No. 844,446. PATENTED FEB. 19, 1907.

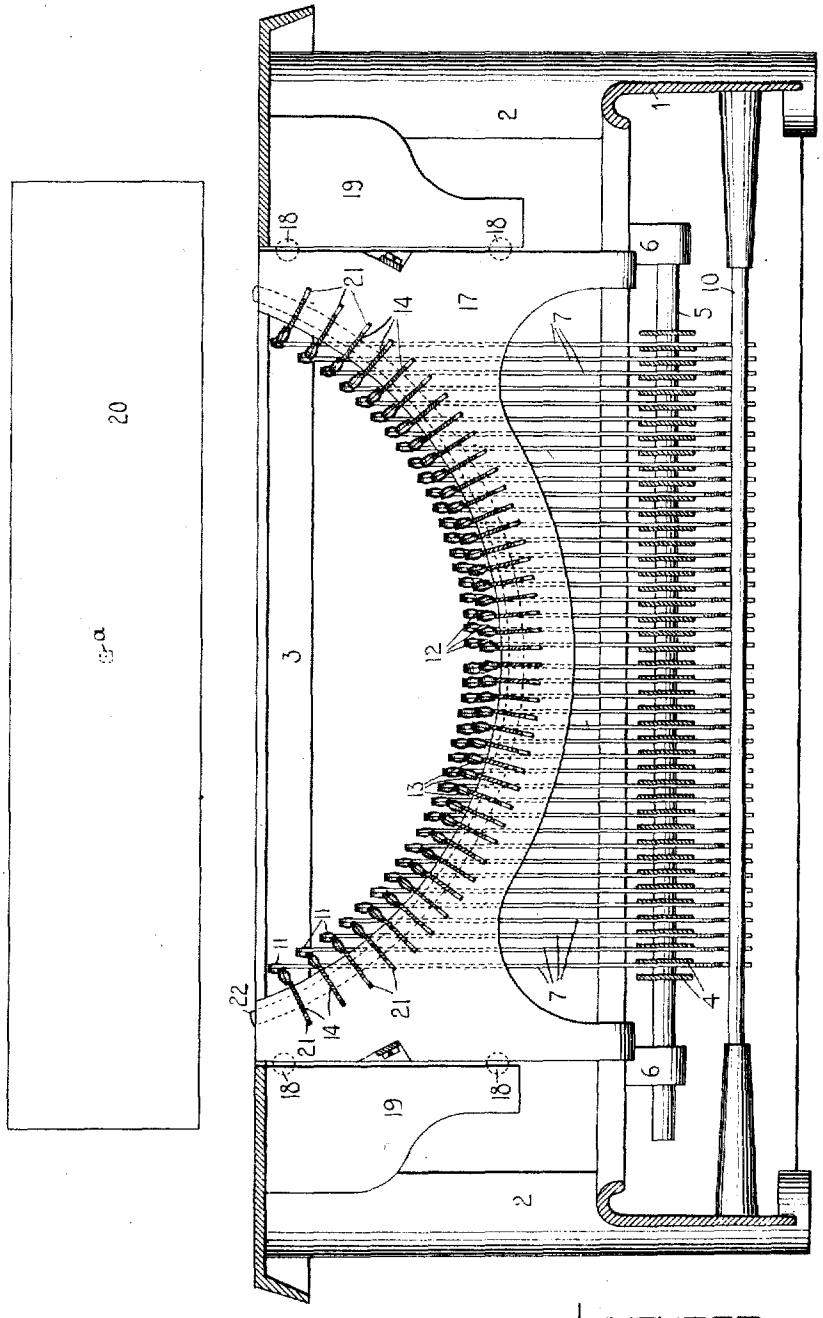
C. GABRIELSON.

TYPE WRITING MACHINE.

APPLICATION FILED AUG. 8, 1902.

4 SHEETS—SHEET 1.

FIG. 1.



WITNESSES.

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4 SHEETS—SHEET 2.

