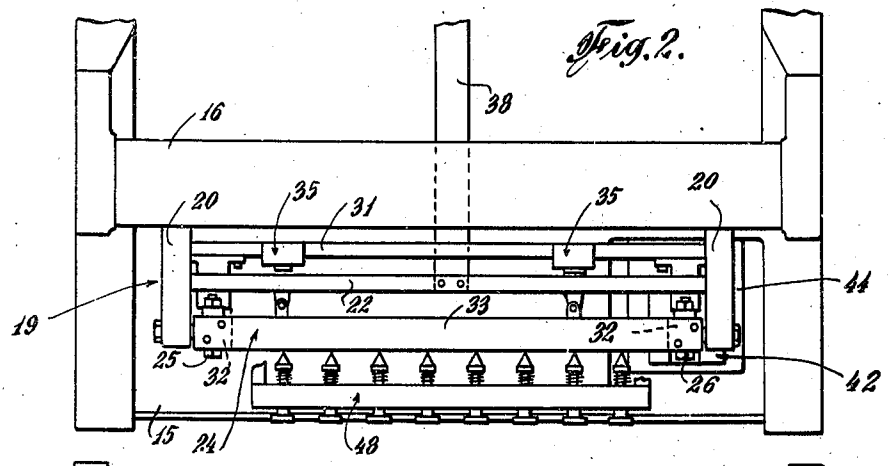
Jan. 18, 1944. L. NACHEMOV 2,339,716

TOOL MARKING MACHINE

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Fig. 2.



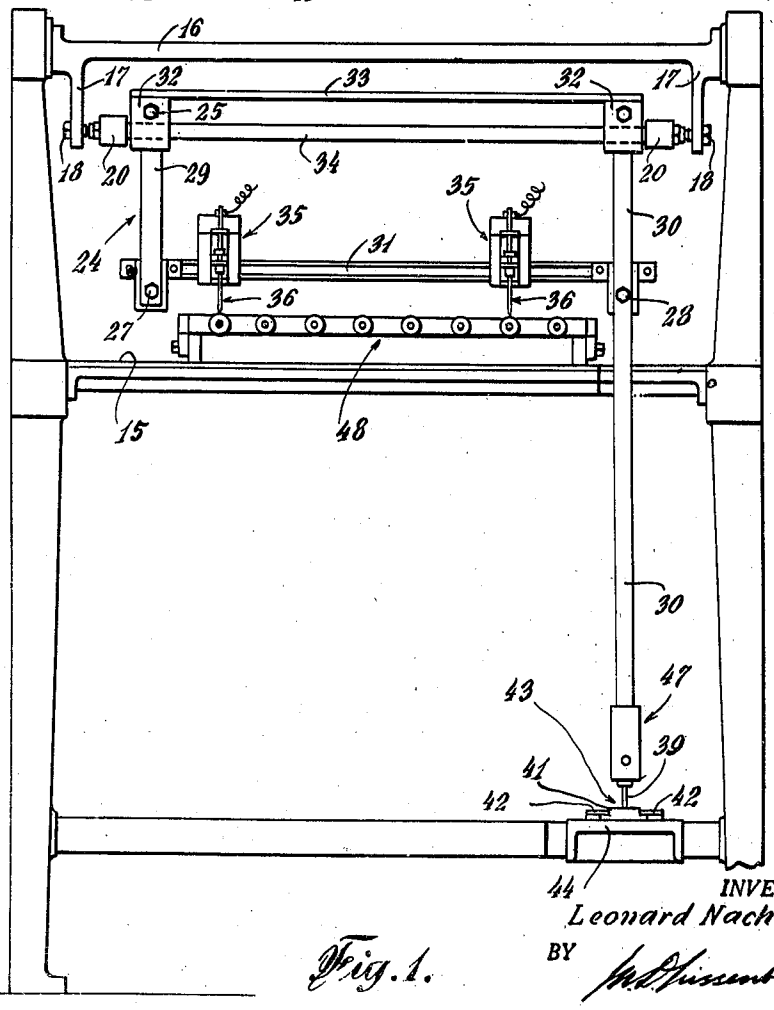


Fig. 1.

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TOOL MARKING MACHINE

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Fig. 3.

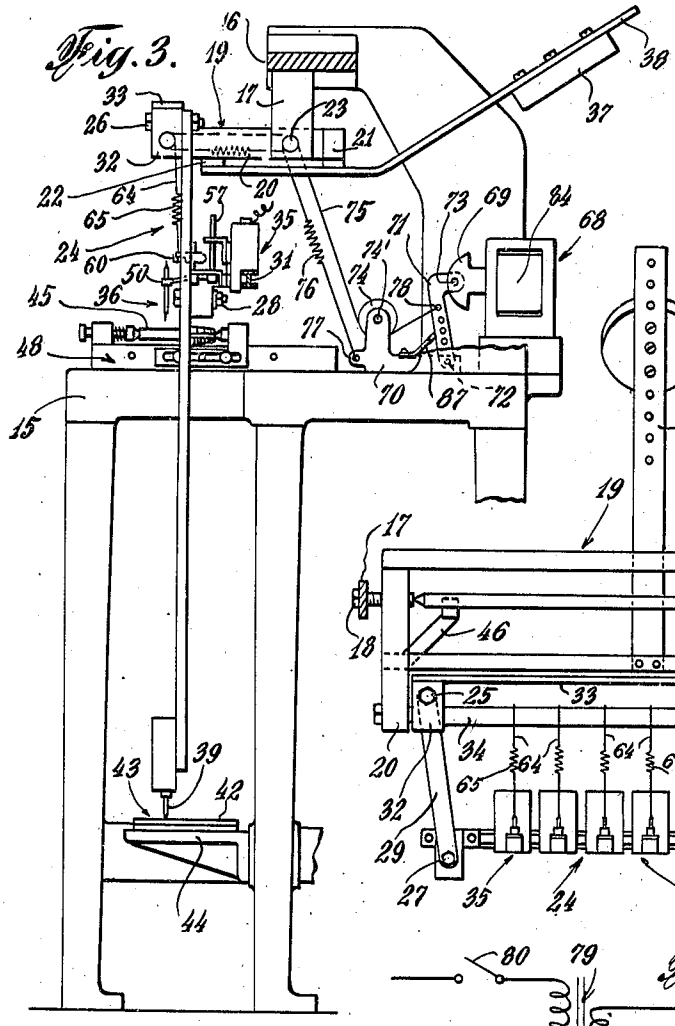


Fig. 10.

