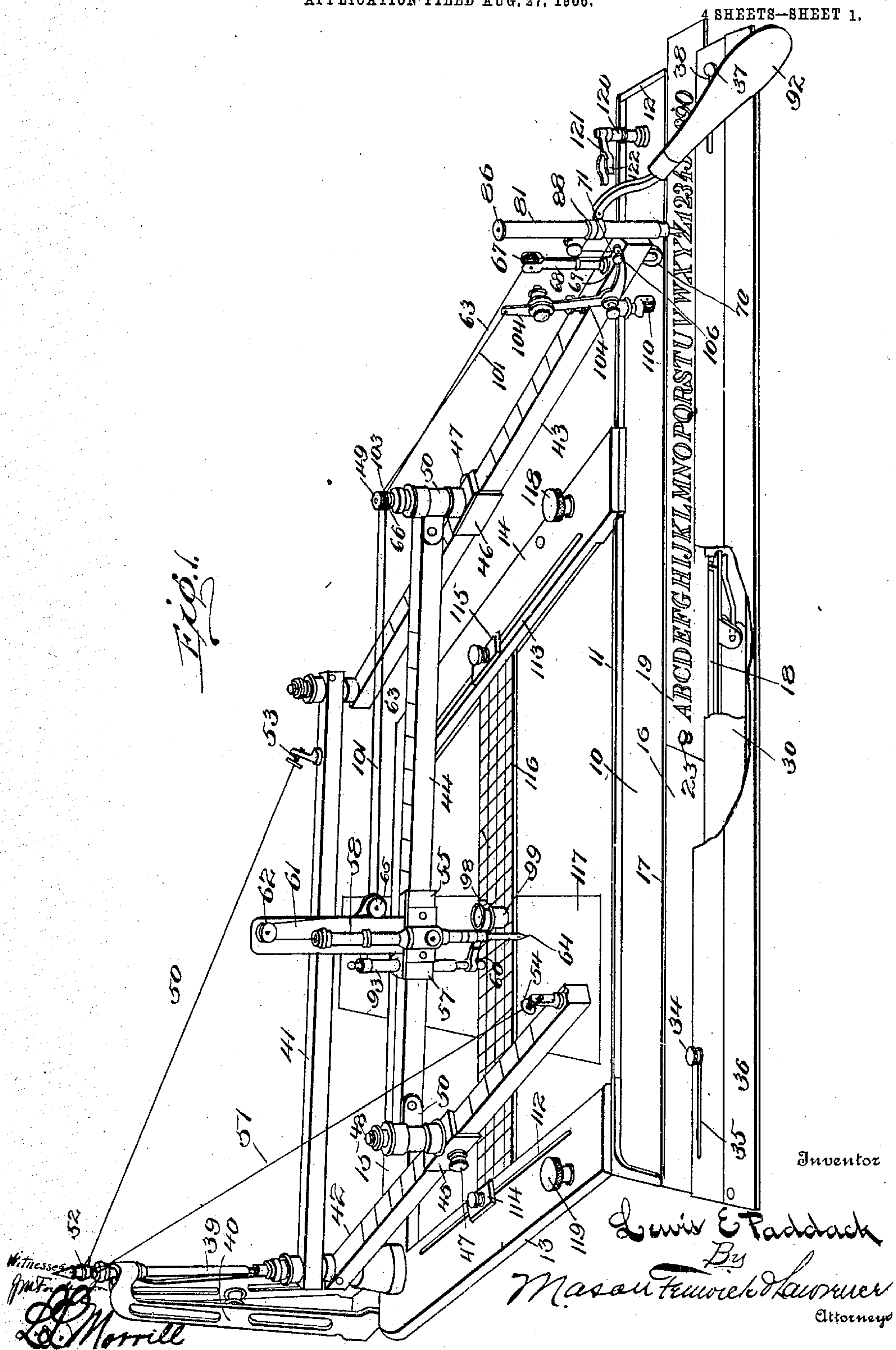


No. 860,562.

PATENTED JULY 16, 1907.

