

(No Model.)

3 Sheets—Sheet 1.

B. F. STOWELL.
ENGRAVING MACHINE.

No. 570,070.

Patented Oct. 27, 1896.

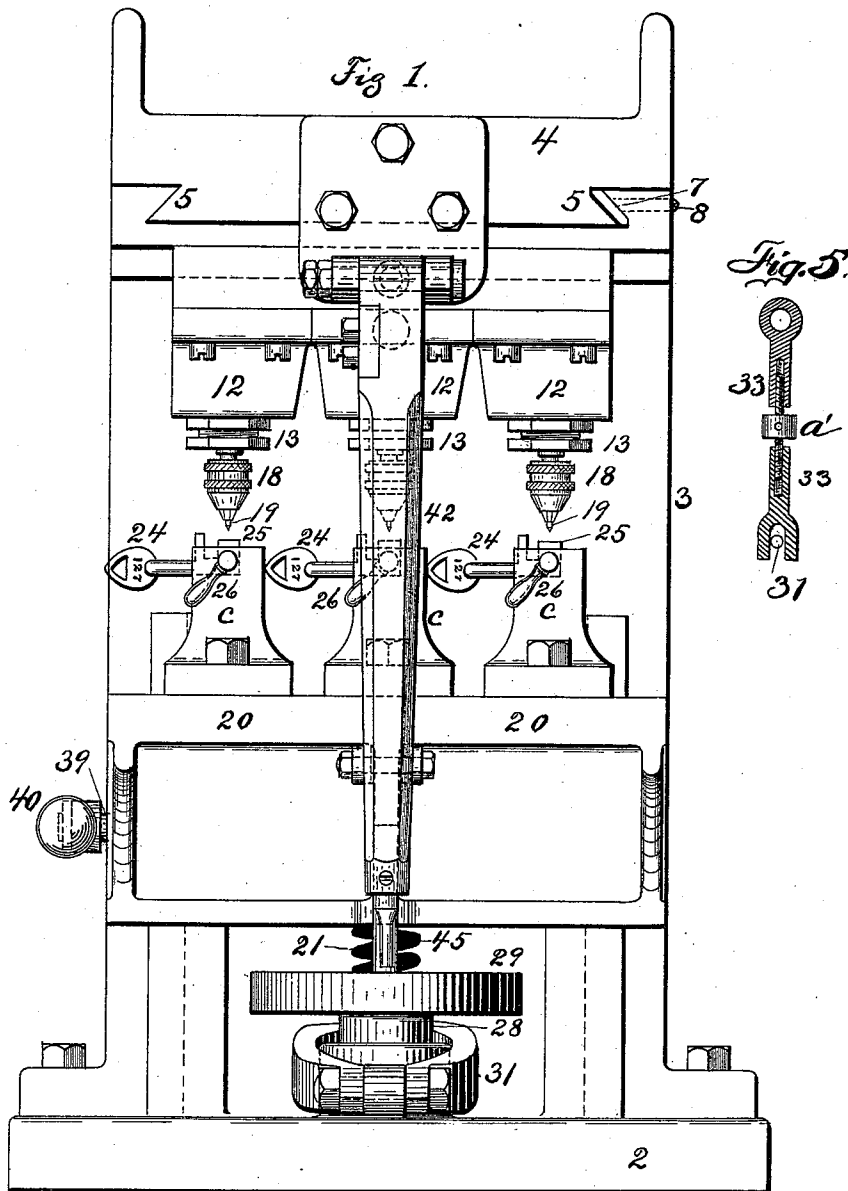


Fig. 5.

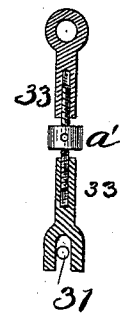
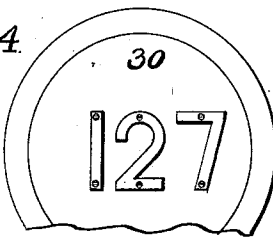


Fig. 4.



WITNESSES:

Charles N. Marvin
Wanda E. Cooke

24 25 127

INVENTOR
Byron A. Stowell.

BY
Smith & Wenden
ATTORNEYS.

