

(No Model.)

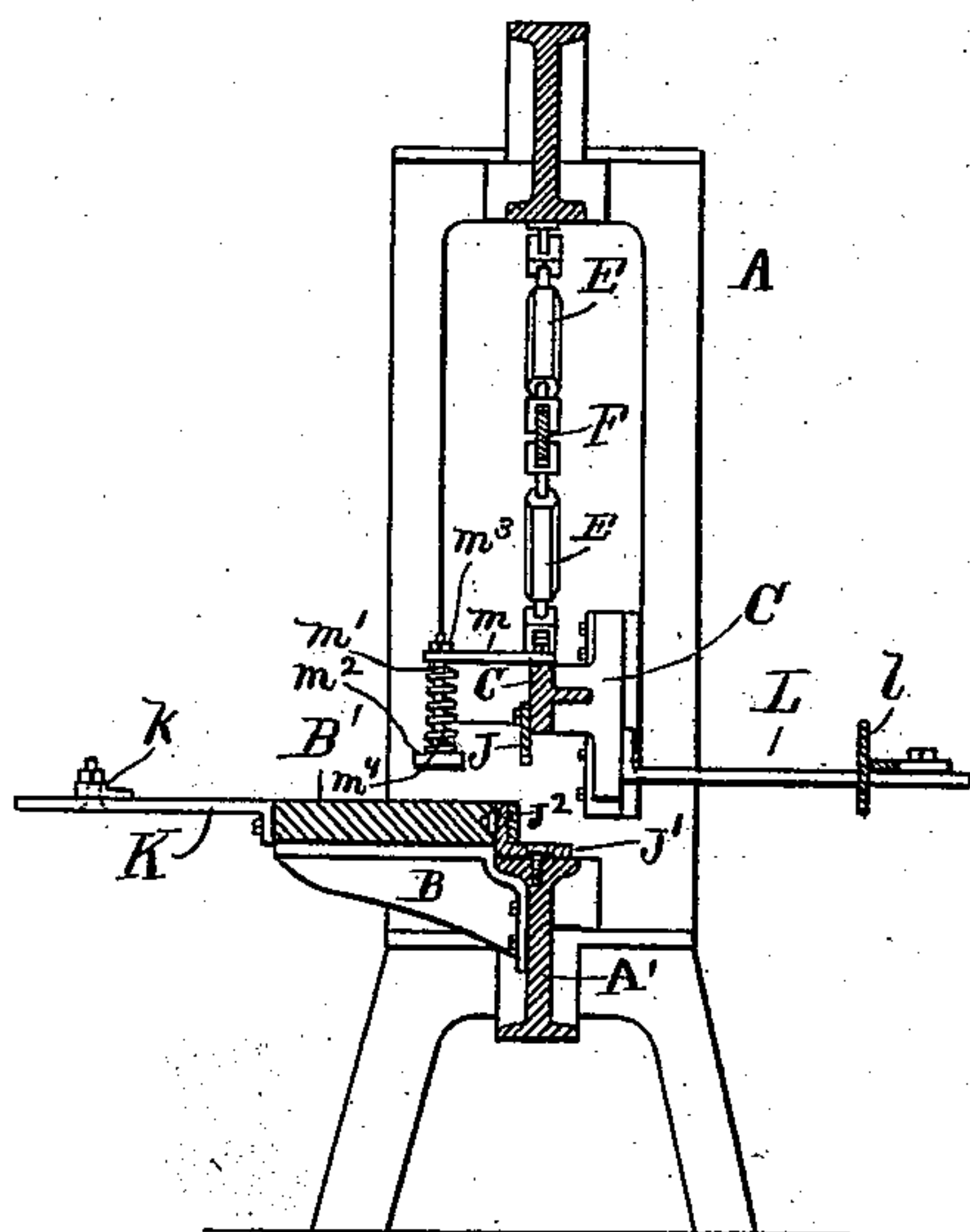
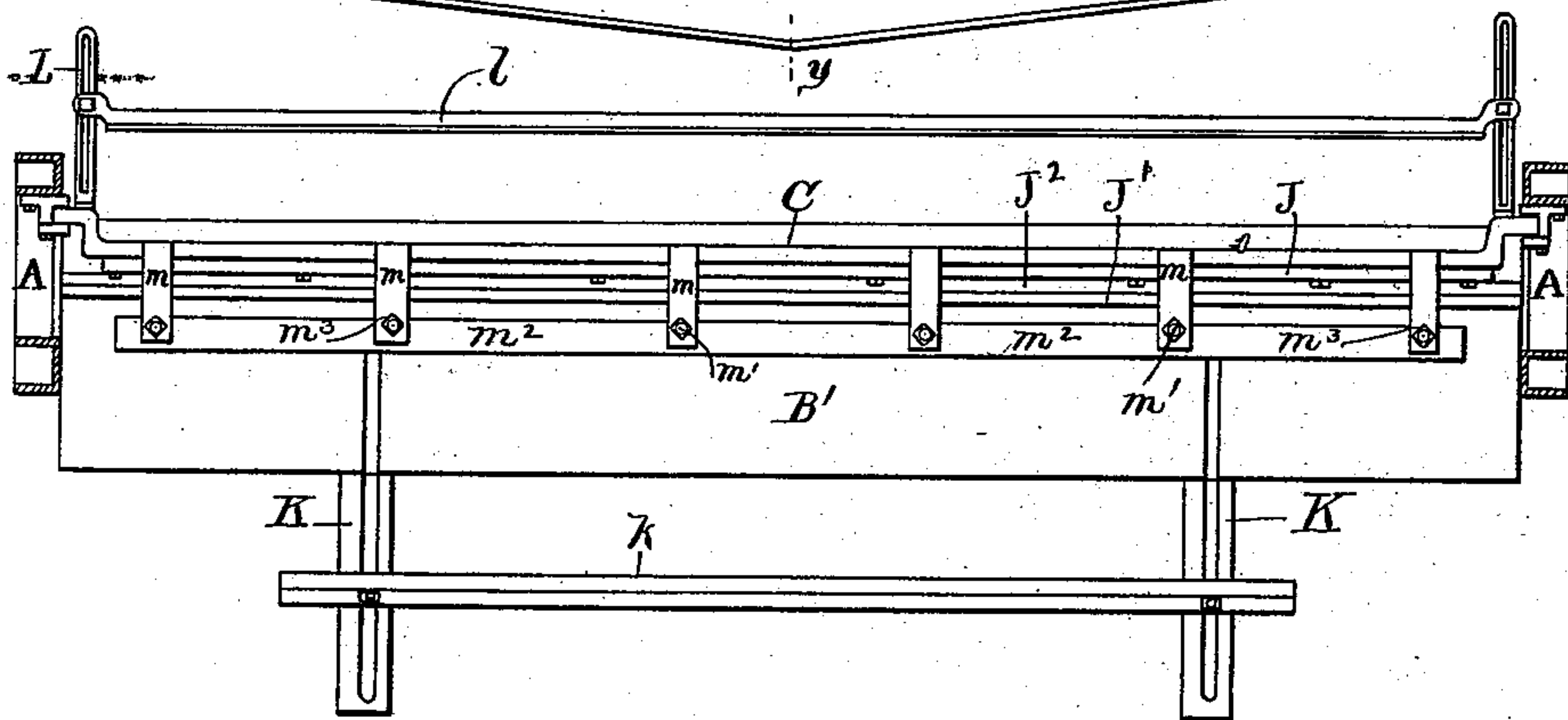