L. E. PADDACK.
DRAFTING INSTRUMENT.
APPLICATION FILED AUG. 27, 1906.

4 SHEETS—SHEET 1.

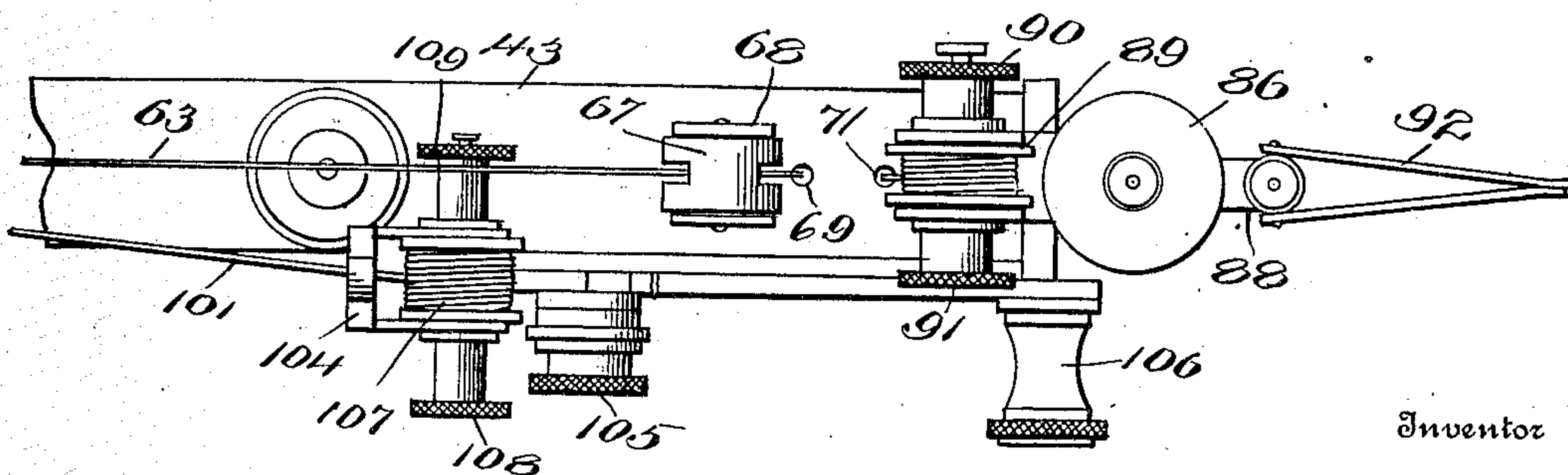
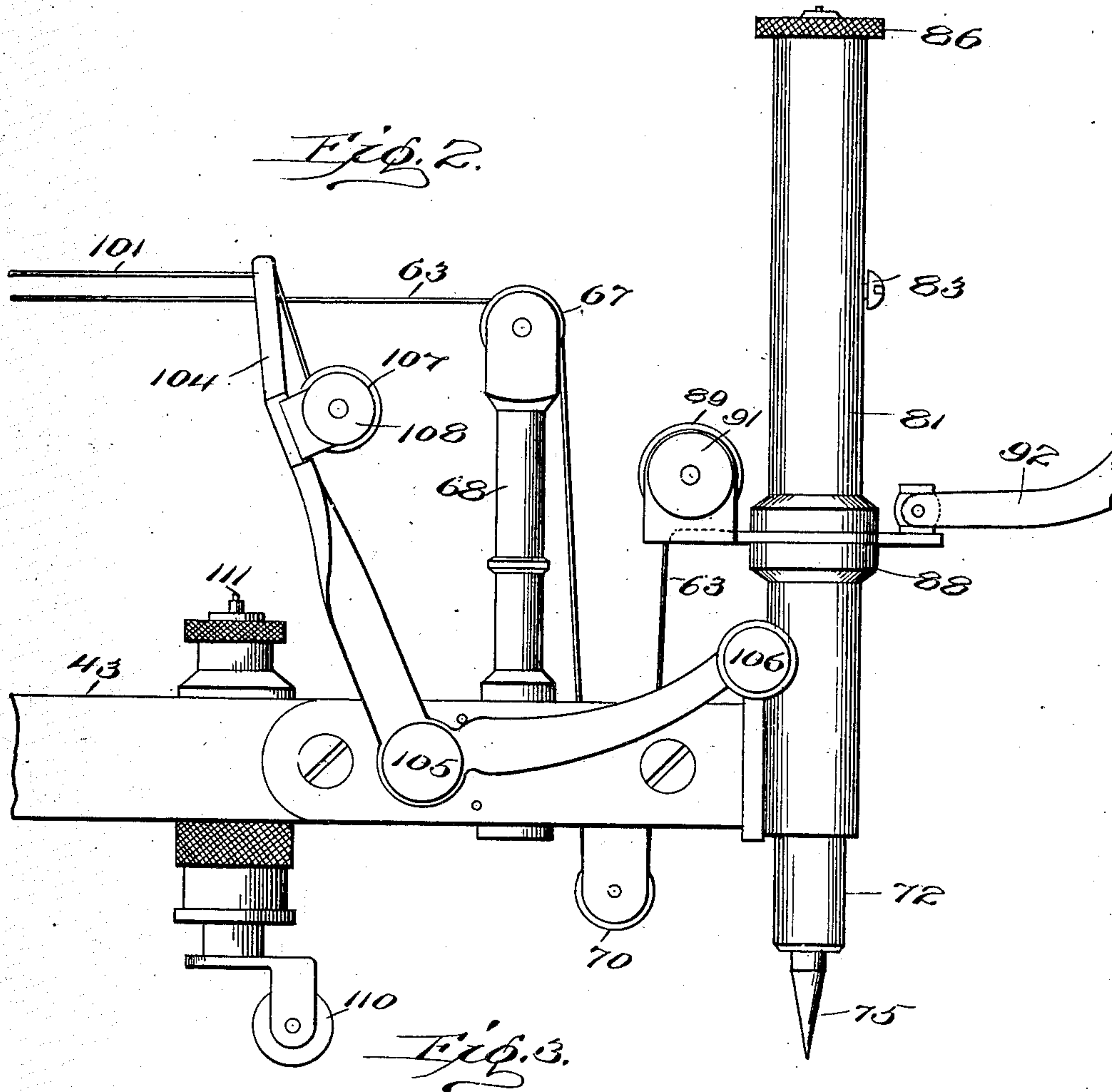


No. 860,562.

PATENTED JULY 16, 1907.

