

Aug. 24, 1937.

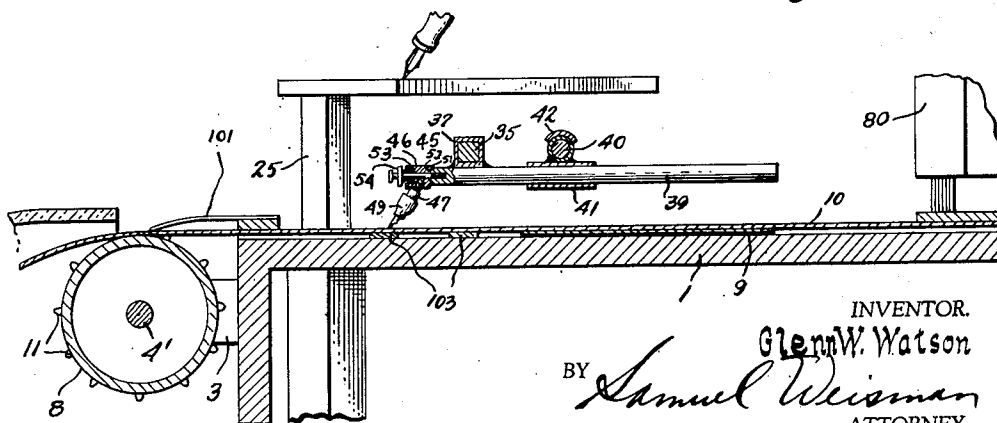
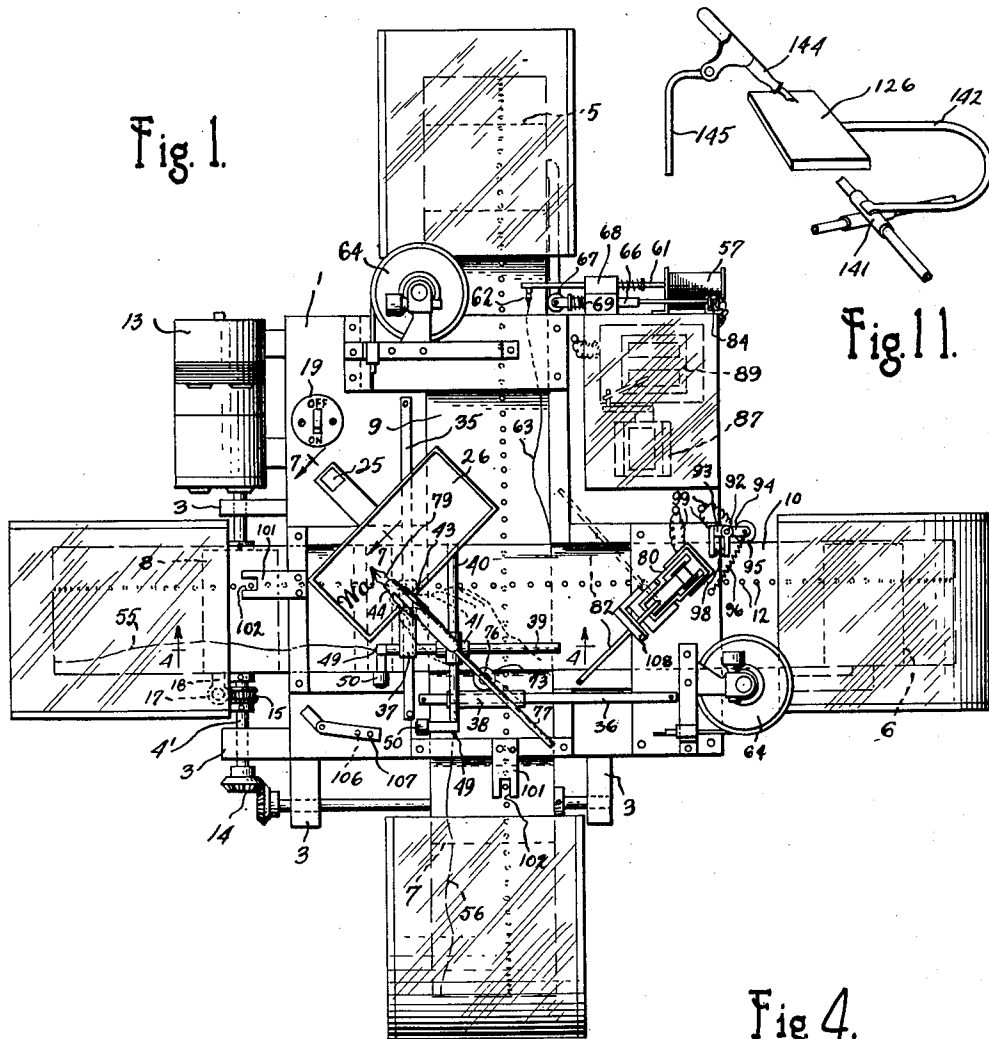
G. W. WATSON

2,091,060

ELECTRIC SIGNATURE WRITER

Filed April 13, 1937

4 Sheets-Sheet 1



INVENTOR.

Glenn W. Watson

BY *Samuel Weisman*
ATTORNEY.

Aug. 24, 1937.

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2,091,060

ELECTRIC SIGNATURE WRITER

Filed April 13, 1937

4 Sheets-Sheet 2

Fig. 2.

