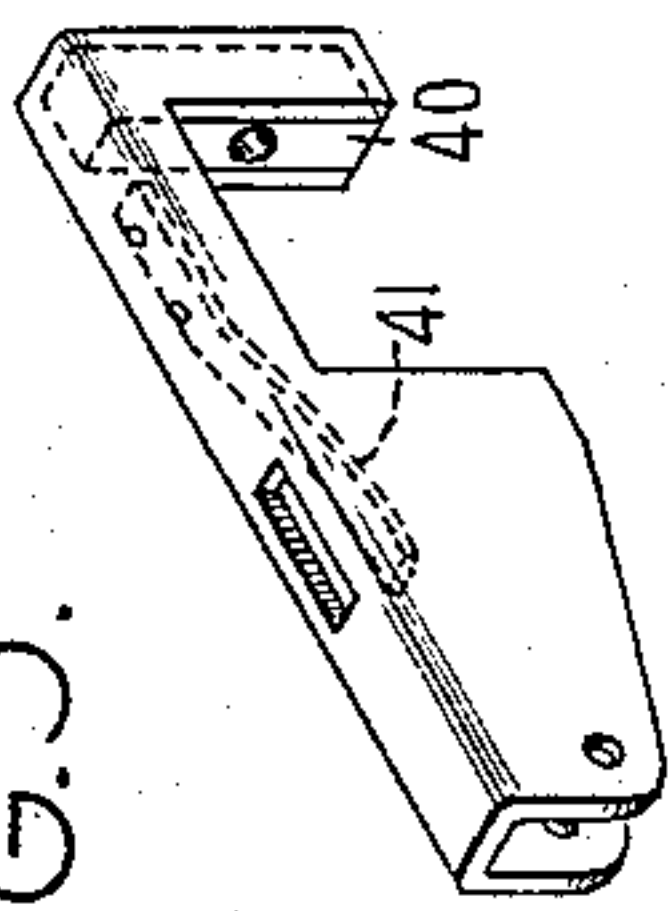
