

F. E. CROMPTON.
MACHINE FOR SIMULTANEOUSLY PRODUCING A PLURALITY OF ORIGINAL IMPRESSIONS
OR INSCRIPTIONS.

1,045,678.

APPLICATION FILED MAR. 15, 1912.

Patented Nov. 26, 1912.

4 SHEETS-SHEET 1.

Fig. 1.

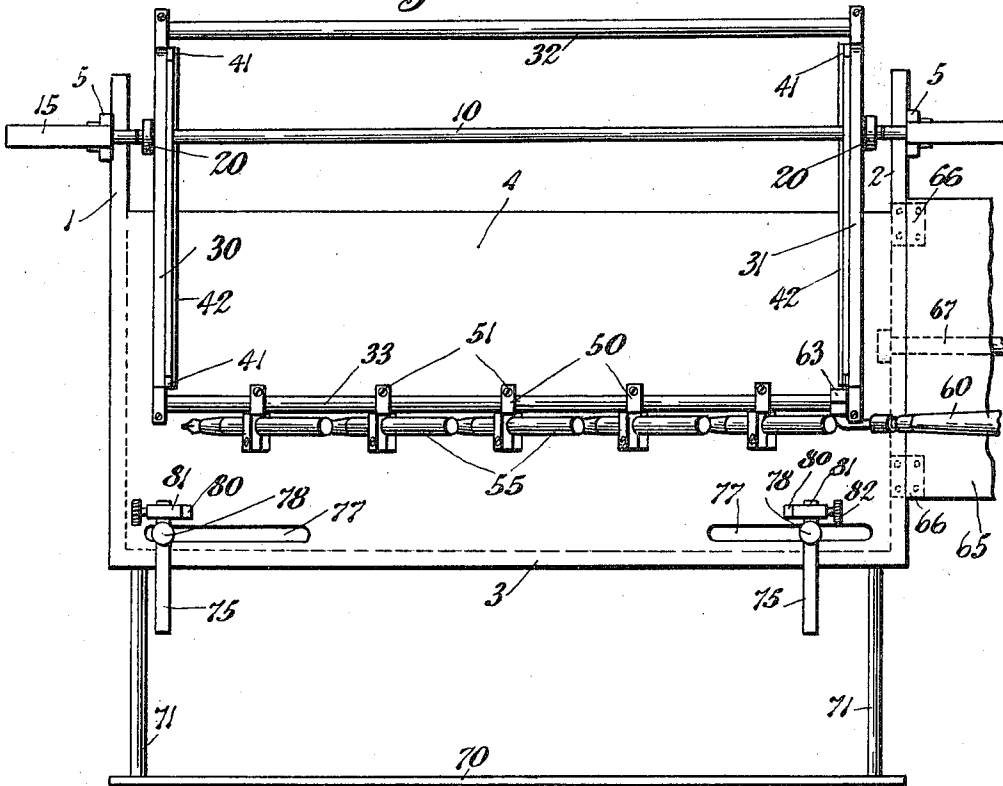
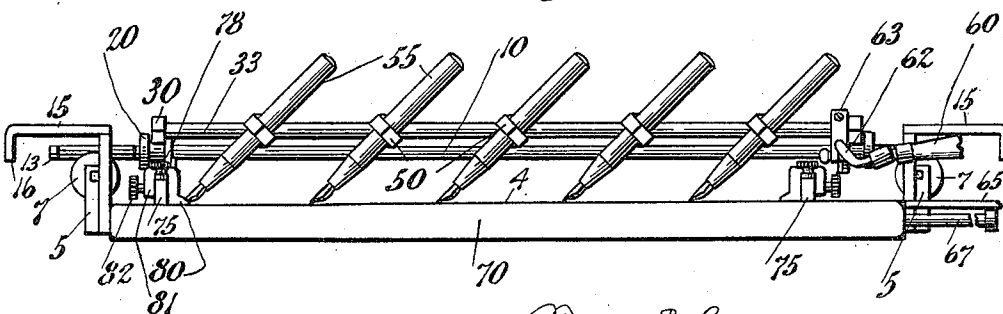


Fig. 2.