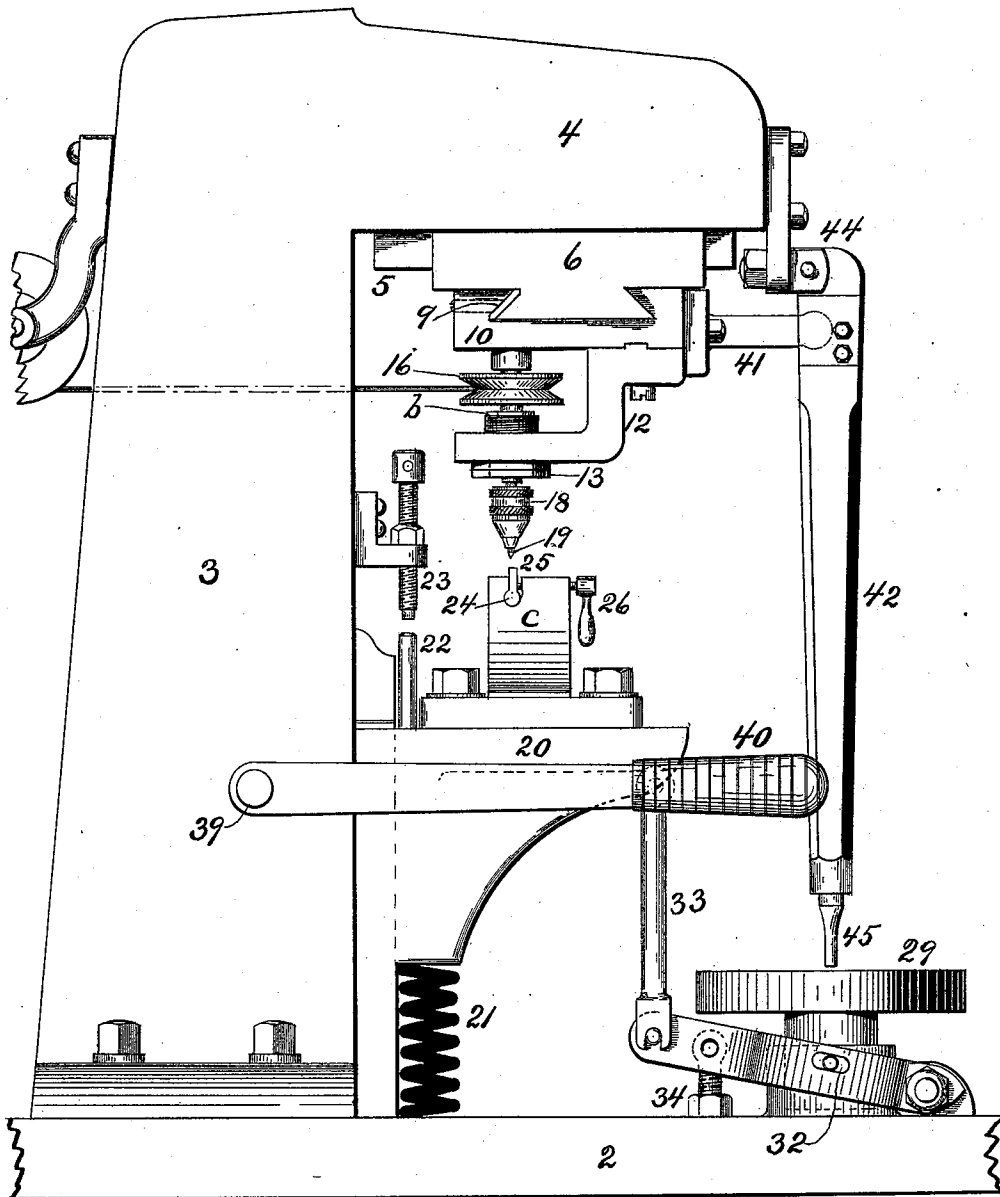
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WITNESSES:

Charles W. Marvin.
Maudie C. Look.

Fig. 2.

INVENTOR

Byron F. Stowell.

BY

Smith & Brinson
ATTORNEYS.

