

Sept. 28, 1971

G. BERLANT
ATTACHMENT KIT FOR COPYING MACHINE
FOR ENGRAVING JEWELRY RINGS

3,608,429

Filed Dec. 24, 1969

2 Sheets-Sheet 1

FIG. 1

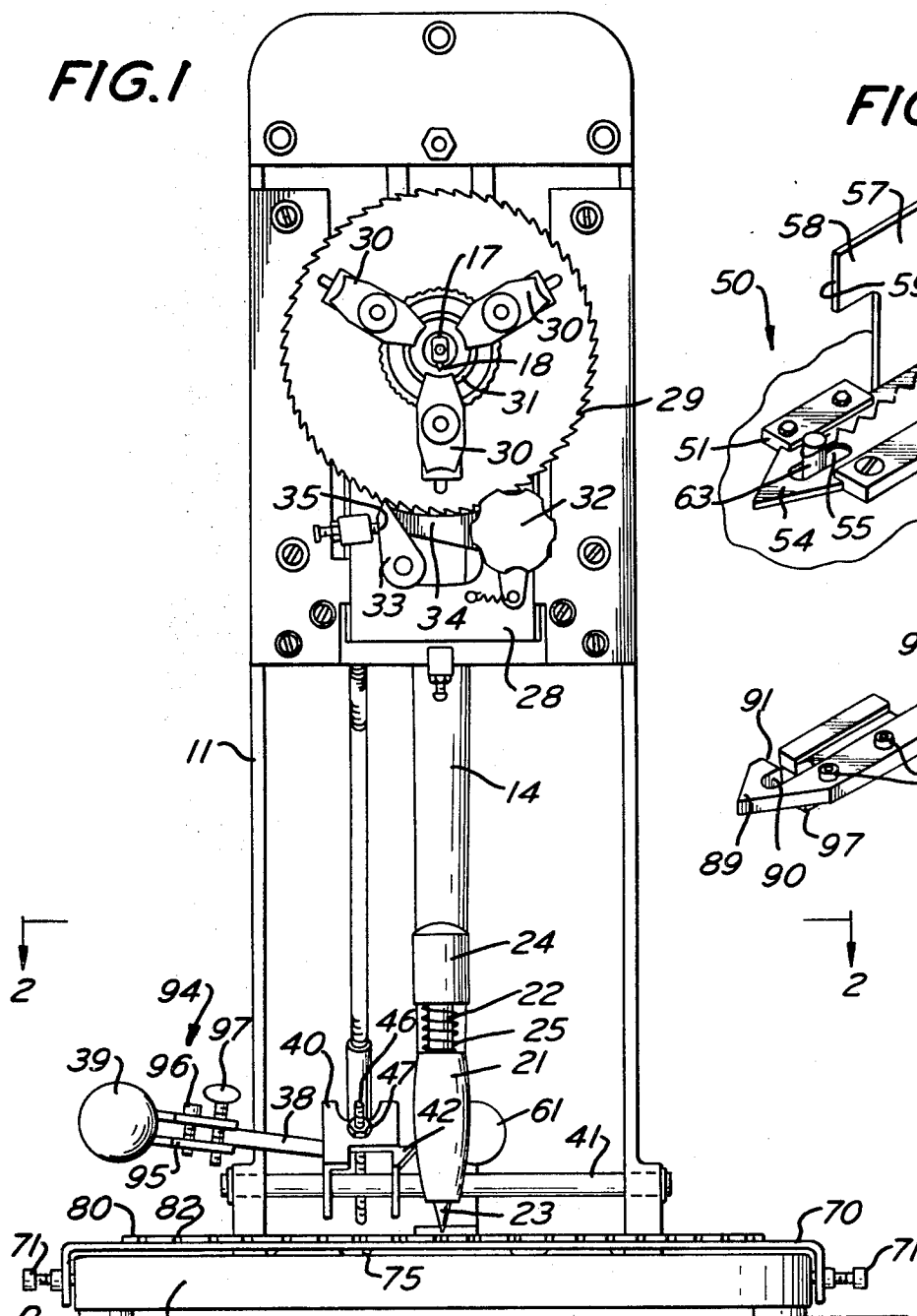


FIG. 4

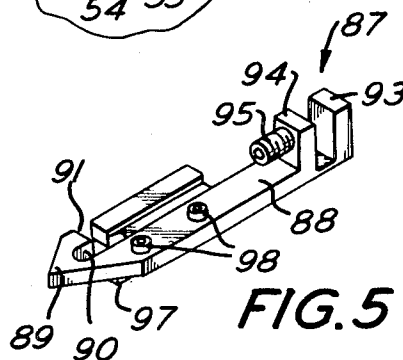
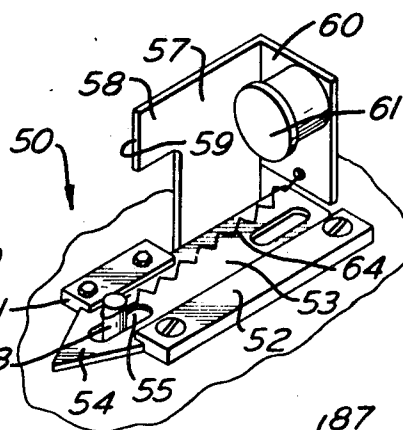


