

R. H. STROTHER.  
TYPE WRITING MACHINE.  
APPLICATION FILED JAN. 27, 1910.

990,312.

Patented Apr. 25, 1911.

3 SHEETS-SHEET 1.

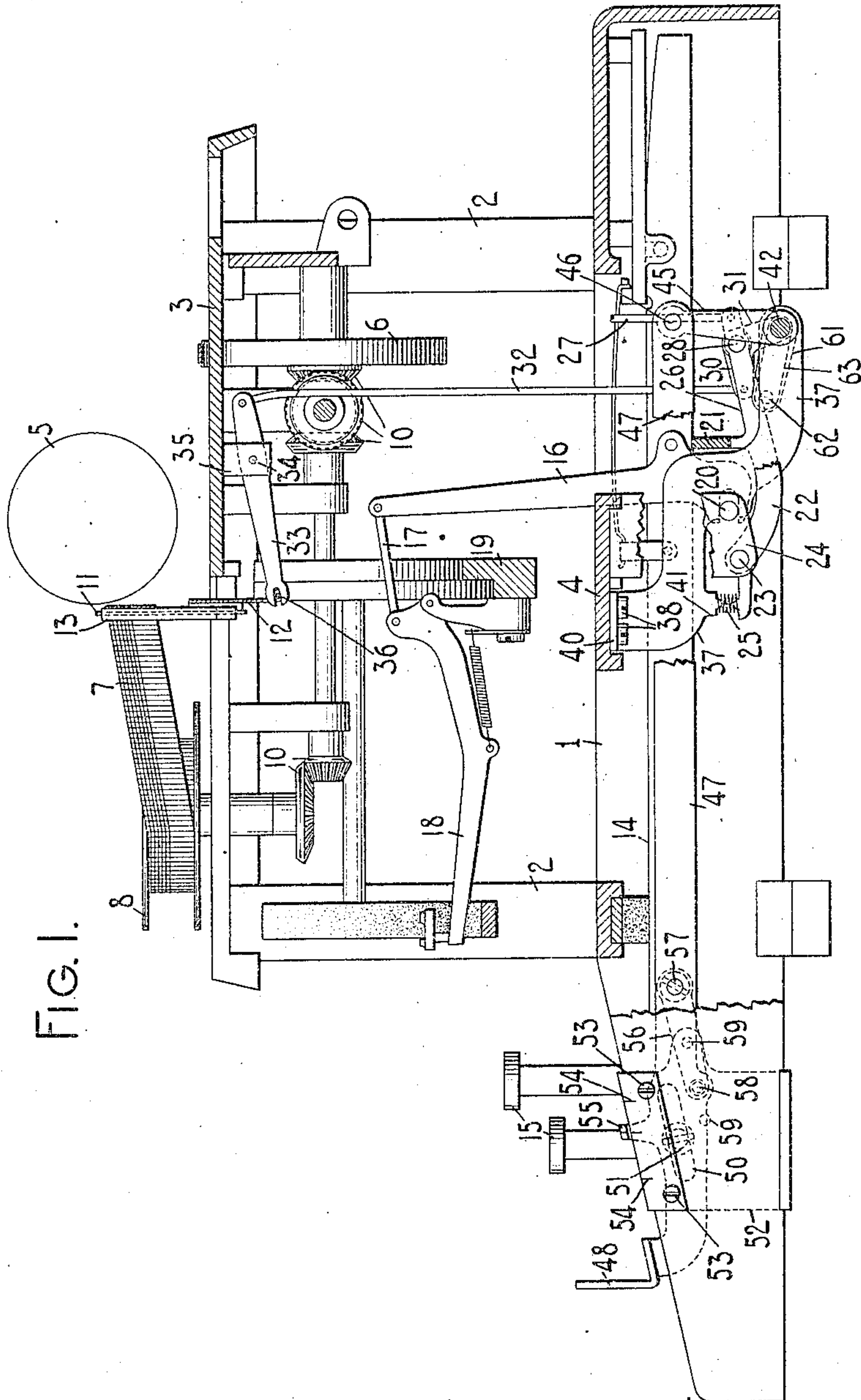


FIG. 1.

