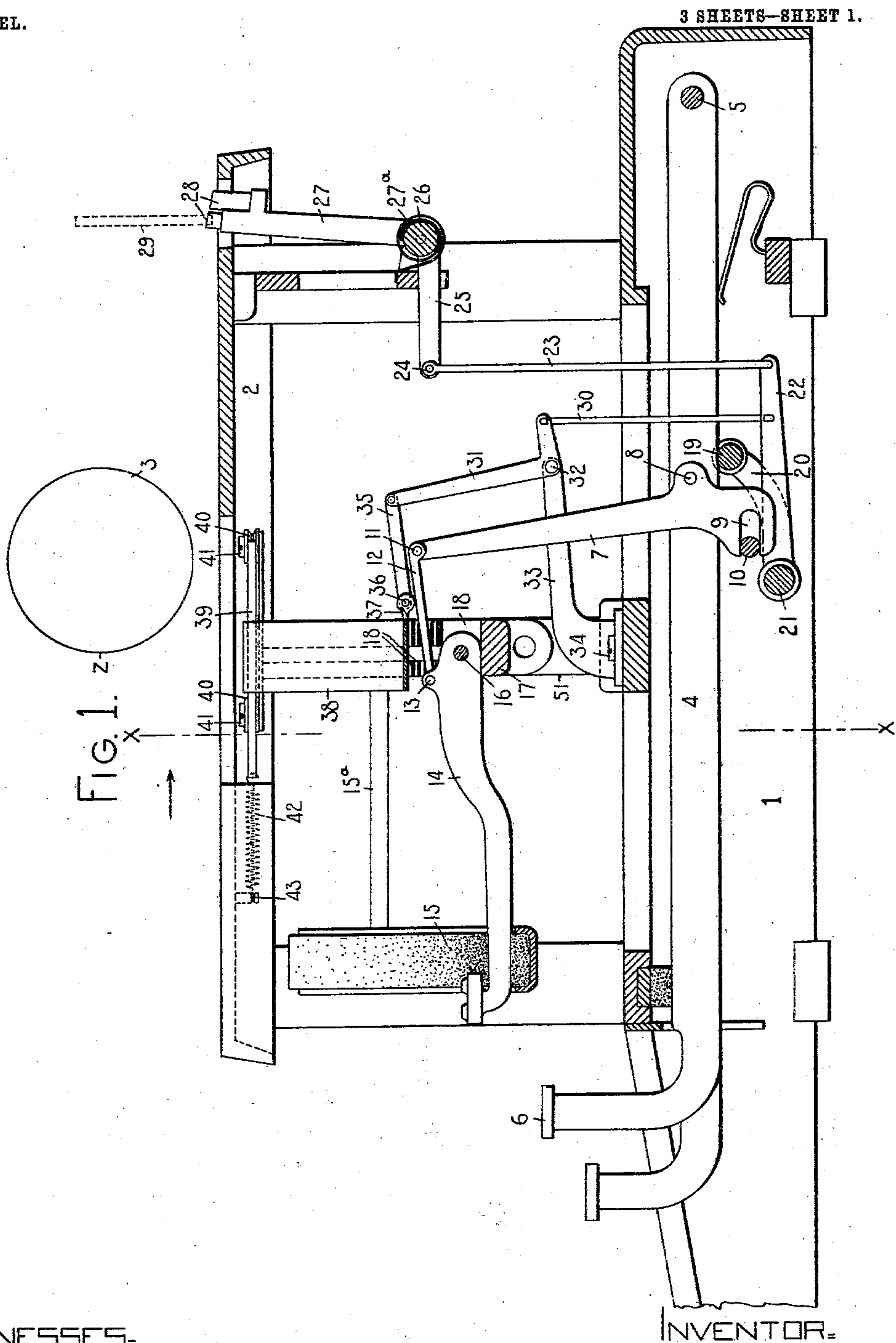


No. 740,836.

PATENTED OCT. 6, 1903.

