C. S. MARSHALL.

Machine for Folding Leather.

No. 227,555. Patented May 11, 1880.

Fig. 1.

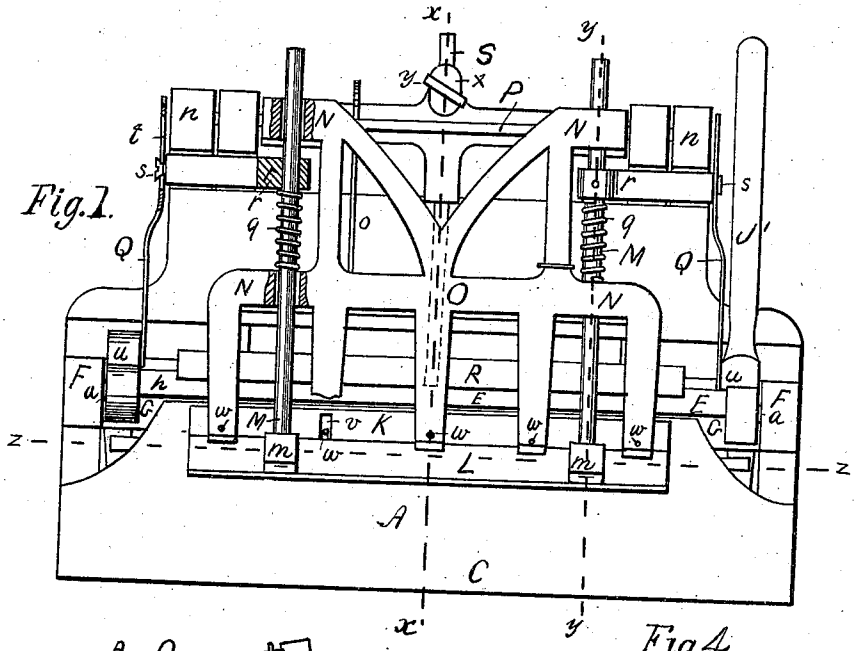


Fig. 2.

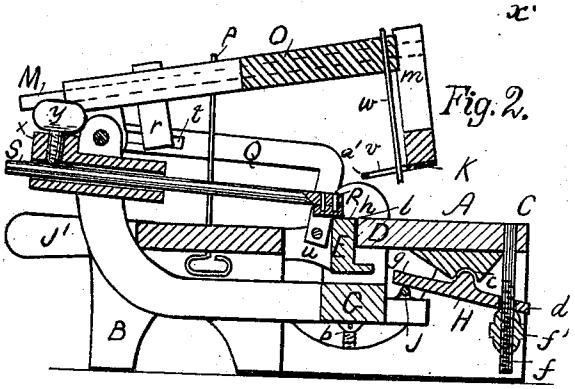


Fig. 4.

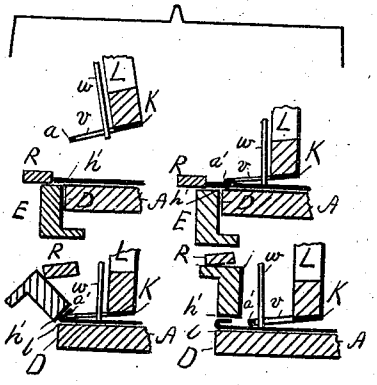


Fig. 3.

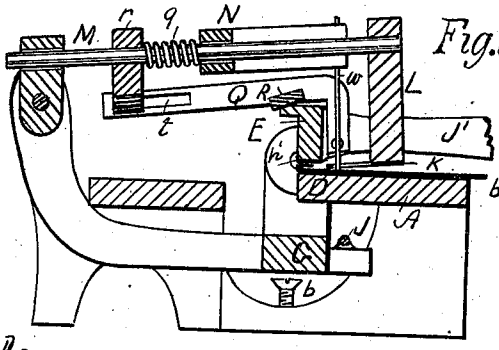
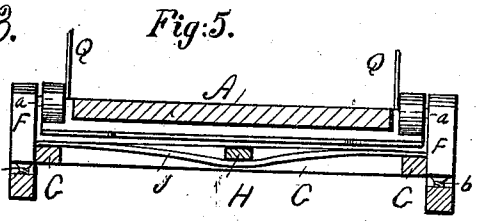


Fig. 5.



