

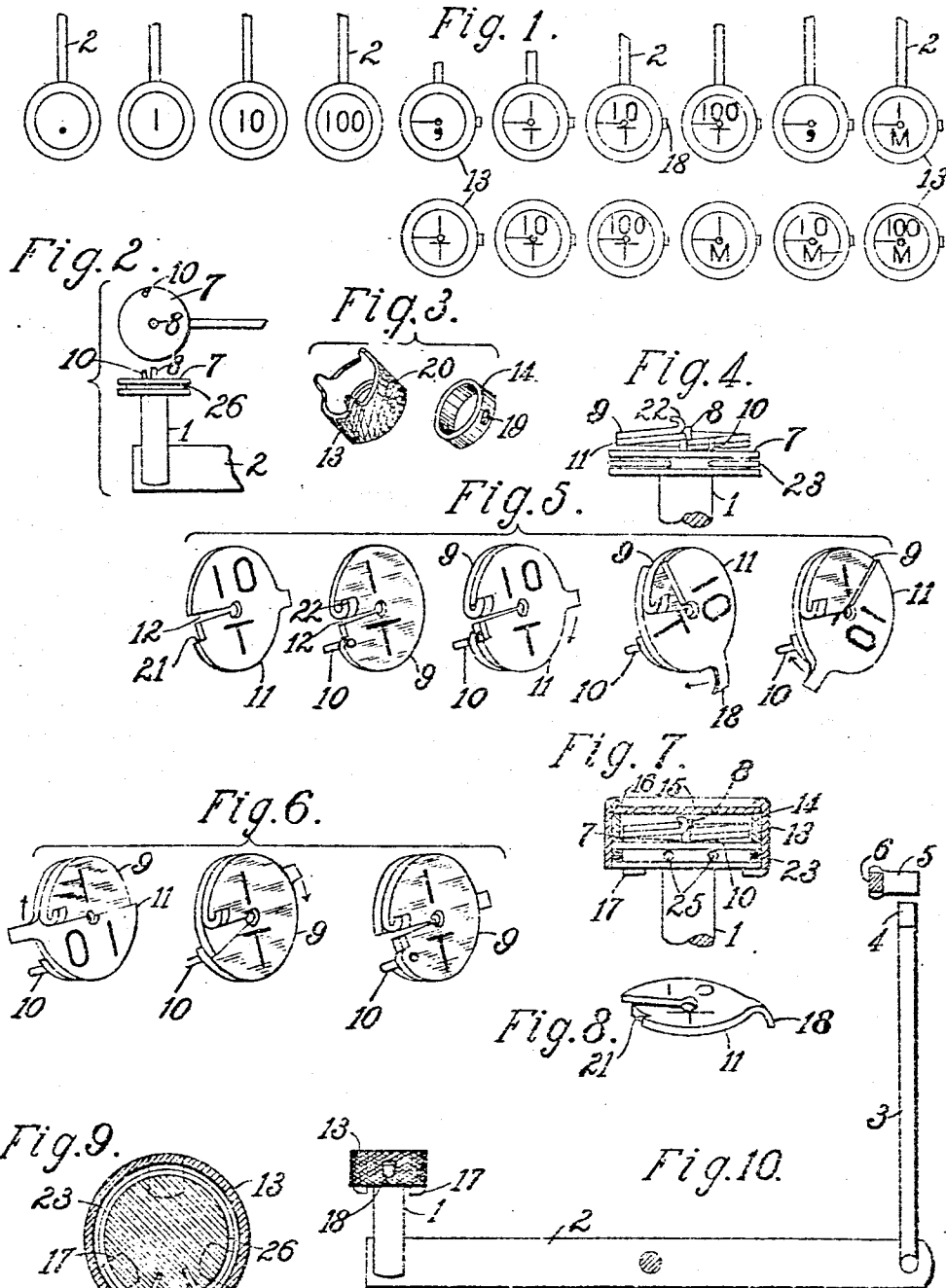
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TYPE WRITING MACHINE.

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948,668.