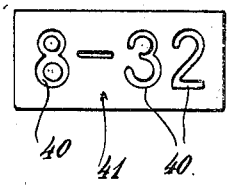


Fig. 4.

Fig. 11.

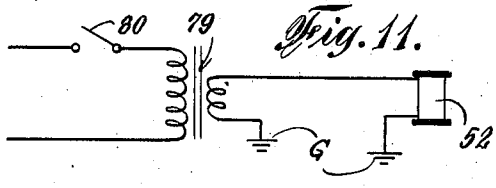


Fig. 12.

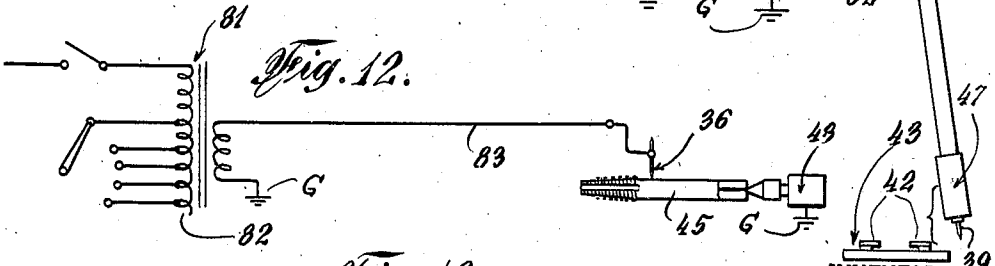
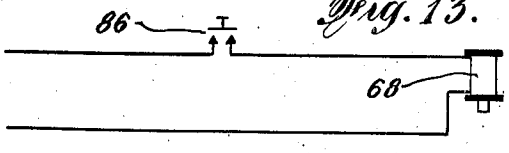


Fig. 13.



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TOOL MARKING MACHINE

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Fig. 5.

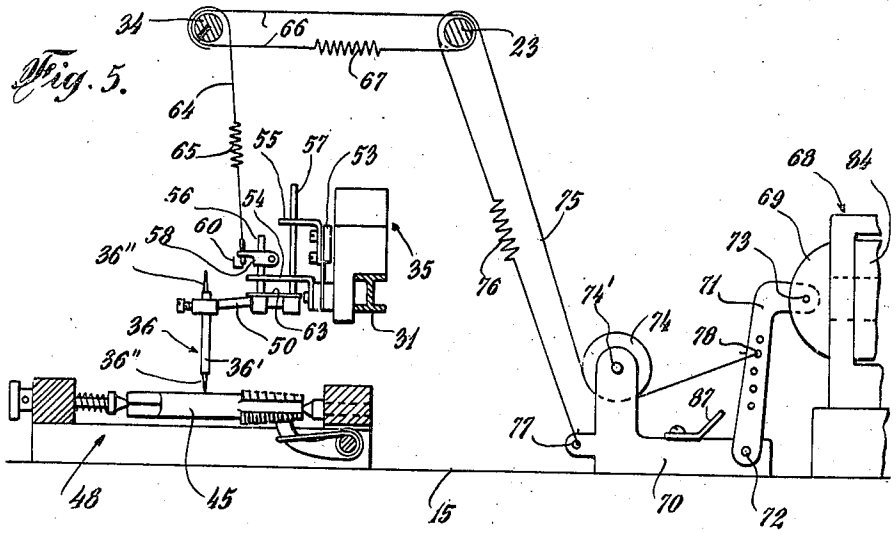


Fig. 6.

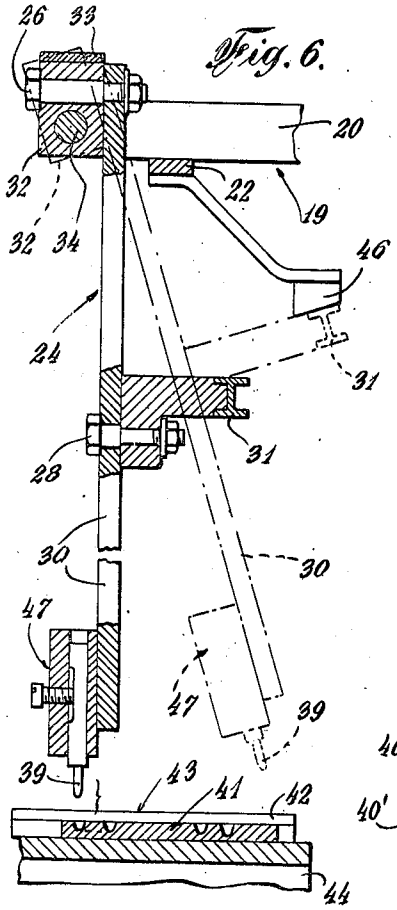


Fig. 7.