FIG. 5

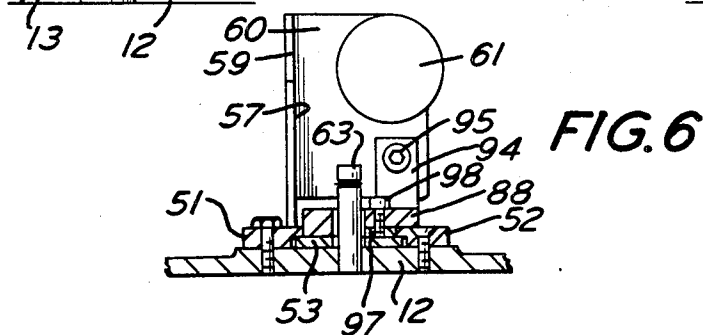


FIG. 6

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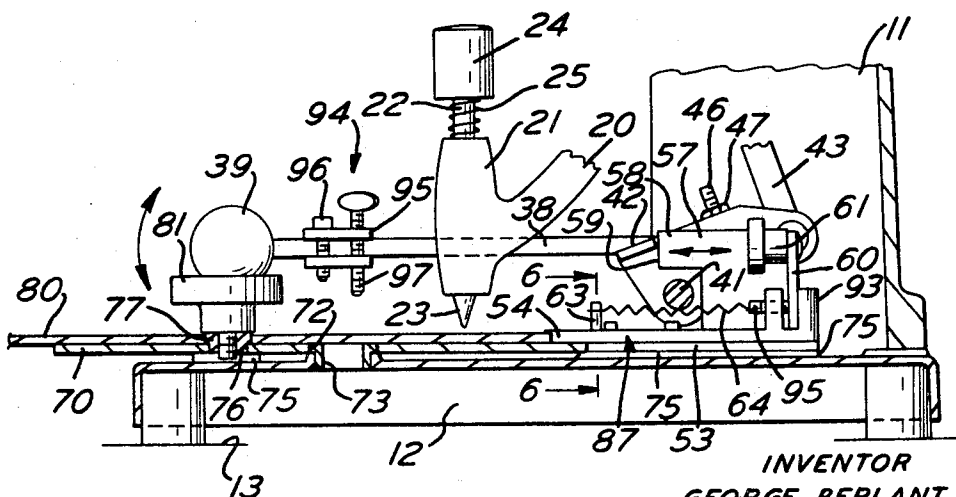
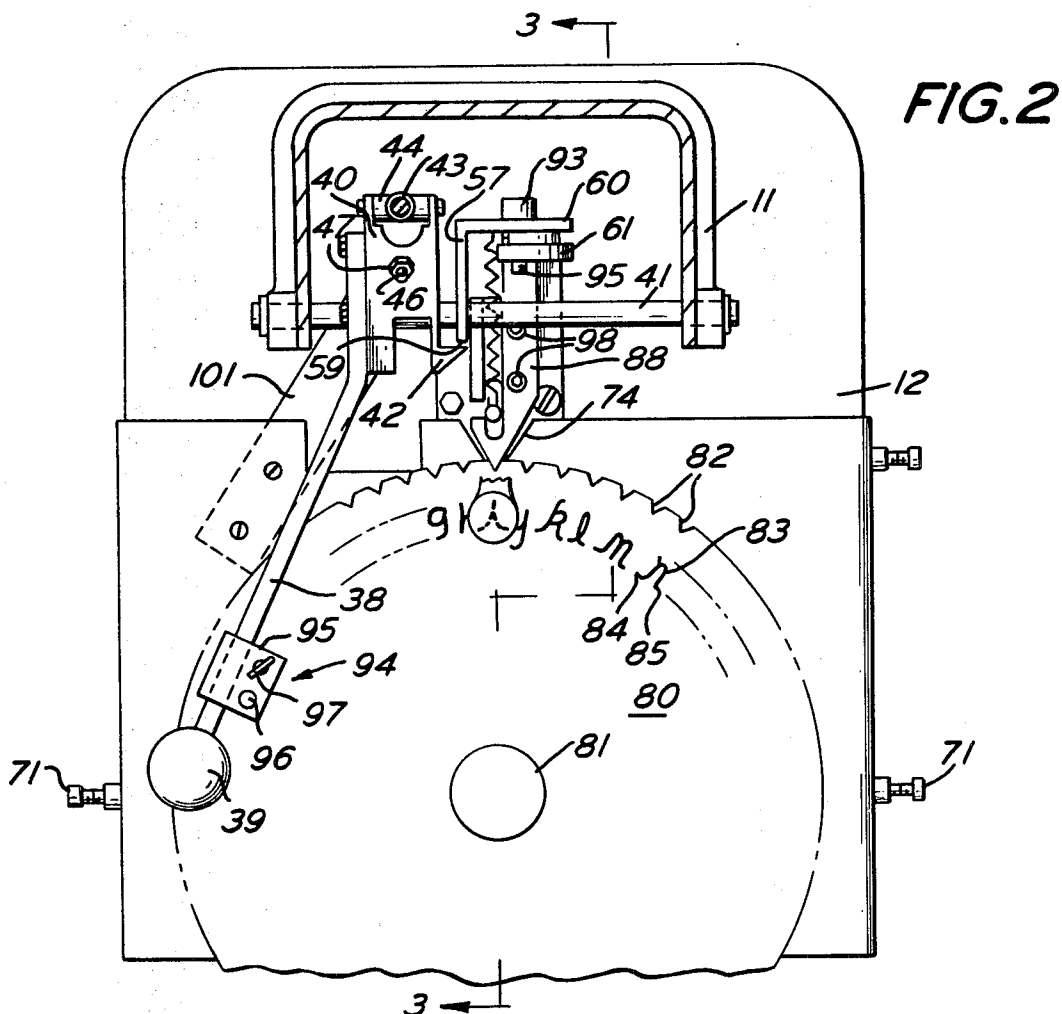


FIG. 3

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3,608,429

ATTACHMENT KIT FOR COPYING MACHINE FOR ENGRAVING JEWELRY RINGS

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12 Claims

ABSTRACT OF THE DISCLOSURE

An attachment kit for modifying a copying and engraving machine that utilizes a pattern carrier of a standard diameter so that it can copy indicia from a plurality of circular pattern carriers of different diameters. An adapter bracket properly positions the circular pattern carries so that they can be engaged by a tracing tool. Additionally, the attachment kit includes a locking member that cooperates with the locking member on the machine that normally engages the standard pattern carrier so that the non-standard pattern carriers can be locked in position so that the indicia thereon can be copied and engraved. Furthermore, the attachment kit includes a member that limits the spacing between engraved characters to a predetermined distance and a screw device that controls the depth of the engraving cut.

This invention relates to copying and engraving machines, and more particularly, to an attachment kit for a copying and engraving machine which enables the machine to copy indicia from a plurality of circular pattern carriers of different diameters.

The copying and engraving machines of the type disclosed in Gruettner and Stiefel Pat. No. 2,562,269 have been used for many years for engraving the interior surfaces of jewelry rings. These machines use a pantograph lever which has a tracing tool at one end and a cutter near its mid-portion. The indicia to be engraved are carried on a circular pattern carrier and are disposed in a ring along the perimeter thereof. In using this type of machine the character to be engraved is positioned by an indexing notch on the perimeter of the pattern carrier that cooperates with a locking member on the machine to hold the character underneath the tracing tool. The tracing tool traces the character on the pattern carrier thereby causing a corresponding engraving to appear on the interior surface of the ring.