WITNESSES:

*E. M. Wells*  
*M. H. Hanover*

INVENTOR:

*Robert H. Strother*

*By Jacob Felber*

HIS ATTORNEY

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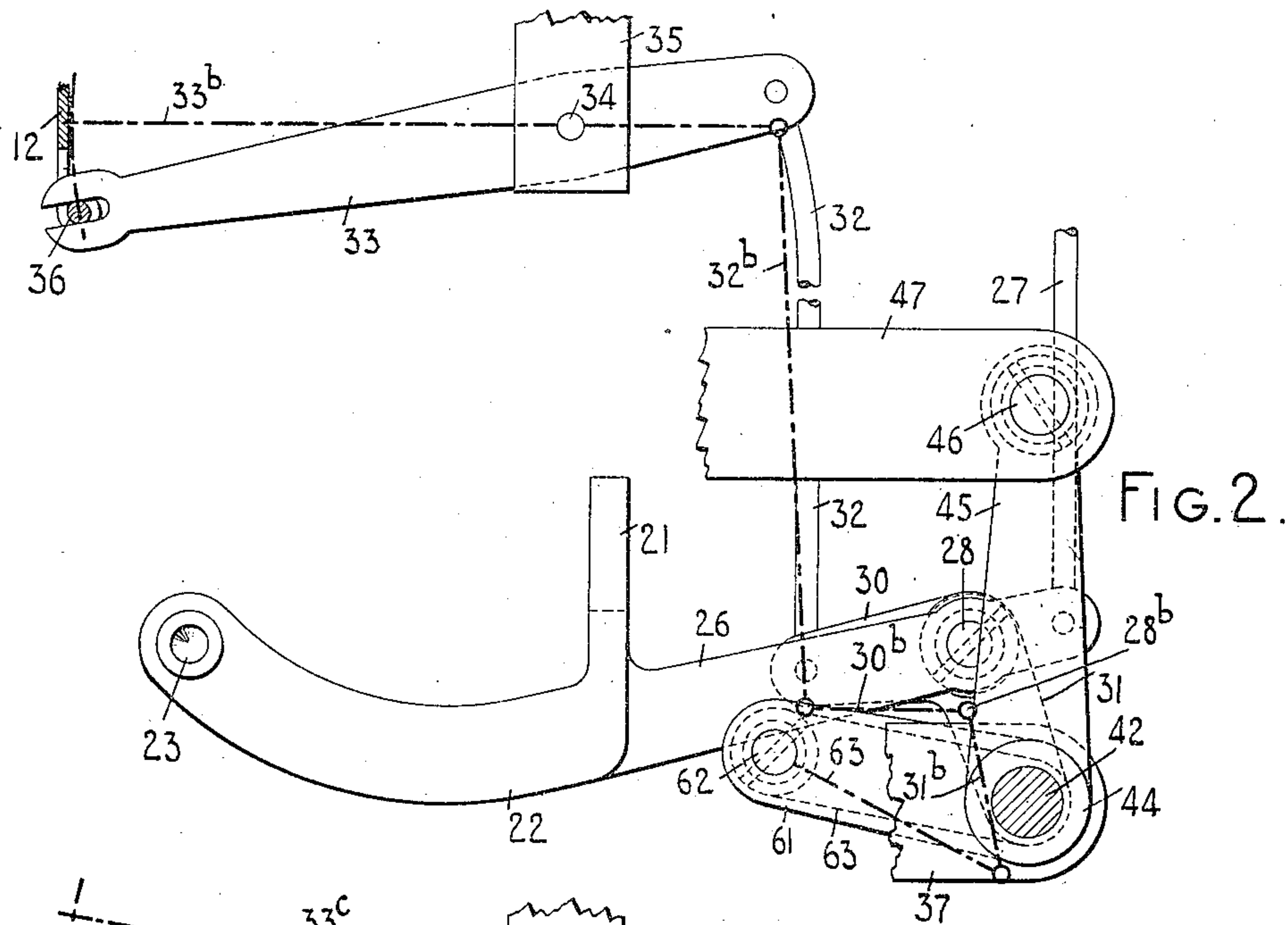


FIG. 2.