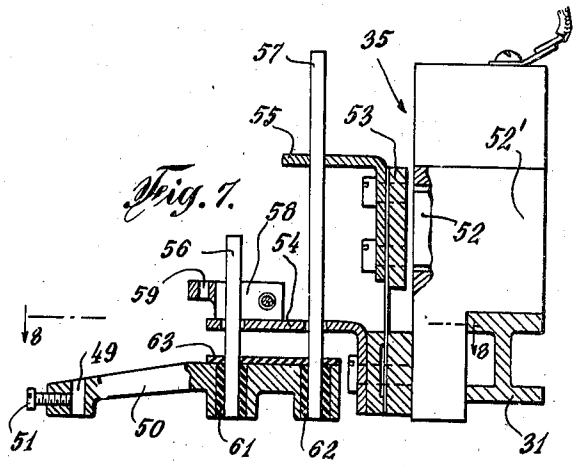


Fig. 8.

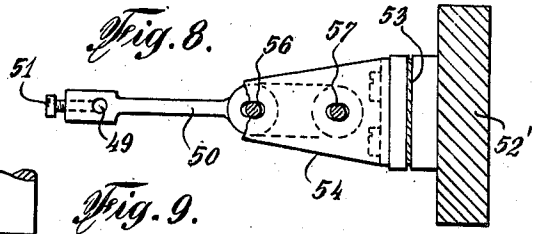
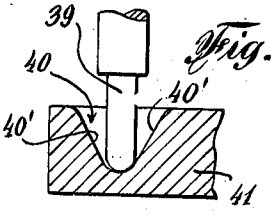


Fig. 9.



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Patented Jan. 18, 1944

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UNITED STATES PATENT OFFICE

2,339,716

TOOL-MARKING MACHINE

Leonard Nachemov, New York, N. Y., assignor to Abraham J. Sossner, Theodore S. Sossner, and Nettie Sossner, a copartnership doing business as Sossner Steel Stamps, New York, N. Y.

Application December 26, 1942, Serial No. 470,311

20 Claims. (Cl. 33—25)

The present invention relates to marking machines and particularly to the type employing a pantographic device, and adaptable for the marking of tools and other varieties of articles.

An object of this invention is to provide a machine of the character mentioned, of novel and improved construction, for simultaneously marking a series of articles with desired characters thereon, employing copying marking implements with provision whereby they can be lifted or otherwise shifted from operative copying position and free of the work, though the manually operated master stylus is in operative position with respect to the master pattern, for examination of the progress of the work at any time, and to avoid superfluous and of course unwanted marking by the copying implements during intervals of shifting the master stylus from character to character on the pattern plate.

Another object hereof is to provide a novel and improved machine of the type set forth for the marking of metal articles as taps, drills, bits and other tools, by electric arc etching, a process advantageously employed in a machine following the teachings of this invention.

A further object of this invention is to provide an improved and novel machine employing a pantographic device, where the pressure of the individual copying marking styluses is independent of the pressure applied manually by the operator to the master stylus on the pattern plate.

Another object hereof is to provide a novel and improved machine of the kind mentioned, in which the pantograph frames are counterbalanced for maintaining inoperative position, and uneffected by the counterbalancing means for self-maintenance of their shifted position during operation.

A further object of this invention is to provide a machine of the character mentioned, of novel and improved construction, adaptable for copying markings by various processes employing some form of stylus or its equivalent for the copying implement in the practice thereof, which is easy to use, simple to adapt for the marking of various types of articles, and efficient in carrying out the purposes for which it is designed.

Other objects and advantages will become manifest as this disclosure proceeds.

In the accompanying drawings forming part of this application, similar characters of reference indicate corresponding parts in all the views.

Fig. 1 is a front view of a machine embodying the present invention, omitting various parts for the sake of clarity.

Fig. 2 is a top view thereof.

Fig. 3 is a side view of said embodiment, shown partly in section.

Fig. 4 shows the pantographic mechanism included in said machine, the frames of which it is comprised, normally being in angular relation, but here shown substantially coplaner to facilitate explanation of the device.

Fig. 5 is a diagrammatic side view showing the mechanism for controlling the position and operation of the marking styluses.

Fig. 6 is a fragmentary view showing stop means employed for limiting the movement of the frames of the pantographic device included in the within embodiment.

Fig. 7 is a partly sectional side view of an electrically operated stylus vibrator mechanism included in the machine illustrated.

Fig. 8 is a section taken at line 8—8 in Fig. 7.

Fig. 9 is a diagrammatic fragmentary sectional view showing a preferred construction of the master stylus and the character grooves in the pattern plate used with the machine described.

Fig. 10 is a plan view of a pattern plate showing the characters, in this instance the numerals indicating the size, to be simultaneously marked or copied onto the shanks of a series of taps.

Fig. 11 shows the wiring diagram for operation of a stylus vibrator mechanism illustrated in Fig. 7.

Fig. 12 shows the wiring diagram for carrying out the electric arc burning or etching process of copying characters on metal object, as taps for instance, in the embodiment illustrated herein.

Fig. 13 shows the wiring diagram of the apparatus used for shifting the copying styluses into and out of marking position.

In the drawings, on table 15, is a fixed inverted U frame, indicated generally by the numeral 16, carrying a pair of opposite, spaced, downwardly extending brackets 17, between which brackets, on the horizontally aligned pintles 18, is swingably mounted a frame designated generally by 19, along a line near the rear end of said frame. This frame 19, extends forwardly, and in the embodiment illustrated, is positioned substantially horizontally during operation. Said frame 19, comprises the side arms 20 and the tie-rods 21 and 22; the former along the rear of said side arms, and the latter secured to said arms intermedite the ends of said arms. A shaft 23, which serves as a pulley, is journalled between the pintles 18 within the confines of the frame 19. Said frame 19 together with another frame 24,

comprise a pantographic device, in which, said frame 24, is normally in upright position, is hingedly or pivotally associated with the frame 19, and includes the pivotal joints 25, 26, 27 and 28, which axes determine a parallelogram; said axes being parallel to each other and perpendicular to the axis of the pintles 18.

