

No. 754,922.

PATENTED MAR. 15, 1904.

C. GABRIELSON.  
TYPE WRITING MACHINE.  
APPLICATION FILED DEC. 31, 1900.

NO MODEL.

3 SHEETS—SHEET 1.

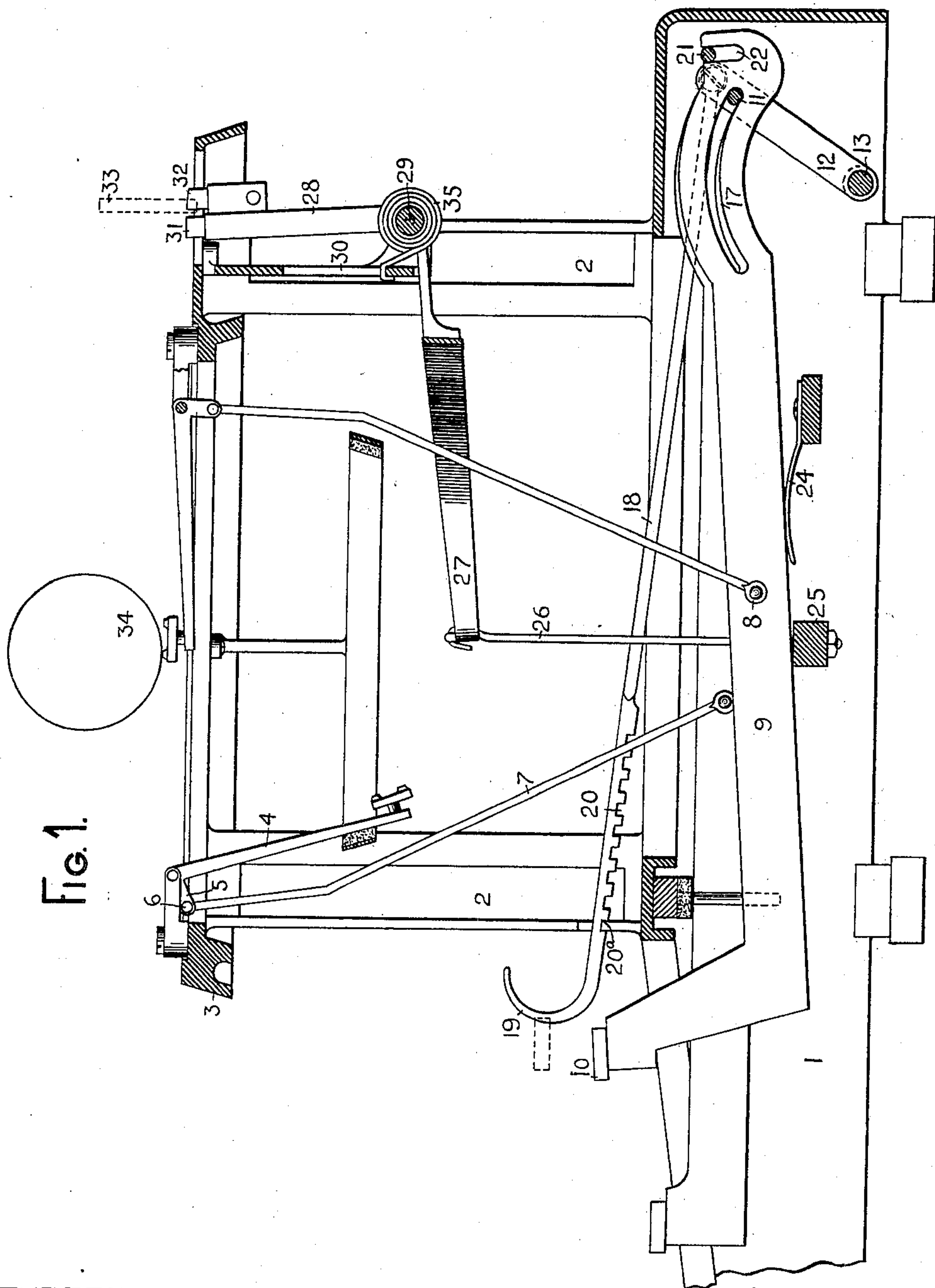


Fig. 1.