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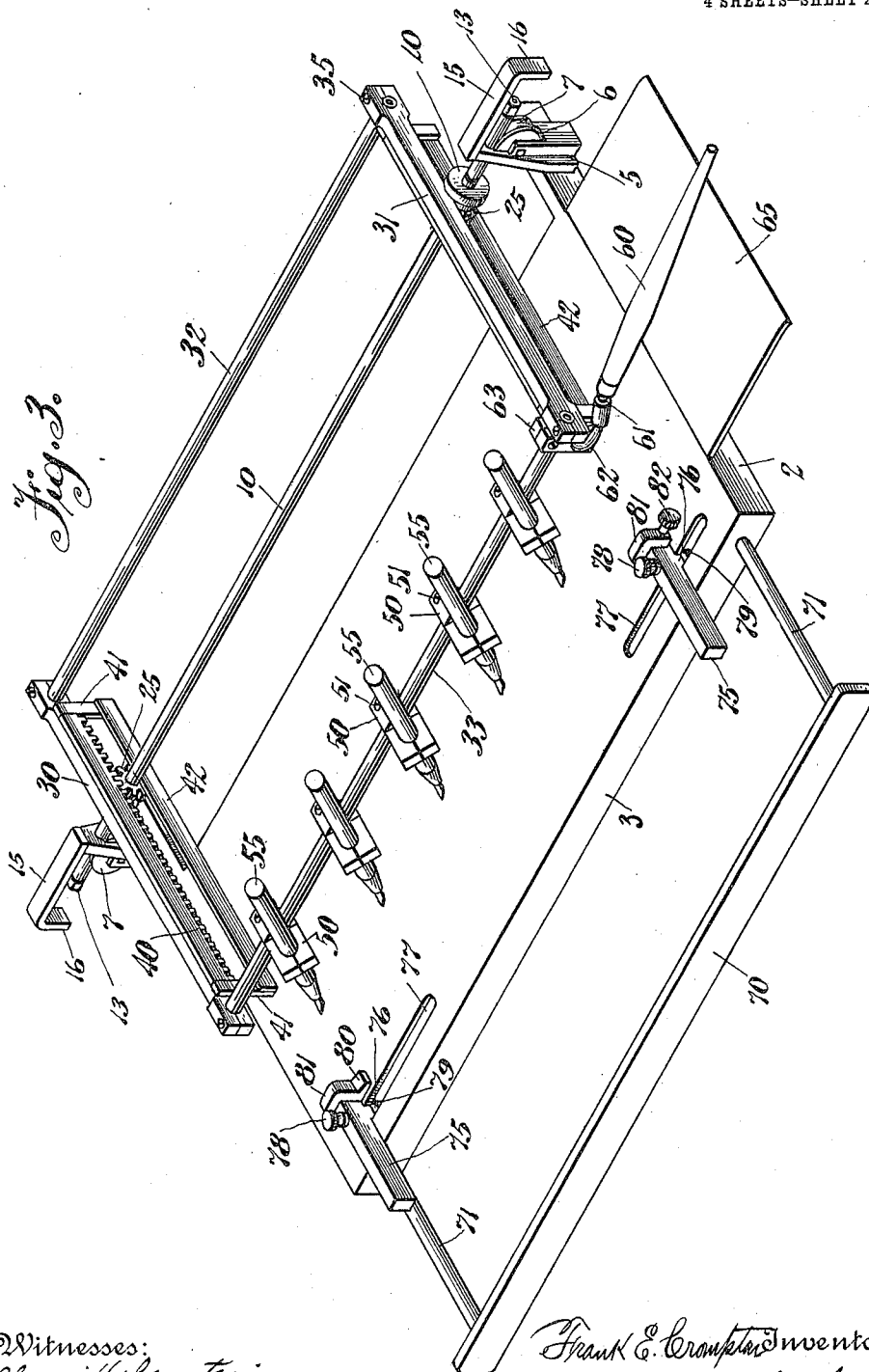
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