

(No Model.)

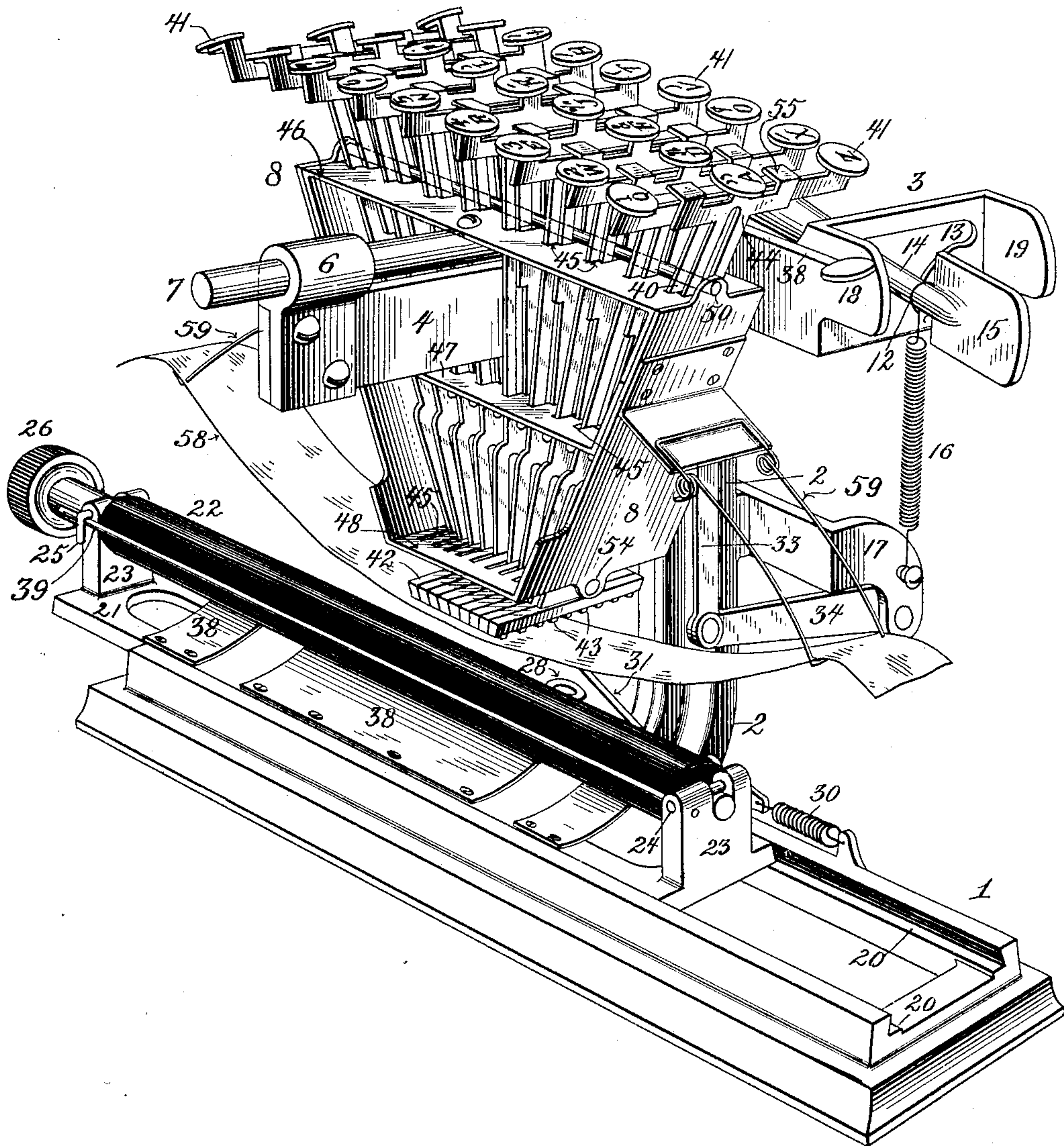
4 Sheets—Sheet 1.

L. S. BURRIDGE.
TYPE WRITING MACHINE.

No. 594,777.

Patented Nov. 30, 1897.

Fig. 1.



ATTEST
A. C. Burdine
D. E. Burdine

INVENTOR:
Lee S. Burridge,
BY *Dodges & Co.*
ATTYS.