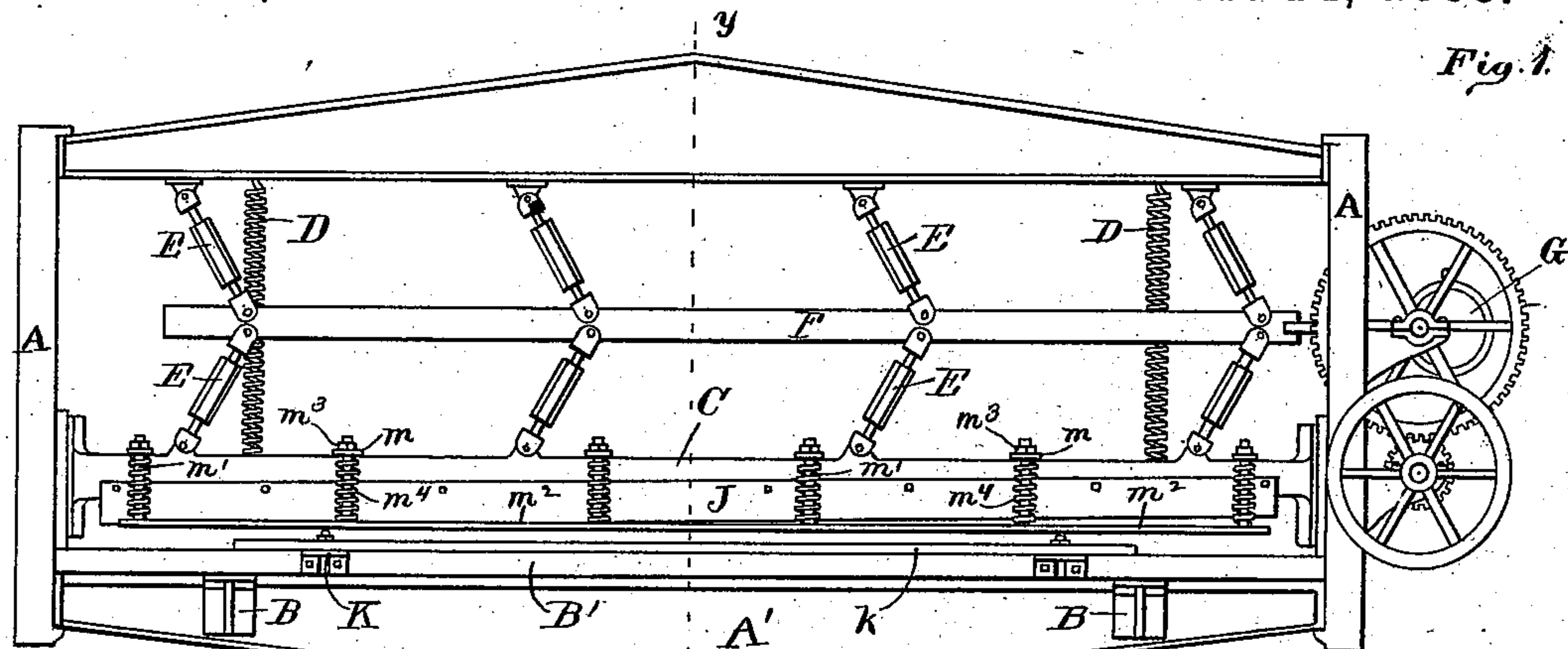
3 Sheets—Sheet 1.

