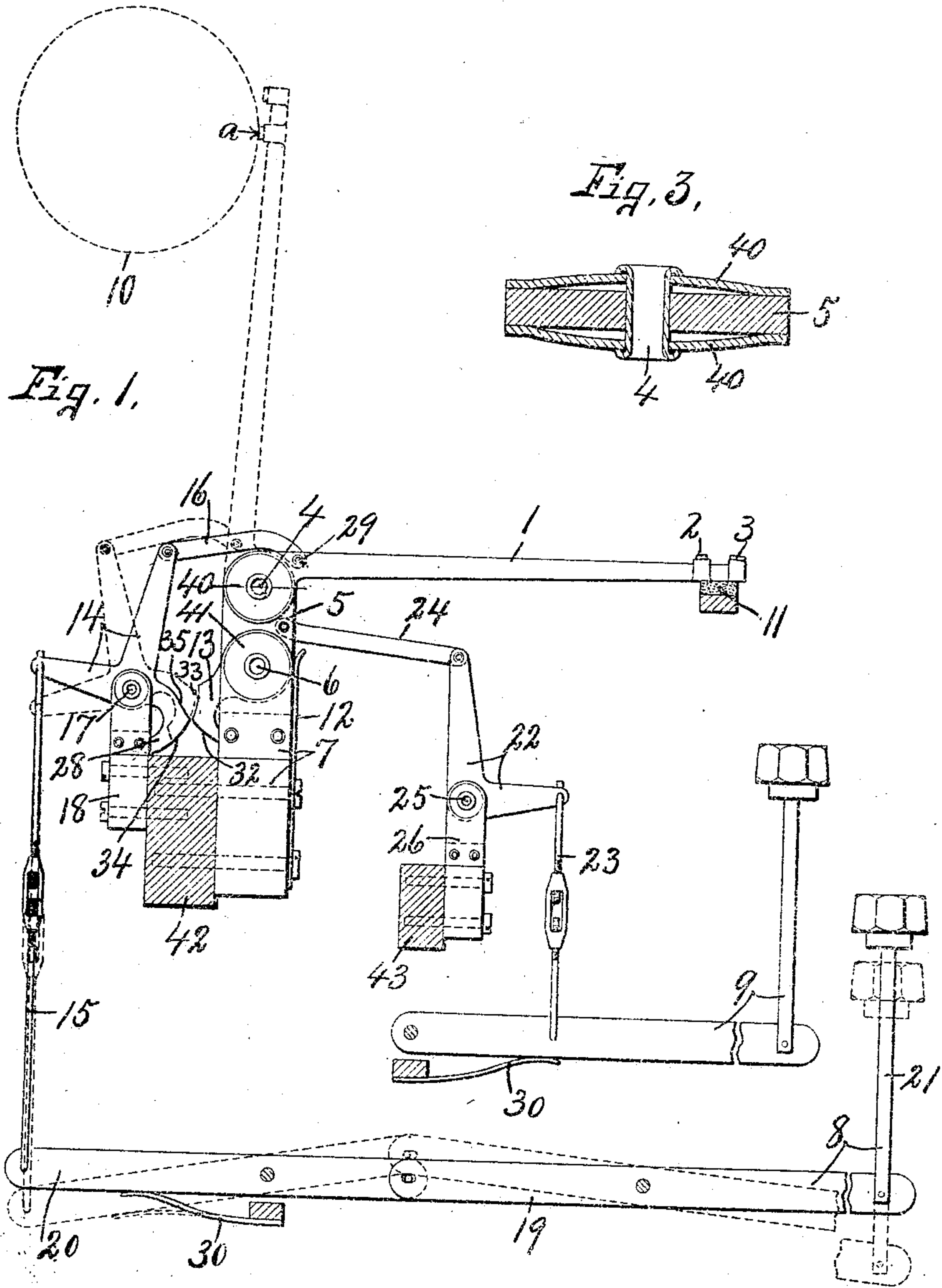


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G. F. STILLMAN, DEC'D.
M. D. STILLMAN, ADMINISTRATRIX.
TYPE WRITING MACHINE.
APPLICATION FILED MAY 3, 1904.