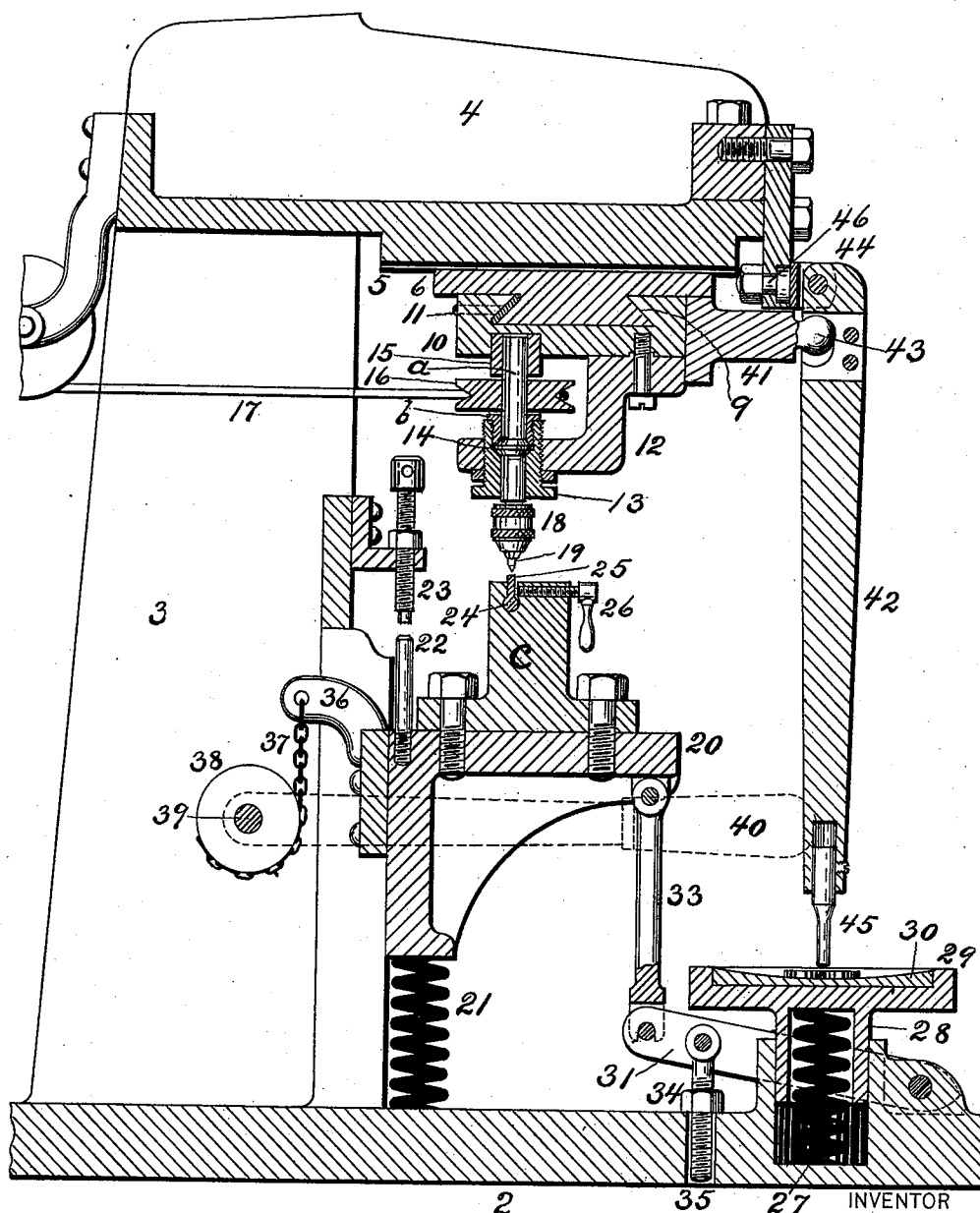
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3 Sheets—Sheet 3.

B. F. STOWELL.
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WITNESSES:

Charles N. Marvin
Maudie C. Cooke

Fig 3.

Byron F Stowell.

BY

BY
Smith & Denison
ATTORNEYS.

UNITED STATES PATENT OFFICE.

BYRON F. STOWELL, OF BINGHAMTON, NEW YORK, ASSIGNOR TO THE
BUNDY MANUFACTURING COMPANY, OF SAME PLACE.

ENGRAVING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 570,070, dated October 27, 1896.

Application filed April 6, 1896. Serial No. 586,349. (No model.)

To all whom it may concern:

Be it known that I, BYRON F. STOWELL, of Binghamton, in the county of Broome, in the State of New York, have invented new and useful Improvements in Profiling-Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to profiling-machines.

My object is to produce a machine by which a duplicate of a pattern is reproduced by a suitable cutting-tool, which is guided by the pattern through intermediate mechanisms, and is so reproduced of equal or larger or smaller size than the pattern, according to the adjustment of the tool-guiding mechanism. It is herein described and shown for the purpose of reproducing numerals, letters, or characters by cutting them in relief upon the face of a plate or upon the flat end of a bit or ward or lug upon one side of a key; but it is evident that it can be applied to many other purposes without departing from the principle of my invention, and can reproduce an intaglio from such a pattern, the same as a design in relief from that type of pattern.