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*Carl Gabrielson*

by *Jacob Felbel*  
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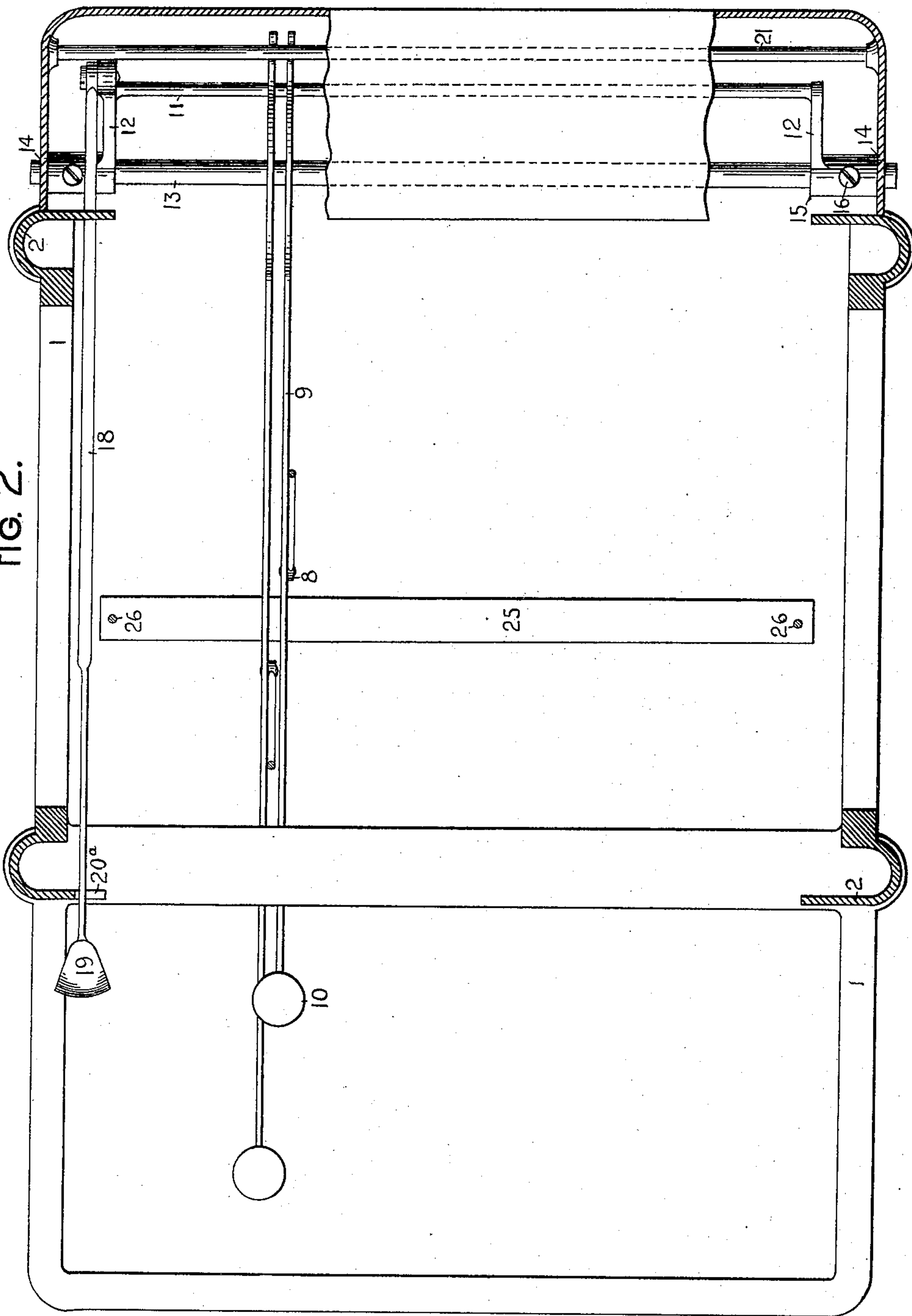
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3 SHEETS—SHEET 2.

