

No. 685,121.

Patented Oct. 22, 1901.

J. FELBEL.
TYPE WRITING MACHINE.

(Application filed Dec. 26, 1900.)

(No Model.)

3 Sheets—Sheet 1.

FIG. 1.

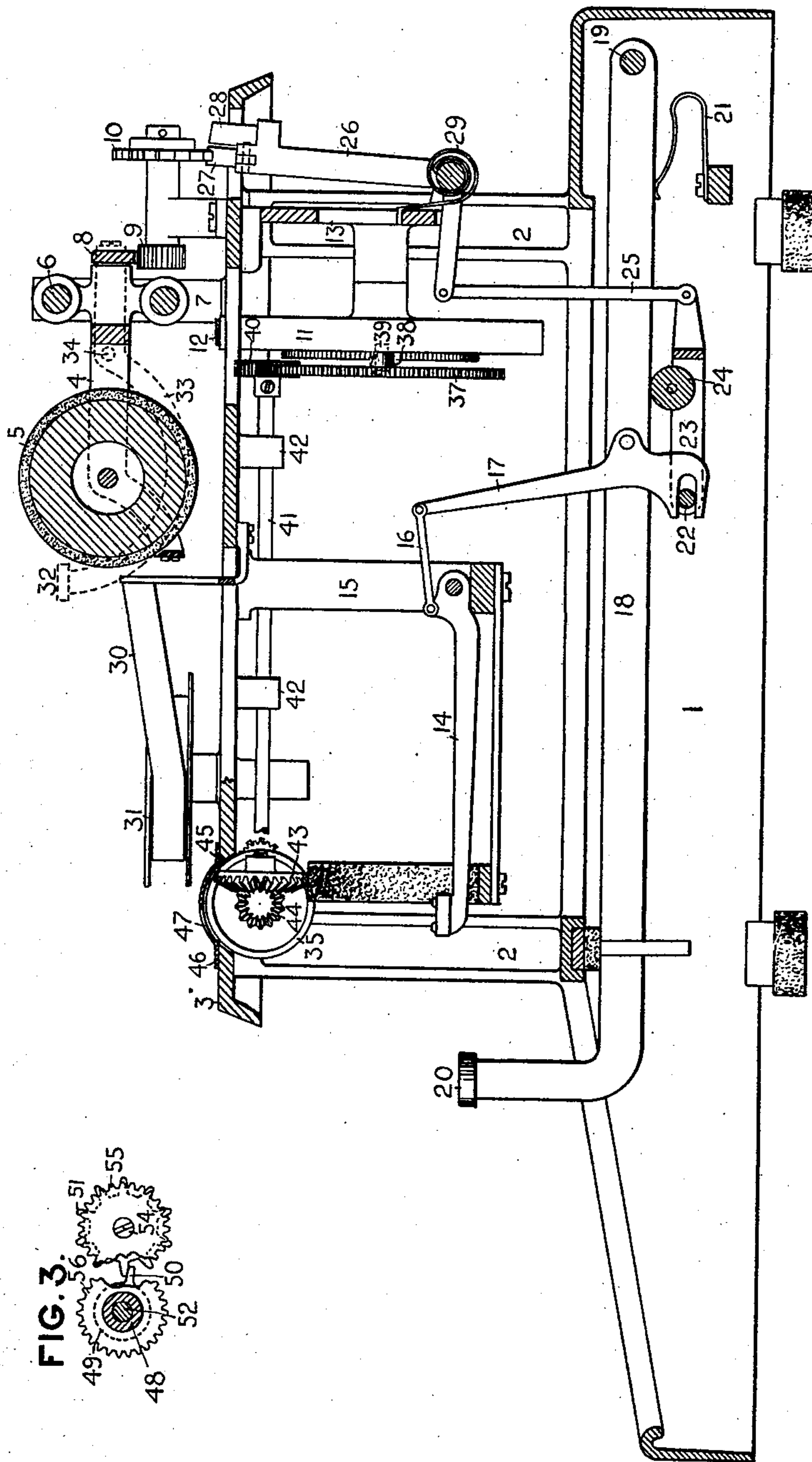


FIG. 2.