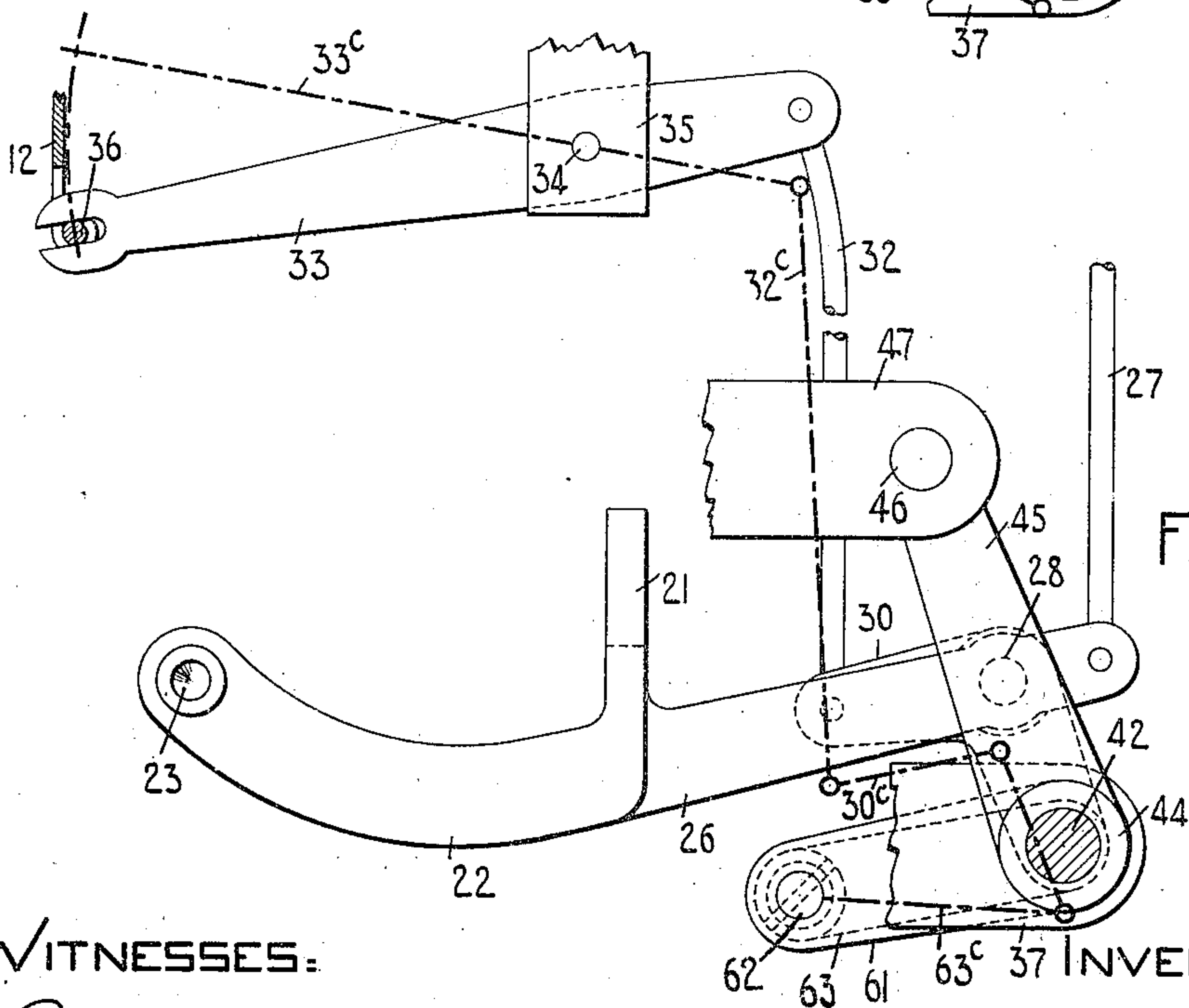


FIG. 3.

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3 SHEETS—SHEET 3.