Patented Feb. 8, 1910.



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UNITED STATES PATENT OFFICE.

JOHN C. McLAUGHLIN, OF JERSEY CITY, NEW JERSEY, AND WENCES BEBER, OF NEW YORK, N. Y., ASSIGNORS TO UNDERWOOD TYPEWRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

948,668.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, JOHN C. McLAUGHLIN, a citizen of the United States, residing in Jersey City, in the county of Hudson and State of New Jersey, and WENCES BEBER, a citizen of the United States, residing in the city of New York, 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.

This invention relates to the keys of type-writing and other instruments, and particularly to the denomination keys of tabulating mechanisms.

It is frequently desired to use the same key for different purposes, as in case of a tabulating mechanism, where it is sometimes necessary to use the same stop for different denominations and to make a corresponding change in the key.

The object of the invention is to provide simple and practicable means for effecting changes in the keys for such purposes.

In the preferred manner of carrying out the invention, we employ two character-bearing disks, each of which may be in the form of a helix, the disk being slitted radially to form the edges of the helix. These helices are nested together in such a manner that one may be rotated to cover or uncover the other, the action of the movable helix being analogous to that of an ordinary screw. The movable helix we connect to the key cap, and we arrange to rotate the latter in order to give the desired movement to the movable helix.

Other features and advantages will hereinafter appear.

In the accompanying drawings, Figure 1 is a diagrammatic plan showing in the upper row a set of denomination keys, of which the first four are of ordinary construction, and the last six are constructed in accordance with the invention. Upon these six keys the movable helices are shown, the fixed helices being covered up thereby. In said figure, the second row shows the same six keys, the movable helices having been turned or wormed to positions beneath the fixed disks, exposing the latter, so that the keys

may now be used for different denominations. When adjusted according to the first row, the ten keys and their stops are adapted for denominational work up to millions, with punctuation marks between the hundreds and thousands, and also between the hundreds of thousands and millions. In the lower row, the punctuation marks are omitted and the capacity of the mechanism is increased to hundreds of millions. Fig. 2 shows in plan and elevation the base and stem of the key. Fig. 3 shows a perspective of the knurled key cap and a ring designed to be driven into the cap. Fig. 4 shows the key base and the character disks thereon. Figs. 5 and 6 show diagrammatically in perspective the character disks separately and also nested together, and also illustrate the different stages in the movement of the movable disk to a position beneath the fixed disk. Fig. 7 is a sectional view of the entire key. Fig. 8 is a perspective view of the movable disk. Fig. 9 is a cross section taken horizontally through the base of the key. Fig. 10 is a diagram showing the key connected to the denomination stop.

The key is illustrated as mounted upon a stem 1, the latter carried upon a lever 2, which is connected to a rod 3 having at its upper end a denomination stop 4 to co-operate with a column stop 5 carried upon a rack or bar 6 mounted upon the usual carriage (not shown).

The key comprises a base 7 having a central vertical stud 8 upon which is caught a thin celluloid or other character bearing disk 9. A pin 10 connects the disk to the base 7, so that the former may not rotate. Overlying the disk 9 is a substantially similar disk 11 pivoted upon the stud 8. Each disk may be formed of celluloid or of thin metal, and radially slit at 12, and given a helical form, so that the radial edge of disk 11 may enter between the radial edges of disk 9, and rotation of the former may enable it to worm or screw itself to a position entirely below the latter, as illustrated in the last three positions of Fig. 5 and those of Fig. 6. The movable disk 11 is illustrated as bearing the characters "10 T," meaning ten thousand, and the lower disk

bearing the characters "1 T" meaning one thousand. Thus the key is changed from a higher or lower denomination or vice versa, according to the exposed character disk.