J. FELBEL.  
TYPE WRITING MACHINE.  
APPLICATION FILED JULY 6, 1903.

NO MODEL.



WITNESSES.

K. V. Donovan.  
Wm. Smith

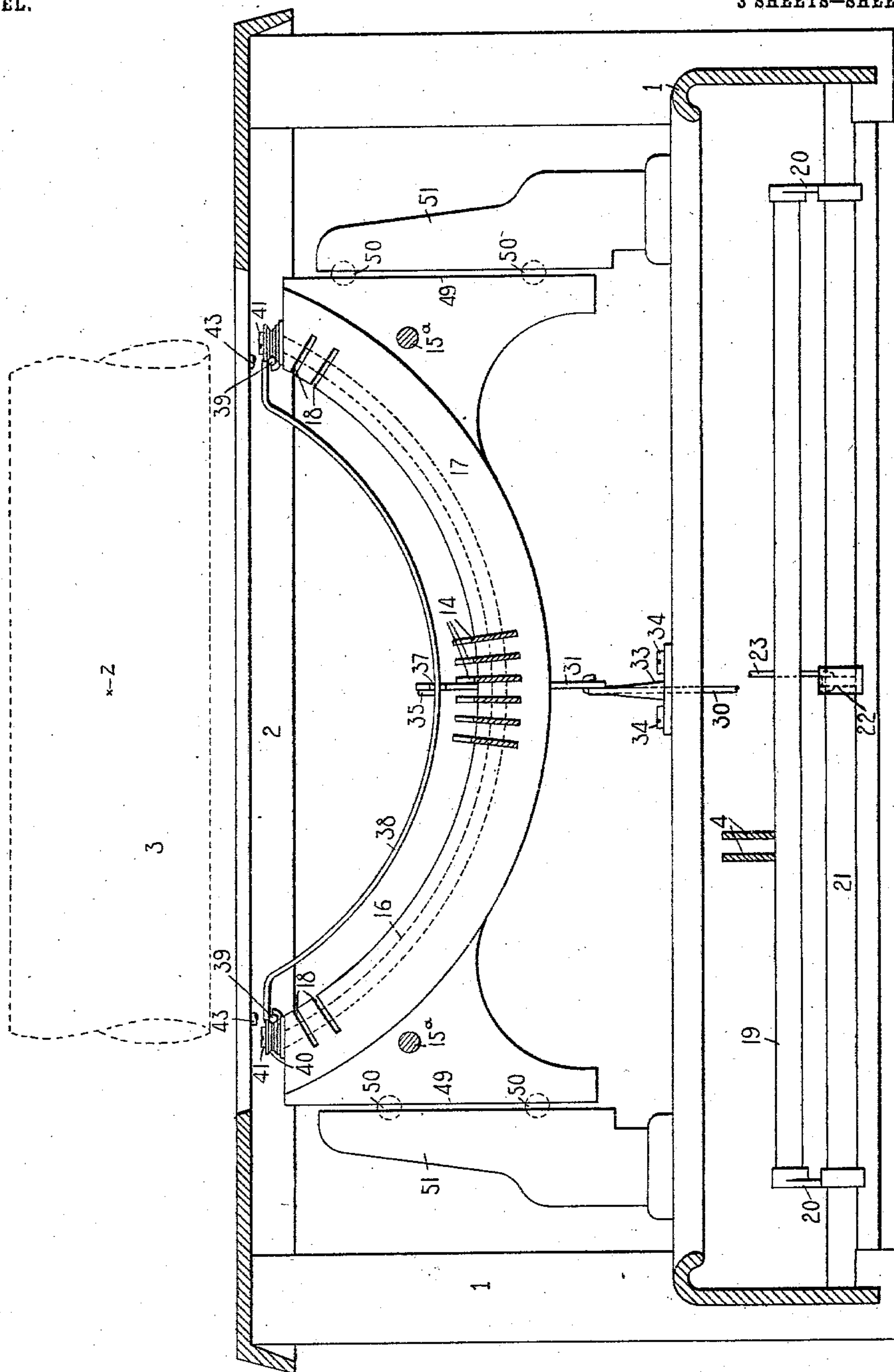
Jacob Felbel

J. FELBEL.  
TYPE WRITING MACHINE.  
APPLICATION FILED JULY 8, 1903.

NO MODEL.