Because of size limitations, a relatively small standard pattern carrier has been used. The number of different characters that can be engraved from such a pattern carrier is somewhat less than forty. Therefore, the engraver is limited to engraving only capital letters, numerals and some miscellaneous punctuation. This limitation is disadvantageous since it is desirable to include on one pattern carrier, upper case and lower case characters in addition to numerals. Preferably these copying engraving machines should be capable of utilizing pattern carriers having a diameter that is greater than that of the standard pattern carrier so that all the desired characters can be included in it.

Accordingly, it is an object of this invention to provide an attachment kit for modifying an existing copying and engraving machine so that circular pattern carriers of different diameters can be used therewith.

It is another object of this invention to provide a device for controlling the increment of rotation when the ring which is being engraved is indexed from one engraving position to the next.

It is a further object of this invention to provide an adapter bracket for the base of an engraving and copying

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machine which cooperates with a circular pattern carrier so that the characters on the pattern carrier are disposed within the range of the tracing tool.

It is still another object of this invention to provide a pattern having lower case scrip thereon wherein adjacent letters have lead in and lead out lines.

It is a still further object of this invention to provide a locking member that cooperates with the locking member on a copying and engraving machine so that pattern carriers employed with the adapter bracket can be locked with a desired character in position to be traced by a tracing tool.

It is still a further object of this invention to provide a device for regulating the amount of pressure employed by the cutter during engraving.

Generally, the invention relates to an attachment kit for a copying and engraving machine of the type having a frame, a pantograph lever with a tracing tool holder and an engraving tool holder thereon. A peripherally indexable ring holding chuck, and a first circular, peripherally indexable pattern carrier rotatably and removably mounted to a first support on the frame so that the portion of the pattern being traced can be engaged by the tracing tool. In addition, according to the invention, the machine includes a first axially movable locking member for locking the first pattern carrier in its index position, first means for causing relative movement between the engraving tool and the ring holding chuck, second means for peripherally indexing the chuck through a fixed increment, and movable control means for actuating the first and second means. The kit includes an adapter bracket supported by the frame having means thereon for rotatably supporting a second circular peripherally indexable pattern carrier of different diameter than the first pattern carrier. The means for rotatably supporting the second pattern carrier is positioned on the adapter bracket so that the portion of the second pattern carrier being traced can be engaged by the tracing tool.

Other objects of the invention will appear hereinafter from the detailed description of the invention which follows wherein:

FIG. 1 is a front elevation view of a copying and engraving machine of the type described with elements comprising the attachment kit having been installed;

FIG. 2 is a partial plan view taken along lines 2—2 of FIG. 1 showing the indicia on the pattern carrier and the engagement of the locking member and the pattern carrier;

FIG. 3 is a sectional view taken along line 3—3 of FIG. 2;

FIG. 4 is a detailed view of the locking member used with a standard pattern carrier;

FIG. 5 is a detailed view of the locking member of the attachment kit; and

FIG. 6 is a front elevation view taken along lines 6—6 of FIG. 3.

The invention can best be described by referring to the accompanying drawings wherein a copying and engraving machine of the type for which the adapter kit is designed is illustrated. This machine is substantially the same as that which is described in Gruettner et al. Pat. No. 2,562,269, in that it includes a vertically movable U-shaped frame 11 supported by a base 12 on a planar surface such as a table 13 by a plurality of legs. A pantograph lever 14 which is mounted for universal movement at the upper end of the frame has an arm 17 located intermediate its ends which supports a cutting tool 18. The pantograph lever also includes a lower arm 20 (FIG. 2), which supports a cylindrical housing 21. A shaft 22 slidably received within housing 21 has a tracing point 23 at its lower end, and a knob 24 at its upper end. A

helical spring 25 interposed between the bottom surface of the knob and the top surface of cylindrical housing 21 biases the tracing point upwardly away from the base. However, slight manual pressure against the knob 24 is all that is required to overcome the force of the spring and lower the tracing point toward the base.

