C. P. MOSHER.

TYPE WRITING MACHINE.

APPLICATION FILED MAY 1, 1905.

Patented Apr. 26, 1910.

956,133.

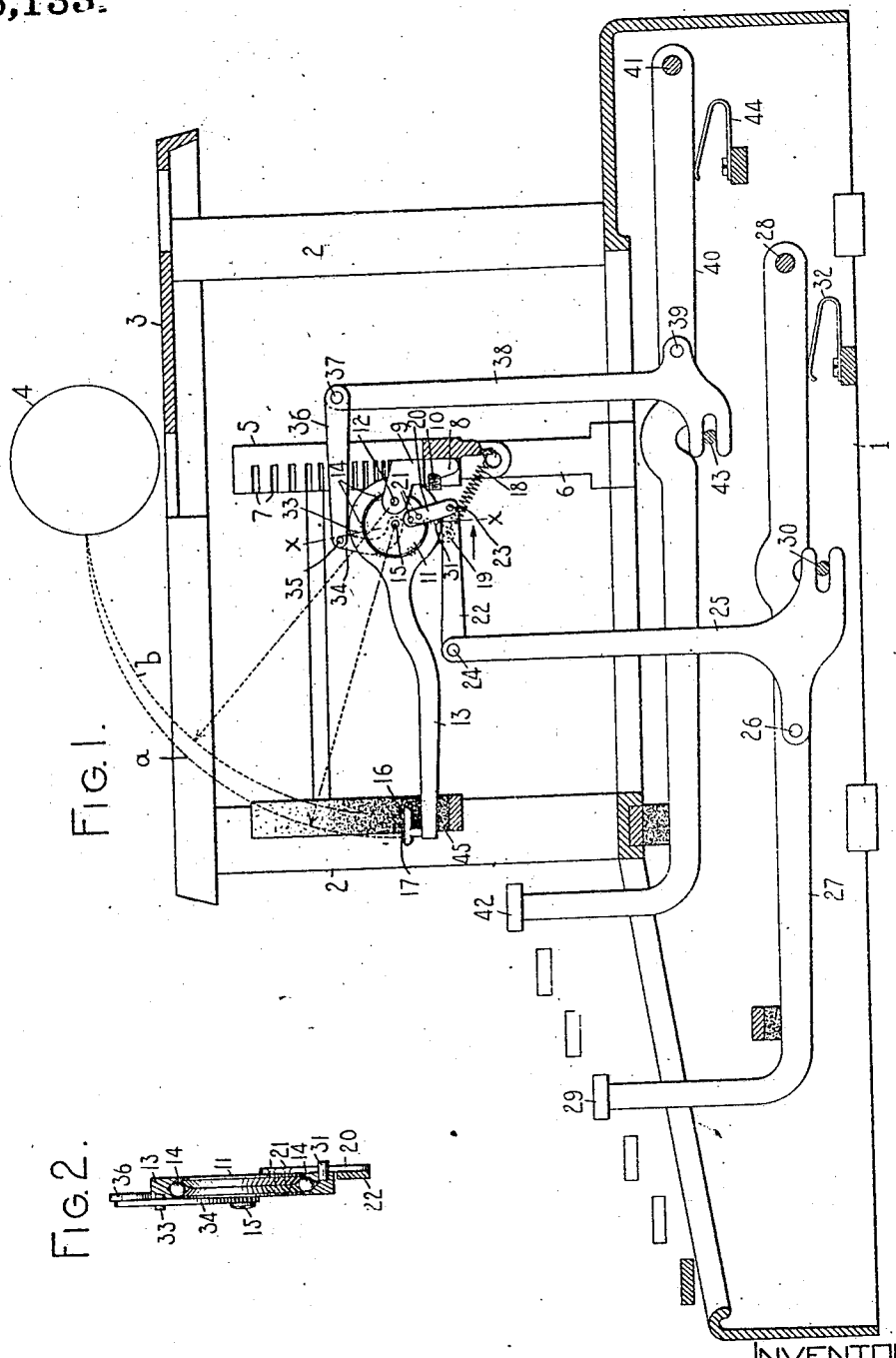

FIG. 1.

FIG. 2.

WITNESSES:

E. W. Wells

R. H. Strother

INVENTOR:

Charles P. Mosher

By Jacob Tabbal

HIS ATTORNEY.

UNITED STATES PATENT OFFICE.

CHARLES P. MOSHER, OF SYRACUSE, NEW YORK, ASSIGNOR TO THE MONARCH TYPE-WRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

956,133. Specification of Letters Patent. Patented Apr. 26, 1910.

Application filed May 1, 1905. Serial No. 258,162.

To all whom it may concern:

Be it known that I, CHARLES P. MOSHER, citizen of the United States, and resident of Syracuse, in the county of Onondaga 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 more especially to the type bar action of such machines.