FIG. 2.



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3 SHEETS—SHEET 3.

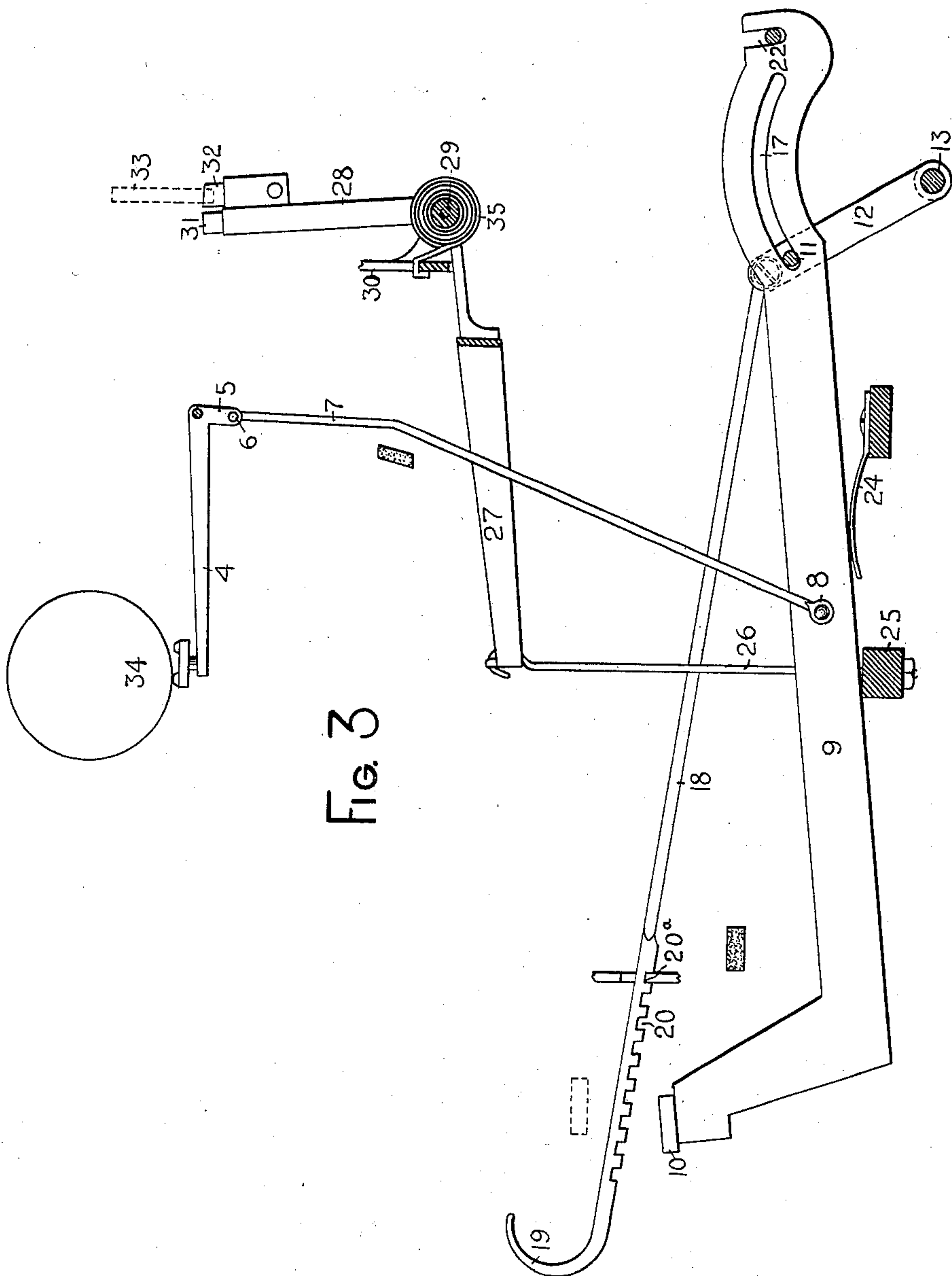


FIG. 3

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# UNITED STATES PATENT OFFICE.

