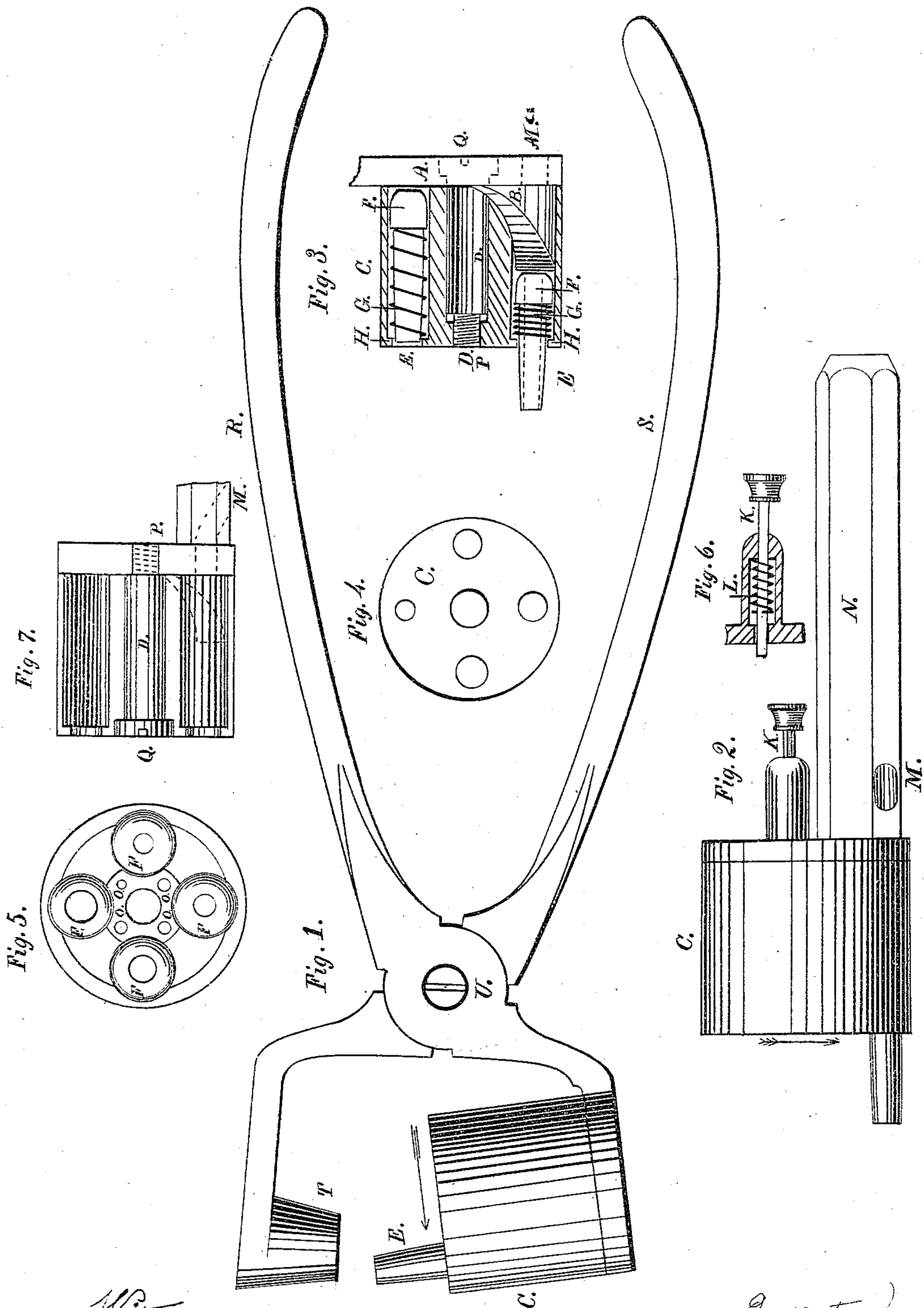


J. E. GATES.
Belt-Punches.

No. 126,141.

Patented April 30, 1872.



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IMPROVEMENT IN BELT-PUNCHES.

Specification forming part of Letters Patent No. 126,141, dated April 30, 1872.

Specification describing certain Improvements in Belt-Punches, invented by JOSIAH EMERY GATES, of Lowell, in the county of Middlesex and Commonwealth of Massachusetts.

