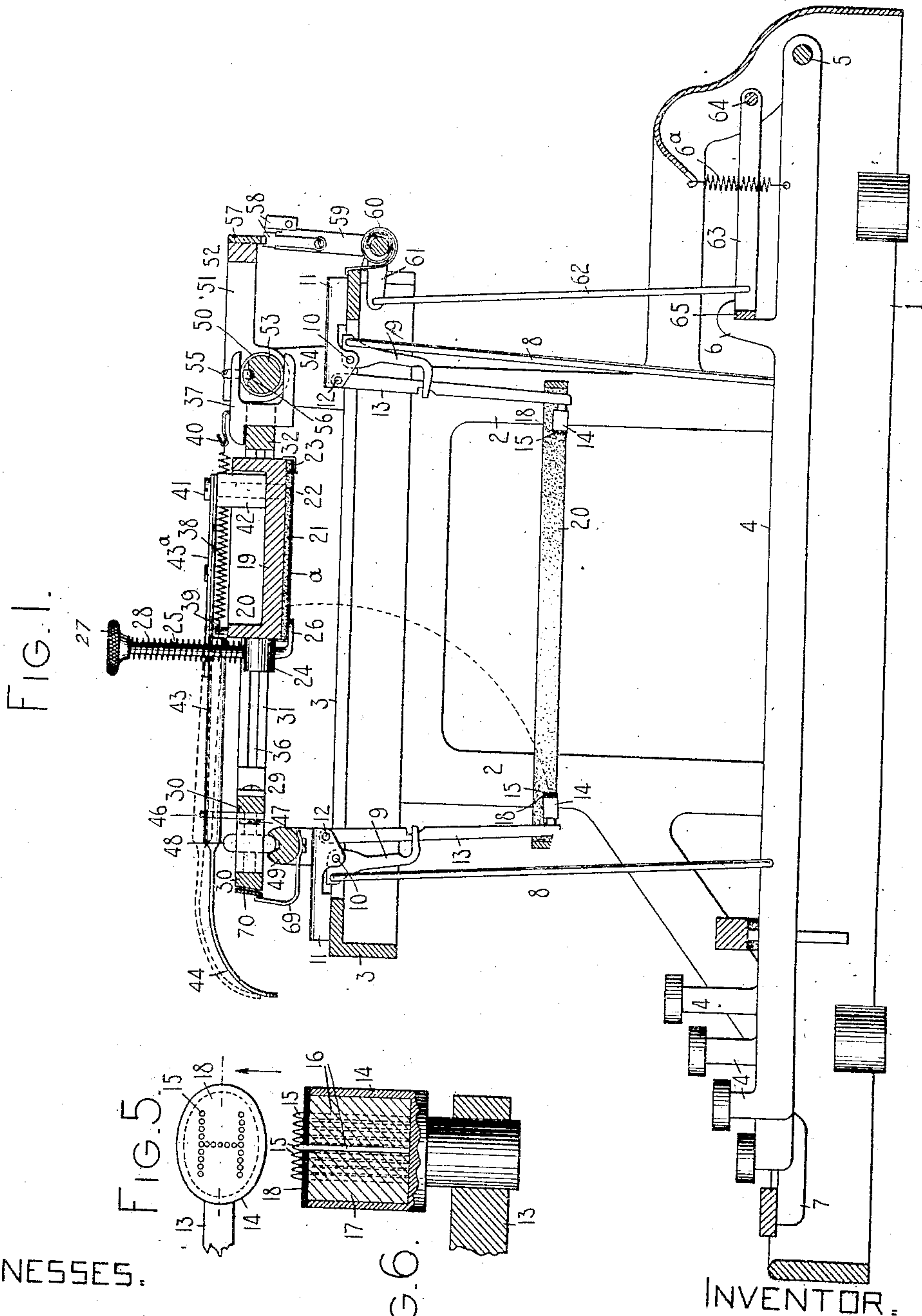


No. 864,960.

H. W. ENDERIS.
 WRITING MACHINE.
 APPLICATION FILED MAR. 21, 1905.

PATENTED SEPT. 3, 1907.

3 SHEETS—SHEET 1.



WITNESSES.