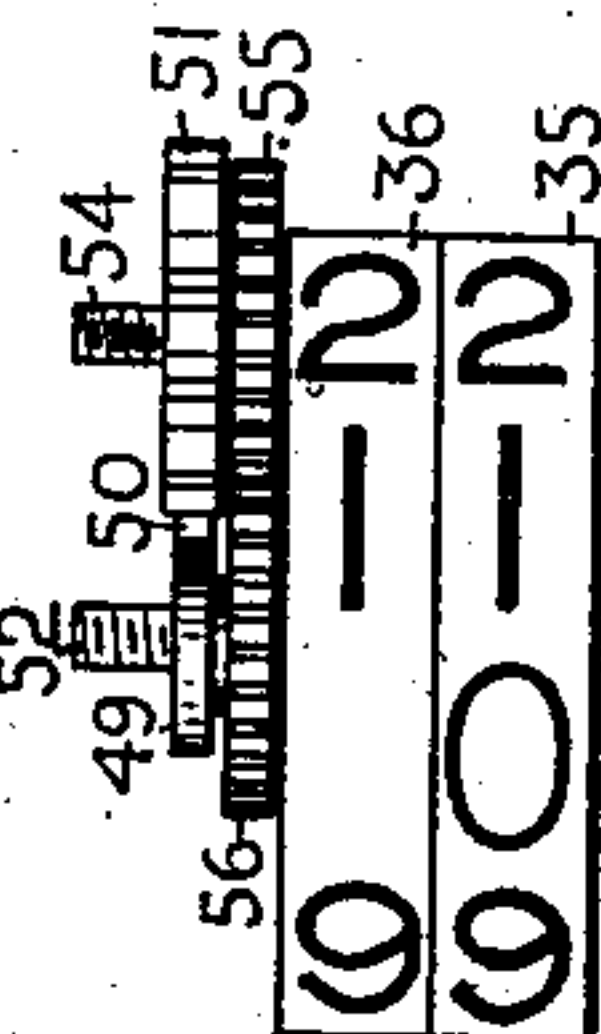
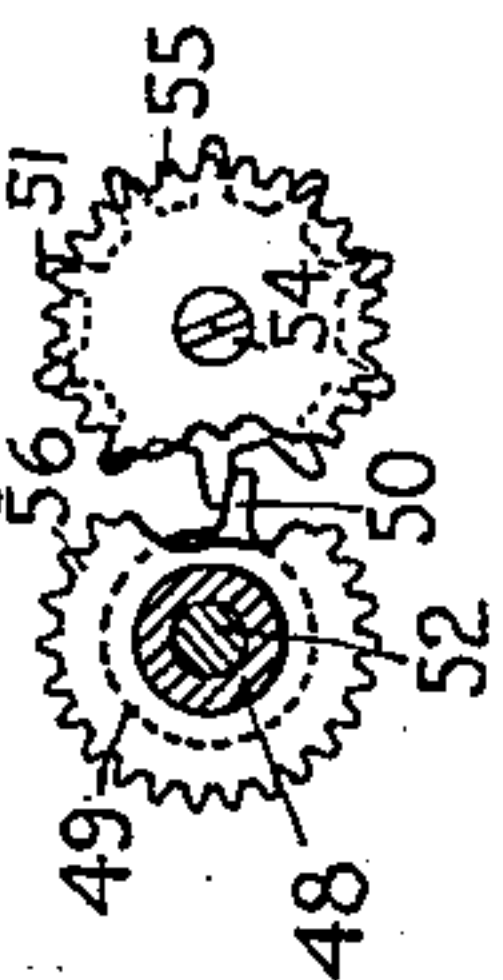


FIG. 3.