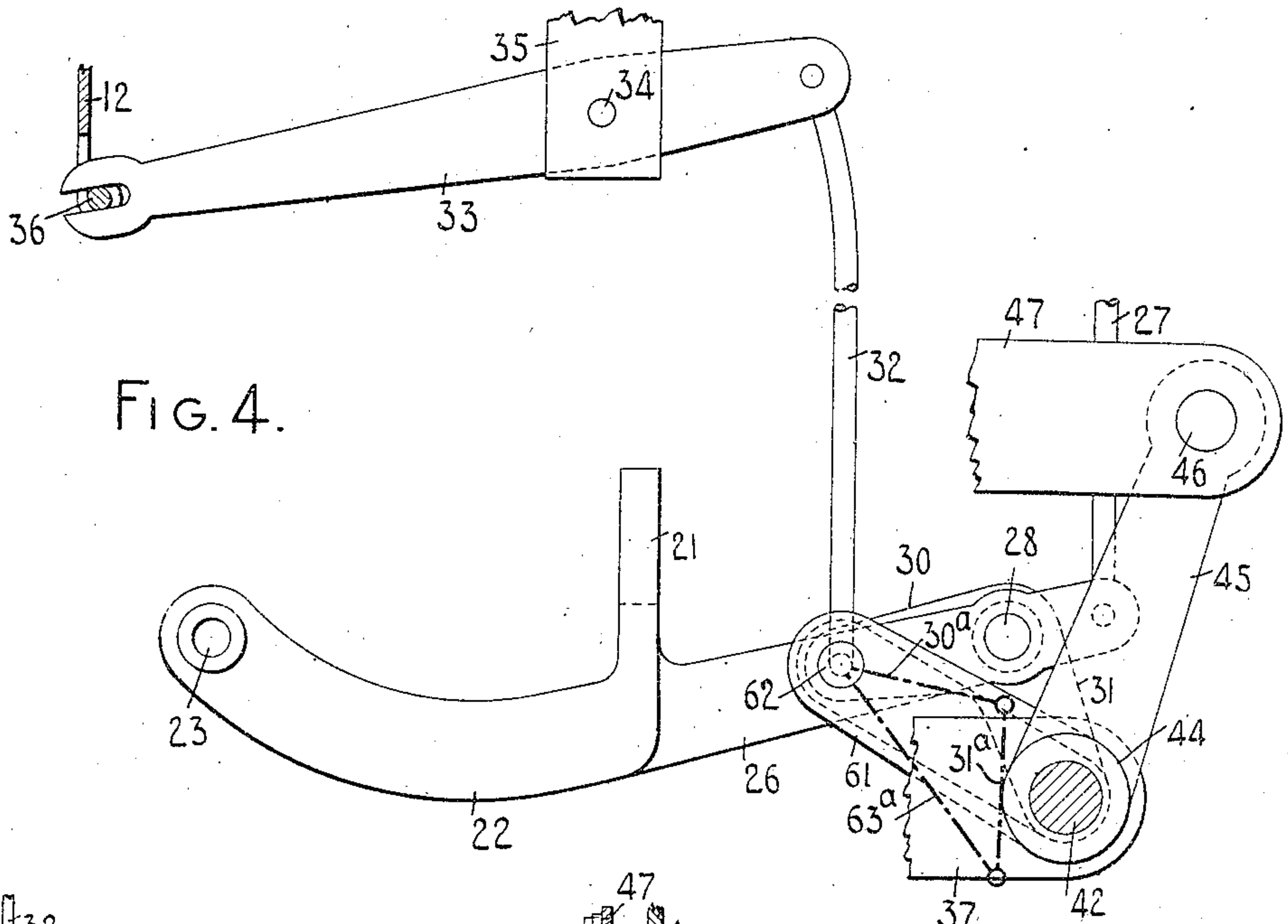


FIG. 4.