E. M. Wells.

Mr. Pool

661

Henry M. Enderis

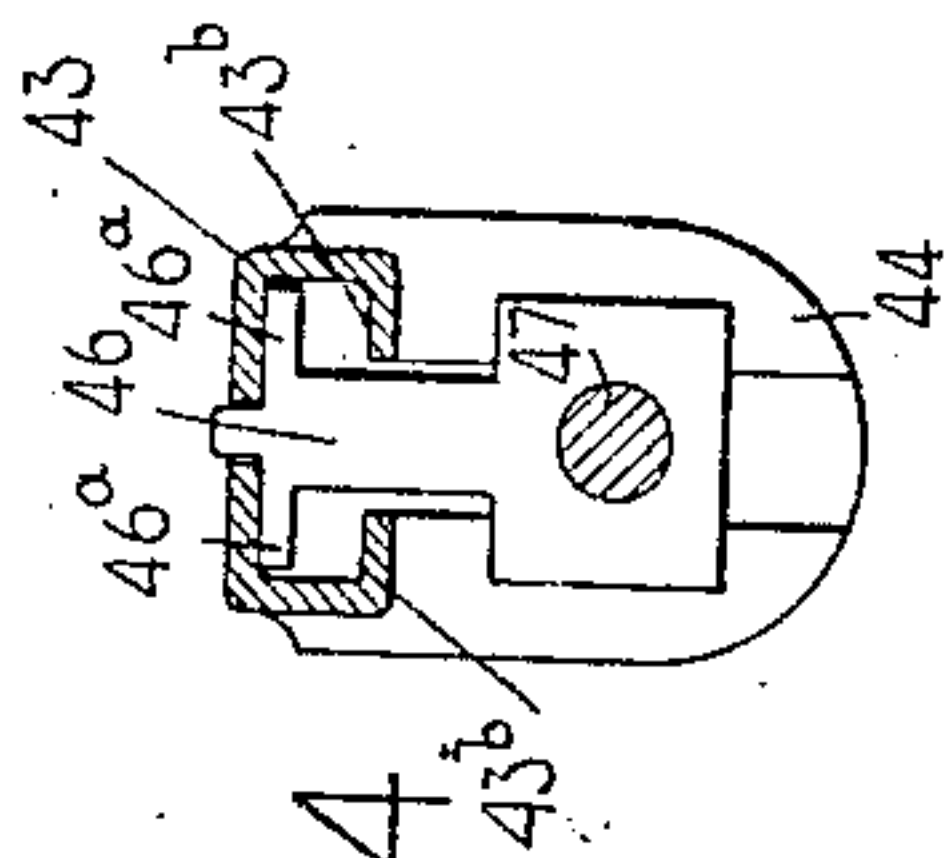
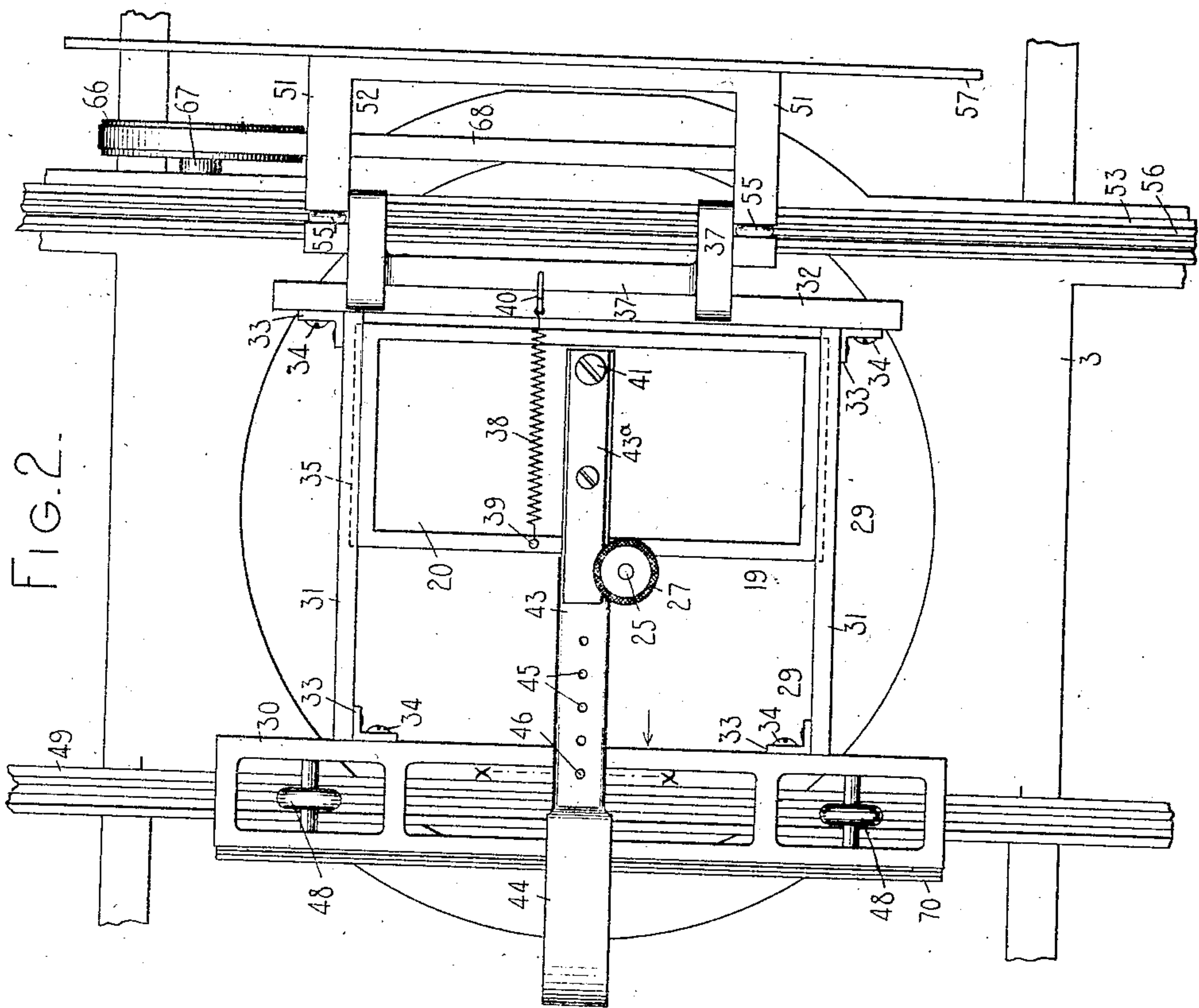
By James Gelbel

