

C. E. SMITH.
TYPE WRITING MACHINE.
APPLICATION FILED OCT. 6, 1906.

899,847.

Patented Sept. 29, 1908.
3 SHEETS—SHEET 1.

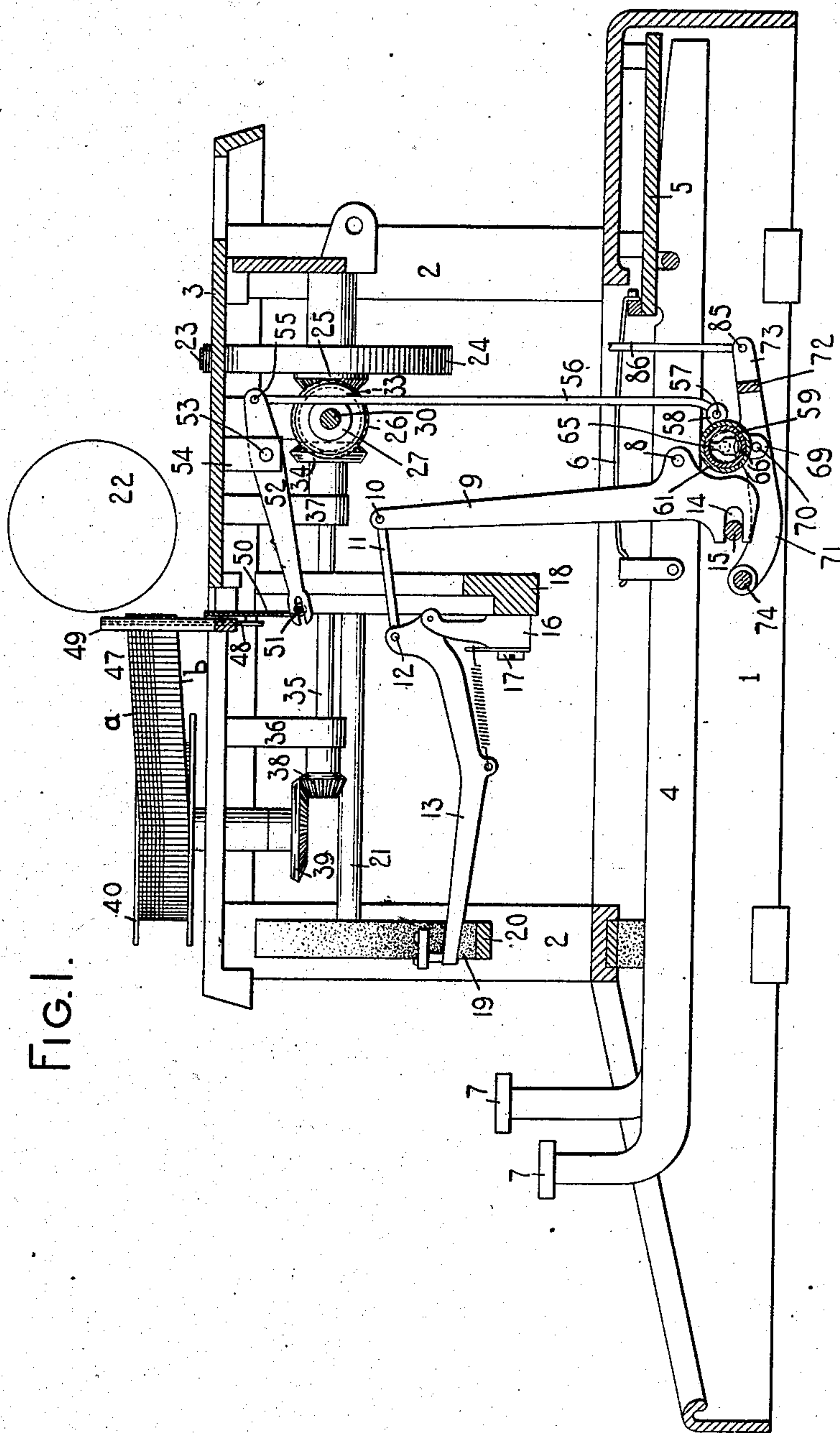


FIG. 1.