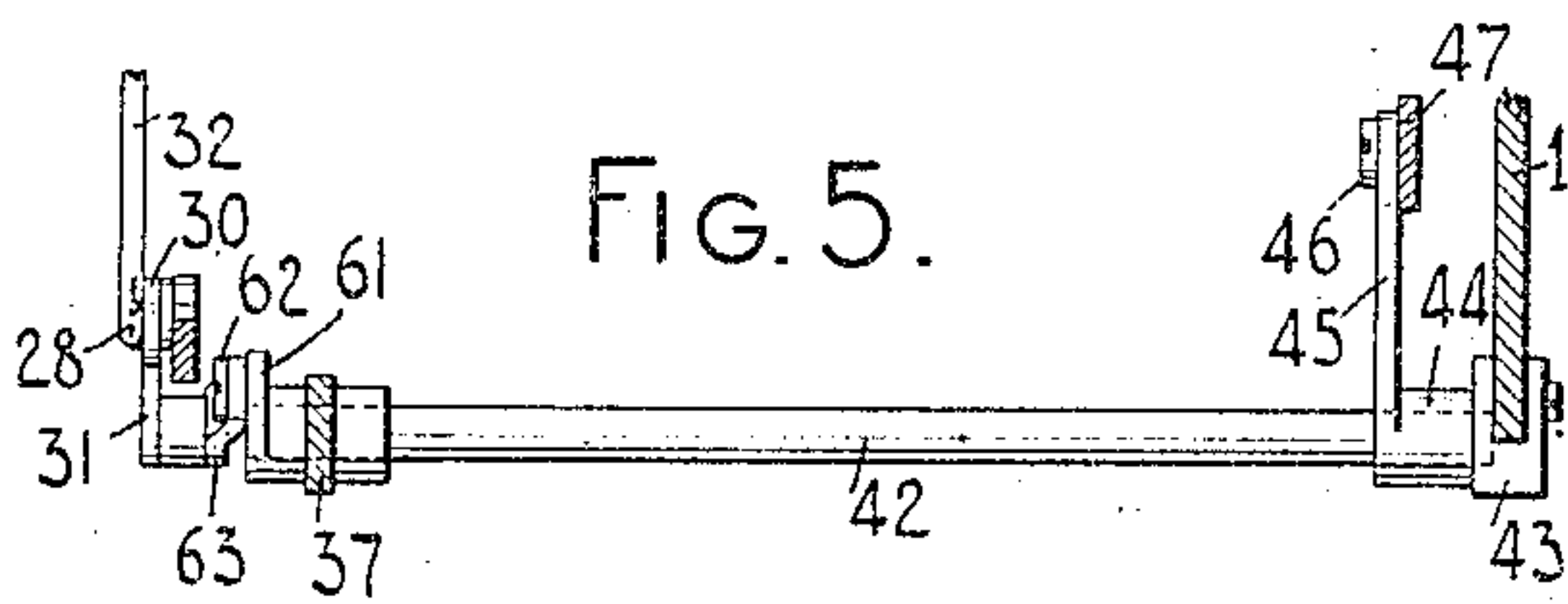


FIG. 5.

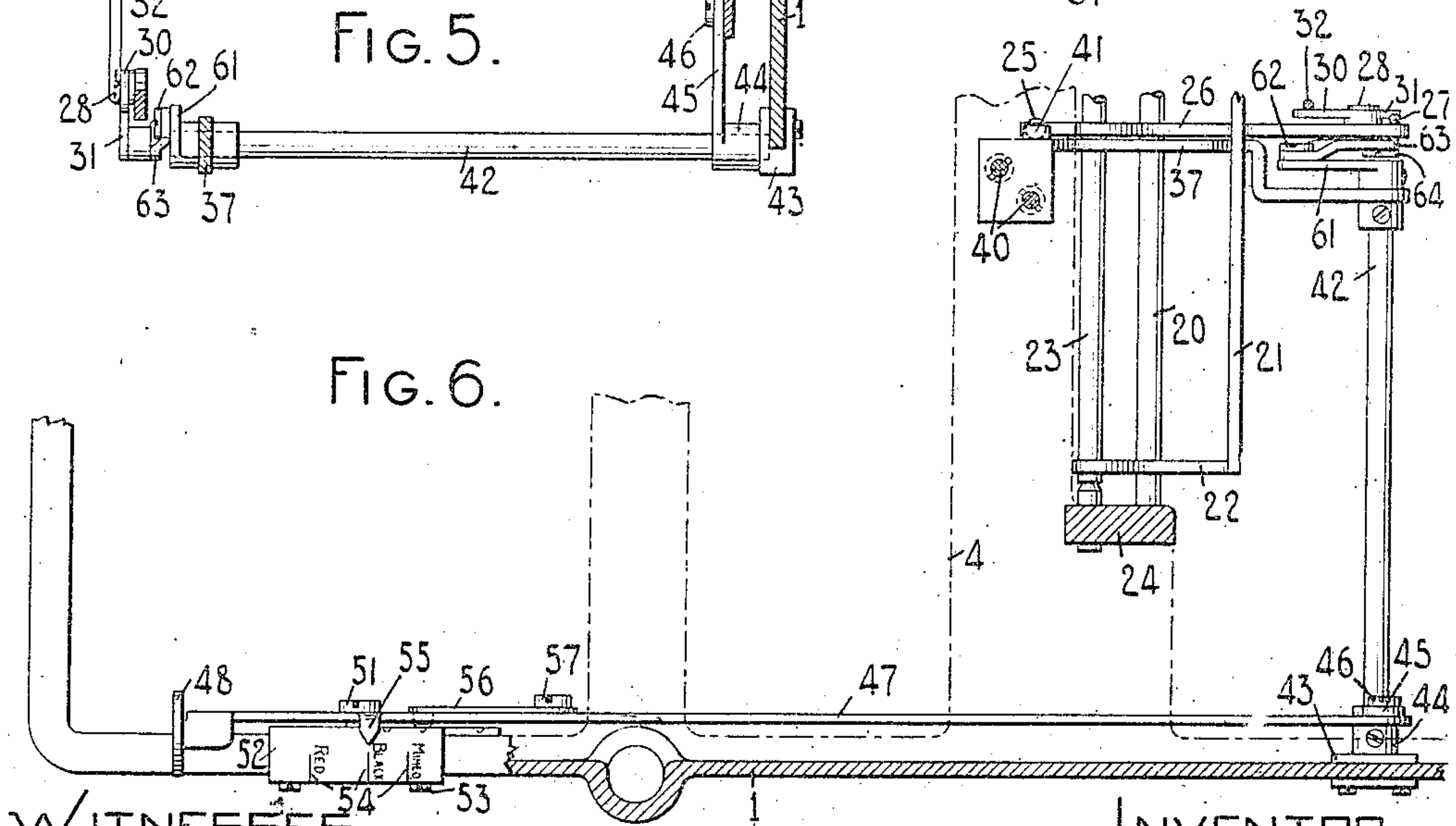


FIG. 6.

