

J. B. STETSON.

LEATHER-CREASING MACHINE.

No. 178,199.

Patented May 30, 1876.

FIG. 1

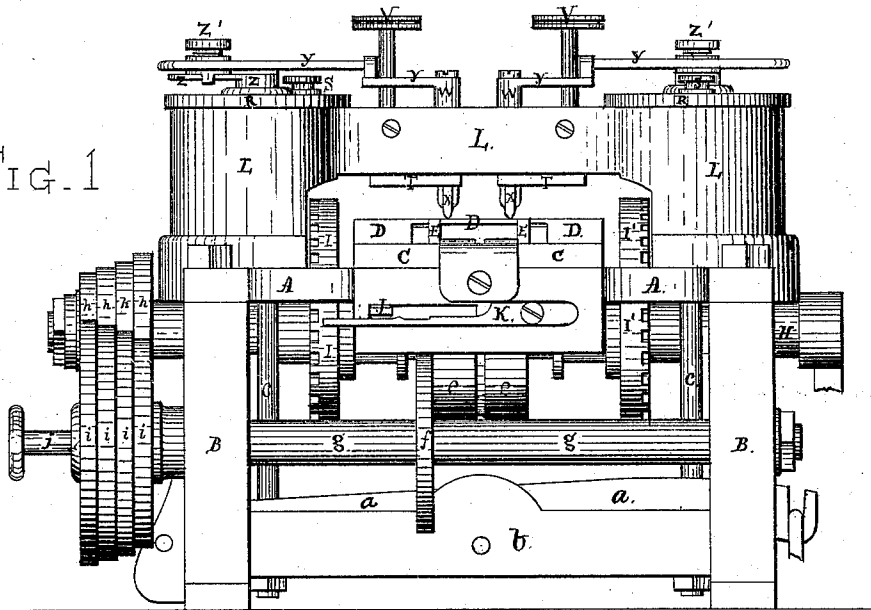
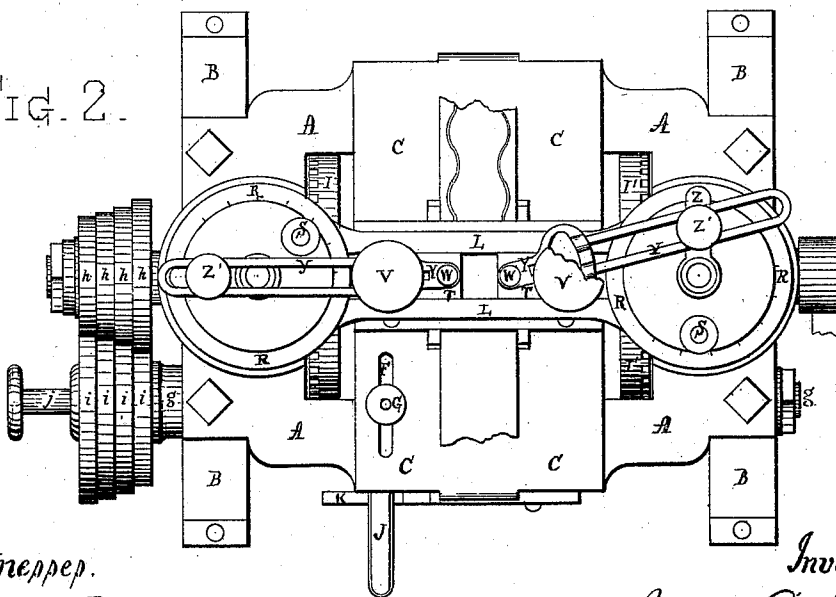


FIG. 2.



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FIG. 4.

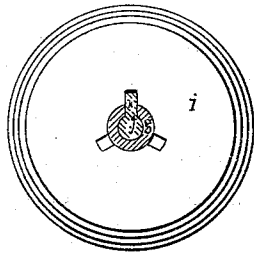


FIG. 5.