WITNESSES:

R. V. Donovan.
E. M. Wells.

INVENTOR:

Jacob Felbel

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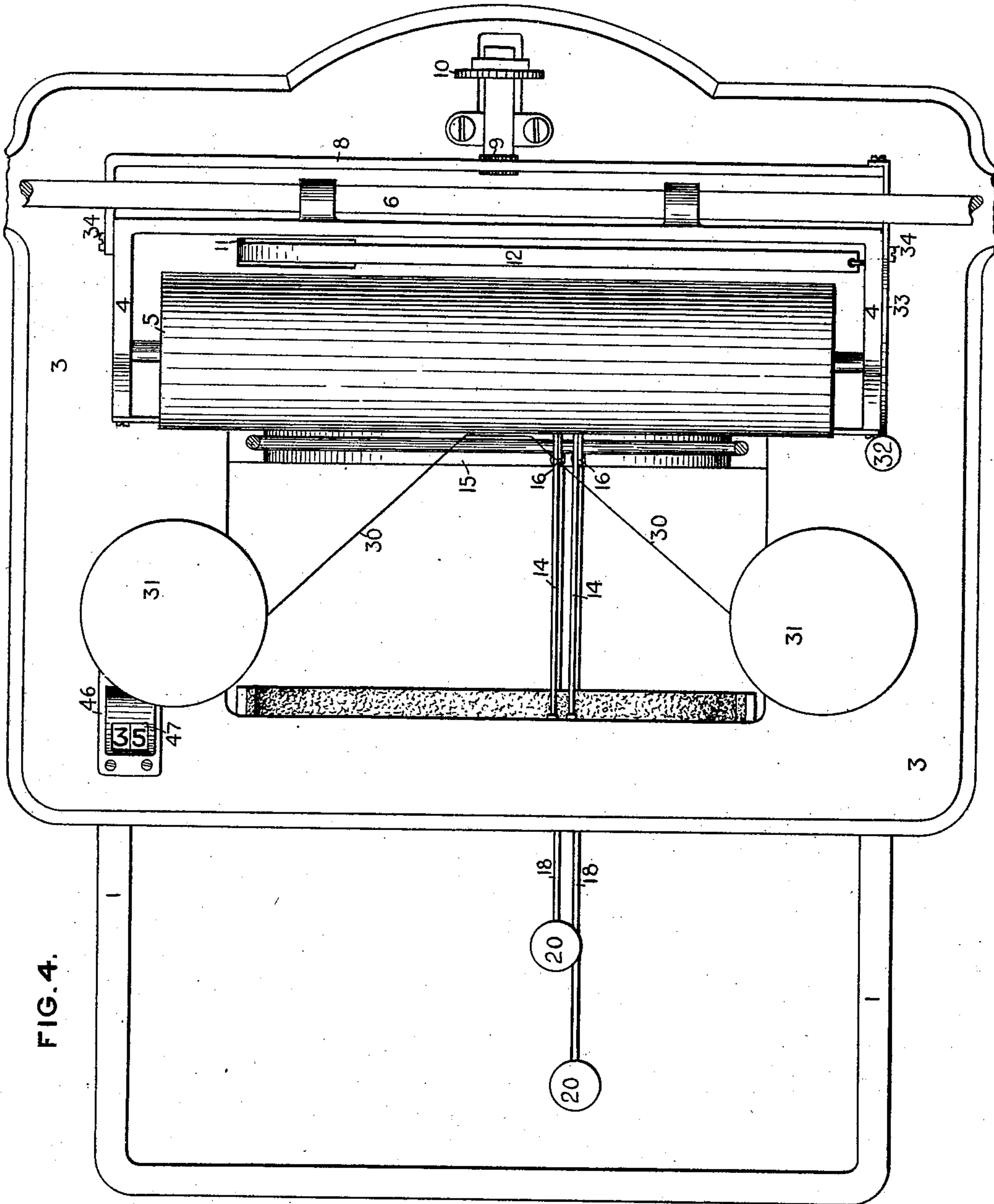


FIG. 4.

WITNESSES:

K. V. Donovan,
E. M. Wells.

INVENTOR:

Jacob Felbel

No. 685,121.