This machine embodies a work-table and a pattern-table and means whereby each is elevated or lowered in equal or proportional degree or distance, the one vertically toward or from a revolving cutter and the other vertically toward or from a tracer, which is caused to follow the contour of the pattern and direct and control the forward and back diagonal or lateral movements of the cutter, according to the contour of the pattern, and to reproduce it, means being provided for regulating and adjusting the lift or elevation of the tables whereby the depth of the cut made by the cutter is controlled, means being also provided for manually lowering said tables for the removal or insertion of the patterns or finished work, and in which each cutter is carried by a holder consisting of slides in a suitable series of ways and so connected to said tracer that every possible movement of the said tracer is imparted to the cutter.

My invention consists in the several novel features and combinations of elements hereinafter described, and which are specifically

set forth in the claims hereunto annexed. It is constructed as follows, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation of the machine. Fig. 2 is a side elevation thereof. Fig. 3 is a vertical sectional elevation thereof, showing the table depressed. Fig. 4 is a top plan of a pattern and also of its reproduction upon a lug on one side of the shank of a key. Fig. 5 shows means for adjusting the length of the connection 33.

Upon a suitable base 2 a standard 3 is erected, provided with an arm 4, having ways 5, upon which a slide 6 is mounted having a suitable gib 7 and set-screw 8 to regulate the fit of said slide upon these ways. This slide is also provided with suitable ways 9, upon which a counter-slide 10 is mounted, with a gib and screw 11. An angular arm 12 is secured to said counter-slide, and 13 is a tubular nut adjustably inserted into said arm, and through which a cutter-shaft *a* is inserted having a bearing-shoulder 14, said nut being also recessed to receive a lesser tubular nut *b*, which adjustably bears upon said shoulder to prevent the upward thrust of said shaft, the upper end of which has a bearing in a step 15 in the counter-slide, and 16 is a suitable pulley on said shaft, driven by a belt 17 from any suitable source of power. A suitable chuck 18, mounted upon said shaft, holds a suitable cutter or cutting-tool 19.

Upon suitable vertical ways upon the front of the standard a work-table 20 is mounted to be reciprocated vertically, and 21 is a suitable supporting and lifting spring normally holding said table up so that the upper end of the stud 22 will engage with a set-screw 23, which is adjustable to vary the lift of the table and the depth of the cut made by the cutter. Upon this table a suitable work-holder *c* is mounted, that shown being recessed to receive and hold the shank of a key 24, provided with a lateral lug 25, upon the upper face of which, as shown, the pattern is to be reproduced by said cutter, the hand-screw 26 suitably engaging with said key to hold it securely. In a suitable socket in the base a spring 27 is placed, which supports and lifts the pattern-table, comprising a suitable shank 28 and top 29, in or upon which

the pattern 30 is secured, such as is shown in Fig. 4, except that for some purposes the pattern should be reversed, as when the reproduction is to be used for printing. A yoke 31 is pivoted upon the base, connected on one or both sides to the shank 28 by a suitable slot-and-pin connection 32, engages with the connecting-bar 22, pendent from the work-table, and by this mechanism the lift or depression of one table is imparted to the other. In Fig. 5 this connection is shown as adjustable by means of the right and left hand screw *a'*. A pin and nut 34, connected to the yoke 31 and fitting loosely in a recess 35 in the base, adjusts and limits the degree of depression of the pattern-table and also of the work-table.

To depress the work-table, an arm 36 is secured to it. A chain 37 connects said arm to a drum or pulley 38, mounted upon a shaft 39, and 40 is a band-lever suitably secured to said shaft or drum, so that when it is depressed said shaft or drum, or both, is rotated to wind up the chain and pull down said table. This operation of lowering this table forces the pattern-table down a distance limited by the pin and nut 34, as it may be adjusted.

Upon the counter-slide 10, which has a lateral movement, an arm 41 is secured, its outer end being suitably connected to the pattern-guide 42, as by a ball-and-socket joint 43. The upper end of this guide is suitably hinged or otherwise connected at 44 to the arm 4 of the standard, so that it can be swung forward and back, its point being thus forced to follow the contour of the pattern 30, and when so swung the slides will be shifted accordingly upon their respective ways, having either a movement independent of each other or joint movement in different directions, or will move together in a straight forward or back movement, or will move upon each other in a diagonal line, according to the direction of the movement of the tracer 45 as it engages with the contour of the pattern and imparts such movement to the cutter. The pivot 46 permits the tracer 45 to be swung laterally, it being thus mounted upon a universal-joint, and the cutter having a like universal movement.