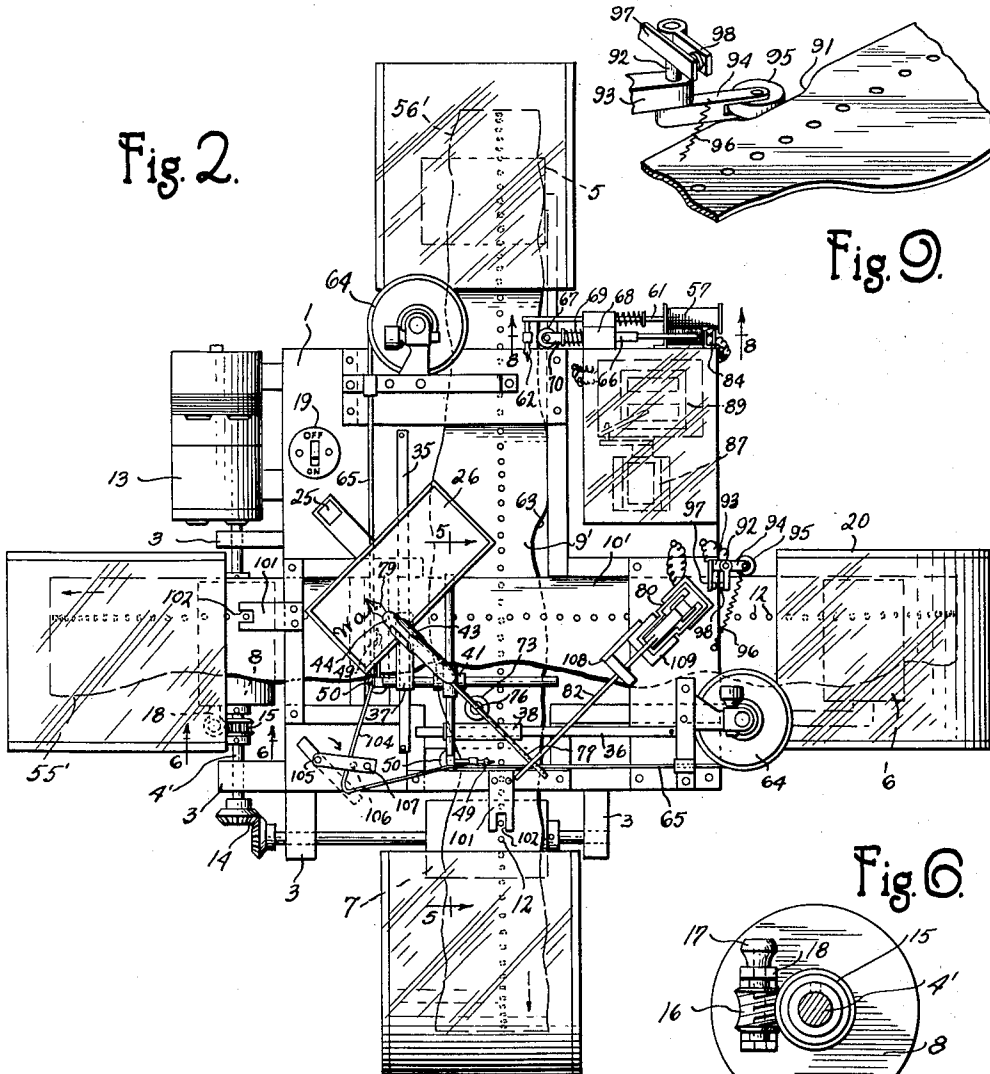


Fig. 9.

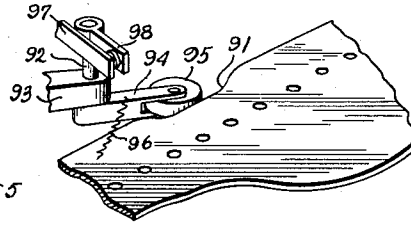


Fig. 6.

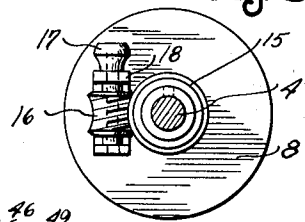
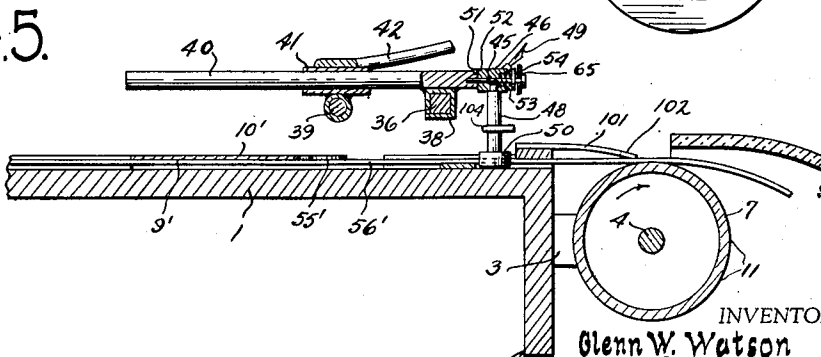


Fig. 5.