- 5 The movement of the movable disk 11 is effected by a cap 13 which is revolvably mounted and connected to said disk. A ring 14 within the cap is fixed thereto in any suitable way as by driving the ring in. It rests upon the round base 7. A transparent cover in the form of a glass disk 15 rests upon the ring. Fig. 7, and is retained by an interior flange 16 formed upon the cap 13. The latter has ears or clips 17 catching under the bottom of the base 7. The cap is knurled, Figs. 3 and 10, for convenience in rotating the same. It will be seen at Fig. 7 that the character-bearing disks are confined within the ring 14 and below the transparent cover 15 through which the characters may be seen, as at Fig. 1. A tongue 18 projecting from the disk 11 extends through holes 19, 20 in the ring and cap to enable the latter to turn the disk. The disk makes substantially an entire revolution, and is formed with a notch 21 to clear the pin 10, said pin serving as a stop to limit the movement of the disk and cap in one direction. The stationary disk 9 is provided with a stop 22 to limit the movement of the disk and cap in the reverse direction, said stop 22 being in the form of an ear bent up from the body of the disk. The cap is retained in either position by means of a friction spring 23 having ends 24 turned into holes 25 formed in the base, the latter having a peripheral groove 26 to receive the spring, and the spring rubbing against the inner wall of the cap. Figs. 7 and 9.
- 40 When it is desired to change the keys from one set of denominations to the other at Fig. 1, it is only necessary to give each of the key caps a full revolution, thereby causing one character disk to be exposed and the other covered up thereby.

If the disks are made of metal, they may be suitably printed or covered with printed paper disks. It is not essential in all cases that the disk be helical in form, as flat celluloid and other disks may be sufficiently yielding to enable the desired worming action to take place.

It will be seen that one of the leading features of the invention consists in employing a character-bearing shutter to cover or uncover a character-bearing disk; and many variations may be resorted to within the scope of this and other features of the invention. Portions of the improvements may be used without others.

Having thus described our invention, we claim:

1. A key provided with a character disk and a movable shutter, and also having a

cap connected to said shutter to adjust the same.

2. A key provided with a character disk and a movable shutter, and also having a cap connected to said shutter to adjust the same, said shutter bearing a character different from said disk.

3. A key comprising a character disk, a shutter, a transparent disk over said shutter, a cap, and means for enabling said cap to operate said shutter.

4. A key comprising a character disk, a revolvable shutter bearing a different character from said disk, a transparent disk over said shutter, a revolvable cap, and means connecting said shutter to said cap.

5. A key button comprising a transparent disk having a striking surface, a revolvable cap, and means connected to said cap for exhibiting beneath said disk different characters at will.

6. A duplex character-disk in a finger-key button consisting of two helical disks nested together and relatively adjustable, said key having a striking surface.

7. A finger-key comprising a base, a radially slit character-disk connected to the base, a second radially slit character-disk nested with the first disk, and a finger-piece connected to the second disk to rotate the same to cover and uncover the first disk.

8. A key comprising a base, a radially slit character-disk connected to the base, a second radially slit character-disk nested with the first disk, and a finger-piece connected to the second disk to rotate the same to cover and uncover the first disk; means being provided to limit the revolution of the finger-piece in both directions.

9. A key comprising a base, a helical character-bearing disk connected thereto, a second helical character-bearing disk nested with the first, a transparent cover, and a revolvable finger-piece connected to the second disk.

10. A key comprising a base, a helical character-bearing disk connected thereto, a second helical character-bearing disk nested with the first, a transparent cover, a revolvable finger-piece connected to the second disk, and means for detaining the revolvable finger-piece in different positions.

11. A key comprising a base, a helical character-bearing disk secured thereon, a second helical character-bearing disk nested within the first, a transparent cover, and a revolvable cap connected to the second disk and having means to support the cover.

12. A key comprising a base, a helical character-bearing disk secured thereon, a second helical character-bearing disk nested within the first, a transparent cover, and a revolvable cap connected to the second disk and having means to support the cover; said

cap having a flange to catch over the cover, and also having means to catch under the base.

13. In combination, a character-bearing disk, a transparent cover therefor, and a key cap inclosing said disk and cover and connected to said disk to revolve the same.

14. A character key provided with a revoluble cap, and means connected to the cap to change the character on the key.

15. A finger-key having two disks bearing different characters; each disk having a radial slit to permit one disk to be turned to cover or uncover the other.