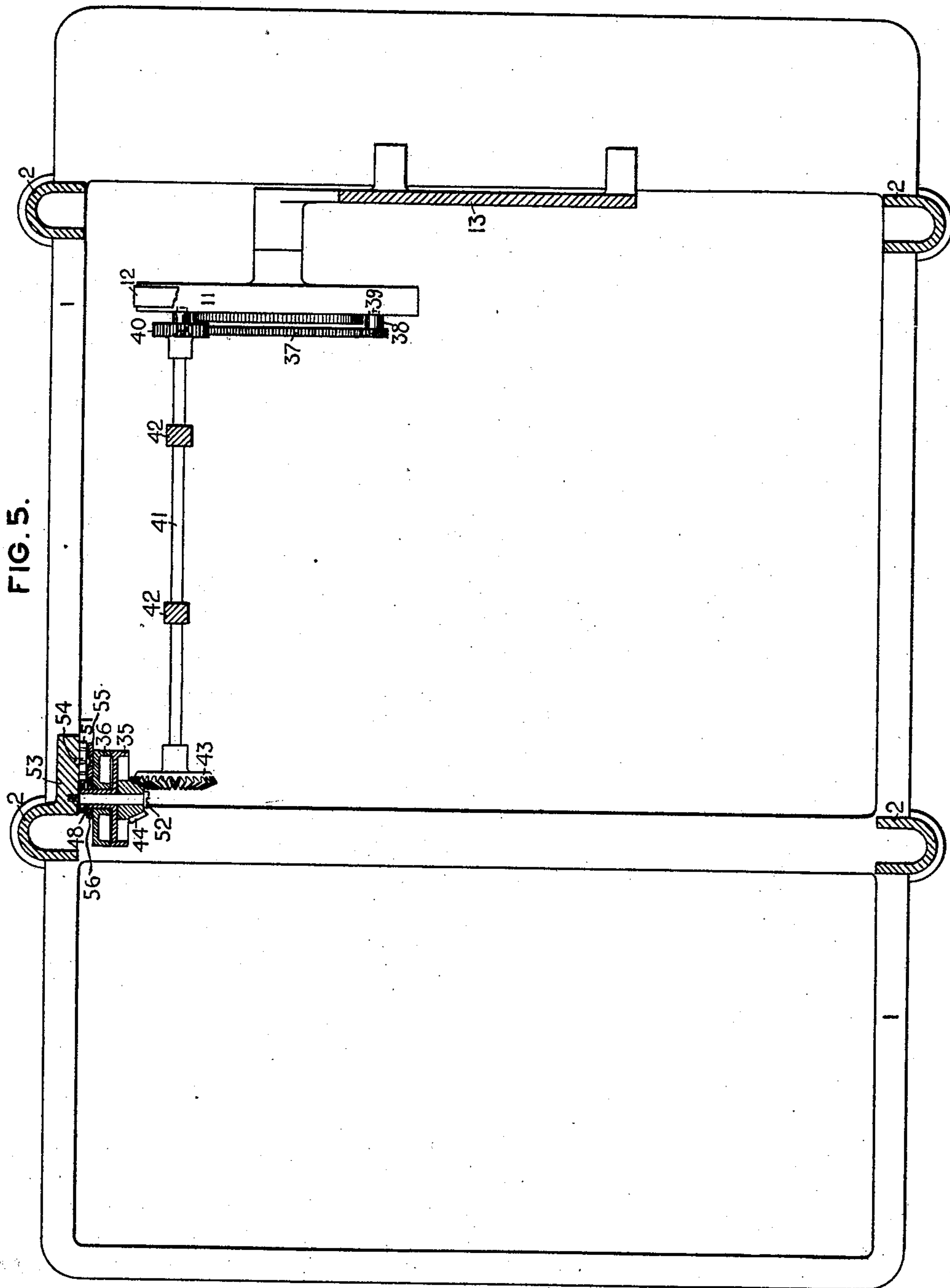
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3 Sheets—Sheet 3.