L. L. SAGENDORPH.

MACHINE FOR SHEARING OR PUNCHING SHEET METAL.

No. 377,780.

Patented Feb. 14, 1888.



Attest
W. P. Gulick.
E. M. Harmon.

Fig. 3.

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(No Model.)

3 Sheets—Sheet 2.

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Fig. 4

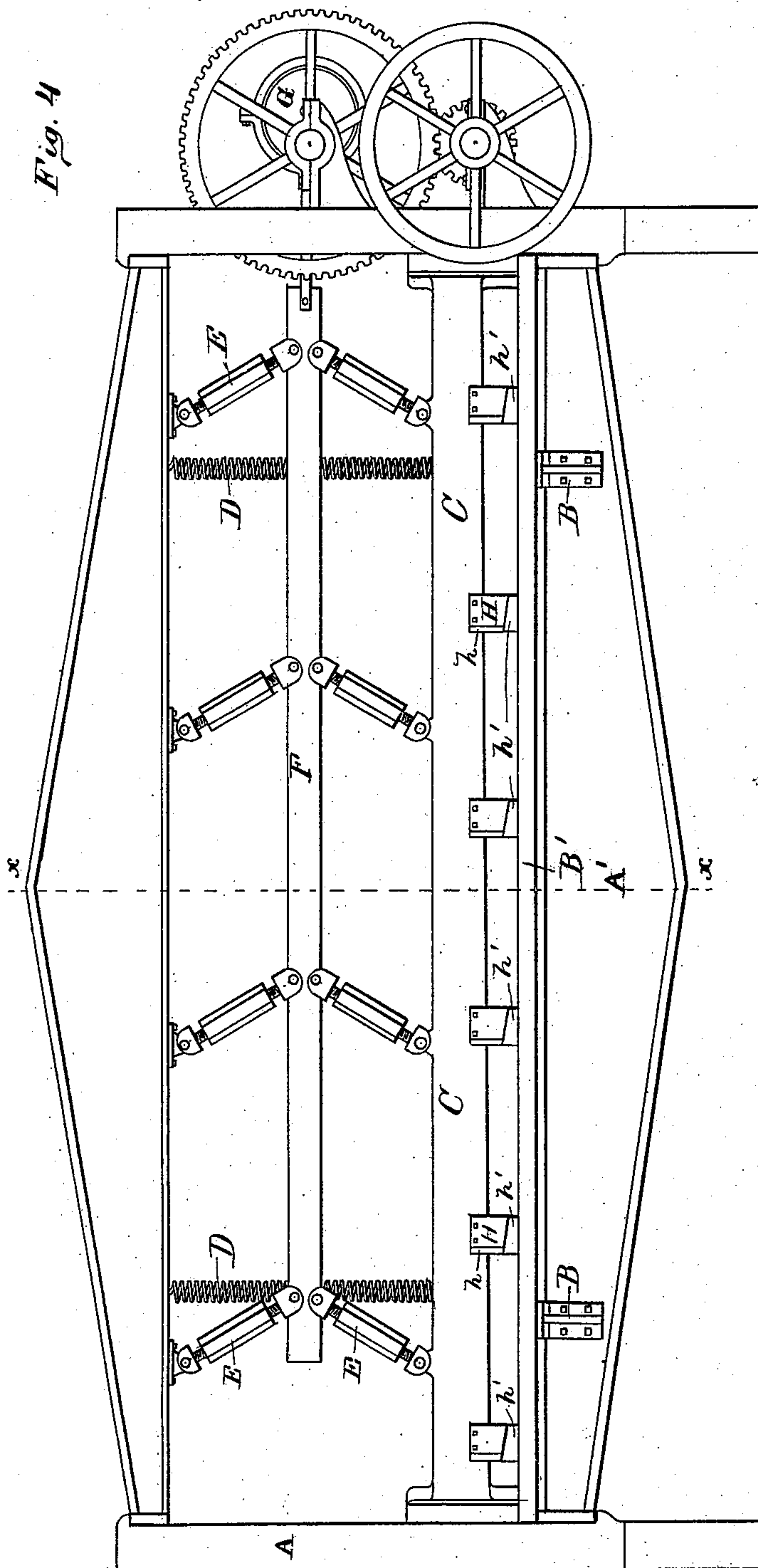
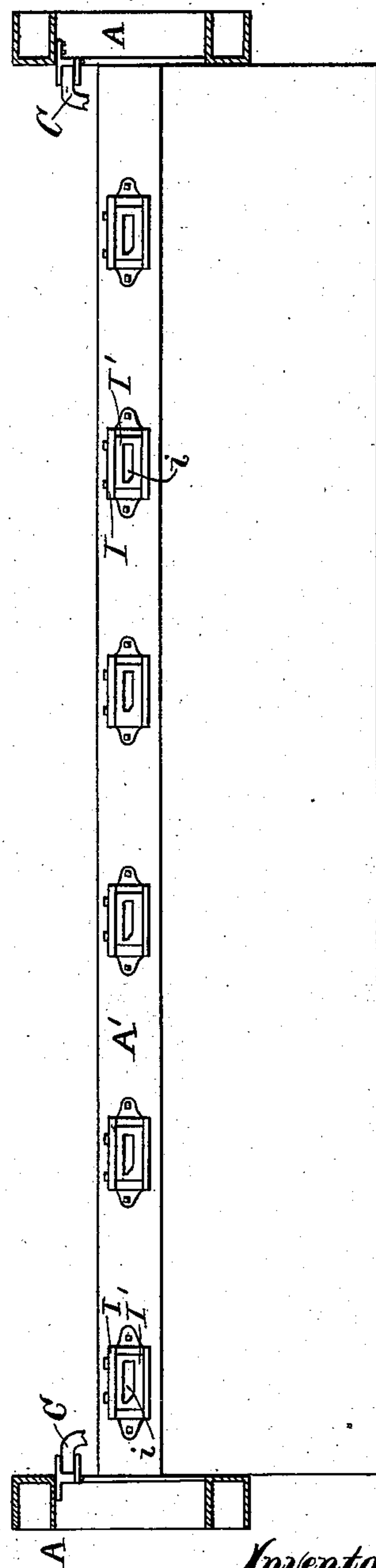