The ring supporting mechanism is mounted at the upper portion of the frame and includes a vertically movable ring carrying plate 28 that supports a ratchet wheel 29. Mounted on the ratchet wheel are a plurality of adjustable clamping jaws 30 which can hold a ring 31 that is to be engraved securely in place. The jaws are opened and closed by rotation of knob 32. A ratchet pawl 33 and a holding pawl 34 are operable to index the ratchet wheel and the ring in a fixed increment upon actuation of the control lever, as explained herein. If desired, an adjustable stop 35 can be provided to limit the movement of ratchet pawl 33.

A control lever 38 having a handle or knob 39 is fixed to a U-shaped bracket 40, which in turn, is pivotably mounted on shaft 41 that is journaled in the frame. The U-shaped bracket includes an outwardly extending pawl 42 which is used for a purpose that will be described hereinafter.

A connecting rod 43 (FIG. 1) is connected to a sleeve 44 which is pivotably mounted at one end to the aforementioned U-shaped bracket 40. The opposite end of the connecting rod is associated with the structure on the rear of the ring carrier plate as is more fully explained in the Gruettner et al. patent.

The aforementioned bracket 40 carries an adjustment screw which is threadedly received in suitable aperture formed therein. A lock nut 47 is threaded over the adjustment screw and retains it in its position. The purpose of this adjustment screw will be more fully explained herein.

A lock member 50 which is provided for retaining the pattern carrier in a fixed position while a character thereon is traced, is constrained for longitudinal movement on the base, by guides 51 and 52. The lock member 50 comprises a flat member 53 having a point 54. A slot 55 near the point is adapted to receive a guide-pin 63. Along its side member 53 supports an upright bracket 57 having a forwardly extending portion 58 that defines a bearing surface 59, adapted to be engaged by the aforementioned pawl 42 on U-shaped bracket 40. Additionally, the upright member supports a transverse plate 60 having a knob 61 thereon. The aforementioned pin 63 supports one end of a coiled helical spring 64 which is carried at its other end by transverse member 60. As can be readily understood by reference to FIG. 4, spring 64 normally biases the lock member to its forward position so that the point can engage a suitable notch on a circular pattern carrier as illustrated in FIG. 3 of the Gruettner et al. patent.

The structure described above is operative to engrave indicia on the interior surface of a ring. The pattern on which the indicia appears is a circular plate which is rotatably mounted to the base of the engraving and copying machine. The character to be engraved is positioned underneath the engraving tool and is held in position by the locking member 50 coming into contact with a notch on the perimeter of the pattern. The tracing tool is pressed into engagement with the character on the pattern carrier and is traced through the character. Downward pressure on the control lever causes the cutting tool to be brought into engagement with the ring 31. The character is cut into the ring as the point 23 traces the character. Upward pressure on the control lever causes the aforementioned ratchet wheel to be indexed through a given increment thereby presenting a clean surface for the next character to be engraved. The mechanism by which this is achieved is fully described in the Gruettner et al. patent.

An attachment kit is provided for permitting plurality of circular pattern carriers of different diameters to be utilized on this machine. One advantage of having larger

pattern carrier is that, since the pattern must be located near the perimeter of the carrier, more indicia can be placed thereon than if the pattern carrier were smaller. Another advantage is script characters can be engraved so that the lower case letters can be connected on both large and small diameter rings as will be more fully explained herein.

The kit includes an adapter bracket 70 which fits over the base of the machine and is held thereon by a plurality of attachment screws 71. The bracket has a notch 74 to permit the locking member to engage a notch on the pattern carrier. A hole 72 in the adapter bracket 70 is aligned with a bushing 73 on the base when the adapter is installed in an operative position. The bushing is used normally to support a standard circular pattern carrier when the adapter bracket is not utilized. Bosses 75 on the surface of the base support the adapter bracket. A hole 76 in the adapter bracket carries an internally threaded bushing 77 on which a larger pattern carrier 80 is rotatably supported. The larger pattern carrier 80 is held in position on the adapter bracket by knob 81 which is screwed into the internally threaded bushing 77. It should be apparent that the hole 76 in the adapter bracket in which the pattern carrier 80 is held is spaced from the bushing 73 in the base by a distance equal to the difference of the radii of the standard pattern carrier and the larger pattern carrier 80. This is because the indicia on the pattern carrier must always be within the operative range of the tracing tool. Thus, it is important that pattern carriers of any size be positioned by their adapter brackets so that indicia thereon can be rotated to lie within the range of the tracer tool. In other words, all of the pattern carriers must be positioned so that they are adjacent the aforementioned notch 74 so that they can be engaged by the locking member.