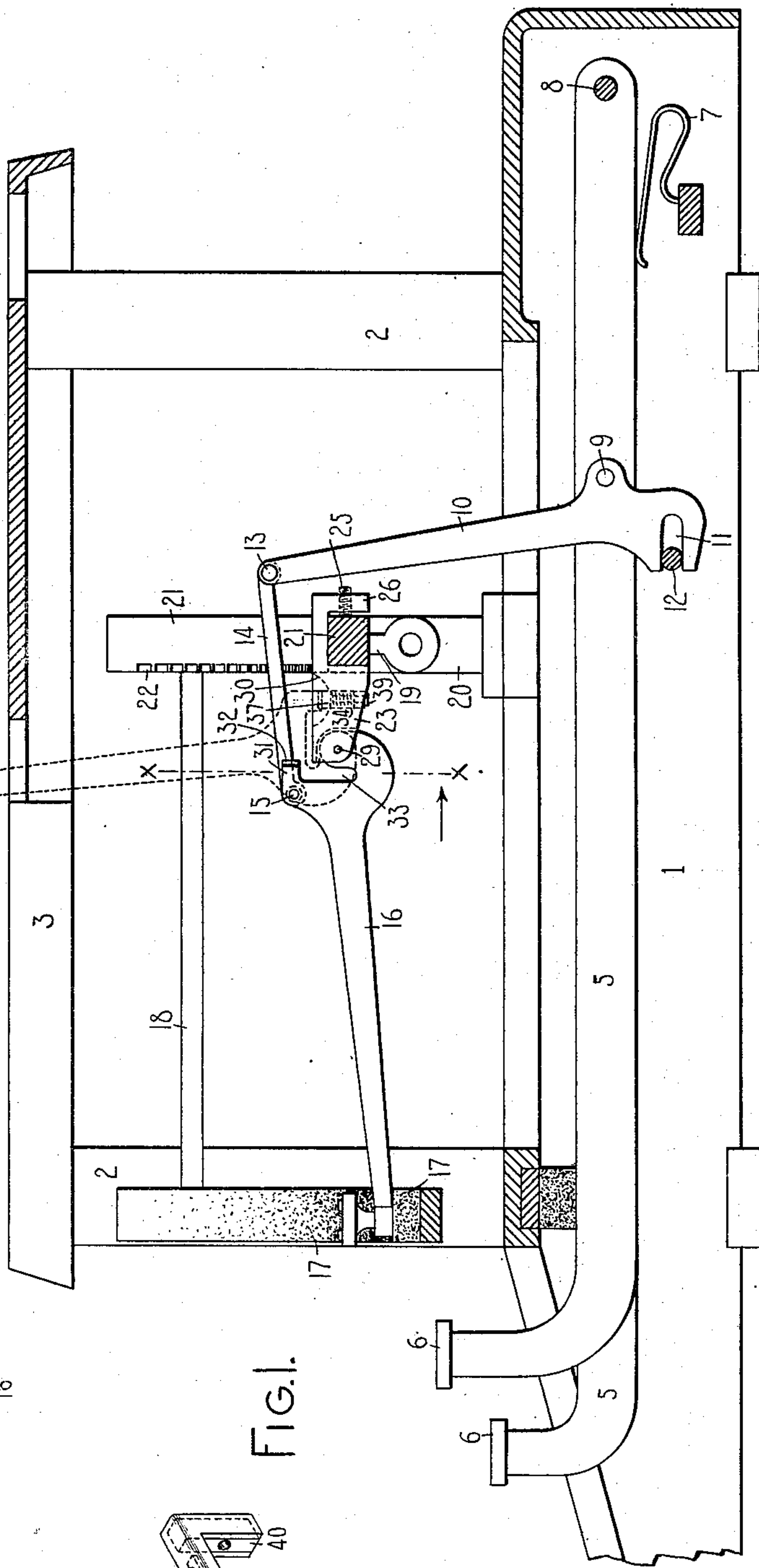
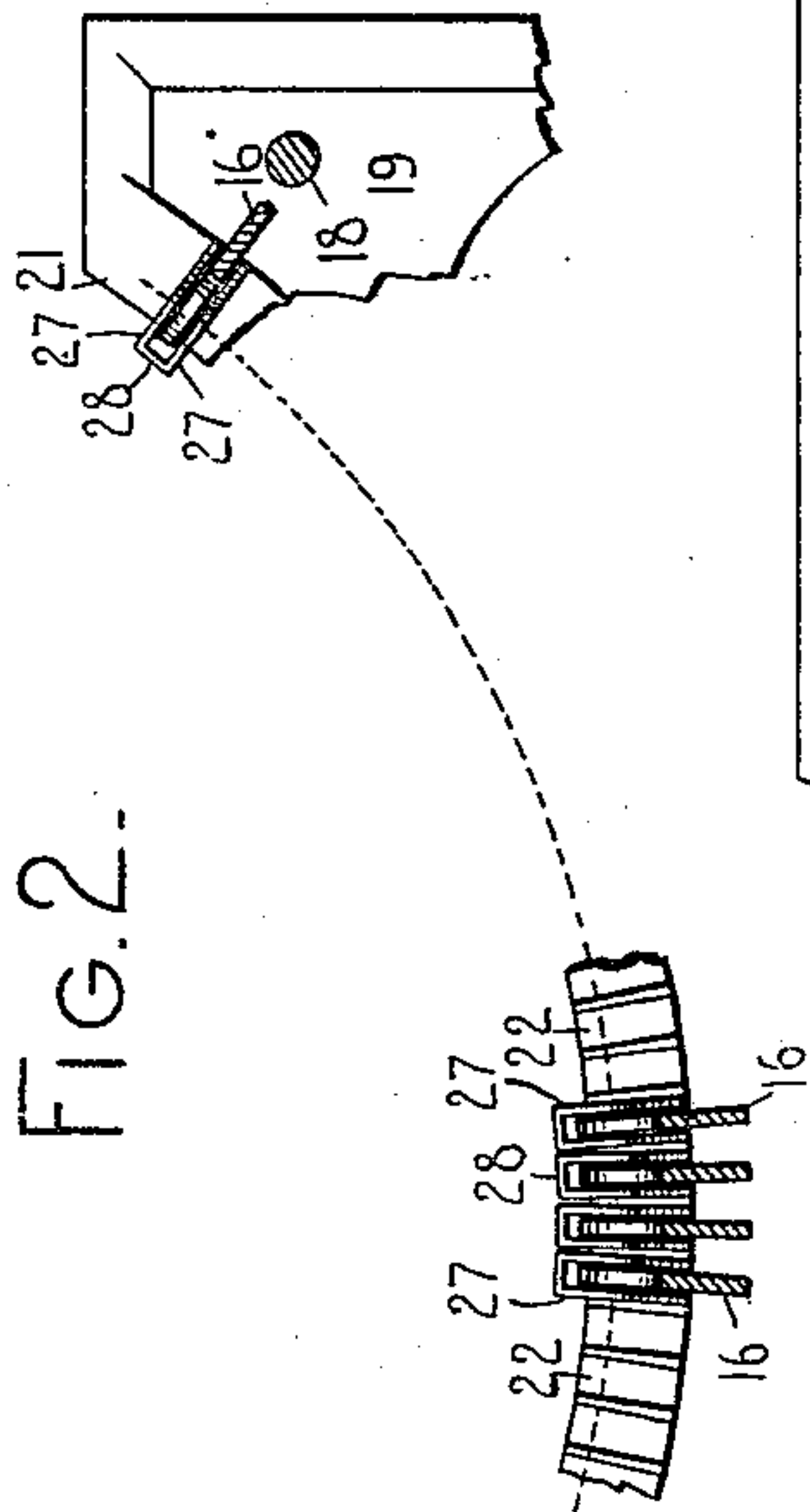