Fig. 5



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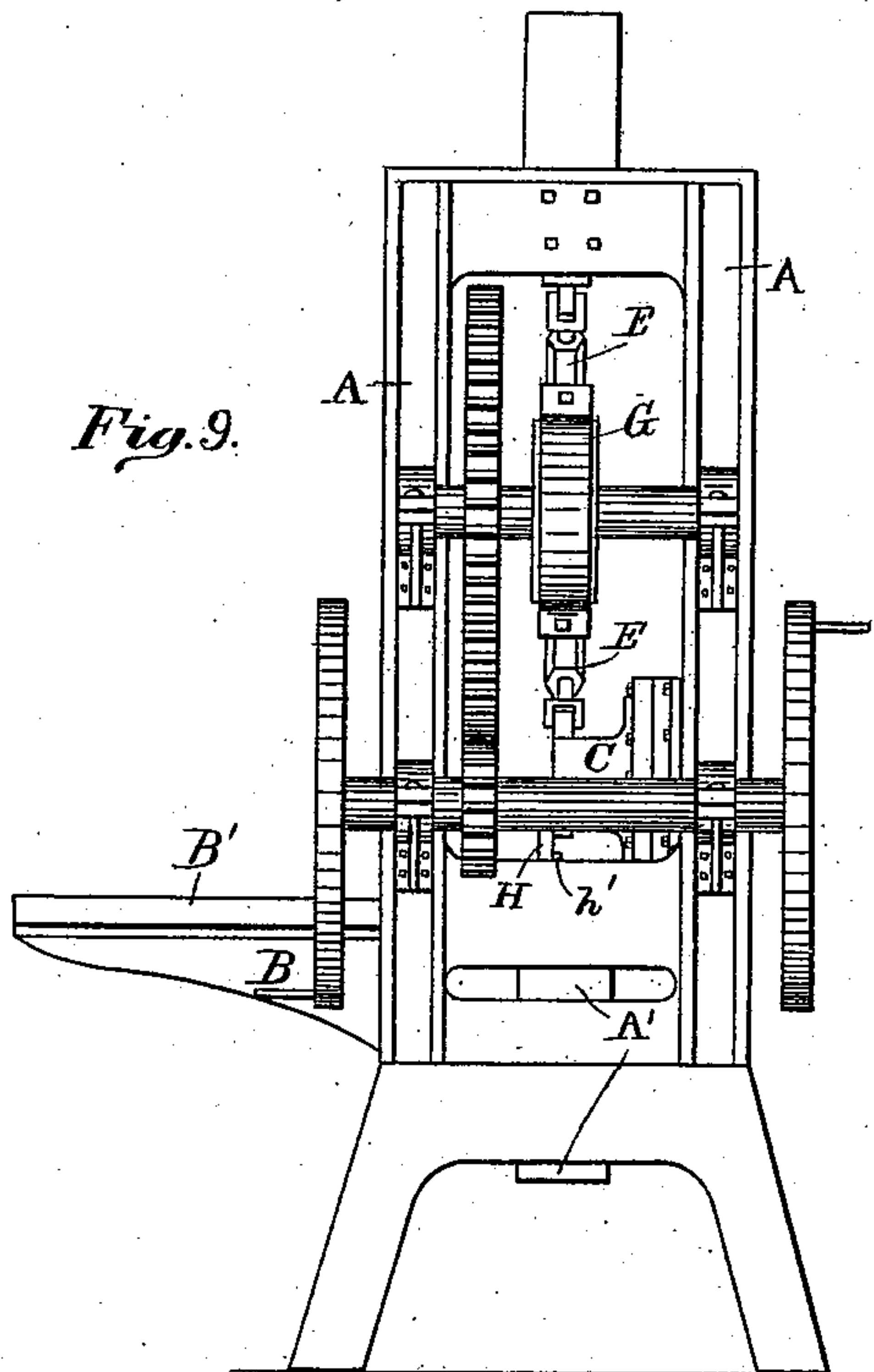


Fig. 9.