HIS ATTORNEY

No. 864,960.

H. W. ENDERIS.
WRITING MACHINE.
PATENTED SEPT. 3, 1907.
APPLICATION FILED MAR. 21, 1905.

3 SHEETS-SHEET 2.



WITNESSES:

E. M. Wells

Wm. Pool

INVENTOR:

Henry W. Enderis

By Jacob Felbel

HIS ATTORNEY

No. 864,960.

H. W. ENDERIS.
PATENTED SEPT. 3, 1907.
WRITING MACHINE.
APPLICATION FILED MAR. 21, 1905.

3 SHEETS—SHEET 3.

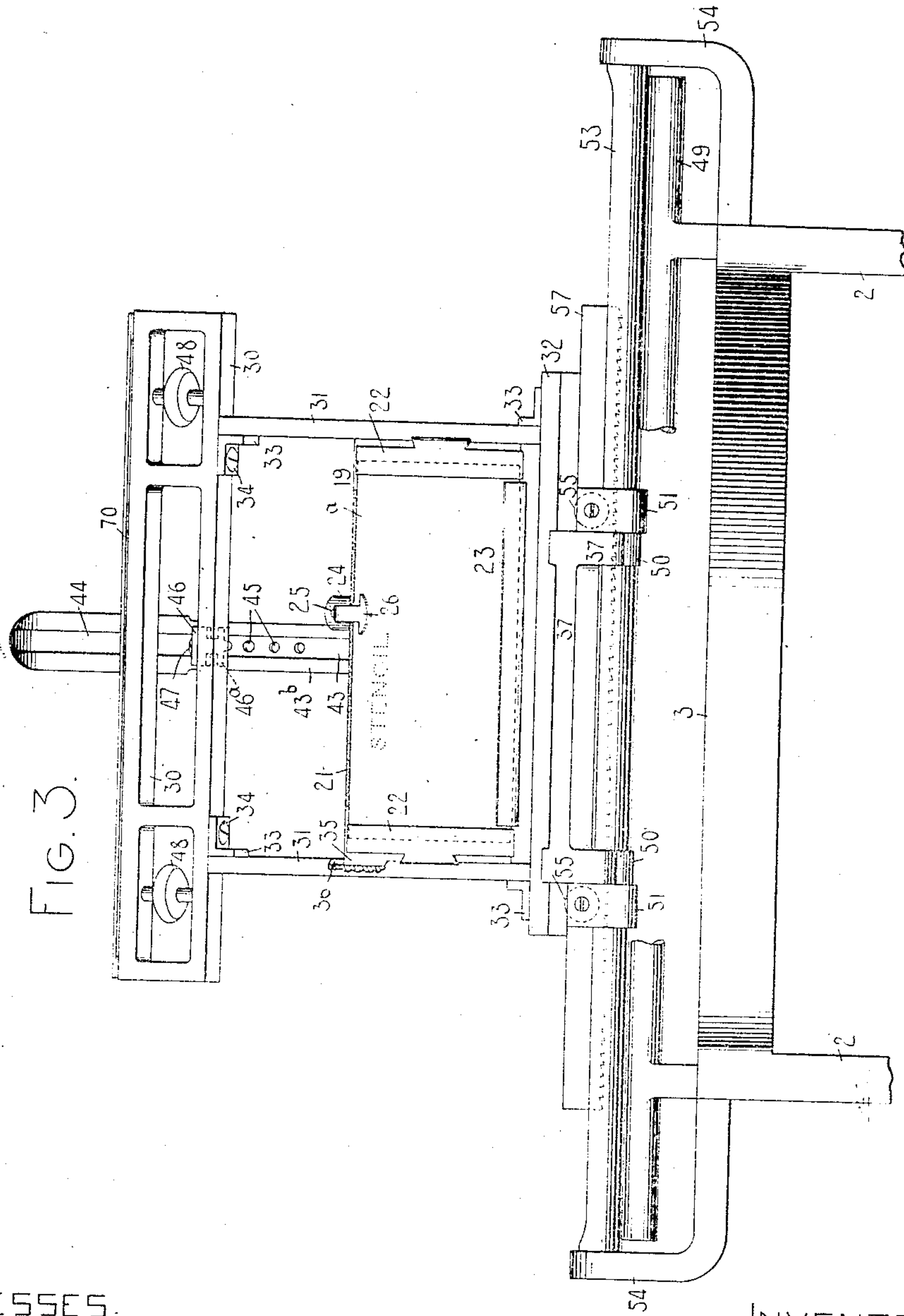


FIG. 3.

WITNESSES.

E. M. Wells

Wm. Pool

INVENTOR.

Henry H. Enderis

By Jacob Felbel

HIS ATTORNEY

UNITED STATES PATENT OFFICE.

HENRY W. ENDERIS, OF LINCOLN, NEBRASKA, ASSIGNOR TO WYCKOFF, SEAMANS & BENEDECT, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

WRITING-MACHINE.

No. 864,960.

Specification of Letters Patent.

Patented Sept. 3, 1907.

Application filed March 21, 1905. Serial No. 251,300.

To all whom it may concern:

Be it known that I, HENRY W. ENDERIS, a citizen of the United States, and a resident of Lincoln, in the county of Lancaster and State of Nebraska, have invented certain new and useful Improvements in Writing-Machines, of which the following is a specification.

My invention relates to writing machines and is more particularly adapted for use in stencil making machines.

The main object of the invention is to produce an improved construction of such machines.

To this and other ends the invention resides in the features of construction, arrangements of parts and combinations of devices to be hereinafter fully set forth and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical, front-to-rear central sectional view of a machine