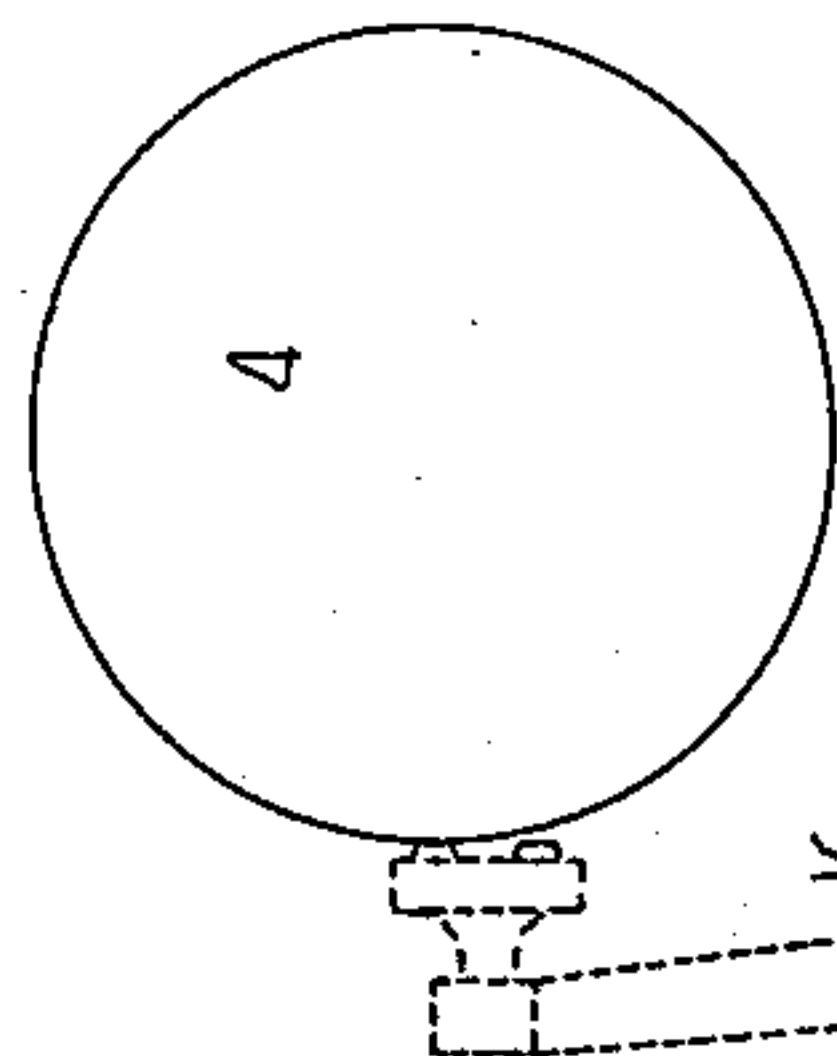