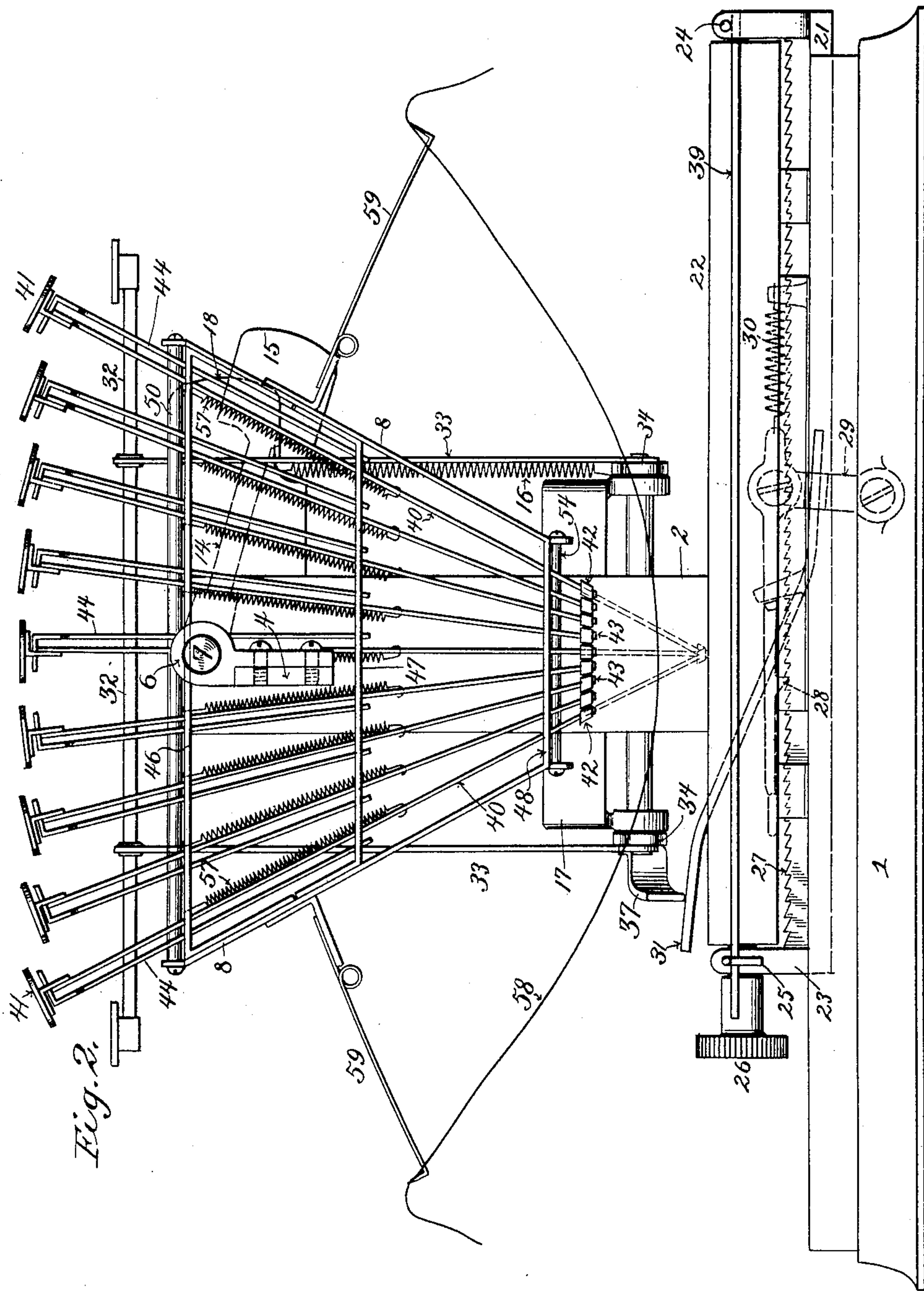
(No Model.)

4 Sheets—Sheet 2.

L. S. BURRIDGE.
TYPE WRITING MACHINE.

No. 594,777.

Patented Nov. 30, 1897.



ATTEST,
W. C. Burdine.
D. E. Burdine

INVENTOR:
Lee S. Burridge,
BY Dodger Lane,
ATTYS.