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## TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 754,922, dated March 15, 1904.

Original application filed August 16, 1900, Serial No. 27,102. Divided and this application filed December 31, 1900. Serial No. 41,569. (No model.)

*To all whom it may concern:*

Be it known that I, CARL GABRIELSON, a citizen of the United States, and a resident of Greenville, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to mechanism for adjusting the leverage of the keys upon the types of writing-machines whereby at the will of the operator the keys may be given less or more leverage with a shallower or deeper key-stroke, as fully set forth in my application, Serial No. 27,102, filed August 16, 1900, (now Patent No. 668,713, dated February 26, 1901,) of which this is a division.

One of the main objects of the present invention is to provide a mechanism in which the leverage of the key upon the type shall automatically decrease during the key-stroke and in which the dip and leverage of the keys may be adjusted by an independent mechanism, so that whether the keys be adjusted for a shallow or a deep stroke the automatic decrease in leverage takes place at every key movement.

To this and other ends my invention consists in certain combinations of devices, features of construction, and arrangements of parts, all as will be hereinafter set forth, and particularly pointed out in the concluding claims.

In the accompanying drawings, Figure 1 is a central vertical elevation taken longitudinally of a Remington No. 6 type-writing machine, showing my improvements applied thereto, one type-bar being illustrated in normal position and the other in printing position and the mechanism being adjusted for a shallow key-stroke. Fig. 2 is a sectional plan of the lower portion of the machine. Fig. 3 is a skeleton view showing a type-bar and connected parts in printing position and the mechanism adjusted for a deep key-stroke.

In the several views similar parts are designated by similar numerals of reference, and

certain portions of the machine are broken away or omitted for the sake of clearness.

1 designates the base of the machine, 2 corner-posts thereon, and 3 the top plate, upon which are mounted independently-pivoted type-bars 4, having short arms 5, to which are pivoted at 6 the upper ends of links 7, the latter being attached at their lower converging ends at 8 to horizontal levers 9 of the second order, having keys 10 at their forward ends and pivoted or fulcrumed at their rear ends upon a transverse horizontal rod 11. Said rod connects the upper ends of a pair of upright rocker-arms 12, whose lower ends are mounted upon a rock-shaft 13, journaled in the side walls of the base at 14. Said rocker-arms are preferably formed with hubs 15, which are secured upon the shaft by screws 16 and abut against the inner walls of the base, so as to prevent endwise displacement of the rock-shaft. In each key-lever is cut longitudinally a slot 17 for engaging the fulcrum-rod 11, said slot being formed on an arc concentric with the axis 13 and each of the slots coinciding with all the others, so that when the levers are in normal position the fulcrum-rod 11 may be swung or shifted upon the axis 13 in a direction longitudinally of the key-levers and transversely of the length of the rod, the swinging movement being limited by the length of the slots. The lower edge of each of said slots may be regarded as a prolonged bearing edge or surface, as any portion thereof may bear upon the rod 11, according to the adjustment of the latter. The left-hand rocker-arm 12 is connected by a rod 18 to a finger-piece 19, placed in a convenient position at the keyboard, whereby the entire rocking frame, comprising fulcrum-rod 11, arms 12, and shaft 13, may be adjusted. Upon the under side of the rod 18 I provide a series of notches 20, any of which may engage a catch or notch 20<sup>a</sup>, cut upon the inner vertical edge of the left-hand front corner-post 2, so as to preserve the adjustment of the swinging fulcrum-rod frame. Endwise displacement of the key-levers, either relatively to one an-



other or relatively to the frame of the machine, is prevented by a parallel rod 21, fixed in the side walls of the base and engaged by open slots 22, formed in the rear ends of the key-levers, said slots having considerable depth to permit free upward movements of the rear ends of the key-levers.