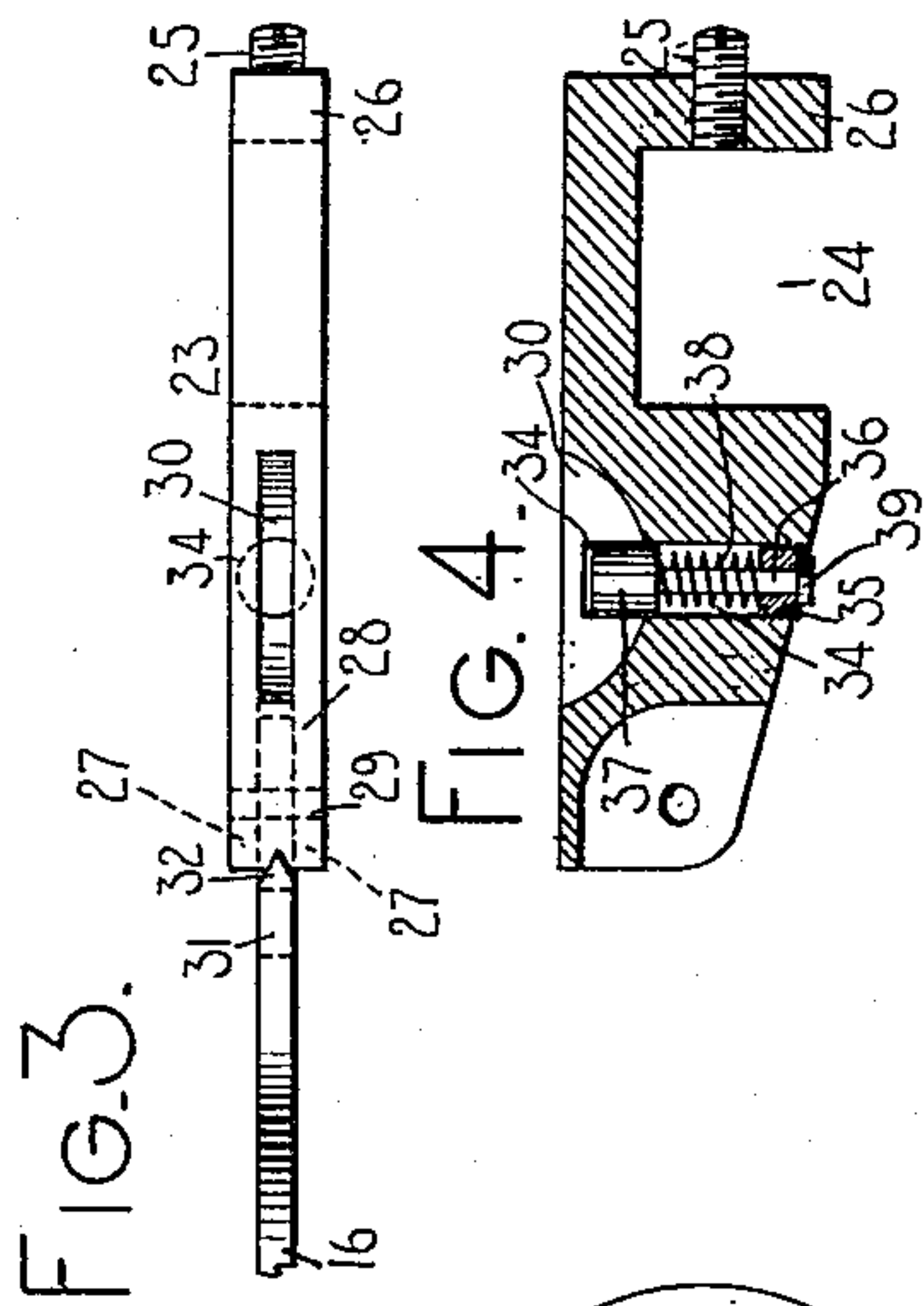