My invention consists in supplying a punch, for making holes in leather, cloth, paper, or other substances, with a number of cutters or punches of different sizes, so arranged in a revolving shell and combined with a fixed cam that either of the punches can be brought into use at the will of the operator; also, in so combining a spring with the shell and punch as to withdraw the punch into the shell when the punch is not in use.

The accompanying drawing represents my invention.

Figure 1 is a hand-lever punch. Fig. 2 is a drive-punch. Fig. 3 is a section of the shell, showing the stud and cam and two punches. Fig. 4 is a top view of the shell. Fig. 5 is a view of the shell detached from the plate, showing the base of punches, the recesses to receive the stops, and the groove in which the cam works. Fig. 6 is a section of the tube containing the stop. Fig. 7 is a section of the shell, showing the proper position of the stud.

A is a circular plate, having upon one face thereof the cam B. C is the shell, having in one end a circular groove, which receives the cam B and allows the shell to revolve on the stud D. The stud D has a screw, P, cut on one end, which screws into the plate A, and at the other end a head, Q, which retains the shell against the plate. The shell has chambers H H large enough to allow the base of the punch to move freely for the reception of the punches E E. An opening at H, in the face of the shell, allows the punch to project beyond the face of the shell C as the punch passes over the cam. These punches are of different diameters, and have each an enlarged base, F, flattened where they rest upon the cam B or plate A to diminish the wear and friction of the same upon said cam and plate. The other side of the base F serves as a shoulder to the spiral-wire spring G, which latter, surrounding the punch E, rests at one end upon said base F and at the other end against the end of the chamber H. The spring G throws the punch E back against the plate A when said punch is not resting upon the cam B.

In Fig. 1, T is a metallic cutting-block, on which the leather or other substance rests while being punched, and R and S are levers.

In Fig. 2, K is a stop forced by the spring L perpendicularly against the inner end of the shell C, which latter has several recesses, O, in number equal to the number of punches, and as the shell is revolved the stop is forced successively into each of said recesses, stopping the punches in succession upon the top of the cam. In order to revolve the shell the stop is withdrawn from the recess by the hand. The cam B and cam-plate A are drilled through from top to bottom, where the hollow punch E rests when in position for use, to form with said punch a continuous tube to conduct away the cuttings and deliver them from the punch at M.

In Fig. 2 the delivery-passage is deflected out through the handle N, the deepest part of the cam, on which the punch rests when in use, being immediately beneath said handle to insure strength and directness of the blow. This handle N is to be grasped by the hand, and the punch is forced through the substance to be punched by blows upon the top of said handle; or the handle is confined in a treadle punching-machine by a set-screw, or otherwise, in the same way that ordinary single punches are. In the latter case the punch is forced through the substance to be punched by pressure.

The method of using the hand-lever punch, shown in Fig. 1, is too obvious to need any particular description.

All the punches herein described and referred to, invented by me, are operated precisely in the same way that the ordinary punches for similar purposes are used.

To adjust the punch of the required size into its place on the cam it is only necessary, after drawing back the stop K, shown in Fig. 2, to revolve the shell C upon the stud D in the direction shown by the arrows until the punch, thrown out by the cam D, is over the delivery-passage M, or until the stop K is forced by the spring L into the recess O, which will retain the punch in place while being used.

Various contrivances may be used for retaining the punch in place while being used instead of the stop K, herein described, the simplest, perhaps, consisting merely of a de-

pression made in that part of the cam on which the base of the punch rests while in use, in which case the punch will be retained in place merely by the action of the spring G; or the shell may be stopped by a set-screw.

An eyelet-setting machine may be constructed on substantially the same principle as that of the punch above described.

I do not confine myself to the length or exact shape of the cam herein described, as these can be varied; nor to the number of punches, as the number may be increased indefinitely by increasing the diameter of the shell; and, on the other hand, two or three punches may be used instead of the four shown in the model and drawing.

The advantages of my invention are that several punches may be carried in small space, and may be obtained for a much smaller sum

than the cost of an equal number of separate punches, and that the punches which are not in use are drawn back into the shell, they, said punches, being thus protected from injury and not interfering with the substance being punched.

Having described my invention, I claim—

1. The revolving shell C, carrying the punches E E, combined with the fixed cam B, substantially as and for the purpose herein described.

2. The revolving shell C, the punches E E, the cam B, and the spring G, all combined, constructed, and arranged substantially as and for the purpose herein set forth.

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