

(No Model.)

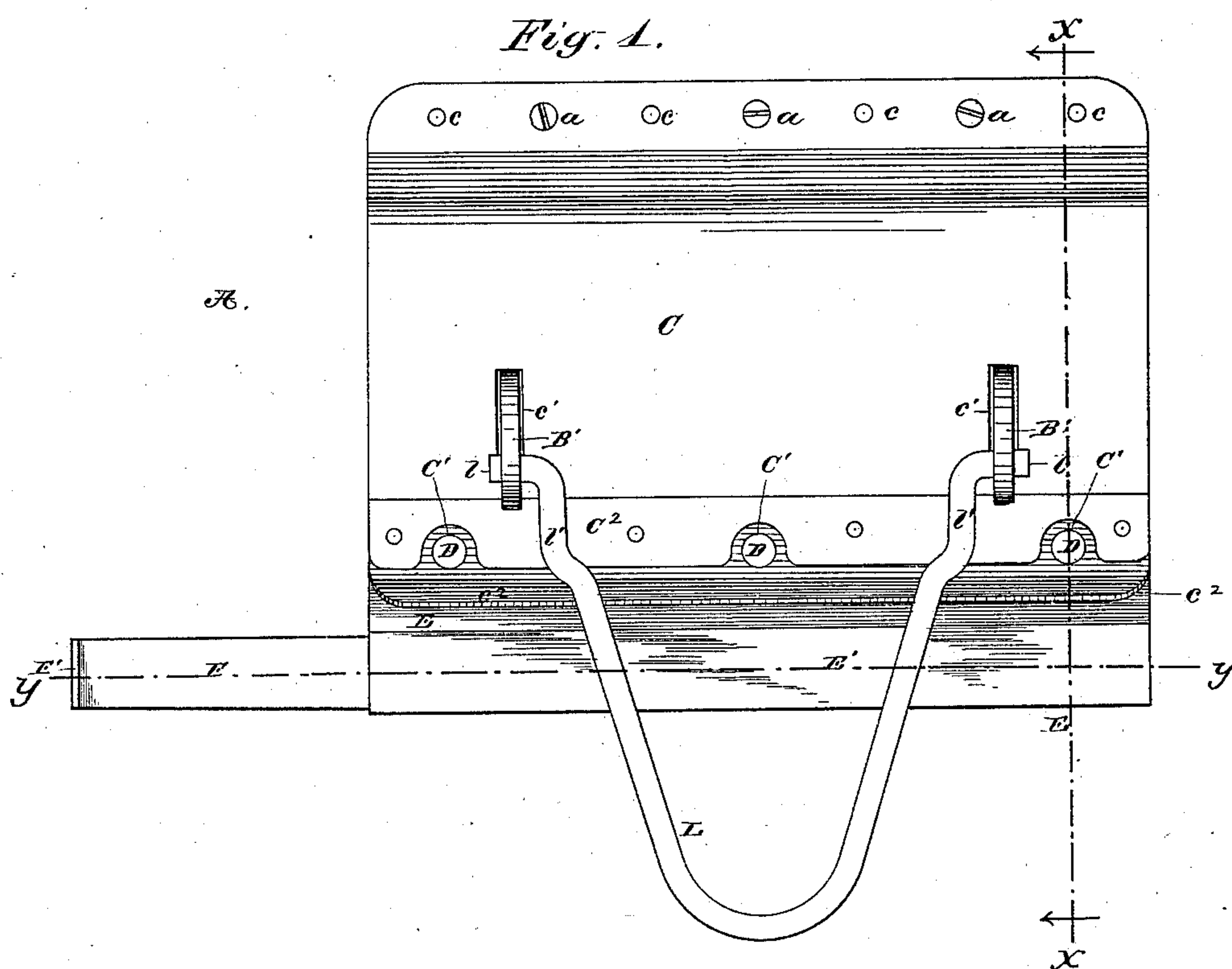
2 Sheets—Sheet 1.

J. S. SHANNON.

PUNCH.

No. 310,917.

Patented Jan. 20, 1885.



WITNESSES

J. M. Adams.

J. W. Kaschagen.

INVENTOR_

James S. Shannon
per M. E. Dwyer
Attorney

(No Model.)

2 Sheets—Sheet 2.

J. S. SHANNON.

PUNCH.

No. 310,917.

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Fig. 2.

