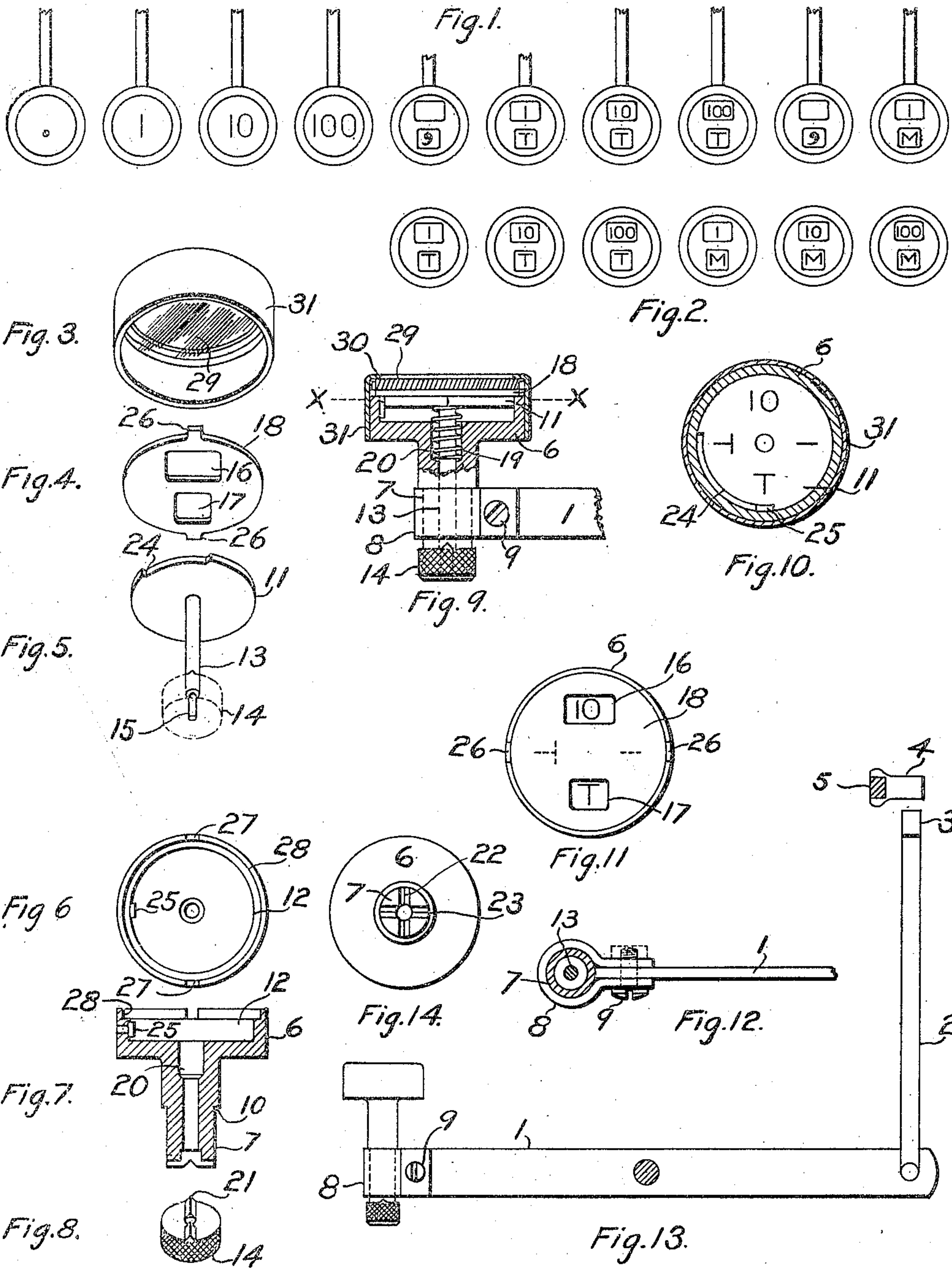


C. F. LUNDEBERG.  
TYPE WRITING MACHINE.  
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921,857.

Patented May 18, 1909.



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# UNITED STATES PATENT OFFICE.

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## TYPE-WRITING MACHINE.

No. 921,857.

Specification of Letters Patent.

Patented May 18, 1909.

Application filed April 15, 1908. Serial No. 427,144.

*To all whom it may concern:*

Be it known that I, CARL F. LUNDEBERG, a citizen of the United States, residing in Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to typewriter and other keys, and particularly to the denomination keys of tabulating mechanisms.

Heretofore it has been proposed to provide a tabulator key with a character disk covered by a shutter, and to revolve the disk to expose different characters through the shutter, thereby enabling a set of such keys to be used both when it is desired to insert punctuation marks on the typewriter between the groups of denominations, and also when it is desired to omit such punctuation marks and increase the denominational capacity of the set of keys.

The principal object of the present invention is to provide a simple, inexpensive and readily applied device for shifting the character or other disk in a key, to change the reading of the key.