2 SHEETS—SHEET 1.



WITNESSES,
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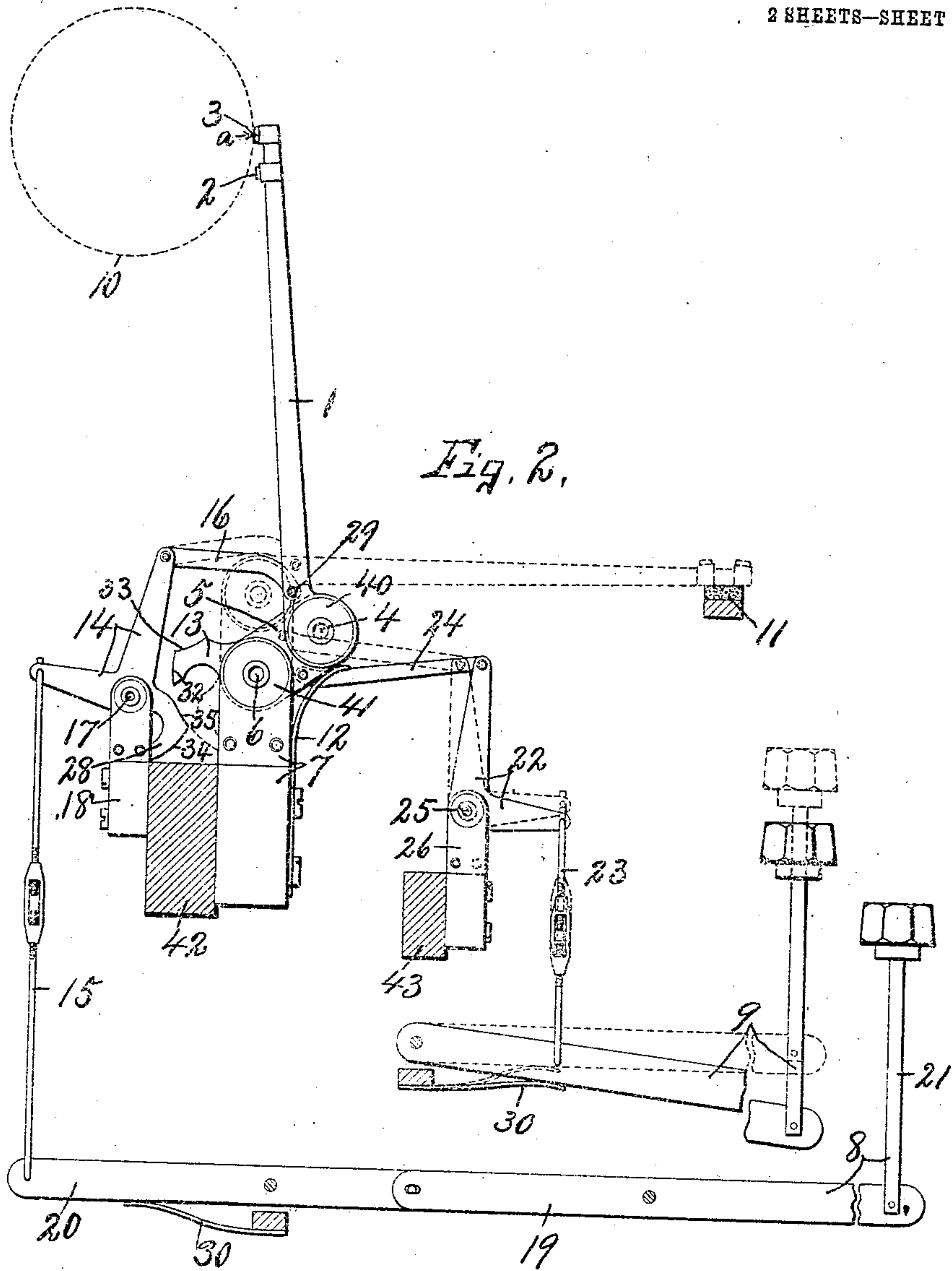
INVENTOR,
George F. Stillman
BY,
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UNITED STATES PATENT OFFICE.

GEORGE F. STILLMAN, OF SYRACUSE, NEW YORK; MABEL D. STILLMAN, ADMINISTRATRIX OF SAID GEORGE F. STILLMAN, DECEASED, ASSIGNOR TO THE SMITH PREMIER TYPE-WRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

No. 863,952.

