

No. 835,509.

PATENTED NOV. 13, 1906.

J. FELBEL.
TYPE WRITING MACHINE.
APPLICATION FILED AUG. 18, 1906.

2 SHEETS—SHEET 1.

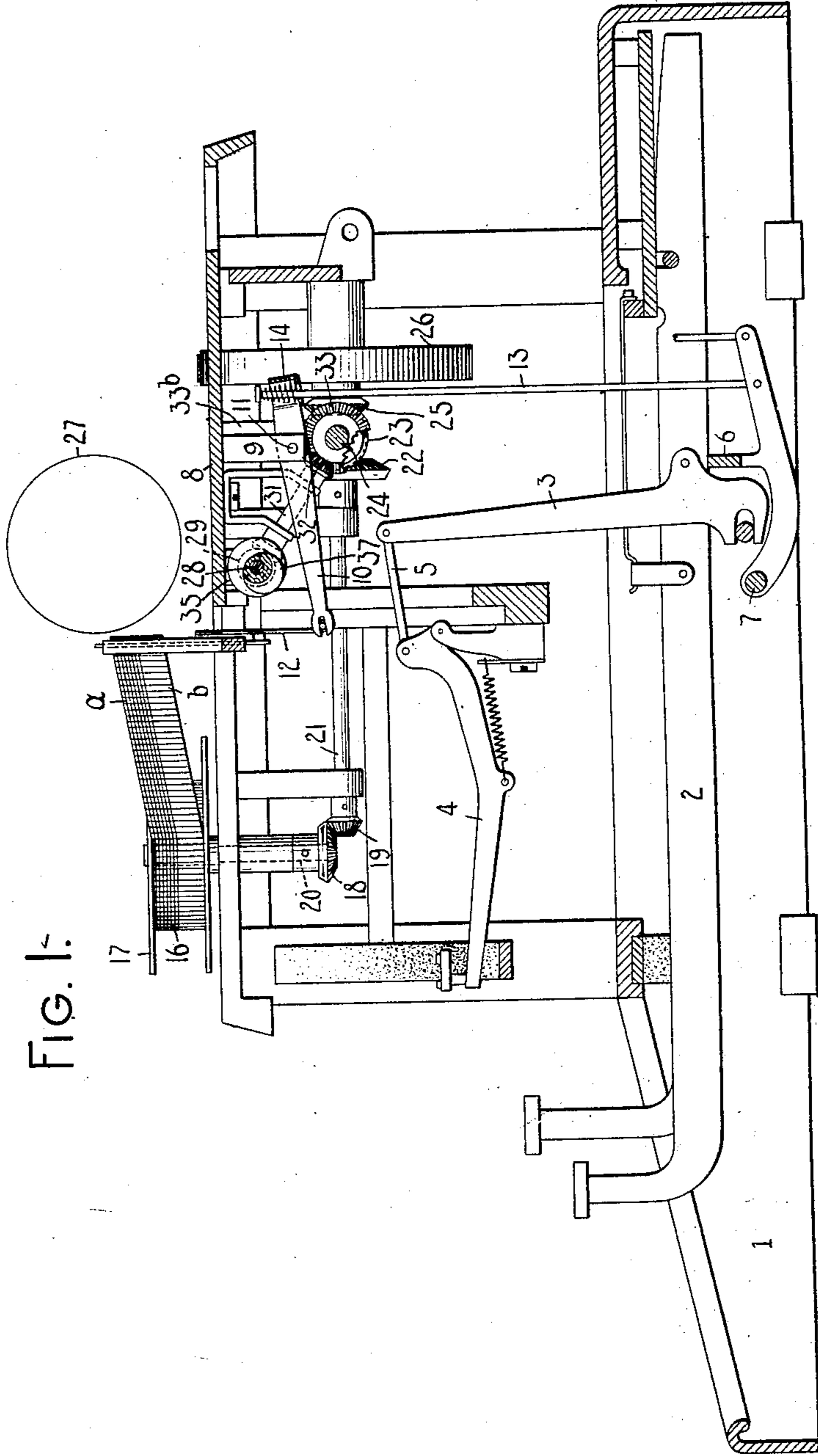


FIG. 1.

WITNESSES:

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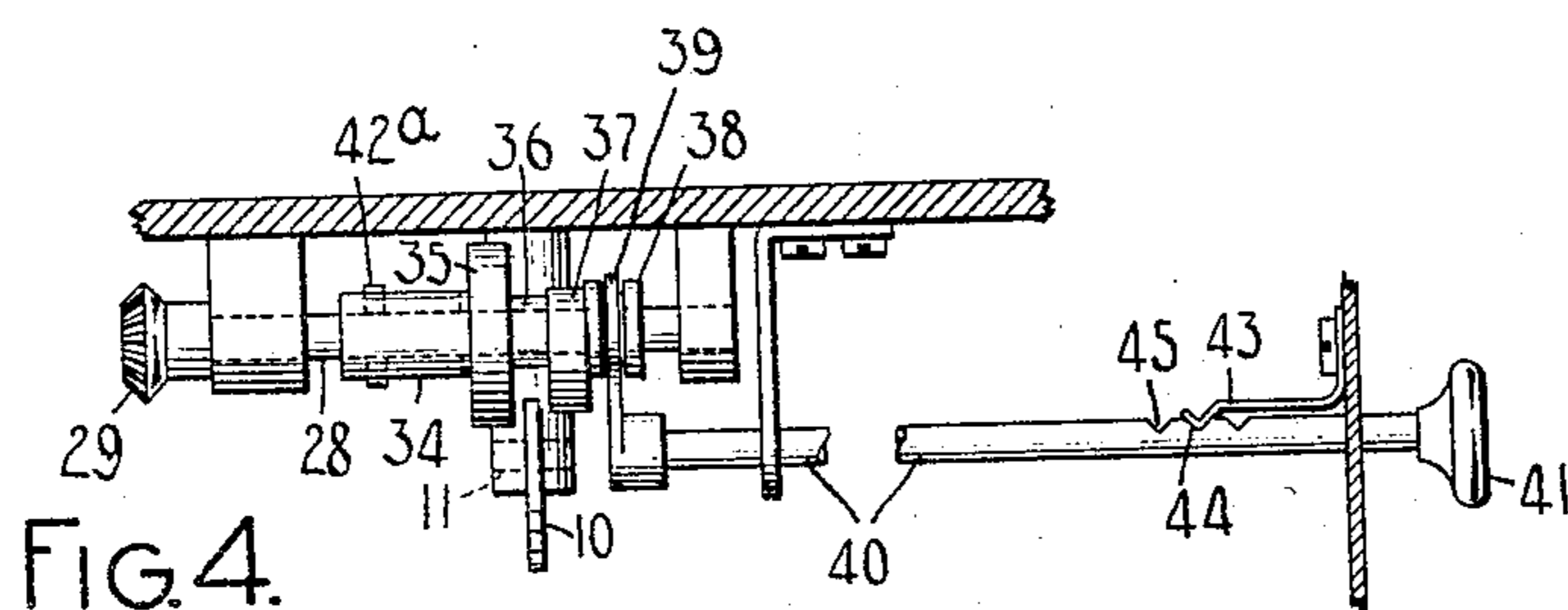