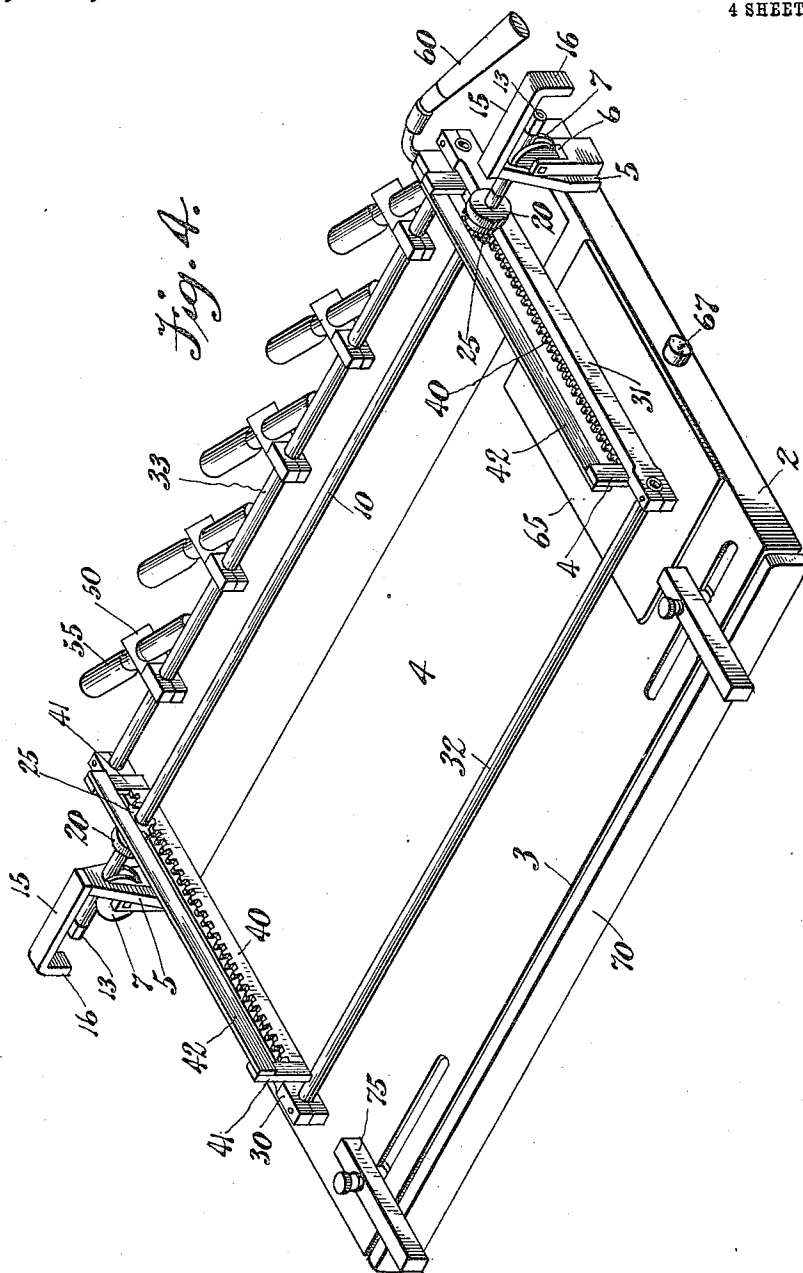
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4 SHEETS-SHEET 3.