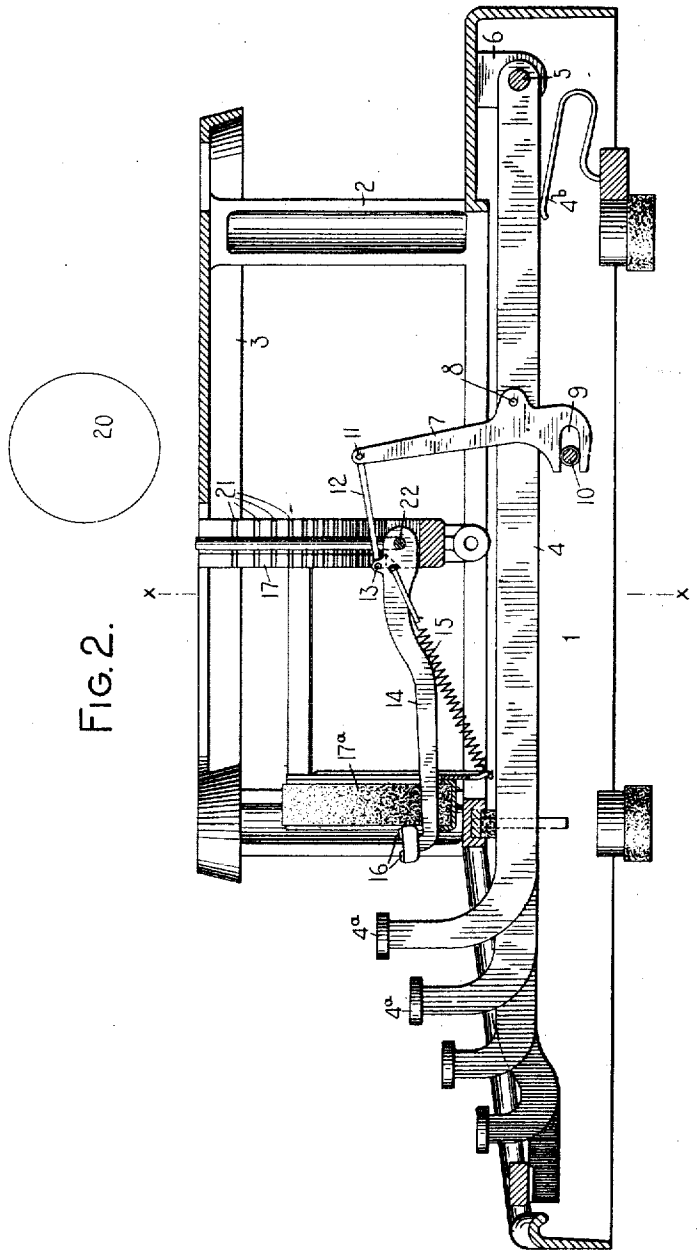

FIG. 2.