Said frame 24, comprises the side arms 29 and 30; the latter being comparatively long, the lower cross beam 31, and the spaced blocks 32, mounted at the ends of the tie bar 33; the upper ends of the side arms 29 and 30, being respectively pivotally secured to said blocks 32, on the axes 25 and 26 aforesaid, and the cross beam 31 being pivotally secured at the lower end of side arm 29 on the aforesaid axis 27, and intermediate the ends of the long side arm 30, at axis 28; said cross beam 31, being preferably horizontal, that is, the line connecting axes 25 and 26, and the line between the axes 27 and 28, are parallel and horizontal.

The blocks 32, which are pivotally carried at the upper ends of the side arms 29 and 30 respectively, are each mounted free to swing on the horizontal shaft 34, which is journalled between the aligned pintles 33 at the forward ends of the side arms 20 of the frame 19. It is to be noted that there is no movement of said frame 19 along the line of the axis of pintles 18, and that the length of bar 33 is such as to maintain the blocks 32, against movement longitudinally along the axis of the pintles 33. The shafts 23 and 34 are parallel to each other and to the beam 31. This beam carries a series of independent marking mechanisms 35, each of which include a stylus 36 forward of said beam 31; the axes of all such styluses are coplaner, and the lower or marking extremities of all of said styluses preferably are colinear along a horizontal parallel with the shafts 23 and 34. A balancing means may be provided to include a counterweight 37, adjustably securable along a bar 38, secured to the tie-bars 21 and 22, and extending rearwardly from frame 19; said bar 38 being preferably bent upwardly, the lower end of the long side bar 30, carries a replaceably secured master stylus 39, which is to be manually led by the operator of the machine along the grooves 40 determining characters or insignia formed on pattern plate 41, which is removeably mountable within track bars 42 of the pattern holder 43 on a low-level table 44.

In the embodiment illustrated, copying is performed by etching on metal objects, as the taps 45, by the electric-arcing process, where each stylus 36 consists of a rod body 36' having needle element ends 36''. However, depending upon the nature of the articles to be marked, or the copying to be done, the styluses may be of different character, as for instance pencil points or fountain pen devices.

When the machine is not in "marking" operation, bar 30 is raised so that master stylus 39, is above, and out of contact with the pattern plate 41, and whereby frame 19 will swing to a position forward edge upwardly, and counterweight 37 will lie about horizontal; stop member 46, making contact with bar 31, to limit upward movement of the frame 34, at which position, the moment arm of the counterweight 37, with respect to axis 18 is at a maximum and maintains this "rest" position of the machine's components.

For "operating" position, the operator holding stylus holder 47, lowers same until master stylus 39 enters a groove 40 of the pattern plate 41, whereby frame 19, is swung forward edge downwardly and of course, the pivoted jointed frame 24 is lowered, while counterweight 37 is raised. In this position, even if the operator releases the hold on 47, the pantograph components will remain in their lowered position, for the moment arm of the counterweight 37 with respect to axis 18, has decreased, but the weights of the frames 19 and 24, and all they carry, and the dimension of their parts are so originally chosen, that the moment of same with respect to axis 18 exceeds, in such "operating" position, the moment of the counterweight 37 with respect to said axis 18; the position of said counterweight being so set along arm 38, to accomplish such result.

In the embodiment of this invention illustrated, as previously stated, electric arc burning or etching is employed for copying the desired markings onto the shanks of metal articles, as for instance a series of taps 45, which are mounted respectively below the styluses 36, in any suitable fixture or holder 48, removeably mounted on table 15.

Each stylus 36, is removeably mounted in vertical bore 49 of a stylus holder 50 by means of a set-screw 51. For operation, each stylus 36, in contact with a tap 45, has imparted thereto a vibratory motion so that the stylus is shifted in and out of contact with its related tap 45. Such motion-producing means, for each stylus 36, comprises an electromagnet 52, mounted along beam 31, to be operated by an alternating current for actuation of an armature 53. An angle bracket 54, is secured to the magnet core body 52', and another angle bracket 55, is secured to the armature 53. The stylus holder 50, has extending upwardly therefrom, the pins 56 and 57, which pins slidingly fit loosely through holes in bracket 54; pin 57, also extending slidingly through a hole in bracket 55. Above bracket 54, pin 56 carries an adjustably secured stop collar 58, having a vertical bore 59, to receive the shank of a hook 60 which is positioned therethrough. In order that stylus holder 50, be electrically insulated from the remainder of the structure, insulation elements 61, 62 and 63 are provided. Upon lifting hook 60, the stylus holder 50 is lifted from the tap 45, while upon lowering hook 60, the said stylus holder will fall due to its own weight, until the "etching" tip of stylus 36 touches tap 45; the position of stop element 58 being such as to permit a greater fall than is above required and the shank of the hook 60 is preferably loose in upright bore 59. Regardless of stylus holder's 50 position, meaning whether it is raised from the tap 45 up to bracket 54, which is out of "marking" position, or lowered so that stylus 36 touches the tap 45 it is to mark, which is marking position, or while said stylus holder is sliding from one such position to another, during actuation of the armature 53, said stylus holder 50 will vibrate, as of course will the stylus 36 it holds.