L. E. PADDACK.
DRAFTING INSTRUMENT.
APPLICATION FILED AUG. 27, 1906.

4 SHEETS--SHEET 2.



Inventor

Witnesses

J. M. Fowler Jr.
L. L. Merrill.

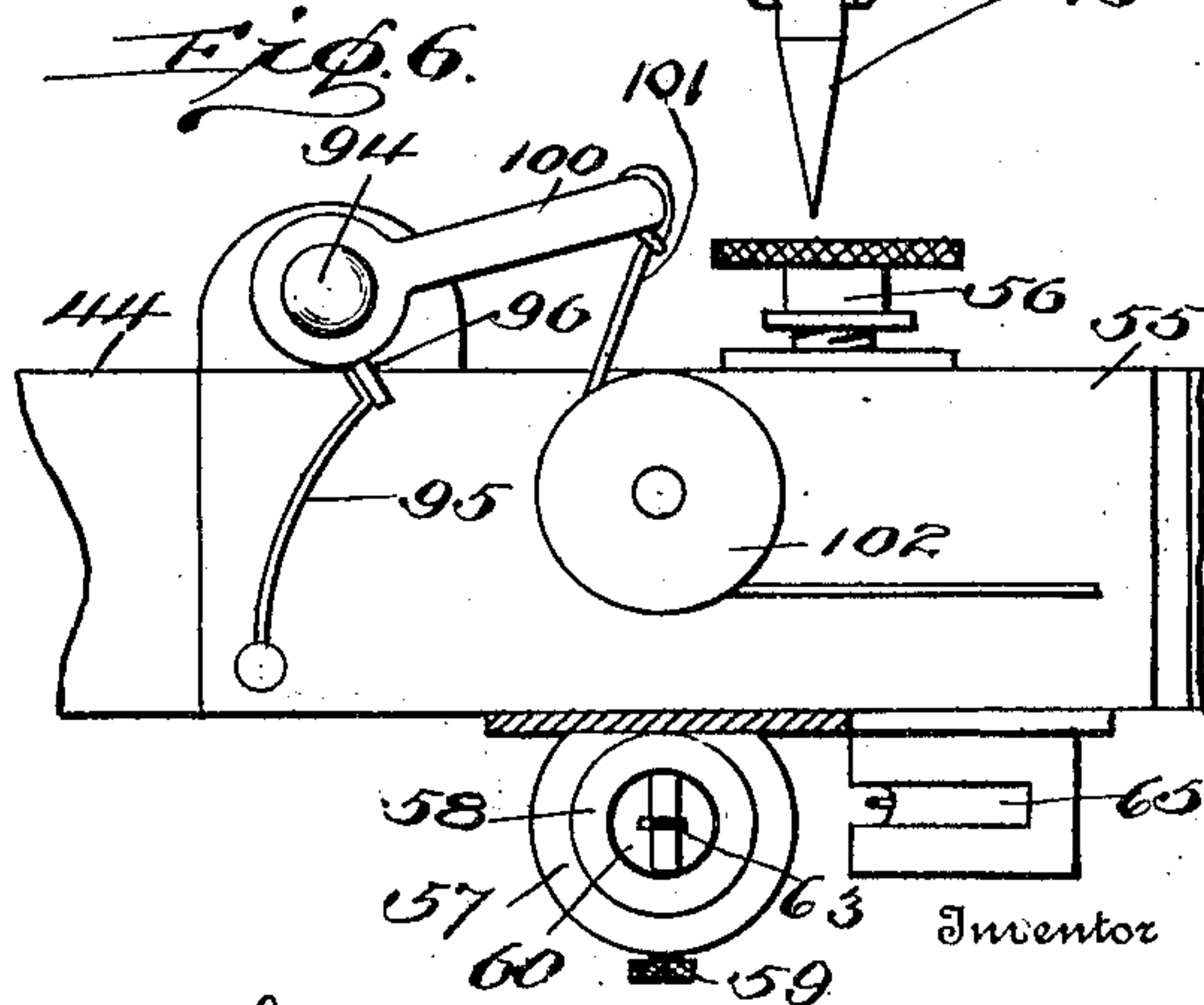
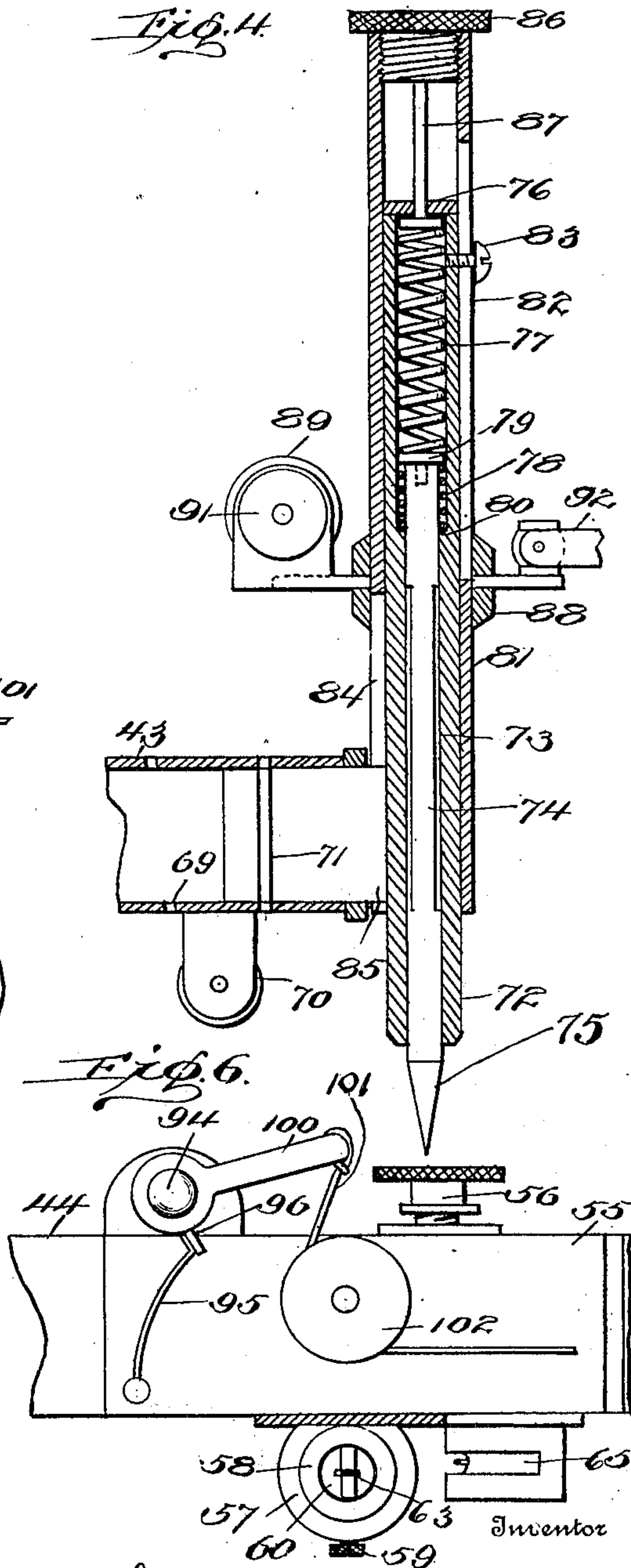
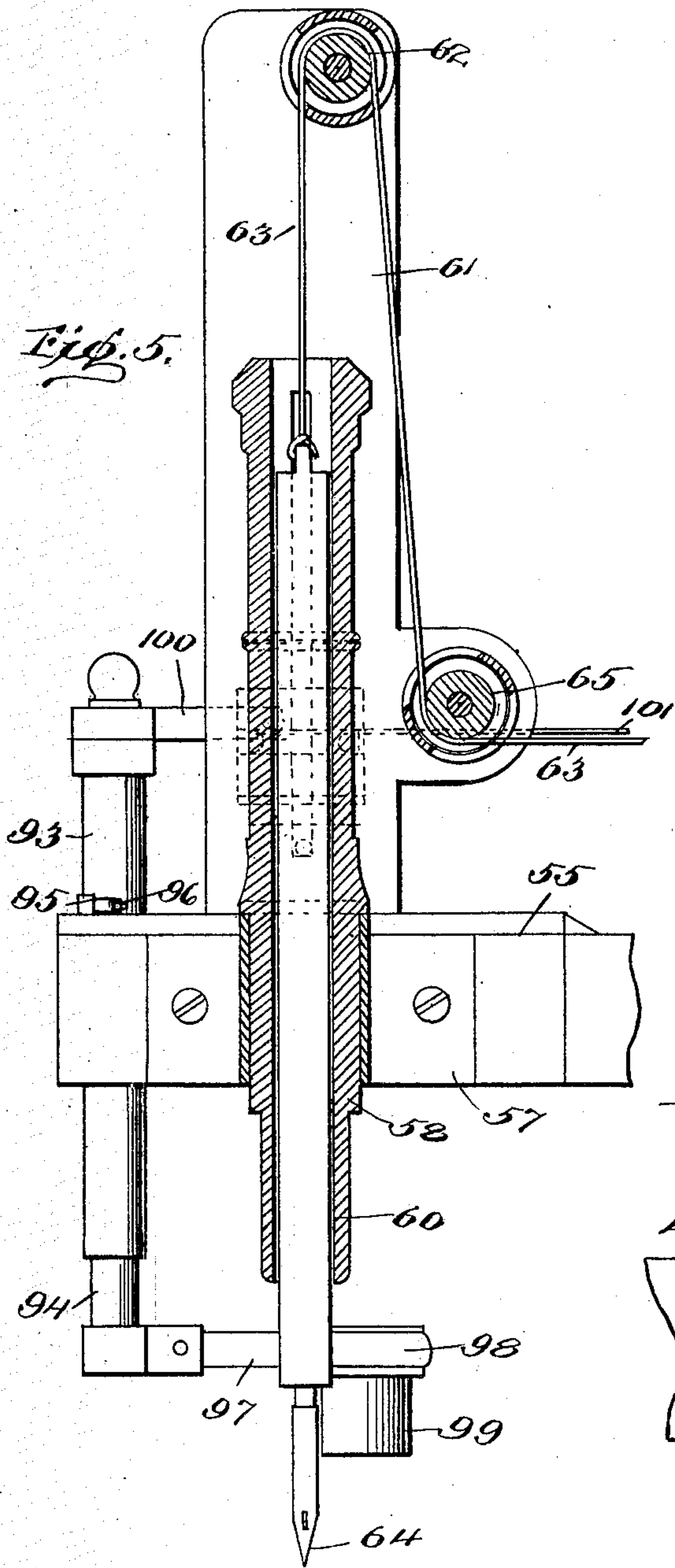
Lewis E. Paddock
By
Mason Fenwick & Lawrence
Attorneys