1,045,678.



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Fig. 5.

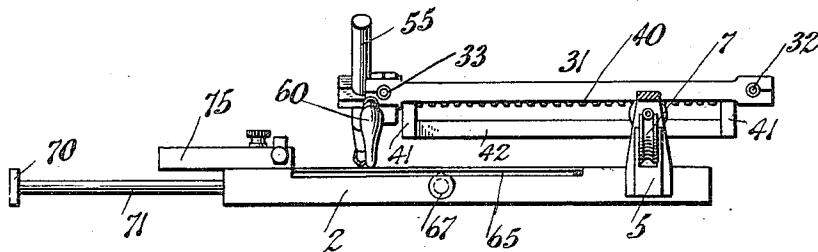


Fig. 6.

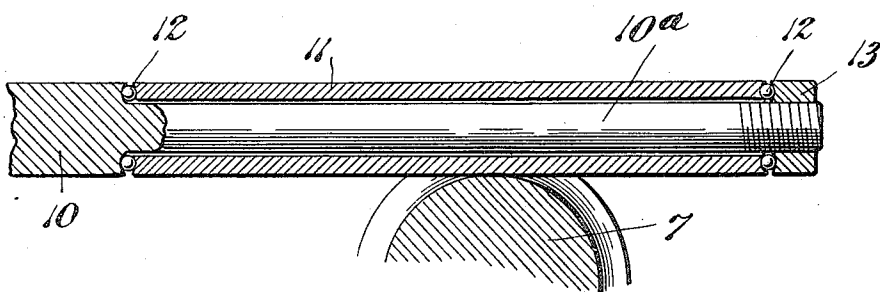
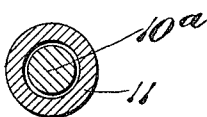


Fig. 7.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR SIMULTANEOUSLY PRODUCING A PLURALITY OF ORIGINAL IMPRESSIONS OR INSCRIPTIONS.

1,045,678.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANK E. CROMPTON, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Machines for Simultaneously Producing a Plurality of Original Impressions or Inscriptions, of which the following is a specification.

The present invention relates to improvements in machines designed to simultaneously produce a plurality of original impressions, marks, or inscriptions upon documents or other objects by a single operation of the machine, and the special object of the present invention is to produce a simple form of such machines which will be economical to manufacture and simple and effective in operation.

Machines of the type to which the present invention relates have heretofore been constructed with a suitable bed frame for supporting the documents or other objects in position to receive the impressions, marks, or inscriptions and a carriage supporting a plurality of marking members such as pens or pencils in operative relation to the bed frame and connected with the bed frame by pantographic links to cause all of the marking members to have exactly the same movements when the machine is operated. The marking members have usually been movably mounted upon the carriage to move toward and away from the supporting bed and have been moved over the surface of the bed by the movement of the carriage.

In my improved and simplified machine I have omitted the pantographic link connections between the carriage and the bed frame and have so mounted the carriage upon the bed frame that it will move freely in any direction over the bed. The mounting for the carriage comprises a shaft freely journaled in the bearings upon said bed frame, so as to rotate and reciprocate in said bearings. The bearings for the shaft are formed to reduce the friction to a minimum, and may consist of roller bearings journaled upon the bed frame and anti-friction sleeves or collars journaled upon reduced ends of the

shaft and resting in the roller bearings. Suitable guides are provided upon the shaft and carriage to cause the carriage and shaft to move in unison in directions longitudinal of the shaft and at the same time permit the carriage to move transversely with relation to the shaft. The shaft and carriage are provided respectively with intermeshing pinions and rack bars by which the relative transverse movement of the carriage and shaft causes the rotation of the shaft and maintains the carriage in proper operative relation to the shaft and insures the uniform motion of all parts of the carriage. The marking instruments (which may be in the form of pens, pencils, styluses or other kinds of marking or cutting instruments) are rigidly mounted upon the carriage and move toward and away from the bed by reason of the carriage having a rocking fulcrum support upon its shaft. The carriage may be provided with a monitor handle supported above a suitable hand rest or plate or it may be operated in any other suitable manner.

For the purpose of illustrating my invention, I have shown it embodied in a simple form of machine designed primarily for simultaneously signing or inscribing checks or other documents. In using this form of machine to illustrate my invention I desire to have it understood that I do not limit myself to this application or use of the machine, since the principle involved in the construction of the machine may, without departing from the spirit of my invention, be applied to other forms of machines for other uses.

In order that the invention may be fully understood I will first describe the same with reference to the accompanying drawings and afterward point out the novelty more particularly in the annexed claims.

In said drawings: Figure 1 is a plan view of my improved machine. Fig. 2 is a side elevation of the same. Fig. 3 is a perspective view of the machine, showing the parts in operative position. Fig. 4 is a similar view showing the carriage with marking members reversed. The parts are placed in this position when the machine is out of use. Fig. 5 is an end elevation of the machine

with parts shown in section. Figs. 6 and 7 are enlarged detail, sectional views of the anti-friction shaft bearings.