WITNESSES:

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# UNITED STATES PATENT OFFICE.

ROBERT H. STROTHER, OF MONTCLAIR, NEW JERSEY, ASSIGNOR TO UNION TYPE-WRITER COMPANY, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

## TYPE-WRITING MACHINE.

990,312.

Specification of Letters Patent.

Patented Apr. 25, 1911.

Application filed January 27, 1910. Serial No. 540,426.

*To all whom it may concern:*

Be it known that I, ROBERT H. STROTHER, citizen of the United States, and resident of Montclair, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to typewriting machines and more particularly to the ribbon mechanism of such machines.

My invention has for its object to provide improved mechanism for vibrating the ribbon of a visible typewriter; to provide a changeable connection whereby the ribbon can be thrown different extents at each vibration, in order to print from either one of a plurality of stripes of the ribbon; to provide means whereby the ribbon vibrator is not thrown to printing position when it is desired to do mimeograph work, and other objects as will appear hereafter.

To the above ends, my invention consists in certain features of construction and combinations and arrangements of parts, all of which will be fully set forth herein and particularly pointed out in the claims.

In the accompanying drawings:—Figure 1 is a side view, in vertical section, of a typewriting machine having my invention embodied therein. Figs. 2, 3 and 4 are diagrammatic side views on an enlarged scale with parts in section and parts broken away; Fig. 2 showing the mechanism set to print from the upper stripe of the ribbon; Fig. 3 showing the mechanism set to print from the lower stripe of the ribbon, and Fig. 4 showing the mechanism set so as not to vibrate the ribbon when the keys are operated. Fig. 5 is a fragmentary front view partly in section and showing the mechanism that is set by hand to vary the operation of the ribbon. Fig. 6 is a fragmentary top view with parts in section and parts broken away, and showing the portions of the mechanism that are mounted in the base of the machine.

My invention is applicable or adaptable generally to those typewriters that employ a ribbon vibrator. It is here shown applied to a Monarch typewriter.

The main frame of that machine comprises a base 1, corner posts 2 and a top plate 3, said base comprising, among other

things, a cross bar 4 about midway of the length of the machine. A platen 5 is mounted on a carriage which is not shown, but which is drawn across the machine by a spring drum 6 in a manner well-known in the art. The ribbon 7 is carried by spools 8 mounted above the top plate and driven from the spring drum 6 by a train of gearing 10. The ribbon is threaded through a vibrator 11 having a depending stem 12 and guided on a fixed standard or guide 13. These parts may be of the ordinary Monarch construction or of any other suitable construction. A series of printing key levers 14, having keys 15 on their forward ends, operate a series of sub-levers 16 which are connected by links 17 with front-strike type bars 18 mounted on a segment 19. The sub-levers 16 are pivoted to the key levers and each of them coöperates with the fixed fulcrum rod 20. The segment 19 is shiftable up and down for upper and lower case printing. A universal bar 21, lying beneath the key levers, forms part of a frame which also comprises arms 22 which are rigidly mounted on a rock shaft 23, which is journaled at its ends in brackets 24 depending from the transverse frame bar 4. Said universal bar is held up in its normal position by a returning spring 25. In addition to the end arms 22, the universal bar frame comprises another arm 26 which projects some distance to the rear of the universal bar and which has pivoted to the rear end thereof an up-standing link 27 which operates the escapement mechanism of the machine. My ribbon vibrating mechanism is also connected with this arm 26 and it comprises a bell crank pivoted to the side of said arm at 28. Said bell crank has a forwardly extending arm 30 and a downwardly extending arm 31, said forwardly extending arm being connected by a link 32 with a lever 33 of the third order which is pivoted at 34 in a bracket 35 depending from the top plate of the machine. Said lever 33 has in its forward end an open slot that receives a cross pin 36 of the stem 12 of the ribbon vibrator. When any printing key is operated the pivot 28 of the bell crank 30, 31 moves downward and said bell crank swings to a certain extent on said pivot. I have provided means for controlling this swinging motion of the



bell crank. When it is desired to print from the lower stripe of the ribbon the bell crank is allowed to swing but little so that the forward end of it moves down about as far as the rear end or possibly farther. When it is desired to print from the upper stripe of the ribbon a greater extent of swinging motion is imparted to the bell crank so that the forward end of it does not move down so far, and when it is desired to leave the vibrator stationary the bell crank is caused to swing about its pivot to such an extent that the forward end of said bell crank is substantially stationary.