WITNESSES:
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INVENTOR:
Charles E. Smith
By Jacob Selbach
HIS ATTORNEY

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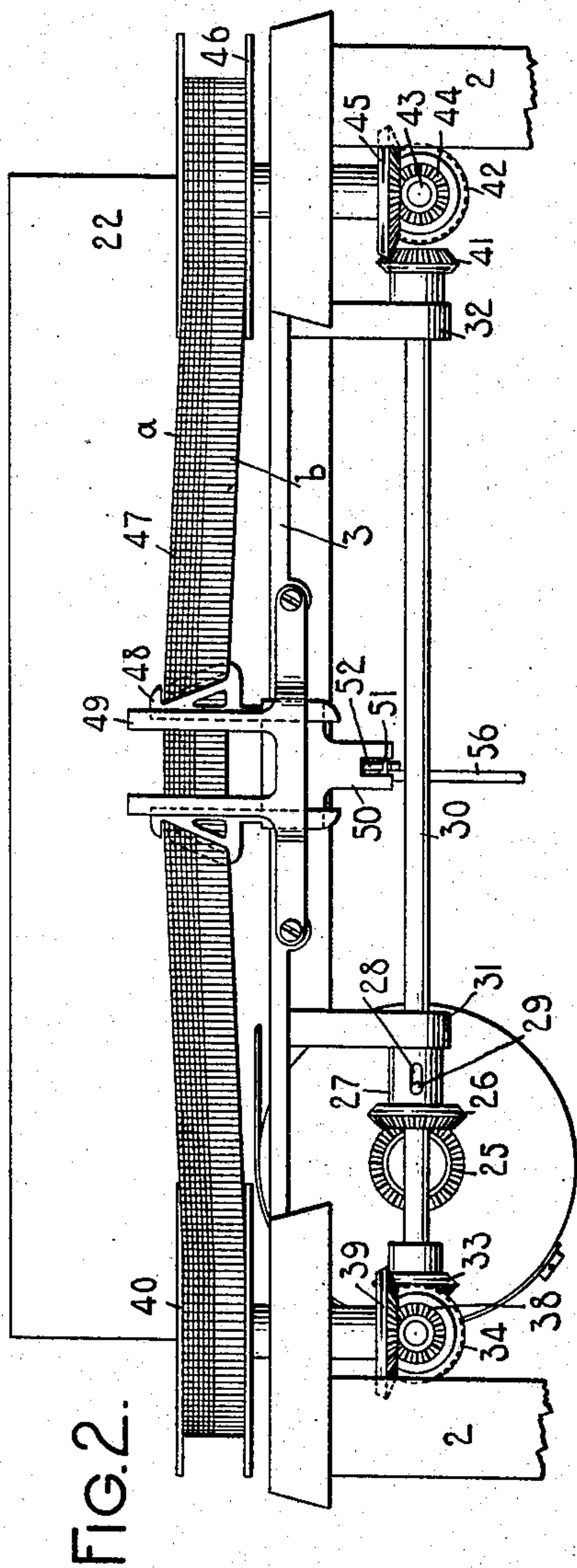


FIG. 2.