The hooks 60, are at the lower ends of cords 64, the upper ends of which cords are secured to and wound a little in a clock-wise direction about shaft 34, so that upon rotation of said shaft, said cords are wound or unwound, depending upon direction of such rotation, the extent of which shaft movement is small, whereby the styluses 36 are raised or lowered. An elastic element or spring 65 may be interposed in each of the cords 64. The shafts 34 and 23 are connected by a belt 66, which may have an elastic element or spring 67 interposed therein.

On table 15, is mounted a solenoid 68, having an armature 69, moveable therein horizontally, and a bracket 70. An arm 71, is linked at its ends 72 and 73 to the bracket 70, and forward end of the armature 69, respectively. Said bracket 70, also carries a pulley 74, rotatably mounted thereon, at 74'. A cord 75, having an elastic or spring element 76 interposed therein, is connected at its ends 77 and 78, to the bracket 70, and the arm 71, respectively; said cord 75 passing over shaft 23, and under pulley 74, whereby upon movement of the solenoid armature 69, the shaft 23 will be turned. Said armature 69, is adapted to move within the solenoid coil 84, upon excitation of said coil, and to withdraw outward from said coil of the solenoid by action of a spring (not shown) upon opening of the solenoid circuit Fig. 13. Therefore, upon excitation of the solenoid, its armature 69 moving to the right in Fig. 3, will cause shaft 23, to turn a little clockwise, and upon cessation of solenoid operation, the resulting withdrawal of the armature 69, the action of the stressed spring 76, will cause shaft 23, to turn a little counter-clockwise; the scope of movement of said shaft 23, being such as to move the stylus holders 50, the required distance.

Due to the inclined positions the master stylus 39 may assume, the tip thereof, is preferably made semi-circular, while the groove 40 of the characters of the pattern plate 41, should be a trough having semi-circular bottom of substantially identical dimension as said stylus tip, with divergent sides 40', as an example of construction to take care of such condition.

The electrical circuit for any of the stylus vibrators 35, reference is made to Fig. 11, which shows magnet 52 of said vibrator, in the secondary circuit of a step-down transformer 79; the primary circuit of said transformer, having a switch 80 interposed therein. The frame of the machine being a conductor indicated by the ground symbol "G" throughout all the wiring diagrams herein. The electrical circuit for accomplishment of the arc etching, referring to Fig. 12, which shows a hook up as to each copying stylus 36, including a step-down transformer 81 having a variable primary 82, control of which adjusts intensity of arcing across gap formed between stylus 36 and its related tap 45. A conductor 83 connects the stylus holder 50 to a terminal of the secondary of the transformer 81; the remaining terminal of said secondary and the fixture or tap holder 48 being connected to the frame of the machine. The electrical circuit for control of the solenoid 68, referring to Fig. 13, shows the solenoid coil 84 connected in a circuit controlled by a switch 86, preferably of the push-button type.

In the set up of the machine during non-operation, the master stylus 39 is in raised position, out of contact with the pattern 41 which has the grooved characters, say "8—32," the size to be marked on the shanks of a series of identical taps 45, mounted in horizontal tandem alignment in a suitable fixture 43, positioned on table 15 so that each tap 45 is directly under a stylus 36. The swing frame 19, is positioned tiltingly forwardly upwardly with stop member 46 resting on beam 31 of the jointed frame 24; all electrical circuits are "open," the armature 69 is in retracted position out of coil 84 of the solenoid 68 as specifically shown in Fig. 3, and the counterweight 37 has assumed near horizontal position; each of the cords 64 is wound a little around shaft 34, and all stylus holders 50, are in their raised position respectively up against the brackets 55.

In operation, all circuits of the stylus vibrators 35 are closed, thereby actuating the vibrator armatures 53, the movement of which impart a vibratory, and relative to the taps 45, a substantially up and down movement to each of the copying styluses 36, also, all etching circuits are closed. Arm 30 is pulled downward and master stylus 39 is set into a pattern character groove 40; the lower tips of the styluses 36, though the jointed frame 24 is in lowered position, will be above the taps 45, and respectively form greater gaps therewith, than across which sparking will occur.

Now, upon closing push buttom switch 86, which preferably is held in the left hand of the operator, the solenoid armature 69, will be drawn into coil 84, thereby shifting link 71, from its rest position of Fig. 3, to that shown in Fig. 5, pulling cord 75 and (tensing spring 76) whereby shaft 23, will be rotated a little in a clockwise direction, and due to movement of belt 66, shaft 34 will likewise rotate a little in the same direction, the necessary extent of movement of these shafts being less than a revolution, thereby unwinding the cords 64 sufficiently for lowering the hooks 60, whereby stylus holders 50, will drop due to gravity, the springs 65 taking up any shocks of the fall, until the lower tips of the marking styluses 36, in their lowest vibratory position, contact the respective taps 45. During the upward vibratory movements of said styluses 36, they break their contact with said taps 45, and at their lowest position during vibratory movement, said styluses 36 make contact with said taps respectively, whereby the heat of the resulting electric arcing between the respective styluses 36 and taps 45, causes a burning or etching of the tap surfaces. Now, movement of the master stylus 39 by the operator, along all the characters of the pattern plate, will cause similar markings to be etched onto the taps 45; the etched markings being obviously of reduced size with respect to the dimensions of those on the pattern plate 41, in such ratio, substantially as the distance between points 26 and 28, is to the distance between the points 26 and the lower tip of the master stylus 39.