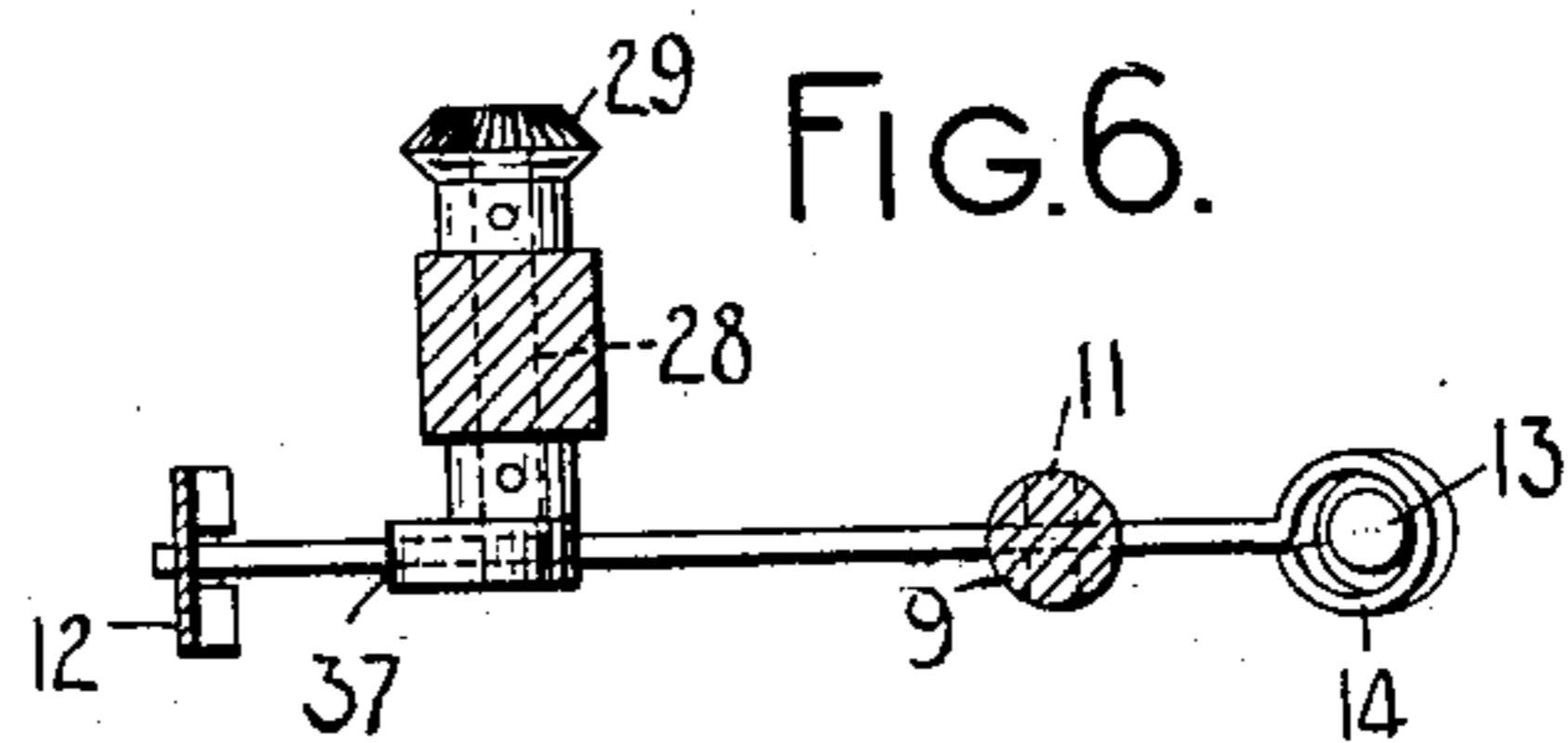
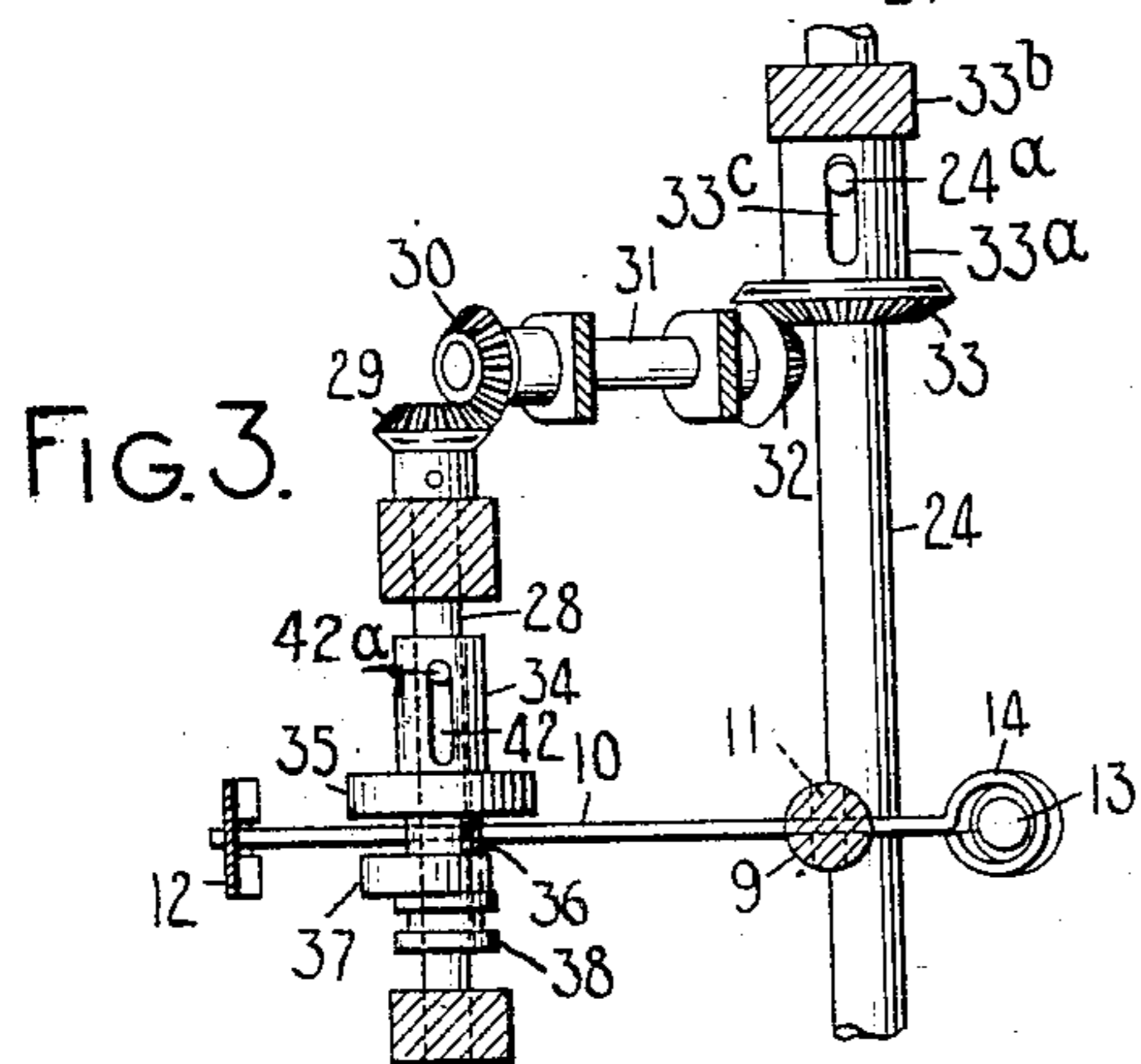
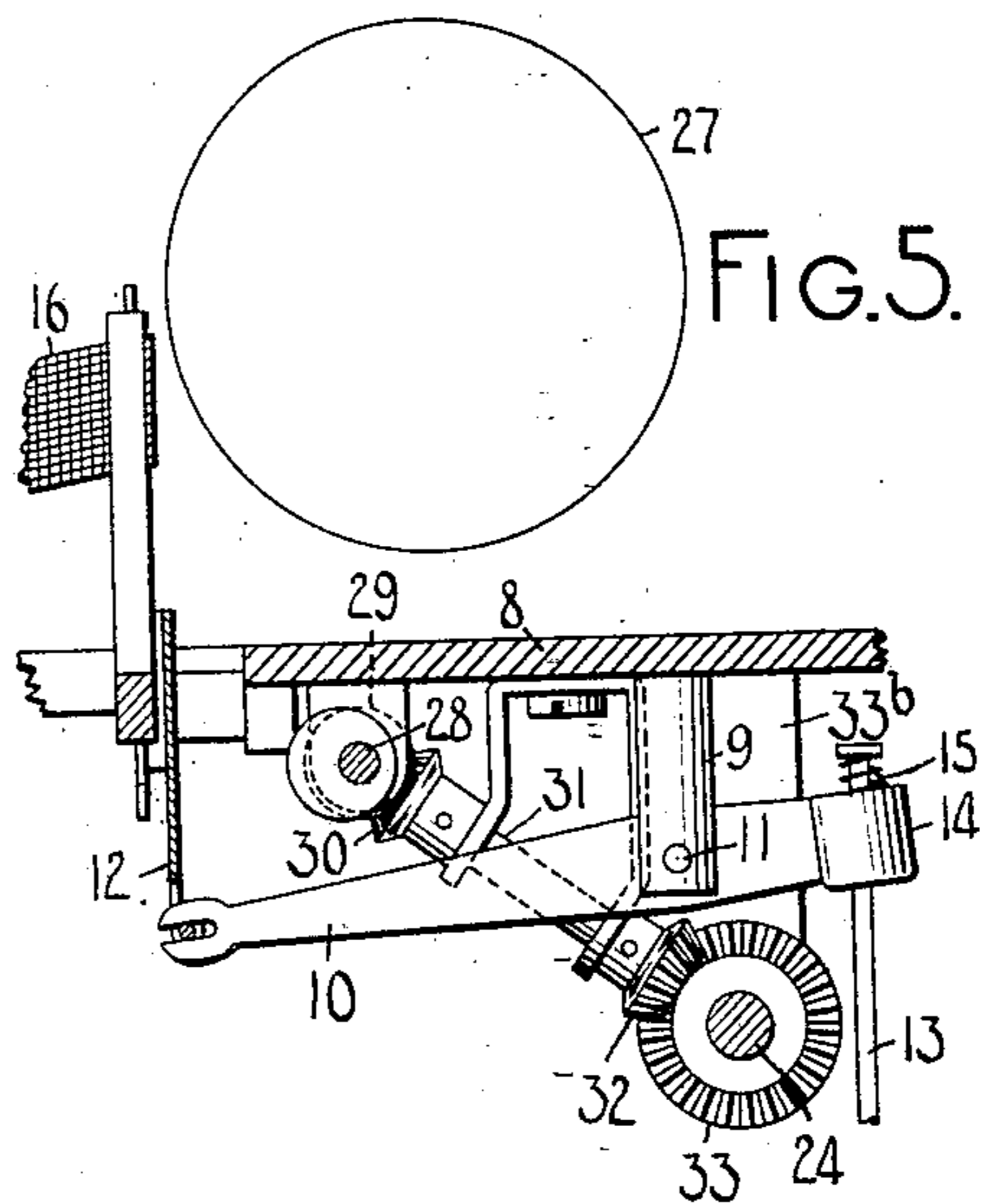
