(No Model.) 3 Sheets—Sheet 1.

E. B. STIMPSON.

MULTIPLE PUNCHING MACHINE.

No. 550,805. Patented Dec. 3, 1895.

Fig: 1.

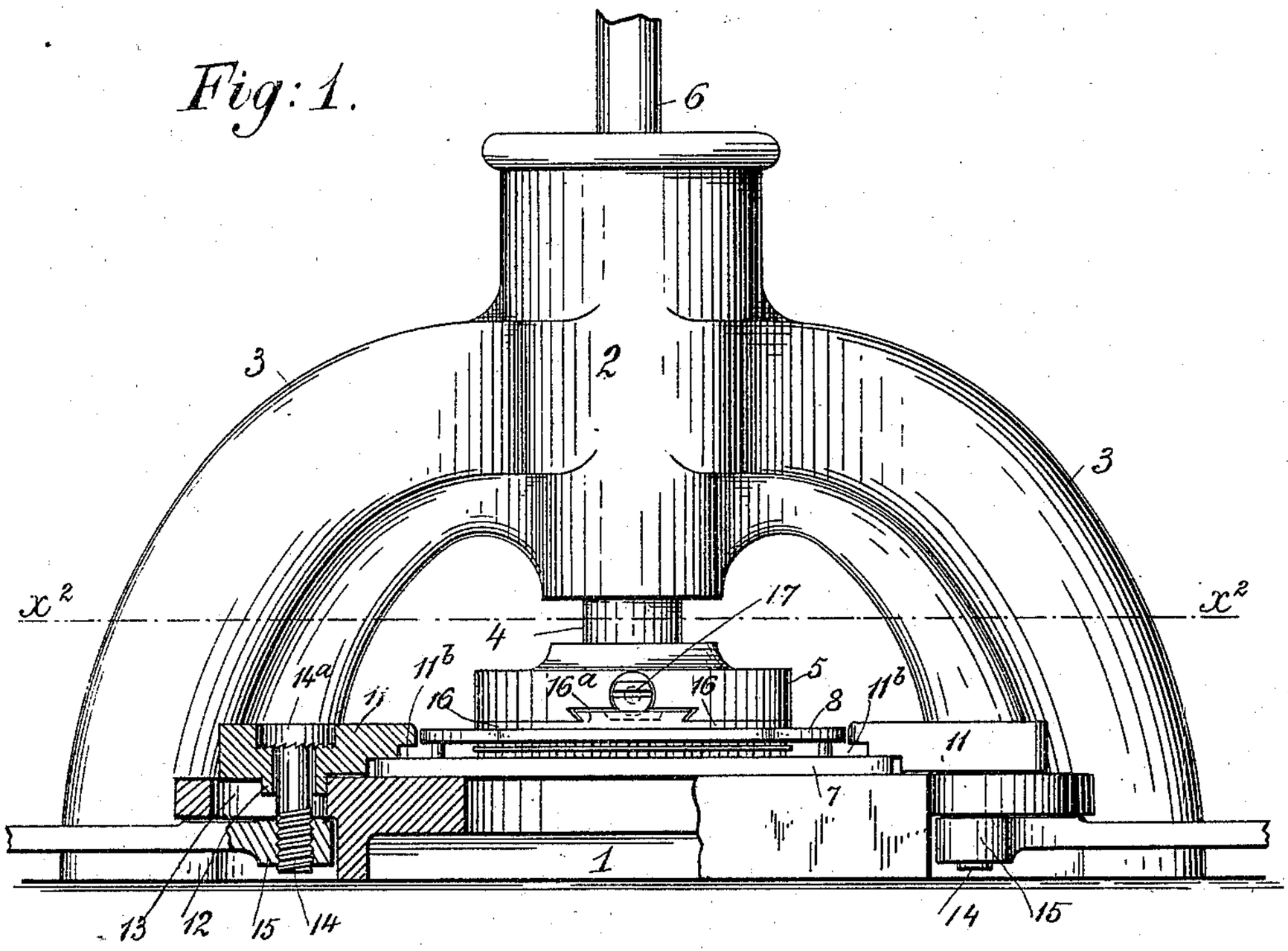
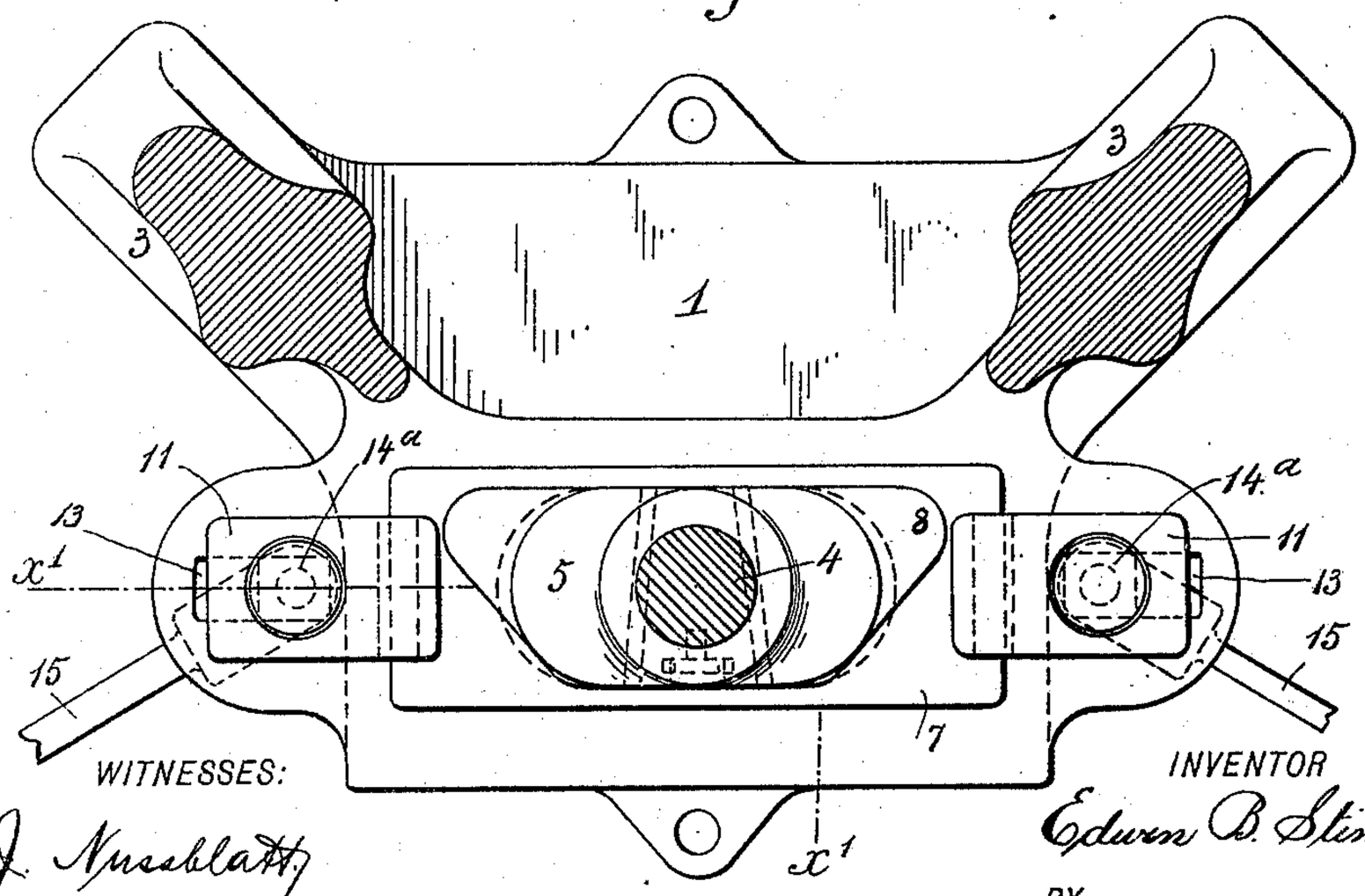