No. 860,562.

PATENTED JULY 16, 1907.

L. E. PADDACK.
DRAFTING INSTRUMENT.
APPLICATION FILED AUG. 27, 1906.

4 SHEETS—SHEET 3.



Witnesses
J. M. Fowler
L. E. Morrell

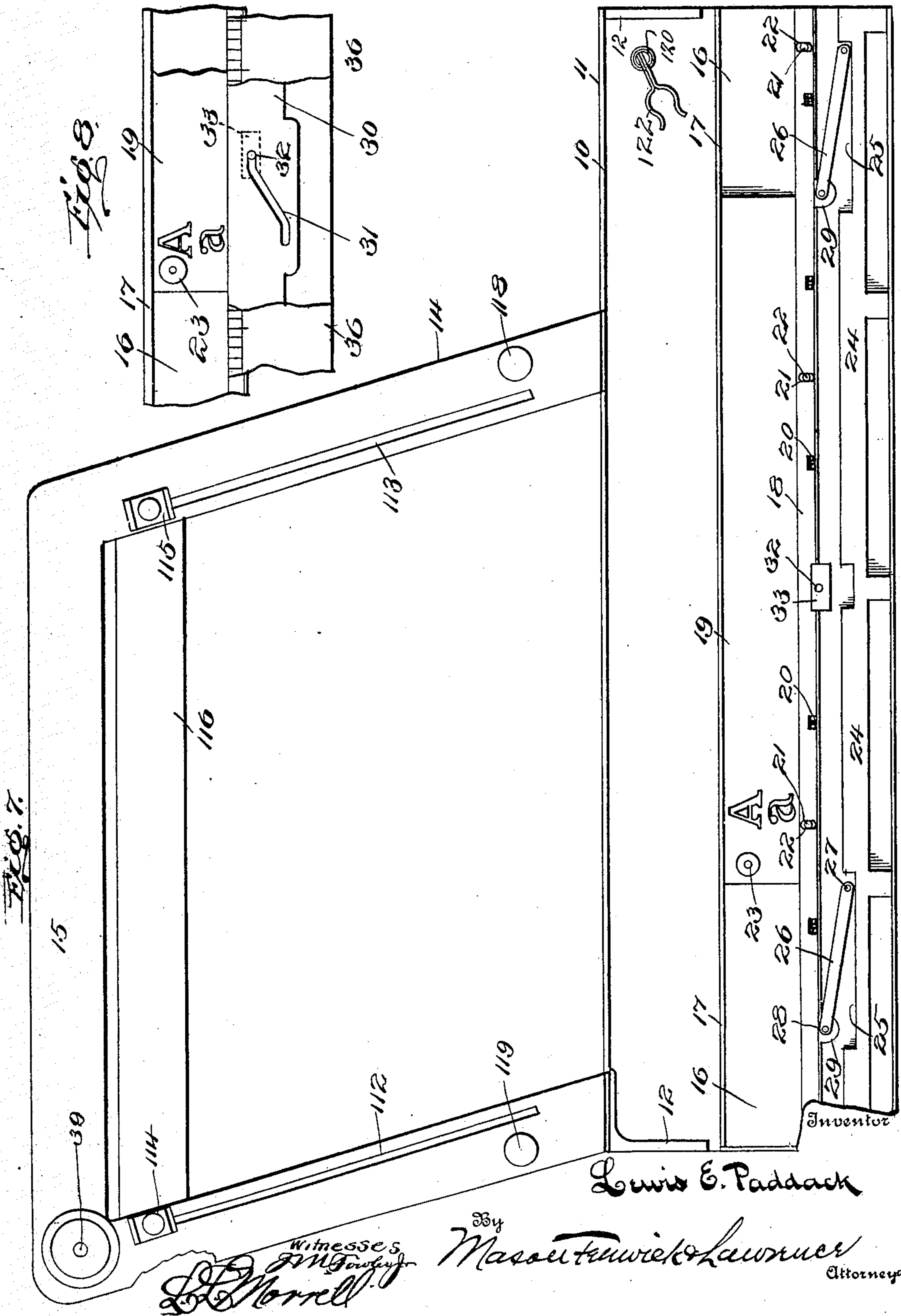
Louis E. Paddack
By *Mason F. Wickham*
Attorneys

No. 860,562.

PATENTED JULY 16, 1907.

L. E. PADDACK.
DRAFTING INSTRUMENT.
APPLICATION FILED AUG. 27, 1906.

4 SHEETS—SHEET 4.



UNITED STATES PATENT OFFICE.

LEWIS E. PADDACK, OF DULUTH, MINNESOTA.

DRAFTING INSTRUMENT.

No. 860,562.

Specification of Letters Patent.

Patented July 16, 1907.

Application filed August 27, 1906. Serial No. 332,285.

To all whom it may concern:

Be it known that I, LEWIS E. PADDACK, a citizen of the United States, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Drafting Instruments; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

10 This invention relates to drafting instruments, and especially to that class of instruments usually and commonly known as planographs.

15 An object of the invention is to provide a planograph embodying new and improved means for raising the pen synchronously with the tracing point.

20 A further object of the invention is to provide in a planograph means for manipulating an ink well associated with the pen such manipulation being accomplished by actuating means adjacent the tracing point and convenient to the hand of the operator.

25 A further object of the invention is to provide improved means for accommodating a metallic strip provided with characters which are to be transferred to the drawing being made.

30 A further object of the invention is to provide a planograph of general and improved construction.

35 A further object of the invention is to provide in a planograph an ink well mounted upon improved operating means adjacent the pen and in position to be swung beneath the pen to charge the pen with ink.

40 With these and other objects in view, the invention comprises certain other novel constructions, combinations and arrangements of parts, as will be hereinafter more fully described and claimed.

45 In the drawings:—Figure 1 is a perspective view of the planograph with portions broken away to more clearly illustrate the construction. Fig. 2 is an enlarged, detail view in side elevation of the tracing point, pen lifting device and associated parts. Fig. 3 is a top plan view of the several parts shown in Fig. 2. Fig. 4 is a vertical sectional view of the tracing point and the resilient member for holding the tracing point in intimate association with the character plate. Fig. 5 is a view in vertical section of the pen and its sleeve showing in side elevation the shaft upon which the ink well is carried and operated. Fig. 6 is a top plan view of the pen and ink well operating parts. Fig. 7 is a top plan view of the machine showing the cover plate and pivoted arms removed and showing the means for maintaining the matrix in parallelism. Fig. 8 is a detail view of a fragment of the cam plate.

