No. 656,940. Patented Aug. 28, 1900.

C. CHEVALIER.

ENGRAVING MACHINE.

(Application filed Mar. 9, 1900.)

(No Model.)

FIG. 1.

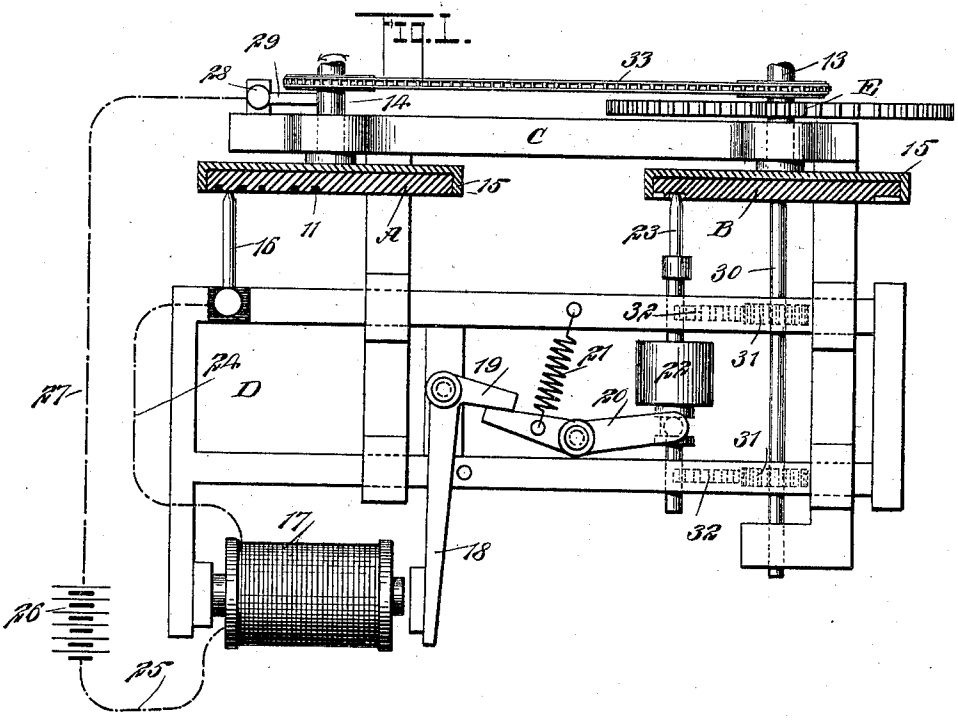


FIG. 3.

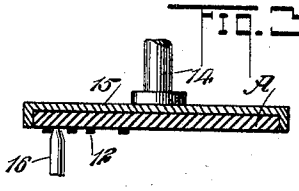
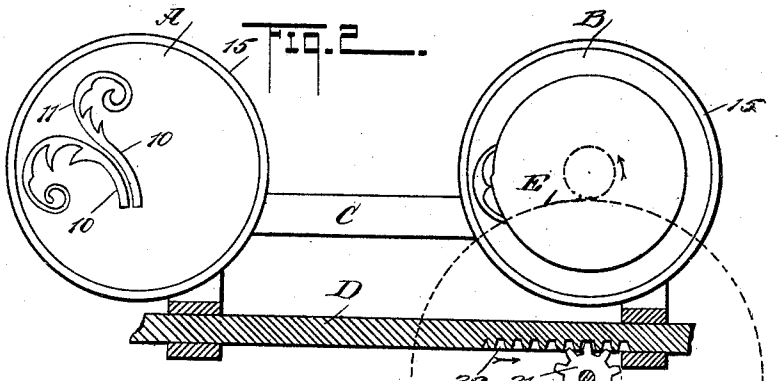


FIG. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

CHARLES CHEVALIER, OF NEW YORK, N. Y.

ENGRAVING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 656,940, dated August 28, 1900.

Application filed March 9, 1900. Serial No. 8,046. (No model.)

To all whom it may concern:

Be it known that I, CHARLES CHEVALIER, a citizen of the United States, residing at the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Engraving-Machine, of which the following is a full, clear, and exact description.

The object of this invention is to provide a machine for engraving metal surfaces, especially the surfaces of watchcases or similar articles, the said ornamentation being produced in a simple manner and with great economy of labor. Heretofore the design to be produced upon a watchcase, for example, has been raised or produced in metal on a pattern-disk, necessitating considerable work in routing out the metal around that surface which represents the design. According to my invention the design is cut into the metal or made in intaglio, and the cut surface is filled with wax or with other non-electric-conducting material, or the design is drawn or painted on the pattern-disk with a material which will be a non-conductor of electricity.

The invention will be fully described hereinafter and the features of novelty pointed out in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 represents a plan view of an apparatus for carrying out my invention, the pattern-disk, its holder, and the article to be engraved upon with its holder being in section. Fig. 2 is an elevation of the apparatus with parts in section, showing the pattern-disk and the article to be engraved from the pattern-disk with a portion of the design embossed on the article; and Fig. 3 is a sectional plan through a holder and a pattern-disk upon which the design is painted.