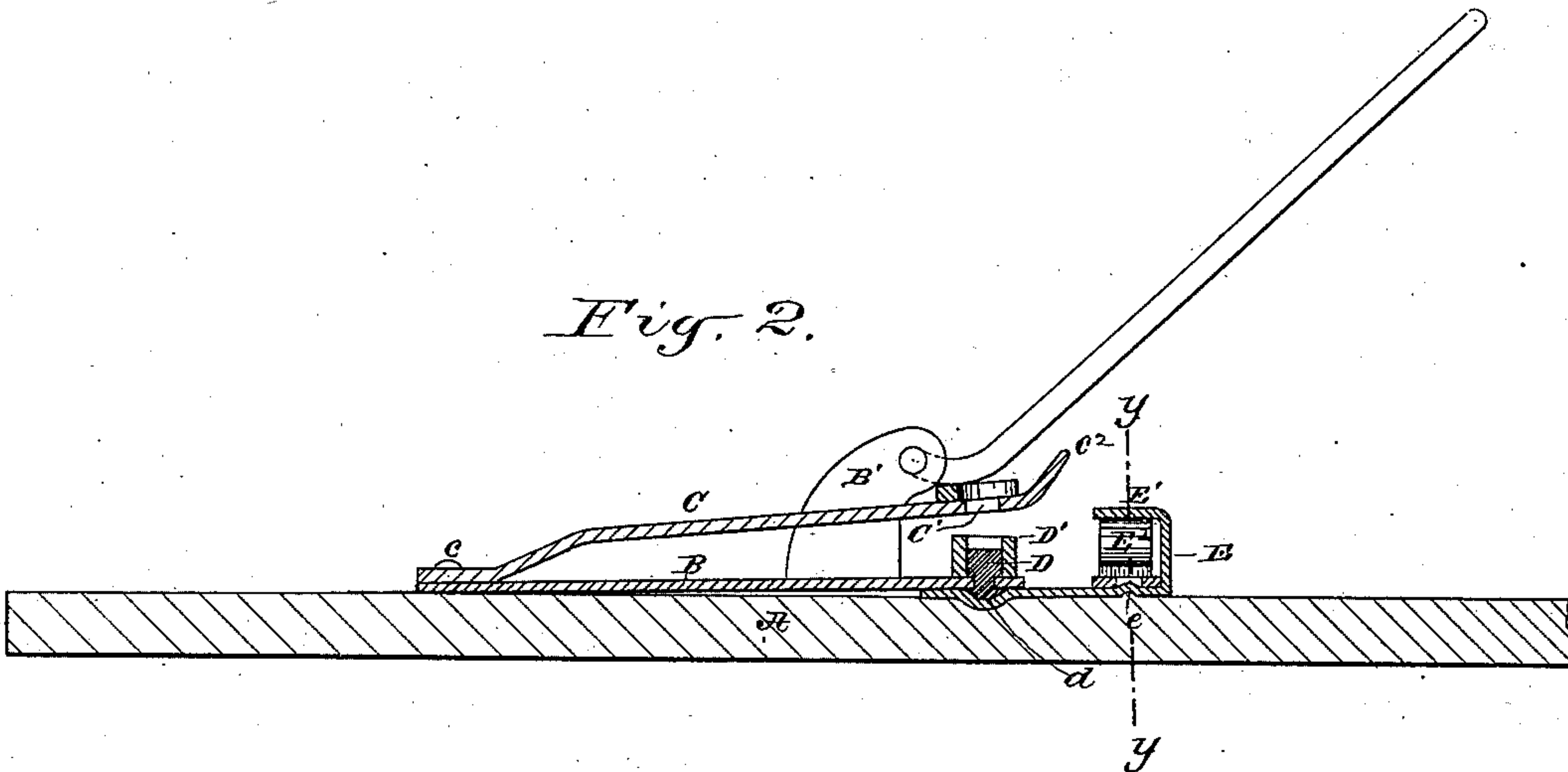
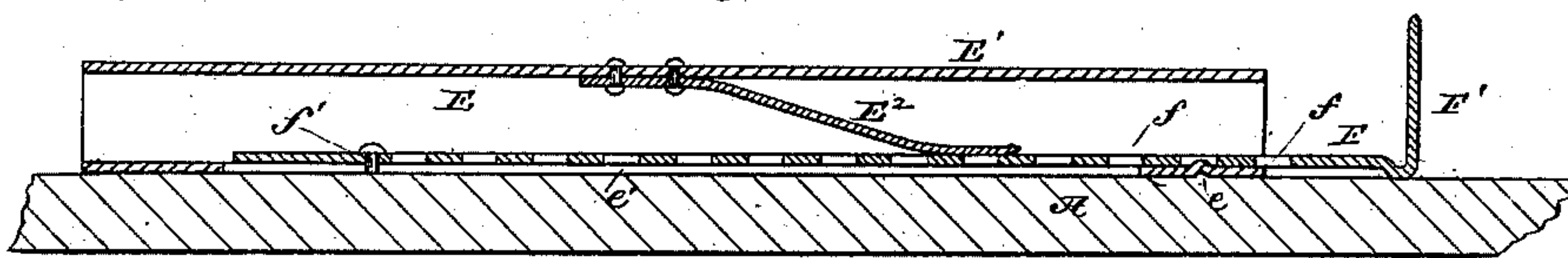


