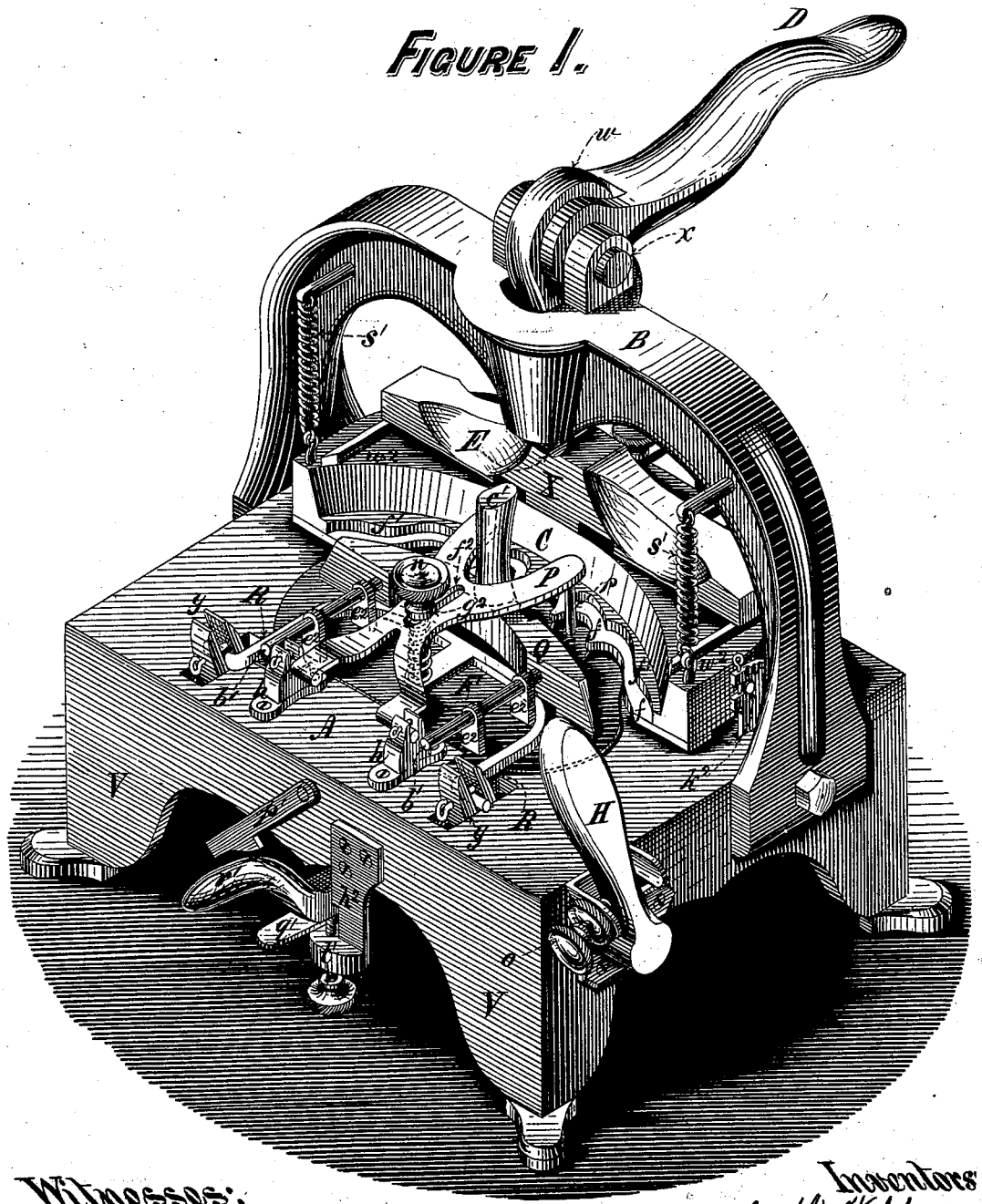
4 Sheets—Sheet 1.

J. WALDEN & G. PLATTS.

Machine for Folding and Shaping Leather.

No. 209,731. Patented Nov. 5, 1878.

FIGURE 1.



