J. FREUND.

ENGRAVING MACHINE.

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1,434,602. Patented Nov. 7, 1922.

Fig. 1.

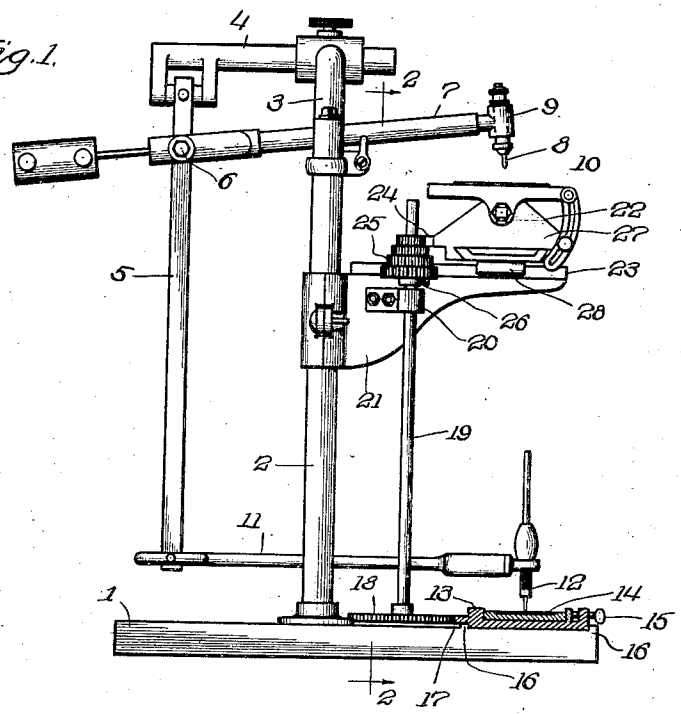
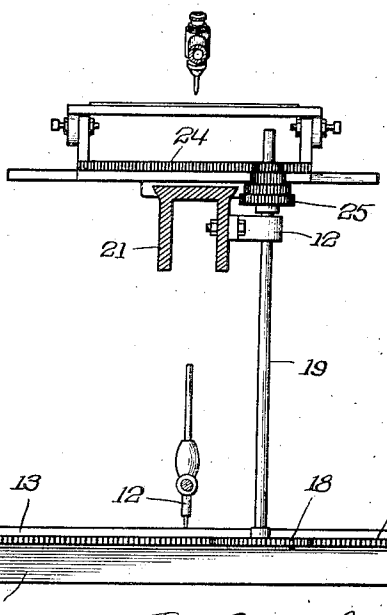


Fig. 2.



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UNITED STATES PATENT OFFICE.

JACOB FREUND, OF CHICAGO, ILLINOIS.

ENGRAVING MACHINE.

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To all whom it may concern:

Be it known that I, JACOB FREUND, a citizen of the United States of America, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Engraving Machines, of which the following is a specification.

This invention relates to an engraving machine of the type usually employed for engraving jewelry, and the purpose of the invention is to widen the range of usefulness of such machines so that they are better adapted for engraving lines of letters such as are used in announcements and cards.

The type of machine as illustrated does most accurate work when both the tracing stylus and the engraving tool operate in a central zone. When these are moved a considerable distance to the right or left of such central zone slight distortions occur in the engraved line. To correct such a tendency to distort the letters or correct inaccurate alinement usually requires a costly change or redesigning the entire machine. By means of the present improvements upon this type of engraving machine the plate holder is made automatically shiftable in any desired ratio with the pattern holder so that both the tracing stylus and the engraving tool may operate in a central area and the pattern holder and plate holder may be shifted laterally to permit the successive engraving of letters in a central area.

Fig. 1 of the drawings shows in side elevation with part of the mechanism not relating to the present improvements omitted, an engraving machine constructed according to this invention.

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1.

The type of machine illustrated comprises a base supporting a pair of uprights which carry the plate support and the pantograph mechanism for transmitting motion at a reduction from the tracing stylus to the engraving tool. The plate holder is as usual mounted on bearings which permit it to move to be adjusted forwardly and rearwardly and also slide laterally.