Fig: 2.



WITNESSES:

J. Nusblatt.

Peter A. Ross.

INVENTOR

Edwin B. Stimpson

BY

Henry Bonnett

ATTORNEY.

(No Model.)

3 Sheets—Sheet 2.

E. B. STIMPSON.

MULTIPLE PUNCHING MACHINE.

No. 550,805. Patented Dec. 3, 1895.

Fig: 3.

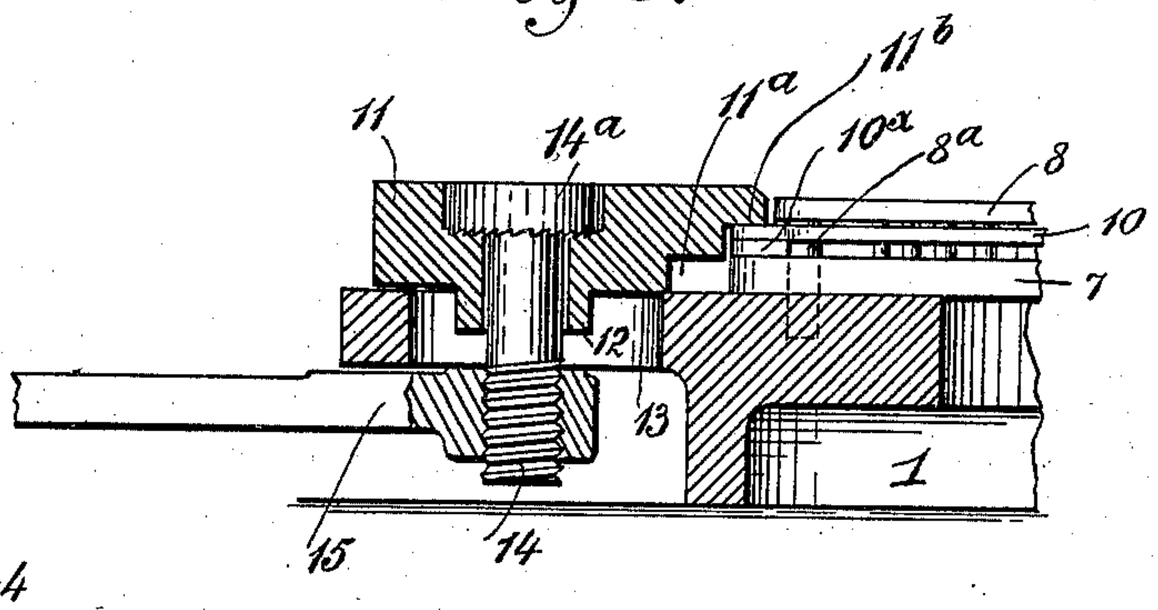


Fig: 8.

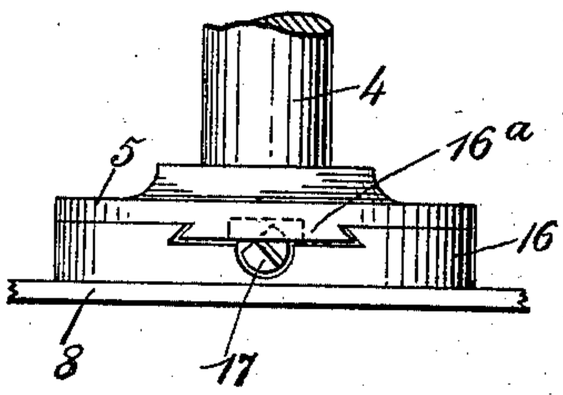


Fig: 4.

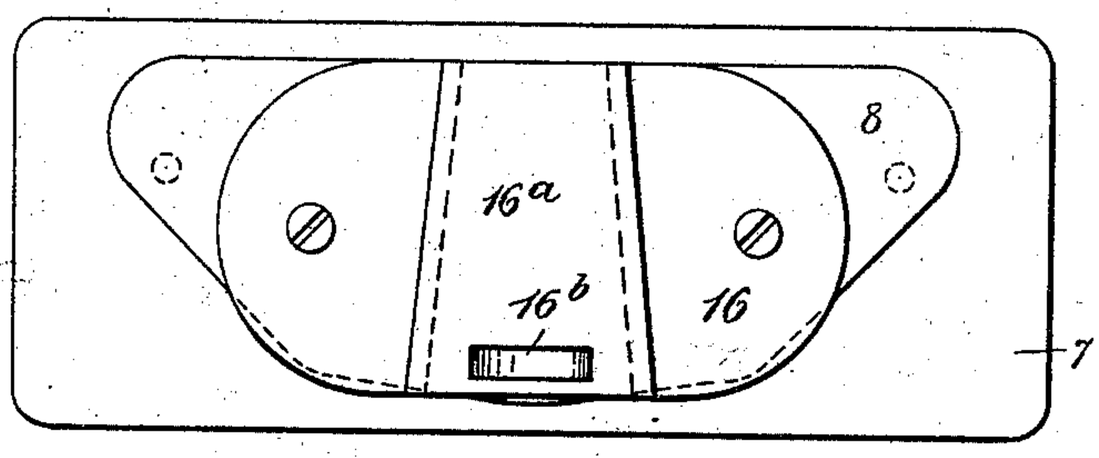


Fig: 6.