Witnesses:
Leo. W. Miatt
S. T. Sullivan

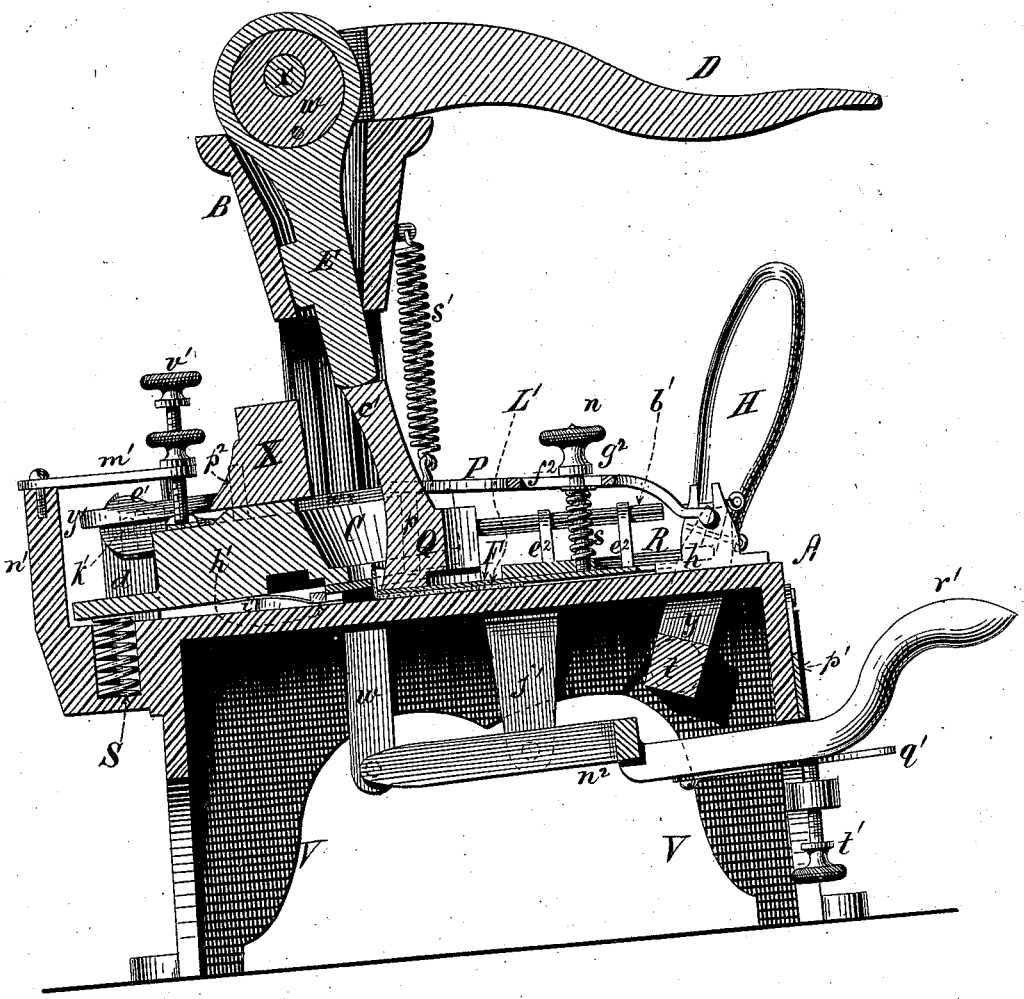
Inventors
Joseph Walden
George Platts
By their Attorney
E. N. Dickerson Jr.

J. WALDEN & G. PLATTS.

Machine for Folding and Shaping Leather.

No. 209,731. Patented Nov. 5, 1878.

FIGURE 2.



Witnesses:
Geo. W. Miatt
S. T. Sullivan

Inventors:
Joseph Walden
George Platts
By their Attorney
E. N. Dickerson Jr.

J. WALDEN & G. PLATTS.

Machine for Folding and Shaping Leather.

No. 209,731. Patented Nov. 5, 1878.

FIGURE 3.