3 SHEETS—SHEET 2.

FIG. 2.



WITNESSES.

INVENTOR.

*R. V. Donovan*  
*Charles Smith*

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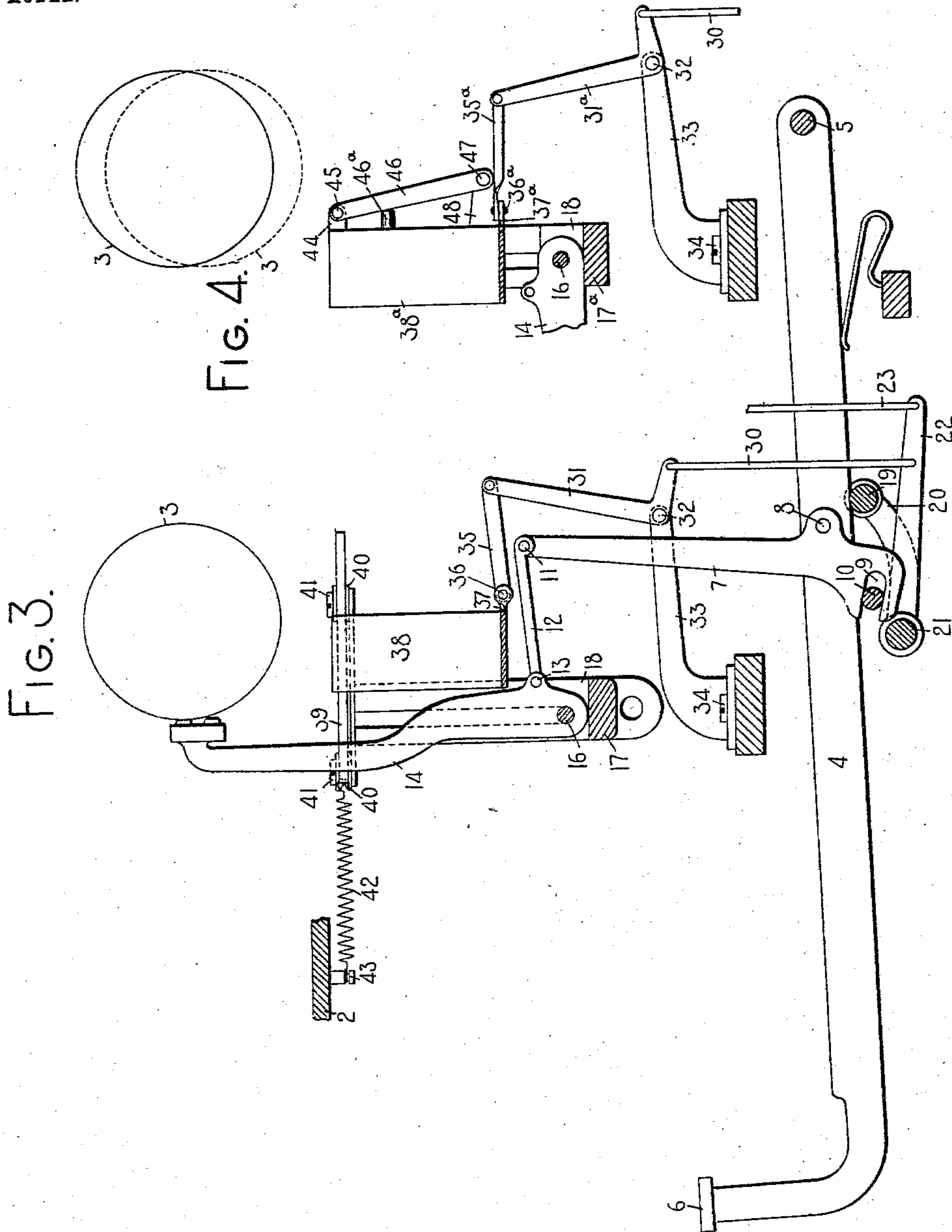
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NO MODEL.