As has been mentioned above, the pattern carrier is circular and the indicia is arranged thereon around the perimeter thereof. Notches 82 corresponding to each of the characters on the pattern carrier are cut into the periphery thereof. As illustrated in FIG. 2, each of the characters 83 has a relatively long lead-in line 84 and a relatively long lead-out line 85. This feature of the engraved characters which can be achieved on a relatively large wheel is advantageous, since the characters which are engraved on the ring can thus be engraved in an interconnected fashion since the lead-in of one character will merge with the lead-out of the preceding character. On rings of small diameter, the space between adjacent letters will be relatively small and thus only a small portion of the lead-in and lead-out lines need be used. However, on rings of large diameter almost the entire length of the respective lead-in and lead-out lines may be used to achieve connecting letters. This relationship results from the fact that for a given degree of rotation the arc through which the surface to be engraved moves increases with the diameter of the ring.

In order to compensate for the increased height of the pattern carrier by virtue of the fact that it is positioned on top of the adapter bracket 70 which in turn is positioned over bosses 75, it is necessary to provide an attachment 87 for the locking member 50. The attachment comprises a flat member 88 with a point 89 and having a slot 90 with an opening 91 connected thereto.

At the rear portion of the flat member are two upright clamping jaws 93 and 94. Jaw 94 carries a clamping screw 95. On the underside of the locking member an adjustment bar 97 is provided. This bar is laterally movable and is held in position by lock screws 98.

The modification kit is installed in the following manner. The adapter bracket 70 is fitted over bushing 73 and the attachment screws 71 are tightened. The pattern carrier which corresponds to the particular adapter bracket is then placed in position over bushing 77 and knob 81 is screwed into position. It locates the pattern carrier so that

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the characters or indicia to be engraved are within the range of the tracing tool 23.

In order to compensate for the deviation of the pattern carrier, locking member attachment 87 is connected to the basic locking member 50. This is done by slipping pin 63 through opening 91 so that it can move relative to slot 90. At the same time, clamping jaws 94 and 93 are arranged around transverse member 60 so that locking screw 95 can be tightened against the front surface thereof. Adjustment bar 97 is moved laterally until the attachment is held against lateral movement between guides 51 and 52, and then the locking screws 98 are tightened.

In order to utilize the device, handle 38 is pressed downwardly and the tracing tool 23 is brought into contact with the character to be engraved. The downward movement of handle 38 causes the cutting tool 18 to be brought into contact with the ring in a manner that is explained in the Gruettner et al. patent. After the character is engraved the handle 38 is raised upwardly to its full upward limit of movement. This movement has two results. The first result is that it causes pawl 42 on U-shaped member 40 to engage bearing surface 59 on the locking member (FIGS. 2 and 3), and thereby causes the locking member to move backwards against the force of spring 64 so that its pointed end moves out of engagement with the pattern carrier. Additionally, the upward movement of the control handle serves to index the ratchet wheel 29 through a fixed increment of rotation. This increment of rotation is adjusted for a standard pattern carrier by means of the aforementioned threaded shaft 46. The threaded shaft 46 is adjusted so that upward movement of the handle is so limited that ratchet pawl 33 can only engage a fixed number of teeth.

It has been found for most purposes that with the standard pattern carrier, on base 12, four teeth are satisfactory for adequate spacing between engraved characters. However, the spacing between these characters can be increased or reduced by permitting different lengths of threaded shaft 46 to extend through the bracket to thus increase or further limit the amount of upward rotation available to control arm 38.

If desired, the adapter bracket may automatically limit the incremental amount of rotation by providing it with a spacer plate 101 which can be screwed or riveted to the bracket and which is so positioned that when the bracket is fixed on the base plate, the spacer plate underlies the aforementioned shaft 46 and thus limits its downward movement. The advantage of this feature over that of adjusting the screw for different increments is that this automatically and simply adjusts the increment of rotation upon the installation of the adapter bracket, thus eliminating all guesswork and change of error if the threaded shaft 46 had to be moved.