At any time during operation, the marking or etching can be made to cease, as is desirable when the master stylus 39 is passed from character to character of the pattern plate 41, where such characters have no connecting groove, by merely releasing hold on push button switch 86, thus opening the solenoid circuit Fig. 13, whereby armature 69, will due to a stressed spring acting thereagainst, automatically be moved outwardly from coil 84, until said armature reaches a fixed stop member 67, whereupon spring 76, in being unstressed, by resulting movement of link 71, will pull cord 75, whereby shaft 23, and in turn, shaft 34, will both rotate back in counter-clockwise direction to original position of rest. It is evident that cords 64 will wind up on shaft 34, thus, hooks 60 will lift the stylus holders 50, and of course the styluses 36 with them, to original non-etching raised position; the springs 65 taking up any shock. Such lifting of the styluses 36, should be accomplished before the master stylus 39 is taken out of the groove of one of the pattern plate characters, for placement into another of the characters. It is true, that by raising arm 30, the jointed frame 24 and the styluses 36, are likewise lifted. But during the movement of the master stylus 39 from one groove to another on the pattern plate, continued operation of the etching circuits,

would cause continued arcing between the styluses 36 and the taps 45, and hence marking of the taps will continue after the master stylus leaves the first groove and being a little before said master stylus 39 enters the second groove, whereby unwanted and therefore objectionable marking would be etched on the taps during such intervals, which may even be lines connecting the individual etched characters. Another advantage of being able to lift the styluses 36 from off the work, meaning the taps 45, is to enable the operator to view the progress and character of the work being performed at any stage, without the necessity of shifting the pantograph frames 19 and 24, or taking the master stylus 39 out of pattern 41.

It is to be noted that the possible vertical movement of the stylus holders 50, independent of position of beam 31, and independent of each other, permits taps or other articles of different sizes, but identical in any individual setting in a fixture 48, to be marked by this machine, because the marking plane of the styluses 36, need not be a constant, and slight variations in dimensions of the parts to be identically marked, would not effect "copying" operation of any of the individual styluses 36. This freedom of movement of the stylus holders 50, makes the pressure of an individual marking stylus, regardless of the type which may be employed and its process of marking, to be the weight of the stylus and its holder 50, and such pressure of the copying point is constant and is not varied or effected by the pressure used by the operator of the master stylus 39 on the pattern plate 41.

This invention is capable of numerous forms and various applications without departing from the essential features herein disclosed. It is therefore intended and desired that the description and terminology and phraseology employed herein be deemed illustrative and for purposes of explanation, and not by way of limitation, and that the specific embodiment set forth shall also be deemed merely illustrative and not restrictive; reference being had to the following claims rather than to the particular description herein set forth to indicate the scope of this invention.

I claim:

1. In a machine of the character described, the combination with a fixed frame, of a link means moveably mounted on said frame, a normally substantially uprightly positioned frame, including a pair of spaced elements swingably secured to the link means; said elements being lifted or lowered upon movement of said link means, a pair of side arms pivotally secured dependingly from said elements respectively, a beam pivotally connected across the side arms at a point on each arm below the other pivotal connection of the respective arms; the respective distances between the axes of the pivotal connections along each of the side arms, being equal; the distance between the axes of the pivotal connections of the beam, and the distance between the axes of the pivotal connections of the side arms on the elements, being equal; and the axes of all four pivotal connections of said side arms being parallel, a master stylus depending from one of the side arms, a pattern plate having characters thereon, positioned below the master stylus, one or more marking stylus holders carried on the beam, a marking stylus depending, one from each marking stylus holder, and a table member below the marking means, adapted to receive articles to be marked thereon; whereupon lowering the upright frame, the master stylus will contact a character on the pattern plate and each marking stylus, carried on the beam thus lowered, will contact one of said articles.

2. A machine as defined in claim 1, wherein each marking stylus holder is moveably mounted on the beam, adapted to be raised and lowered with respect to said beam and including means to raise and lower each marking stylus holder with respect to said beam.

3. A machine as defined in claim 1, wherein each marking stylus holder is moveably mounted on the beam, adapted to be raised and lowered with respect to said beam and including means to raise and lower each marking stylus holder with respect to said beam; the distance each of the holders are lowerable with respect to the beam, being greater than the distance between a marking stylus and the article it is to mark, when the beam is at its lowest operating position determined when the master stylus is in contact with a character on the pattern plate.

4. A machine as defined in claim 1, wherein is included a shaft journalled on the upright frame, and a cord for each marking stylus holder, supporting said holder at the lower end of said cord; the upper end of each cord being mounted on the shaft, whereby upon rotation of the shaft in one direction, each holder will be lowered with respect to the beam, and upon rotation of said shaft in reverse direction, each holder will be raised with respect to said beam; each marking stylus holder being moveably mounted on the beam, adapted to be lowered and raised with respect to said beam.

5. A machine as defined in claim 1, wherein each marking stylus holder is moveably mounted on the beam, adapted to be lowered and raised with respect to said beam, and including a shaft journalled on the upright frame, and a cord for each marking stylus holder, supporting the holder at the lower end of said cord; the upper end of each cord being mounted on the shaft, whereby upon rotation of the shaft in one direction, each holder will be lowered with respect to the beam, and upon rotation of said shaft in reverse direction, each holder will be raised with respect to the beam; each cord having a resilient portion.

6. A machine as defined in claim 1, wherein each marking stylus holder is moveably mounted on the beam, adapted to be lowered and raised with respect to said beam, and including a shaft journalled on the upright frame, a cord for each marking stylus holder, a stop member at the lower end of each cord; each holder being freely slidable on its related cord; the upper end of each cord being mounted on said shaft, whereby upon rotation of said shaft in one direction, each holder will be lowered with respect to the beam, and upon rotation of said shaft in reverse direction, each holder will be raised with respect to the beam; the extent of downward movement of each stop member, exceeding the extent of downward movement of its related holder when each marking stylus is in contact with an article to be marked.