Specification of Letters Patent.

Patented Aug. 20, 1907.

Application filed May 3, 1904. Serial No. 206,107.

To all whom it may concern:

Be it known that I, GEORGE F. STILLMAN, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in

5 Type-Writing Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to improvements in type-writing machines and refers more particularly to the type

10 bar and its actuating mechanism to be used in connection with visible writing machines.

In this class of machines the type bars are hung in an arc below the platen and substantially concentric with the printing point, so that the available space is limited

15 to less than a half circle.

It is desirable in all typewriting machines to employ a double key board, that is, separate keys for the capitals and small letters and in such cases it is, customary to use a separate type bar for each key, but in placing

20 these several type bars in the limited space of a visible writing machine it is necessary to introduce certain complications of structure to avoid crowding and to permit a free action of the moving parts which renders the manufacture of the machine delicate and expensive.

My object is to produce a visible writing machine in which each type bar is equipped with two type, one for the capitals and one for small letters and to employ

25 a double, or lower and upper case, key board so that each type of each bar is brought to the printing point by a separate key in a single operation.

In other words the main object is to shift the type bar by the same key which throws it to the printing position to avoid the shifting of the platen and permit the use of

30 a double key board and two type on the same bar.

Another object is to prevent the operation of the same bar by its different keys at the same time and hold the moving parts in their normal position for printing with the lower case type bars and keys.

35

Other objects and uses will appear in the following

40 description.

In the drawings—Figure 1 is a side elevation of one of the type bars and its actuating mechanisms in position for printing with the lower case or small letters. Fig. 2 is a similar view of the same parts in position for print-

45 ing with the upper case or capitals. Fig. 3 is a sectional view through one of the bearings for one of the oscillating parts as for instance, the type bar bearing.

Similar reference characters indicate corresponding parts in all the views.

In carrying out the objects stated, a type-bar —1— having two type —2— and —3— is normally fulcrumed at —4— to a swinging link —5— which is pivotally

50

mounted at —6— upon a suitable hanger —7— and the type-bar and link are connected respectively to suitable manuals or key levers —8— and —9— in such manner

55 that the depression of one manual, as the lower case key —8—, rocks the type-bar on its normal fulcrum —4— and causes the lower case or small type —2— to print at a fixed point —a— on the front face of the platen —10— while the depression of the other man-

60 ual —9— rocks the type-bar on a different fulcrum hereinafter described and causes the upper case or capital type —3— to print at the same point —a— each type-bar having two fulcrums and two operating man-

65 uals. The link —5— is normally disposed in an upright position with the fulcrum —4— vertically over the pivot —6— and when in this position the lower case, or smaller type —2—, which are mostly used, are caused to strike at the printing point —a— by the depression of the manual —8—, as shown by dotted lines in Fig. 1,

70 the type end of the type-bar normally resting in a substantially horizontal position upon a suitable seat —11— and swings to a substantially vertical position in the operation of printing upon the front face of the platen —10—. The link —5— is held in its normal upright

75 position by a spring 12— and an extension 13— on the lower end of the link which abuts against the rear face of the hanger —7—.

The manual —8— for operating the type-bar to print with the lower case or small type —2— is connected to

80 said type-bar at one side of the fulcrum —4— through the medium of a rock-arm —14— and links —15— and —16—. The rock-arm 14— is fulcrumed at 17— upon a bracket —18— at the rear of the hanger —7— and is provided with two arms one of which is flexibly con-

85 nected to the type-bar —1— by the link —16— while the other end is connected to the rear end of the manual —8—, which preferably consists of two levers —19— and —20— and a plunger —21—.

The link —5— is adapted to rock forwardly from its

90 normal upright position upon its pivot —6— to draw the type-bar downwardly a distance corresponding to the space between the centers of the type —2— and —3—, so as to bring the upper case or capital type into registration with the printing point —a— when the

95 manual —9— is depressed during which operation the fulcrum of the type-bar is transferred from the link —5— to the link —16—. This manual —9— is connected to the link —5— through the medium of a rocking member —22— and links —23— and —24—, the

100 rocking member —22— being fulcrumed at —25— upon a fixed bracket —26— and is provided with two arms, one of which is flexibly connected by a link —24— to the link 5— preferably between the pivot

—6— and fulcrum —4— while the other arm of said rocking member is flexibly connected to the manual —9— by the link —23—, the rocking member —22— and its supporting bracket being located in front of the hanger—7—. The degree of the forward movement of the link —5— is shown in full lines in Fig. 2 which shows the manual as depressed with the type of the upper case at the printing point —a—. In order that this latter movement may be accomplished I provide a rocking member 14— with an extension —28— which normally abuts against the front face of the bracket —17— when the type-bar is resting on the seat —11—.