3 SHEETS—SHEET 3.



WITNESSES.

*R. V. Monroan.*  
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INVENTOR.

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# 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.

SPECIFICATION forming part of Letters Patent No. 740,836, dated October 6, 1903.

Application filed July 6, 1903. Serial No. 164,335. (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, 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 type-writing machines, and more particularly to means for preventing dust or grit from falling onto or gaining access to the bearings of the type bars or carriers.

In "front-strike" type-writing machines wherein the platen is ordinarily located above the type-bars, with its front face over the type-bar bearings or pivots, dust or grit, usually composed of particles of sand, rubber, and inked paper, falls from the paper when the operator is making erasures and passes into or upon the bearings of the type bars or carriers and sometimes seriously affects the free and easy operation thereof.

The object of my present invention is to overcome this difficulty and provide simple and efficient means for keeping the dust or grit away from the bearings of the type bars or carriers and to so mount and arrange such means that it shall automatically move out of the way of the type bars or carriers when they are actuated to print.

To the above and other ends, which will hereinafter appear, my invention consists in the features of construction, arrangements of parts, and combinations of devices to be hereinafter described, and particularly pointed out in the appended claims.

In the accompanying drawings, wherein like reference characters indicate corresponding parts in the various views, Figure 1 is a front to rear vertical sectional view of enough of a type-writing machine to illustrate my invention. Fig. 2 is a transverse sectional view of the same, taken on the line  $x-x$  of Fig. 1 and looking in the direction of the arrow in said figure. Fig. 3 is a detail skeleton view in vertical section and side elevation of certain of the parts illustrated in Fig. 1, the view showing the disposition of the parts when a type-bar is in the printing position. Fig. 4 is a fragmentary side elevation, partly in sec-

tion, of a modified form of construction embodying my invention.

The frame 1 of the machine has a top plate 2, on which a carriage (not shown) of the usual or any desired construction travels from side to side of the machine, said carriage being provided with a platen 3, which is diagrammatically illustrated. Key-levers 4, pivoted at 5 in the base of the frame of the machine, are provided with finger-keys 6. Each key-lever has a sublever 7, pivoted thereto at 8, and the lower end portion of each sublever is slotted at 9 for coöperation with a fixed fulcrum-bar 10, that extends beneath the key-levers from side to side of the machine. The upper end of each sublever is pivotally connected at 11 to one end of an actuating-link 12, that has its other end pivoted at 13 to a type bar or carrier 14, supported at its forward end on a segmental pad 15. The various type-bars are segmentally arranged and are pivoted at 16 in a segment 17, each type-bar being received within a bearing-slot 18 in the segment. The segment is provided with forwardly-extending arms 15<sup>a</sup>, which support the pad 15. A depression of any finger-key will cause the associated type-bar to be moved upwardly and rearwardly to the printing-point  $z$ .

Extending beneath the various key-levers is a universal bar 19, supported upon arms 20, that extend from a rock-shaft 21, which turns in bearings in the frame of the machine. Projecting rearwardly from the rock-shaft 21 and centrally thereof is a crank-arm 22, the rear end of which is connected to an upwardly-extending link 23, that has its upper end connected at 24 to a crank-arm 25, which projects forwardly from the rock-shaft 26 of a dog-rocker 27. This dog-rocker carries feed-dogs 28, that coöperate with a suitable escapement-wheel or feed-rack 29, (indicated in dotted lines in Fig. 1,) and the parts are restored to the normal positions by the usual dog-rocker spring 27<sup>a</sup>. By these means a step-by-step feed movement of the carriage is effected at each printing operation of a key-lever. The crank-arm 22 is likewise connected to an upwardly-extending link 30, the upper end of which is attached to one arm of a bell-crank lever 31, pivotally supported at 32