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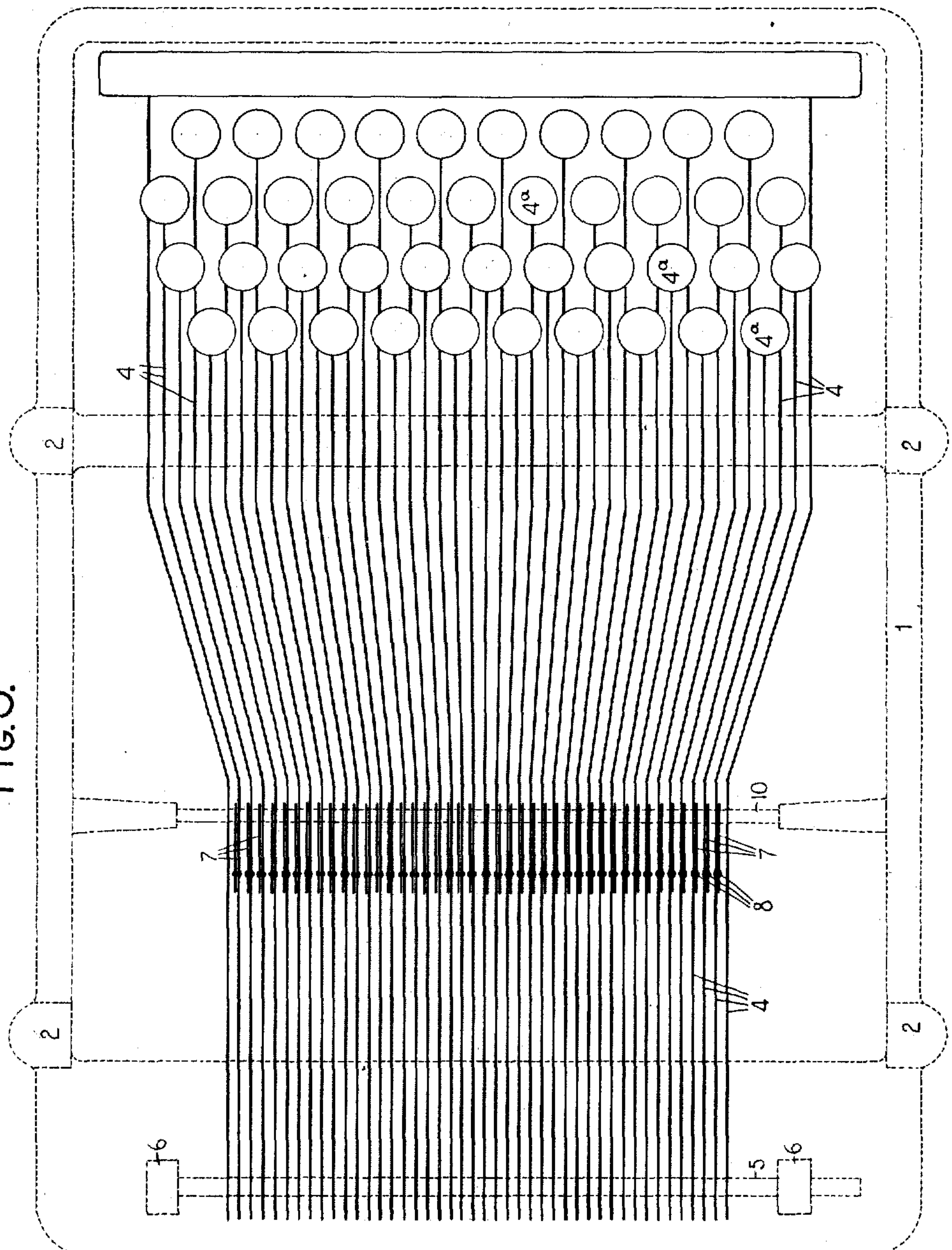
4 SHEETS—SHEET 3.

FIG. 3.



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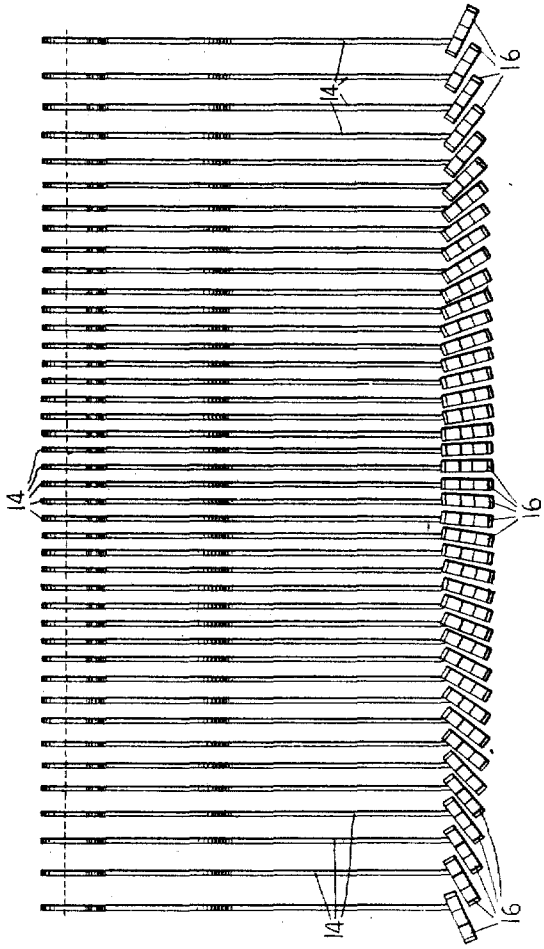
4 SHEETS—SHEET 4.