No. 896,096.

PATENTED AUG. 18, 1908.

J. FELBEL.  
TYPE WRITING MACHINE.  
APPLICATION FILED MAR. 14, 1904.



WITNESSES:

K. V. Donovan.

Wm. Pool.

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. 896,096.

Specification of Letters Patent.

Patented Aug. 18, 1908.

Application filed March 14, 1904. Serial No. 197,963.

*To all whom it may concern:*

Be it known that I, JACOB FELBEL, citizen of the United States, and 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 typewriting machines and has for its main objects to provide an improved construction of type bar hanger, which is adapted to shield the type bar pivots from dust or grit, and to serve also as a guide for a type bar of improved construction, and also to provide means for starting the return of the type bar after printing.

In the accompanying drawings wherein like reference numerals indicate like parts in the various views, Figure 1 is a vertical front-to-rear sectional view of one form of typewriting machines embodying my invention, with such parts omitted as are not material. Fig. 2 is a fragmentary front elevation of the segment with several hangers thereon, and their type bars shown partly in section. This view is taken on the plane represented by dotted line *x* of Fig. 1, with some parts omitted. Fig. 3 is an enlarged plan view of a detached hanger and part of a type bar. Fig. 4 is a vertical, longitudinal section of the hanger showing the type bar returning mechanism. Fig. 5 is a perspective view of a hanger made of sheet metal.

Upon the base 1 of the machine are corner posts 2 which sustain a top plate 3. The top plate 3 supports a carriage (not shown) of any desired construction, said carriage being provided with a platen 4, diagrammatically illustrated. Key levers 5, each having a finger-key 6 and returning-spring 7, are pivoted at 8 in the rear of the base of the machine. Pivoted at 9 to each key-lever is a sub-lever 10 having at its lower end a slot 11 which coöperates with a fixed fulcrum-bar 12 extending from side to side of the machine beneath the key-levers. The upper end of each sub-lever 10 is pivotally connected at 13 to the rear end of an actuating link 14 which has its forward end pivoted at 15 to a type bar 16, supported at its type end on a segmental rest 17. The rest or pad 17 is in turn supported by several arms, of which 18 is one, which extend forwardly from the type bar segment 19. For the purposes of the in-

vention it is immaterial whether the segment 19 be fixedly or movably connected with its brackets or supports, of which the left hand one 20 is shown. The hanger supporting part 21 of the segment has a series of radial slots 22 in its front face, adapted to receive the hangers 23 and hold them against lateral displacement.

Each hanger has in its rear portion a notch or cut-away 24, the cut-away bifurcating the hanger and providing forks by means of which said hanger fits over or embraces the hanger support 21 of the segment and at the same time occupies its appropriate radial slot 22. In this position the hanger 23 is secured in any suitable manner, as by a set screw 25 passing through the rear wall or fork 26 and abutting against the rear of support 21, said screw, when turned in, drawing the front wall or fork of the bifurcation against the front face of the segment whereby the hanger is secured to the segment in a fixed position, but may be adjusted radially of said segment. The forward portion of the hanger is of an inverted U-shape, having side walls 27 joining a top or roof 28. The type bar 16 is pivoted at 29 in the side walls; the side walls 27 and top 28 of the hanger thus forming a housing or hood for the type bar pivot. It will be evident that the pivots of all the type bars on the segment are thus protected from falling particles of paper, rubber and the like resulting from erasures, and the bearings are prevented from becoming clogged and working hard.

In the top of the type bar hanger 23, and somewhat to the rear of the pivot 29, is a slot 30 which is adapted to receive a lug or finger 31 on the type bar and projecting rearwardly and having a beveled end 32 to facilitate its downward entrance into the slot 30. The type bar is formed with a cut-away or recess 33, whereby it is free to swing to printing position, (shown by the dotted lines in Fig. 1) when the finger key 6 is depressed, without striking the hanger.