The link —16— is pivotally connected at —29— to the type-bar —1— near but between the fulcrum —4— and type, and it is now apparent that by depressing the manual —9— the link —5— and fulcrum —4— are drawn forwardly while the rocking member 14— is held from similar movement by the extension —28— abutting against the front face of the bracket —18—. This also holds the link —16— from forward movement and the pivot —29— therefore becomes the fulcrum upon which the type-bar swings to the printing position, but it is free to rock vertically to accommodate itself to the shifting position of the fulcrum —4— of the type-bar as the link —5— is drawn forwardly to the position seen in Fig. 2. This forward rocking movement of the link —5— through the medium of the manual —9— and its connections with said link causes the type-bar to be drawn downwardly, and at the same time its type end is rocked upwardly on the fulcrum —29— so that the upper case type print at the point —a— and as soon as the pressure upon the manual is released the type-bar returns by gravity to its normal position of rest on the seat —11— aided by the spring 12— and an additional spring —30— which bears on the lower edge of the lever —31— of the manual —9— thus returning the link —5— to its normal upright position, as seen in Fig. 1 when operated by the manual —8— the type-bar becomes a lever of the third kind fulcrumed at —4— and the operating power applied at —29—, but when operated by the manual —9— it becomes a lever of the first kind fulcrumed at —29— and the power applied at —4— so that the points where the power is applied alternately become the fulcrums of the type-bar.

In printing with the lower case type —2— when the manual —8— is depressed the rocking member and link —14— is drawn to the position indicated by dotted lines in Fig. 1, thus elevating the type-bar on the fulcrum —4— and bringing the type —2— to the printing point, the link —5— being held from rearward movement by the engagement of the extension 13— with the rear face of the hanger —7—. This extension 13— is provided with two curved faces 32 and —33—, the face —32— being concentric with the pivot —6— and the face —33— is concentric with the pivot —17—. The extension —28— is also provided with two curved bearing faces —34— and —35—, the face —34— being concentric with the pivot —17— while the face —35— is concentric with the pivot —6— and is substantially coincident or struck from nearly the same radius as the curved face —32— while the curved surfaces —33— and —34— are also struck with substantially the same radius from the center of the pivot —17— so that the

curved surfaces which are drawn from the same center may just clear each other in their movement upon their respective pivots —6— and 17—. The object of these curved surfaces is to prevent the accidental movement of one of the parts —5— or 14— when the other is being operated, as for instance—when the manual —8— is depressed the rocking member 14— is drawn rearwardly to throw the type-bar to the printing point and the curved surface —34— is brought into registration with the curved surface —33— of the extension 13—, thus preventing any accidental forward movement of the link —5— while the manual 8— is in action. In like manner when the manual —9— is depressed the curved surface —32— registers with the curved surface —35— and prevents the vibration of the rocking member 14— while the type-bar is being moved to and from the printing point. This latter arrangement, however, is not necessary to the operation of my invention and it is only intended as a precautionary means to prevent accidental displacement of one of the parts —5— or 14— while the type-bar is being actuated by the manuals —8— or —9—.

The type-bar —1— is provided with spring friction plates —40—, Fig. 3, which are dished outwardly at the center and have their marginal edges in frictional engagement with the opposite sides of the link —5— so as to form broad concentric bearings around the pivot —4—, which in this instance—consists of an eyelet passed through suitable apertures in the type-bar —1— and plates —40— and constitutes one pivot upon which the type-bar moves. The hanger —7— is provided with similar spring friction plates —41— which are constructed and arranged in the same manner as those seen in Fig. 3 for holding the link —5— from lateral movement or loss motion.