embodying one form of my invention. Fig. 2 is a fragmentary top plan view of the machine. Fig. 3 is a fragmentary front view of the upper part of the machine and showing the carriage raised to expose the stencil sheet or work element. Fig. 4 is an enlarged detailed sectional view taken on the line $x-x$ of Fig. 2. Figs. 5 and 6 are enlarged detail face and sectional views respectively of one of the type heads.

In the drawings, the main frame of the machine comprises a base 1, corner posts 2 and a top plate 3. Key levers 4 are pivoted at 5 in the rear of the base and each key lever is formed with a hook-like portion 6 and is provided with a restoring spring 6^a. Spacing levers 7 are also pivoted at 5. Each key lever is connected by a link 8 with a sub-lever 9 pivoted at 10 in a type bar hanger 11 which is one of a circularly arranged series fixedly secured in any suitable manner to the top plate 3. Pivoted to each hanger at 12 is a type bar 13 which is adapted to co-act with and be actuated by its associate sub-lever 9. The free end of each type bar is provided with a type 14, the operating face whereof is suitably formed for stencil cutting or puncturing. I have shown herein and most clearly in Figs. 5 and 6, type faces each composed of a plurality of needle points 15, the needles or wires 16 being embedded and held in a suitable composition 17 which is retained in a cup-like depression in the type block by a cap 18. It is to be understood, however, that any other construction of type suitable for puncturing or cutting the work element may be employed.