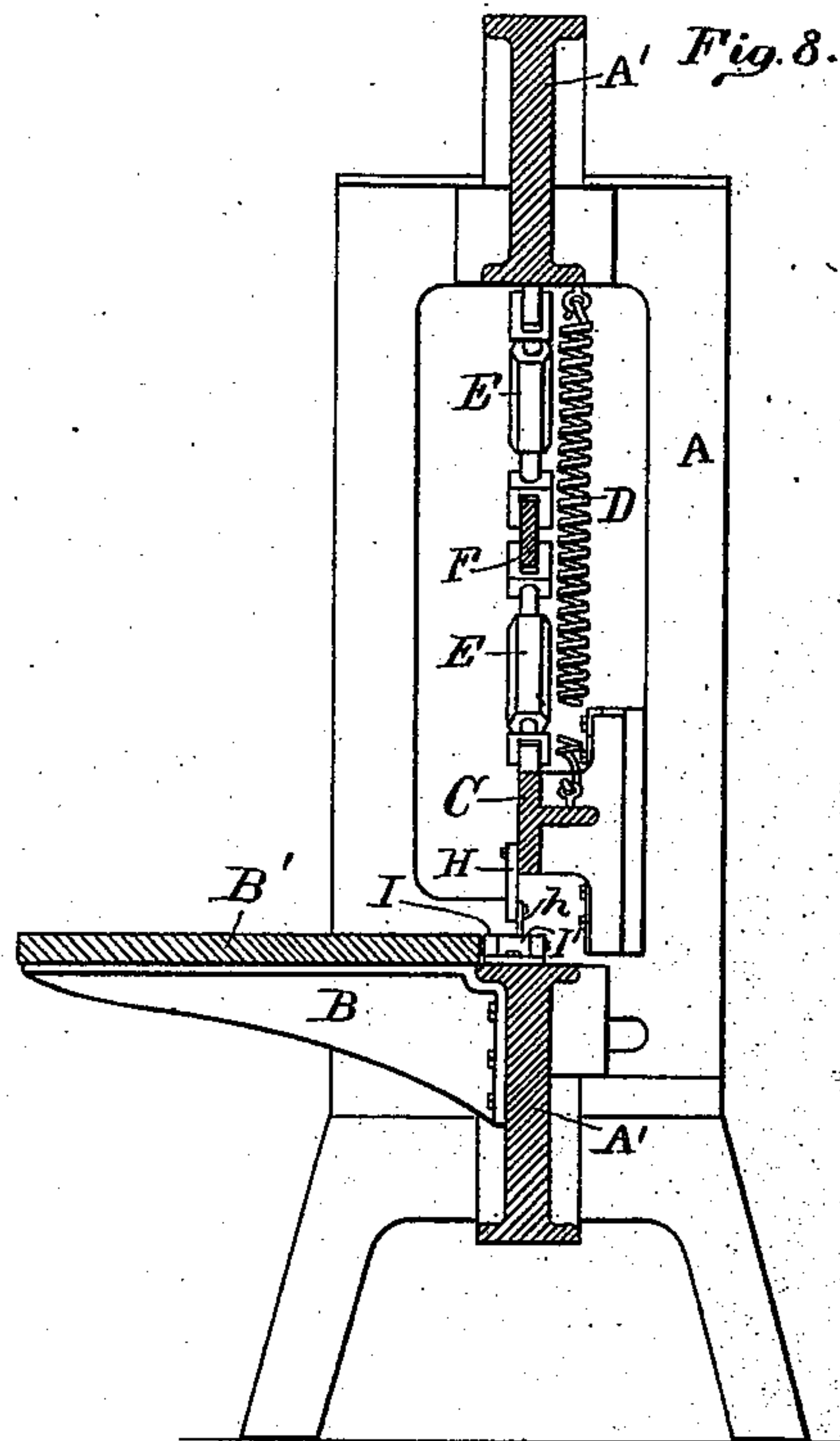


Fig. 8.

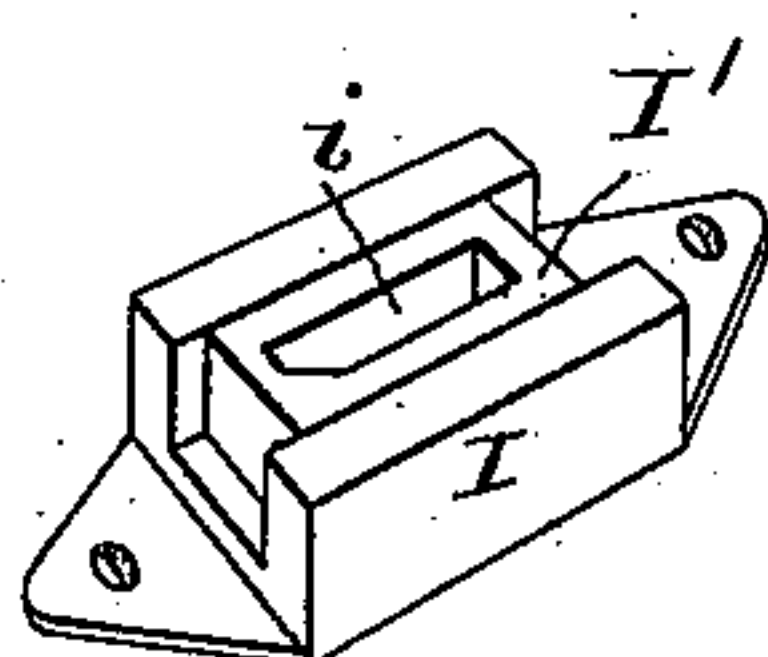


