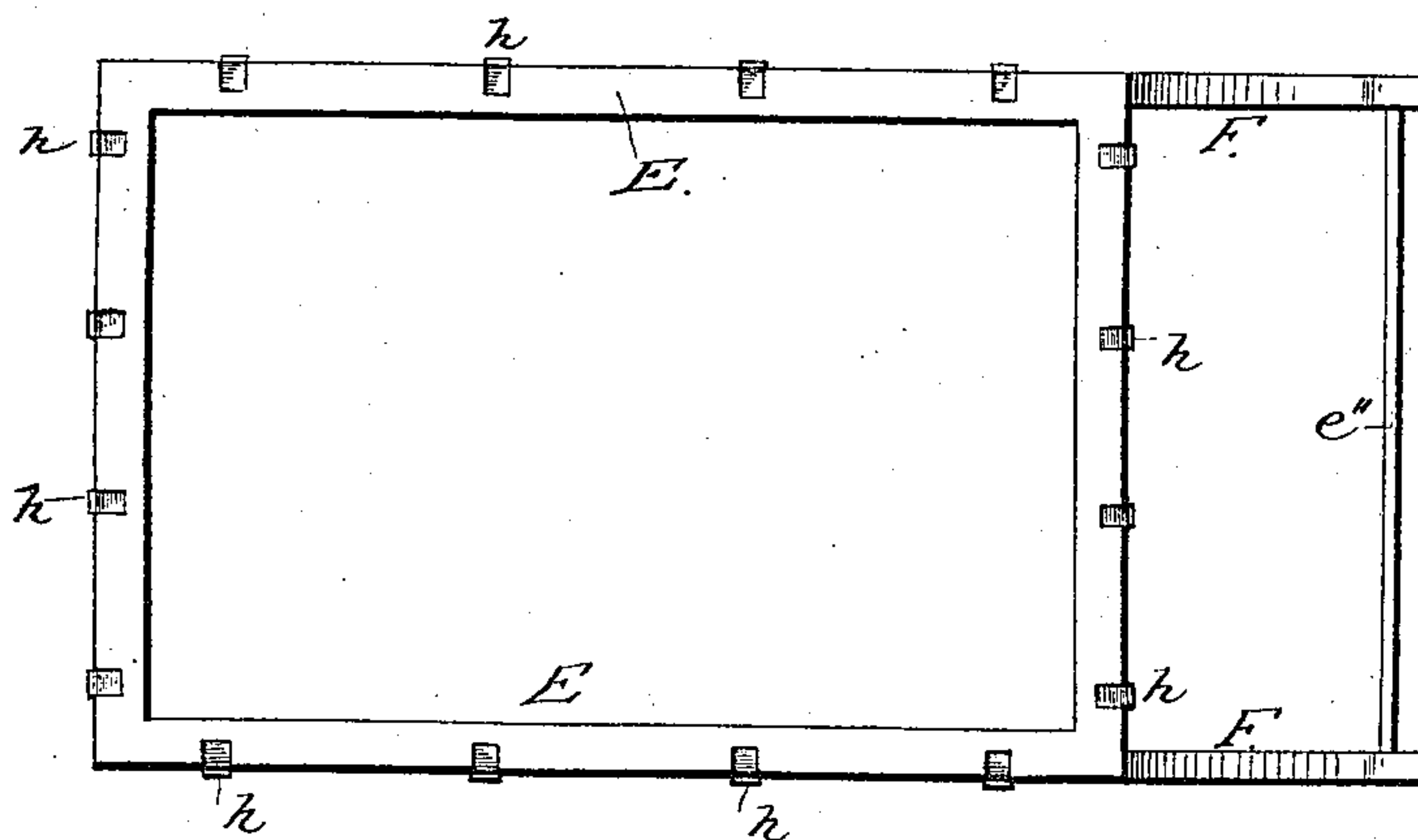


Fig. 6.