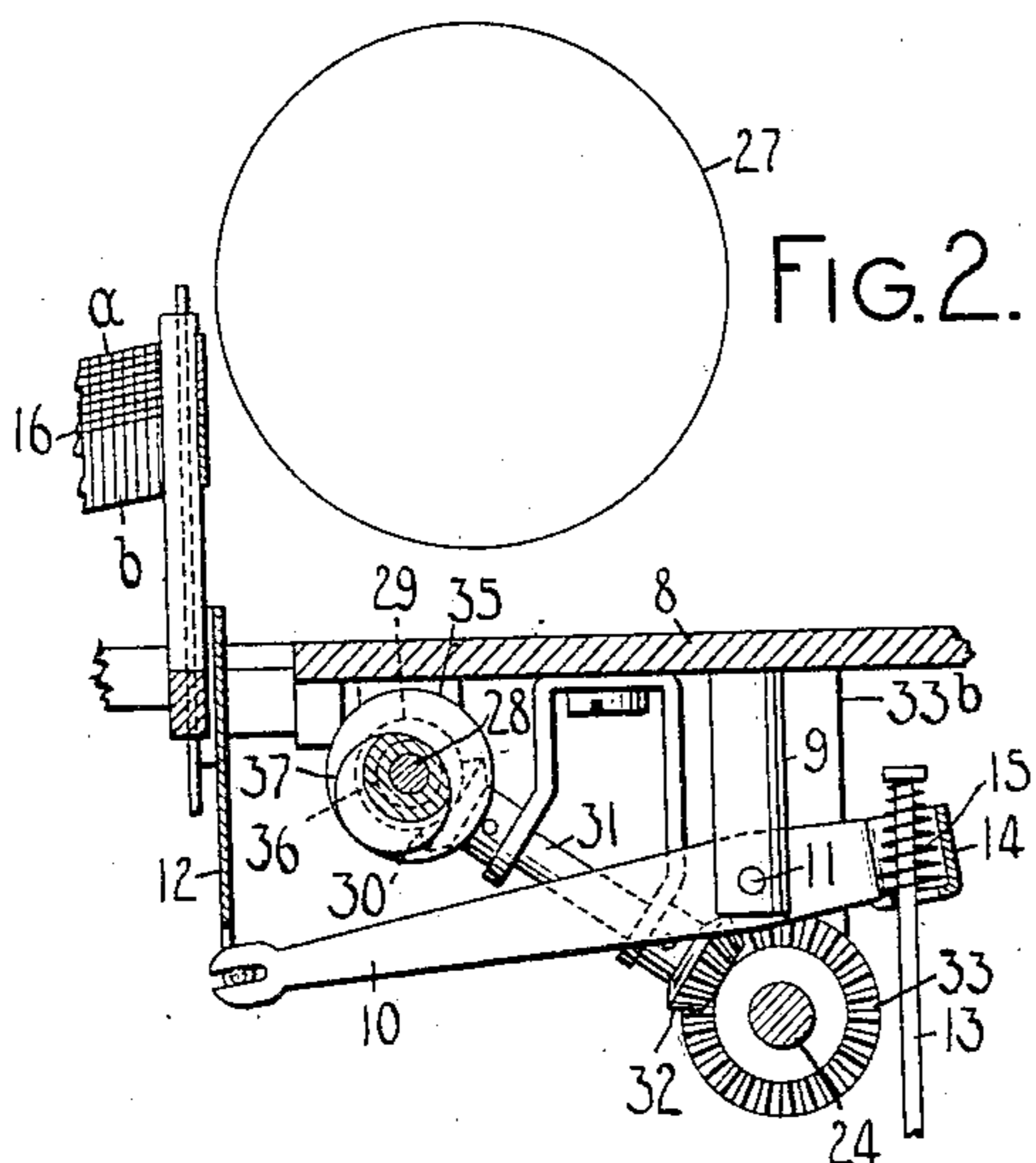
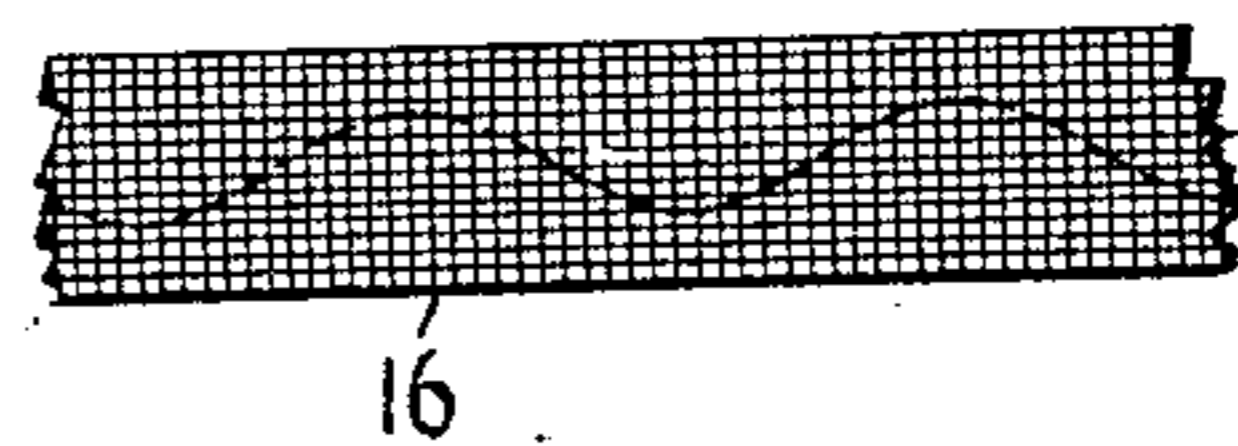