7. A machine as defined in claim 1, wherein each marking stylus holder is moveably mounted on the beam, adapted to be raised and lowered with respect to said beam, and including means to raise and lower each holder with re-

spect to the beam, means to vibrate each holder, carried on said beam; said vibrating means including an electromagnet and an electrical circuit including said magnet, a switch and a supply of electrical energy, and an electrical circuit adapted for arcing to occur between each mark-ink stylus and the article it contacts periodically upon vibratory movement of the holder; said arcing means comprising a source of electrical energy connected to the marking stylus and the article to be marked; both stylus and article being electrical conductors; the vibrating means being independent of the means to raise and lower each marking stylus holder.

8. In a machine of the character described, the combination of a normally substantially horizontally positioned frame, swingably suspended about a fixed horizontal axis, a pair of spaced elements swingably mounted at the forward end of said swingable frame, about an horizontal axis; said axes being co-planar, a normally substantially uprightly positioned frame, comprising a pair of side arms pivotally secured dependingly from said elements respectively, a beam pivotally connected across the side arms respectively, at a point on each arm below the other pivotal connection of the respective arms; the respective distances between the axes of the pivotal connections along each of said side arms being equal, and the distance of the line between the axes of the pivotal connections of the beam being equal to the distance of the line between the axes of the pivotal connections of the side arms on said elements, and the axes of all four pivotal connections of said side arms being parallel to each other and in angular relation to the axis about which said elements swing, a master stylus depending from one of the side arms, a pattern plate having characters thereon, positioned below the master stylus, one or more marking-stylus holders carried on the beam, a marking stylus depending, one from each stylus-holder and a table member below the marking means, adapted to receive thereon the articles to be marked.

9. A machine as defined in claim 8, wherein the axis about which the horizontally positioned frame swings, and the axis about which the elements swing, are parallel, and the axes of all four pivotal connections of the side arms of the normally upright frame are in perpendicular direction with respect to the axis about which said elements swing.

10. A machine as defined in claim 8, wherein each marking stylus holder is moveably mounted on the beam, adapted to be lowered and raised with respect to said beam and including means to lower and raise each marking stylus holder with respect to said beam.

11. A machine as defined in claim 8, wherein each marking stylus holder is moveably mounted on the beam, adapted to be lowered and raised with respect to said beam and including means to raise and lower each marking stylus holder with respect to said beam; the distance each of said holders are lowerable with respect to said beam, being greater than the distance between a marking stylus and the article it is to mark, when the beam is at its lowest operating position determined when the master stylus is in contact with a character on the pattern plate.

12. A machine as defined in claim 8, wherein is included a shaft journalled on the upright frame, and a cord for each marking stylus holder, supporting said holder at the lower end of said cord; the upper end of each cord being mounted on the shaft, whereby upon rotation of the shaft in one direction, each holder will be lowered with respect to the beam, and upon rotation of said shaft in reverse direction, each holder will be raised with respect to said beam; each marking stylus holder being moveably mounted on the beam, adapted to be lowered and raised with respect to said beam.

13. A machine as defined in claim 8, wherein each marking stylus holder is moveably mounted on the beam, adapted to be lowered and raised with respect to said beam, and including a shaft journalled on the upright frame, and a cord for each marking stylus holder, supporting the holder at the lower end of said cord; the upper end of each cord being mounted on the shaft, whereby upon rotation of the shaft in one direction, each holder will be lowered with respect to the beam, and upon rotation of said shaft in reverse direction, each holder will be raised with respect to the beam; each cord having a resilient portion.

14. A machine as defined in claim 8, wherein each marking stylus holder is moveably mounted on the beam, adapted to be lowered and raised with respect to said beam, and including a shaft journalled on the upright frame, a cord for each marking stylus holder, a stop member at the lower end of each cord; each holder being freely slidable on its related cord; the upper end of each cord being mounted on the shaft, whereby upon rotation of said shaft in one direction, each holder will be lowered with respect to the beam, and upon rotation of said shaft in reverse direction, each holder will be raised with respect to said beam; the extent of downward movement of each stop member, exceeding the extent of downward movement of its related holder when each marking stylus is in contact with an article to be marked.

15. In a machine as defined in claim 8, wherein each marking stylus holder is moveably mounted on the beam, adapted to be lowered and raised with respect to said beam, and including means to vibrate each holder, carried on said beam; said vibrating means including an electromagnet and an electrical circuit including said magnet, a switch and a supply of electrical energy, and an electric circuit adapted for arcing to occur between each marking stylus and the article it contacts periodically upon vibratory movement of the holder; said arcing means comprising a source of electric energy connected to the marking stylus and the said article to be marked; both stylus and article to be marked being electrical conductors; the vibrating means being independent of the means to raise and lower each marking stylus holder.

16. In a machine as defined in claim 8, wherein each marking stylus holder is moveably mounted on the beam, adapted to be lowered and raised with respect to said beam, and wherein is included a shaft journalled on the upright frame, a cord for each marking stylus holder, supporting said holder at the lower end of said cord; the upper end of each cord being mounted on the shaft, whereby upon rotation of the shaft in one direction, each holder will be lowered with respect to the beam, and upon rotation of said shaft in reverse direction, each holder will be raised with respect to said beam, a pulley rotatably mounted on the axis about which the horizontally positioned frame is swingably mounted, a belt connecting the pulley and shaft, a bracket and a solenoid having a moveable armature, mounted on a fixed part of the machine, an arm

linked to said bracket and armature, a second pulley rotatably mounted on the bracket, a belt having a resilient portion, positioned over and with its strands depending from the first pulley; the ends of one strand being fixed to the bracket; the other strand passing under and contacting the second pulley and its end being secured to the linked arm; said strands not being connected to each other at their lower ends, a circuit adapted to actuate the solenoid comprising said solenoid, a switch and a source of electrical energy, whereby upon excitation of said solenoid, the shaft will be rotated in one direction, and upon opening the solenoid circuit, the return of the stressed resilient portion of the second belt to unstressed condition, the shaft will be rotated in reverse direction.