A returning-spring 24 is provided for each key-lever, and a universal bar 25 extends across beneath all the levers, being connected by wires 26 to branches 27 of a dog-rocker 28 and the latter being pivoted at 29 to a bracket 30 and bearing both a feeding-dog 31 and a detent-dog 32. Said dogs cooperate with an escapement-wheel 33 in the usual manner to control the letter-feeding movements of a carriage, (not shown,) upon which is mounted a platen 34. The dog-rocker is provided with a returning-spring 35.

In operation upon the depression of any key its lever is swung downwardly upon the rod 11 as a pivot or center, the lever swinging about said center during the entire key-stroke and through the link 7 pulls down the short arm 5 of the type-bar and swings the free end of the latter up to the printing-center. During the depression of the key-lever the universal bar 25 is carried down and through the wires 26 vibrates the dog-rocker and alters the relation of the dogs thereon to the escapement-wheel. Upon the relief of the key from pressure the parts are returned to normal position by the springs 29 and 24, assisted by the weight of the type-bar, and the carriage is fed forward one step.

When the fulcrum-rod is adjusted forwardly from the position shown at Fig. 1, the said rod is brought closer to the load-points 8 of the key-levers, and hence the leverage of the keys is increased and at the same time the stroke of the keys is made deeper, the extreme forward adjustment of the fulcrum-rod being illustrated at Fig. 3, at which figure the leverage is greatest and the key-strokes deepest.

At the initial portion of the printing stroke of any key-lever the short arm 5 of the type-bar stands crosswise or at about right angles to the link 7, and at this time a maximum leverage of the key upon the type-bar is obtained, so that the type-bar may be put in motion easily; but when the type-bar turns upon its pivot the short arm swings downwardly, finally standing nearly in line with the link 7, whereby during the printing stroke the leverage of the key upon the type-bar automatically decreases nearly to the vanishing point, so that the momentum of the hand of the operator may be absorbed and also so that the type may strike a sharp blow. It will be seen that the leverage-adjusting mechanism may be operated independently of the automatically-operating leverage-decreasing devices 5 and 7, and hence that at each key depression the full benefit of the automatic decrease in leverage is obtained irrespective of

the position or adjustment of the fulcrum-rod 11 relatively to the pulling or load points 8 of the key-levers.

The universal bar 25 is placed in proximity to the load-points of the key-levers, so that the variations in the adjustment of the fulcrum-rod may not lead to faulty action of the letter-feeding devices. As the downward movement of the load-point is always the same regardless of the adjustment of the fulcrum-rod, the placing of the universal bar substantially at the load-point insures that the dog-rocker shall have substantially uniform movement at all times regardless of the adjustment of the fulcrum-rod and dip of the key-lever, and hence that the dog-rocker shall properly cooperate with the escapement-wheel 33.

Various changes in details of construction and arrangement may be resorted to within the scope of the invention.

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

1. In a type-writing machine, the combination of a type, a key, means for automatically decreasing the leverage of the key upon the type during its printing stroke, and independent means for adjusting the purchase or leverage of the key upon the type, the construction and arrangement being such that the leverage may at will be temporarily changed by said adjusting means without altering the operation of said automatic leverage-decreasing means.

2. In a type-writing machine, the combination with a series of type-bars and a series of keys, of means for automatically decreasing the direct purchase or leverage upon said type-bars during the printing strokes of the keys, and independent means for effecting an adjustment of the leverage of the keys upon the type-bars, the construction and arrangement being such that the leverage may at will be temporarily changed by said adjusting means without interfering with the operation of said automatic leverage-decreasing means.