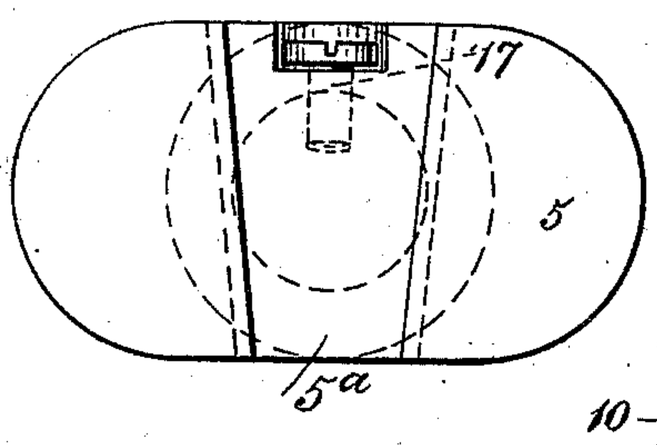


Fig: 5.

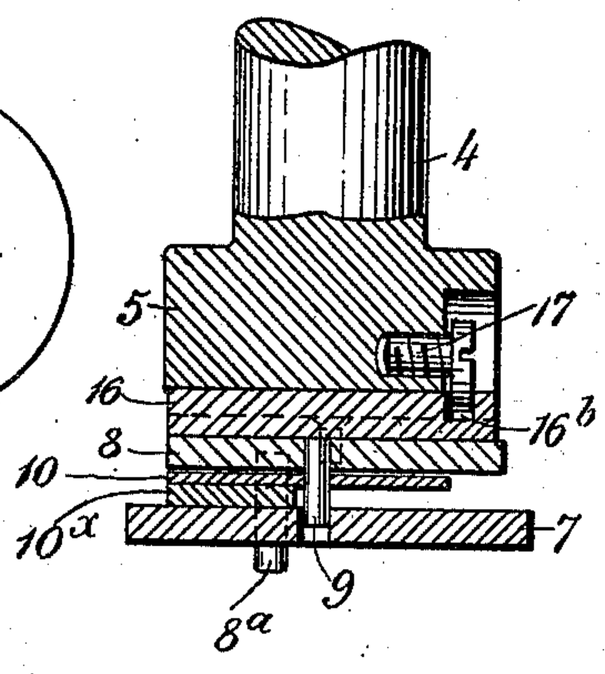
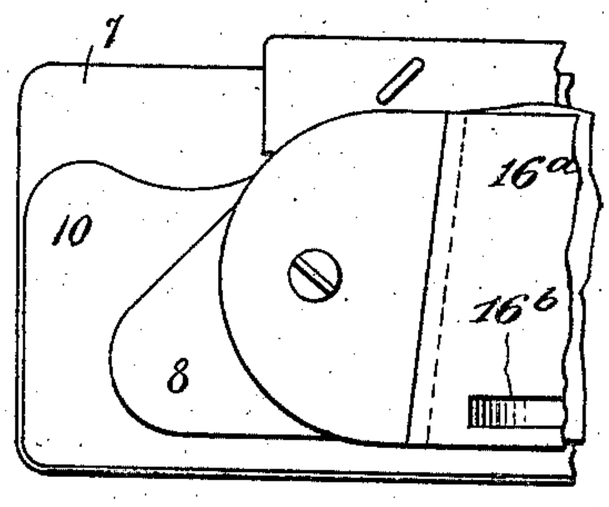


Fig: 7.



WITNESSES:

J. Nussbaum

Peter A. Ross

INVENTOR

Edwin B. Stimpson

BY

Henry Connett

ATTORNEY.

(No Model.) 3 Sheets—Sheet 3.