In the printing position the sides of recess 33 loosely embrace the top 28 of the hanger, and in normal position said sides are substantially parallel to the front face of segment 19. The thickness of finger 31 and the width of slot 30 are so related that in printing position the type bar is steadied laterally or is held from vibration longitudinally of the



platen and correct alinement is obtained, each slot 30 serving as an individual type guide for its associated finger 31.

The hanger 23 has a vertical perforation 34 (Fig. 4) centrally of the slot 33. The lower part of the perforation or chamber 34 is tapped to receive a threaded cylindrical block or plug 35 which is screwed into it, the block 35 having a central hole which receives and guides the stem 36 of the spring plunger 37, which latter is movable in the perforation 34 and is guided thereby. The top of the plunger is maintained somewhat above the bottom of the slot 30 by a spring 38 surrounding the stem and bearing at one end against the block 35 and at its opposite end against the underside of the head 39. To limit the upward movement of the plunger in the hanger, the stem 36 is provided with a head 39 contactive with the bottom of the plug 35. As the type bar approaches the printing point, the finger 31, moving downwardly in the slot 30, contacts with the plunger 37 and presses it down against the action of the spring 38 until the type prints and the finger key is released. Then the return of the type bar to its normal position is started or assisted by the spring plunger acting upon the finger 31, said plunger having the function of a repulser, its spring having been energized by the type bar as the latter moves towards the printing point, so that when the type bar is at the printing point the energized spring tends to force it away therefrom.

During the greater part of its movement from the rest 17 to the printing point and back again, the type bar does not coact with the guide slot 30. It is not until the type bar nears the printing point, that it begins to cooperate with the guide slot of its associated hanger, and the type bar swings away from the platen only a very short distance before it again separates from its guide. Useless friction during the major portion of the travel of the type bar to and from the platen is thus avoided.

The hanger may be constructed in various ways within the scope of my invention. For example, it may be formed from a solid block of metal by milling the slots 24 and 30 and the portion between the side walls 27 as shown. In this form the rear side and the upper portion of the hanger above the type bar pivot are closed. Or a hanger may be formed by suitably punching out and folding appropriately a blank of sheet metal, and providing it with a solid perforated and threaded support 40 for the screw 25 as seen at Fig. 5. In this latter construction the type bar restoring means may be a flat spring 41, riveted at one end in the top of the hanger.

The type bar actuating means shown is of known construction; but I do not wish to be

limited thereto, as any other means for operating the type bar may be employed as well.

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

1. In a typewriting machine, the combination of a type bar having a recess therein, and a roofed hanger whose top is adapted to be loosely embraced by the sides of said recess when the type bar is in printing position.

2. In a visible-writing machine, the combination of a series of type bars mounted in individual hangers, and individual type guides integral with the hangers and above the type bar pivots, the type guide and type bar being brought into cooperative relation by a downward movement of one of the parts.

3. In a visible-writing machine, the combination of an inverted U-shaped hanger having an opening in its top, and a type bar mounted in the hanger and having a portion adapted to enter the said opening when the type bar nears the printing position.

4. In a typewriting machine, the combination of a roofed hanger having a guide opening in its roof, and a type bar pivoted in the hanger and having a lug which normally lies between the type and the pivot and projects rearwardly substantially parallel with the top of the hanger and which cooperates with the opening when the type is at or near the printing point.

5. In a typewriting machine, the combination of a platen, a segment below the platen, roofed hangers mounted on the segment and transversely thereof, and recessed type bars pivoted in forwardly projecting portions of the hangers and in such wise that the pivots of the type bars are shielded by the roofs of the hangers from falling particles.

6. In a typewriting machine, the combination of a hanger having an inverted U-shaped bearing portion and a guiding opening in the top of the hanger, and a type bar pivoted within said U-shaped portion and having a finger that enters the guiding opening in the hanger from above during the last portion of the stroke of the type bar and prevents lateral movement of the bar.

7. In a typewriting machine, the combination of a type bar hanger having an inverted U-shaped bearing portion, and a type bar pivoted in said U-shaped bearing portion and having the pivotal connection between the type bar and hanger covered by the U-shaped portion of the hanger, the type bar being recessed to receive a portion of the hanger during the printing stroke.