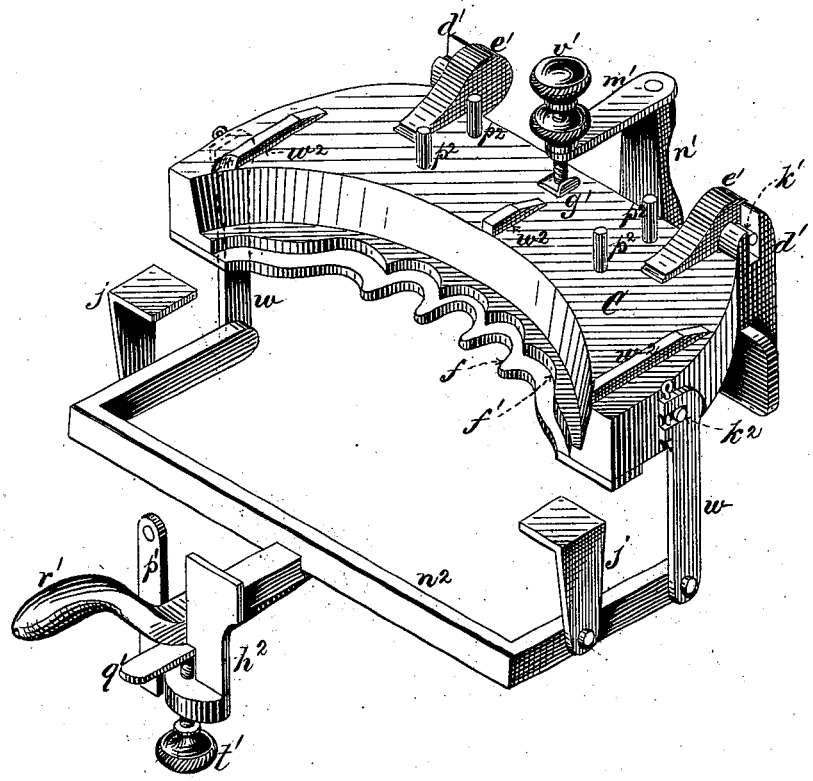
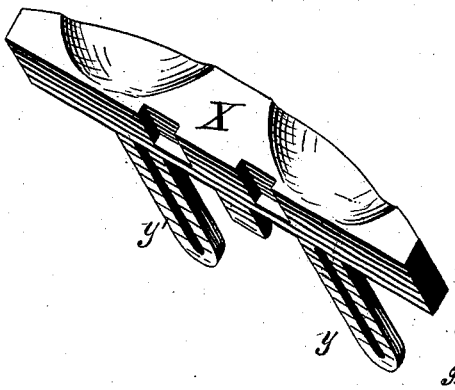


FIGURE 4.



Witnesses:
Geo. W. Miatt
S. T. Sullivan

Inventors:
Joseph Walden
George Platts
By their Attorney
E. N. Dickerson Jr.

J. WALDEN & G. PLATTS.

Machine for Folding and Shaping Leather.

No. 209,731. Patented Nov. 5, 1878.

FIGURE 5.

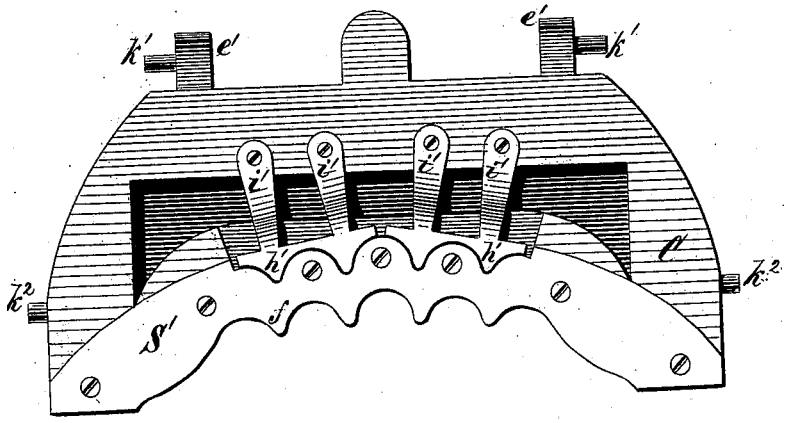
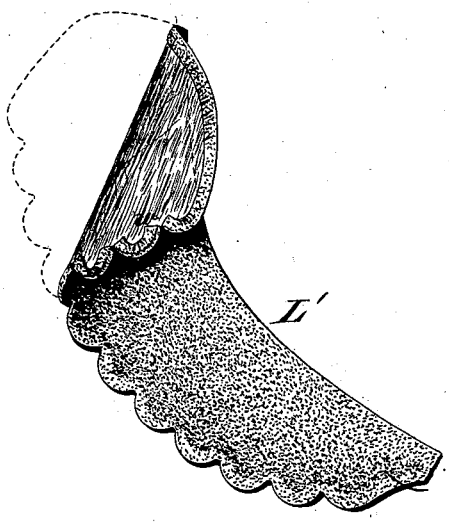


FIGURE 6.



Witnesses:
Geo. W. Miatt
S. T. Sullivan

Inventors
Joseph Walden
George Platts
By their Attorney
E. N. Dickerson Jr.

UNITED STATES PATENT OFFICE.