I have thus far described a single type-bar and its actuating mechanisms, but it is apparent that any number of these type-bars may be arranged side by side in a circular arc having its center at or near the printing point —a— and that each type-bar is provided with two separate actuating mechanisms similar to those hereinbefore described. I usually provide a separate hanger for each type-bar and its supporting link —5— and these hangers are mounted upon a suitable support —42— which is built in the machine frame, not shown and to which the brackets —18— are also secured.

The brackets —26— for supporting the rocking members —22— are mounted upon a separate support —43— which is located in front of the support —42— and is also secured to the machine frame in any desired manner not necessary to herein illustrate or describe, as these supports form no part of my present invention.

Having thus described my invention what I claim and desire to secure by Letters Patent is—

1. In a typewriting machine, a type bar having two type, separate fulcrums for the type bar, and separate devices operable separately to rock the type bar on one of its fulcrums to bring each type to the same printing point.

2. In a front-strike-typewriting machine, a type-bar having two type and two fulcrums for the type-bar each movable about the other.

3. In a front-strike-typewriting-machine, a type-bar having two type and two pivots a fixed distance apart and each movable about the other.

4. In a typewriting machine, a double type bar having two type and separate operating devices each connected to the type-bar at a different point to throw it to the

printing position, the connecting point of one of said devices forming a fulcrum for the type-bar when actuated by the other of said devices.

5 In a type-writing machine, a type bar having two type and separate operating devices each connected to the type-bar at a different point to throw it to the printing position, the point of connection of each of said devices with the type-bar forming a fulcrum upon which the type-bar swings when actuated by the other of said devices.

10 6. In a type-writing machine, a two-type-type-bar having two fulcrums each movable about the other, and separate manuals each connected to rock the type-bar on one of its fulcrums to its printing position.

15 7. In a typewriting machine, a two-type type-bar having two fulcrums a fixed distance apart and each movable about the other, and separate operating devices each adapted to rock the type bar on one of its fulcrums.

20 8. In a front-strike typewriting-machine, a fixed hanger, a link pivoted to said hanger to swing forwardly and downwardly, a two-type type-bar pivoted to the link a fixed distance from the pivot of said link, a manual and connections between said manual and link for rocking said link on its pivot, and a second manual and connections between it and the type-bar for rocking said type-bar upon its pivot to its printing position.

25 9. In a typewriting machine, the combination with a type-bar having two type and two fulcrums each movable about the other to bring either of the type to the printing point, a manual connected to move the type-bar upon one fulcrum to print with one type, and a second manual connected to move the type-bar on the other fulcrum to print with the other type.

30 10. In a typewriting machine, a two-type type-bar having two fulcrums each movable about the other and separate operating mechanisms, each adapted to rock the type-bar on one of its fulcrums and each mechanism including a manual or key.

35 11. In a typewriting machine, a type-bar normally constituting a lever of the third kind and a manual connected

to throw it to the printing position, and a second manual 40 connected and operating to convert the type-bar into a lever of the first kind and at the same time to throw it to a different printing position.

12. In a front-strike typewriting-machine, the combination with the hanger of a link pivoted to the hanger, 45 means for limiting the rocking movement of the link in one direction, a manual and connections for rocking the link in the opposite direction, a two-type-type-bar pivoted to the link, and a second pivot for the type-bar upon which the type-bar swings to the printing position when 50 said manual is operated to rock the link.

13. In a front-strike typewriting machine, a hanger, a link pivoted to the hanger, a type-bar pivoted to the link, means to rock the link in one direction, and additional 55 means engaging the type-bar above its pivotal connection with the link to throw the type-bar to the printing position as the link is rocked upon its pivot.

14. In a front-strike typewriting-machine, a hanger, a link pivoted to the hanger, means to rock the link upon its pivot, a type-bar pivoted to the link, means for return- 60 ing the link to its starting position, and additional means connected to the type-bar above its pivotal connection with the link for rocking the type-bar upon its pivot to its printing position.

15. In a typewriting machine, the combination of a type- 65 bar carrying two types, two links either of which is adapted to operate said type-bar, one of said links pulling in one direction to swing said type-bar about one pivot and the other of said links pulling in the opposite direction to swing said type-bar about another pivot, and two keys 70 connected respectively with said links.

In witness whereof I have hereunto set my hand this 28 day of April 1904.

GEO. F. STILLMAN.

Witnesses:

H. E. CHASE,
HOWARD P. DENISON.