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UNITED STATES PATENT OFFICE.

CHARLES S. MARSHALL, OF BROCKTON, MASSACHUSETTS, ASSIGNOR TO HIMSELF AND HOWARD T. MARSHALL, OF SAME PLACE.

MACHINE FOR FOLDING LEATHER.

SPECIFICATION forming part of Letters Patent No. 227,555, dated May 11, 1880.

Application filed January 24, 1880.

To all whom it may concern:

Be it known that I, CHARLES S. MARSHALL, of Brockton, in the county of Plymouth and State of Massachusetts, have invented a certain new and useful Machine for Folding Leather, &c., of which the following is a specification.

This invention relates to machines for folding leather more particularly, although, as will be obvious from the description hereinafter given, the invention is applicable to machines for folding other materials; and the machine, as embraced by the present improvements, consists, in substance, of a folding semi-rotating bar mounted upon a suitable support and arranged to be operated to fold the material as desired, a presser-plate and connections, arranged not only to hold the material while a portion thereof is being folded by the folding-bar, but to make an edge about which to bend and fold the material, and a gage-bar by which to set and adjust the material for being folded, all substantially as hereinafter more fully described.

In the accompanying plate of drawings my improved folding-machine for leather, &c., is illustrated, Figure 1 being a plan view; Figs. 2 and 3, transverse vertical sections on lines *x x* and *y y*, respectively, of Fig. 1, but showing the working parts in different positions, the one with the parts as situated before being operated to fold the material, and the other with the parts as situated when the folding operation is partially completed; Fig. 4, views illustrative of the different stages of the folding operation and of the positions of the parts performing the same irrespective of their connecting mechanism; Fig. 5, a vertical section on line *z z* of Fig. 1, but on a reduced scale.

In the drawings, A represents a table or platen, supported in any suitable manner on legs or standards B B. This table receives, supports, and carries the various working and stationary parts of the machine.

C is the front of the table A, and back of such front the table is cut out parallel thereto, forming a straight edge, D; and at and along this edge D, and flush and level with the top of the table, is arranged a bar, E, which is the folding implement of the machine. This folding-bar E at each end turns by journal-pins *a* on posts F, joined by a connecting-rail, G, under the table, and each end of this connecting-rail G rests upon set-screws *b*, and the connecting-rail is held to such bearing with a yielding pressure, which is produced by a spring-rod, which traverses the length of the rail G and rests at each end thereon, and at its center is pressed upon in a downward direction by one end of a lever, H, having a fulcrum, at *c*, on the under side of the table, and its other end, *d*, adapted by a screw-bolt, *f*, and nut *f'*, the bolt passing loosely through the lever H for the lever to be brought to press by its end *g* with a greater or lesser degree of downward pressure upon the center of the spring-rod J, and thus give a greater or lesser degree of pressure on the rail G and posts F, carrying the folding-bar E.

The suspension of the folding-bar E by its journals *a*, as above described, is such that when the folding-bar E is flush and level with the table, as above described, it rests and lies against the vertical portion of the straight edge D of the table, and also such that in the turning of said folding-bar on said journals in a direction to bring its edge or surface *h*, which is flush or level with the table, over and upon the surface of the table, such edge or surface will follow around the corner *l* of the table-edge D as a center, if not affected as hereinafter stated.

The above-described arrangement of the carrying parts for the folding-bar allows the folding-bar in its movement around the corner *l* of the table-edge D, as above described, to lift, if necessary, and thus to accommodate its working-edge to whatever thickness of material may be between it and the surface of the table when it is moving from an upright position toward a horizontal position, more or less parallel with and above the table-surface, and when it is moving upward from such parallel position with the table-surface to an upright position to lower, and thus in the continuance of the turning until it reaches its normal position at the table-edge, to follow the corner *l* of such edge, as aforesaid.