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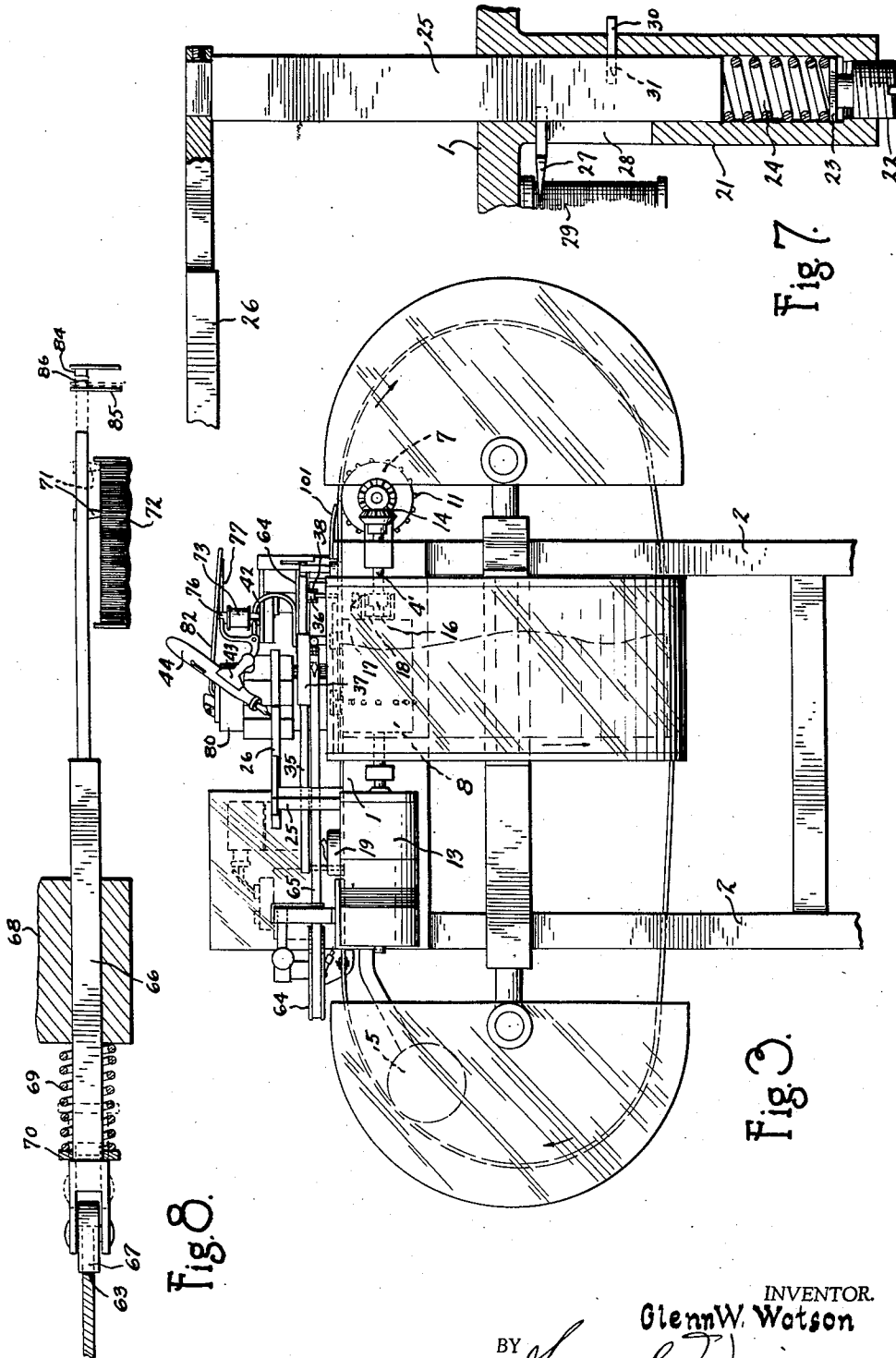
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ELECTRIC SIGNATURE WRITER

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4 Sheets-Sheet 3



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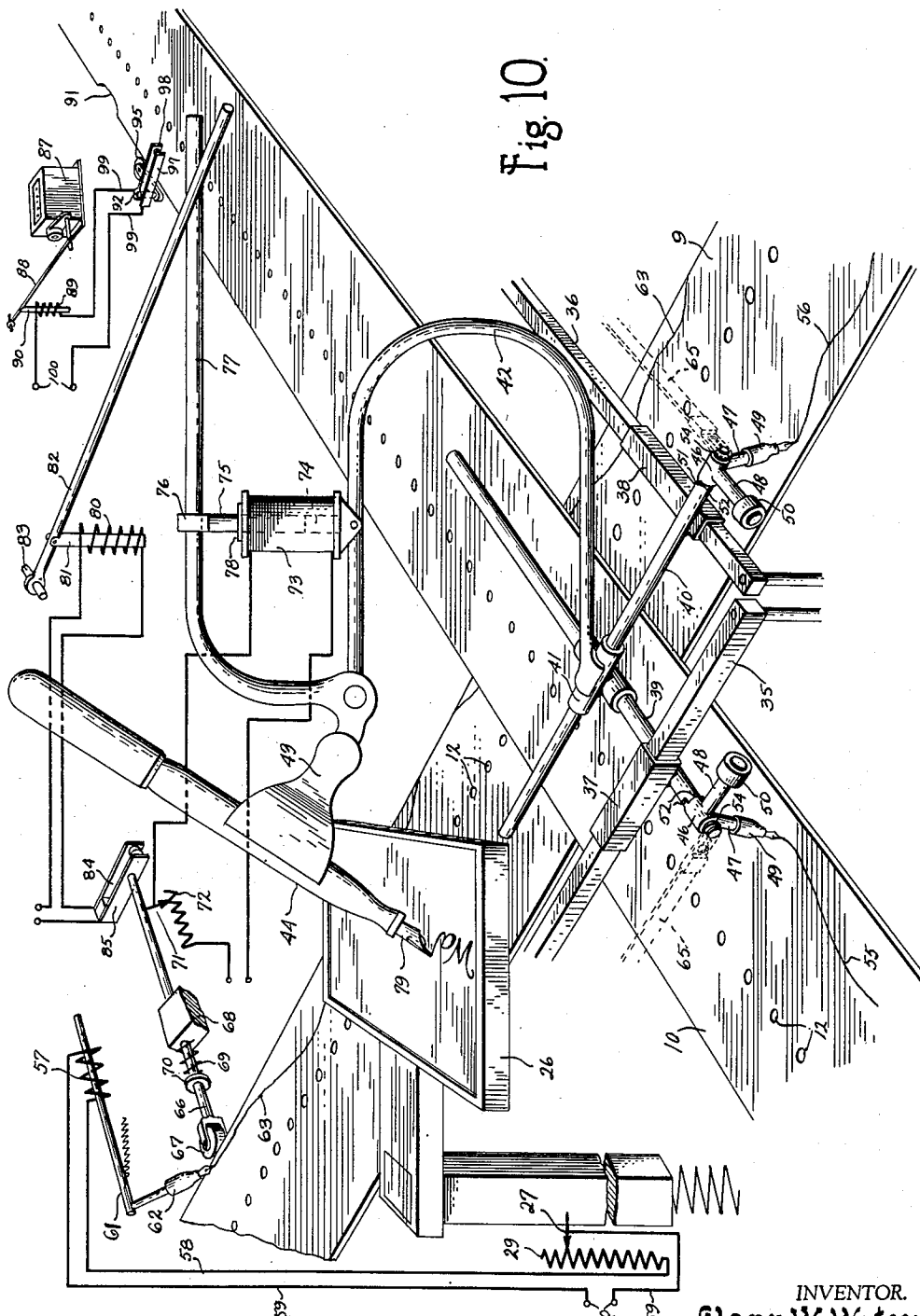
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ELECTRIC SIGNATURE WRITER