FIG. 7.



WITNESSES:

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INVENTOR:

Jacob Felbel

UNITED STATES PATENT OFFICE.

JACOB FELBEL, OF NEW YORK, N. Y., ASSIGNOR TO UNION TYPEWRITER COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

No. 835,509.

Specification of Letters Patent.

Patented Nov. 13, 1906.

Application filed August 18, 1906. Serial No. 331,113.

To all whom it may concern:

Be it known that I, JACOB FELBEL, a citizen of the United States, and a resident of the borough of Manhattan, city of 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.

My invention relates to the ribbon mechanism of writing-machines, and has for its main objects, first, to provide means for automatically using up the ribbon widthwise and lengthwise in a visible-writing machine; secondly, to provide means for automatically varying the throw of the ribbon-vibrator during successive key-strokes, so as to cause the ribbon to be used widthwise or crosswise; thirdly, to provide means for changing from the crosswise feed to a lengthwise feed only in a given lengthwise field or portion of the ribbon for the purpose of changing from one color or field to another, and, fourthly, to provide means for arresting the throw of the vibrator or its actuating means at any predetermined field or color, so as to limit the impression within a selected predetermined part of the ribbon.

To these and other ends my invention consists in the various features of construction, combinations, and arrangements of parts hereinafter more fully explained, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a longitudinal vertical section of a type-writing machine embodying my improvements. Fig. 2 is a detail side sectional view showing the several features of my invention. Fig. 3 is a detail sectional plan of the ribbon-vibrator lever and the several stop members with which it coöperates. Fig. 4 is a front sectional view of the shifting mechanism for the stop devices and showing also in section the actuating-lever. Fig. 5 is a side sectional detail of a modification, omitting some of the features shown in the previously-named views. Fig. 6 is a top plan view, partly in section, of the construction shown in Fig. 5. Fig. 7 is a fragment of an inking-ribbon, showing the path in which it is utilized.