In Fig. 4 the pattern and its reproduction upon a reduced scale are shown, but where the reproduction is to be used in printing the pattern should be reversed. In case the pattern in any part has a recess within a border, as the numerals 6, 9, or 0, the table is depressed and the point of the tracer 45 inserted into said recess, that the table being released and raised, and then the tracer being suitably guided, the cutter will cut out said recess in the reproduction.

The relative scale or proportion of the reproduction to the pattern depends upon the set of the machine.

This machine is shown in the drawings as performing its work in triplicate, making

three reproductions simultaneously from a single pattern with a single tracer, and by duplicating substantially the construction shown its capacity can be increased to any desired number.

It will be seen that through the play of the yoke 31 in the fork of the lower end of the connection 33 and the existence of this lost motion, as shown in Fig. 5, when the lever 40 is operated the work-table will be depressed first far enough to remove the work from the cutter, and then the fork will engage with the yoke before the pattern-table is lowered by the action of said connection and yoke, so as to disengage the tracer from the pattern. It will also be seen that when such pressure upon the lever 40 is removed the pattern-table will be raised to bring the tracer into engagement with the patterns before the cutter comes into contact with the work, whereby the cutter will not begin to cut until its starting-point has been determined by the tracer. It also follows that by reason of said lost motion the cutter will stop cutting at a point controlled by said tracer, so that no work can be spoiled by the disengagement of the tracer from the pattern.

It will be seen that when the lever 40 is raised or permitted to rise the spring 27 will raise the table 29 until it meets the tracer 45, which stops its upward movement; and thereafter the spring 21 will raise the work-table until the work is in contact with the cutter. The tracer stops the upward movement of the pattern-table before the cutter is in engagement with the work.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a profiling-machine a work-table and a spring operative to normally maintain it in working position in combination with a pattern-table, a spring operative to maintain it also in normal working position and means to connect said tables so that they are elevated substantially simultaneously and a predetermined distance by their respective springs.

2. In a profiling-machine a work-table and a spring operative to normally maintain it in working position in combination with a pattern-table, a spring operative to maintain it also in normal working position, and means to connect said tables so that they are elevated substantially simultaneously, by their respective springs, and a lever connected to the work-table and operative to depress both tables substantially simultaneously each a predetermined distance.

3. In a profiling-machine a work-table and a pattern-table so connected as to be vertically and sequentially reciprocated each a predetermined distance in combination with a tracer and a revolving cutter so connected thereto as to be guided thereby according to the contour of the pattern.

4. In a profiling-machine a base and a standard, a work-table and a pattern-table, separate springs under each to maintain them

respectively in working position, a connection between them whereby the vertical movement of either table is transmitted to the other, and means to limit such vertical movements in either direction, as predetermined.

5 In a profiling-machine a base and a standard, a work-table, a spring under it normally maintaining it in a given position with reference to an adjustable stop, a pattern-table a spring under it normally maintaining it in a given position gaged by the work-table stop, a stop upon said standard, a lever connected to said work-table operative to depress both tables a predetermined distance and an adjustable stop-pin connected to said pattern-table, whereby the extent of the depression of both tables is gaged, in combination.

6. In a profiling-machine a base and a standard, a work-table, a spring under it normally maintaining it in a given position with reference to an adjustable stop, a pattern-table a spring under it normally maintaining it in a given position gaged by the work-table stop, a stop upon said standard, a lever connected to said work-table operative to depress both tables successively a predetermined distance, and an adjustable stop-pin connected to said pattern-table, whereby the extent of the de-

pression of both tables is gaged, in combination with a rotating cutter and a tracer so connected thereto as to be guided thereby according to the contour of the pattern followed by said tracer.

7. In a profiling-machine a base, a standard and an arm thereon, a work-table and a pattern-table mounted upon said base, and means to successively reciprocate them vertically each a limited distance, in combination with a slide mounted upon ways upon said arm, a counter-slide mounted upon ways transverse to said slide, a rotating cutter-shaft journaled in said counter-slide, a cutter suitably mounted upon said shaft, and a tracer connected to said arm by a universal joint and to said counter-slide by a loose joint whereby the swing of said tracer in following the contour of the pattern is imparted to said cutter, to move it in any direction to reproduce said pattern upon the work-table.

In witness whereof I have hereunto set my hand this 3d day of April, 1896.

BYRON F. STOWELL.

In presence of—

JOSHUA W. CAPEN,

WILLIAM F. GALLAGHER.