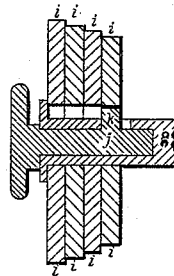
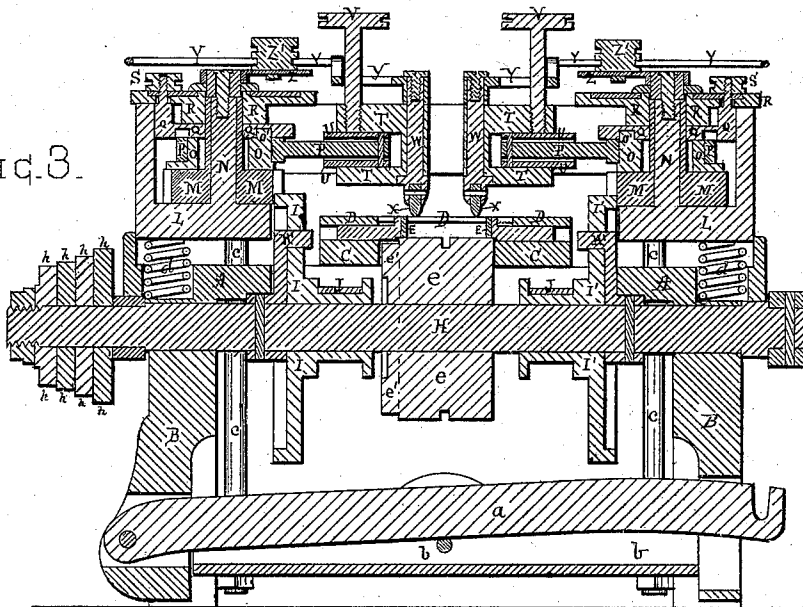


FIG. 3.



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UNITED STATES PATENT OFFICE,

JOSEPH B. STETSON, OF LINCOLN, MAINE, ASSIGNOR OF ONE-HALF HIS
RIGHT TO CHARLES W. STETSON, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN LEATHER-CREASING MACHINES.

Specification forming part of Letters Patent No. **178,199**, dated May 30, 1876; application filed
April 29, 1876.

To all whom it may concern:

Be it known that I, JOSEPH B. STETSON, of Lincoln, Penobscot county, Maine, have invented a Machine for Creasing Leather Straps, &c., of which the following is a specification:

This invention relates to certain mechanism for indenting continuous or broken lines, by friction, in leather surfaces; and it consists in the combination of a suitable frame and two adjustable creasing-tools; also, in the combination of two adjustable creasers with guides for the material to be operated upon, and a suitable feed-wheel; also, in the above combination with means for adjusting the creasers, both laterally and vertically; also, in the mechanism for regulating and changing the direction of the lines formed by the creasers and the position of the tools while forming such lines; also, in providing the creasing-tools with removable points; also, in the devices, herein described, for connecting the loose gear-wheels with their shaft, and for varying the speed of the counter-shaft with relation to the main shaft.

In the drawings, Figure 1 is a side-view of my machine. Fig. 2 is a plan or top view of the same. Fig. 3 is a longitudinal vertical central section thereof. Fig. 4 is a transverse section of the counter-shaft, loose gears, and key; and Fig. 5 is a longitudinal section of the same.

My machine is intended particularly for the use of harness-makers, and its object is to produce rapidly, easily, and with uniformity, upon leather straps of various widths and thicknesses, ornamental lines, indented or rubbed into the stock in imitation of hand-work, and of such configuration as may be desired, whether straight and parallel or wavy and alternately approaching and receding from each other.

My invention, so far as it relates to connecting the loose gear-wheels to their shaft, and to the means of varying the relative speed of shaft and axle, is equally applicable to other machines in which it is desirable to accomplish the same results.

The frame of my machine consists of a platform, A, mounted upon two pairs of legs, B. The table C, over which the work passes, is

secured to or may form a part of the platform, and is cut away at the center to permit the feed-wheel to operate upon the stock passing over it. A bridge, D, spans this aperture. Its abutments and string-pieces form ways in which the guides E travel as they are moved by a double slide beneath them, which is provided on each side with a diagonal groove to receive a pin projecting downward from each guide. A pin projecting upward from the slide through a slot, F, in the table, is furnished with a check-nut, G, which serves as a handle by which to move the slide and the guides, or as a stop to hold them fast in any desired position. Thus the guides are both set by the same operation at any given distance from the center, so as to receive a strap of any given width.