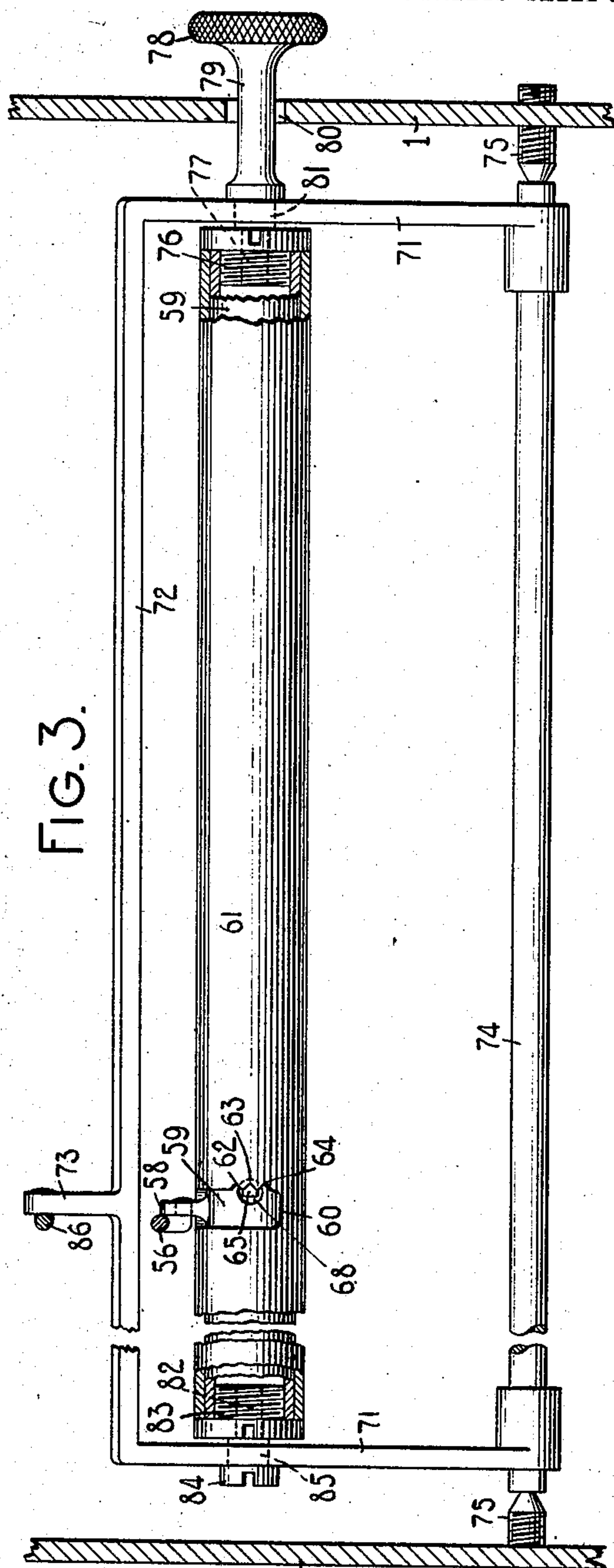


FIG. 3.

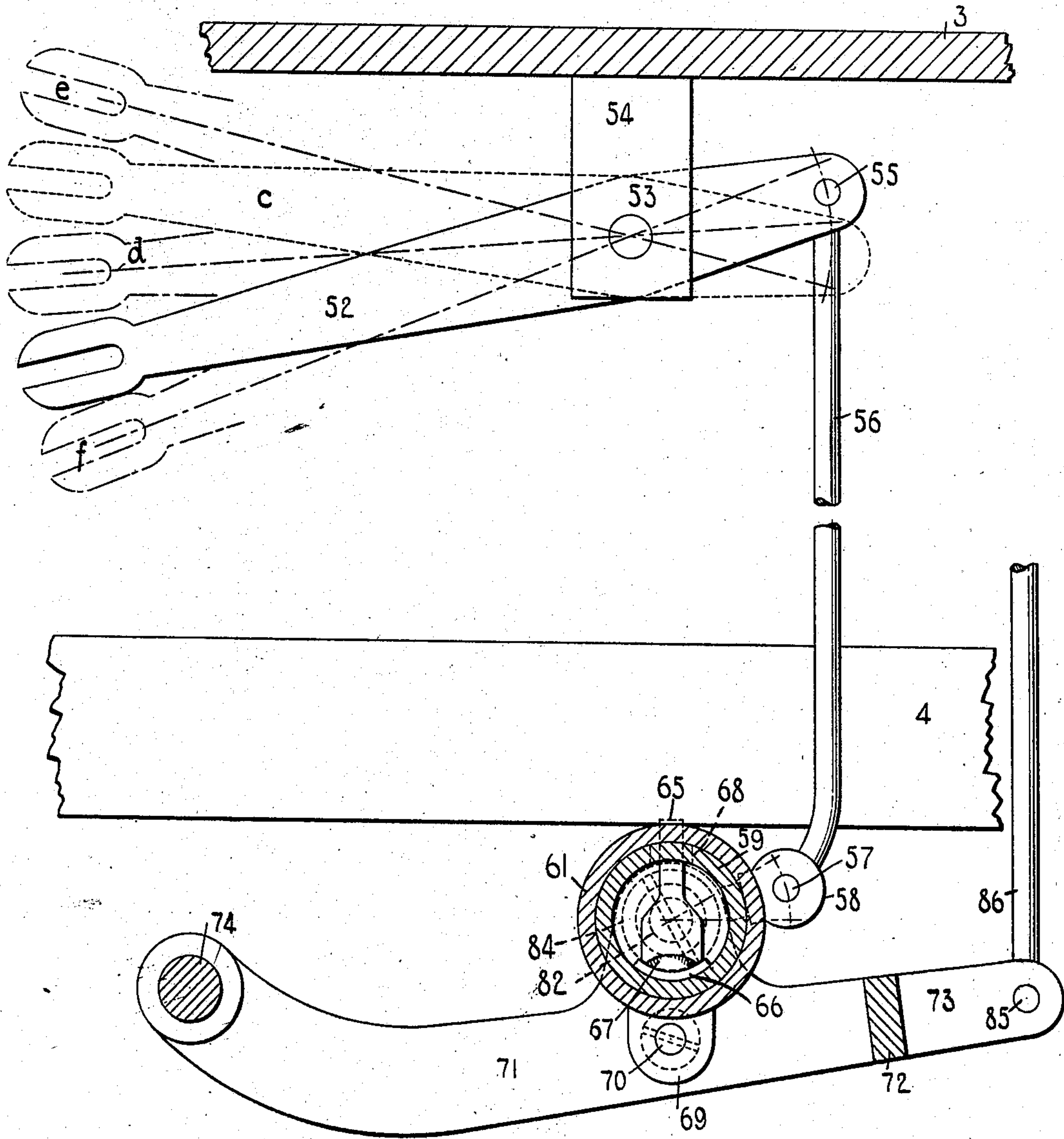
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3 SHEETS—SHEET 3.