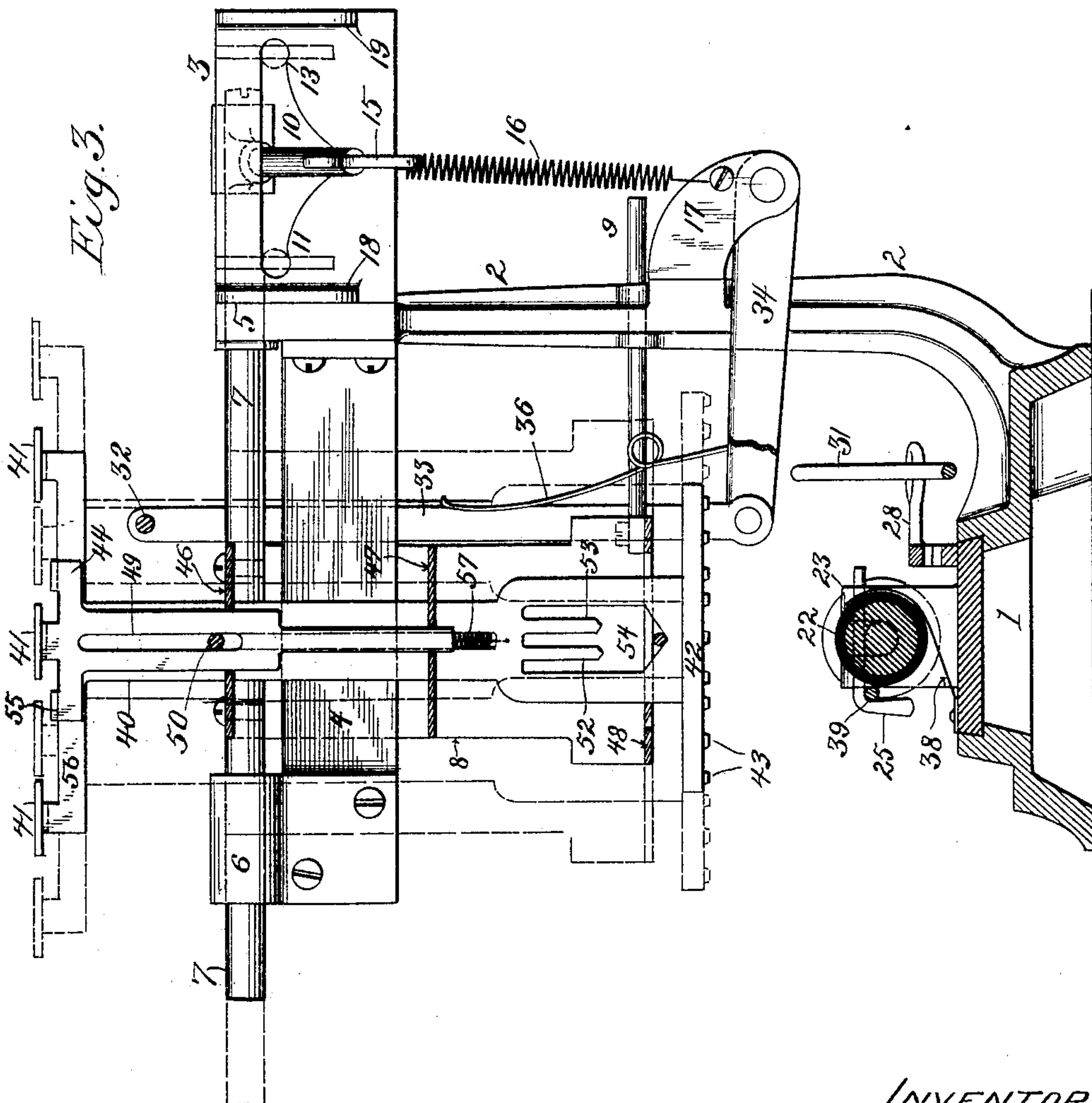
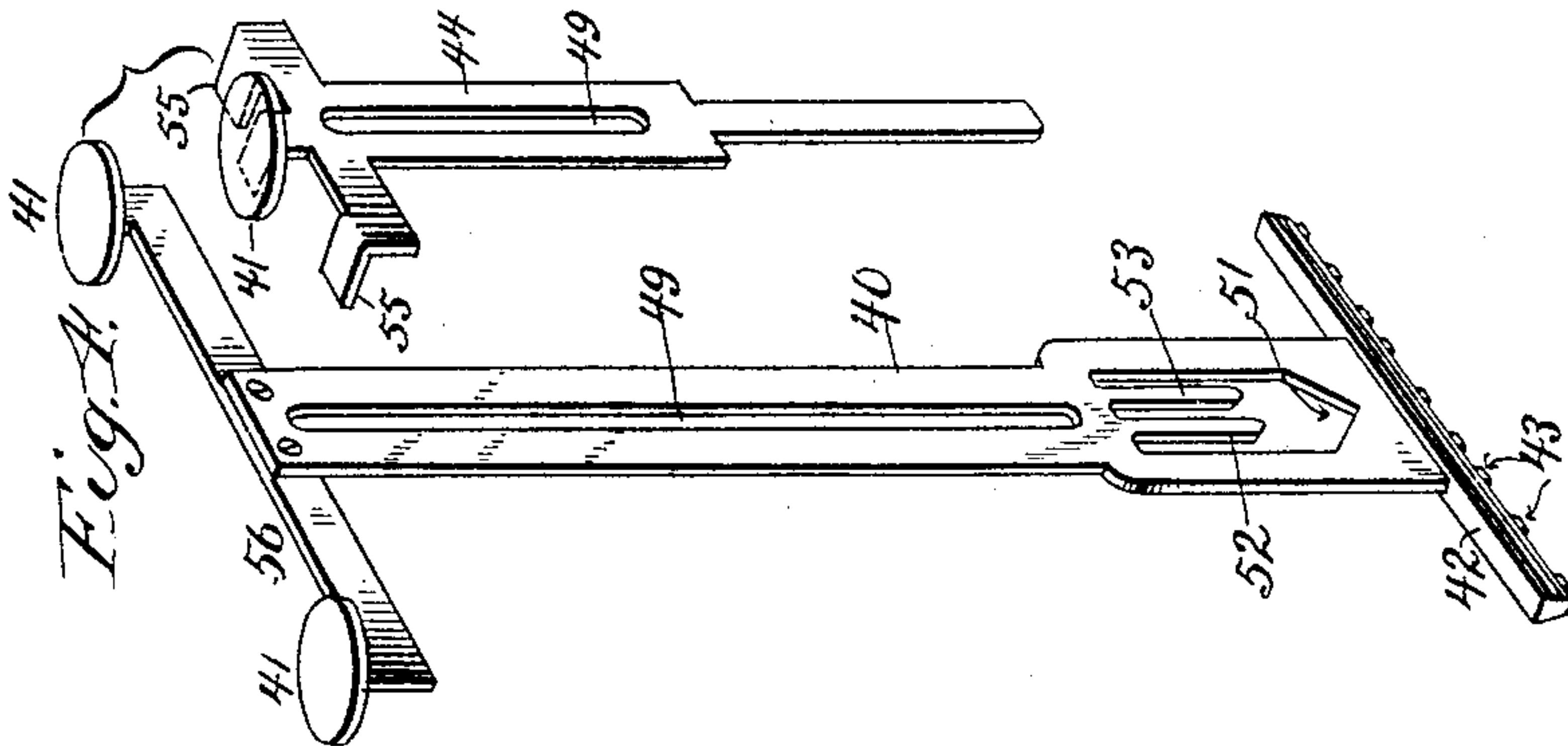
(No Model.)

4 Sheets—Sheet 3.

L. S. BURRIDGE.
TYPE WRITING MACHINE.

No. 594,777.

Patented Nov. 30, 1897.



ATTEST
W. B. Burdine.
D. E. Burdine.

INVENTOR:
Lee S. Burridge,
BY *Nodgett & Sons*,
ATTY'S

L. S. BURRIDGE.
TYPE WRITING MACHINE.

No. 594,777.

Patented Nov. 30, 1897.

Fig. 7.