A bracket 37, having the form shown in Figs. 1 and 6, is rigidly mounted on the underside of the cross bar 4 by means of screws 38 passing through an ear 40 bent off horizontally from said bracket, which bracket lies in part by the side of the arm 26 of the universal bar frame, and has an ear 41 bent off therefrom which receives the upper end of the returning spring 25. The rear end of the bracket 37 has journaled therein the left hand end of a transverse rock shaft 42, the right hand end of which is pivoted in a bearing block 43 detachably secured to the right hand side plate of the base 1 of the machine. At its right hand end said rock shaft has rigidly mounted thereon the hub 44 of an upright arm 45, the free end of which has pivoted thereto at 46 the rear end of a bar 47 which extends to the front of the machine, where it is formed with a finger piece 48 for moving said bar in a front or back direction. The forward end of the bar 47 is formed with an elongated slot 50 through which passes a shouldered and headed screw 51 that is threaded into a plate 52 which is detachably secured to the side bar of the machine by means of screws 53. The upper part of this plate is marked with lines 54 to indicate the different settings of the bar, said lines cooperating with a pointer 55 formed on the bar 47. There are three of the designations 54 marked "Mimeo." "Black" and "Red." In order to maintain the bar in either of its positions corresponding to these designations, a plate spring 56 is secured to the side of the bar 47 by a screw 57, and this spring carries a pointed pin 58 which passes through a hole in the bar 47 and is adapted to enter any one of three conical depressions 59 in the plate 52. It will, of course, be understood that when the finger piece 48 is moved in either direction it rocks the shaft 42. At its left hand end, said shaft 42 carries an arm 61 to the forward end of which at 62 there is pivoted a link 63 the free end of which is pivoted at 64, Fig. 6, to the depending bell crank arm 31. The link 63 is a guide link or controlling link for controlling the operation of the bell crank 30, 31. When the parts are in normal position the pivot screw 64 and the

shaft 42 are co-axial, so that when said shaft is turned by means of the finger piece 48, the link 63 swings about the screw 64 as a center without disturbing the bell crank 30, 31. Said link 63 and the arm 61 are of such a length and so disposed that when the pointer 55 stands opposite the line 54 marked "Mimeo.", the pivot 62 stands directly opposite, or substantially so, to the lower end of the link 32 where said link is pivoted to the lever arm 30, this being the position of the parts shown in Fig. 4. When the universal bar is depressed by the operation of a printing key, the parts move to the respective positions indicated by the heavy broken lines 30<sup>a</sup>, 31<sup>a</sup>, and 63<sup>a</sup> in Fig. 4. The link 63 is compelled to turn about the pivot 62 as a center, and in doing so it compels the bell crank 30, 31 to turn approximately about the same center so that the lower end of the link 32 remains nearly stationary and the vibrator stands substantially stationary. The lower end of the link 32 has a very slight motion in a front and back direction, but practically no motion at all in an up and down direction. The result is that the ribbon vibrator is not operated.

When the pointer 55 is moved opposite the line 54 marked "Black", as shown in Fig. 6, the parts assume the position shown in Figs. 1 and 2 in which the pivot 62 is somewhat below the lower end of the link 32 and in which the link 63 has an inclination forward and somewhat upward. If now a printing key be operated the universal bar will be depressed, moving the pivot 28 to the point marked 28<sup>b</sup> and the other parts will assume the positions indicated by the heavy broken lines in the figure. The link 63 will pull the arm 31 forward to the position marked 31<sup>b</sup> and the other parts will assume respectively the positions marked 30<sup>b</sup>, 63<sup>b</sup>, 32<sup>b</sup> and 33<sup>b</sup>. The lower end of the link 32 will move downward but not to the same extent as the pivot 28 so that the vibrator is operated just enough to bring the upper stripe of the ribbon to the printing point.

When the pointer 55 is moved forward to the position marked "Red", the parts assume the positions shown in Fig. 3, where the link 63 is lower than it is shown in Fig. 2. When a printing key is operated the parts assume the respective positions marked 30<sup>c</sup>, 31<sup>c</sup>, 30<sup>c</sup>, 32<sup>c</sup> and 33<sup>c</sup>. The forward end of the lever arm 30 moves downward fully as far as the pivot 28, with the result that the vibrator is thrown to a higher point than in Fig. 2 so as to print from the lower stripe of the ribbon.

The link 63 may be called a guide link or controlling link for controlling the operation of the floating lever 30, 31. The pivot screw 62 may be called an anchor or anchorage for said guide link and the arm 61 a support for said anchorage. It will be seen that this



support is pivoted and that the pivotal axis of said support coincides with the normal position of the pivot 64 at the free end of the link 63; that means are provided for moving this support about its pivot to move the anchorage 62 to a series of positions for varying the throw of the vibrator, and that in one of these positions said anchorage is approximately co-axial with the free end of the lever arm 30, in which last position the ribbon vibrator is not operated.