In the various views the same parts will be found designated by the same characters of reference.

As will be noted at Fig. 1, I have shown my invention adapted to a Monarch typewriter; but of course it may be used in other styles of visible-writing machines.

1 is the base-frame; 2, the key-levers; 3, the upright sublevers; 4, the type-bars connected by links 5 to the sublevers; 6, a universal bar under the key-levers and pivotally mounted at 7 in the base-frame; 8, a top plate; 9, an arm or bracket depending therefrom; 10, a ribbon vibrator lever pivoted at 11 in said bracket and carrying at its free forward end a ribbon vibrator or carrier 12 of usual construction.

The rear free end of the vibrator-lever 10 is connected to the universal bar by a link 13 and an intermediate spring connection, which may be of any suitable construction. In the form shown the link 13 passes through an eye 14 in the lever 10 and is headed at its upper end. Within said eye and surrounding the link is a coiled spring 15, the lower end of which is seated at the bottom of the eye and the upper end of which bears against the under side of the head of the link or connecting-rod, the whole being so arranged that when the universal bar is depressed and the link 13 pulled down the lever 10 will be vibrated through the action of the link upon the spring, the spring being normally of sufficient rigidity to resist compression during the vibration of the lever; but when said lever is stopped and the universal bar continues to descend under the force of the key-lever said spring will then be compressed or will yield to the desired extent on the principle more fully described in my previous patent, No. 674,312, dated May 14, 1901. During the vibration of the lever the ribbon-carrier of course moves up and down to raise and lower the ribbon 16 in the usual way. As customary, the ribbon is adapted to travel lengthwise through the vibrator and from one spool 17 to another. The means for causing this travel in the Monarch machine are illustrated at Fig. 1 and comprise, essentially, a pair of miter-gears 18, 19 with appropriate shafts 20, 21, respectively, and another pair of miter-gears 22, 23, the gear 22 being on the shaft 21 and the gear 23 being on a transverse shaft 24, which derives its motion from a beveled gear 25, properly connected with a gear on the shaft 24. (Not

shown.) The gear 25 is connected with a spring-drum 26, which in turn is connected to the paper-carriage. (Not shown.) The platen thereof, however, is illustrated diagrammatically at 27. The beveled gears and shafts 18 19, 20 21, 22 23 are in duplicate, one set at each side of the machine, and the gears 23 are arranged to be shifted with the shaft 24 when it is shifted longitudinally, so that the ribbon-winding devices at either side may be thrown in or out of operation as desired and the ribbon wound either to the right or to the left considered from the front of the machine, there being two spools 17, one at each side of the machine.

Referring more particularly to Figs. 1 to 4, inclusive, underneath the top plate and mounted in suitable brackets or supports is a shaft 28, bearing at its inner end a beveled gear 29, with which meshes a similar gear 30 at the upper forward end of an inclined shaft 31, likewise mounted in suitable bearings and provided at its lower end with a beveled gear 32, that meshes with a gear 33, supported on the ribbon power-shaft 24. The result of this described arrangement is that when the shaft 24 turns the shaft 28 is caused to turn in unison therewith.

Supported on the shaft 28 is a sleeve 34, which carries three different stop devices numbered, respectively, 35 36 37, and said sleeve also carries a grooved collar 38, with which engages a fork 39 on the inner end of a rod 40, which is provided with a finger-piece 41 outside of the framework of the machine, and which rod is suitably supported in brackets or bearings to enable it to be pushed and pulled and to communicate these movements to the sleeve 34 and the devices carried thereby. The sleeve is provided with a slot 42, that embraces a pin 42^a on the shaft 28, which construction causes the sleeve and attached parts to rotate with the shaft and also enables the sleeve and its parts to be slid longitudinally of the shaft. The purpose of this sliding action will now more clearly appear.

It will be observed the inking-ribbon 16 (illustrated at Fig. 2) is drawn to represent a two-color ribbon, the upper field or half *a* of which may be supposed to be black and the lower half *b* red. These two-color ribbons are of necessity quite narrow, and preferably some means should be provided to prevent overthrow of the ribbon when set to print in either of the colors. In my aforesaid patent the stop means shown and described will prevent this overthrow. Such stops are also provided herein, but they are differently constructed, arranged, and operated.

The stops 35 and 36 are circular in form and are concentric with the shaft 28. The stop 35 is of greater diameter than the stop 36 and will arrest the ribbon-vibrator lever

at an earlier part of its stroke than will the stop 36. The stop 35 therefore is used in conjunction with the upper half *a* of the ribbon and the stop 36 in conjunction with the lower half *b* of the ribbon. As shown in Fig. 3, the stop 36 is set in position to arrest the upward swing of the lever 10 and the stop 35 is out of operative position. The stop-shifting mechanism is held in this relationship by a spring-detent 43, engaging a notch 44 in the rod 40, Fig. 4. When it may be desired to put out of use the stop 36 and use the stop 35, the rod 40 is pulled outwardly and the stop 35 brought into register with the lever 10, at which time the detent will engage a notch 45 in the rod 40 to hold the parts in proper working position. It will be noted that these stops 35 36 rotate during the operation of the writing-keys, and thus present new points for the lever to strike against, thus distributing the wear on the stops.