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3 Sheets—Sheet 3.

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Fig. 7.

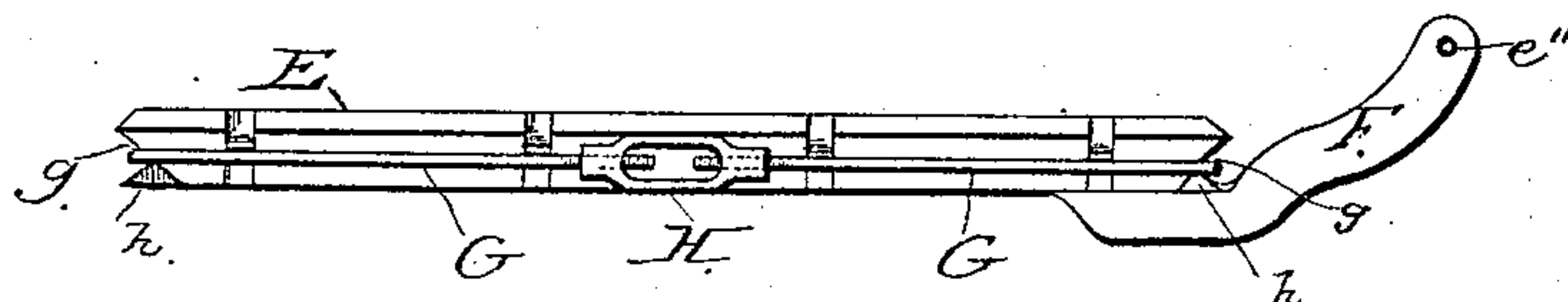


Fig. 8.