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4 Sheets-Sheet 4

Fig. 10.



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UNITED STATES PATENT OFFICE

2,091,060

ELECTRIC SIGNATURE WRITER

Glenn W. Watson, Detroit, Mich.

Application April 13, 1937, Serial No. 136,703

16 Claims. (Cl. 33—18)

The present invention pertains to an electric signature writer and consists of improvements on the device shown in my copending application, Serial No. 98,373, filed August 28, 1936. The expression "electric signature writer" denotes a machine for writing subject matter other than signatures, this title being preferred for the reason that the most common use of the machine is the writing of signatures.

As in the device disclosed in the aforementioned application, the improved machine also separates the original writing into component lines on a pair of travelling, intersecting strips. The separation is made at points remote from the intersection, rather than at the intersection itself, by a pair of scribing instruments actuated from the pen through a mechanism that moves them along linear paths transverse of the directions in which the strips travel. On completion of the original writing, the strips are cut along the component lines to form matrices and are then adapted to serve in the reproducing operation. For this operation, the scribing instruments are interchangeable with followers or rollers adapted to engage the component lines. The transmitting mechanism between these instruments and the pens combines the component movements into a reproduction of the original movement of the pen, whereby the original writing is reproduced. This arrangement does away with the transfer medium, such as carbon paper, of the co-pending application, and is more effective and reliable than a guide means operating directly at the intersection of the component lines, as in said application.

Another object of the invention is to reproduce the pressure variations that occur between the writing instrument and the sheet during the original inscription. For this purpose, the writing platform is resiliently mounted and is responsive to the variations in pen pressure thereon. These variations are transmitted through an electrical system to another pen that scribes a varying pressure line on one of the strips. The strip is cut along this line, and in the process of reproduction, is engaged by a follower, the movements of which operate another electrical system to vary the pen pressure accordingly.

The invention also provides a means for automatically lifting the pen from the paper, during transcription, between separated letters or words and for the crossing of t's and the dotting of i's, corresponding to similar movements during inscription. These movements during inscription record zero pressure on the aforementioned

pressure line. The follower on this line is so mounted as to engage a switch when riding on a part denoting zero pressure. Operation of the switch energizes an electrical system that lifts the pen from the paper.

Further, the invention provides for counting the number of times a given pair of strips has passed through the device. For this purpose, there is provided an electrically operated counting mechanism with a control or operating means therefor on one of the strips. Such means may consist of a contact, mounted on a sealed gear, adapted to close the circuit of the counting mechanism, but preferably is in the form of a notch cut in one of these strips and engageable by a follower which, when entering the notch, operates the counting mechanism. The latter is made tamper-proof by a lock or seal so that the total thereon cannot be altered without authorization.

The several control features of the device, namely, for pressure regulation, pen raising and for the counting mechanism, may be incorporated in an additional strip, if desired. However, the device is considerably simplified by providing these controls on available parts of the matrix strips. Also, the original writing may be separated into more than two component lines on a corresponding number of strips, if desired, as in the aforementioned co-pending application.

The invention is fully disclosed by way of example by the following description and the accompanying drawings, in which

Figure 1 is a plan view of the machine in inscribing position;

Figure 2 is a plan view of the machine in transcribing position;

Figure 3 is a side elevation;

Figure 4 is a section on the line 4—4 of Figure 1;

Figure 5 is a section on the line 5—5 of Figure 2;

Figure 6 is a section on the line 6—6 of Figure 2;

Figure 7 is a section on the line 7—7 of Figure 1;

Figure 8 is a section on the line 8—8 of Figure 2;

Figure 9 is a perspective view of the mechanism for operating the accounting device;

Figure 10 is an enlarged perspective view of the pen apparatus with a wiring diagram of the control apparatus;

Figure 11 is a similar perspective view of a modification wherein the paper is moved and the pen held stationary.

Reference to these views will now be made by use of like characters that are employed to designate corresponding parts throughout.

The framework of the machine comprises a suitable bed or table 1 (Figure 5) standing on legs 2 (Figure 3). At the edges of the table are mounted suitable bearing brackets 3 for supporting shafts 4 on which are mounted rollers designated respectively by the numerals 5, 6, 7, and 8. Opposite rollers are aligned one with the other, as shown in Figures 1 and 2 so that a strip 9 may be laid across the pair, 5, 7, and another strip 10 across the pair 6, 8, the intermediate parts of the strips being superimposed one on the other and the lower one resting on the table 1, as clearly illustrated in Figure 5. The nature and the purpose of these strips is described below.