Additionally, it has been observed that under some circumstances, the cutting pressure used for the continuous engraving of the type disclosed herein is lighter than normally used. Then, under these circumstances, it is advantageous to have a gauge or guide that enables the operator to limit the amount of pressure which is used in engraving the ring. Such an arrangement might advantageously take the form of depth regulator 94 which comprises a clamp bracket 95 held in place by clamp screw 96 on control arm 38. With this device in position on the control arm, it is merely necessary to advance or withdraw the adjustment screw into the bracket until the desired depth of cut is obtained. It should be observed that if the adjustment screw 97 is advanced so that a substantial portion of it lies below the clamp bracket then relatively less pressure will be brought to bear by the cutting tooth against the ring surface, whereas, if the screw is withdrawn so that a relatively small amount if extending below the clamp bracket, then a relatively large cutting force will be brought to bear by the cutting tool.

While the above-described attachment kit has been disclosed with reference to a particular embodiment there-

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of, it is to be understood that many embodiments of this device will be obvious to a person skilled in this art in view of the subject disclosure. Accordingly, the scope of the invention should not be determined only by the specific embodiment disclosed herein, but rather by the scope of the appended claims.

I claim:

1. In a copying and engraving machine of the type having a frame, a pantograph lever having a tracer tool and an engraving tool mounted thereon, a peripherally indexable ring holding chuck, a first circular, peripherally indexable ring pattern carrier rotatably and removably mounted to a first support on said frame near said tracer tool so that the portion of said first pattern being traced can be engaged by said tracer tool, a first axially movable locking member for locking said first pattern carrier in an indexed position, first means for causing relative movement between said tool and said chuck, second means for peripherally indexing said chuck through a fixed increment and movable control means for actuating said first and second means, the improvement comprising, an adapter bracket supported by said frame, said bracket having means thereon for rotatably supporting a second circular, peripherally indexable pattern carrier of different diameter than said first pattern carrier, and said means for rotatably supporting said second pattern carrier is positioned on said adapter bracket so that the portion of said second pattern carrier being traced can be engaged by said tracer tool.

2. A copying and engraving machine of the type defined in claim 1, wherein said adapter bracket has means for engaging said first support, said adapter bracket being positioned on said base so that said means for rotatably supporting said second pattern carrier is spaced from said means for engaging said first support by a distance proportional to the radii of said first and second circular pattern carriers.

3. A copying and engraving machine of the type defined in claim 2, wherein said distance is equal to the difference of the radii of said first and second pattern carriers.

4. A copying and engraving machine of the type defined in claim 1 including a second locking member for locking said second pattern carrier in its indexed position, and said second locking member being releasably connected to said first locking member for axial movement therewith.

5. A copying and engraving machine of the type defined in claim 4 including a plurality of guides on said base in axial alignment with said first locking member and means for engaging said guides mounted on said second locking member so that said second locking member is constrained for axial movement.

6. A copying and engraving machine of the type defined in claim 5 wherein said means for engaging said guides is laterally adjustable to limit relative lateral movement between said guides and said second locking member.

7. A copying and engraving machine of the type defined in claim 6 wherein said second locking means has a clamp engageable with said first locking means whereby said first and second locking means are releasably connected.

8. A copying and engraving machine of the type defined in claim 1 including means on said bracket for reducing said fixed increment so that the spacing between items engraved is reduced.

9. A copying and engraving machine of the type defined in claim 8 wherein said means on said bracket for reducing said fixed increment includes a spacer member that limits the movement of said control means thereby limiting the indexing by said chuck of said second means.

10. A copying and engraving machine of the type defined in claim 1 including means for controlling the engraving pressure of said engraving tool, said means being

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connected to said control means and engageable with said frame.

11. A copying and engraving machine of the type defined in claim 1 wherein said control means includes an elongated member adjustably and threadingly engaged by said control means so that upon adjustment of said member said engraving pressure is controlled. 5

12. A copying and engraving machine of the type defined in claim 1 wherein one of said peripherally indexable pattern carriers includes patterns for at least two lower case script characters thereon, each of said script character patterns includes an elongated lead-in line preceding said script character and connected thereto, and an elongated lead-out line following said script character, the lead-out line of one of said characters being 15

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adapted to be followed by said tracing tool to engrave a connection to the lead-in line preceding said other letter.

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