The type bars are adapted to coöperate with a rectangular flat platen 19 which is preferably formed of metal; the top being cut away at 20 for the sake of lightness. The under face of the platen is provided with a covering or facing 21 of felt or other suitable material. Fixedly attached to the side faces of the platen are retaining pieces 22 which coöperate with the bottom face of the platen to form guide ways or

grooves for the stencil sheet or plate which is indicated by the reference a . A retaining piece 23 is suitably attached to the platen and extends longitudinally thereof at the back, serving as best indicated in Fig. 1, to guide and control the rear edge of the stencil or work sheet. A lug 24 secured to the front face of the platen and about centrally thereof is perforated to receive a stencil holding member. The holding member as herein shown comprises a gripping finger 25 which terminates at the bottom in a holding portion 26 and is provided at the top with a finger button 27. A coiled spring 28 surrounds the gripping finger and is confined between the top of the bearing lug 24 and the finger button 27, said spring serving normally to press the holding portion 26 against the stencil a .

The platen 19 is suitably mounted in a platen carrier or carriage 29, which, as herein shown, comprises a front member or bar 30, side bars 31 and a rear bar 32, the side bars being fixedly connected with the front and rear bars by angle pieces 33 and screws 34. The platen 19 may be mounted in the platen carrier 29 in any preferred manner. A tongue and groove mounting is shown in the drawings, the right and left hand sides of the platen being provided with projecting portions 35 which fit into grooves 36 formed longitudinally of the side bars 31, this arrangement permitting of the fore and aft movement of the platen in the platen carrier. A yoke piece 37 is fixedly secured to the rear bar 32 of the platen frame. A draw spring 38, having its forward end secured to a pin 39 projecting upwardly from the front part of the platen 19 and its rear end secured to a hook 40 fixed to the yoke piece 37, tends constantly to pull the platen 19 to the rear of the platen carrier.

Secured by a screw 41 to a lug 42 projecting upwardly at the rear of the platen is a line space member 43 which terminates forwardly in a handle portion 44 and the top of which is formed with a series of perforations 45, the perforations being situated line space distances apart and adapted to coöperate with a detent 46 fastened by a screw 47 to the front bar of the platen carriage. A leaf spring 43^a tends constantly to press the line space member downwardly and to maintain it in engagement with the detent 46, as indicated by the full lines in Fig. 1. As best shown in Fig. 4, the top portion of the member 43 is bent at either side at 43^b so that when the member 43 is lifted to free it from the pin-like detent 46 the bent portions 43^b will contact with stop lugs 46^a projecting from the sides of the detent 46, the construction being such that the upward and downward movement of the member 43 is limited by the stop lugs 46^a.

The front member or bar 30 of the platen carrier is provided with a pair of rollers 48 which run in and are guided by a groove way or track 49 suitably mounted on the frame of the machine. The yoke piece 37 at

the rear of the platen carrier is bifurcated, as best appears in Fig. 1, so as to partially embrace or surround ears 50 projecting inwardly from the side arms 51 of a carriage truck 52. The ears 50 and arms 51 are perforated to enable the side arms 51 to be slidably mounted on a back rail 53 fixed on standards 54 rising from the top plate. The carriage truck is provided with rollers 55 which cooperate with a groove 56 formed in the top of the back rail 53. The connection between the platen carrier 29 and the carriage truck 52 is such that the carriage may be swung upward about the carriage truck as indicated in Fig. 3, the bifurcated portions of the yoke piece 37 turning on the bearing ears 50 of the truck. The sides of the yoke piece 37, however, are confined between the side arms of the carriage truck so that the latter and the platen carrier move together from side to side of the machine.

A toothed escapement rack 57 is fixed to the rear of the carriage truck. Adapted to cooperate with the escapement rack are carriage feed dogs 58 which are suitably mounted on an upright arm 59 of a pivoted spring restored dog carrier 60, the horizontally disposed arm, 61 of said carrier being connected by a link 62 with a universal bar frame 63 which is pivoted at 64 in the rear of the machine base and carries at its forward end a universal bar 65. As best seen in Fig. 1, the universal bar stands beneath the series of hooks 6 on the key levers 4. A spring drum 66, pivoted in a fixed bearing 67, is connected by a strap 68 with the carriage truck and tends constantly to draw the latter, and with it the platen carrier, leftward across the top plate of the machine. A pointer 69 secured to the front rail 49 cooperates with a scale 70 on the front of the platen carrier.