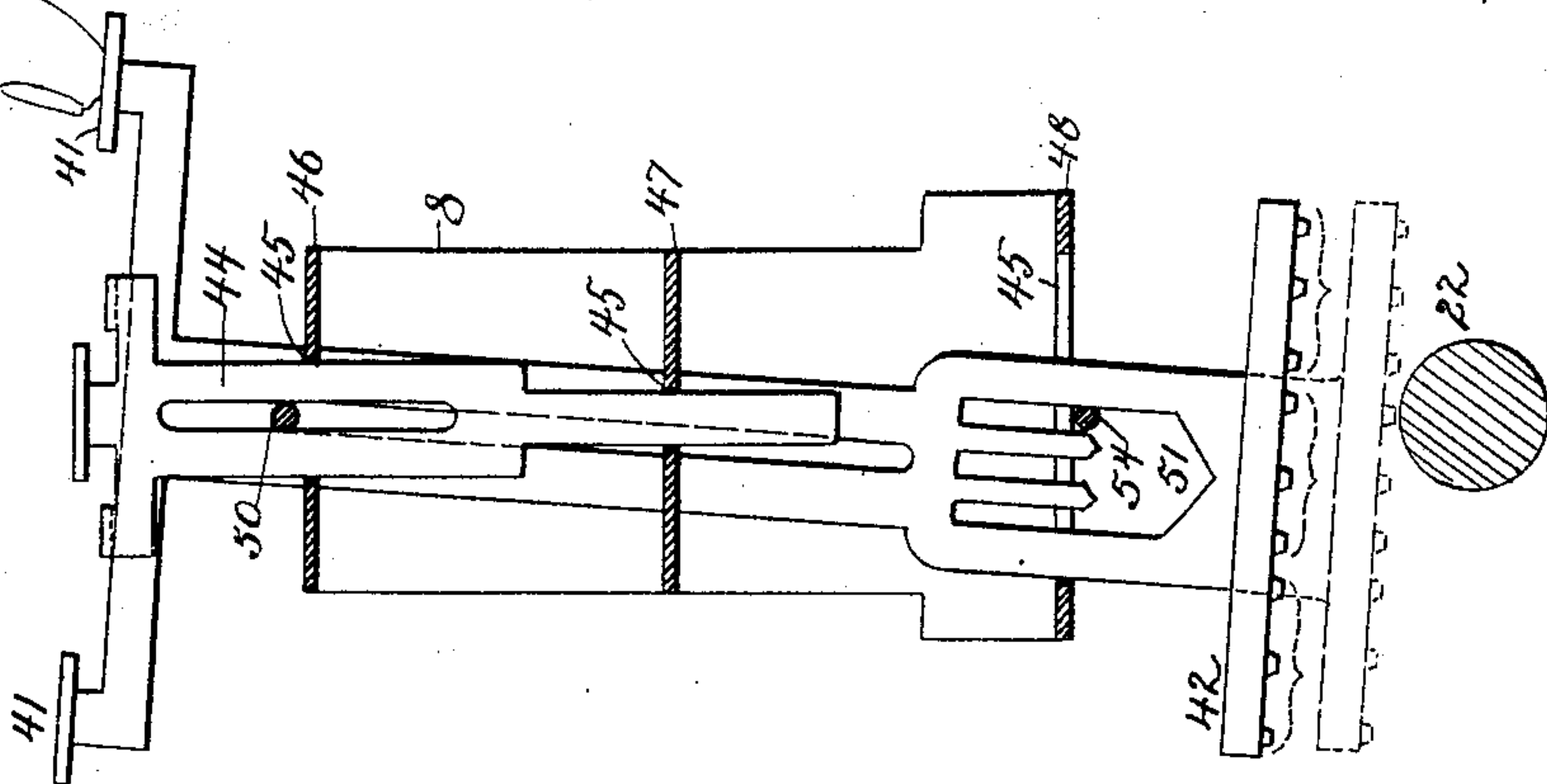


Fig. 6.