FIG. 4.



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UNITED STATES PATENT OFFICE

CHARLES E. SMITH, OF NEW YORK, N. Y., ASSIGNOR TO UNION TYPEWRITER COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

No. 899,847.

Specification of Letters Patent.

Patented Sept. 29, 1908.

Application filed October 6, 1906. Serial No. 337,739.

To all whom it may concern:

Be it known that I, CHARLES E. SMITH, citizen of the United States, and resident of the borough of Brooklyn, city of New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to ribbon mechanism for typewriting machines and more particularly to mechanism in which a ribbon is or may be automatically moved into the path of the approaching type at each printing operation.

One object of my invention is to provide, in a construction of the character specified, simple and efficient means for regulating the mechanism so that any desired field of the ribbon may be presented for coöperation with the printing instrumentalities, this feature of my invention contemplating the use of a ribbon having fields of different characteristics, although it is also useful in connection with a one-color ribbon.

Another object of my invention is to provide means for rendering the mechanism inoperative to move the ribbon (polychrome or otherwise) to the printing point, so that the machine may be readily employed for the preparation of mimeograph sheets when desired.

To the above and other ends which will hereinafter appear, my invention consists of the features of construction, arrangements of parts and combinations of devices described in the following specification and set forth in the accompanying claims.

In the drawings, wherein like reference characters indicate corresponding parts in the various views, Figure 1 is a vertical central sectional view taken fore and aft of the machine, of a sufficient number of parts of a typewriting machine to show my invention in its application thereto. Fig. 2 is a front elevation of the upper portion of said machine. Fig. 3 is a detail plan view of a portion of the ribbon vibrating mechanism with parts broken away and parts shown in section. Fig. 4 is an enlarged detail vertical sectional view of a portion of the ribbon vibrating mechanism, parts of the construction being shown in side elevation.

I have shown my invention applied to a Monarch machine in which it may be readily employed without changing any of the struc-

tural features of such machines, though it should be understood that the invention may be applied to other styles of machines.

Certain of the features shown in the present case are claimed broadly in my companion application Serial No. 337,738 filed of even date herewith, the present case being restricted to features either not contained or not claimed in said companion application.

The framing of the machine comprises a base 1, corner posts 2 and a top plate 3. Key levers 4 are fulcrumed against a fulcrum plate 5 in the base of the machine and are each provided with a restoring spring 6 and a key 7. Each key lever has pivoted thereto at 8 a sub-lever 9 connected at its upper end as at 10 to a forwardly extending link 11 pivoted at 12 to a type bar 13. The lower end of each sub-lever is slotted at 14 for coöperation with a fulcrum rod 15 which extends beneath the key levers and is secured at its ends in the base of the machine. The type bars 13 are segmentally arranged and are carried by hangers 16 secured by screws 17 to a type bar segment 18. The type bars are supported at their forward ends on a pad 19 mounted on a segmental strip 20 supported by rods 21 which project forwardly from the type bar segment. The type bars strike upwardly and rearwardly against the front face of the platen 22, diagrammatically shown in Figs. 1 and 2. The platen 22 is carried by a carriage which moves from side to side of the machine over the top plate 3 in the usual manner, said carriage being connected to one end of a band 23 which has its other end secured to a spring drum 24 to effect a step-by-step letter feed movement of the carriage from right to left in the usual manner when the escapement mechanism (not shown) is actuated. The spring drum actuates a beveled pinion 25 through a pawl and ratchet connection (not shown) which turns said pinion when the carriage is moving in letter space direction, but not in the other direction. Said pinion 25 meshes with a pinion 26 having a hub 27 with a slot 28 therein for the reception of a pin 29 projecting from a shaft 30. The shaft 30 is mounted in bracket arms 31, depending from the top plate and is adapted to receive a longitudinal as well as a rotary movement in its bearings. The bracket arm 31 bears against the end of the hub 27 to prevent a movement of the pinion 26 with its