on a rearwardly-extending bracket-arm 33, secured at 34 to a fixed portion of the machine. The upwardly-extending arm of the bell-crank lever is pivotally connected to a forwardly-extending link 35, which at its front end is pivoted at 36 to an ear 37, that extends rearwardly from a segmental dust shield or cover 38. This dust-shield is located above the type-bar pivots and the bearing-slots 18 and lies between the front face of the platen and said bearings. The ends of the segmental strip which constitutes the dust-shield are rigidly connected to and supported by movable guide-rods 39, each of which is supported and guided by grooved rollers 40, that turn on screw-pivots 41 on the type-bar segment. The forward end of each guide-rod 39 is connected to one end of a contractile spring 42, the other end of said spring being connected to a pin 43, which projects downwardly from the top plate of the machine. From this construction it will be seen that the springs 42 tend to maintain the dust-shield normally in the position illustrated in Fig. 1 of the drawings, where it will be seen that the pivotal bearings of the type-bars and also the slots in which they work are fully covered or protected from dust or grit falling from the face of the platen, which is in the same plane, or substantially the same plane, as the pivots of the type-bars. In this position of the dust-shield, however, it would be struck by the ascending type-bars if it were fixed instead of movable, as it is, and the type-bars would be prevented from printing; but owing to the described connections between the dust-shield and the universal bar said shield is retracted when a key-lever is depressed and sufficiently far to be entirely out of the way of the type-bar when it is in printing position, as illustrated at Fig. 3. The depression of any finger-key will, however, cause the universal bar to descend and the upright arm of the bell-crank lever 31 to swing rearwardly and pull the dust-shield in the same direction and to the position indicated in Fig. 3. This takes place automatically as the type-bar vibrates toward the printing-point, the dust-shield moving in the general direction of the movement of the type-bar and out of the path thereof as it approaches the printing position, so that the dust-shield will not interfere with the printing movements of the type-bars. When pressure on the finger-key is released and the type-bar moves back to its normal position, the springs 42 will restore the dust-shield to its normal position.

In Fig. 4 I have shown a modified form of construction embodying my invention, wherein the dust-shield 38<sup>a</sup> is provided with rearwardly-extending ears 44, that are pivoted at 45 to upwardly-extending links 46, pivoted at their lower ends 47 to bracket-arms 48, that extend rearwardly from the segment 17<sup>a</sup>. The brackets 48, links 46, and rearwardly-extending ears 44 are located near each end

of the segmental dust-shield, and the links 46 constitute supporting means on which the dust-shield may be vibrated transversely or fore and aft of the machine. The dust-shield has a centrally-located rearwardly-extending ear or projection 37<sup>a</sup>, to which is pivoted at 36<sup>a</sup> a link 35<sup>a</sup>, whose rear end is pivoted to a bell-crank 31<sup>a</sup>, actuated in the manner hereinbefore described with reference to Fig. 1. A pin or stop 46<sup>a</sup> may be provided in front of each side link 46 to prevent the dust-shield from dropping or tipping forward about the pivots 45 and 47. These pins or stops may project rearwardly from the back of the type-bar segment and at points where they will not interfere with the rearward movement of the dust-shield. The dust-shield 38<sup>a</sup> may be provided with restoring-springs similar to the springs 42, or the spring 27<sup>a</sup> of the dog-rocker may be relied upon to restore the dust-shield to its normal position in both constructions.

For the purpose of my present invention and from certain aspects thereof it is immaterial what construction of means is employed for actuating the type-bars, and it is likewise immaterial from certain aspects of my invention whether the platen is shifted relatively to the type-bars for upper and lower case printing or whether the type-bars are shifted relatively to the platen, or, in fact, whether only one type is employed on each bar, in which case there would be no shift at all.