WITNESSES:

K. V. Donovan.
E. M. Wells.

INVENTOR.

Jacob Felbel

UNITED STATES PATENT OFFICE.

JACOB FELBEL, OF NEW YORK, N. Y.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 685,121, dated October 22, 1901.

Application filed December 26, 1900. Serial No. 41,056. (No model.)

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, in the 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.

This invention relates to means for indicating the position of the paper-carriage, and is an improvement upon the construction for which Letters Patent were granted to me October 30, 1900, No. 660,988.

The main object of the present invention is to enable the use of larger and more easily-read numbers and at the same time to put the numbering devices into a more compact form, so that they may not occupy room that may be needed for other portions of the typewriter mechanism and also so that the numbers may be read through a sight-hole provided in the top plate, where they come more readily under the operator's observation.

In carrying out my invention I preferably arrange two similar number-wheels side by side, the left-hand wheel indicating tens and the right-hand wheel indicating units and the latter wheel being positively connected to the carriage. The tens-wheel is by suitable mechanism moved once at the completion of each movement of the units-wheel, so that the operator may at any time inform himself of the exact position of the carriage by glancing at the number which appears through the sight-hole in the top plate.

My invention consists in certain combinations of devices and features of construction, all as will be more fully hereinafter set forth, and particularly pointed out in the concluding claims.

In the accompanying drawings, Figure 1 is a sectional elevation taken longitudinally of a "front-strike" type-writing machine embodying my improvements. Fig. 2 is an enlarged plan of the number-wheels and tens-carrying devices. Fig. 3 is an elevation of the tens-carrying devices. Fig. 4 is a plan of the machine, showing a sight-hole and a number appearing therethrough, which tells the position of the carriage. Fig. 5 is a sectional

plan taken below the top plate of the machine and showing the number-wheel and other details.

In the several views parts are omitted or broken away to more clearly exhibit the invention and similar parts are designated by similar numerals of reference.

1 designates the rectangular base of the machine, 2 corner-posts rising therefrom, and 3 a top plate supported upon the posts. A reciprocatory carriage 4, bearing a platen 5, slides in letter-space direction upon rails 6, which are fixed upon brackets 7, rising from the top plate. A rack 8 upon the carriage meshes with a pinion 9, which is connected to a letter-feeding escapement-wheel 10. The carriage is propelled by a spring-drum 11, which is connected thereto by a strap 12 and which is mounted upon a bracket 13, depending from the under side of the top plate. Type-bars 14 are pivoted at their rear ends in a segment 15 and strike upwardly and rearwardly against the platen. The type-bars are operated by means of links 16, bell-cranks 17, and key-levers 18, to which said bell-cranks are pivoted. The key-levers are pivoted at their rear ends upon a fulcrum-rod 19 and are provided with keys 20 and returning-springs 21. Beneath the key-levers is supported a transverse fulcrum-rod 22, which is engaged by the forked lower ends of all the bell-levers 17. Upon said rod 22 is hinged a frame 23, which supports a universal bar 24, and is connected by a vertical link 25 to the horizontal arm of a dog-rocker, which is pivoted in said bracket 13 and whose upright arm 26 carries a feeding-dog 27 and a detent-dog 28. A returning-spring 29 is provided for the dog-rocker and serves also to hold the universal bar 24 normally up against the key-levers. A ribbon 30 is carried by spools 31, which may be rotated in any suitable manner.

A release-key 32 may be provided upon the carriage, said key being fixed upon a forwardly-extending arm 33 of a bail, the latter being hinged to the carriage-frame at 34 and comprising said rack 8. Upon depression of said release-key the bail swings upon the hinge or pivots 34 and the rack is lifted out

of engagement with the pinion 9, whereupon the carriage may be slid rapidly in either direction.