In constructing the improved machine I form an open sided rectangular base frame having the end bars 1 and 2 and the side bar 3, upon which is mounted the document supporting bed plate 4. The bed plate 4 extends over the greater part of the area of the base frame 1, 2, 3, but the end bars 1 and 2 are uncovered at the side opposite the bar 3 for the purpose of allowing room for the reversal of the carriage as hereinafter explained.

5—5 are upright posts or brackets rigidly secured to the frame bars 1 and 2, adjacent to the open side of the rectangular bed frame. These posts or brackets 5 are formed with transverse openings 6, in which are mounted the grooved anti-friction bearing wheels 7. The wheels 7 are journaled upon bearing pins extending parallel with the end frames 1 and 2, so as to present the grooved peripheries of the wheels parallel with the length of the bed frame.

10 is the carriage supporting shaft which has its opposite ends reduced in diameter as shown at 10^a in Figs. 6 and 7 to receive the anti-friction sleeves 11 which have ball bearings 12 at their ends upon which they are supported. The sleeves 11 and their ball bearings are held in position upon the reduced ends of the shaft 10 by means of nuts 13 threaded upon the reduced ends of the shaft. The adjacent faces of the ends of the sleeves 11 and the shoulders upon the shaft and the inner face of nuts 13, are formed with annular recesses in which the ball bearings 12 are seated. The bearing ends of the shaft 10 rest in the grooved rollers 7 and the anti-friction sleeves 11 engage the grooved peripheries of said rollers, so that the shaft 10 will be free to rotate in either direction and to reciprocate longitudinally in the described bearings for the purpose which will presently be explained.

Secured to the upper end of each post or bracket 5 is a horizontal plate 15 formed with a downturned end 16 which is presented in axial alinement with the shaft 10 to limit the longitudinal movements of the shaft in its bearings. Adjacent to its opposite ends between the bearing posts or brackets 5, the shaft 10 is provided with adjustable flanged bearing collars 20 and small gears or pinions 25 which may be adjustably mounted upon the shaft 10 by any suitable means.

The carriage upon which the marking members are mounted comprises a rectangular frame formed of the two parallel end bars 30, 31 and the two parallel side bars 32, 33. The end bars 30, 31 are formed with split sockets in their ends to receive the ends of the side bars, which are rigidly held in place by set screws 35 passing through the

split ends of the end bars. Each of the end bars 30, 31 of the frame or carriage is designed to rest upon a flanged bearing collar 20 just inside of the annular flanges thereof. Secured to the inner face of each of the bars 30, 31 is a rack bar 40 which meshes with one of the small gears or pinions 25. The teeth of the rack bars 40 project slightly below the periphery of the bearing collars 20 so as to laterally engage said bearing collars. Projecting downwardly from the opposite ends of the rack bars 40 are arms 41 to which are secured the keeper bars 42 which pass beneath the shaft 10 and retain the frame or carriage in position upon the shaft. These keeper bars 42 rest alongside of the pinions 25 of the shaft.

It will be observed that the frame or carriage which supports the marking members is mounted upon the shaft 10 with its end bars 30, 31 resting upon the flanged bearing collars and the rack bars 40 meshing with the gears or pinions 25, so that the frame or carriage will move freely relatively and transversely of the shaft 10 causing the shaft to rotate in its bearing sleeves 11, and will move longitudinally with the shaft, causing the shaft to move upon its grooved anti-friction rollers 7. The engagement of the carriage end bars 30 and 31 with the flanges of bearing collars 20, and the engagement of the pinions and racks with the carriage end bars and bearing collars respectively, will effectively prevent relative motion between the shaft 10, and the carriage, in a direction parallel with the longitudinal axis of the shaft. The engagement of the rack bars and pinions retains the opposite ends of the carriage constantly in working relation. The bearing collars 20 and pinions 25 are independently adjustable upon the shaft 10 so as to afford convenient means for properly positioning the carriage in the machine. With this construction it will be understood that any movements of the carriage will be imparted equally to all parts of the carriage as accurately as in the older forms of such machines in which pantographic links were employed for this purpose.