J' is a lever-handle attached to one end of folding-bar for convenience in operating it, as above described.

K is a plate for pressing upon the table A

at and along the table-edge D, and between it and the front of the table. This plate K, hereinafter called the "presser-plate," is carried by a bar, L, arranged horizontally above the table and provided with posts *m m*, each having a rod, M, which run in parallel lines at right angles to the posts and toward the rear of the table and pass loosely through two guideways, N N, of a horizontal frame, O, which, at the rear of the table A, is arranged to turn or swing upon a transverse horizontal rod, P, which, outside of such points of suspension, is secured by stationary posts *n* at the rear of the table A.

o is a V-shaped spring, attached at one end to the under side of the frame O and at the other end to the table A, and otherwise adapted to throw the frame upward, and thus to keep the presser-plate K, carried by it as aforesaid, off from and above the table unless it be overcome by outside downward pressure applied to the frame.

p is a strap connecting frame O to table A in a manner that, while it will allow of a sufficient upward and downward swing of the frame, as above described, it will prevent any unnecessary upward spring.

Each rod M of the presser-plate K, between the guideways N of the frame O, carries a spiral spring, *q*, which springs, at one end, rest against the forward guideways and at the other end against fixed collars *r* of the rods M, each of which fixed collars is extended laterally and is hung by a headed pin, *s*, to the slot *t*, along the length of a rod, Q, which is pivoted to an ear-piece, *u*, at the rear end of the folding-bar E. This connection between the folding-bar E and the guide-rods of the presser-plate secures a forward-and-backward movement of the presser-plate in relation to the folding-bar, and the construction and arrangement of parts, above described as making the connection, is such that the forward movement of the presser-plate will occur as the edge *h* of the folding-bar is passing from a vertical position, or thereabout, to a horizontal position above and parallel, or nearly so, with the surface of the table A, as herein described, and that the backward movement of the presser-plate will occur as the said edge *h* of the folding-bar E is passing from said horizontal position backward to its normal position of rest. The forward movement of the presser-plate is against and the backward movement is with the force of the spiral springs *q*, the forward movement being secured by the pull of the connecting-rods Q upon the guide-rods M of the presser-plate as the folding-bar is turned in a direction over and upon the table.

v v are a series of slots in presser-plate K, at right angles to its length, and *w* vertical pins entering and passing through the same, and at their upper ends fixed to the swinging frame.

R is a straight-edged gage-bar, which rests loosely upon the upper of the folding-bar E, and S a rod projecting at right angles therefrom and to the rear of the table, where it passes loosely through a tubular block, *x*, suspended so as to turn upon the rod P, to which is hung the swinging frame O, carrying the presser-plate K, as before described.

y is a thumb-screw for tightening the rod S in its bearing of the tubular block *x*.

The above completes the description of the construction and arrangement of the parts constituting the present improved folding-machine for leather, &c., and their use and operation are as follows:

First set the gage-bar upon the edge *h* of the folding-bar E according to the width of the fold required. Next lay the edge of the material to be folded at, along, and against this gage-bar, and then place the presser-plate K and vertical pins *w w* down upon the material so placed, and which is upon the table. Now swing the lever-handle upward, at the same time holding the presser-plate K and pins *w* down upon the material. This upward swing of the lever-handle turns the folding-bar E on its journal-bearings *a*, and thus, if it be continued to the proper extent, necessarily the edge portion of the material placed upon the folding-bar, as aforesaid, is first turned or bent upward about edge *a'* of the presser-plate, which is contiguous to the corner *h'* of the folding-bar, toward the corner *l* of the table, and then is turned or bent downward upon that portion of the material which lies upon the table in front of the folding-bar, completing the fold. Now swing the lever-handle back and release the pressure of the presser-plate K and pins *w*, and the several parts resume their normal positions, and thus are placed in readiness for another operation, as above described.