The devices which indicate the position of the carriage comprise a pair of independent vertically-arranged number-wheels 35 and 36, which are placed side by side and to which a rotary movement is transmitted from the carriage-driving drum 11 by means of a train of gearing which comprises a large spur-wheel 37, secured by means of studs 38 and screws 39 upon the front vertical face of said spring-drum and in mesh with a pinion 40, which is fixed upon the rear end of a forwardly-extending horizontal shaft 41, the latter being journaled in brackets 42, which depend from the top plate, and carrying at its forward end a bevel-gear 43, which meshes with a bevel-pinion 44, made fast to the right-hand number-wheel 35. It will be seen that the shaft 41 is parallel with the axis of the spring-drum and at right angles to the axis of the number-wheels, the latter axis being preferably horizontal. Said number-wheels may project upwardly through an opening 45, formed in the top plate 3, and may be covered by a cap-plate or shield 46, the latter having a sight-hole 47, through which the numbers may be read, said sight-hole being constructed to show only one complete number at a time.

The right-hand number-wheel 33 at Figs. 2 and 5 being positively geared to the carriage rotates at each step-by-step movement of the latter, there being many more of such movements during a line of writing than there are numbers on said wheel. Said wheel 35 is therefore connected by means of tens-carrying devices to the left-hand or tens wheel 36. Any suitable tens-carrying devices may be used, but I prefer to fix upon the left-hand end of the long hub 48 of the units-wheel a small disk 49, having a single radially-projecting finger 50, adapted to a ten-tooth star-wheel 51, which is in line with said disk 49, so that the finger may impart to the star-wheel one-tenth of a revolution at the completion of each revolution of the units-wheel. It will be seen that the units-wheel 35 is rotatively mounted upon a long horizontal shouldered screw 52, which is tapped into a lug 53, formed upon the upper portion of the corner-post 2, and that the star-wheel 51 is likewise mounted upon a shorter shouldered screw 54, also tapped into said lug and parallel with the screw 52. This star-wheel 51 is connected to the tens-wheel by means of a pair of equal pinions, one of which, 55, is concentric with the star-wheel and fixed thereto, and the other of which, 56, is concentric with and secured upon the tens-wheel, said pinions 55 and 56 being in engagement, whereby when the star-wheel is given one-tenth of a rotation by the finger 50 it turns the pinions 55 and 56, and hence the tens-wheel 36, one tenth of a revolution.

In the operation of the machine a type-key

20 is depressed, vibrating its lever 18 downwardly and through the bell-lever 17 and link 16 swinging the type-bar 14 to the platen to make an impression of the type upon the paper arranged thereon. Upon release of the finger-key from pressure said parts are returned to normal position by spring 21. During the reciprocation of the lever 18 the dog-rocker is caused to vibrate by means of the described connections, and the escapement devices permit an advance movement of the carriage toward the left in the usual manner under the influence of the spring-drum 11. The movement of the latter is communicated by gears 37 40, shaft 41, and gears 43 and 44 to the units-wheel 35, which accordingly is given a partial rotation, so that the next higher number thereon is brought into view at the sight-opening 47. As the operation of depressing the keys is repeated the units-wheel is rotated step by step, each time presenting a new number and once in each revolution imparting through the tens-carrying devices 50, 51, 55, and 56 an intermittent step-by-step movement to the tens-wheel 36, so that the operator when wishing to ascertain the position of the carriage needs only to glance at the number which is visible at the time through the opening or sight-hole in or upon the top plate. Upon the completion of the line of writing the carriage is returned by the operator to begin a new line, and through the connection 12 the spring-barrel is rotated reversely to rewind the spring therein. By means of the described positive connections to the spring-barrel the units-wheel 35 is also rotated reversely, and the latter, through said tens-carrying devices, imparts an intermittent reverse rotary movement to the tens-wheel 36, so that when the carriage reaches its normal starting-point for a new line the character "0" or zero appears through the sight-hole 47, a blank appearing upon the tens-wheel. If the carriage should be arrested at any point during its return movement or during a rapid movement thereof in letter-space direction when released from the control of the escapement devices by the key 32, the number which appears through said sight-hole at once informs the operator of the exact position of the carriage. Thus the difficulty of mentally calculating said position by means of graduations, line, or marks upon a carriage-scale is wholly avoided, as well as the constant liability of misreading the scale, and consequently imprinting the letters at a wrong point in the line of writing. By the use of the release-key and the number-wheel the carriage can be adjusted instantly to any desired position without possibility of confusion, and the work of the operator is thereby greatly facilitated.