The axle H of the machine is mounted in the end frames, beneath the platform, and carries with it the main gear-wheels I I', which have a lateral motion thereon to permit them to be thrown out of or into gear with the pinions which operate the creasers. This lateral movement of the gear I is effected by a lever, J, pivoted at one end to the under side of the platform, and working in a circumferential groove in the hub of the wheel. By a toggle-joint connection with this lever, the wheel I' is moved simultaneously in the opposite direction by a similar lever. A spring or friction bar, K, serves to prevent displacement of the lever J.

The creasing mechanism may next be described. It is mounted upon or within a casting, L, having a vertical play with relation to the main frame, so as to bring the tools it bears to act upon the stock passing over the table. The ends of the casting L form a nearly cylindrical casing to receive the pinion M, and the other parts which have for an axis a spindle, N, fixed vertically in the bottom of the cylindrical part of this casting, while its central part, connecting the semi-cylindrical ends is fitted to receive the carriage to which the creasers are secured. Immediately above the pinion M is an annular ring, constituting the end of the pitman P, and within this ring is another ring, O, with an elongated eccentric opening in it of sufficient width to receive

the spindle N. This last-named ring is caused to turn with the pinion by means of a tongue-and-groove connection between their surfaces, giving to the ring a lateral movement upon the pinion, limited by its eccentric opening. A wrist-pin, O', projects upward from the ring O and enters an eccentric groove in the under surface of a disk, Q, and a pin rising from this disk passes through a semicircular slot in the cap R, and through a movable plate mounted therein, which serves to cover and close the slot. This pin is furnished with a check-nut, S, forming a knob by which the disk Q may be held fast to the cap or so moved as to vary the position of its eccentric groove and, consequently, change the throw or the length of stroke of the pitman. The other end of the pitman is connected to the tool-carriage T, by a loose thimble, U, slipped upon and pivoted to the end of the pitman-rod. This thimble enters the end of the tool-carriage, and is secured to it, adjustably, by a set-screw, V, so that the carriage may be set at any desired distance from the center of the machine, and may be moved back and forth by the pitman on ways formed in the central part of the casting L.

The tool-spindle W passes downward through the carriage, bearing in its lower end the creaser X, which is, by preference, made removable, but may be formed in one with the spindle. The creasing-tool is arranged to slip between the prongs of the spindle, and is flattened, so as not to present a point, merely, to the strap to be operated on, but so as to have a long bearing upon it, and thus get the frictional effect incident to hand-work, as heretofore practiced, the central and rear portions of the bearing-edge of the tool following successively in the track of the front of that edge.

As it is very desirable that the wavy lines formed by the moving creasers shall be uniform in width and general appearance, it is necessary to change the position of the tool when the direction of the line is to be changed, so that the center and rear edge of the tool shall follow the precise track of the front edge, to deepen and perfect the crease. To effect this result I attach to the top of the tool-spindle a lever, Y, slotted receive a crank-pin from the crank Z, which is made adjustable as to its length by a slide and clamp-nut, Z'. This crank receives its motion from the rotary cap R, upon which its hub rests, so that the direction of the horizontal axis of the tool is changed by the lever Y simultaneously, and to correspond with the movement of the tool-carriage effected by the cam which moves the pitman.

The vertical movement of the creasers is effected by a treadle connected with the free end of the pivoted lever a, which bears, at its center, upon a cross-bar, b, to which are secured stirrup-rods c, depending from the ends of the casting L, which carries the creasing mechanism. A few pounds pressure upon the

treadle depresses this mechanism against the resistance of an interposed spring, d, which raises it when the pressure is removed. Thus the creasers are brought to bear with any desired pressure upon the strap to be operated on.

The feed-wheel e is loose upon the main axle, but is kept from lateral motion thereon by a pin projecting from beneath the platform, and entering a circumferential groove in the wheel for that purpose. The feed-wheel has a roughened surface to carry the strap forward, and is provided, on one side, with a gear-wheel, e', formed in one with or firmly secured to it. This gear is always in mesh with the cog-wheel f on the counter-shaft g, mounted in the leg-frames. The speed given to the counter-shaft thus governs that of the feed-wheel.