The inner longitudinal bar 33 of the carriage has adjustably mounted upon it a plurality of grips 50 for supporting the marking members. These grips 50 may be of any suitable construction. As shown in the drawings the grips 50 consist of split collars or yokes embracing the bar 33 and adjustably secured thereon by set screws 51. Each yoke is formed with a split socket to support the fountain pen or other marking instrument shown at 55.

60 is the monitor handle having ball and socket joint 61 with a curved arm 62 projecting from a split yoke 63 which embraces and is adjustably secured to the carriage bar 33.

65 is a hand rest or plate hinged to the end bar 2 as shown at 66 so that it can be presented outwardly in operative position as shown in Figs. 1, 2 and 3 or folded over onto the bed 4 as shown in Fig. 4. Any suitable means may be provided for supporting the hand rest 65 in horizontal position. I have shown a supporting rod 67 suitably mounted in an opening formed through the end bar 2, so that when the rod 67 is pulled out, it will assist in supporting the plate 65 whereas when it is pushed in it will be out of the way and protected from injury.

It is sometimes desirable in a machine used for signing checks which are bound in book form, to provide an extension of the supporting bed to properly hold the check book while signatures are being made. For this purpose I have provided an extension supporting bar 70 mounted upon rods 71, which pass freely through openings formed in the side bar 3 of the bed frame. In Figs. 1 and 3 this auxiliary supporting bar 70 is shown in extended position while in Fig. 4 it is shown in its inner position pushed up against the bed frame. When the bar 70 is withdrawn it will be understood that it serves as an added support for the book of checks which are being signed. 75 are gage plates formed with downwardly presented lugs 76 which pass through slots 77 formed in the bed plate 4. Headed screws 78 pass through the gages 75 and engage enlarged nuts 79 presented beneath the bed plate 4. By this means the gage plate 75 can be adjusted longitudinally of the bed plate 4 to properly position a book or a series of papers or documents in position for signatures or other inscriptions. In addition to the gage plates referred to I may provide auxiliary holding down fingers 80 formed upon yokes 81 provided with set screws 82 designed to be clamped in the desired adjusted position upon gage bars 75 for engaging the top sheet of a series of papers or sheets or pages in a book to assist in holding them in the desired adjusted position with reference to the marking instruments. These auxiliary devices are not essential to the proper operation of the machine but are useful in the particular application illustrated in the drawing.

From the above description it will be understood that the rectangular frame or carriage which supports the marking members is supported by its end bars and rack bars upon the bearing collars and gears of the shaft 10. The engagement of the gears with the rack bars insures the uniform angular relation of the carriage with the shaft and bed frame it of course being understood that the pinions and rack bars are placed in mesh at points equally distant from the long side of the carriage so as to insure constant parallel relation of the side

bars of the carriage with the shaft 10. The lateral bearing faces of the parts of the carriage and bearing collars upon the shaft assist the intermeshing gears and rack bars in preserving this proper angular relation of the parts. The carriage is capable of rocking upon the shaft 10 to move the marking members 55 toward and away from the supporting bed 4, or the documents placed thereon. The carriage is so proportioned and hinged upon the shaft that it will be nearly balanced thereon so that the weight upon the marking members will be very slight. The weight upon the marking members, however, can be increased if desired, either by having the normal position of the marking members farther away from the supporting shaft 10 or by increasing the weight of the carriage, a provision which is desirable with some forms of marking members, such for instance as cutting styluses. In addition to this rocking movement of the carriage it will be understood that the carriage is free to move transversely upon the shaft 10 causing the shaft to rotate and to move longitudinally of the bed by causing the shaft to move longitudinally in its bearings.

In the operation of the machine for signing checks or other documents, the papers to be signed are placed in the proper position upon the bed or table 4 to bring the signing spaces in position beneath the several marking members or pens 55. In case the papers being signed are checks in book form the check book is positioned upon the bed and supported by the means above described. When the checks are in position the operator, with his hand resting upon the plate 65, takes hold of the monitor handle 60 in the same manner as he would take up an ordinary pen holder and manipulates the carriage in a manner very similar to operating with the ordinary pen. Because of the nearly balanced arrangement of the carriage the operator is enabled to write in a natural manner, applying his accustomed pressure to the pens, to produce his normal signature. Any one of the pens may be watched as a guide in making the signature or inscription.