In the construction shown in Figs. 1, 2, and 3 of the drawings the segment is represented as a shiftable one and the dust-shield is carried by and shifts vertically with the segment when the latter is shifted for upper and lower case writing, the link 35 vibrating about its pivotal connection with the upright arm of the bell-crank 31 in the same manner that the links 12 vibrate about their pivotal connections with the sublevers 7 and in such manner that there is no disturbance of the bell-crank 31 or of the sublevers 7 during the shifting operations. The segment is provided with grooved guideways 49, that receive antifriction-balls 50, which balls likewise cooperate with fixed grooved guideways 51, secured to the framing of the machine. The segment may be shifted by any suitable means--such, for instance, as those employed in the Monarch machine.

In the construction represented in Fig. 4 the segment is not intended to be shifted, but the platen may be shifted for upper and lower case writing by any suitable means, as represented diagrammatically in said figure, although it will be observed that the segment is nevertheless equally adapted to be shifted therewith, if desired.

In both constructions the dust-shield is arranged to move bodily fore and aft of the machine in parallel planes, the links or levers 46 and 31<sup>a</sup> permitting such movement in the Fig. 4 construction, and the slides 39 and le-



ver 31 enabling this parallel movement to be obtained in the other construction.

From the foregoing description it will be understood that the dust-shield is independent of the type-bars, but that, nevertheless, it is operatively connected to the key-levers through the universal bar and the connections from said bar to the shield, so that the shield receives an automatic movement fore and aft of the machine, thus moving the shield out of the path of the type-bar as it approaches the printing position and enabling the shield to again cover the type-bar bearings as well as the pivotal joints 13 when the type-bar is restored to the normal position. The dust-shield is easily accessible and the accumulated dust or grit collecting thereon may be readily removed when desired.

While I have shown and described two forms of construction embodying my invention, it should be understood that various changes may be made without departing from the spirit of my 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-bar, a dust-shield that covers the bearing of said type-bar, and means for automatically moving said dust-shield.

2. In a type-writing machine, the combination of a type-bar, a dust-shield that covers the bearing of said type-bar and is independent thereof, and means for automatically effecting a movement of said dust-shield when the type-bar is actuated.

3. In a type-writing machine, the combination of a pivoted type-bar, a dust-shield that covers the pivot-bearing of the type-bar, and means for moving the shield out of the path of the type-bar when the latter moves to the printing position.

4. In a type-writing machine, the combination of a pivoted type-bar, a key therefor, a dust-shield that covers the pivot-bearing of the type-bar, and means controlled by the movement of said key for effecting a movement of the shield.

5. In a type-writing machine, the combination of a rearwardly-striking pivoted type-bar, and a dust-shield which covers the type-bar pivot and receives a forward and backward movement corresponding to the movement of the type-bar.

6. In a type-writing machine, the combination of a rearwardly-striking pivoted type-bar, and a dust-shield which covers the type-bar pivot and is independent of the type-bar, and which receives a forward and backward movement corresponding to the movement of the type-bar.

7. In a type-writing machine, the combination of a pivoted type-bar, a key-lever therefor, and a dust-shield that covers the pivot-bearing of the type-bar and is operatively connected to said key-lever to be moved thereby.

8. In a type-writing machine, the combination of a type-bar, a key-lever therefor, a universal bar, and a dust-shield that is connected to and is moved by said universal bar.

9. In a type-writing machine, the combination of a type-bar, a key-lever therefor, a universal bar, a dust-shield and intermediate connections between said dust-shield and universal bar, whereby a movement of the key-lever will effect a movement of the shield to remove it from the path of the type-bar as the bar moves to the printing position.

10. In a type-writing machine, the combination of a series of pivoted type-bars, a dust-shield that covers the pivot-bearings of said type-bars, and means for moving said dust-shield.

11. In a front-strike type-writing machine, the combination of a series of segmentally-arranged pivoted type-bars, a dust-shield that extends over and covers the pivot-bearings of said type-bars, and means for automatically moving said dust-shield when any type-bar of the series is actuated.