3. In a type-writing machine, the combination with a series of independently-movable types, of a series of keys, a series of levers operated by said keys, means between said levers and said types for automatically decreasing the purchase of said key-levers upon said types during the printing strokes of the keys, and independent means for effecting an adjustment of the leverage of said key-levers upon said type-bars, the construction and arrangement being such that the leverage may at will be temporarily changed by said adjusting means without interfering with the operation of said automatic leverage-decreasing means.

4. In a type-writing machine, the combination of a series of independently-movable types, a series of key-operated levers, means arranged between said levers and said types for automatically decreasing the purchase or



leverage of said levers upon said types during their printing strokes, and means arranged at the fulcrums of said levers for effecting at will a fixed adjustment of the leverage of said key-levers upon types.

5. In a type-writing machine, the combination of a series of independently-movable types, a series of key-levers of the second order, connections between said key-levers and said types such that the purchase of said levers upon said types automatically decreases during their printing strokes, and means arranged at the rear ends of said levers for effecting at will a fixed adjustment of their leverage upon said types.

6. In a type-writing machine, the combination of a series of independently-pivoted type-bars having arms 5, a series of key-operated levers, links connecting the levers to said type-bar arms, said arms normally extending crosswise of said links, and extending substantially longitudinally of said links when the type-bars are in printing position, whereby the leverage of said levers upon said type-bars is automatically decreased during their printing strokes, and means for shifting the fulcrum-points of said levers.

7. In a type-writing machine, the combination of a set of type-operating levers, a transverse fulcrum-bar for said levers, and means for effecting a relative movement between said levers and said fulcrum-bar, in a direction longitudinally of said levers and so as to change the leverage of the latter on their connected types.

8. In a type-writing machine, the combination of a series of type-bars, a series of key-bearing levers, a series of links directly connecting said key-levers to said type-bars, a fulcrum-bar for said levers, and means for adjusting said bar relatively to the points of attachment of said links.

9. In a type-writing machine, the combination of a type, a key-operated lever connected thereto, a fulcrum-bar for said lever, and means for moving said fulcrum-bar toward or away from the load-point of the lever.

10. In a type-writing machine, the combination of a series of type-bars, a series of levers operatively connected thereto, a fulcrum-bar extending transversely of said levers, and means for moving said fulcrum-bar longitudinally of said levers and so as to change the leverage of the latter on their connected types.

11. In a type-writing machine, the combination of a type, a key-operated lever, a prolonged bearing formed or provided upon said lever, a fulcrum supported upon the frame of the machine and engaged by said bearing, and means for moving said fulcrum along said bearing.

12. In a type-writing machine, the combination with a series of types of a series of key-operated levers each having a prolonged bearing edge or surface, each of said bearing edges

or surfaces coinciding with the others, a transversely-arranged fulcrum-rod engaging all of said bearing edges or surfaces, and means for adjusting said fulcrum-rod along said bearing edges or surfaces.

13. In a type-writing machine, the combination with a series of type-operating levers of a transversely-arranged swinging fulcrum-rod, and bearing edges formed upon said levers concentrically with the axis of motion of said swinging fulcrum-rod.

14. In a type-writing machine, the combination with a series of type-operating levers having coincident slots of a transverse fulcrum-rod engaging said slots, and means for adjusting said rod along said slots and toward or away from the load-points of the levers.

15. In a type-writing machine, the combination with a series of type-operating levers of fulcrum-rod 11, rocker-arms 12, and arc-shaped slots 17 provided in said levers.

16. In a type-writing machine, the combination of a series of type-operating levers, a movable fulcrum for said levers, a finger-piece arranged at the keyboard of the machine, and connecting devices extending from said finger-piece to said movable fulcrum, whereby the latter may be adjusted to change the leverage of said levers.

17. In a type-writing machine, the combination of type-operating levers 9, fulcrum-rod 11 adjustable longitudinally of the levers to change the leverage thereof on their connected types, rocker-arms 12, shaft 13, rod 18, and finger-piece 19.