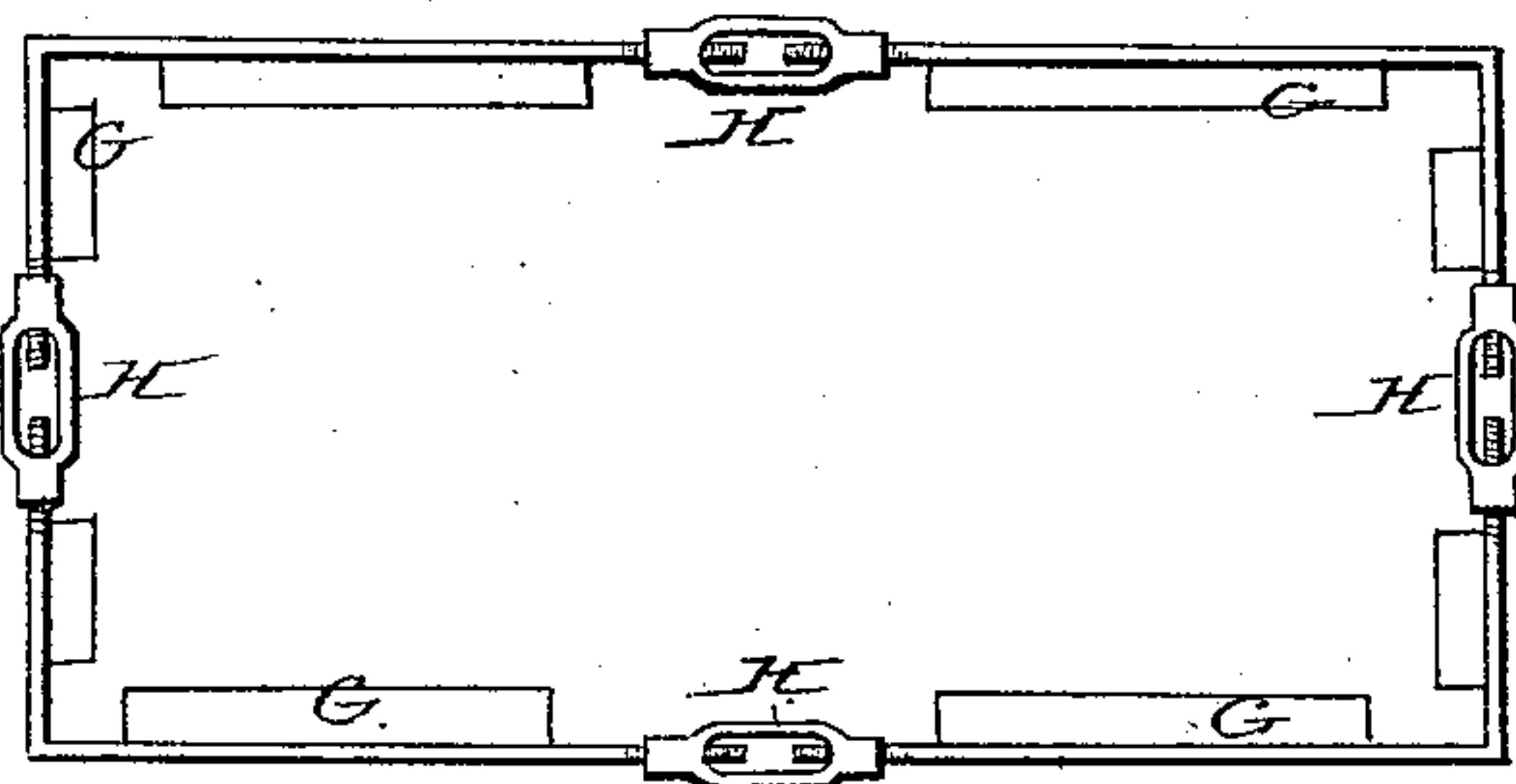
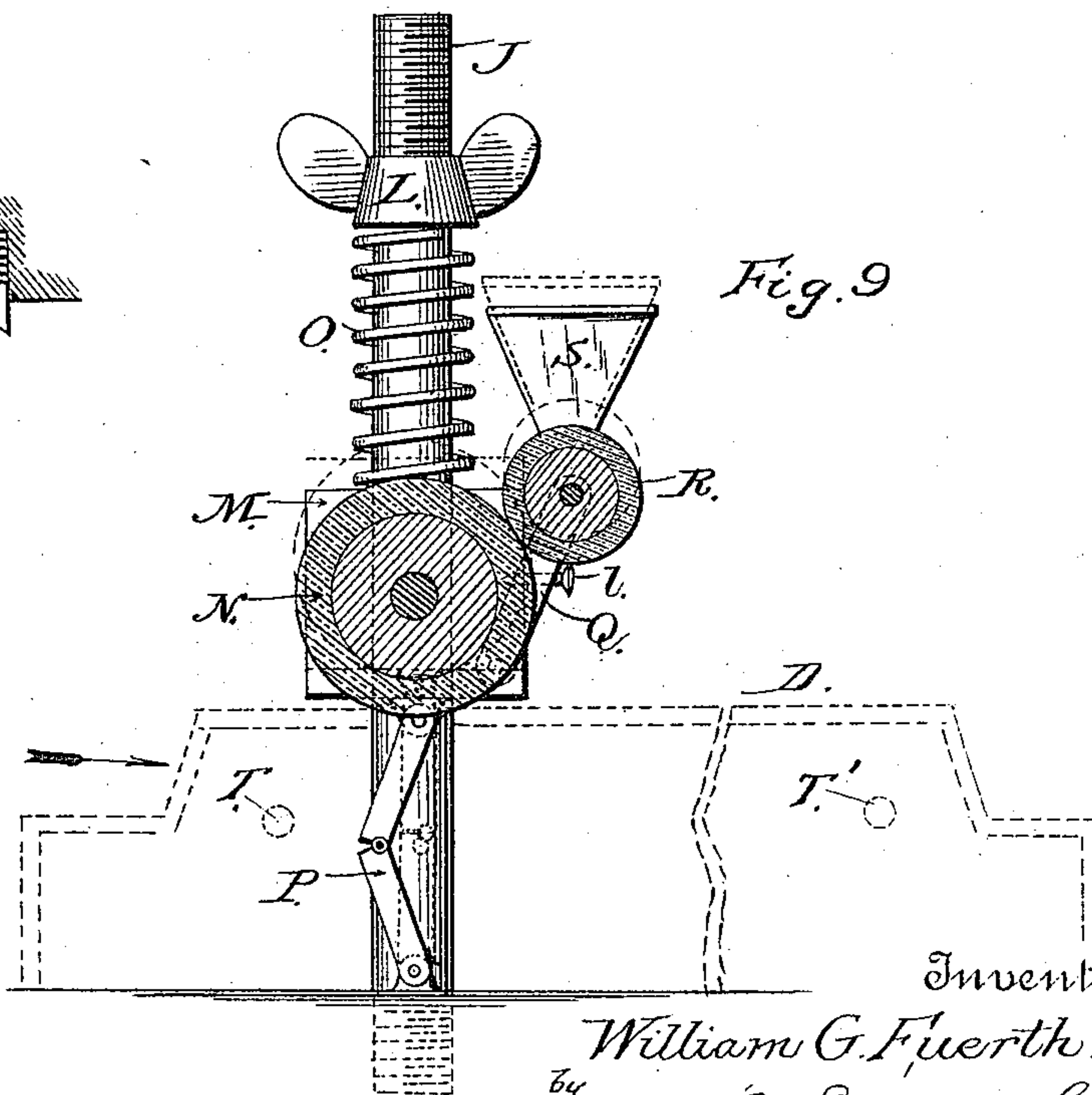