E. B. STIMPSON.

MULTIPLE PUNCHING MACHINE.

No. 550,805. Patented Dec. 3, 1895.

Fig. 9.

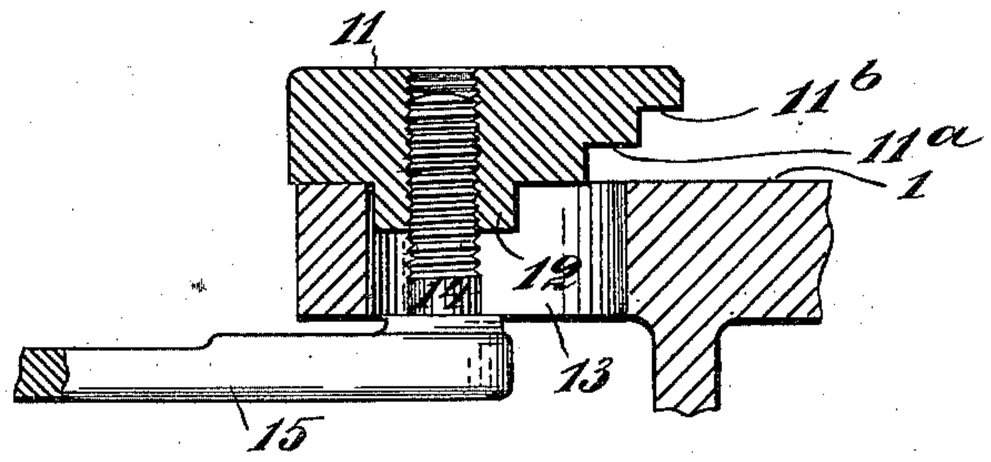


Fig. 11.

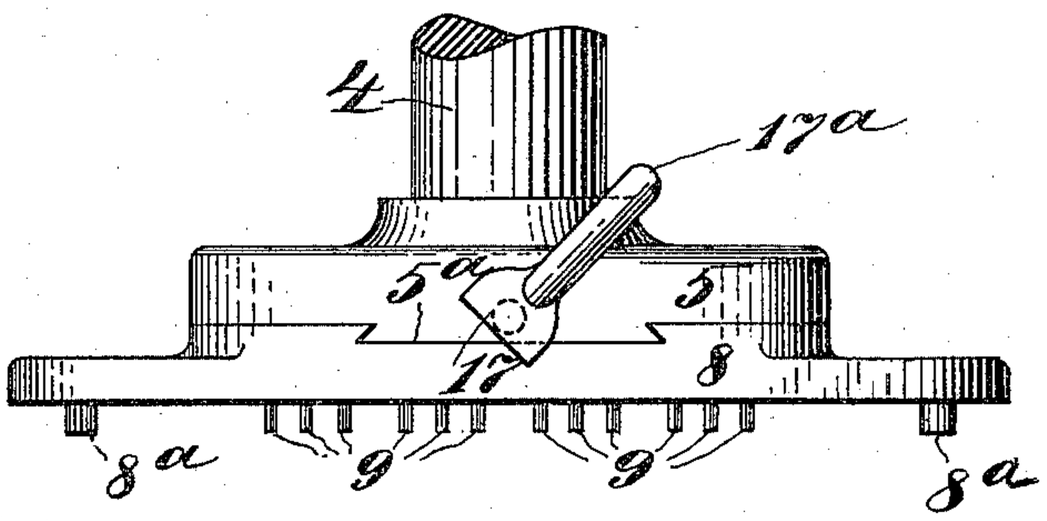
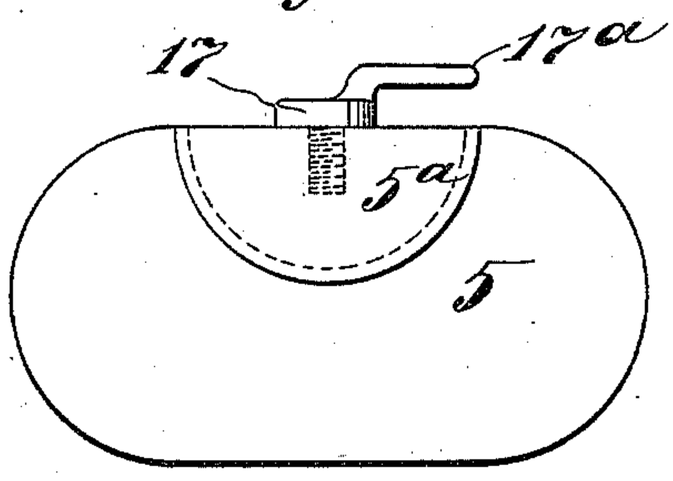


Fig. 10.