shaft during the longitudinal movement thereof in one direction and the pinions 25 and 26 cooperate to prevent movement of the pinion 26 with the shaft in the opposite direction or to the left. The construction is such, therefore, that the shaft 30 will rotate with the pinion 26 but independent longitudinal movement of the shaft is afforded. The left-hand end of the shaft is provided with a beveled pinion 33 for cooperation with a beveled pinion 34. The pinion 34 is mounted on the rear end of a shaft 35 which turns in bearings 36, 37 which are in the nature of depending bracket arms on the top plate of the machine. The forward end of the shaft 35 carries a beveled pinion 38 which meshes with a gear 39 connected with the left-hand ribbon spool 40. The opposite or right-hand end of the shaft 30 is provided with a beveled pinion 41 which is adapted to mesh with a gear 42 mounted on the rear end of a shaft 43 mounted in bearings similar to the bearings 36 and 37 and provided at its forward end with a beveled pinion 44 which meshes with a gear 45 connected to the right-hand ribbon spool 46. A ribbon 47 extends from one spool to the other and is preferably a polychrome ribbon having fields *a* and *b* of different characteristics, thus the field *a* may be of one color and the field *b* of another color or the field *a* may be record ribbon and the field *b* copying ribbon. In the passage of the ribbon from one spool to another as shown in Fig. 2 it passes through guide openings in a ribbon vibrator 48 which is of the usual construction and is guided in its vertical movement by a fixed guide 49. The ribbon vibrator has a depending stem 50 pivoted at 51 to the forwardly extending arm of a ribbon vibrator actuating lever 52 pivoted at 53 to a depending bracket 54 on the top plate of the machine. The rear end of the lever 52 is pivotally connected at 55 to an upright link 56. The lower end of this link is pivoted at 57 to a crank arm or device 58.

From an inspection of Figs. 3 and 4 it will be seen that this crank arm 58 is formed as a projection on an inner tubular-like member 59 and projects through a slot 60 in a surrounding tubular universal bar 61 in which the member 59 is received and adapted to turn, the tube 59 receiving a bearing in the universal bar 61. One side wall of the slot 60 is provided with three notches or depressions 62, 63 and 64 in which a spring-pressed pawl or detent 65 is adapted to engage. This pawl is preferably struck up from spring metal and has an angular base 66 which is riveted to the inner tube 59 as indicated at 67 in Fig. 4. The tension of the pawl or detent 65 is exerted to maintain it in either of the depressions 62, 63 or 64. The detent 65 is riveted to the lower portion of the tubular member 59 as shown in Figs. 3 and 4 and