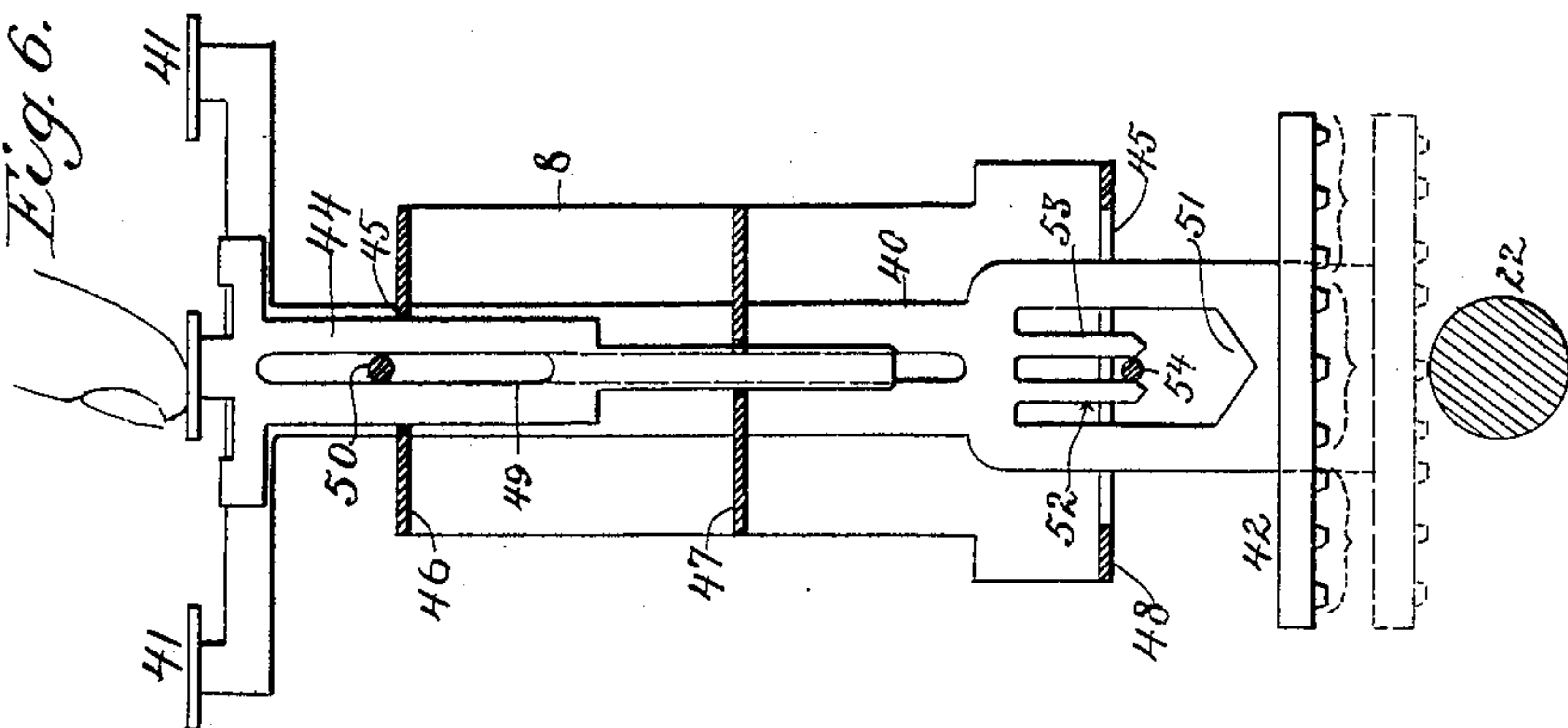
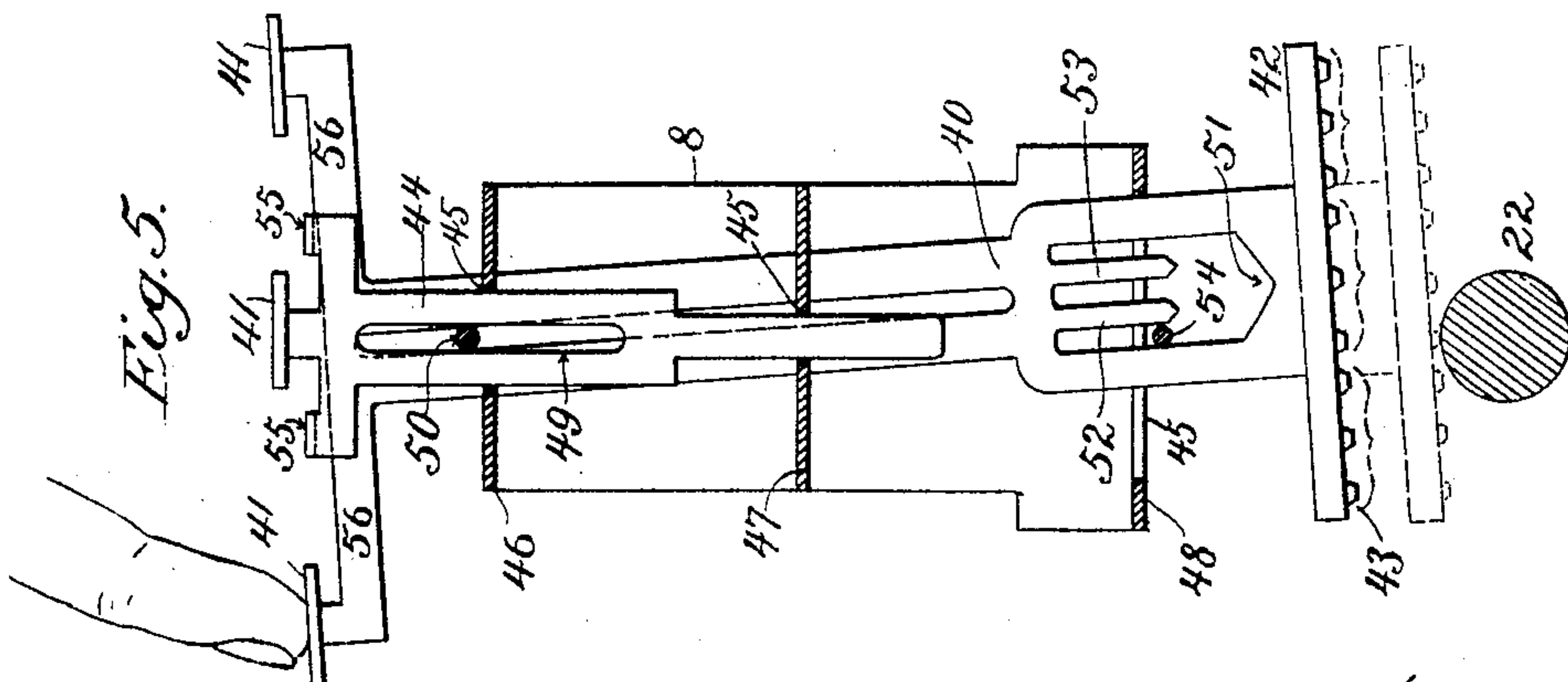


Fig. 5.



ATTEST;
C. C. Burdine.
D. E. Burdine.

INVENTOR:
Lee S. Burridge,
BY *Dodgetts* ATTYS.

UNITED STATES PATENT OFFICE.

LEE S. BURRIDGE, OF NEW YORK, N. Y., ASSIGNOR TO THE CENTURY MACHINE COMPANY, OF SAME PLACE.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 594,777, dated November 30, 1897.

Application filed March 10, 1897. Serial No. 626,872. (No model.)

To all whom it may concern:

Be it known that I, LEE S. BURRIDGE, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention pertains to type-writing machines; and it consists in various novel features, details, and combinations hereinafter set forth, prominent among which is a type-carrying bar, slide, or member provided with a plurality of printing-characters and with a plurality of finger keys or buttons, pressure upon any one of which keys or buttons shall cause the corresponding character to produce its proper impression at the printing-point.

In the drawings herewith, Figure 1 is a perspective view of a machine embodying my invention; Fig. 2, a front elevation of the machine; Fig. 3, a vertical sectional view at right angles to the axis of the paper-roll or platen; Fig. 4, a perspective view showing the two members of a compound key bar or slide separated from each other to make more clear their construction; Figs. 5, 6, and 7, elevations or diagrammatic views illustrating the operation of the printing mechanism.

The purpose of this invention is to produce a machine the keyboard of which may be manipulated by the fingers of both hands or which shall not require the employment of one hand in shifting or setting the parts preparatory to actuation by the other hand. In other words, the object is to produce a simple, cheap, and efficient "two-hand" machine having a large number of characters and wide range of usefulness, yet extremely cheap and simple in construction. To this end I adopt the construction shown in the accompanying drawings, in which--

1 indicates a base or support which may be conveniently formed of cast-iron and from which rises a post or standard 2, having at its upper end forwardly and rearwardly projecting arms 3 and 4.

Mounted and arranged to slide freely in boxes or bearings 5 and 6, the former at the upper end of post or standard 2 and the latter at the outer end of arm 4, is a cylindrical

rod 7, upon which is secured a frame 8, carrying the printing mechanism proper—that is to say, the type bars, slides, or members and the keyboard.