50 Like characters of reference designate corresponding parts throughout the several views.

55 The planograph forming the subject-matter of this application comprises a base plate 10 having a flange 11 formed along the back of said plate and with por-

tions 12 extending downwardly for a short distance along the ends. Rigidly secured to the back edge of the base plate are frame pieces 13 and 14 disposed obliquely to the edge of the said plate and connected 60 at the back to an integral or rigid frame strip 15, in parallelism with the base plate. The base plate 10 and frame strips 13, 14 and 15 form the frame work of the device upon which is mounted the operating structure and the matrix. Upon the base plate is slidably 65 mounted the matrix carrier 16 having along one edge an intumed flange 17 and at its opposite end provided with a strip 18 corresponding substantially in thickness with the matrix 19 and forced against the edge of the said matrix by means of springs 20, lateral movement 70 of the said strip being permitted by reason of slots 21 formed transversely in the said strips and engaging upon studs 22 rigid with the matrix carrier so that with the matrix in position with the carrier, as shown in Figs. 1 and 7, the strip 18 bears against one entire longitudinal 75 edge of the matrix and holds the matrix in position within and under the intumed flange 17, but permitting the said matrix to be moved longitudinally of the carrier manually, a knob, as 23, being provided upon the matrix for that purpose. 80

Along the forward edge of the base plate is positioned a spacer 24 provided with cut-out recesses 25 positioned to accommodate links 26, pivoted as at 27, to the base plate and at 28 to ears 29 formed upon the edge of the matrix carrier and by which the matrix 85 carrier is held in parallelism with the base plate and movement in such parallelism permitted. Such transverse movement of the matrix carrier in parallelism is accomplished by means of a plate 30 provided with an inclined cam slot 31 engaging a pin 32 carried 90 upon an ear 33 at the edge of the matrix carrier and rigid therewith, the said plate 30 being provided with a knob 34 extending through a slot 35 in the cover member 36 and by a rivet 37 through a similar slot 38 95 in the opposite end of the said cover member 36, the said slots 35 and 38 extending in alinement with each other and in longitudinal parallelism with the edges of the base plate and the matrix and matrix carrier, and whereby the plate 30 is moved longitudinally relative to the base plate and cover member 36, thereby 100 moving the cam slot 31 in relation to the pin 32 to move the pin 32 and the matrix carrier laterally.

Upon the rear frame plate 15 adjacent its juncture with the side frame plate 13 is erected a spindle 39 by means of an upright 40 rigid with the said frame and 105 upon the said spindle 39 are pivoted the extremities of arms 41 and 42, the arm 41 extending normally substantially parallel with the strip 15 and the arm 42 extending normally substantially parallel with the frame piece 13. Upon the extremity of the arm 41 110 is pivoted an arm 43 which said arm 43 is maintained in movable parallelism with the arm 42 by means of a

cross bar 44 movable longitudinally of the said arms 42 and 43 by means of sleeves 45 and 46, slidably mounted upon the said arms respectively and retained in longitudinal adjustment by any approved means, as the thumb screws 47. The arms 42 and 43 are provided with scale marks, as indicated, to facilitate the proper adjustment of the sleeves 45 and 46 upon the said arms, whereby the said arms are moved synchronously upon the movement of either one. The cross bar 44 is pivoted upon the sleeves 45 and 46, as by the studs 48 and 49, carried by the said sleeves embraced by clips 50 and 51 rigidly secured to the opposite extremities of the said cross bar 44. The arms 41 and 42 are supported against sagging by means of guy wires 50 and 51 connected at one end to swivels, as at 52, mounted upon the upper extremity of the spindle 39 and connected at their lower ends by means of tension screws 53 and 54 with the said arms 41 and 42, respectively, adjacent their extremities. Upon the cross bar 44 is slidably mounted a sleeve 55 maintained in operative position upon the said bar in any approved manner, as by the thumb screw 56 inserted through the said sleeve and engaging the said bar and the position of the sleeve upon the bar being determined by means of graduations formed upon the said bar, as shown particularly in Fig. 1. Upon the sleeve 55 is rigidly secured a clip 57 through the bowed portion of which is inserted a pen barrel 58 being retained therein in any approved manner as by the thumb screw 59 and carrying the pen stock 60, slidable therein. Rigid with the pen barrel 58 is an upright 61 having adjacent its upper end a pulley 62 over which is extended a cord 63 connected with the upper end of the pen stock 60, and by which the said pen stock and its associated pen 64 are raised. The cord 63, after passing over the pulley 62, passes thence under the pulley 65, mounted upon the upright 61 and about a pulley 66 upon the spindle 49. From the pulley 66 the cord 63 passes over a pulley 67 carried upon an upright 68, adjacent the extremity of the arm 43 and passes thence downward through an opening 69 formed in the arm 43 and under a pulley 70 beneath the said arm and upwardly again through an opening 71.