projects through an enlarged opening 68 in the upper part of the tubular member 59. The universal bar 61 is provided with a depending ear 69 at the left-hand end thereof and said ear is apertured for the reception of a screw 70 that is received in a threaded opening in the left-hand side arm 71 of the universal bar frame made up of the side arms 71, a cross bar 72 from which a rearwardly extending arm 73 extends and a rock shaft 74 mounted at its ends on cone pivot screws 75 which are received in threaded openings in the base 1 of the machine at each side thereof. The right-hand end of the inner tube 59 is internally threaded for cooperation with a headed screw 76 which screw in turn is internally threaded to receive a threaded stem 77 of a finger piece 78. The projecting part 79 of the stem of said finger piece extends through a slot 80 in the right-hand side of the base 1 of the machine in order that the finger piece will not interfere with the up and down movement of the universal bar, and so that the tubular member 59 may be turned in its bearing by the finger piece 78 from outside of the machine. The stem 79 of the finger piece has a cylindrical bearing portion 81 which is received in a bearing opening in the right-hand side arm 71 of the universal bar frame. The left-hand end of the rotative adjusting member 59 is internally threaded to receive a stem 82 of a headed screw which, like the screw 76, has an internally threaded central opening for cooperation with a threaded stem 83 of a headed shouldered screw 84, the cylindrical portion 85 thereof being received in a bearing opening in the left-hand side arm 71 of the universal bar frame, the universal bar 61 being secured by its ear 69 and screw 70 to the universal bar frame and maintained fixed while the finger piece 78 may be employed to turn the tubular member 59 to adjust the crank arm 58 on said member relatively to the universal bar. The effect of this adjustment is to change the normal position of the link 56, vibrator actuating lever 52 and the ribbon vibrator 48 so as to bring either field *a* or *b* of the ribbon into use or to lower the ribbon vibrator to a position where the depression of the finger key 7 will be ineffective to bring the ribbon to the printing point even though the universal bar is depressed the usual distance. Thus, by effecting a rotative adjustment of the crank arm 58 through the finger piece 78 to a position where the detent 65 is received in the notch 63, the actuating lever 52 of the vibrator is positioned normally in the full line position shown in Fig. 4 and will be moved at each printing operation to the dotted line position *c* to bring the uppermost or black field *a* of the ribbon to the printing point.

An adjustment of the crank arm 58

through the finger piece 78 to a position where the spring detent 65 engages the notch 62, changes the normal position of the vibrator actuating lever to the position indicated at *d* in Fig. 4, the lever being vibrated at each printing operation to the position represented at *e* to bring the lowermost or red field *b* of the ribbon to the printing position. When the rotative member 59 is adjusted through the finger piece 78 to seat the spring detent 65 in the notch 64, then the forward end of the ribbon vibrating lever 52 will be depressed in its normal position to the lowermost point which it is capable of attaining and which is represented at *f* in Fig. 4. Each printing operation will effect a movement of the vibrator actuating lever from the position shown at *f* to that indicated at *d* when the parts are in the last mentioned adjusted position. The extent of this movement is insufficient to bring the ribbon to the printing point so that while the ribbon vibrator is actuated in the usual manner it is, nevertheless, inoperative to bring the ribbon to the printing point and the parts are arranged at this time for the preparation of mimeograph sheets. The rearwardly extending arm 73 which projects from the universal bar frame is pivoted at 85 to an upwardly extending link 86 connected in the usual manner to the escapement mechanism so that each depression of a key lever not only effects an operation of the ribbon vibrator in the manner described but also effects an operation of the escapement mechanism to afford a step-by-step feed of the carriage from right to left.

It will be seen that by my present invention I provide constantly maintained connections between the universal bar and the ribbon vibrator and that there is no lost motion effected between any of the parts whether the field *a* or *b* of the ribbon is in use or the ribbon vibrating mechanism is rendered ineffective to move the ribbon to the printing point; that there is no connection or disconnection effected between the parts; that consequently the touch on the finger keys is uniform at all times irrespective of the adjustment of the member 59; that the mechanism is simple in construction and reliable in operation; and that there is little liability of the mechanism becoming deranged or broken. The universal bar frame and the parts carried thereby may be restored to normal position after each actuation by the usual dog rocker restoring spring (not shown) or a separate restoring spring may be employed for this purpose.

Various changes may be made without departing from my invention.

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

1. In a typewriting machine, the combina-

tion of a ribbon having a plurality of fields of different characteristics, a key actuated universal bar, connections between said universal bar and ribbon, and means carried by and movable relatively to the universal bar for shifting said connections relatively to the universal bar to determine which field of the ribbon shall be presented to operative position.

2. In a typewriting machine, the combination of a ribbon, a key actuated universal bar, connections between said universal bar and ribbon, and means carried by the universal bar for shifting said connections relatively to the universal bar to render the movement of the universal bar inoperative to move the ribbon to operative position.

3. In a typewriting machine, the combination of a ribbon having fields of different characteristics, a universal bar, a device carried by said universal bar and adapted to be set and maintained in different positions relatively thereto, and connections between said device and the ribbon, the construction and arrangement of the parts being such that a change in the disposition of said device determines which field of the ribbon shall be presented to operative position or whether or not the ribbon shall be moved to operative position.

4. In a typewriting machine, the combination of a ribbon vibrator, a universal bar, a rigidly supported arm carried by and adjustable on said universal bar, connections between said adjustable arm and said vibrator, and means extending to the outside of the machine for adjusting said arm.