JOSEPH WALDEN AND GEORGE PLATTS, OF NEWARK, NEW JERSEY.

IMPROVEMENT IN MACHINES FOR FOLDING AND SHAPING LEATHER.

Specification forming part of Letters Patent No. **209,731**, dated November 5, 1878; application filed March 18, 1878.

To all whom it may concern:

Be it known that we, JOSEPH WALDEN and GEORGE PLATTS, of the city of Newark, State of New Jersey, have invented a new and useful Improvement in Machines for the Folding and Shaping of Leather, of which the following is a full, true, and exact description, reference being had to the accompanying drawings.

Our invention relates to improvements in machines for folding and crimping leather or similar materials, and is especially useful in giving to them a scalloped edge, though it may be used for any other purpose in which it is desired to make a fold of leather.

Our present invention is an improvement on one for which we have made application on the 10th day of December, 1877.

Our apparatus consists, generally, of a bed-plate, upon which a pressure-plate is depressed. Upon this bed-plate there slides a folding-plate, which folds the edge of the leather against the pressure-plate previously mentioned, and forces the bight or bend of leather beneath it. Upon its withdrawal the pressure-plate is forced down, and thereby folds the leather. We also show contrivances by means of which the pressure can be applied to the pressure-plate or to the folding-blade for purposes to be described; also, apparatus for elevating the pressure-plate and keeping it up when the leather is to be folded against it; also, a means of adjusting the distance between the pressure-plate and the bed-plate, and thereby determining the width of the crevice into which the leather is to be forced; also, a method for preventing the withdrawal of the folded leather, and also a mechanism for forming the turned scallops previously referred to.

Our apparatus will be understood from the accompanying drawings, in which—

Figure 1 represents a perspective view of our machine; Fig. 2, a cross-section through the same; Fig. 3, a view of the pressure-plate and its controlling mechanism; Fig. 4, a view of the apparatus by means of which the power is communicated from the punch or ram to the pressure-plate; Fig. 5, a bottom view of the pressure-plate; Fig. 6, a view of the completed article.

A represents, generally, the bed-plate of our apparatus supported on the legs V. Attached to this plate is the bridge B, which supports the plunger or punch E upon an eccentric pivot, *w*, which is pivoted upon a center, *x*. This eccentric is operated by a lever, D, and serves to apply pressure to the various parts of the apparatus, as will presently be described. Supported in the frames *d'* is the pressure-plate C. This pressure-plate is provided with pins k^1, which are supported in the open slotted ends of the frames *d'*. The slots in the end of the frame *d'* are continued down so as to allow of the vertical adjustment of the pressure-plate C within them. This pressure-plate is elevated by two springs, *s'*, attached to its two front corners, and by a single spiral spring, S, which is let into a socket in the frame of the machine. By these springs a constant upward pressure is exerted upon the pressure-plate C. Attached to the frame n^1 fast to the bed-plate is a swinging adjustable stop, which acts against the back of the pressure-plate C. This stop consists of a set-screw, *b'*, provided with a jam-nut, which is screwed in the swinging arm *m'* pivoted onto the arm n^1. The bottom of the screw *v'* rests against the inclined plane g^1, and this arm can be swung to one side, so as to rest against the upper surface of the pressure-plate C, thereby allowing this plate to rise somewhat higher than when the set-screw rests against the inclined plane g^1. The position of the front of the pressure-plate C and its distance from the bed-plate is determined by means of the handle *r'*. (Shown clearly in Fig. 3.) This handle *r'* is attached to a frame, n^2, which is pivoted in the hangers *j'*. Pivoted on the two ends of the frame n^2 are two links, *w*, which have hold of the pins k^2 on the sides of the pressure-plate C. The hangers *j'* being fast to the bed plate, it is obvious that the elevation of the handle *r'* depresses the pressure-plate C, while the depression of the handle elevates the pressure-plate.

The links *w* are provided with slots and pins for the purpose of allowing of the substitution of one pressure-plate for another. The springs *s'* tend to elevate the front of the pressure-plate C, and therefore, through the intervention of

the links and frame, to depress the handle r'. The downward movement of this handle is determined by the set-screw t', which screws in the hanger h^2. Fast in the handle r' is the spring-plate q', which can be interposed between the screw t' and the handle r', as shown in Fig. 2. Thereby the handle r' is not allowed to strike the screw t', but is held somewhat up.