17. In a machine as defined in claim 8, wherein each marking stylus holder is moveably mounted on the beam, adapted to be lowered and raised with respect to said beam, and wherein is included a shaft journalled on the upright frame, a cord for each marking stylus holder, supporting said holder at the lower end of said cord; the upper end of each cord being mounted on the shaft, whereby upon rotation of the shaft in one direction, each holder will be lowered with respect to the beam, and upon rotation of the shaft in reverse direction, each holder will be raised with respect to the beam, a pulley rotatably mounted on the axis about which the horizontally positioned frame is swingably mounted, a belt connecting the pulley and shaft, a bracket and a solenoid having a moveable armature, mounted on a fixed part of the machine, an arm linked to said bracket and armature, a second pulley rotatably mounted on the bracket, a belt having a resilient portion, positioned over and with its strands depending from the first pulley; the end of one strand being fixed to the bracket; the other strand passing under and contacting the second pulley and its end being secured to the linked arm; the strands not being connected to each other at their lower ends, a circuit adapted to actuate the solenoid, comprising said solenoid, a switch and a source of electrical energy, whereby upon actuation of the solenoid, the shaft will be rotated in one direction, and upon opening the solenoid circuit, the return of the stressed resilient portion of the second belt to unstressed condition, the shaft will be rotated in reverse direction, means to vibrate each marking stylus holder, carried on the beam; said vibrating means including an electromagnet and an electrical circuit including said magnet, a switch and supply of electrical energy, and an electrical circuit adapted for arcing to occur between each marking stylus and the article it contacts periodically upon vibratory movement of the holder; said arcing means comprising a source of electrical energy connected to the marking stylus and the said article to be marked; both stylus and the article to be marked thereby, being electrical conductors; the vibrating means being independent of the means to raise and lower each marking stylus holder.

18. In a machine of the character described, the combination of an inverted U-shaped frame, a pair of pintles mounted in spaced horizontal alignment on said frame, a substantially horizontally positioned frame, swingably suspended on said pintles, a pulley shaft journalled between said pintles, a second pair of pintles mounted in spaced horizontal alignment at the forward end of said horizontal frame; the axes of all said pintles being paralliel, a pair of elements swingably mounted, one on each of the second pair of pintles, a normally substantially uprightly positioned frame, comprising a pair of side arms pivotally secured dependingly from said elements respectively, a beam pivotally connected across the side arms respectively, at a point on each arm below the other pivotal connections of the respective arms; the respective distances between the axes of the pivotal connections along each of said side arms being equal, and the distance of the line between the axes of the pivotal connections of the beam being equal to the distance of the line between the axes of the pivotal connections of the side arms on said elements, and the axes of all four pivotal connections of said side arms being parallel to each other and in perpendicular relation to the axis about which said elements swing; the axis about which said elements are swingably mounted being the horizontal axis of the second pair of pintles, a bar secured to said elements whereby said elements are maintained in spaced relation, a master stylus depending from one of the side arms of the upright frame, a pattern plate having characters thereon, positioned below the master stylus, one or more marking stylus holders moveably mounted on the beam, adapted to be lowered and raised with respect to said beam, a marking stylus, depending, one from each stylus holder, a table member below the marking means, adapted to receive thereon the articles to be marked, a cord for each marking stylus holder, supporting said holder at the lower end of said cord; the upper end of each cord being mounted on the shaft between the second pair of pintles, whereby upon rotation of said shaft between the second pair of pintles in one direction, each holder will be lowered with respect to the beam, and upon rotation thereof in reverse direction, each holder will be raised with respect to the beam, a belt connecting the shafts, a bracket and a solenoid having a moveable armature mounted on a fixed part of the machine, an arm linked to said bracket and armature, a pulley rotatably mounted on said bracket, a belt having a resilient portion, positioned over and with its strands depending from the pulley shaft between the first pair of pintles; the end of one strand being fixed to the bracket; the other strand passing under and contacting the pulley and its end being secured to the linked arm associated with the solenoid; the strands not being connected to each other at their lower ends, a circuit adapted to actuate the solenoid, comprising said solenoid, a switch and a source of electrical energy, whereby upon actuation of the solenoid, the pulley shaft will be rotated in one direction, and upon the opening of the solenoid circuit, the return of the stressed resilient portion of the second belt to unstressed condition, the shafts will be rotated in reverse direction, means to vibrate each marking stylus holder, carried on the beam; said vibrating means including an electro-magnet and an electrical circuit including said magnet, a switch and a supply of electrical energy, and an electrical circuit adapted for arcing to occur between each marking stylus and the article it contacts periodically upon vibratory movement of the holder; said arcing means comprising a source of electrical energy connected to the marking stylus and said article to be marked; both the stylus and the article to be marked thereby being electrical conductors; the vibrating means being independent

of the means to raise and lower each marking stylus holder.

19. In a machine as defined in claim 8, including a bar extending rearwardly upwardly from the horizontally positioned frame, a counterweight carried on said bar, adapted to maintain the upright frame in raised position with respect to the pattern plate when said upright frame is substantially raised from said pattern plate, and not to effect the position of said upright frame when said frame is in lowered near-operating or operating position.

20. A machine as defined in claim 1, wherein the cross-section of the tip of the master stylus is semi-circular and the grooves forming the characters on the pattern plate are each of V-shaped cross-section having a semi-circular bottom of substantially identical diameter as that of the section of the tip of said master stylus.

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