The operation of the machine will be readily understood. The spring mounted gripping finger 25 is first pressed down and then turned so that the holding portion 26 is rotated out of the field of the platen. The work element or stencil plate *a*, which is usually composed of cardboard, thin metal or the like, is then inserted between the face of the platen and the guide members 22 and pushed back until its bottom edge enters the space between the face of the platen and the rear guide member 23. The gripping finger or holding member 25 is then manipulated until the holding portion 26 is in the position indicated in Fig. 1, wherein it will be noted the gripping finger serves to press the top of the stencil sheet or plate *a* against the face of the platen. The stencil sheet being in place the handle 44 is lifted to the dotted line position in Fig. 1, thereby releasing the line space member 43 from the detent 46 and allowing the draw spring 38 to draw the platen to the rear of the platen frame as indicated in Figs. 1, 2 and 3. The line space member is then lowered, the parts being so proportioned that the foremost perforation 45 will engage with the detent 46. The platen carrier is then positioned for beginning the line by means of the pointer 69 and its cooperating scale 70. When a key lever 4 is adequately depressed the type bar 13 associated therewith is, through the connecting link 8 and sub-lever 9, swung upwardly causing the needle point type to follow a path such as is indicated by the dotted line in Fig. 1 and to perforate the stencil sheet *a*. As the key lever is swung downwardly its hook 6, acting on the universal bar 65, swings the universal bar frame downwardly about its pivot 64, there-

by, through the link 62, actuating the dog carrier 59 and causing the dog members 58 to cooperate in a known manner with the feed rack 57, so that on the return of the parts to normal position the carriage truck and platen carrier, under the influence of the spring drum 66, will be permitted to move the distance of one letter space. The operation is repeated until the line of writing is finished, the carriage truck and platen carrier moving step-by-step across the top plate of the machine after which the platen is returned across the top plate until it is positioned to begin a new line. The line space member 43 is then lifted until free from the detent 46, whereupon the platen is drawn forward by means of the handle 44 and against the pull of the draw spring 38 until the second perforation 45 is in position to engage with the detent 46. The member 43 is then lowered until the detent engages with the second perforation. The second and succeeding lines may then be written in the manner described. When the writing has been completed the stencil sheet may be removed by lifting the platen carrier to the position indicated in Fig. 3 and pressing down and turning the gripping finger or member 25.

It will be noted that I have provided means for suitably feeding and controlling a work sheet or stencil sheet, which commonly is too stiff to be readily fed through a machine employing a cylindrical platen, without doing injury to the said work sheet; that the said means comprises a platen or stencil support having a flat surface having preferably a soft facing of felt or the like and provided with suitable guiding and holding means for the work sheet, said means comprising a stencil pocket formed in part by the retaining piece 23 and the retaining pieces 22, said pocket engaging the rectangular stencil sheet on three sides and the clamping means clamping said sheet at its fourth side; that a series of puncturing elements or type bars having a fixed support are adapted to cooperate with the platen; that means are provided to feed the platen in one direction or from side to side, transversely of the machine for letter spacing and in a direction at right angles thereto longitudinally of the machine for line spacing; and further that I have provided mechanism of simple and inexpensive construction, and which will well and practically accomplish the desired results. It is further to be noted that though the invention is particularly adapted for stencil writing it is not limited to that specific kind of work but may equally well be employed for other kinds of writing.

I do not desire to be limited to the particular construction and arrangement herein shown and described. Changes in details of the mechanism and in the arrangements of the parts may be effected and parts may be used without other parts all within the spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent, is:—

1. In a writing machine, the combination of a fixed type bar support, a series of type bars mounted thereon, means for actuating said type bars, a platen carrier adapted to be fed in one direction and pivotally mounted so that it may be swung at right angles to the direction of its feed, and a flat platen mounted in the platen carrier and movable relatively thereto for line spacing in a direction at right angles to the direction of feed of the platen carrier.