The hook p^1, attached to the frame of the machine, hooks under the handle r' and elevates it far enough to hold the pressure-plate C firmly against the bed-plate A of the machine, so that by means of the contrivances described the plate C can be adjusted at three different distances from the bed-plate. In the first place both hook and handle may be swung to one side when the greatest space intervenes between the pressure-plate and the bed-plate, which space can also be regulated by means of the set-screw t'; secondly, the plate q' can be interposed between the screw t' and the handle r', thereby depressing the pressure-plate C still more, or the handle r' can be raised entirely and the hook p^1 hooked beneath it, whereby the pressure-plate C is held against the bed-plate A. When both the hook and the slide are swung to one side from beneath the handle r', the set-screw m' should also be swung to one side, so that it rests against the pressure-plate C, whereby the spring S is allowed to elevate the back of the pressure-plate at the same time that the springs s' elevate its front, when the plate q' is interposed beneath the handle; then the screw v' is swung around so as to rest upon the wedge g^1, whereby the front and back are correspondingly depressed.

Resting upon the surface of the pressure-plate C is the sliding frame X, which slides upon ways w^2. (Shown clearly in Fig. 4.) This frame is provided with the slotted arms y', which are supported on the pins p^2 attached to the pressure-plate. When the frame X is slid back, as shown in Figs. 1 and 2, the plunger E does not engage with it; but when it is slid forward beneath the plunger E, so as to rest upon the front of the ways w^2, and to make, as it were, a bridge between the front ends of this plate, then the plunger E, when depressed, engages with it and forces the pressure-plate against the bed-plate of the machine.

Pivoted to the frame of the machine is the shaft t, operated by a handle, H. On this shaft are set the rocker-arms y. These arms embrace in their upper slotted ends the rods R, which are attached to the folding-plate F, which rests upon the bed-plate of the machine. The rods R are confined in the slotted ends of the rocker-arms by means of removable pins. Holes are cut in the bed-plate to allow of the vibration of the rocker-arms.

Pivoted in the sockets h is the clamping-frame P, carrying the clamping-pins p. These pins, when depressed, pass through slots cut in the folding-plate F and clamp the leather against the bed-plate. Cut in the clamping-plate P is the slot f^2, through which passes a pin, g^2, having a milled head screwed into the frame of the folding-plate F. A coiled spring is compressed between the clamping-frame P and the folding-plate F and surrounds the pin, so that ordinarily the clamping-plate P and the pins p are raised; but they can be depressed by the hand of the operator. Sliding also on the folding-plate F is the frame Q, which has attached to it the rods b', which slide through the supports c^2 attached to the folding-plate F. The slotted frame Q is provided with the arm c', against which the plunger E bears when the frame Q is slid forward, as shown in Fig. 2.

In case a circular folded edge is desired, the folding-plate and the pressure-plate are shaped to correspond, and folding-plates and pressure-plates are provided so as to fold the different shapes which may be desired. These are readily substituted, as may be easily seen without further explanation. In case, however, a scalloped edge is desired, then the machine is constructed with folding edges and plates similar to those here shown.

The pressure-plate, it will be observed, is provided with a scalloped edge, f, which is arranged to press against the bed-plate. Above this, and somewhat retired from it, is the scalloped edge f^1, which serves as a guide for the material, as will be presently described. The edge of the folding-plate F is shaped to correspond to the edge f, as is also the edge of the frame Q, so that when this frame Q is advanced its front edge exactly corresponds with the scalloped edge of the folding-plate F, whereby an even and steady pressure is communicated to this edge, for a purpose hereinafter to be described.

Beneath the pressure-plate C is a row of spring-plates, h^1. (Shown clearly in Fig. 5.) These plates are shaped to correspond to the scallops in which the leather is finally to be folded. They are slightly raised above the under surface, S', of the pressure-plates C by means of springs i, upon which they are supported. This is shown clearly in cross-section in Fig. 2. These plates h^1 form an abutment, against which the leather may be folded, and the pressure-plate is cut away beneath them, so that when the pressure-plate is depressed by the plunger they retire into recesses in it, and do not interfere with the folding of the leather. It will be observed that their edges are somewhat differently shaped from the folding-edge f. This is purposely done, so that the advancing motion of the leather beneath the pressure-plate will cause the center of the folded scallop caused by the edge f of the pressure-plate to meet exactly the center of the scallops formed by the spring-plates.

The apparatus here shown is arranged to fold but three scallops; but as many as may be desired can be folded simultaneously.