The comparative length and depth of the "waves" of the lines formed by the creasers depend on the relative speed of the feed-wheel and the tool-operating mechanism. I vary their comparative speed in the following manner: Upon the main axle, outside the frame, I fix a series of gear-wheels, h, of varying diameters, and made fast to the shaft, and upon the counter-shaft g I arrange an inverse series, i, turning freely upon the shaft, except as one or another of this series is connected to its shaft in the following manner: The end of the counter-shaft g, upon which the loose gears are mounted, is hollow, and a groove is cut lengthwise thereof from the central opening to the surface. A round rod, j, enters the hollow shaft, and is furnished with a key, k, which projects through the groove into a keyway formed in each of the loose gears i. The key is less in width than the thickness of one of the loose gears, so that but one of them is keyed to the shaft at a time. The others turn at varying speed as they are driven by the corresponding fixed gears h, but have no power to drive the counter-shaft g. If the outer gear of the loose series i is thus keyed to the shaft the motion of the shaft will be comparatively slow. To increase its speed the rod j, bearing the key k, is pressed farther into the hollow end of the shaft g, while the machine is in motion, and when the key comes opposite to the keyway in the adjoining gear-wheel it slips into that keyway, securing that gear to the counter-shaft, and releasing the former one.

By a similar process the key is transferred to the gear next in order when greater speed is to be given to the shaft, and so on, through the series.

It is evident that, by thus gradually shifting the key from its seat within the larger of the loose gears i into the corresponding recess in the smaller one, a larger driving and a smaller driven wheel will be brought to act upon the shaft g, thus increasing its speed by degrees, and, with it, that of the feed-wheel.

By drawing back the key through the several loose gears successively the speed is gradually decreased.

This same arrangement of shaft, key, and gear may be employed to connect or disconnect a gear-wheel with the shaft upon which it revolves. For instance, the wheels I I' may be thus connected to the main axle, or disconnected from it, instead of moving laterally upon it, to throw into or out of gear, as already described.

It will thus be seen that the rapidity of the feed may be considerably varied without varying the speed of the movement of the tool-carriages; and, consequently, that a greater or less amount of stock will be carried through the machine at every reciprocation of the tool-carriage, and hence that the "waves" of the creases formed in the leather will be longer or shorter according as the smaller or larger of the loose gears is keyed to the counter-shaft.

When it is desired to form the creases in straight parallel lines the tool-carrying mechanism is thrown out of gear by sliding the gears I I' laterally upon the main axle by means already described.

The speed of the counter-shaft with relation to the main shaft may be increased or diminished by sliding the key to the right or left from one of the loose wheels into another.

The construction of my machine is such that it is inconvenient to remove the tool-spindle from its place; and I therefore make the points removable from between the prongs of the spindle, where they are held securely by pins projecting from their sides and entering recesses in the lower part of the spindle, but may be removed, if desired.

In place of the friction-tools generally used I sometimes insert stitch-wheels or rotary tools having a notched surface, which will produce upon the leather broken lines or successive indentations, in imitation of stitching.

The relative position of the levers *y y* and

cranks *z z* in Figs. 1 and 2 is not strictly correct, one lever and crank being thrown to one side, to show the movement more clearly, and one set-screw is shown partly broken away.

I claim as my invention—

1. The combination, in a creasing-machine, of two adjustable creasing-tools, with means for feeding the strap forward, and movable guides to direct the same in its movement, substantially as specified.

2. The combination, in a creasing-machine, of a feed-wheel and two adjustable guides, with a reciprocating creasing mechanism provided with means of adjustment, both laterally and vertically, substantially as and for the purpose specified.

3. The combination of the reciprocating mechanism, the devices for partially rotating the tool-spindle and the pressure mechanism, substantially as and for the purpose specified.

4. The creasing-tools herein described, provided with removable points, and constructed and operating substantially as and for the purpose specified.

5. The slotted hollow shaft *g*, in combination with the sliding rod *j* and key *k*, substantially as and for the purposes set forth.

6. A series of driving-wheels of varying sizes, fixed upon a common shaft, in combination with, and giving motion to, an inverse corresponding series loosely mounted and turning at different speeds upon a slotted hollow shaft, within which a rod and key are inserted, adapted to secure to the shaft at any time one wheel only of the loose series, substantially as and for the purpose specified.

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Witnesses:

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