Various changes can be made in the details of construction and arrangement without departing from my invention.

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

1. In a typewriting machine, the combination of a ribbon vibrator, means for operating said vibrator, said operating means including a floating lever and means for operating said floating lever; a guide for one arm of said floating lever, and means for moving said guide to change the motion of said lever arm and thereby to change the operation of said lever on said vibrator.

2. In a typewriting machine, the combination of a ribbon vibrator, means for operating said vibrator, said operating means including a floating lever and means for operating said lever; a guide link for one of the arms of said lever, and means for changing the anchorage of said guide link in order to change the operation of said lever on said vibrator.

3. In a typewriting machine, the combination of a ribbon vibrator, a floating bell crank having one arm thereof operatively connected with said vibrator, a guide for the other arm of said bell crank, means for moving said guide to change the direction of motion of said other arm, and means for operating the bell crank.

4. In a typewriting machine, the combination of a ribbon vibrator, a floating bell crank, a device operatively connected with said vibrator and pivoted to one of the arms of said bell crank, a guide link for the other arm of said bell crank, and means for changing the point of anchorage of said guide link to vary the operation of said bell crank on said device, said means including means for locating said anchorage substantially co-axial with the point at which the device is pivoted to said arm whereby said bell crank is rendered ineffective to operate said vibrator.

5. In a typewriting machine, the combination of a ribbon vibrator, a floating lever, a device operatively connected to said vibrator and pivoted to one arm of said floating lever, means for operating said floating lever, a guide for another arm of said lever, and means for moving said guide, said moving means including means for setting said guide so as to cause said floating lever when

operated to turn substantially about the point at which said device is pivoted to said lever, whereby said lever is rendered ineffective to operate said vibrator.

6. In a typewriting machine, the combination of a ribbon vibrator, a device operatively connected with said ribbon vibrator, a part pivoted to said device, means for operating said part, a guide link for controlling the motion of said part, and means for changing the point of anchorage of said guide link, said means including means for locating said point of anchorage substantially co-axial with the point at which said device is pivoted to said part, whereby said part is rendered ineffective to operate said vibrator.

7. In a typewriting machine, the combination of a ribbon vibrator, printing key levers, a universal bar, a lever arm connected with said universal bar, a floating lever mounted on said lever arm, a device operatively connected with said ribbon vibrator and pivoted to an arm of said floating lever, a guide or controller for said floating lever, and means for moving said guide or controller to vary the action of said floating lever on said vibrator.

8. In a typewriting machine, the combination of a ribbon vibrator, a universal bar, an arm connected with said universal bar, a floating lever mounted on said arm, a device operatively connected with said vibrator and pivoted to said floating lever, a guide link for said floating lever, and means for changing the point of anchorage of said guide link to vary the action of said floating lever on said device.

9. In a typewriting machine, the combination of a ribbon vibrator, a universal bar, an arm connected with said universal bar, a floating lever mounted on said arm, a device operatively connected with said vibrator and pivoted to said floating lever, a guide link for said floating lever, and means for changing the point of anchorage of said guide link to vary the action of said floating lever on said guide link, said changing means including means for locating said anchorage substantially co-axial with the point at which the device is pivoted to said lever arm to render said floating lever ineffective to operate said vibrator.

10. In a typewriting machine, the combination of a ribbon vibrator, a floating lever, a device operatively connected with said vibrator and pivoted to an arm of said floating lever, a guide link pivoted to another arm of said lever, an anchor for said guide link, a pivoted support for said anchor having its pivotal axis coincident with the normal position of the point at which said guide link is pivoted to said floating lever, and means for adjusting said support about its pivot.

11. In a typewriting machine, the combination of a ribbon vibrator, a floating lever, a device operatively connected with said vibrator and pivoted to an arm of said floating lever, a guide link pivoted to another arm of said lever, an anchor for said guide link, a pivoted support for said anchor having its pivotal axis coincident with the normal position of the point at which said guide link is pivoted to said floating lever, and means for adjusting said support about its pivot.



nation of a ribbon vibrator, means including  
a floating lever for operating said vibrator,  
and adjustable means for varying the char-  
acter of the motion of said floating lever to  
5 regulate the action of said lever on said vi-  
brator.

Signed at the borough of Manhattan, city

of New York, in the county of New York  
and State of New York, this 26th day of  
January, A. D. 1910.

ROBERT H. STROTHER.

Witnesses:

E. M. WELLS,

M. F. HANNWEBER.