WITNESSES:

J. Spreckels

Peter A. Ross

INVENTOR

Edwin B. Stimpson

BY

Henry Connett

ATTORNEY.

UNITED STATES PATENT OFFICE.

EDWIN B. STIMPSON, OF BROOKLYN, NEW YORK.

MULTIPLE PUNCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 550,805, dated December 3, 1895.

Application filed May 20, 1895. Serial No. 549,936. (No model.)

To all whom it may concern:

Be it known that I, EDWIN B. STIMPSON, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Multiple Punching-Machines, of which the following is a specification.

My invention relates to that class of machines which are employed for the ornamentation of leather and the like by punching holes therein in the form of a pattern or design. Such a machine comprises, ordinarily, a bed, on which the die-plate is removably secured, a stripping-plate secured to the die-plate, an arm on the bed, in which is mounted a vertically-moving plunger, a lever and cam or the like for elevating and depressing the plunger, and a punch-plate removably secured to the head of the plunger and carrying the punches arranged in their proper order. It is desirable in such a machine to have a readily-removable die-plate and punch-plate in order that the same machine may be used for various styles of ornamentation, and it is also necessary, in order to accommodate various patterns, that the face of the plates shall be left free from holes or obstructions. Therefore it has been customary to secure these plates by screws, those for the punch-plate passing through the plunger-head and screwing into the back of the said plate. This mode of attachment does not, however, afford the desired facility and rapidity in the interchanging of plates, and the attaching-screws are liable to be lost or mislaid.

My object is to provide securing devices for the punch and die-plates which will enable them to be interchanged with great facility, accuracy, and rapidity, which will leave substantially the entire faces of the plates unencumbered, and which have no separate or detached screws or parts to be lost.

The invention will be fully described hereinafter, and its novel features carefully defined in the claims.

In the accompanying drawings, wherein an embodiment of the invention is illustrated, Figure 1 is a front view of the punch with the left-hand side of the base in section on line $x' x'$ in Fig. 2, and Fig. 2 is a horizontal section thereof on the line $x^2 x^2$ in Fig. 1. Fig. 3 is a fragmentary sectional view of one of the clamping devices on a larger scale than the principal views. Fig. 4 is a plan view of the punch-plate detached and on a larger scale than the principal views. Fig. 5 is a transverse section of the plunger-head, punch-plate, and die on a larger scale than the principal views. Fig. 6 is a face view of the under side of the plunger-head. Fig. 7 is a plan view of one end of the punch and die-plates seen in Fig. 3. Figs. 8, 9, 10, and 11 illustrate slight modifications, which will be described.

Referring to Figs. 1 to 7, inclusive, 1 represents the bed of the machine, 2 the head thereof, and 3 the arms, which support the head over the bed. In the head 2 is mounted a plunger 4, provided with a head 5, and adapted to be elevated and depressed in punching by means of a cam-lever 6. This operating-lever device, as well as the plunger, are common and well-known constructions, and will require no specific illustration and description. Such a cam and cam-lever are illustrated in the patent to E. B. Stimpson, No. 105,382.

On the bed of the machine is mounted a die or die-plate 7, and on the head 5 of the plunger is secured a punch-plate 8, provided with a set of punches 9, Fig. 5, which pass through holes in a stripper 10, secured to the die-plate, and also through holes in the latter plate. These devices—namely, the punch-plate, punches, stripper, and die-plate—have been employed before and possess no novelty in themselves.

The novel features of my present invention reside in the means for securing the punch-plate to the plunger-head and the die-plate to the bed of the machine, and these features I will now describe.

The mechanism for securing the die-plate firmly on the bed 1 comprises two like clamping devices situated at opposite ends of said plate, one of which I will describe with especial reference to Figs. 1 and 2.