Fig. 10.



Fig. 9.



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UNITED STATES PATENT OFFICE.

WILLIAM G. FUERTH, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE
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REDUPLICATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 440,756, dated November 18, 1890.

Application filed June 26, 1890. Serial No. 356,779. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM G. FUERTH, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Reduplicating Apparatus, of which the following is a full and clear description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a longitudinal sectional view of the apparatus. Fig. 2 is a side elevation of the base, showing the posts or pillars and the driving gear-wheel. Fig. 3 is a bottom plan view of the movable stencil-carrying frame, showing the slot or opening through which the printed sheets are discharged and the rack with which the driving-gear engages. Fig. 4 is a side view of the stencil-carrying frame. Fig. 5 is a front view of the base-frame. Fig. 6 is a plan view of the stencil-holding frame. Fig. 7 is a side view of the same, showing the means for clamping the stencil-sheet. Fig. 8 is a detail of the clamp. Fig. 9 is a detail of the inking-roller and the means for supporting the same. Fig. 10 is a detail to be referred to.

My invention relates to an improved means for reduplicating or manifolding written or printed matter, as well as reproducing drawings, sheet-music, autograph writings, and all other writings, characters, or marks; and my invention consists of the construction and combination of devices which I shall herein-after describe and claim.

To enable others skilled in the art to which my invention appertains to make and use the same, I will now describe its construction and indicate the manner in which the same is carried out.

Referring to the drawings, A indicates a base-frame of any suitable design and construction, which is adapted to be placed upon a table or stand in the manner common to this class of machines, the said frame having a shaft B journaled therein at a point near the center and provided with a spur-gear C and crank-handle C' for operating the machine by hand-power, the purpose of which I will presently explain.

Upon the base-frame and mounted in guides or channels *a* therein is a stencil-carrying frame D, in which a suitable platen *b* is formed, while on the under side of said frame near one side thereof is a rack *c*, which extends about the full length of the frame D, and is adapted to be engaged by the spur-gear C on the base-frame, whereby said stencil-carrying frame may be caused to move across the base-frame. The stencil-carrying frame is about one-half the length of the base-frame, and at one end is formed with an opening or slot *d*, through which the printed sheets are delivered in the usual manner, and on the sides of said stencil-carrying frame, near the end which has the discharge opening or slot, are projections *e*, having depressions *e'*. (See Fig. 4.)