Upon the extremity of arm 43 is rigidly mounted a sleeve 72 having a central bore 73, in which is slidably mounted a bar 74 provided at its lower end with a tracing point 75. The sleeve 72 is closed at its upper end by a plate 76 and the bar 74 is held adjacent the lower extremity of its movement by means of a spring 77 disposed within the opening 73 and bearing upon the upper end of the said bar, the said bar being somewhat cushioned by a weaker spring 78 disposed beneath the head 79 of the said bar and bearing against a shoulder 80, the tension of the said springs being equalized when the spring 77 is considerably expanded and the spring 78 considerably contracted. About the sleeve 72 is disposed a tube 81 slidable upon the said sleeve by reason of a slot 82 engaging upon a screw 83 rigidly secured in the sleeve 72 and by another slot 84 embracing the angular shank 85, by which the sleeve 72 is secured to the arm 43. The tube 81 is provided at its upper end with an adjusting screw 86 from which a wire or other supporting means, as 87, extends downwardly through the plate 76, and bears upon the top of the spring 77.

Rigidly secured to the tube 81 is a collar 88 provided at the rearward side with an adjusting device comprising a spool 89, upon which is wound the cord 63 and tension screws or nuts 90 and 91, by which rotary displacement of the spool is prevented. At the side opposite the adjustment means a handle 92 is pivotally secured to the sleeve 88, and by which the tube 81 is moved longitudinally upon the sleeve 72. Upon the sleeve 55 is also mounted a sleeve 93, through which extends a shaft 94 rotatable through a limited arc and held yieldingly in position by means of a spring 95 engaging a pintle 96, carried by the said shaft 94, and extending through a slot in the sleeve 93. The shaft 94 carries at its lower end an arm 97, provided at its end with resilient fingers 98 adapted to embrace an ink pot 99 and to hold the same in operative position. The shaft 94 is also provided at its upper end with an arm 100 disposed at an angle relative to the arm 97 and engaged by a cord 101, extending about a pulley 102 carried upon the sleeve 55. The cord 101, after passing about the pulley 102, extends to and passes about a pulley 103 carried upon the stud 49 and to and connected with a bell crank lever 104, pivoted, as at 105, adjacent the extremity of the arm 43, the other end of said bell crank lever being provided with a knob or other approved finger engaging means 106, adjacent the tracing point 75. Upon the lever 104 is mounted a cord adjusting device comprising a spool 107 about which the cord 101 is wound and tension screws 108 and 109 by which rotary displacement of the said spool is prevented.

The extremity of the arm 43 is carried and supported by means of a caster 110, swiveled adjacent the end thereof, as upon the stud 111 and moving upon the plain surface of the base plate 10. The frame pieces 13 and 14 are provided with longitudinal slots 112 and 113 respectively, within which are mounted slides 114 and 115, respectively, carrying a guide strip 116 preferably transparent and in position to engage and hold a sheet of paper, as 117, upon which the device is being operated. The said strips are also preferably provided with knobs, as 118 and 119, for lifting the device, the said device being substantially balanced at the point shown by the said knob. Adjacent the end of the base plate 10 is also preferably erected an upright 120 carrying an arm 121 provided at its extremity with resilient fingers 122 similar to the fingers 98 and for engaging and holding the sleeve 81 when the machine is hung upon the wall or similarly stored.

In operation a sheet of paper, as shown at 117, is placed and held in position by means of the guide strip 116, and a matrix 19 provided with the desired characters placed in the matrix carrier 16. The matrix, shown in the drawing, is provided with the letters of the alphabet, but it is to be understood that the said matrix may be and is in operation provided with any approved characters, symbols, words, designs, configurations or other desired characters, dependent upon the use to which the device is to be put at the time it is being operated. The matrix carrying the desired and approved characters or configurations are slidably inserted in the matrix carrier 16 and held against accidental displacement by means of the strip 18 and springs 20. The pen 64 is positioned at the point upon which it is desired to form the character and the matrix

slidably moved so that the character to be transferred is in proper position for engagement by the tracing point 75. The handle 92 is then grasped and the tube 81 moved downwardly by that means until the tension of the spring 77 overcomes the tension of the weaker spring 78, whereupon the rod 74 is moved downwardly until the point 75 is engaging within the depressed characters of the matrix. The movement of the tube 81 downwardly moves also the spool upon which is carried the cord 63, which releases the tension upon the said cord and permits the pen stock 60 to move downwardly by gravity in the sleeve 58, until the pen 64 is in contact with the sheet. The tracing point 75 is then, while in contact with the character, moved about said character and the character is reproduced by the pen 64 in such proportion as has been predetermined by the position of the cross bar 44, upon the arms 42 and 43. When another character is to be formed the tube 81 is raised by the spring 77 upon the release of the handle 92 and tension applied thereby to the cord 63 synchronously raises the pen stock 60 and pen 64 out of contact with the paper 117. The matrix 19 is then moved until another character is brought in juxtaposition with the tracing point 75, whereupon the operation is repeated. Before lowering the pen into contact with the paper the pen is inked by moving the bell crank lever 104, thereby exerting tension upon the cord 101, and rotatably moving the shaft 93 to move the ink pot 99 beneath the pen 64. The pen, is then, by means of the handle 92 lowered into the ink pot 99, and charged, and after being so charged is raised and the ink pot moved by releasing the bell crank lever 104.

The matrix 19 will generally be provided with more than one row of characters and the several rows are brought into position for operation by sliding the plate 30 longitudinally of the base plate 10 by means of the knob 34, upon which move the cam slot 31 engaging the pin 32 moves the matrix carrier laterally and therewith the matrix 19 carried thereby.

40 What I claim is:—

1. In a device of the class described, a base frame, arms pivoted upon the said frame, a bar connecting the said arms and whereby the said arms are held in parallelism and to move synchronously in a horizontal plane, a pen mounted upon the said bar and to move slidably longitudinally thereof and to move slidably vertically, a tracing point carried by one of said arms and movable vertically thereupon, and means connecting the tracing point and pen whereby the pen and point move vertically in synchronism.