To prevent oscillation of the frame 8, it is provided at its lower part with a horizontally-projecting rod 9, which passes through a hole or opening in the post or standard 2, as indicated in Fig. 3. The forwardly-extending arm 3 of the post or standard 2 is first extended in the direction of the axis of the paper-roll and is then bent at right angles thereto or into a plane parallel with that of the rod 7, and that portion of the arm thus parallel with the rod 7 is provided with an opening 10, having three depressions 11, 12, and 13, one at either end and one at its mid-length.

At the forward end of the rod or bar 7 is a lever 14, one end of which is sleeved or swiveled upon the end of the rod, so as to be free to swing about the axis of said rod, while the other end is fashioned into a thumb-piece 15, as indicated in Figs. 1, 2, and 3. The free or outer end of lever 14 is normally drawn down and caused to retain its position in one or other of the seats or notches 11, 12, 13 by a spring 16, which is here represented as extending from the outer end of the lever downward to a bracket 17, projecting from the post or standard 2.

Projecting from the arm 3 of the frame in planes parallel with the finger or thumb piece 15 are two ears 18 and 19, one or the other of which is grasped by the operator in connection with the finger or thumb piece 15 when it is desired to move the latter along the opening 10 of the arm 3 in one or the other direction. The frame 8 being directly attached to and carried by the rod or bar 7 of course moves therewith, and consequently when the lever 14 is moved forward or backward it carries with it the rod 7 and frame 8, with the entire printing mechanism of the latter.

Mounted and arranged to slide within the base 1, which is provided with guiding-ways 20, is a paper-carriage 21, in which is journaled a platen or paper-roll 22. This may be a simple cylinder, of wood or other suitable material, faced or covered with rubber or similar material and provided either with

a continuous axle passing longitudinally through it or with gudgeons, as preferred. The journals of the platen-cylinder are carried in seats or bearings in two uprights 23, rising from the paper-carriage 21, and are held therein by small rods or pins 24 and 25, passing through horizontal holes or openings in the standards above the journals. The platen-cylinder is furnished with a milled wheel or button 26 at one end by which to rotate the platen and to advance the paper for line-spacing or to turn the same backward or forward for the purpose of reading or correcting matter already printed.

The carriage 21 is provided with a longitudinal toothed rack 27, with which engages a tooth of a gravitating dog or pawl 28, pivotally connected with the upper end of a swinging lever 29, which latter is pivoted at its lower end to base 1 and is drawn in the direction of the travel of the carriage by a spring 30, one end of which is attached to said lever and the other end of which is attached to base 1.

A rod or wire 31 projects from lever 29 outward and upward in the vertical plane of said lever and serves by its depression to rock or swing the lever upon its pivot in a direction opposite to that in which it is drawn by spring 30. In thus swinging backward the lever 29 moves pawl or dog 28 lengthwise, causing its tooth to ride back over a tooth of the rack-bar and to engage with the upright rear face thereof preparatory to a forward movement of the carriage by the contraction of spring 30 upon release of rod or lever 31.

The purpose of the movements just noted is of course to advance the paper-carriage for letter-spacing, and as this must take place after each letter impression and after every word it is necessary to provide means whereby said movements shall be occasioned by or through the printing-stroke or pressure upon each finger key or button. To this end there is provided a horizontal rod or bar 32, which is carried by upright bars 33, pivotally connected with the free ends of two supporting arms or levers 34, the opposite ends of which are similarly connected with the arms or branches of bracket 17, as shown in Figs. 1, 2, and 3. Spring 30 serves to maintain the jointed frame thus produced in an elevated position and to hold the rod 32 normally in the path of the printing keys or members, so that each shall bear upon said rod and depress the frame when a printing-stroke is given.

For the purpose of keeping the swinging frame always close to or in contact with frame 8 of the printing mechanism as the latter is shifted back and forth a light spring 36, carried by one of the arms 34, is arranged to bear against one of the arms 33, as shown in Fig. 3.

As shown in Fig. 2, one of the arms or levers 34 is furnished with a finger 37, which, as the rod or bar 32, and consequently the

jointed frame, is depressed, bears upon the outer end of lever or rod 31 and carries the latter down before it, thus effecting the backward movement of pawl or dog 28, as above explained, preparatory to a forward movement of the dog and carriage through the action of spring 30 and lever 29.

The free end of the dog, lever, or bar 28 is fashioned into a loop or finger-piece, as shown in Figs. 1, 2, and 3, to permit it to be readily lifted preparatory to moving the carriage back by hand when desired.

Spring plates or fingers 38 are attached at one edge to the carriage-frame and curved upward to bear against the platen and partially encircle the same for the purpose of guiding the paper and of holding it in frictional feeding contact therewith, as shown in Figs. 1, 2, and 3. For the purpose of guiding the paper and causing it to fall backward over the platen as the printing progresses and the paper is advanced for line-spacing I provide a spring rod or wire 39, one end of which is firmly seated in one of the uprights 23 of the carriage, while the other end is left free to be sprung beneath the depending or hook-like end of the fastening-pin 25 of the other upright.

The construction of the carriage and the mechanism for advancing the same for line-spacing is essentially the same as in machines heretofore put upon the market, but is shown and described for the purpose of presenting information sufficient for the construction and use of the invention in a complete working form.

The construction and arrangement of the universal bar or the jointed frame 32 33 34 is, however, novel, as is also its combination with the spacing mechanism of the carriage.

The printing mechanism proper comprises a series of slides, bars, or plates 40, each provided at the upper or outer end with a plurality of finger keys or buttons 41 and at the lower or inner end with a bar or head 42, carrying a plurality of printing-characters 43. In the form represented in the drawings each slide or plate is provided at its outer end with two finger keys or buttons 41, rigidly attached thereto, and a third finger key or button is carried by a supplemental slide 44. (Best shown in Fig. 4.) Each bar or slide 40 is arranged to move through slots or guideways 45, formed in the plates 46 47 48 of the frame 8, which slots are made longer than the width of the bars in order to permit said bars to be swung edgewise for a purpose presently explained. Each bar or slide 40 and each supplemental bar or slide 44 is provided with a longitudinal slot 49, which, when the parts are assembled, come in alinement, so that a rod 50 may pass through them all, as indicated in Figs. 1, 2, 3, 5, 6, and 7. The purpose of the rod 50 is twofold: It guides the main and supplemental slides and prevents edgewise movement at the point where the slides straddle said rod, and it also serves as a pivot-rod upon or

about which the main bars or slides may be swung edgewise.