Each roller 7 and 8 has a circumferential series of cogs 11 adapted to engage a linear series of perforations 12 in the corresponding strips, for positive feeding of the strips.

One of the shafts, designated specifically by the numeral 4' in Figures 1 and 2, is driven by an electric motor 13. The same shaft is geared at 14 to the adjacent shaft (of the other pair). The remaining shafts are driven by the strips 9 and 10.

One of the shafts is adapted for independent rotary adjustment to correct misalignments of the cogs 11 and perforations 12. The adjusting device is applied, by way of example, to the shaft 4'; and a similar device may be applied to one of the shafts of the other pair if necessary or desired. This device is shown in detail in Figure 6 and consists of a worm gear 15 carried by the shaft 4' and meshing with a manually rotatable worm 16 having a finger knob 17. The worm 16 is journaled in a bearing 18 carried by the adjacent roller 8, the worm and worm gear rotating together with the roller and shaft but being relatively adjustable by manually turning the knob 17. On the table 1 is mounted a switch 19 for starting and stopping the motor 13 which may also be performed automatically. The rollers are enclosed in suitable shields for guarding them and the depending parts of the strips, as may be seen more clearly in Figure 3.

For the purpose of supporting a writing platform, in a resilient manner, a non-circular boss 21 is formed on the table 1, as shown more clearly in Figures 7 and 10. In the bottom of the boss is an adjustable screw 22 with a disk 23 laid thereon, and on the disk is mounted a coil spring 24. The boss receives a plunger 25 of like cross section to avoid relative turning, the lower end of the rod resting on the spring 24. The upper end of the rod carries the previously mentioned writing platform designated by the numeral 26.

Further, the rod 25 carries a contact finger 27 movable in a slot 28 in the boss 21 and riding on a resistance or rheostat 29 preferably supported by the boss. It will presently be shown that variations in writing pressure upon the platform 26 alter a circuit through the rheostat 29 and provide for similar variations in writing pressure in transcribing. It is necessary that the writing platform remain fixed during transcribing, and accordingly a lock pin 30 may be passed through the boss 21 and into a hole 31 in the rod 25, as shown in Figure 7.

In preparing the device for producing transcriptions it is necessary that the original inscription be made at the writing platform 26 and simultaneously separated into components delineated on the strips 9 and 10, substantially in

the manner disclosed in my co-pending application.

Accordingly, as illustrated in Figures 4, 5, and 10, a pair of non-circular guide rods 35 and 36 are supported by the table 1 at a right angle to each other. On the guide rods are mounted similarly shaped slidable sleeves 37 and 38 respectively. To the sleeves 37 and 38 are secured guide stems 39 and 40 respectively extending parallel to the rods 36 and 35 respectively, one being secured over the sleeve and the other under the sleeve so that they may intersect one another. At their intersection they are received in a pen carriage 41 slidable thereon. To the bearing is rigidly secured a supporting arm 42 to which is swivelled a clip 43 carrying a writing instrument 44 operative on the writing platform 26. Any writing instrument may be used, but the clip 43 is preferably designed to hold a conventional fountain pen as illustrated.

The outer end of each stem 39 and 40 carries an assembly of a writing instrument and a roller, either of which may selectively be brought into engagement with the strip there-beneath, for a purpose that will presently be described. The assembly includes a pin 45 fixed axially in the end of the stem and having a bushing 46 rotatably mounted thereon. From the bushing extend two fingers 47 and 48 at an angle to each other, the former carrying a scribing instrument 49, and the latter a reading roller 50. For adjusting the assembly to either of the positions illustrated in Figures 4 and 5, the inner end of the bushing 46 is formed with a tooth 51 engageable in either of two notches 52 cut in the adjacent end of the stem. A spring 53 bearing against the bushing and against a head 54 on the pin 45, secures the adjustment, which is made by pulling the bushing manually outward and turning it to the other position.

Inscribing operation

The inscription to be ultimately reproduced by the machine is written at the platform 26, preferably on a sheet of paper laid on the platform. For this operation the instruments 49 are turned downward into engagement with the strips 9 and 10, as shown in Figure 10. The support 42 follows the movements of the pen 44 and clip 43, carrying with it the pen carriage 41. The latter, when moving in either direction will drag the stem 39 or 40 lying perpendicular to said direction, and with such stem moves the pen 49 carried thereby, guided along the rod 35 or 36 by the sleeve 37 or 38 thereon. Actually, the pen carriage 41 for the most part moves at an angle to both stems in keeping with the movements of the pen 44. The path of the pen 44 is separated into two components by the pens 49 on the moving strips due to the rectilinear movement of the latter pens along their respective guide rods 35 and 36.

The platform 26 is preferably mounted so that its longer edges lie at an angle bisecting the angle of the intersecting strips 9 and 10, thereby encouraging the writing of the inscription also on the bisecting line relatively to the strips, which is the most favorable angle for the production of the component lines 55 and 56 on the strips, in order to make the lines end evenly and of the same length.

Mechanism for recording the writing pressure

It has already been pointed out that, as the writing pressure varies, the contact 27 carried by the plunger 25 moves over the rheostat 20 (Fig-

ure 7). One end of the rheostat is connected to a solenoid 57 by a conductor 58, the solenoid being also joined to the contact 27 by a conductor 59 in which is inserted the current source 60. The armature 61 of the solenoid 57 carries a pen 62 engaging one of the strips near the edge more remote from the instrument 49. The pen 62 inscribes a pressure line 63, the operation of which will presently be described.

Transcribing operation

When the inscription has been completed, the strips 9 and 10 are delineated along the component lines 55 and 56. This may be done by any of the means described in the aforementioned co-pending application. In one practical embodiment, the strips are of comparatively heavy celluloid and are cut with a shears along the lines 55 and 56 without removing the strips from the machine. The strips are thus converted into matrices 9' and 10' respectively, and the lines 55 and 56 become free edges 55' and 56' respectively.