Fig. 6.

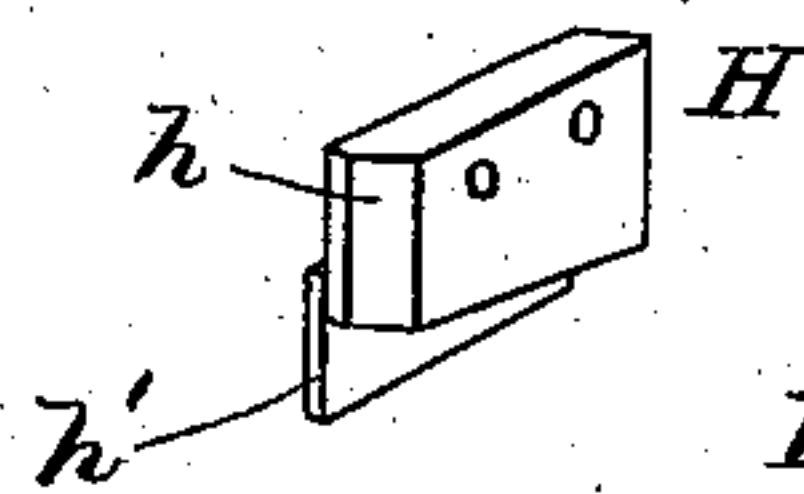


Fig. 7.