Mounted on the bed 1 of the machine is a clamp-jaw 11, provided with a square 12 on its under side, which fits in a slot 13 in the bed. A screw 14 extends down through a hole in the jaw and has screwed on its lower end a lever-nut 15. The jaw 11 has a rabbet 11^a in

its end adjacent to the die-plate, and this rabbet forms a recess and overhang, whereby the jaw is adapted to take over the die-plate, as shown in Fig. 1, and clamp it down firmly on the bed. This clamping is effected by means of the screw 14 and lever-nut 15. The screw may have a rather steep pitch, so that a moderate movement of the lever-nut will effect the clamping and releasing. As the parts are made of metal and therefore non-yielding, the clamp will move but very little in effecting the clamping.

I find it economical to make the screw 14, together with its head 14^a, cylindrical and to countersink said head in the jaw 11, as shown, and in order to prevent the screw from rotating while tightening the clamp I find it convenient to form teeth or serrations on the under side of the screw-head to engage corresponding serrations at the bottom of the countersink. These serrations, which are clearly shown in Fig. 3, may be made by any known means. Other devices may be employed to prevent the rotation of the screw; but I find this device convenient. The screw might be fixed tightly in the jaw. The square 12 prevents the jaw from turning, and the slot 13 is elongated in order to permit the jaw 11 to be moved toward and from the die-plate for a limited distance, for reasons that I will now explain.

In some cases the stripper 10 is not required to extend laterally as far as the ends of the die-plate, as the block or plate $10^\times$ in Figs. 3 and 5, which is interposed between it and the die-plate, may be placed under its rear edge. This is the construction of Figs. 1, 2, 4, and 5. Such a construction of the punch-plate and die-plate is usually employed for punching toe-caps for shoes. In this case the jaw 11 is moved up to the die-plate, as in the principal views, and the die enters the rabbet 11^a. In some cases, however, and particularly where it is the vamp of a shoe that is to be punched, the stripper 10 is supported on blocks $10^\times$, (see Fig. 3,) situated necessarily at the extreme ends of the die-plate, thus increasing the thickness at the points where said plate is to be clamped. In this case the clamp-jaw 11 is moved along the slot 13 away from the die-plate, and the edge of the latter is made to enter another rabbet 11^b in the jaw, as seen in Fig. 3. These two rabbets 11^a and 11^b give the jaw 11 a step-like form at its clamping end, as clearly shown in Figs. 1 and 3, and adapts it to the two forms of dies in common use.

When the punches and die-plate are to be set in the machines, it is customary to fit the former to the latter, so that the punches will occupy their respective holes in the plate. When thus connected and the two parts are set on the bed of the machine, two guide pins or studs 8^a, Figs. 1 and 5, on the punch-plate, which extend down through the die-plate, enter corresponding holes in the bed. These pins locate the plates on the machine-bed. Before the die-plate is secured to the bed by the clamps already described the punch-plate is secured to the plunger-head by the fastening device I will now describe.

In the lower face of the plunger-head 5 I form a transversely-extending tapered dovetail groove 5^a, (seen in Fig. 6,) and on the back or upper side of the punch-plate 8 I secure a plate 16, having on its upper face a transversely-arranged tapered dovetail tongue 16^a, adapted to fit the groove 5^a. In effecting the fastening the narrower end of the tongue 16^a is made to enter the broader front end of the groove 5^a, and the plate is pushed back under the plunger-head. The effect of this is to bring a groove or recess 16^b in the front end of the tongue 16^a under the head of a screw 17, which head is recessed in the front of the plunger-head, as seen in Figs. 5 and 6. This screw-head is flattened or cut away at one side, and this side must be down in order to allow the punch-plate to be placed as described, and when so placed the screw is turned so as to cause the uncut or full side of the screw-head to engage the recess 16^b. As the screw has a rather steep pitch, when it is driven in by rotation the head thereof engages one side of the recess 16^b and drives the punch-plate back a little, so as to seat the tongue 16^a snugly and tightly in its groove. The punch-plate being now secured to the plunger-head, the latter is depressed by the lever 6 until the die-plate 7 is seated on the bed of the machine and the pins 8^a are seated in their holes in the latter, after which the die-plate is clamped fast in the manner and by the clamping devices first above described.