The bushings 46 are adjusted into the other position, lifting the pens 49 and bringing the reading rollers 50 against the edges 55' and 56' as illustrated in Figure 5. For maintaining the rollers against these edges, there are provided two spring pulleys 64, each having a tape 65 adapted to be hooked on the mounting of the corresponding roller 50, as shown in Figure 5, thereby pulling the rollers against the edges 55' and 56'. The tapes are not used during inscription, as shown in Figure 4, for it is then necessary to have free movement of the pens 49.

The platform 26 carries the sheet on which the original inscription is to be reproduced, and the instrument 44 is laid thereon. The movements effected by the rollers 50 are combined at the pen carriage 41 and transmitted to the instrument 44 in the form of the original inscription.

It is essential that the matrices have the same relation to each other as did the strips during inscription. Any deviation from the proper relation may be corrected by turning one of the cogged rollers 7 or 8 relatively to the other by means of the knob 17 as previously described.

Mechanism for reproducing the writing pressure

The variations of the pen pressure during inscription are reproduced in the transcription by the mechanism shown in Figures 8 and 10. The strip 9, having been previously cut along the line 63, is engaged at this line by a roller 66 carried on a rod 67, the latter being slidable in a fixed bearing 68. A spring 69 engages the bearing in a disk 70 on the rod to hold the roller resiliently against the line 63. The rod 66 carries a contact finger 71 riding on a rheostat 72. Electrically connected to the contact finger and rheostat is a solenoid 73 (Figure 10) mounted on the support 42. The armature 74 of the solenoid has an insulated upper end 75 forked at 76 to receive an extension 77 from the swivelled clip 43. (Figure 3). A washer 78 on the armature and above the solenoid prevents the armature from dropping out of the solenoid.

The amount of current passing through the solenoid 73 varies with the position of the contact fingers 71 determined by the sliding of the rod 67 as the roller 66 follows the pressure line 63. Such variations in current strength in the solenoid alter the position of the armature 74 which in turn determines the pressure of the pen 44 against the writing surface. On de-energization

of the solenoid, the tension of the previously stressed pen point 79 holds the extension 77 at the bottom of the fork 76, if the weight of the extension is not sufficient for this purpose.

Automatic pen lifting mechanism

A solenoid 80 has a vertical armature 81 to the upper end of which is pivotally attached an arm 82. One end of the arm rests on the free end of the extension 77, and the other end is pivotally attached to a fixed part 83 of the device. In circuit with the solenoid 80 is a switch 84 having a spring blade 85 normally holding one of the switch contacts 86 spaced from the other, so that the circuit is normally open. The blade 85 lies adjacent to the free end of rod 66, as shown in Figure 8, and is so positioned relatively thereto as to be engaged thereby, and the switch closed, when the roller 67 rides on the normal, unaltered edge of the strip 9'.

The edge 63 merges into an unaltered straight edge when the writing pressure is zero, that is, when the pen has been lifted from the paper during inscription. At the corresponding time during transcription, the circuit to the solenoid 80 is closed, drawing the armature 81 downward and pulling the arm 82 against the extension 77, whereby the clip 43 and the pen 44 are raised. This operation occurs not only at the end of the writing, but also between words or separated letters and in the crossing of t's and dotting of i's. The arm 82 preferably has a swivel mounting on a vertical axis, as through the armature 81 for example, so that the arm may be swung out of the way during inscribing, as shown in dotted lines in Figure 1.

Counting mechanism

It may be desirable to keep a numerical record of the number of times a given inscription has been reproduced. Accordingly, the counting mechanism shown in Figures 9 and 10 is provided. The counting instrument 87 has an operating lever switch, when shifted, actuates the instrument. Adjacent to the lever is a solenoid 89 having an armature 90 adapted to engage and shift the lever when the solenoid is energized.

The counting mechanism is set in operation by a notch 91 cut in an otherwise unused edge of one of the matrices 9', 10', at the end of the component edge thereof. A shaft 92 is journaled in a frame part 93 and carries an arm 94 which in turn carries a roller 95 riding on the aforementioned edge and adapted to enter the notch 91. A suitably positioned spring 96 pulls the roller against said edge. Adjacent to the shaft 92 is a fixed switch contact 97, and the other switch contact 98 is carried by the shaft 92 and movable therewith. These contacts are respectively connected to the ends of the solenoid 89 by conductors 99, with a source of current 100 interposed.

When the roller 95 enters a notch 91, the shaft 92 is turned and with it the contact 98 into engagement with contact 97, thereby closing the circuit to the solenoid 89. The armature 90 is moved, whereupon the counting instrument is operated as previously set forth.

Other accessories

Adjacent to the cogged rollers 7 and 8, the edges of the table 1 carry spring fingers 101 placing the strips 9 and 10, as well as the corresponding matrices, under pressure against said rollers. The spring fingers are preferably forked at 102 to straddle the line of perforations 12,

thereby maintaining the cogs 11 in constant register with the perforations.

Inasmuch as one of the strips 9 or 10 rides over the other and is thereby spaced from the table 1 (Figure 4) it is desirable to fill this space with permanent spacers, at least where the upper strip is being scribed. Accordingly, spacers 103 are mounted on the table and beneath the upper strip to give it a firm support in the area of the component line inscribed thereon.