A frame E, having its center open, is adapted to be fitted down on the stencil-carrying frame, so that its open center may receive the platen, and is provided with grooved outer walls *g*, having lugs *h*, over which is adapted to be placed the clamps which secure the stencil-sheet in place, said frame E having also projecting forward from its sides weighted arms F, which normally lie within the depressions in the projections *e* on the platen-frame D. A rod *e''* joins the two arms F, and is struck by the bearings of the roller, whereby the rear end of said frame is elevated to cause the discharge of the printed sheet in the usual manner.

In using my apparatus the previously-prepared stencil-sheet is laid upon the platen with a sheet beneath it, and the frame E is then placed over the stencil-carrying frame so that its four sides may rest upon the edges of the sheets. The clamps, which consist of bent corner-rods G, and intermediate turn-buckles H, placed between the adjoining threaded ends of the rods, are then slipped over the frame E, so that said rods G may rest in the grooves and over the lugs *h* in said frame, after which the turn-buckles are adjusted, thereby drawing upon the rods G and causing them to bind upon the edges of the sheets and to hold said sheets with the desired amount of tension.

The inking mechanism previously referred

to is plainly shown in Fig. 9, and consists of the following mechanism: Upon the base-frame A, one at each side, are two upwardly-extending posts J, which lie just outside of the path of the stencil-carrying frame, and whose upper ends are threaded to receive the thumb-nuts L. Upon said posts are boxes M, adapted to receive the journals of the inking-roller N, which extends transversely across the stencil-carrying frame, and is normally held down against the stencil-sheet with the requisite pressure by means of springs O, which surround the posts between the upper surface of the boxes M and the under surface of the thumb-nuts L, by whose adjustment the tension of the spring is determined. A pivoted or jointed break-lever P is introduced between the under surface of each box and the upper surface of the base-frame A, its opposite ends being pivotally secured to said surfaces and its central portion having a hinged or jointed connection, substantially as shown in Fig. 9, whereby when the stencil-carrying frame is moved on the return-stroke it causes the levers to "break joint" at the center to cause the roller N to descend and bear upon the stencil-sheet during the forward passage of the stencil-carrying frame. Extending upwardly at an angle from the boxes M are two pivoted arms Q, between the upper ends of which is mounted a feed-roller R, which is held against the discharge end of the ink fountain or reservoir S, which is supported from the posts or otherwise, as may be desired, and the feed-roller is caused to bear with the desired pressure against the inking-roller by means of a pin I, which passes through the arms Q into the boxes M, as shown in Fig. 9.

Mounted in each side and at each end of the sliding stencil-carrying frame in the path of the break-levers P are pins T T', adapted to trip the inking mechanism in the following manner: On the forward passage of the stencil-carrying frame the inking-roller is down and resting with the desired pressure upon the stencil sheet, in which condition it remains until the forward movement has ended, at which point the pin T strikes the joint so as to cause the latter to straighten out, thereby elevating the inking-roller out of the way and permitting the return passage of the platen-frame and sheets, as no printing need be done on the backward movement, the printed sheet being discharged at the completion of the return movement by the arms F coming in contact with the bearings or boxes of the inking-roller or other pieces. When a new sheet is placed beneath the stencil and the platen-frame is moved forward again, the pin T', at the opposite end of the frame, strikes against the jointed levers at the end of the return movement, so as to cause them to break joints, when the springs O throw the inking-roller downward upon the stencil, whereby said stencil is again supplied with ink.

If desired, I may use spring-pins having

beveled faces, as shown in Fig. 10; but the plain pins projecting from the frame, as in Fig. 9, will answer the purpose and are more cheaply made. The vertical movements therefore of the inking mechanism are produced automatically by the sliding back and forth of the platen-frame.