A further feature of importance in the construction of the machine described is the arrangement by which the carriage can be reversed in the machine. Fig. 3 shows the carriage in normal operative position while Fig. 4 shows the carriage reversed and the several parts arranged in compact position. This reversal of the carriage is important not only for presenting fountain pens in convenient position for filling, but also in avoiding the necessity of leaving the pens in a normal position with their points down, in which position there would be some danger of leakage of the ink and injury to the

pen nibs. In reversing the position of the carriage it will be understood that the carriage is moved as far to the left as possible as shown in Fig. 3, and the frame then turned over upon the shaft 10, the lower end of the frame during this operation passing freely through the space separating the uncovered ends of bars 1 and 2. When the carriage is completely turned over it is moved inwardly in reversed position above the bed, as shown in Fig. 4. In this last named figure the ordinary pen caps employed upon fountain pens are shown positioned upon the pens.

While I have shown my invention as applied to a machine for simultaneously writing a plurality of original signatures or inscriptions, I would have it understood that I do not intend to limit my invention to this specific application but intend to cover the mechanism in a broader sense to apply to any style of machine in which marking instruments of any form are employed for simultaneously producing impressions, marks, or inscriptions, whether said marking operation be with pens, crayons, or pencils, or in the nature of a scratching or engraving process with cutting instruments such as styluses.

What I claim is:

1. In a machine of the character described, the combination of a bed, and a rotatable shaft journaled adjacent to said bed, with a frame or carriage fulcrumed upon said shaft and movable transversely and longitudinally with relation to said bed, and a plurality of marking members mounted upon said carriage.

2. In a machine of the character described, the combination of a bed, and a rotatable shaft journaled above said bed, with a frame or carriage fulcrumed upon said shaft and movable transversely and longitudinally with relation to said bed, a plurality of marking members mounted upon said frame or carriage and a controlling device connected with said frame or carriage.

3. In a machine of the character described, the combination of a bed, and a rotatable longitudinally movable shaft journaled adjacent to said bed, with a frame or carriage fulcrumed upon said shaft and movable transversely thereon and longitudinally therewith and vertically with relation to said bed, a plurality of marking members mounted upon said frame or carriage and a controlling device connected with said frame or carriage.

4. In a machine of the character described, the combination of a main frame having a bed, and a rotatable longitudinally movable shaft journaled above said bed, with an elongated skeleton frame or carriage fulcrumed upon and extending transversely of said shaft and movable transversely thereon

and longitudinally therewith, a plurality of marking members mounted upon one side of said frame or carriage, and a monitor controlling device connected with said frame or carriage.

5. In a machine of the character described, the combination of a main frame having a bed, posts or brackets mounted upon said main frame, a shaft having bearings in said posts or brackets and capable of rotating and moving longitudinally therein, a frame or carriage having rocking support upon said shaft and a plurality of marking members mounted upon said frame or carriage.

6. In a machine of the character described, the combination of a bed, posts or brackets mounted upon said bed, roller bearings journaled in said posts or brackets, a shaft having anti-friction bearing sleeves journaled upon its opposite ends and resting upon said roller bearings whereby said shaft will be free to rotate and move longitudinally in its bearings, a frame or carriage having rocking support upon said shaft and a plurality of marking members mounted upon said frame or carriage.

7. In a machine of the character described, the combination of a bed, a rotatable longitudinally movable shaft journaled adjacent to said bed, a frame or carriage fulcrumed upon and movable transversely of said shaft, coacting members upon said frame or carriage and said shaft holding them against relative movement longitudinally of said shaft, and a plurality of marking members mounted upon said frame or carriage.