When the punch and die-plates are to be removed, the operations are reversed, the clamps which hold the die-plate are released and drawn back in their slots 13, and the screw 17 is rotated back until the full side of the head thereof is withdrawn from the recess 16^b. As the thickness of the screw-head is substantially the same as the width of said recess, the withdrawal of the screw causes said head before it disengages itself from the recess to start the tongue 16^a and loosen it in its groove. By lifting the plunger-head sufficiently to clear the pins 8^a the connected punch and die-plates may be drawn out toward the front.

It is not essential to the clamp which holds the die-plate 7 down upon the bed that the screw shall be fixed in the jaw 11. This jaw may have in it a screw-threaded bore and the screw 14 may be fixed to the lever 15. Such a construction is illustrated in Fig. 9. The operation of this construction is the same as that last described.

I have shown the groove-dovetail 5^a on the head of the plunger and the tongue-dovetail 16^a on the punch-plate, or, rather, on the plate 16, which is permanently fixed to and forms a part of the punch-plate; but the dovetails may be reversed, as shown in Fig. 8. In this view I also show the screw 17 set in the

plate 16, instead of in the head; but it will be obvious that in the construction of Fig. 8 the screw might as well be set in the plunger-head. The plate 16 could, of course, be integral with the punch-plate; but it is more economical to construct it separately, as the plate 16 may be of cast-iron and the punch-plate will usually be of steel. However, in Fig. 11 I have shown these two parts as integral.

The parts which I have called "dovetails"—namely, the groove 5^a and tongue 16^a—need not have just the form shown in Figs. 4 and 6. They may be of substantially-semicircular form—for example, as seen in Fig. 10, which is an under side view of the plunger-head, showing the tongue 5^a of substantially-semicircular form. Fig. 11 is a front elevation of the plunger-head seen in Fig. 10 with the punch-plate 8 attached thereto. These views also show a slightly-modified form of the locking device for holding the punch-plate in place. In lieu of adapting the mutilated head of the screw 17 to engage a recess in the other part the said head takes over the front edge of said part—in this case the punch-plate—and said screw-head is furnished with a wing or handle 17^a for rotating it. Thus it will be seen that my machine is susceptible of considerable modification without material departure from the invention.

Having thus described my invention, I claim—

1. In a punching machine, the combination with the bed of the machine, provided with slots, the clamp-jaws, each provided with a square to engage one of said slots, the screws in said jaws extending down to a point below the slotted bed, and means for drawing down the jaws through the medium of said screws, of the plunger and its head, the punch-plate detachably secured to said head, and the die-plate, adapted to be secured to the bed of the machine by said clamps, substantially as set forth.

2. In a punching machine, the combination with the bed of the machine provided with two slots 13, the clamp-jaws 11, each provided with a square 12 to engage the respective slots and two rabbets 11^a and 11^b, in their respective clamping ends, the screws in the said jaws extending below the machine bed, and means for drawing down the jaws through the medium of said screws, of the plunger, the punch-plate secured removably to the head of the plunger, and the die-plate and stripper, adapted to be secured to the bed by said clamps, substantially as set forth.

3. In a punching machine, the combination of the headed plunger, and the punch-plate, the said punch-plate and the plunger being provided with inter-engaging dovetails and the plunger-head being provided with a screw having a mutilated head adapted to engage the punch-plate when the latter is in place and prevent it from being drawn out, substantially as set forth.

4. In a punching machine, the combination with the headed plunger, and the punch-plate, the said plate and the plunger-head having inter-engaging dovetails, one of said parts having a recess, 16^b, and the other a screw 17, with a mutilated head adapted to engage said recess when dovetails are engaged, substantially as set forth.

5. In a punching machine, the combination with the plunger 4, provided with a head 5, having in its face a tapered groove dovetail 5^a, the screw 17, with a mutilated head, set in said plunger-head, of the die-plate provided with a tapered tongue dovetail, 16^a, provided with a recess 16^b, adapted to receive the head of the screw 17 when the punch-plate is in place, substantially as set forth.

6. In a punching machine, the combination with the headed plunger, the punch-plate, and the plate 16, secured to the upper face of the punch-plate and forming a substantially integral part thereof, said plunger-head and plate 16 having inter-engaging dovetails, and one of said parts having a recess 16^b and the other a screw having a mutilated head adapted to engage said recess when the punch-plate is in place and secure it against removal, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

EDWIN B. STIMPSON.

Witnesses:

JAS. KING DUFFY,

PETER A. ROSS.