The main slides or bars 40 are each formed with an opening 51 in their lower or inner ends, which openings are wide and unobstructed at the lower or inner part, but are divided into three narrower openings at the upper part by two tongues 52 and 53, as shown in Figs. 3, 4, 5, 6, and 7. Passing through the opening 51 of all the slides or bars and forming a stop to limit the rise thereof is a rod 54, which may be conveniently located just below the lower plate 48 of frame 8, though this precise location is not essential. The lower end of each opening 51 is made of V shape, so that when the bars or slides are raised to their highest point each shall be drawn and held to a medial or central position by the walls of said V-shaped portion bearing upon the rod 54 and guiding the bar to place.

As shown in the several figures, but particularly in Figs. 1 to 4, the supplemental slides 44 are each provided with two horizontally-extending lips or lugs 55, which overhang and bear upon the horizontal bar 56 of the main slide 40, with which said supplemental slide is combined and coöperates. Each supplemental bar 44 has its lower end guided in a slot or opening in the intermediate plate or bar 47 of the frame 8, so that it may move only in a straight line, but by reason of the overhanging lips 55 the supplemental bar is, when depressed, caused to carry before it the main bar or slide 40, with which it is associated. Each main bar or slot 40 is provided with a light and highly elastic retracting-spring 57, (shown in Fig. 2,) which tends to keep said slide and its companion supplemental slide in its elevated position or at its outward adjustment. As shown in Figs. 1 and 2, the several main slides are arranged in lines radiating from a common center, which center is the printing-point or common point of impingement of the characters carried by said bars.

The purpose and effect of the particular construction and arrangement of type-bars above described may best be explained in connection with Figs. 5, 6, and 7. In these figures each type-bar head 42 is represented as furnished with nine printing-characters 43, which characters are arranged in three groups of three each. Each group is intended to operate or to print when the platen is in one position, and the different groups are brought into play or types of different groups are caused to print by moving the frame 8 to one or another of its three positions through the aid of lever 14, as hereinbefore explained.

Referring now to Figs. 5, 6, and 7, and considering only the middle group of three characters, it will be seen that if the middle finger key or button 41 be depressed, as in Fig. 6, the main and supplemental bar will descend together and in a straight or vertical line, the tongues 52 and 53 passing on opposite sides

of the guide-rod 54 and insuring a straight-line movement of the bar 40. In this way the central character of the middle group will be caused to print, as indicated by dotted lines in said Fig. 6. If, however, the left-hand button 41 be depressed, as in Fig. 5, the bar 40 will be caused to swing about the rod 50 as a fulcrum, causing the lower or inner end of the bar 40 to swing edgewise until the outer wall of the opening 51 bears against the rod 54, whereupon the continuing pressure of the finger upon the button 41 will cause the downward or inward movement of the slide 40 and the printing of the left-hand character of the middle group of characters, as shown by dotted lines in Fig. 5.

It will be seen that the finger keys or buttons 41 of the main bar are so far to one or the other side of the guide or fulcrum rod 50 that being sustained or upheld by the spring 57 each bar will readily tip or swing about said rod before descending appreciably. When the bar has swung as far as the walls of the opening 51 will permit, the entire finger-pressure becomes effective to move the slide longitudinally and such motion at once begins. It will thus be seen that the first effect of pressure upon either finger key or button of the main bar is to produce the lateral or edgewise swinging of the bar, and that immediately after this effect is attained and in reality by a continuing action or movement the bar or slide is moved longitudinally. The effect of pressure upon the right-hand key or button of the bar 40 is of course to swing the bar in the opposite direction from that indicated in Fig. 5, or, in other words, to swing the lower end of the bar to the left and to cause the printing of the right-hand character of the middle group, as indicated by dotted lines in Fig. 7.

It will be readily understood without further explanation that if the frame 8 be moved to the right with reference to Figs. 5, 6, and 7 the left-hand group of printing-characters will be brought into action or play in precisely the same manner as one or another of the characters of the middle group is caused to print when the frame 8 is in the medial position indicated in Figs. 5, 6, and 7. Similarly, if the frame 8 be moved to the left with reference to Figs. 5, 6, and 7, the right-hand group of three characters will be brought into play and one or another of said characters will be caused to print, according to which of the several keys 41 of the main and supplemental bar 40 be struck by the finger. It will thus be seen that with but nine type-carrying slides or bars I am enabled to print eighty-one characters, while the machine as a whole is exceedingly simple and compact. It will be apparent, however, that the shifting of the printing mechanism may be dispensed with and the number of printing-characters reduced or the number of slides increased for the purpose of securing the desired number of printing-characters without bodily move-

ment of the printing mechanism. It will likewise be seen that instead of shifting the printing mechanism the carriage may be shifted laterally, as is now done in machines of well-known make.

The parts composing the machine may for the most part be stamped from sheet metal and thus produced at very small expense. The frame 8 may be conveniently composed of sheets or strips of steel or other suitable material stamped or punched and bent to form, as indicated, and even the base 1 and standard 2 may be similarly formed, though it is believed best to make these of cast metal, together with the arms 3 and 4. The bracket or hanger 17 may be either cast or formed of sheet metal or the several parts may be forged.

An inking-ribbon will be provided and may be supported and fed or advanced in any convenient way or by any usual mechanism adapted to this end. In the drawings I have represented a length of ribbon 58, carried by two pairs of spring-arms 59, the ends of which arms are bent upward to form hooks or pins by which the ribbon may be engaged. The ribbon is permitted to sag or hang in a loop or bow beneath the line of type-heads 42, as shown in Figs. 1 and 2, its length being such as to prevent its reaching the platen except when carried down by and in advance of the type-head, which at the moment is being depressed. The effect of this arrangement is to cause the ribbon to lift away from the surface of the paper after each impression, and thus to expose the same for reading. Owing to the fact that the type-heads approach the ribbon from different directions and that the points at which the different characters strike the ribbon and carry the same against the platen or the paper thereon varies with each character, the ribbon may be used under the arrangement shown without becoming speedily exhausted, and it is therefore not essential that provision be made for automatically moving the ribbon. It will be found sufficient to occasionally unhook the ribbon and move it a short distance lengthwise. However, automatic ribbon-feeding mechanism may, as above suggested, be provided.