Fig. 3.



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UNITED STATES PATENT OFFICE.

JAMES S. SHANNON, OF HINSDALE, ILLINOIS.

PUNCH.

SPECIFICATION forming part of Letters Patent No. 310,917, dated January 20, 1885.

Application filed July 22, 1882. (No model.)

To all whom it may concern:

Be it known that I, JAMES S. SHANNON, of Hinsdale, in the county of Du Page and State of Illinois, have invented certain new and useful Improvements in Punches; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in cutting-punches, or that class of punches for perforating sheets of paper, metal, or other material, which operate by accurately fitted and opposed die and matrix to cut a piece from the sheet punched corresponding with the shape of the matrix and end of the die.

The invention consists in certain features of construction fully explained in the following description, and pointed out in the appended claims.

As herein shown, my invention is represented in form adapted to perforate three holes simultaneously in paper sheets, for the purpose of tying them together with a string or tape; but the invention is applicable to the perforation of metal sheets without material alteration of the form here shown. It may also be applied to hand-punches for car-conductors' use, and to other purposes, by only mechanical modifications of the structure here shown.

In the drawings, Figure 1 is a plan view of the punch, in form for use to perforate three holes simultaneously in sheets of paper near their margins, the punch being applied to a portable board or tablet. Fig. 2 is a vertical section through xx of Fig. 1 enlarged. Fig. 3 is a vertical section through yy of Figs. 1 and 2.

A represents a portable board or tablet, to which the punch is usually secured when the latter is intended for perforating papers.

B is a metal plate constituting the base of the punch.

C is an elastic steel plate riveted at one edge securely to the edge of the plate B, and so bent or formed that its opposite edge normally stands in the elevated position clearly shown in Fig. 2.

D D are studs firmly fixed to the base-plate B, beneath the elevated edge of the plate C; and

C' C' are corresponding holes in said plate C, which, when the latter is depressed, admit the studs D.

B' are lugs which are secured to the base-plate B, and, as here shown, rise through slots c' in the spring-plate C.

L is a lever having its ends l pivoted in the lugs or ears B', and arranged to bear by its curved parts l' upon the plate C, as nearly as practicable in line with the apertures C', so that by the depression of the lever said plate is forced downward over the studs or punches D. It will be observed that the bearing-points of said lever upon the plate C are so arranged that in the operation of said lever simultaneous and substantially equal pressure is thereby applied to the several individual punches.

C'' is a stiffening-bar secured upon the top of the plate C in position to immediately receive the pressure of the lever L and to distribute the same uniformly to the several punches or studs, or, in other words, to prevent the plate C from bending when pressure is applied to the lever L.

D' D' are short rubber tubes surrounding the studs D and rising above them, as shown, and operating as springs for the purpose of lifting the papers clear of said studs after the sheet or sheets have been perforated.

E is a guide for the papers to be perforated, arranged in front of and near the punch, and having its upper surface, E', of proper height to direct the papers over the tops of the studs when rested thereon and pushed forward. Said guide, as herein shown, consists of a piece of tin or other sheet metal having one edge held beneath the punch and the other bent to give the proper elevated surface, E', and at the same time to form a housing for a lateral gage and spring, as will be described.

To further facilitate the insertion of papers beneath the plate C preparatory to punching them, the front edge, c'' , of the latter is bent upward to form an inclined guide, as shown in Fig. 2. The two lugs B', set at equal distance back of the studs D, serve as a gage or stops against which the inserted edge of the papers may be pushed and held while being perforated, in order that the holes in different sheets may be at the same distance from the upper edge.