The pattern-disk A has a design 10 cut therein, and the cut surface is provided with a filling 11 of wax or other material which is a non-conductor of electricity, or, as shown in Fig. 3, the design 12 is produced on the pattern-disk with a paint or non-electric-conducting material. A support C is provided in which two shafts 13 and 14 are mounted to revolve at the same rate of speed, being, for instance, connected by a chain 33. Each shaft is provided with a head 15, and in one of these heads the pattern-disk A is secured, while in the opposite head the article B upon which the design is to be reproduced is secured. A frame D is held to slide in the support C in front of the article to be engraved and the pattern-disk, any approved means being employed for gradually feeding the frame D, so that a tracing-finger 16, which is attached to the frame and is adapted to be placed primarily at the outer edge of the pattern-disk, will be moved gradually from the periphery to the center of the disk. For instance, the shaft 13 may by gearing E drive a counter-shaft 30, having pinions 31, which engage racks 32 on the slide-frame D. An electromagnet 17 is carried by the frame D, and an armature 18 is used in connection with the magnet, the armature being fulcrumed on the sliding frame, and the said armature is shown as provided with an arm 19, which engages with one end of a spring-controlled shifting-lever 20, fulcrumed on the frame. This lever is shown fulcrumed at its center, and the end that is in engagement with the armature has a spring 21 attached to it, the spring being likewise attached to the frame. The tendency of the spring is to draw the arm of the lever to which it is attached in the direction of the pattern-disk, and thereby carry the chuck 22, with which the opposite end of the lever is connected, away from the article to be engraved, since the said chuck carries the cutting or engraving tool 23, which is placed at the periphery of the article on which the design is to be produced when the tracing-finger 16 is at the outside of the pattern-disk.

One of the wires 24 from the electromagnet is carried to a post connected with the tracing-finger, the other wire 25 being led to the battery 26, and from the battery a wire 27 is carried to a post 28, fixed to the support C and having a tongue 29, which engages with the shaft 14.

In operation while the tracing-finger is in engagement with the metal surface of the pattern-disk the circuit will be closed and the cutting-tool will operate to rout out or trim down the surface on which the design is to be produced; but as soon as the tracing-finger engages with the filling in the design on the

pattern-disk the circuit is broken and the armature is released from the magnet, permitting the shifting-lever 20 to act to carry the cutting-tool away from the material on which it was at work; but the moment that the tracing-finger contacts with the metal the armature is energized, drawing the shifting-lever 20 to a position which will instantly carry the cutting-tool to the surface on which it is to work.

I have shown the tracer 16 and tool 23 connected to move one exactly like the other, with the exception of the movement imparted to the tool 23 by the electromagnet 17. I desire it to be understood, however, that a pantagraph connection might be employed, so that the design would be reproduced on an enlarged or a reduced scale. Similarly the head 15, carrying the material B, could be rotated at a greater or less speed than the head carrying the pattern A, so as to modify the design. While I have shown the tool 23 as having only a reciprocating motion relatively to the material, the tool therefore acting as a chisel, I may also give a rotary motion to the tool—for instance, by passing a driving-belt around the chuck 22.

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

1. An apparatus for reproducing patterns, comprising a pattern-head, a work-holding head, a connection whereby said heads are caused to move in unison, a shaft carrying pinions and operatively connected with said heads, a frame mounted to slide in a direction parallel with the faces of the heads and provided with longitudinal racks engaged by said pinions, a reproducing-tool mounted to slide in the frame transversely, that is, toward and from the work, said tool having an annular groove, a lever fulcrumed on the frame about an axis ranging transversely of the direction in which the tool slides, a projection on said lever engaging the annular groove of the tool, a spring connected with said lever to lift the tool off the work, an armature-lever fulcrumed on the frame about an axis parallel with that of the tool-lever, said armature-lever and tool-lever engaging each other, an electromagnet carried by the frame adjacent to the armature-lever and arranged to attract the latter so as to force the tool toward the work, and a circuit including the pattern-head, the tracer and the electromagnet.

2. An apparatus for reproducing patterns, comprising a pattern-head and a work-holding head connected to move in unison, a frame movable parallel with the faces of said heads, a tracer secured to the frame and arranged to engage the surface of the pattern, a reproducing-tool mounted to slide in the frame transversely, that is, toward and from the work, said tool having an annular groove, a lever fulcrumed on the frame about an axis ranging transversely of the direction in which the tool slides, a projection on said lever engaging the annular groove of the tool, a spring connected with said lever to lift the tool off the work, an armature-lever fulcrumed on the frame about an axis parallel with that of the tool-lever, said armature-lever and tool-lever engaging each other, an electromagnet carried by the frame adjacent to the armature-lever and arranged to attract the latter so as to force the tool toward the work, and a circuit including the pattern-head, the tracer and the electromagnet.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES CHEVALIER.

Witnesses:

JOHN LOTKA,

EVERARD BOLTON MARSHALL.