FIG. 4.



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UNITED STATES PATENT OFFICE.

CARL GABRIELSON, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR TO UNION TYPEWRITER COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

No. 844,446. Specification of Letters Patent. Patented Feb. 19, 1907.

Application filed August 8, 1902. Serial No. 118,875.

To all whom it may concern:

Be it known that I, CARL GABRIELSON, a citizen of the United States, and resident of Springfield, in the county of Hampden and State of Massachusetts, 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 the arrangement of the type-bars whereby the segmentally-arranged type-bars used in "visible-writing" machines may be mounted in a single small arc in close and compact arrangement in order that a large number thereof may be employed without liability of interference and without increasing the size of the arc in which the type-bars are mounted.

To the above and other ends, which will hereinafter appear, my invention consists in the novel features of construction, combinations of parts, and arrangements of details to be hereinafter described and claimed.

In the accompanying drawings, wherein like reference characters designate like parts in the various views, Figure 1 is a transverse vertical sectional view taken on the line x x of Fig. 2 and showing a sufficient number of parts of one form of type-writing machines to illustrate my invention and wherein the platen is diagrammatically illustrated. Fig. 2 is a central front-to-rear sectional view of the same. Fig. 3 is a plan view of the machine. Fig. 4 is a developed diagrammatic plan view of the series of type-bars.

1 indicates the base of the machine, from which extends the upwardly-projecting corner-posts 2, surmounted by a top plate 3. Key-levers 4 are provided with finger-keys 4^a and are pivoted on a rod 5, secured at its ends to depending brackets 6, which project from the base, and the levers are restored to their normal positions by springs 4^b. Each key-lever has a straight vertically-disposed sublever 7, pivoted thereto at 8, the lower portion of each sublever being slotted at 9 for coöperation with a fixed fulcrum bar or rod 10, that extends beneath the key-levers from side to side of the machine. The upwardly-extending portion of each sublever is pivoted at 11 to a draw-link 12, the opposite end of which is pivoted at 13 to a type-bar 14, and each type-bar is restored to the normal position by a spring 15. The various type-bars are of a uniform length and are each pivoted on a single pivotal center to swing upwardly and rearwardly to print.

Each of the type-bars has a plurality of types 16 thereon, (two being shown,) and the various types are overlapping, as represented in Fig. 4, the overlapping arrangement being greatest as the sides or ends of the segmentally-arranged series of type-bars are approached. Otherwise expressed, the type-blocks carrying the types extend longitudinally in planes that are disposed at different angles to each other and overlap in planes that extend fore and aft of the machine. A segment 17 is mounted in the frame of the machine and may be movable upon anti-friction-balls 18, working in guide-ways in the sides of the segment and in the oppositely-disposed brackets 19, that depend from the top plate 2. Suitable key-actuated mechanism (not shown) may be connected to the segment in order to shift it, together with the various type-bars which are mounted thereon and with the support 17^a for the outer ends of the typ-bars, so that a relative shift between the type-bars and the printing-point on the platen 20 may be afforded for upper and lower case printing. It should be understood, however, that the platen 20 may be shifted relatively to the type-bars in any suitable manner. The segment 17 is an open one, the type-bars being pivoted in slots 21 in the upper edge thereof. From an examination of Fig. 1 it will be observed that the various slots 21 radiate from a point which corresponds, substantially to the printing-center (indicated at a) and that the spaces between the slots at and near the outer ends of the segment are greater than those at the center of the segment and that the type-bars have a corresponding arrangement. In other words, the pivotal ends of the type-bars are closer together at the central portion of the segment, and the distances between the pivotal ends gradually increase as the ends or sides of the segment are approached. The purpose of this arrangement is to provide a compact arrangement of the type-bars without the type ends thereof interfering in the operation of the