2. In a device of the class described, a base frame, arms pivoted upon the said frame, a pen carried by said arms and movable vertically thereupon, means carried by said arms for moving the said pen vertically, an ink pot carried by the said arm and movable into the vertical path of movement of the pen, and means carried upon one of the arms for moving the ink pot.

3. In a device of the class described, a base frame, arms pivoted upon the said frame, a bar connecting the said arms and whereby the arms are arranged to move synchronously in a horizontal plane, a sleeve carried upon said bar, a pen mounted upon said sleeve and movable therewith, and vertically independent thereof, an ink pot carried by said sleeve and movable into the vertical path of movement of the said pen, means carried by one of said arms for moving the pen vertically, and means carried by said arm for moving the said ink pot.

4. In a device of the class described, a base frame, arms pivoted upon the said frame, a bar connecting the said arms and arranged to permit a movement of the said arm synchronously in a horizontal plane, means whereby

the bar may be adjustably moved longitudinally of the arms, a sleeve mounted upon and movable longitudinally of the said bar, a pen carried by said sleeve and movable therewith, and vertically independently thereof, a tracing point carried by one of said arms and movable vertically independently thereof, means connecting the tracing point and pen whereby the said pen and point move vertically in synchronism, and means for adjusting the connecting means.

5. In a device of the class described, a base frame, arms pivotally mounted upon said frame, a bar connecting said arms and whereby the said arms are arranged to move synchronously in a horizontal plane, a sleeve carried by said bar and movable longitudinally thereupon, a pen carried by said sleeve and movable therewith and vertically independently thereof, an ink pot carried by said sleeve, and movable into the vertical path of movement of the pen, means carried by one of said arms for moving the pen vertically, a lever carried by said arm, means connecting the lever and the ink pot whereby the movement of the lever moves the ink pot, and means carried by said lever for adjusting the connecting means.

6. In a device of the class described, a base plate, a tracing point arranged to move in juxtaposition to said plate, a matrix slidably mounted upon said base plate, and slidably longitudinally thereof, and means carried by said base plate for moving the said matrix laterally.

7. In a device of the class described, a base plate, a tracing point arranged to move in juxtaposition to said plate, a matrix carrier mounted upon said plate, means for moving the said matrix carrier laterally of and in parallelism with the said base plate, and a matrix carried by said matrix carrier and movable longitudinally thereof.

8. In a device of the class described, a base plate, arms pivotally connected with said base plate, a tracing point carried by one of said arms and movable in juxtaposition to said plate, a matrix carrier slidably mounted upon the said base plate, means for moving the matrix carrier laterally of and in parallelism with the base plate, a matrix mounted in and movable slidably longitudinally of the matrix carrier, and clamping means carried by said matrix carrier and arranged to engage the matrix.

9. In a device of the class described, a base plate, an arm pivotally associated with the said base plate, a tracing point carried by the said arm and movable thereupon in juxtaposition to the said base plate, a matrix carrier slidably mounted upon the said base plate, and connected therewith by a plurality of links, a plate mounted upon and slidably longitudinally of the base plate and provided with a cam, and means carried by the matrix carrier for engaging the said cam.

10. In a device of the class described, a base plate a matrix carrier slidably mounted upon said base plate, links connecting the said base plate and matrix carrier whereby the said matrix carrier is retained in parallelism with the base plate, a plate slidably mounted upon the said base plate and movable longitudinally thereof, and cam connections between said movable plate and the matrix carrier whereby a longitudinal movement of the said movable plate moves the matrix carrier laterally.

11. In a device of the class described, a matrix carrier comprising a plate having an intumed flange arranged to engage one side of the matrix, a clamping bar mounted upon the matrix carrier at the side opposite the said flange and movable laterally thereupon, and resilient members disposed to hold the said clamping member at the outer extreme of its movement.

12. In a device of the character described, a matrix carrier comprising a plate having one edge turned inwardly to produce an intumed flange, and with a flange formed along the edge opposite, a clamping bar carried by said matrix carrier in parallelism with the edges thereof, resilient members disposed between the said clamping bar and the flange of the carrier whereby the bar is held at the outer extreme of its movement and in position to yieldingly engage the edge of a matrix.

13. In a device of the character described, a base plate, a matrix carrier mounted slidably thereupon, and comprising a plate having an intumed flange at one side, and an upturned flange at the opposite side, a clamping bar disposed adjacent the upturned flange, resilient members

disposed between the upturned flange and the clamping
bar whereby the clamping bar is normally held at the
outer extreme of its movement, links connecting the ma-
trix carrier and the base plate whereby the matrix carrier
5 is held movably in parallelism with the base plate, a plate
slidably mounted upon the base plate, and cam connection
between the said movable plate and the matrix carrier
whereby a longitudinal movement of the movable plate
moves the matrix carrier laterally.
10 14. In a device of the class described, a base frame,
arms pivoted upon the said frame, and movable in a hori-
zontal plane, a sleeve mounted upon the extremity of one
of said arms and disposed vertically, a tracing point slid-

ably mounted in the said sleeve, a tube embracing the said
sleeve and arranged to control the tracing point, a bar 15
pivotally connecting the arms, a pen mounted upon said
bar and movable vertically, pulleys mounted upon said
bar and one of said arms, and a cord connecting the tube
and pen whereby a vertical movement of the tube moves
the pen synchronously. 20

In testimony whereof I affix my signature in presence of
two witnesses.

LEWIS E. PADDACK.

Witnesses:

HENRY NOLTE,
E. C. LETTE.