In Fig. 6 is shown one of the forms in which leather may be folded by this machine. w^1 represents the folds. The leather is first cut

by a die before it is placed in the machine, care being taken not to make the angles between the scallops too acute. They should be left preferably slightly rounded, so as not to tear in the process of folding.

The operation of the machine can now be understood. The plate F with supporting apparatus is first swung up out of the way of the bed-plate. The handle r' is hooked up by the hook p^1, thereby holding the pressure-plate C against the bed-plate A. The shaped leather is now laid upon the bed-plate face downward, with its shaped edges corresponding to the edge f^1, which serves as a guide. The distance between f and f^1 determines the width of the fold. The folding-plate F is then swung around so as to rest upon the leather, and the pressure-frame Q is drawn forward upon it, so that the plunger E meets the arm c'. Then the handle D is depressed so as to force down the frame Q, thereby turning the edge of the leather at an angle to its body. Then the hook p^1 is withdrawn from beneath the handle r', thereby allowing the pressure-plate C to rise slightly from the bed-plate A. The apparatus is then in the position shown in Fig. 2. The arm m' is swung around so as to hold down the back of the pressure-plate C, while the handle r' allows its front to rise only sufficiently far to permit the folding-plate F and the double thickness of the leather L′ to be forced beneath the folding-surface f. The handle D is then raised and the frame Q withdrawn from beneath the plunger. The handle H is thrown forward, whereby the leather L′ is pressed into the crevice between the pressure-plate and the bed-plate and thereby folded. The folding-plate F is thrown forward until the leather brings up against the abutments h^1.

It is important that the pressure-plate C be raised only far enough to allow of the passage beneath it of the leather and the folding-plate. The folding-plate remaining underneath the pressure-plate C, the plate q' is first swung from beneath the handle r', and the arm m' is also swung to one side, whereby the pressure-plate C is raised free of the leather. Then the clamping-plate P is thrown down, so that its pins p clamp the leather against the bed-plate, when the handle H is thrown back, thereby withdrawing the folding-plate F, the leather being held forward by the clamping-plate P, which is depressed by the hand of the operator.

It is important that the pressure-plate C be slightly raised before the withdrawal of the folding-plate F, so as not to disturb the scalloped folds. Then the frame X is thrown forward upon the ways w^2 until it rests beneath the plunger E. The plunger E is then depressed by the handle D, thereby forcing the pressure-plate C against the folds of the leather, which are thereby firmly set. The abutments h^1 retiring into the pressure-plate do not prevent it from being forced firmly against the bed-plate of the machine. The handle D is then raised, the folding-plate thrown up, when the leather can be removed from the apparatus folded, as shown in Fig. 6.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In a leather-folding machine in which a fold of leather is forced into a crevice, the combination of a folding-plate with an abutment against which the folding-plate brings up, thereby accurately determining the shape of the fold, substantially as described.

2. In a leather-folding machine, a pressure-plate provided with spring-abutments, against which the leather to be folded is forced, which abutments are set on a spring and retire into a recess cut in the pressure-plate when said pressure-plate is forced against the leather, substantially as described.

3. In a leather-folding machine in which a sheet of leather is laid upon a folding-surface and has its edge folded by a folding-plate before it is pressed into a crevice between two movable jaws or a movable jaw and a plate, the combination, with such jaws or jaw and plate, of the means, substantially as herein described, for forcing said folding-plate against the leather, thereby giving to its edge a preparatory fold, as set forth.

4. In a leather-folding machine in which a bight or fold of leather is forced into a crevice, the combination of a folding-plate with the means, substantially as described, independent of the pressure-lever, for widening the crevice, and thereby allowing of the withdrawal of the folding-plate before pressure is applied to the pressure-plate, as set forth.

5. In a machine for folding leather, the combination of a pressure-plate and a lever connected therewith, by means of which the distance between the pressure-plate and the bed-plate can be determined, which lever can also be elevated by means of a hook, thereby forcing the pressure-plate against the bed-plate, substantially as described.

6. In a leather-folding machine in combination with the pressure-plate, the means, substantially as specified, of applying the pressure equally to both sides of the pressure-plate, substantially as stated.

7. In a leather-folding machine, in combination with the folding-plate, the means, substantially as specified, for applying pressure to the edges of the folding-plate by an apparatus shaped to correspond with such edges.

8. In a leather folding-machine, the means of depressing simultaneously the front and back of the pressure-plate, substantially as described.

JOSEPH WALDEN.
GEORGE PLATTS.

Witnesses:
S. F. SULLIVAN,
WM. J. SAWYER.