It will be noted that the spur-wheel 37 is about three-fourths as large as the spring-barrel, whose periphery moves at the same speed as the paper-carriage, and also that

the diameter of the pinion 40, which meshes with said spur-wheel, is nearly one-half as great as the diameter of the bevel-gear 43. The peripheral speed of the latter is therefore nearly one and one-half times as great as the speed of the carriage. Moreover, the diameter of the bevel-pinion 44, which meshes with the gear 43, is less than half the diameter of the number-wheels, whence it follows that the movement of the peripheral or numbered portion of the said number-wheels is about three times as great as the corresponding movement of the carriage. I employ the described motion-multiplying gearing between the carriage and the number-wheels for the purpose of enabling large figures to be placed upon the latter, so that they may be easily read. Preferably the diameter of the pinion 40 is about one-fourth that of the spur-wheel 37, and preferably the diameter of the bevel-pinion 44 is about one-half that of the bevel-gear 43.

It will be observed that the oscillatory or curvilinear reciprocatory movements of both the number-wheels correspond with and are governed by the rectilinear reciprocatory movements of the carriage in opposite directions and that said wheels are controlled by the same step-by-step feeding devices as the carriage. It will also be noted that I have provided two wheels each with a column or series of whole numbers arranged in numerical or consecutive order and corresponding in their various combinations to the feeding movements of the paper-carriage—that is to say, the first number denoted by said wheels is “0” to agree with the normal position of the carriage and the last number denoted thereby is, say, “70” to agree with the extreme left-hand position of the carriage. The wheel 36 is moved only at every tenth letter-feeding movement of the carriage. Of course if the carriage have a movement of only seventy letter-spaces the tens-wheel may be provided with only seven numbers, the numerals “8” and “9” being erased therefrom, so that the capacity of the two wheels would be only seventy.

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

1. In a type-writing machine, the combination of a carriage constructed to reciprocate in letter-space direction along the framework of the machine, a units number-wheel mounted for rotation, connections between said units-wheel and said carriage for causing the units-wheel to oscillate as the carriage reciprocates, a tens number-wheel, connections between said tens-wheel and said units-wheel, and step-by-step letter-feeding devices controlling the movements of said carriage, said units-wheel and said tens-wheel.

2. In a type-writing machine, the combination of step-by-step letter-feeding mechanism, a carriage constructed to reciprocate in letter-space direction along the framework of the machine, a units number-wheel mount-

ed in the framework of the machine independently of said carriage and bearing a column of numbers, the height of each number exceeding the corresponding step-by-step letter-feeding movement of the carriage, a tens number-wheel operatively connected to said units-wheel, and connections between said units-wheel and said carriage for causing said units-wheel to oscillate as the carriage reciprocates.

3. In a type-writing machine, the combination of a carriage, a rack, escapement devices, a units number-wheel, a tens number-wheel and tens-carrying devices, said units-wheel and said tens-wheel being controlled by the carriage both during all the reciprocatory movements of the latter in letter-space direction.

4. In a type-writing machine, the combination of step-by-step letter-feeding devices, a carriage constructed to reciprocate in letter-space direction along the framework of the machine, a vertically-arranged wheel mounted in the framework of the machine independently of said carriage, means for causing said wheel to oscillate as said carriage reciprocates, a column of units extending in numerical order around the peripheral face of said wheel, said numbers being successively presented to the operator in their natural positions, a tens number-wheel arranged by the side of said units-wheel and connected thereto, and means for indicating to the operator that number, formed by the two wheels, which corresponds to the position of the carriage.