2. In a writing machine, the combination of a fixed type bar support, a series of type bars mounted thereon, means for actuating said type bars, a platen carrier, carriage feed devices adapted to feed said platen carrier in one direction, said platen carrier being pivotally mounted so that it may be swung at right angles to the direction of its feed, a flat platen mounted in ways in said platen carrier and movable thereon for line spacing, and means constantly tending to draw said platen in a direction at right angles to the direction of feed of the platen carrier.

3. In a typewriting machine, the combination of a platen having a flat printing surface, a pivotally mounted platen carrier on which said platen is slidably mounted, means for enabling said platen to be slid on said platen carrier and maintained in predetermined positions to space between the lines of writing, means for moving said platen carrier and platen step-by-step for letter spacing in a direction at right angles to the line spacing movements of the platen, and printing instrumentalities having a support which remains fixed during letter spacing movements of the platen and platen carrier.

4. In a writing machine, the combination of a platen having a flat facing of suitable material, work holding means cooperating with said platen, a platen carrier in which said platen is slidably mounted, a spring constantly tending to draw said platen towards the rear of said platen carrier, a line spacing member secured to said platen and adapted to cooperate with a detent on said platen carrier to overcome said draw spring and to permit said platen to be moved to any one of a plurality of predetermined positions fore and aft of said platen carrier.

5. In a writing machine, the combination of a platen having a flat facing of suitable material, work holding devices cooperating with said platen to hold the work sheet in fixed relation with the platen during line spacing and letter feeding operations, a pivotally mounted platen carrier in which said platen is slidably mounted, means for moving said platen fore and aft in said platen carrier to space between the lines of writing, means for moving said platen carrier from side to side of the machine a letter space distance at a time, and a series of type bars mounted on a fixed support and adapted to cooperate with said platen.

6. In a writing machine, the combination of a platen having a flat facing of suitable material, work holding devices cooperating with said platen to hold the work sheet in fixed relation with the platen during line spacing and letter feeding operations, a pivotally mounted platen carrier in which said platen is slidably mounted, means for moving said platen fore and aft of said platen carrier to space between the lines of writing, means for moving said platen carrier from side to side of the machine a letter space distance at a time, a fixed support below said platen, and a circularly arranged series of type bars mounted upon said support and adapted to cooperate with the under side of said platen.

7. In a writing machine, the combination of a platen having a flat facing of suitable material, work holding means cooperating therewith to hold the work sheet in fixed relation with the platen during line spacing and letter feeding operations, a platen carrier, means for moving said platen fore and aft of the machine in said carrier to space between the lines of writing, roller bearings mounted in said carrier, fixed tracks or ways cooperating with said roller-bearings, means for moving said carrier step-by-step along said fixed ways said platen carrier being pivotally mounted whereby said platen may be swung upward to expose the writing, a type bar support arranged beneath said platen, and a circularly arranged series of type bars mounted on said support and adapted to cooperate with the facing of said platen.

8. In a stencil writing machine, the combination of a fixed support, a series of key actuated puncturing elements pivoted on said support, a swinging flat platen situated above said puncturing elements, means for moving said platen in one direction a letter space distance at a time, and hand operated line spacing means adapted to move said platen predetermined distances fore and aft of the machine at right angles to the direction of letter space movement.

9. In a stencil writing machine, the combination of a platen having a flat facing of suitable material, work holding devices cooperating with said platen, a pivotally mounted platen carrier in which said platen is slidably mounted, line spacing means adapted to move said platen predetermined distances fore and aft in said platen carrier, letter spacing means for moving said platen carrier from one side of the machine to the other, said platen carrier being pivotally mounted so that it may be swung in a direction at right angles to its letter spacing movement and a series of key actuated puncturing elements mounted on a fixed support and adapted to cooperate with said platen.

10. In a stencil writing machine, the combination of a platen having a flat facing of suitable material, work holding means cooperating therewith, a platen carrier, means for moving said platen fore and aft of the machine in said carrier and relatively thereto for spacing between the lines of writing, roller bearings mounted in said carrier, fixed tracks or ways cooperating with said roller bearings, means for moving said carrier step-by-step longitudinally of said fixed tracks, said carrier being pivotally mounted so that it and the platen may be swung at right angles to the direction of step-by-step movement a fixed support beneath said platen, and a circularly arranged series of key actuated puncturing elements mounted on said support and adapted to cooperate with the facing of said platen.