8. In a typewriting machine, the combination of a hanger that is apertured, the side walls of said aperture constituting a type guide, a type bar that is pivoted to the hanger and is recessed to receive a portion of the hanger during the printing stroke of the bar, and a finger on the bar that is adapted to



enter the aperture in the guide during the last portion of the stroke to guide the bar and prevent lateral movement thereof.

9. In a front strike typewriting machine, the combination of a hanger that is apertured in the top thereof, the side walls of said aperture constituting a type guide, an upwardly and rearwardly striking type bar that is pivoted to the hanger and is recessed to receive a portion of the hanger during the printing stroke of the bar, and a finger on the bar that projects rearwardly from the type bar when it is in the normal position and above the pivot thereof and is adapted to enter the aperture in the guide from above during the last portion of the stroke to guide the bar and prevent lateral movement thereof.

10. In a typewriting machine, the combination of a hanger having an inverted substantially U-shaped bearing portion and an aperture in the top of the hanger, the side walls of said aperture constituting a type guide, a type bar that is pivoted in the substantially U-shaped bearing portion of the hanger and is recessed to receive a portion of the hanger during the printing stroke of the bar, and a finger on the bar that is adapted to enter the aperture in the guide during the last portion of the stroke to guide the bar and prevent lateral movement thereof.

11. In a front strike typewriting machine, the combination of a platen, a series of segmentally arranged roofed hangers that are substantially U-shaped in cross section at the type bearing portions thereof, and a series of segmentally arranged type bars pivoted in said hangers and in a vertical plane substantially coincident with the front face of the platen, so that the pivotal connection between the type bars and hangers will be protected from rubbings or grit which drop from the front face of the platen or the paper thereon, said type bars being formed to embrace the roofed portions of the hangers when in printing position.

12. In a front strike typewriting machine, the combination of a platen, a series of segmentally arranged roofed hangers that are substantially U-shaped in cross section at the type bearing portions thereof, a series of segmentally arranged type bars pivoted in said hangers, and fixed type bar guides formed in the roofs of the hangers and with which portions of the type bars cooperate when moved downwardly to prevent lateral movements of the type bars.

13. In a typewriting machine, the combination with a type bar hanger containing a spring, of a type bar pivoted to said hanger and having a finger projecting from the body of the type bar, the end of said finger being adapted to put said spring under tension just before the type strikes.

14. In a typewriting machine, the combination of a plurality of type bar hangers,

each containing an independent spring, and a plurality of type bars each having a finger projecting from the body of the type bar and normally separated from its associated spring the end of said finger being adapted at the printing moment to put said spring under tension.

15. In a typewriting machine, the combination of a type bar hanger having an alining aperture in its top, a spring below said aperture, and a type bar pivoted to said hanger and provided with a finger adapted to be moved to enter said aperture and act on said spring.

16. In a typewriting machine, the combination of a type bar hanger having a roof and an alining aperture in said roof, a spring below said roof, and a type bar pivoted to said hanger and provided with a finger adapted to pass into said aperture and to act on said spring.

17. In a typewriting machine, the combination of a type bar hanger having a roof, an alining aperture in said roof and a spring therebelow, a type bar pivoted in said hanger below said roof and having a recess to embrace said roof and also a finger to enter said aperture and to act on said spring.

18. In a typewriting machine, the combination with a segment, of a bifurcated type bar hanger, the forks of which embrace the segment on opposite sides, one of said forks being provided with a set screw, the point of which bears against one of the side walls of the segment and so as to draw the other fork of the hanger against the opposite side wall of the segment whereby the hanger is not only secured to the segment but may be adjusted radially thereof.

19. In a typewriting machine, the combination of a type bar hanger, a type bar pivoted thereon, one of said parts having a projecting portion or finger cooperative with an opening in the other part whereby the type bar is guided at the printing moment, and a spring member on one of the type bar and hanger parts cooperative with the projecting portion on the other part at the printing moment.