8. In a machine of the character described, the combination of a bed, posts or brackets mounted upon said bed, a shaft having bearings in said posts or brackets capable of rotating and moving longitudinally therein, a frame or carriage fulcrumed upon said shaft and movable transversely thereof, means for preventing relative movement between the frame or carriage and the shaft in a direction longitudinally of said shaft, means for confining said frame or carriage upon said shaft, a plurality of marking members carried by said frame or carriage, and a controlling device connected with said frame or carriage.

9. In a machine of the character described, the combination of a bed, and a rotatable longitudinally movable shaft journaled above said bed, with a frame or carriage fulcrumed upon said shaft and movable transversely thereon and longitudinally therewith, a keeper bar or plate mounted upon said frame or carriage and engaging beneath said shaft for confining the frame or carriage upon the shaft, and a plurality of marking members mounted upon said frame or carriage.

10. In a machine of the character de-

scribed, the combination of a bed, and a rotatable longitudinally movable shaft journaled above said bed, with a gear mounted upon said shaft, a frame or carriage having a rack bar meshing with said gear and a plurality of marking members mounted upon said frame or carriage.

11. In a machine of the character described, the combination of a bed, bearing brackets mounted upon said bed, a rotatable longitudinally movable shaft journaled in said brackets, gears secured upon said shaft, a frame or carriage having rack bars meshing with said gears, a plurality of marking members mounted upon said frame or carriage and a controlling device connected with said frame or carriage.

12. In a machine of the character described, the combination of a bed, a rotatable longitudinally movable shaft journaled adjacent to said bed, a frame or carriage supported upon said shaft, toothed gearing between said frame or carriage and said shaft, means for confining said frame or carriage against displacement upon said shaft, a plurality of marking members mounted upon said frame or carriage, and a controlling device connected with said frame or carriage.

13. In a machine of the character described, the combination of a main frame having a bed, a rotatable longitudinally movable shaft journaled above said bed, bearing collars mounted upon said shaft, a frame or carriage resting upon said bearing collars, means for maintaining a proper angular relation between said frame or carriage and said shaft, a plurality marking members mounted upon said frame or carriage and a controlling device connected with said frame or carriage.

14. In a machine of the character described, the combination of a main frame having a work supporting bed, posts or brackets secured to said main frame, a shaft mounted in said posts or brackets to rotate and move longitudinally therein, gears secured to said shaft, a rectangular frame or carriage provided with racks meshing with said gears, suitable keeper bars mounted upon said frame or carriage and engaging said shaft, a plurality of marking members mounted upon said frame or carriage and a monitor controlling device connected with said frame or carriage.

15. In a machine of the character de-

scribed, the combination of a main frame having a work supporting bed, a rotatable longitudinally movable shaft supported above said bed, bearing collars adjustably mounted upon said shaft, a frame or carriage resting upon said bearing collars, gears upon said shaft adjacent to said bearing collars, racks upon said frame or carriage, meshing with said gears, means for confining said frame or carriage in position upon said shaft, a plurality of marking members mounted upon said frame or carriage above said bed, and a monitor controlling device connected with said frame or carriage.

16. In a machine of the character described, the combination of a main frame having a work supporting bed, a rotatable longitudinally movable shaft supported above said bed, gears secured to said shaft, bearing collars upon said shaft alongside of said gears, the teeth of said gears projecting beyond the peripheries of said bearing collars, a rectangular frame or carriage having end bars formed with bearing surfaces which rest upon said bearing collars, rack bars secured to said end bars and meshing with said gears, the teeth of said rack bars projecting beyond the bearing surfaces of said end bars, and a plurality of marking members mounted upon said marking frame or carriage.

17. In a machine of the character described, the combination of a bed, and a rotatable shaft journaled above said bed, with a reversible frame or carriage fulcrumed upon said shaft and movable transversely thereon above and below said shaft, and a plurality of marking members mounted upon said frame or carriage.

18. In a machine of the character described, the combination of a bed, a rotatable shaft journaled above said bed, gears upon said shaft, a reversible frame or carriage, a plurality of marking members mounted upon said frame or carriage, rack bars upon said frame or carriage meshing with said gears and means confining said rack bars in engagement with said gears, whereby said reversible frame or carriage can be reversed upon said shaft and moved transversely thereon above and below said shaft for the purpose set forth.

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