For the purpose of gaging the position of the punctures with reference to the lateral edges of the sheet a movable gage, F F', is provided. As here illustrated, said gage consists of a metal strip, F, arranged beneath the guiding-flange E' of the plate E, and having its outer end, F', upturned so as to rise above the level of the surface of E'. A spring, E'', fastened to the flange E', bears downward upon the slide F, and a long slot, e', in the plate E beneath the slide, engaged by a pin, f', fixed in said slide, serves to retain the same laterally in place when moved outward and inward. A pin or a point, e, struck up from the plate E, in position to engage with a series of holes, f, in the slide F, co-operates with the spring E'', to more positively hold the gage in any position given it. In the longitudinal movement of the gage the outer end is lifted to clear the pin or point e, after which it may be slid inward or outward to any extent desired. The gage F' having been set at the required point to bring the punctures in the position desired, any number of sheets successively perforated will have their edges and punctures coincident. In a punch for papers this gage will be made of such length as to serve equally for note or other sizes of papers, and, if desired, the upper surface of the slide F may be marked to indicate the extent to which the gage should be drawn outward in order to bring the perforations equally distant from opposite sides of the sheets.

The distinctive feature of the punch described is the absence of the usual hinge-joint for the two main parts of the punch, and the substitution of a flexible and elastic piece of metal therefor. A principal advantage of this construction is the perfect and permanent accuracy with which the studs D may be made to enter the holes C', for in putting the parts B and C together the studs are first inserted in said holes, and while there held the said parts are firmly joined by the rivets c c at their opposite edges. Whenever the plate C is thereafter depressed, therefore, the studs will accurately enter the holes. In consequence of such perfect register of the studs and holes both these will be less worn by use; but, as another merit of the construction shown, wherein the matrix-plate C is of thin sheet-steel, the studs D may be readily enlarged, when worn, by forcing the matrix-plate down upon the studs and hammering the ends of the latter until they perfectly fill the holes C'.

In some cases the base-plate B and the matrix-plate C may be made of the same continuous piece of sheet-steel, instead of two parts riveted together, as here shown.

In large punches for perforating sheet metal other forms of the lever L may obviously be employed, that here shown being merely of heavy wire suited to punches for puncturing a few sheets of paper at a time. In such heavier punches, also, metal springs may be substituted for the elastic rubber

tubes D', as a means of lifting the sheet from the studs, and such springs may be arranged either to encircle the studs or at their sides, as preferred. It is of course immaterial whether the studs or dies D are fixed to a plate, B, made continuous with the plate C, either by being of the same piece of metal or by being firmly riveted to said plate C. This is a convenient construction in small punches; but in larger ones the dies D may, if desired, be secured to one part of a cast-iron frame, and the rear edge of the plate C to another part of said frame, in permanent relation to the point or points at which the dies are fixed.

I claim as my invention—

1. In a cutting-punch, the combination, with a die and matrix, of jaws supporting said die and matrix, formed by plates secured together at their edges, opposite the points of attachment of the die and matrix, and arranged to stand normally apart at their free edges, and a lever for forcing said jaws together in the operation of the punch, substantially as described.

2. In a cutting-punch, the combination of a rigid plate, B, flexible plate C, punch-die D, rigidly secured to one of the said plates, and a corresponding matrix, C', belonging to the opposite plate, said plates being secured to each other at the margin opposite the die and matrix, and constructed to support said die and matrix accurately in proper working relation, substantially as described.

3. In combination with the plates B and C, provided with one or more opposing punch-dies and matrices, and connected with each other, as described, lugs B', proceeding from one of said plates, and a lever, L, pivoted to said lugs, and constructed to bear upon the opposite plate at a point or points adjacent to the punch or punches, whereby said plates may be forced toward each other for the operation of the punch or punches, substantially as set forth.

4. In combination with the punch having studs or punch-dies D projecting above the bed, and having a plate, C, prolonged and upwardly turned at e', the recessed guide-plate E', arranged to direct the sheet to be punched over the tops of the studs, substantially as described.

5. In combination with the punch, plate E, forming a guide or support for the sheet to be punched, and the slide F, provided with the upturned projection F', said slide being movably attached to the plate E, and combined with means for guiding and retaining it in place, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

JAMES S. SHANNON.

Witnesses:

M. E. DAYTON,
JESSE COX, Jr.