5. In a typewriting machine, the combination of a ribbon having fields of different characteristics, a ribbon vibrator, a universal bar, permanently maintained connections between the vibrator and universal bar, said connections including an actuating lever, and adjustable means between said lever and universal bar for changing the normal position of the vibrator without changing the universal bar and thereby changing the throw of the vibrator without changing its extent of movement in order to determine which field of the ribbon shall be presented to operative position.

6. In a typewriting machine, the combination of a ribbon, a ribbon vibrator, a universal bar, permanently maintained connections between the vibrator and universal bar, said connections including an actuating lever, and adjustable means between said lever and universal bar for changing the normal position of the vibrator without changing the universal bar and thereby changing the throw of the vibrator without changing its extent of movement in order to determine whether or not the ribbon shall be presented to operative position.

7. In a typewriting machine, the combination of a ribbon, a universal bar, and connections between said universal bar and ribbon, said connections including a device adjustable on and around the universal bar.

8. In a typewriting machine, the combination of a ribbon, a universal bar, and connections between said universal bar and ribbon, said connections including a device adjustable on and around the universal bar, and hand actuated means that extend outside the frame of the machine for effecting an adjustment of said device.

9. In a typewriting machine, the combination of a ribbon, a universal bar, and connections between said universal bar and ribbon, said connections including a device carried by and adjustable on and around the universal bar, and means for retaining said device in any one of a plurality of positions to which it may be adjusted around the universal bar.

10. In a typewriting machine, the combination of a ribbon vibrator, a universal bar, intermediate connections between said universal bar and vibrator, an adjustable device carried by the universal bar and forming part of said intermediate connections and having a rigidly connected finger piece outside the frame of the machine and by means of which said device may be adjusted.

11. In a typewriting machine, the combination of a ribbon vibrator, a tubular universal bar, an adjustable member contained within said tubular universal bar, and connections between said member and the ribbon vibrator.

12. In a typewriting machine, the combination of a ribbon having fields of different characteristics, a ribbon vibrator, finger keys, constantly maintained actuating connections intermediate the finger keys and vibrator, said intermediate connections comprising two members, one of which is adjustable on the other and operative to vary the normal position of the vibrator and thereby determine which field of the ribbon shall be presented to operative position.

13. In a typewriting machine, the combination of a ribbon vibrator; actuating means for said vibrator; said actuating means comprising a lever that turns on a fixed pivot and which is connected with said vibrator, a universal bar, keys cooperative therewith to effect an actuation of the universal bar at each actuation of a key, and intermediate connections between said universal bar and lever; and means cooperative with said actuating means for changing the throw of the vibrator relatively to the printing point

without changing the extent of movement thereof.

14. In a typewriting machine, the combination of a ribbon having fields of different characteristics; a ribbon vibrator; actuating means for said vibrator, said actuating means comprising a lever that turns on a fixed pivot and which is connected with said vibrator, a universal bar, keys cooperative therewith to effect an actuation of the universal bar at each actuation of a key, and intermediate connections between said universal bar and lever; and means cooperative with said actuating means for changing the throw of the vibrator without changing the extent of movement thereof in order to render any desired field of the ribbon operative and to render the actuating means inoperative to move the ribbon to the printing point when desired.

15. In a typewriting machine, the combination of a ribbon vibrator, a universal bar, and intermediate connections between said universal bar and vibrator, said connections including a crank arm, and means for adjusting said crank arm on the part that carries it to vary the throw of the ribbon relatively to the printing point.

16. In a typewriting machine, the combination of a ribbon vibrator, a universal bar, and intermediate connections between said universal bar and vibrator, said connections including a crank arm, and means for adjusting said crank arm to vary the throw of the ribbon relatively to the printing point, the construction and arrangement of the parts being such that an adjustment of the crank arm determines the normal position of the vibrator.

17. In a typewriting machine, the combination of a ribbon having fields of different characteristics, a ribbon vibrator, a universal bar, and intermediate connections between said universal bar and vibrator, said connections including a crank arm, and means for adjusting said crank arm on the part that carries it and thereby determining which field of the ribbon shall be moved to operative position or whether or not the universal bar shall be operative to move the ribbon to the operative position.

Signed at the borough of Manhattan, city of New York in the county of New York and State of New York this 5th day of October A. D. 1906.

CHARLES E. SMITH.

Witnesses:

E. M. WELLS,
J. B. DEEVES.