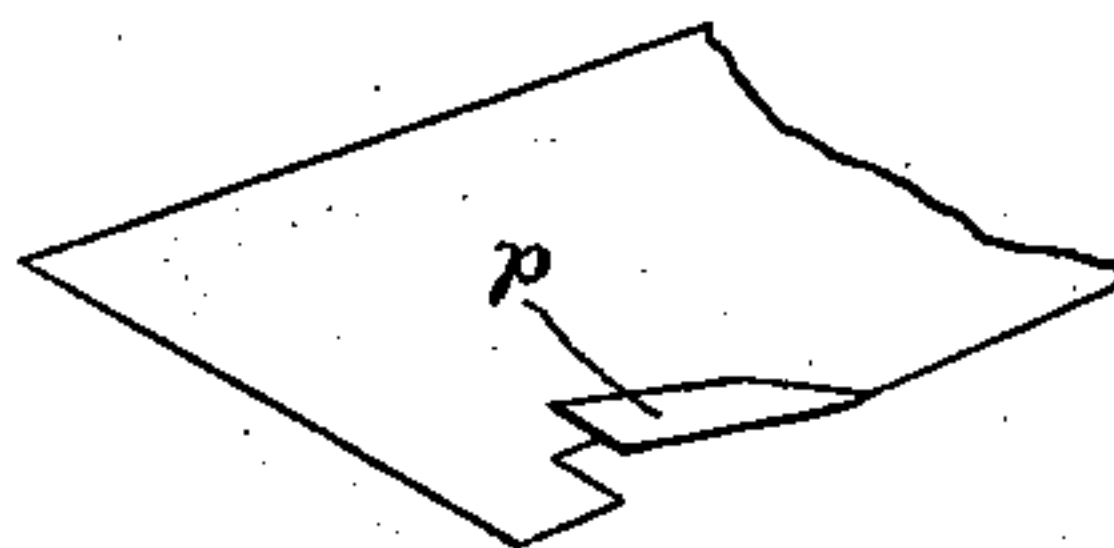


Fig. 10.

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UNITED STATES PATENT OFFICE.

LONGLEY LEWIS SAGENDORPH, OF CINCINNATI, OHIO, ASSIGNOR OF ONE-HALF TO HARLAN P. LLOYD, OF SAME PLACE.

MACHINE FOR SHEARING OR PUNCHING SHEET METAL.

SPECIFICATION forming part of Letters Patent No. 377,780, dated February 14, 1888.

Application filed June 13, 1887. Serial No. 241,220. (No model.)

To all whom it may concern:

Be it known that I, LONGLEY LEWIS SAGENDORPH, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Machines for Shearing and Punching Sheet Metal, of which the following is a specification.

The several features of my invention and the advantages arising from their use, conjointly or otherwise, will be apparent from the following description.

In the accompanying drawings, forming part of this specification, Figure 1 is a front elevation of my machine adapted for shearing, the legs being omitted. Fig. 2 is a top view of the machine, as shown in Fig. 1, the top of the frame-work and the toggle-arm mechanism being removed. Fig. 3 is a sectional elevation, the section being taken at the line *y y*, Fig. 1, springs D being omitted. Fig. 4 is a front elevation of a machine embodying my improvements and adapted for punching. Fig. 5 is a plan view of the table of the machine shown in Fig. 4. Fig. 6 is a perspective view of one of the female dies receiving the punches illustrated in Fig. 7. Fig. 7 is a perspective view of one of the punches used on the machine. Fig. 8 is a sectional elevation, the section being taken at the line *x x*, Fig. 4. Fig. 9 is an end elevation of the machine shown in Fig. 4, springs D being omitted. Fig. 10 is a perspective view of part of a roofing-plate punched in the machine shown in Fig. 4.

The frame A A' supports the brackets B, and also the mechanism for operating the bar C. The bar C is hung from the top of the frame-work by heavy springs D, which tend to raise it. It is guided in its movements by guides at the sides of the frame-work, in which the ends of the bar fit.