One of the objects of my invention is to provide a series of type bars, each carrying two types and to connect with each type bar two keys, one for each type.

Another object of my invention is to provide a type bar carrying two types and so mounted that said type bar may be swung about either of two pivots to cause one or another of the types to print.

Other objects of my invention will appear hereinafter.

My invention consists in certain features of construction and combinations and arrangements of parts, which will be fully set forth herein and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a front to rear sectional view of a front-strike typewriting machine in which my invention is embodied; and Fig. 2 is a detail view in section on the line *x*—*x* of Fig. 1.

The main frame of the typewriting machine shown in the drawings comprises a base portion 1, from which rise posts 2 which support a top plate 3. A platen 4 is mounted on a carriage which is adapted to move back and forth across the machine in the ordinary manner. Said carriage may be drawn across the machine by the usual spring drum and this motion may be controlled by any suitable step-by-step feed mechanism.

I have shown my invention applied to a front-strike typewriting machine, but said invention is also applicable to other styles of typewriting machines. In the present instance, the type bars are supported by a fixed segment 5 which is disposed beneath the platen and is supported by posts or brackets 6 which rise from the base portion 1 of the main frame. Said segment is formed on its forward face with a series of radial slots 7 within which are seated the stems 8 of hangers 9, said stems being rigidly held in position within the slots by screws 10 which are threaded into openings which are in the nature of enlargements of the slots 7. Each of the hangers 9 is forked, the arms of the forked portion extending toward the front of the machine, as shown, and between said forks a circular disk 11 is pivoted at 12. The pivot 12 is situated back of the center of the disk 11. Said disk 11 is formed with a grooved periphery, as shown in Fig. 2, and constitutes one member of a ball bearing, the other member of which consists of an internally grooved circular opening or eye formed in the rear end of a type bar 13. Within the coöperating grooves of the type bar and the disk run balls 14, the whole constituting a ball bearing for the type bar. The construction is such that the type bar may either swing about the center 15 of the disk 11 as a center of rotation, said disk remaining stationary; or it may swing about the pivot 12, the type bar and disk moving together. These two pivotal centers are not coincident, the latter, in the present instance, being nearer the back of the machine than the former.

On the free end of the type bar there are mounted two types 16 and 17, the latter being farther from the pivotal end of the type bar than the former. The construction is such that if the disk 11 be held stationary and the type bar be swung about said disk as a pivot, the type 17 will describe the path marked *a* on the drawings and will be caused to print, whereas if the disk 11 and the type bar be swung together about the pivot 12, the type 16 will move to the printing point, following the path *b*. The type bar is restored to normal position by a spring 18 connected at one end to an ear 19 of the type bar and at the other end to the segment 5.

In order to swing the type bar 13 and the disk 11 together to cause the type 16 to print, an arm 20 is secured to said disk in any suitable manner, for example, by rivets 21, and said arm extends downward past the rim of the eye of the type bar. A link 22 is pivoted at its rear end at 23 to the arm 20 and at its forward end at 24 to a sub-lever 25, which is pivoted at 26 to a key lever 27 which is pivoted at its rear end to a stationary bar 28 and which carries at its forward

end a key 29. The sub-lever 25 extends below the key lever 27 and is formed with a slot which embraces a stationary rod or bar 30, which is located back of the pivot 26. A pin 31 projects from the side of the eye of the type bar, just in front of the depending arm 20. The construction is such that if the key 29 be depressed, the sub-lever 25 will be moved toward the front of the machine and the arm 20, being rigidly secured to the disk 11, will rotate said disk about the pivot 12 and said arm coöperating with the pin 31 will also rotate the type bar 13, together with the disk 11, thus throwing the type 16 to the printing point. A spring 32 returns the key lever 27 to normal position and tends to hold said key lever and the parts connected therewith in normal position. The disk 11 will thus be prevented from turning in case the type bar 13 is thrown to the printing point by other means than by said key.

In order to swing the type bar about the disk 11 as a pivot, a pin 33 is provided, said pin projecting from the side of the eye of the type bar above the disk 11, just back of an arm 34 which is pivoted on a shouldered and headed screw 15 which is threaded into the disk 11. The arm 34 projects above the type bar and at its free end is pivoted at 35 to the forward end of a link 36, which is pivoted at its rear end as shown at 37 to the upper end of a sub-lever 38, which is pivoted at 39 to a key lever 40, which at its rear end is pivoted on a stationary rod or bar 41 and at its forward end is provided with a key 42. The sub-lever 38 extends below the key lever 40 and is formed with a slot which embraces a stationary rod or bar 43 which is situated nearer the front of the machine than the pivot 39 of the sub-lever. The key lever 40 is returned to and held in normal position by a spring 44. The construction is such that if the key 42 be depressed, the sub-lever 38 will be moved toward the back of the machine, the arm 34 will be swung toward the back of the machine and said arm, engaging the pin 33, will swing the type bar about the disk 11 as a pivot, thus swinging the type 17 to the printing point. Any suitable type-rest 45 may be provided for supporting the free ends of the type bars when said type bars are in normal position.