Any well-known means may be employed for moving the platen-frame over the bed-frame—such, for instance, as the rack-and-pinion mechanism previously described for a hand-power machine; but I have shown in the drawings a preferred mechanism, operated by foot-power, for producing the desired movements. When such a means as last described is employed, the sliding stencil-carrying frame has secured to it one end of a spring U, whose opposite end is secured to the base-frame, and said stencil-carrying frame has secured to it one end of a strap or connection W, which is extended forward over a guide-pulley W', and thence carried downward to a pivoted foot-lever X. From this description it will be seen that when the foot-lever is depressed it draws down upon the strap or connection and causes the frame D to move forward so that the stencil may pass under the inking-roller. When the foot is released from the foot-lever, the spring contracts and returns the stencil-carrying frame to its normal position. I do not limit myself to this specified form of mechanism for propelling the stencil-carrying frame, for the same movements may be accomplished by hand or otherwise without departing from the spirit of my invention.

Among the advantages claimed for this apparatus are uniformity of pressure upon the stencil, thereby insuring all the copies being alike; uniformity of ink-supply, which insures uniform copies; removing the usual rubbing friction from the stencil-sheet, thereby increasing the number of copies from said sheet, and a uniform rate of rotation of the ink-roller.

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

1. In a reduplicating apparatus having a stationary bed-frame, the combination of a movable stencil-carrying frame, means for causing the same to move across the bed-frame, and an inking-roller tripped by the passage of the stencil-carrying frame, whereby the roller is automatically brought into and out of contact with the stencil, substantially as herein described.

2. In a reduplicating apparatus, the combination of a stationary bed-frame, a sliding stencil-carrying frame mounted in guides thereon, and a spring-actuated inking-roller raised and lowered automatically by the passage of the stencil-frame, substantially as herein described.

3. In a reduplicating apparatus, a bed-frame and a stencil-carrying frame mounted to slide thereon, in combination with the frame E, adapted to be fitted over the stencil-carrying frame, and the turn-buckles or analo-

gous devices engaging the threaded ends of adjoining rods, substantially as herein described.

4. In a reduplicating apparatus having a frame which supports the stencil-sheet, a means for clamping said sheet, consisting of an open frame fitting over the sheet-supporting frame and a clamp surrounding said open frame and comprising bent rods and intermediate turn-buckles, whereby the edges of the stencil and its underlying sheet are securely clamped, substantially as herein described.

5. In a reduplicating apparatus having a movable stencil-carrying frame, the combination of an inking-roller mounted in vertically-adjustable bearings and a jointed connection in the path of the movable stencil-carrying frame, whereby said roller is automatically raised and lowered by the passage of the said frame, substantially as herein described.

6. In a reduplicating apparatus, a bed-frame having the posts, and a stencil-carrying frame mounted to slide on said bed-frame, in combination with an inking-roller, journal-bearings mounted on said post and receiving the journals of the roller, springs bearing against the boxes to hold the roller normally down, and a jointed lever or connection be-

tween the bearings and the bed-frame, said lever being adapted to be tripped by the passage of the stencil-carrying frame, substantially as herein described.

7. In a reduplicating apparatus, the bed-frame, the frame for the stencil, a clamping-frame, and means for moving the stencil-carrying frame across the bed-frame, in combination with a vertically-adjustable inking-roller, a jointed connection between the same and the bed-frame, and pins on the stencil-carrying frame for automatically engaging and tripping said jointed connection, whereby the inking-roller is raised and lowered, substantially as herein described.

8. In a reduplicating apparatus, the combination of the bed-frame, the sliding stencil-carrying frame, the sliding boxes M, ink-rollers mounted between the same, a jointed support for the boxes tripped by the passage of the stencil-carrying frame, an ink-fountain and roll, and the adjustable arms in which the roll is mounted, substantially as herein described.

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