11. In a typewriting machine, the combination of a fixed type bar support, a series of type bars mounted on said support, a carriage truck movable from side to side of the machine, a platen carrier pivotally connected with said carriage truck so that said carrier may be swung upwardly to expose the writing, a flat platen mounted to slide in said platen carrier fore and aft of the machine above the type bars, and work holding means operative to hold the work sheet in a fixed relation with the platen during the writing of a plurality of lines.

12. In a typewriting machine, the combination of a fixed type bar support, a series of type bars mounted on said support, a carriage truck movable from side to side of the machine for letter spacing, a platen carrier pivotally connected with said carriage truck so that said carrier may be swung upwardly to expose the writing, a flat platen mounted to slide in said platen carrier fore and aft of the machine above the type bars for line spacing, and work holding means operative to hold the work sheet in a fixed relation with the platen during both letter spacing and line spacing movements.

13. In a typewriting machine, the combination of printing instrumentalities, a back guide rail, a carriage truck mounted to slide thereon, a platen carrier pivotally connected at its rear with said truck so that said carrier may be swung upwardly to expose the writing, a front guide rail cooperative with said platen carrier when the latter is in operative position, a flat platen slidable on said platen carrier, and a work holding means operative to maintain the work sheet in a fixed relation with the platen as long as said work sheet remains in the machine, said carriage truck, platen carrier and platen being movable together in one direction for letter feeding and said platen being movable relatively to said platen carrier and said truck for line spacing.

14. In a typewriting machine, the combination of a type bar support, type bars mounted thereon, a platen carrier, a flat platen mounted to slide in said platen carrier, and work holding means comprising a spring pressed holding member pivotally mounted on said platen and capable of axial movement in order to hold or release the work sheet.

15. In a typewriting machine, the combination of a type bar support, type bars mounted thereon, a platen carrier, a flat platen mounted to slide in said platen carrier, and work holding and guiding devices comprising oppositely disposed grooved guides fixed to the platen at its sides, a grooved guide fixed to the platen at its rear, and a holding member pivoted to the platen at its front, said holding member being provided with a finger piece and being capable of movement in the direction of its axis in order to hold or release the work sheet.

16. In a typewriting machine, the combination of a flat platen, a platen carrier in which said platen is slidably mounted, means constantly tending to impel said platen towards one side of said platen carrier, a hand actuated line spacing member mounted on the platen and movable relatively thereto, and a detent mounted on the platen carrier and cooperating with said line spacing member to hold the platen against said means.
17. In a typewriting machine, the combination of a flat platen, a platen carrier in which said platen is slidably mounted, means constantly tending to impel said platen towards one side of said platen carrier, a hand actuated line spacing member mounted on said platen and provided with a plurality of openings, and a detent on the platen carrier cooperative with the openings in said line spacing member to hold the platen against said means.
18. In a typewriting machine, the combination of a flat platen, a platen carrier in which said platen is slidably mounted, means constantly tending to impel said platen towards one side of said platen carrier, a line spacing member movable on the platen and provided with an actuating handle, and a detent on the platen carrier cooperative to maintain said member in any one of a plurality of predetermined positions to vary the relation between said platen and said platen carrier.
19. In a writing machine, the combination of a type bar support, a series of type bars mounted on said support, a flat platen pivotally supported to swing up and down and adapted to move transversely of the machine for letter spacing purposes and longitudinally of the machine for line spacing purposes.

20. In a stencil writing machine, the combination of a series of stencil types, a carriage adapted to move from side to side of the machine for letter spacing, and a flat stencil-support mounted in said carriage and adapted to move at right angles to the letter spacing movements of said carriage for line spacing purposes, said support being provided with a soft flat facing and with means for clamping a flat stencil sheet upon said facing.

21. In a stencil writing machine, the combination of a series of stencil types, a carriage adapted to move from side to side of the machine for letter spacing, a flat stencil support pivoted to swing up and down, and slidably mounted on said carriage so that said stencil support may be moved for line spacing at right angles to the letter spacing movements of the carriage, a detachable flat facing on said stencil support, and means for clamping a flat stencil sheet on said facing.

22. In a stencil writing machine, the combination of a flat stencil support provided with a stencil pocket adapted to cooperate with three sides of a rectangular stencil sheet, and means for clamping the fourth side of said stencil sheet to said stencil support.

Signed at Lincoln, in the county of Lancaster and State of Nebraska, this 14th day of March A. D. 1905.

HENRY W. ENDERIS.

Witnesses:

E. L. CLINE,
M. L. WILLIS.