The stop 37 is mounted eccentrically on the shaft 28 and is for the purpose of enabling the ribbon to be used crosswise automatically. This use of the ribbon may take place when there are two colors employed or when there is only one color in the ribbon; but ordinarily the eccentric stop will be used only with the one-color ribbon. It may also be remarked here that the two stops 35 36 may be used with the one-color ribbon for utilizing the ribbon in two parallel longitudinal fields.

The eccentric stop 37 turns always with the shaft 28, and thus presents different portions of its face to the upper edge of the vibrator-lever 10, these different portions being different distances from the center of the shaft 28, and as a consequence the lever 10 will be arrested in its upward throw at different distances from its normal or rest position, and on account of this differential throw of the lever the vibrator connected thereto will have a corresponding differential throw. Thus different portions of the ribbon widthwise will be successively thrown opposite the printing-point and be struck by the types. When the longest radial portion of the eccentric is presented to the lever 10, the lever will have its shortest throw, and when the shortest radial portion of the eccentric is turned to cooperate with the lever 10 the latter will have its longest throw, the dip or depression of the universal bar being great enough for this extreme throw of the lever. If the lever 10 be arrested before making its complete throw, the universal bar and the key-lever may nevertheless continue their movement by reason of the spring or yielding connection between the link 13 and the lever 10.

When it may be desired to put the eccentric stop into action, the rod 40 is pushed inwardly until the detent drops into the notch 46. This brings the eccentric in register with the lever 10, and by the cooperation of

these two devices the ribbon will be utilized in some such manner as that represented in Fig. 7 by the dotted serpentine line, the means for moving the ribbon lengthwise or from one spool to another operating simultaneously.

Referring now more particularly to Figs. 5 and 6, I have shown a one-color ribbon and have omitted the stops 35 36, retaining only the rotary eccentric-stop, which normally remains in register with the lever 10 and arrests its throw variably, as hereinbefore described, the variable arrest being entirely automatic, as previously explained.

Preferably the gears 29 30 32 33 in both forms remain always in mesh, and in order not to disturb the relationship of the gears 32 33 when the shaft 24 is shifted to reverse the longitudinal feed of the ribbon the gear 33 is provided with a hub 33^a, which bears against a bracket 33^b, and this hub is slotted at 33^c to receive a pin 24^a, projecting from the shaft 24, said pin carrying around the sleeve and gear 33 with the shaft 34, while enabling the shaft to be shifted longitudinally independently of the gear 33.

Various changes in detail, construction, and arrangement may be made without departing from the spirit of my invention as defined herein and in the claims.

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

1. In a type-writing machine, the combination of a ribbon-vibrator, stop means for arresting said vibrator in its travel toward the printing-point, and means operating automatically to adjust said stop means to arrest the vibrator at different points in its travel.

2. In a type-writing machine, the combination of a ribbon-vibrator, stop means for arresting said vibrator in its travel toward the printing-point, and means operating automatically to adjust said stop means to arrest the vibrator at progressively-varying points in its travel.

3. In a type-writing machine, the combination of a ribbon-vibrator, actuating means therefor comprising an operating-lever, a stop coöperative with said operating-lever to stop its movement, and means operating automatically to cause said stop and said lever to coöperate at different points in the travel of the lever.

4. In a type-writing machine, the combination of a ribbon-vibrator, actuating means therefor comprising an operating-lever, and a stop coöperative with said operating-lever and rotatable to progressively stop the extent of movement of said lever.

5. In a type-writing machine, the combination of a ribbon-vibrator, means for feeding the ribbon longitudinally and stop means for arresting the vibrator in its travel toward

the printing-point, said stop means being actuated by said ribbon-feeding means to vary the extent of travel or throw of the vibrator.

6. In a type-writing machine, the combination of a ribbon-vibrator, means for feeding the ribbon longitudinally, and stop means for arresting the vibrator in its travel toward the printing-point, said stop means being actuated by said ribbon-feeding means to vary progressively the extent of travel or throw of the vibrator.

7. In a type-writing machine, the combination of a ribbon-vibrator, actuating means therefor comprising an operating-lever, a key-actuated universal bar, a yielding connection between said universal bar and said lever, and a stop automatically operative to arrest said lever and automatically vary the throw of the vibrator.

8. In a type-writing machine, the combination of a ribbon-vibrator, stop means comprising a stop for arresting the vibrator at an unvarying point in its travel and a second stop for automatically varying the point of arrest of said vibrator and means for moving said stop means to bring one or another of said stops to operative position.

9. In a type-writing machine, the combination of a ribbon-vibrator, actuating means therefor comprising an operating-lever, rotary stop means coöperative with said lever and comprising concentric portions and an eccentric portion and means for rendering operative any desired stopping portion.

10. In a type-writing machine, the combination of a ribbon-vibrator, actuating means therefor comprising an operating-lever, means for feeding the ribbon longitudinally, stop means rotatable by said ribbon-feeding means and comprising concentric stops and an eccentric stop, all coöperative with said lever, and hand-actuated means for moving any desired stop to operative position.