It has already been pointed out that the rollers are maintained under tension against the matrix edges 55' and 56' during transcription, by means of the tapes 55 and spring pulleys 54. Occasionally it may be necessary to remove the rollers from the matrix edges, especially when it is necessary to adjust one of the matrices by means of the knob 17. The means for accomplishing this function includes a cord 104 tied to the pulley shafts 48 as shown in Figures 2 and 5. On the table 1, adjacent to the cord is pivotally mounted a horizontal lever 105. A finger 106 extends downwardly from the lever and is adapted to engage the cord and to pull it outward when the lever is swung. The lever also has a finger 107 standing on its upper surface, to be grasped in moving the lever. When the cord 104 is pulled out in the manner described, the rollers 50 are withdrawn from the matrices against the tension of the tapes 55.

A weighted arm 108 is pivotally attached to the frame 109 of the solenoid 80 or some other suitable support. It is mounted to be laid upon the arm 82 and, when so positioned, maintains the pen 44 off the paper until removed from the arm 82. This is used while changing the paper or in any other case requiring such lifting of the pen.

Modifications

The invention has been described with reference to a movable pen and a stationary writing platform. The scope of the invention, however, includes a reversal of these parts wherein the pen is stationary and the writing platform movable.

Such a modification is illustrated in Figure 11, which shows all the essential changes. The pen carriage 141, corresponding to the member 41 of Figure 10 and operated in the same manner has an arm 142 carrying the writing platform 126 rather than the pen clip. The pen 144, on the other hand, is carried by a fixed holder 125. Thus, the paper is moved against the pen, rather than vice versa.

In another use of the invention, two sets of different signature matrices may be placed on the strips 9 and 10 in such a manner that each strip has a component line or a set of hills and valleys along both edges. A reversed arrangement of rollers and arms operating from the second component line of each strip and operating another pen carriage and pen, permit the writing of a second signature simultaneously with the first. The above described strips may be formed by joining together two matrix strips formed in the manner herein described, and forming the gear holds nearer the center of the strip. The separate strips may be fastened together in any desirable manner, as by gluing, staples, etc.

In another modification of the invention, the component or matrix line of one of the strips may be transferred to the other strip, so that the latter strip carries both lines. This strip would

then be sufficient for reproduction of the signature after a slight rearrangement of one of the reading rollers and the connecting arms to operate the pen carriage and the pen.

Also, by a rearrangement and extension of the arms attached to the reading rollers, a series of pen carriages and pens may be operated to reproduce the writing on a multiple of checks, bonds, etc.

It will also be understood that the angle between the strips may vary from zero degrees to 90 degrees, thus including parallelism and all possible angular relations. The arms and other members between the pen carriage and the transcribing pens would be rearranged accordingly. Also, the strips may even be mounted in different planes, with a corresponding rearrangement of the mechanism between the pen carriage and the transcribing pens.

The invention is especially desirable in matters of signature authenticity, as in check protection for example, inasmuch as all signatures are exactly alike. The reproduced signatures may be matched as to both size and form by superposition on a master specimen, such as a sample retained at the bank on which the checks are drawn. The matching may easily be done before a strong light, whereby any deviation may be detected. Thus, forgery is practically impossible.

Although specific embodiments of the invention have been illustrated and described, it will be understood that various alterations in the details of construction may be made without departing from the scope of the invention, as indicated by the appended claims.

What I claim is:

1. A machine for use in reproducing an inscription comprising a table, pairs of opposed feed rollers carried thereby on intersecting drive lines, means for driving said rollers, a carriage supported for free movement in a plane, a pair of scribing instruments having a sliding mounting relatively to said carriage and mounted respectively between the rollers of each pair and substantially in the plane of said table, means restricting said instruments to linear movement transverse of said drive lines respectively, a writing platform and a writing instrument, one being carried by said carriage and the other by said table.

2. A machine for use in reproducing an inscription comprising a table, pairs of opposed feed rollers carried thereby on intersecting drive lines, means for driving said rollers, a pair of guide rods mounted respectively across said drive lines, stems guided respectively on said rods and intersecting each other, a carriage slidably engaging said rods at their intersection and freely movable in the plane of said rods, scribing instruments carried respectively by said rods and mounted respectively between the rollers of each pair and substantially in the plane of said table, a writing platform and a writing instrument, one being carried by said carriage and the other by said table.

3. A machine for use in reproducing an inscription comprising a table, pairs of opposed feed rollers carried thereby on intersecting drive lines, means for driving said rollers, a carriage supported for free movement in a plane, a pair of followers having a sliding mounting relatively to said carriage and mounted respectively between the rollers of said pairs, means restricting said followers to linear movement transverse of said drive lines respectively, a writing platform and

a writing instrument, one being carried by said carriage and the other by said table.

4. A machine for use in reproducing an inscription comprising a table, pairs of opposed feed rollers carried thereby on intersecting drive lines, means for driving said rollers, a carriage supported for free movement in a plane, a pair of fittings having a sliding mounting relatively to said carriage, a scribing instrument and a follower extending from each fitting, said fittings being adjusted to bring either the instruments or the followers between the rollers of said pairs and substantially in the plane of said table, means restricting said fittings to linear movement transverse of said drive lines respectively, a writing platform and a writing instrument, one being carried by said carriage and the other by said table.

5. A machine for use in reproducing an inscription comprising a table, pairs of opposed feed rollers carried thereby on intersecting drive lines, means for driving said rollers, a pair of guide rods mounted respectively across said drive lines, stems guided respectively on said rods and intersecting each other, a carriage slidably engaging said rods at their intersection and freely movable in the plane of said rods, scribing instruments carried respectively by said rods and mounted respectively between the rollers of each pair and substantially in the plane of said table, a writing platform and a writing instrument, one being carried by said carriage and the other by said table, and tensioning means applied to said followers.

6. A machine for use in reproducing an inscription comprising a table, pairs of opposed feed rollers carried thereby on intersecting drive lines, means for driving said rollers, a pair of guide rods mounted respectively across said drive lines, stems guided respectively on said rods and intersecting each other, a carriage slidably engaging said rods at their intersection and freely movable in the plane of said rods, followers carried respectively by said rods and mounted respectively between the rollers of each pair and substantially in the plane of said table, a writing platform and a writing instrument, one being carried by said carriage and the other by said table.