The mechanism for operating the bar C consists of several sets of toggle-arms, E E, which are joined to the bar F, this latter receiving a reciprocating motion from the eccentric G, preferably by means of the mechanism, as illustrated. To the upper shearing-bar, J, is attached the bar C in such a manner that its cutting-edge is slightly inclined. The angle-iron J' is fitted into the angle between the ta-

ble B' and the cross-brace A', and is securely attached to the latter. The vertical portion of the angle-iron J' carries the lower shearing-bar, J². Extension-arms K are also preferably attached to the table B' to hold the front gage, *k*, which is adjustable in position on the arms K and table B', as shown. The rear gage, *l*, is supported by the arms L, projecting backwardly from the ends of the bar C.

The machine is also provided with a clamping device for holding the sheet metal during shearing. Bars *m*, projecting forwardly from the bar C, have passing through their front ends vertical rods *m'*, which have attached to their lower ends the clamping-bar *m*², and provided at their upper ends with the nuts *m*³, which prevent the rods *m*² dropping through the arms *m*. The springs *m*⁴ surround the rods *m'*, and, pressing against the bars *m* above and the clamping-bar *m*² below, tend to press the clamping-bar *m*² downwardly.

To adapt the machine for punching, the shearing-bars and angle-iron, and preferably, also, the gages and arms supporting them, are removed and other attachments made to the machine, as illustrated in Figs. 4, 5, and 7.

Each of the punches H has its lower face beveled, as shown in Figs. 4 and 7, and one edge provided with the bevel *h*, preferably making an angle of about one hundred and thirty-five degrees with the front face of the punch. To the rear face of the punch the guide-plate *h'* is attached. The corresponding female die consists of a shoe, I, which is attached to the cross-brace A', and is provided with an opening to receive the die proper, I'. The die I' is provided with the opening *i*, which is shaped to receive the punch H and its attached guide-plate *h'*. The plank B', forming the table in front of the machine, rests on the brackets B, and is preferably of such thickness as to make its top level with the top of the shoes I.

The mode of operation of the device is as follows: In shearing, the sheet or sheets to be cut are put under the shear-blade J, with one edge against the gage *l* or *k*, as necessity requires. The bar C is now lowered by means of the toggle-arm mechanism. The clamping-bar *m*² strikes the sheet and is pressed strongly

against it by the springs m^4 as the bar continues to descend, and to cut the sheet of metal between the upper and lower shearing-bars, J and J^2 . The clamping device is particularly
 5 valuable in connection with the shearing device herein described, because in their joint use there is no drawing of the metal, and no allowance for drawing of the metal need be made upon the gage, whether one sheet or
 10 twenty be cut at a time.

In punching, the sheet of metal is placed under the punches H and against the guide-plates h' . The bar C is now lowered, and the punches descending cut from the edge of the sheet the
 15 cleats p , as shown in Fig. 10. The beveled face h of the punch does not descend far enough to complete the cutting of the cleat from the sheet, so that the cleat is merely bent over at
 20 the edge of the female die, forming a crease, so that when the cleat is folded completely back on the line of this crease it is placed at right angles to the edge of the sheet. This constitutes one step in the preparation of the sheet for roofing purposes.

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

1. In combination with the bar C and toggle-arm mechanism for operating the same, the shearing-bar J, angle-iron J' , and shearing-bar
 30 J^2 , and cross-brace A' , substantially as and for the purposes specified.

2. In combination with the bar C and toggle-arm mechanism for operating the same, the shearing-bar J, cross-piece A' , table B, angle-

iron J' , lower shearing-bar, J^2 , and clamping
 35 mechanism, substantially as and for the purposes specified.

3. In combination with the bar C and toggle-arm mechanism for operating the same, the shearing-bar J, cross-piece A' , table B, angle-
 40 iron J' , lower shearing-bar, J^2 , bars m , rods m' , nuts m^3 , springs m^4 , and clamping-bar m^2 , substantially as and for the purposes specified.

4. In combination with the bar C and toggle-arm mechanism for operating the same, the
 45 shearing-bar J, cross-piece A' , table B, angle-iron J' , lower shearing-bar, J^2 , bars m , rods m' , nuts m^3 , springs m^4 , and clamping-bar m^2 , arms L, and gage l , and arms K, and gage k , substantially as and for the purposes specified. 50

5. In combination with bar C and toggle-arm mechanism for operating the same, shearing-bars J J^2 , and angle-iron J' , and punches H, and dies I, the punches and dies being interchangeable with the angle-iron and shear-
 55 ing-bars, substantially as and for the purposes specified.

6. In combination with the bar C and toggle-arm mechanism for operating the same, the cross-brace A' , shearing-bars J J^2 , angle-iron
 60 J' , and punches H, and dies I, the punches and dies being interchangeable with the angle-iron and shearing-bar, substantially as and for the purposes specified.

LONGLEY LEWIS SAGENDORPH.

Witnesses:

WILLY COX,
 O. M. HILL.