5. In a type-writing machine, the combination of step-by-step letter-feeding devices, a carriage constructed to reciprocate in letter-space direction along the framework of the machine, a units number-wheel arranged within the framework of the machine, and mounted independently of said carriage, means for causing said wheel to oscillate as the carriage reciprocates, a tens number-wheel operatively connected to said units-wheel, and a sight-hole in the framework through which that number, formed by said wheels, which tells the position of the carriage, is visible to the operator.

6. In a type-writing machine having a top plate, the combination of step-by-step letter-feeding devices, a carriage constructed to reciprocate in letter-space direction, a platen upon said carriage, a units number-wheel arranged vertically at the front of the machine beneath said top plate, operative connections extending from said wheel to said carriage, a tens number-wheel, tens-carrying devices, and a sight-hole arranged in said top plate over said wheels.

7. In a type-writing machine, the combination of a carriage, a rack, a pinion, escapement devices, a spring-drum, a units number-wheel connected by gearing to said drum, a tens number-wheel, tens-carrying devices, and a cover having a sight-hole.

8. In a type-writing machine, the combina-

tion of a power-driven reciprocatory carriage, escapement devices, a release-key, a units number-wheel positively connected to said carriage and arranged to rotate in a plane at
 5 right angles to the direction of travel of said carriage, and a tens number-wheel operatively connected to said units-wheel and arranged by the side thereof.

9. In a type-writing machine, the combina-
 10 tion with a reciprocatory carriage and step-by-step feeding devices, of a units number-wheel, motion-multiplying gearing positively connecting said units-wheel to said carriage so that said wheel may oscillate as the car-
 15 riage reciprocates, and a tens number-wheel operatively connected to said units-wheel.

10. In a type-writing machine, the combina-
 20 tion of a reciprocatory carriage, a spring-barrel connected thereto, a gear fixed upon said barrel, a pinion in mesh with said gear, a forwardly-extending shaft upon which said pinion is mounted, a bevel-gear carried upon the forward end of said shaft, a bevel-pinion meshing with said bevel-gear, a units number-wheel
 25 connected to said bevel-pinion, and a number-wheel connected to said units-wheel by tens-carrying devices.

11. In a type-writing machine, the combina-
 30 tion of a reciprocatory carriage having a platen, a series of type-bars arranged forwardly of the platen, a top plate, a units number-wheel arranged beneath the top plate at one side of the type-bar system, a tens number-wheel connected to said units-wheel, and
 35 a sight-hole arranged in the top plate over said units and tens wheels.

12. In a type-writing machine, the combina-
 40 tion of a carriage, rack 8, pinion 9, carriage-escapement devices, drum 11, gear 37, pinion 40, shaft 41, bevel-gear 43, bevel-pinion 44,

units number-wheel 35, finger 50, star-wheel 51, pinions 55 and 56, tens number-wheel 36, and plate having sight-hole 47.

13. In a front-strike writing-machine, the combination of a carriage, letter-spacing de-
 45 vices therefor, a wheel, connections from said carriage to said wheel for causing one revolution of the latter during ten letter-space movements of the carriage, a series of numbers arranged upon said wheel, the height of
 50 each number exceeding the length of the letter-space movement of the carriage, a tens number-wheel, and connections between said number-wheels.

14. In a type-writing machine, the combina-
 55 tion of a carriage, letter-feeding devices therefor, a units-wheel, a wheel as 36, having a series of numbers thereon, and means for imparting a rotative movement to said wheel 36 only at every tenth letter-feeding movement
 60 of the carriage, and said wheel being moved in opposite directions by opposite movements of the carriage.

15. In a type-writing machine, the combina-
 65 tion with a step-by-step carriage, of a plurality of number-wheels connected to said carriage and adapted to carry from one to another in accordance with the varying position of the carriage, and so as to disclose to the
 70 operator a number corresponding to the numerical position of the carriage.

Signed at the borough of Manhattan, in the city of New York, in the county of New York and State of New York, this 21st day of December, A. D. 1900.

JACOB FELBEL.

Witnesses:

E. M. WELLS,

K. V. DONOVAN.