16. A tabulator finger-key having two disks bearing different characters, each disk having a radial slit to permit one disk to be turned to cover or uncover the other, each of said disks having the characters both above and below its slit.

17. A set of denomination finger-keys for a tabulator including certain keys, each of which is provided with two contiguous character-disks bearing different characters and related so that one may be rotated to cover or uncover the other.

18. A set of denomination keys for a tabulator including certain keys, each of which is provided with two contiguous character-disks bearing different characters and related so that one may be rotated to cover or uncover the other; each rotatable disk being connected to a key cap, whereby it may be rotated.

19. A key comprising a round base provided with a peripheral groove, a ring resting upon said base, a glass cover resting upon said ring, a revoluble annular cap having an interior flange fitting over said cover, said cap inclosing said ring and fixed thereto, and having means to catch under the base, a friction spring in said groove, two helical character disks nested together, means connecting one character disk to the base, and means connecting the other character disk to the revoluble cap.

20. A key comprising a round base provided with a peripheral groove, a ring resting upon said base, a glass cover resting upon said ring, a revoluble annular cap having an interior flange fitting over said cover, said cap inclosing said ring and fixed thereto, and having means to catch under the base, a friction spring in said groove, two helical character disks nested together, means connecting one character disk to the base, and means connecting the other character disk to the revoluble cap; the second disk being mounted for approximately an entire revolution, and having a notch to clear the fastening pin of the first disk, and adapted to be arrested thereby.

21. A key comprising a round base provided with a peripheral groove, a ring rest-

ing upon said base, a glass cover resting upon said ring, a revoluble annular cap having an interior flange fitting over said cover, said cap inclosing said ring and fixed thereto, and having means to catch under the base, a friction spring in said groove, two helical character disks nested together, means connecting one character disk to the base, and means connecting the other character disk to the revoluble cap; the second disk being mounted for approximately an entire revolution, and having a notch to clear the fastening pin of the first disk, and adapted to be arrested thereby; and the first disk having a stop to arrest the revolution of the second disk in the opposite direction.

22. A key comprising a stem, a round base thereon provided with a peripheral groove and a central stud, a ring resting upon said base, a glass cover resting upon said ring, a rotatable annular cap having an interior flange fitting upon said cover, said cap fixed to and inclosing said ring and having ears to catch under the base, a friction spring in said groove and having ends turned into perforations in the base, two helical character-disks having radial edges and nested together and fitted upon said stud, a pin connecting one character disk to the base, and a projection connecting the second character disk to the revoluble cap; the second disk being mounted for approximately an entire revolution and notched to clear the fastening pin of the first disk and also adapted to be arrested by said pin, and the first disk having a stop to arrest the revolution of the second disk in the opposite direction; the radial edges of each helix being adjacent to each other, and characters being formed one above and one below said edges.

23. In a tabulating mechanism, a set of denomination finger-keys including a series of keys, each provided with two character disks of different denominations, and having means to bring either disk into view at will, and a denomination-determining mechanism adjustable by said keys.

24. In a tabulating mechanism, a set of denomination keys including a series of keys, each provided with a revoluble cap, and means controlled by the caps for changing the denominations of the keys.

25. The combination with a set of unchangeable denomination stops, of a set of denomination keys connected to said stops to operate the same, certain of said keys bearing changeable indices or characters to enable each of their connected stops to serve for different denominations, or for alternate punctuation and denomination and thereby to enable the entire set of keys and stops to serve for alternate systems of tabulation.

26. A system of keys for a denomination-selecting mechanism including a series of

unchanging keys for denominations up to
and including hundreds, and a series of
changeable keys for higher denominations;
one set of faces or indexes of the changeable
5 keys including punctuation marks or spaces
to separate the hundreds from the thousands
group and to separate the latter from the
millions group, and separating spaces or

marks being omitted from the other set of
faces or indexes, the latter having a corre- 10
spondingly greater range of denominations.

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