12. In a type-writing machine, the combination of a series of pivoted type-bars, a dust-shield that is independent of the type-bars and covers the pivot-bearings thereof, and means for automatically moving said dust-shield at each actuation of a type-bar.

13. In a type-writing machine, the combination of a series of pivoted type-bars, a series of keys therefor, a dust-shield that extends over and covers the pivot-bearings of said type-bars, and means controlled by the keys for moving said shield out of the path of each of said series of type-bars as it approaches the printing position.

14. In a type-writing machine, the combination of a series of pivoted type-bars, a series of key-levers therefor, a universal bar, a dust-shield that extends over and covers the pivot-bearings of said type-bars, and means controlled by the universal bar for moving said shield out of the path of each of said series of type-bars as it approaches the printing position.

15. In a type-writing machine, the combination of a type-bar that is pivoted to swing in a bearing-slot, and an automatically-actuated dust-shield that covers the slot in which the type-bar moves.

16. In a type-writing machine, the combination of a slotted segment, a series of type-bars pivoted in the slots in said segment, and an automatically-actuated dust-shield that covers said slots.

17. In a front-strike type-writing machine, the combination of a segment having bearing-slots therein, a series of segmentally-arranged type-bars pivoted in said slots, a platen above said segment, a segmental dust-shield arranged above said slots, to cover them and the pivot-bearings of the type-bars, and means for automatically moving said dust-shield when a type-bar is actuated.

18. In a front-strike type-writing machine,



the combination of a segment having bearing-slots therein, a series of segmentally-arranged type-bars pivoted in said slots, a platen above said segment, a segmental dust-shield arranged above said slots to cover them and the pivot-bearings of the type-bars, and adapted to move fore and aft of the machine, finger-keys for the type-bars, and means controlled by said finger-keys for automatically moving said dust-shield when a type-bar is actuated, so that the shield will clear the path of a type-bar in its movement to the printing position.

19. In a front-strike type-writing machine, the combination of a segment having bearing-slots therein, a series of segmentally-arranged type-bars pivoted in the slots in said segment, a platen above said segment, key-levers, a universal bar, a dust-shield arranged above said slots to cover them and the pivot-bearings of the type-bars, and intermediate connections between the universal bar and shield for automatically moving said dust-shield when a type-bar is actuated.

20. In a type-writing machine, the combination of a pivoted type-bar, a key-lever, a sublever, a dust-shield which is independent of the type-bar and covers the pivot-bearing of the type-bar, and means for affording a movement of the shield at each actuation of the type-bar.

21. In a type-writing machine, the combination of a series of pivoted type-bars, a series of key-levers, a series of sublevers, a dust-shield which is independent of the type-bars and covers the pivot-bearings of the type-bars, and means for affording a movement of the shield at each actuation of a type-bar.

22. In a front-strike type-writing machine, the combination of a series of rearwardly-striking pivoted type-bars, a series of sublevers, a series of connections between the sublevers and type-bars, a series of key-levers, a dust-shield independent of the type-bars, and means for moving the dust-shield out of the path of the type-bars when a key-lever is actuated.

23. In a type-writing machine, the combination of a type-bar, and a dust-shield which covers the bearing for the bar and normally extends into the path of movement of the bar, but which is moved in the general direction of movement of the bar when it is actuated.

24. In a type-writing machine, the combination of a type-bar and a dust-shield which is independent of the type-bar and covers the bearing thereof and normally extends into the path of movement of the bar, but which is moved in the general direction of movement of the bar when it is actuated.

25. In a type-writing machine, the combination of a series of pivoted type-bars, a dust-shield that is mounted to move in the general direction of movement of the bars and which covers the pivot-bearings of the type-bars when they are at rest, and means for moving the dust-shield out of the way of the type-bars when they are moving to print.

26. In a front-strike type-writing machine, the combination of a series of segmentally-arranged pivoted type-bars, key-actuated means for operating said type-bars, a segmental dust-shield that extends over and covers the pivot-bearings of the type-bars, a universal bar that is actuated at each operation of a type-bar, and connections between the dust-shield and universal bar to effect a movement of the former when the universal bar is moved.