In the use and operation above described, first, the position of the gage-bar R fixes and regulates the disposition of the material upon the folding-bar E, and it, together with the edge *a'* of the presser-plate, fixes the width it is to be afterward folded, and also insures a straight and equal width of fold; second, the folding-bar does the folding of the material in its width which is upon the folding-bar, as aforesaid; third, the presser-plate K holds the material steady and from moving while the folding-bar is folding that part of the material which was placed upon it; fourth, as the folding-bar E lifts and lowers, the gage-bar R lifts and lowers with it, this movement being secured by the suspension of the said bar R on the rod P, as herein described; fifth, as the journal-bearings of the folding-bar are adapted to rise and lower, as has been described, it (the folding-bar) is thus enabled to accommodate itself to the thickness of material between it and the table when it (the folding-bar) is over and folding the material down upon the table; sixth, the presser-plate moves away as the continued turning of the folding-bar brings it over the presser-plate, and in this movement of the plate the plate slides or

passes by the vertical pins, which, by still resting on the material outside of the position of operation of the folding-bar, maintain and hold the same in position and against movement.

The set-screws *b*, on which the folding-bar E, through its carrying parts, rests, as described, obviously enables the working edge or face *h* of the folding-bar to be adjusted in position relative to the corner of the table about which it swings, and otherwise, as is obvious.

In lieu of the holding-pins *w*, obviously a bar may be employed, which bar may be formed to bear either in the whole or in parts of its length upon the material as it is being folded, the presser-plate, of course, being suitably cut, but to move in relation to it, as has been described in connection with the pins.

The working face or edge *h* of the folding-bar E may in itself be adapted to yield to the thickness of the folded material between it and the table, in which case the suspension of the folding-bar E upon yielding journals, as herein described, could be dispensed with.

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

1. In a leather-folding machine, a folding-bar, E, arranged to semi-rotate about an edge, D, of a table or other support, substantially as and for the purpose described.

2. A folding-bar, E, arranged to semi-rotate about an edge, D, of a table or other support, in combination with a gage-bar, R, arranged in relation to said folding-bar E, all substantially as and for the purpose described.

3. A folding-bar, E, arranged to semi-rotate about an edge, D, upon an axis arranged to rise and lower in relation to such edge, substantially as and for the purposes described.

4. A folding-bar, E, arranged to move about an edge, D, of a suitable support, in combination with a plate, K, arranged to press at such edge D and to make an edge about which the folding-bar folds, all substantially as described.

5. The combination, with the folding-bar and table, substantially as described, of the presser-plate K, arranged to confine the leather along its edge to the action of said folding-bar, and to move or slide over the leather simultaneously with the operation of said bar, as set forth.

6. A presser-plate constructed and arranged to confine the leather, &c., which is to be folded along its edge to the action of the folding device, and as such folding device is operating to move or slide over the leather, &c., in combination with pins *w*, arranged to confine the leather while such movement or slide of the presser-plate is taking place, all substantially as and for the purposes described.

7. The combination, with the table and presser-plate K, of the pins *w*, arranged to confine the leather while the shifting movement of the said presser-plate is taking place, substantially as described.

8. In combination with a folding-bar, E, the gage-bar R, arranged to operate in relation to the action of said folding-bar E, substantially as described.

9. The combination, with the folding-bar, of the gage-bar R, arranged for adjustment in relation to said bar substantially as and for the purpose set forth.

10. A presser-plate, K, arranged for a movement through guideways N of a swinging frame, O, in combination with a table, A, and folding device E, substantially as described, for the purpose specified.

11. A presser-plate arranged for a movement through guideways N of a swinging frame, O, and to be operated upon through slotted connecting-rods Q, in combination with a table, A, and folding device E, all substantially as and for the purpose described.

12. The holding-pins *w*, secured to a swinging frame, O, in combination with a table, A, and folding device E, substantially as and for the purpose specified.

13. A table, A, folding-bar E, gage-bar R, presser-plate K, and holding-pins *w*, constructed, combined, arranged, and operating together, all substantially as and for the purpose described.

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