So far as I am aware no one has hitherto proposed to provide a bar, slide, or member with a plurality of type or printing-characters at one point and with a plurality of finger keys or buttons at another point and to so mount or arrange said slide or bar that one or another character should be caused to print according as one or another of the finger keys or buttons of said slide or bar should be depressed, and this I mean to claim broadly and without restriction to details of form, number, or position. It is apparent that the slides may be arranged to move horizontally or in a plane at any desired angle to the horizon, and it will likewise be seen that the printing mechanism *per se* may be employed with any desired type or style of carriage or paper supporting and feeding mechanism.

A stop 60 limits the movement of the dog 28, and thus determines the advance of the carriage.

It is obvious that instead of making the several slots or branch openings in the bar and placing the guide-rod in the frame the bar or slide may be provided with a tongue to enter one or another of a series of openings in the frame, or, in other words, that the guiding slots or openings and the member which enters the same may be transposed without changing the operation or effect of the apparatus. So, too, the slides may move through pivoted or rocking supports of any suitable construction instead of sliding upon a pivot-rod. The form of the rod 7 may also vary, and if it be made polygonal the lower guide-rod 9 may be dispensed with, although it is deemed better to have a lower guide of some sort.

Having thus described my invention, what I claim is—

1. In a type-writing machine, a bar, slide or member carrying upon one part a plurality of printing-characters, and upon another part a plurality of finger keys or buttons, said buttons being arranged to effect the necessary movements of the bar or member to determine which character shall print, and also to move such character to the printing-point in accordance with the button pressed.

2. In a type-writing machine, the combination of a bar, slide or member having a plurality of type or printing-characters rigidly affixed thereto, and having also a plurality of finger keys or buttons; a paper-support; and a guide to direct one or another type or character to the printing-point on the paper according as one or another of the finger keys or buttons of the bar is pressed.

3. A bar, slide or member provided with a plurality of type or printing-characters, a plurality of finger keys or buttons, and a plurality of guideways or slots; and a fixed rod, bar or guide arranged in the path of the bar or member and adapted to occupy one or another of the slots or guideways as the bar is oscillated and moved longitudinally by pressure upon one or another of its finger keys or buttons.

4. In a type-writer, a bar, slide or member provided with a plurality of type or printing-characters and with a plurality of finger keys or buttons; a rod or pivot upon or about which said bar or slide may be oscillated by one or more of its finger-buttons; and guides arranged to maintain the bar or slide in the position to which it is so oscillated and to cause its longitudinal movement to take place without further oscillation.

5. In a type-writer, a series of bars or slides each provided with a plurality of type at one end and a plurality of finger-keys at the other end, said bars or slides being adapted to move both longitudinally and laterally to bring one or another type or character to the printing-point.

6. In combination with a platen or paper-support, a printing mechanism comprising a series of bars or slides each provided with a plurality of finger keys or buttons and with a plurality of types or printing-characters; guides for determining the direction of movement of each bar in accordance with the key or button pressed, the printing mechanism and the platen being also capable of movement one in relation to the other at right angles to the line of printing; whereby a small number of slides or bars is enabled to print a large number of characters.

7. In a type-writing machine, the combination of a platen; a printing mechanism consisting of a series of bars or slides each capable of longitudinal and lateral movement and each provided with a plurality of finger keys or buttons and a plurality of type or printing-characters; and means for moving the printing mechanism at right angles to the axis of the platen or to the printing-line.

8. In a type-writing machine, the combination of a paper-support; a frame; a series of bars or slides mounted in said frame and each provided with a plurality of type or printing-characters arranged in groups and with a plurality of finger keys or buttons; means for causing one or another of said groups of characters to stand opposite the paper-support; and guides, controlled by the finger keys or buttons to control the direction of movement of the slides or bars, and thereby to determine which character of the group shall print.

9. In combination with a bar or slide provided with a plurality of type at its end and adapted to slide longitudinally to and from the printing-point; a platen; and means for shifting the parts to cause one or another type of said bar or slide to strike the printing-point on the platen.

10. In combination with a paper-carriage and with pawl-and-ratchet mechanism for moving the same forward for letter-spacing;

a jointed frame arranged to act upon the pawl-carrying devices to move the same; and a series of sliding type bars or members provided with finger keys or buttons, and arranged to bear upon a bar of the jointed frame whenever depressed.

11. In combination with a paper-carriage and platen and with a frame carrying printing mechanism and bodily movable transversely to the platen; a universal space bar or rod pivotally attached to its support and adapted to move with the frame; and a series of bars or slides provided with finger keys or buttons and with printing type or characters, each slide adapted to bear upon and to actuate the space-bar.

12. In a type-writing machine, the combination of a main bar or slide provided with a plurality of type and with one or more directly-attached finger keys or buttons adapted to swing or oscillate the slide and then to move it longitudinally; and a supplemental slide having ears to engage the main slide; and provided with a finger key or button, whereby the supplemental slide is adapted to be independently guided and thus prevented from swinging or oscillating the main bar or slide.

13. In combination with guide-rods 50 and 54, slotted bar 40 provided with type 43, finger keys or buttons 41, opening 51, and tongues 52 and 53.

14. In combination with guide-rod 50, slotted bar 40 provided with a plurality of type or printing-characters and with a plurality of finger keys or buttons; and guides for maintaining the direction of movement of the slide or bar determined by the button pressed.

In witness whereof I hereunto set my hand in the presence of two witnesses.

LEE S. BURRIDGE.

Witnesses:

EDWARD B. HESS,
JOSEPH W. STOUGHTON.