27. In a front-strike type-writing machine, the combination of a series of segmentally-arranged pivoted type-bars, key-levers therefor, sublevers controlled by said key-levers, links connecting said sublevers and type-bars, a universal bar controlled by the key-levers, a dust-shield covering the pivot-bearings of the type-bars, and intermediate connections between the universal bar and dust-shield, whereby a movement of a key-lever will automatically move the dust-shield out of the path of its connected type-bar before it reaches the printing position.

28. In a front-strike type-writing machine, the combination of a printing instrumentality, a shield to cover the bearing thereof, and means for moving the shield out of the way when the printing instrumentality is moved to print.

29. In a front-strike type-writing machine, the combination with a platen and a series of pivoted type-carriers, of a key-actuated dust-shield arranged over the pivotal portions of the type-carriers.

30. In a type-writing machine, the combination of a segment shiftable up and down, a series of type-bars pivotally mounted in said segment, a segmental dust-shield over the pivotal portions of said type-bars and shiftable up and down with said type-bar segment, and means for moving said dust-shield transversely of said segment when the type-bars are actuated.

31. In a type-writing machine, the combination of a segment shiftable up and down, a series of type-bars mounted in said segment, a segmental dust-shield connected to said type-bar segment so as to shift up and down therewith, type-bar-actuating means, and means connected therewith and with said dust-shield for moving the same transversely when the type-bars are actuated.

32. In a type-writing machine, the combination of a segment shiftable up and down, a series of type-bars pivotally mounted in said segment, key-actuated means for operating said type-bars, a segmental dust-shield connected to and shiftable up and down with said type-bar segment, and means connected with said type-bar-actuating mechanism for moving said dust-shield transversely when the type-bars are actuated, said means including a pivoted link whereby the dust-shield may be shifted up and down with the type-bar segment without disturbing the remainder of the connections between said shield and said type-bar-actuating means.



33. In a type-writing machine, the combination of a segment shiftable up and down, a series of type-bars pivotally mounted in said segment, key-actuated means for operating  
5 said type-bars, a segmental dust-shield shiftable up and down with said type-bar segment, and means for moving said shield transversely or fore and aft of the machine, including a pivoted link which is adapted to swing up  
10 and down when the type-bar segment and the dust-shield are shifted up and down.

34. In a type-writing machine, the combination of a segment shiftable up and down, a series of type-bars pivotally mounted in said  
15 segment, key-actuated means for operating said type-bars, a segmental dust-shield supported at or near its free ends on said segment and shiftable up and down therewith, a pivoted link connected to said dust-shield at  
20 or about its middle, and means for actuating said link so as to move the dust-shield transversely.

35. In a type-writing machine, the combination of a segment shiftable up and down, a  
25 series of type-bars pivotally mounted in said segment, key-actuated means for operating said type-bars, a segmental dust-shield supported at or near its free ends on said segment and shiftable up and down therewith, a  
30 pivoted link connected to said dust-shield, a

bell-crank connected to said link, and means connected with the type-bar-actuating means for operating said bell-crank and link and causing the dust-shield to move transversely of itself and of the type-bar segment when  
35 the type-bars are actuated to print.

36. In a type-writing machine, the combination of a type-bar segment, a series of type-bars pivotally mounted therein, key-actuated means for operating said type-bars, a segmental  
40 dust-shield arranged over the pivotal portions of the type-bars, and means for enabling the dust-shield to be retracted in parallel planes out of the way of the type-bars when they are swung to print.

37. In a type-writing machine, the combination of a vertically-arranged segment, type-bars pivotally mounted therein, and a vertically-arranged segmental dust-shield movable transversely in parallel planes during  
45 the vibrations of the type-bars.

Signed at the borough of Manhattan, city of New York, in the county of New York and State of New York, this 3d day of July, A. D. 1903.

JACOB FELBEL.

Witnesses:

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