11. In a type-writing machine, the combination of a ribbon-vibrator, actuating means therefor, and means for arresting said actuating means variably and automatically, said arresting means being varied automatically during the operation of the writing-keys.

12. In a type-writing machine, the combination of a ribbon-vibrator, actuating means therefor, and constantly-varying stop means for stopping and changing the throw of the vibrator.

13. In a type-writing machine, the combination of a device for carrying the ribbon toward and away from the printing-point, means for actuating said device, and an automatically-varying device for stopping said actuating means.

14. In a type-writing machine, the combination of an inking-ribbon movable toward and away from the printing-point, operating

means therefor, and an automatically-varying stop means for positively stopping said operating means.

15 15. In a type-writing machine, the combination of an inking-ribbon movable toward and away from the printing-point, operating means therefor, and an eccentric-stop device capable of stopping and varying the throw or movement of said ribbon toward the
20 printing-point.

16. In a type-writing machine, the combination of an inking-ribbon movable toward and away from the printing-point, operating means therefor, and a variable stop device
25 15 for variably stopping said operating means connected to be operated by a given part of the machine when the keys are actuated.

17. In a type-writing machine, the combination of an inking-ribbon movable toward
20 and away from the printing-point, operating means therefor, a variable stop device, a ribbon-feed shaft, and gearing between said feed-shaft and said stop device.

18. In a type-writing machine, the combination of a ribbon normally removed from
25 the printing-point, means for moving said ribbon to cover the printing-point at the printing operation, intercepting stop means against which said moving means strikes
30 during the travel of the ribbon toward the printing-point, and means operating automatically to adjust said stop means and present different stopping-points thereon to the moving means during successive printing
35 movements of the ribbon, thus varying said printing movements of the ribbon.

19. In a type-writing machine, the combination of a ribbon-vibrator, actuating means for said vibrator, intercepting stop means
40 against which said actuating means strikes during the travel of the vibrator toward the printing-point and whereby said vibrator is arrested, and means operating automatically to adjust said stop means to arrest the vibra-
45 tor at different points in its travel.

20. In a type-writing machine, the combination of a ribbon normally removed from the printing-point, means for moving said ribbon to cover the printing-point at the
50 printing operation, stop means for arresting said moving means during the travel of the ribbon toward the printing-point, and means operating automatically to adjust said stops means to vary the travel of the
55 ribbon, said moving means and said stop means being disconnected or separated except at the time of arrest of said moving means by said stop means.

21. In a type-writing machine, the combination of a ribbon-vibrator, actuating means
60 for said vibrator, stop means cooperative with said actuating means to arrest said vibrator in its travel toward the printing-point, and means operating automatically
65 to adjust said stop means to cooperate with

said actuating means at different points in the movement of the latter, said actuating means and said stop means being disconnected or separated except at the time of arrest of said actuating means by said stop
70 means.

22. In a type-writing machine, the combination of a ribbon-vibrator, stop means operating to positively arrest said vibrator in its travel toward the printing-point, and
75 means operating automatically to adjust said positive stop means to arrest the vibrator at different points in its travel.

23. In a type-writing machine, the combination of a ribbon normally removed from
80 the printing-point, means for moving said ribbon to cover the printing-point in the printing operation, stop means normally detached from said moving means but cooperative with the latter to arrest the ribbon in its
85 travel toward the printing-point, and means operating automatically to adjust said stop means to vary the travel of the ribbon.

24. In a type-writing machine, the combination of a ribbon-vibrator, actuating means
90 for said vibrator, stop means normally detached from said actuating means but cooperative with the latter to arrest said vibrator in its travel toward the printing-point, and means operating automatically to adjust said
95 stop means to arrest the vibrator at different points in its travel.

25. In a type-writing machine, the combination of a ribbon normally removed from
100 the printing-point, means for moving said ribbon to cover the printing-point at the printing operation, stop means interposed in the path of movement of said moving means and cooperating with the latter to arrest the
105 ribbon in its travel toward the printing-point, and means operating automatically to adjust said stop means to vary the travel of the ribbon.

26. In a type-writing machine, the combination of a ribbon-vibrator, actuating means
110 therefor, stop means interposed in the path of movement of said actuating means and cooperating with the latter to arrest said vibrator in its travel toward the printing-point, and means operating automatically to adjust
115 said stop means to arrest the vibrator at different points in its travel.

27. In a type-writing machine, the combination of a ribbon normally removed from
120 the printing-point, means for moving said ribbon to cover the printing-point at the printing operation, stop means cooperative with said moving means only during the ribbon-actuating movement of said moving means to arrest said ribbon in its travel to-
125 ward the printing-point, and means operating automatically to adjust said stop means to vary the travel of the ribbon.

28. In a type-writing machine, the combination of a ribbon-vibrator, actuating means
130

therefor, stop means coöperative with said
actuating means only during the actuating
movement of the latter, and means operating
automatically to adjust said stop means to
5 arrest the actuating means at different points
so as to vary the extent of movement of the
vibrator.

Signed at the borough of Manhattan, city

of New York, in the county of New York and
State of New York, this 11th day of August, 10
A. D. 1906.

JACOB FELBEL.

Witnesses:

E. M. WELLS,
M. W. POOL.