7. A machine for use in reproducing an inscription comprising a table, pairs of opposed feed rollers carried thereby on intersecting drive lines, means for driving said rollers, a pair of guide rods mounted respectively across said drive lines, stems guided respectively on said rods and intersecting each other, a carriage slidably engaging said rods at their intersection and freely movable in the plane of said rods, followers carried respectively by said rods and mounted respectively between the rollers of each pair and substantially in the plane of said table, a writing platform and a writing instrument, one being carried by said carriage and the other by said table, and tensioning means applied to said followers.

8. A machine for use in reproducing an inscription comprising a table, pairs of opposed feed rollers carried thereby on intersecting drive lines, means for driving said rollers, a pair of guide rods mounted respectively across said drive lines, stems guided respectively on said rods and intersecting each other, a carriage slidably engaging said rods at their intersection and freely movable in the plane of said rods, fittings carried respectively by said rods, a scribing instrument and a follower extending from each fitting, said fittings

being adjustable to bring either the instruments or the followers between the rollers of said pairs and substantially in the plane of said table, a writing platform and a writing instrument, one being carried by said carriage and the other by said table.

9. In a machine for reproducing an inscription, a table, means for driving intersecting strips across said table, a writing platform and a writing instrument, scribing instruments connected to said writing instrument and adapted to separate the movements of said writing instrument into component lines on said strips, followers interchangeable with said scribing instruments and adapted to follow said component lines to reproduce the original movement of said writing instrument, means responsive to the pressure variations between said platform and writing instrument to define a variable line on one of said strips, a follower for said line and adapted to reproduce the original pressure variation between said platform and writing instrument.

10. In a machine for reproducing an inscription, a table, means for driving intersecting strips across said table, a writing platform and a writing instrument, scribing instruments connected to said writing instrument and adapted to separate the movements of said writing instrument into component lines on said strips, followers interchangeable with said scribing instruments and adapted to follow said component lines to reproduce the original movement of said writing instrument, said platform being resiliently mounted and responsive to pressure variations between said writing instrument and platform, means for recording such variations in a variable line on one of said strips, a follower for said last named line and adapted to reproduce the original pressure variation between said platform and writing instrument.

11. In a machine for reproducing an inscription, a table, means for driving intersecting strips across said table, a writing platform and a writing instrument, scribing instruments connected to said writing instrument and adapted to separate the movements of said writing instrument into component lines on said strips, followers interchangeable with said scribing instruments and adapted to follow said component lines to reproduce the original movement of said writing instrument, said platform being resiliently mounted and responsive to pressure variations between said writing instrument and platform, means on one of said strips denoting separation of the writing instrument from said platform during the original writing, and a mechanism operable by said means for separating the writing instrument from said platform during engagement of said followers with said component lines.

12. In a machine for reproducing an inscription, a table, means for driving intersecting strips across said table, a writing platform and a writing instrument, scribing instruments connected to said writing instrument and adapted to separate the movements of said writing instrument into component lines on said strips, followers interchangeable with said scribing instruments and adapted to follow said component lines to reproduce the original movement of said writing instrument, said platform being resiliently mounted and responsive to pressure variations between said writing instrument and platform, means for recording such variations in a variable line on one of said strips, a follower for said last named line and adapted to reproduce the orig-

inal pressure variation between said platform and writing instrument, said follower being engageable with the normal edge of said strip to lift said writing instrument from said platform.

- 5 13. In a machine for reproducing an inscription, a table, means for driving intersecting strips across said table, a writing platform and a writing instrument, scribing instruments connected to said writing instrument and adapted to separate the movements of said writing instrument into component lines on said strips, followers interchangeable with said scribing instruments and adapted to follow said component lines to reproduce the original movement of said writing instrument, means responsive to the pressure variations between said platform and writing instrument to define a variable line on one of said strips, a follower for said line, an electrical device for varying the pressure of said writing instrument and operatively connected to said follower.

- 10 14. In a machine for reproducing an inscription, a table, means for driving intersecting strips across said table, a writing platform and a writing instrument, scribing instruments connected to said writing instrument and adapted to separate the movements of said writing instrument into component lines on said strips, followers interchangeable with said scribing instruments and adapted to follow said component lines to reproduce the original movement of said writing instrument, said platform being resiliently mounted and responsive to pressure variations between said writing instrument and platform, means on one of said strips denoting separation of the writing instrument from said platform during the original writing, and an electrical device operable by said means for separating the writing instrument from said platform during en-

gagement of said followers with said component lines.

15. In a machine for reproducing an inscription, a table, means for driving intersecting strips across said table, a writing platform and a writing instrument, scribing instruments connected to said writing instrument and adapted to separate the movements of said writing instrument into component lines on said strips, followers interchangeable with said scribing instruments and adapted to follow said component lines to reproduce the original movement of said writing instrument, said platform being resiliently mounted and responsive to pressure variations between said writing instrument and platform, means for recording such variations in a variable line on one of said strips, a follower for said last named line and adapted to reproduce the original pressure variation between said platform and writing instrument, a mechanism for withdrawing the writing instrument from said platform and operable by said follower when in engagement with the normal edge of said strip.

16. In a machine for reproducing an inscription, a table, means for driving intersecting strips across said table, a writing platform and a writing instrument, scribing instruments connected to said writing instrument and adapted to separate the movements of said writing instrument into component lines on said strips, followers interchangeable with said scribing instruments and adapted to follow said component lines to reproduce the original movement of said writing instrument, a counting mechanism, means on one of said strips at the end of the component line thereon for actuating said counting mechanism.

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