18. In a type-writing machine, the combination of a set of type-operating levers, a transverse fulcrum-bar for said levers, means for effecting a relative movement between said levers and said fulcrum-bar, in a direction longitudinally of said levers and to change the leverage thereof on their connected types, and means for preventing endwise displacement of said levers relatively to one another.

19. In a type-writing machine, the combination of a series of type-bars, a series of key-bearing levers, a series of links directly connecting said key-levers to said type-bars, a fulcrum-bar for said levers, means for adjusting said bar relatively to the load-points of the levers so as to change the leverage thereof on their connected type-bars, and means for preventing endwise displacement of the levers.

20. In a type-writing machine, the combination of a series of type-bars, a series of levers operatively connected thereto, a fulcrum-bar extending transversely of said levers, means for moving said fulcrum-bar longitudinally of said levers so as to change the leverage on their connected type-bars, and means for preventing endwise displacement of said levers.

21. In a type-writing machine, the combination with a series of types of a series of key-operated levers each having a prolonged bearing



ing edge or surface, each of said bearing edges or surfaces coinciding with the others, a transversely-arranged fulcrum-rod engaging all of said bearing edges or surfaces, means for adjusting said fulcrum-rod along said bearing edges or surfaces, a fixed transverse rod, and slots in the levers engaging said fixed rod.

22. In a type-writing machine, the combination of a series of type-bars, a series of key-operated levers, a series of links attached to the type-bars and converging toward the key-levers, a fulcrum-rod for said levers, means for adjusting said rod longitudinally of said levers, and a universal bar arranged in the path of the levers and in proximity to the points of attachment of said links to said levers, said universal bar being connected to a carriage-feeding mechanism.

23. In a type-writing machine, the combination of a series of types, a series of key-operated levers positively connected thereto, and a transverse rod movable in a direction crosswise of its length for changing the leverage of said levers upon said types.

24. In a type-writing machine, the combination of a series of types, a series of key-operated levers, each of which is pivoted to vibrate on a single axis, and means for simultaneously adjusting the distance between the load-points and axes of all of said levers.

25. In a type-writing machine, the combination of a type, a key-operated lever connected thereto, a movable pivot for the latter, and means for holding said pivot in different positions, said lever being adapted to swing about said pivot during the entire key-stroke.

26. In a type-writing machine, the combination of a type-bar, a key-operated lever connected thereto, and a shiftable pivot for altering the dip of said lever.

27. In a type-writing machine, the combination of a type-bar, a slotted key-operated lever connected thereto, and a shiftable pivot in engagement with said slot.

28. In a type-writing machine, the combination of a series of types, a series of key-operated pivoted levers, and means for simultaneously adjusting the distance between the load-points and axes of all said levers and for maintaining said distance fixed under each adjustment during the operation of the machine.

29. In a type-writing machine, the combination with a series of type-bars and a series of key-levers, of means independent of said key-levers for automatically decreasing the direct purchase or leverage upon said type-bars during the printing stroke, and independent means for effecting an adjustment of the leverage of the keys upon the type-bars.

30. In a type-writing machine, the combination with a series of type-bars, of a series of key-levers each of which is pivoted to swing on a single axis, means independent of said key-levers for automatically decreasing the purchase or leverage upon said type-bars during the printing strokes, and independent means for adjusting the distance between the load-point and axes of all of said levers.

31. In a type-writing machine, the combination with a series of type-bars, of a series of key-levers, means independent of said key-levers for automatically decreasing the purchase or leverage upon said type-bars during the printing strokes, and independent means for adjusting the distance between the load-points and axes of all of said levers and for maintaining said distance fixed under each adjustment during the operation of the machine.

Signed in the borough of Manhattan, city of New York, in the county of New York and State of New York, this 29th day of December, A. D. 1900.

CARL GABRIELSON.

Witnesses:

E. M. WELLS,

WM. E. COOK.