Each of the series of type bars is connected to a key 42 and also to a key 29, the series of keys 42 being all arranged back of the series of keys 29. The types 16 may be lower case types and be operated by the series of keys 29 which is nearest the front of the machine; and the types 17 may be the corresponding upper case types which are caused to print by the keys 42 nearer the back of the machine; or the types 16 and 17 may be adapted to print different characters or numerals.

Various changes may be made in the details of construction and arrangement without departing from my invention. The ball bearing between the disk 11 and the type bar may be of any suitable construction and may be assembled in any suitable manner. So far as my invention is concerned, this need not necessarily be a ball bearing, but may be some other form of pivotal connection. The operating links 22 and 36 may obviously be connected with the keys in different manners. Various other changes may be made in the mechanism without departing from the gist of my improvements.

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 two types thereon and having one member of a ball bearing, another member of said ball bearing pivoted to swing about a point eccentric of said ball bearing member, means for swinging said type bar about said ball bearing member as a pivot to cause one of said types to print, and means for swinging said type bar and said ball bearing member together about the second named pivot as a fixed center to cause the other of said types to print.

2. In a typewriting machine, the combination of a type bar carrying a plurality of types, a disk 11 having a ball bearing groove in the periphery thereof, a coöperating ball bearing groove in the pivotal end of the type bar, a hanger 9 to which said disk 11 is eccentrically pivoted, an arm 20 projecting from said disk 11, a key operatively connected with said arm, an abutment 31 on said type bar in position to be engaged by said arm, whereby said disk and said type bar may be swung together to cause one of said types to print, an arm 34, a key operatively connected with said arm 34, and an abutment 33 on said type bar whereby said type bar may be swung about said disk to cause another of said types to print.

3. In a typewriting machine, the combination of a type 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 as a fixed center and the other of said links pulling in the opposite direction to swing said type bar about another pivot as a fixed center, and two keys connected respectively with said links.

4. In a typewriting machine, the combination of a pivotally mounted type bar, an arm pivotally mounted beside said type bar, an abutment on said type bar and standing in the path of said arm, and a key operatively connected with said arm.

5. In a typewriting machine, the combination of a type bar, two independently operable arms pivotally mounted adjacent to said type bar, two abutments on said type

bar standing respectively in the paths of said arms, and two keys connected respectively with said arms.

6. In a front strike typewriting machine, the combination of a type bar normally lying toward the front of the machine, two links operatively connected with said type bar, one of said links extending toward the rear of the machine, and the other of said links extending toward the front of the machine, two keys operatively connected with said links respectively, means whereby when one of said keys is depressed, the link connected with said key swings said type bar from its normal position to its printing position in the arc of a circle about one center, and means whereby the other key swings said type bar from its normal position to its printing position in the arc of a different circle about another center.

7. In a typewriting machine, the combination of a type bar carrying two types, a pivotally mounted member to which said type bar is pivoted, means for swinging said pivotally mounted member and said type bar together about a fixed center to print from one of said types, means for swinging said type bar independently of said pivotally mounted member to print from the other of said types, and means for holding said pivotally mounted member in normal position when the type bar is operated by the last mentioned means.

8. In a typewriting machine, the combination of a type bar carrying a plurality of types, a plurality of keys, operative connections between each of said keys and said type bar, means whereby one of said keys may swing said type bar from its normal position to printing position in the arc of a circle about one center to cause one of said types to print, and means whereby another key may swing said type bar from the same normal position to printing position in the arc of another circle about another center to cause another of said types to print, said operative connections and said means being so arranged and related as that when one key is actuated the other key and its operative connections are prevented from being moved by the operation of the operated key.

9. In a typewriting machine, the combination of a type bar carrying a plurality of types and having an eye at its pivotal end, a disk arranged within said eye, a hanger to which said disk is eccentrically pivoted, means projecting from said disk, a key operatively connected with said projecting means, an abutment on the type bar in position to be engaged by said means whereby the disk and type bar may be swung together to cause one of the types to print, an arm connected to the center of said disk, a key operatively connected with said arm, and an abutment on the type bar whereby said type bar may be swung about said disk to cause another of said types to print while the disk remains stationary.

Signed at Syracuse, in the county of Onondaga, and State of New York this 27th day of April A. D. 1905.

CHARLES P. MOSHER.

Witnesses:
H. A. AUMENT,
WALTON C. COOK.