20. In a typewriting machine, the combination of a type bar hanger provided with a guide slot, a type bar pivoted on said hanger and having a finger angularly disposed to the body thereof and adapted to cooperate with the guide slot in the hanger at the printing moment, and a spring plunger on said hanger cooperative with the end of the finger on the type bar at the printing moment.

21. In a typewriting machine, the combination of a series of segmentally arranged upwardly and rearwardly striking type bars, and a series of independent segmentally arranged spring-pressed plungers one for each of said type bars, the spring for each of said plungers being energized by its associate



type bar in the movement of the latter to the printing position.

22. In a typewriting machine, the combination of a series of segmentally arranged upwardly and rearwardly striking type bars, and a series of independent segmentally arranged spring pressed repulsers, one for each of said type bars, the spring of each of said repulsers being energized by its associate type bar in the movement of the latter to the printing position and each of said repulsers comprising a plunger, a guide in which said plunger works and a coiled spring surrounding and bearing against the plunger.

23. In a typewriting machine, the combination of a series of segmentally arranged upwardly and rearwardly striking type bars, and a series of independent segmentally arranged spring-pressed repulsers, one for each of said type bars, the spring of each of said repulsers being energized by its associate type bar in the movement of the latter to the printing position, each of said repulsers comprising a plunger, a chamber in which said plunger works, a coiled spring contained within said chamber and surrounding the stem of said plunger, and a removable perforated block that closes one end of the chamber, the stem of the plunger being received in the perforation in the block.

24. In a typewriting machine, the combination of a type bar and a spring-pressed repulser, the spring of which is energized by the type bar as the latter approaches the printing position, said repulser comprising a plunger with which the type bar contacts at the last portion of its printing stroke, a guiding chamber in which said plunger works, a coiled spring contained within said guiding chamber and surrounding a portion of the plunger and bearing at one end against the plunger, and a plug with a perforation in which the plunger is received and by which the plunger is guided, said plug being threaded into the guide chamber at one end thereof.

25. In a typewriting machine, the combination of a series of segmentally arranged upwardly and rearwardly striking type bars and a series of independent segmentally arranged spring pressed repulsers, one for each of said type bars, the spring of each of said repulsers being energized by its associated type bar in the movement of the latter to the printing position, each of said repulsers comprising a plunger with which the type bar contacts at the last portion of its printing stroke, a guiding chamber in which said plunger works, a coiled spring contained within said guiding chamber and surrounding a portion of the plunger and bearing at one end against the plunger, and a plug with

a perforation in which the plunger is received and by which the plunger is guided, said plug being threaded into the guide chamber at one end thereof.

26. The combination with a typewriting machine having a platen, and a series of type-bars arranged to strike the front of the platen, of a series of hangers to which the type-bars are pivoted arranged radially in front of and below the platen, said hangers being of U cross-section and having their rear sides and upper portions above the type-bar pivots closed, substantially as set forth.

27. The combination in a type-writing machine having an upright segment, and a series of type-bars, of a series of type-bar hangers of U cross-section arranged with their open sides away from the printing point and against the segment and having openings in which the type-bars are pivoted, and which are closed above the type-bar pivots, substantially as set forth.

28. The combination in a typewriting machine having a series of type-bars normally extending forwardly from an upright segment, of a series of hollow type-bar hangers arranged on the segment and having their sides and upper ends closed except for openings at one side to receive the ends of the type-bars, substantially as set forth.

29. The combination, in a front strike type-writing machine, of a series of hangers and type bars pivoted thereto, the hangers having opposable side walls open at the front to receive the type bars, and closed or united at the rear and over the type bar pivots to exclude dust.

30. The combination, in a front strike typewriting machine, with a series of type bars provided with offset pivot ends, of a series of hangers to which said bars are pivoted, the upper and rear sides of the hangers being united so as to inclose the offset ends of the type bars.

31. The combination, in a front strike type writing machine, with a series of type-bars provided with offset pivot ends, of a series of hangers of U cross-section in which the offset ends of the type bars are pivoted, the pivot ends of the hangers being closed to form covers over the offset ends of the type bars to exclude falling dust.

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 March, A. D. 1904.

JACOB FELBEL.

Witnesses:

K. V. DONOVAN,  
E. M. WELLS.