The present improvements comprise a rack extending horizontally along the rear of the plate holder and which may be caused to mesh with any one of a plurality of pinions by shifting the plate holder forwardly or rearwardly in its bearings and locking it in its adjusted position against forward or rearward motion while permitting it to move laterally as driven by one of the pinions. The driving pinions all of different sizes are splined to a vertical shaft so that any one may be brought into the horizontal plane of the rack on the plate holder. This vertical shaft carries fast a gear at its lower end meshing with a rack at the rear of a laterally shiftable pattern holder slidably mounted on the base of the machine. By this construction when the pattern holder is shifted laterally to bring one letter after another to below the stylus, a corresponding shift at a reduction is imparted to the plate holder. The stylus and engraving tool may therefore be continuously operated in a zone where the engraving tool will do most accurate work.

Referring to the drawings, the base 1 of the machine is shown provided with two upright posts 2 which are yoked together at the top by a frame 3 which carries a bearing member 4 for the vertical lever 5 which is a part of the pantograph. The lever 5 is connected by a gimbal joint 6 with the horizontal engraving tool supporting arm 7. The engraving tool 8 is vertically slidable a slight distance in the extension 9 of lever 7 so as to bear on the prepared plate 10 only by its own weight. The lower end of lever 5 is pivotally connected to the horizontal arm 11 which supports at its forward end the tracing stylus 12. Below the stylus 12 is the pattern holder 13. This holder is arranged to receive removable forms 14 which are clamped to the holder by means of the screws 15. The pattern holder is shiftable laterally of the machine between rails 16 formed on the upper surface of base 1. A horizontally disposed rack 17 at the rear of the pattern holder meshes with a gear 18 on a vertical shaft 19 which has its bearings in base 1 and a bracket 20 on the supporting bracket 21 for the plate holder 22. The bracket 21 is clamped to the uprights 2 and is provided with a fore-and-aft extending bearing 23 which permits the plate holder 22 to be adjusted forwardly and rearwardly for the purpose of engaging its rack 24 with any one of pinions 25 splined to the shaft 19. These pinions are retained in their adjusted position along shaft 19 by the collar 26. The plate holder 22 includes two parts 27 and 28 in sliding engagement so that the part 27 which supports the plate 10 and carries rack

24 may be moved laterally under the action of one of pinions 25 when shaft 19 is rotated.

In the operation of the device the pattern holder 13, stylus 12 and tool 8 may remain in central position while the plate 10 which is to receive the engraving is clamped in a central location on holder 22. Then as the letters of the pattern are successively traced by the stylus 12 the pattern holder may be shifted from time to time so that the stylus is always operated in a central zone. This shifting of the pattern holder through the rack and gear connection with the plate holder insures a similar motion at a reduction of the plate holder. The ratio between the pattern holder and plate holder is determined by which of the pinions 25 is located opposite rack 24. This ratio may correspond with the adjustment of the pantograph mechanism or may vary therefrom if it is desired to cause the engraving tool to mark out letters of different width with respect to height than the proportions of the letters of the pattern. This set of shiftable pinions not only enables the engraver to do more accurate work and results in a considerable saving of time, but also enables him to vary the proportions of the letters traced by the tool 8 to some exact predetermined relationship with the pattern letters.

Although but one specific embodiment of this invention has been herein shown and described, it will be understood that numerous details of the construction shown may be altered or omitted without departing from the spirit of this invention as defined by the following claim.

I claim:

An engraving machine comprising a frame structure supporting a pantograph mechanism, a pattern support, a work support, a tracing stylus carried by said pantograph mechanism for movement over the pattern support, said pantograph mechanism including a horizontal tool supporting arm pivoted for vertical motion around a horizontal axis and an engraving tool mounted for limited vertical motion on said tool supporting arm above the work support whereby the engraving tool may bear upon the work at a predetermined uniform pressure.

Signed at Chicago this 2 day of June, 1921.

JACOB FREUND.