machine. Thus, for instance, at the central portion of the segment the types on the type-bars extend at but slight angles to the body portions thereof, and these angles of the types and the consequent overlapping thereof increase as the sides or ends of the segment are approached, as clearly indicated in Fig. 4. It is therefore desirable to more widely separate the type-bars at the sides of the segment than those at the central portion thereof in order that ample clearance may be provided for the offset types at the sides of the segment and so that there will be no interference between the overlapping types during the operation of the machine. By providing a comparatively close assemblage of the type-bars at the central portion of the segment I am enabled to provide greater spaces between the type-bars at the sides of the segment, thus giving greater space or clearance to the type-bars at the sides of the segment, where it is most needed, without unduly increasing the size of the arc in which the type-bars are mounted. From an examination of Fig. 1 it will likewise be seen that by this same arrangement I am enabled to arrange the actuating-sublevers 7 in parallelism and at equal distances apart throughout the system and at the same time to transmit a movement from each sublever to its type-bar by a direct fore-and-aft pull on the bar and without bending. The arrangement, in other words, enables me to use straight sublevers with an application of the direct force thereof fore and aft of the machine and without irregularly spacing said levers or unduly crowding the sublevers at the sides of the segment.

The various type-bars are preferably pivoted in place in the slots 21 on a single pivot-wire 22, which extends into a transverse pivot-wire-receiving groove in the segment and passes through openings in the hub or heel portions of the various type-bars, so that the pivotal centers of the type-bars are in a single transverse plane.

In the actuation of the machine the depression of a key-lever by its key 4^a will cause a rearward vibration of the upper end of the associated sublever 7 in a vertical plane, thereby drawing or pulling the connected type-bar through the link 12 upwardly and rearwardly to the printing-point. When pressure on the finger-key is released, the key-lever, sublever, and type-bar will be restored to the normal position by the springs 4^b and 15.

Various modifications 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 front-strike type-writing machine, the combination of a series of segmentally-arranged type-bars, a series of upright key-actuated sublevers, the upper ends of which sublevers are segmentally arranged and their upper portions being substantially equidistant, and a curved series of connecting-links between the upper ends of the sublevers and the type-bars, the type-bars being wider apart at the ends of the series and so spaced as that the links extending from the sublevers to the type-bars are arranged in substantially straight lines and in substantial parallelism.

2. In a front-strike type-writing machine, the combination of a series of key-levers, a series of upright sublevers connected thereto and terminating at their upper ends in an arc and being equidistant at their upper portions, a type-bar support, a series of type-bars arranged in a curve or arc on said support, the curve or arc being substantially concentric or parallel with that of the upper ends of the sublevers; the said type-bars at the ends of the curve or arc being spaced apart greater distances than the type-bars at the middle of the curve or arc, and a curved or arc-shaped series of straight-line links connecting said type-bars and said sublevers.

3. In a front-strike type-writing machine, the combination of a series of segmentally-arranged type-bars spaced apart at gradually-increasing distances as the ends of the segment are approached, a segmental series of connecting-links disposed rearwardly from the type-bars in substantially straight lines, a series of sublevers, the upper ends of which are segmentally arranged to match the curvature of the type-bar arrangement, the upper portions of said sublevers being also substantially equidistant and connected to the rear ends of the said links, and a series of key-levers connected to said sublevers, the said key-levers being contracted or condensed at the points of connection to the sublevers and at such points being substantially equally spaced apart.

Signed at Springfield, in the county of Hampden and State of Massachusetts, this 6th day of August, A. D. 1902.

CARL GABRIELSON.

Witnesses:
J. G. DUNNING,
C. S. HAWKINS.