According to my present improvements, the character disk is mounted in a key-cup and provided with a stem which extends down below the key and projects therefrom, and carries at its lower end a button whereby the character disk can be turned to cause different characters thereon to be exhibited through the overlying shutter. Other features and advantages will hereinafter appear.

In the accompanying drawings, Figure 1 is a diagrammatic plan of a set of tabulator keys provided with my improvements. Fig. 2 shows how some of the keys may be adjusted to change the denominations represented thereby. Fig. 3 shows a key-cup and a glass cover contained therein. Fig. 4 is a shutter. Fig. 5 is a character disk with its stem and button. Fig. 6 is a plan of a key-cup, and Fig. 7 a sectional elevation thereof. Fig. 8 is a button for adjusting the character disk. Fig. 9 is a part-sectional view of the key mounted upon a key lever or carrier. Fig. 10 is a sectional plan taken at about the line  $x-x$  of Fig. 9. Fig. 11 is a plan omitting the glass cover and the key cap. Fig. 12 is a sectional plan to illustrate the manner of

supporting the key upon a lever. Fig. 13 is a diagrammatic side elevation of a portion of a tabulating mechanism. Fig. 14 is a plan of the key-cup inverted.

The denomination key is mounted upon the front end of a lever 1, which carries at its rear end an upstanding rod 2, formed at its top with a denomination stop 3, to engage a column stop 4 carried upon a rack 5 provided upon the usual carriage.

The key consists principally of a cup 6, formed with a neck 7 which is fitted tightly in an eye 8, the latter fixed by a screw 9 upon the front end of the lever 1; the neck having a shoulder 10 to rest upon the top of the eye.

A character disk 11 fits in a recess 12 in the cup 6, the recess being the hollow or bowl of the cup. Fixed to the character disk and extending down therefrom is a stem 13, which projects below the bottom of the neck 7, and at its projecting end carries a button or other finger piece 14, which fits upon the lower portion 15 of the stem and is rigidly secured thereto. By means of said button the stem, and consequently the disk 11, may be rotated to cause either set of characters thereon, seen at Fig. 10, to appear through upper and lower apertures 16, 17, formed in a shutter 18 overlying the character disk, so that the keys may be caused to read either as at Fig. 1 or as at Fig. 2.

A compression spring 19 is coiled around said stem 13, and bears up against the under side of the character disk 11, and at its lower end bears against the bottom of a recess 20 formed in the bottom of the key-cup. This spring holds up a detent in the form of a projection 21 formed upon the top of the button 14, in either one of a pair of crossed radial notches or seats 22, 23 (Fig. 14) formed in the bottom of the neck 7. By this means the spring is enabled to hold the character disk yieldingly against accidental rotation.

The character disk 11 is formed with a recess 24 extending around a portion of its edge, and a projection 25 is fixed in a side wall of the cup 6 to enter said recess 24, to limit the rotation of the disk 11 to a quarter of a turn.

The shutter 18 is formed on its opposite edges with nibs 26 to fit in notches 27 cut in the rim of the key-cup, to prevent turning of said shutter or disk. It will be seen that the



latter, which is of greater diameter than the disk 11, fits in a recess 28 formed in the top of the key-cup. Also fitting in the recess 28 is a glass or other transparent disk 29, over  
5 which catches a flange 30 formed upon the top of a cap 31, which is fixed upon the key-cup and extends to the bottom thereof.

It will thus be seen that the denomination of the key can be readily changed by simply  
10 turning the button 14. The latter may be either pulled down to release the detent 21 before rotation, or it may be rotated forcibly to cam the said detent down from the notch. Thus it will be seen that the adjustable or  
15 manipulatable member is situated below the key and out of the way, where it is not liable to become accidentally turned; while the exposed parts at the upper portion of the key are fixed to the lever, and hence are not  
20 liable to become accidentally turned by the finger in striking the key.

Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others.  
25 Having thus described my invention, I claim:

1. A changeable character key comprising a key-cup having a neck, and a character disk in the cup and having a stem projecting  
30 below the neck for manipulation.

2. A changeable character key comprising a cup having a neck, a revoluble character disk within the cup, a stem upon the character disk and projecting down from said neck,  
35 and a button upon the projecting end of said stem.

3. A changeable character key comprising a cup having a neck, a character disk in said cup, a shutter over said disk, a spring to lift  
40 said disk, a stem extending from said disk down through said neck and provided with a finger piece, and a detent for said disk.

4. A changeable character key comprising a cup having a neck, a character disk in said  
45 cup, a shutter over said disk, a spring to lift said disk, a stem extending from said disk down through said neck and provided with a finger piece, and a detent for said disk; said detent in the form of a projection  
50 formed upon said button to engage a depression formed in the neck.

5. A changeable character key comprising a key-cup, a revoluble character disk therein having a stem extending down through the  
55 cup and projecting therefrom, means to limit the rotation of the disk, a spring to lift the disk, a shutter over the disk, a button upon the projecting end of the stem, and a detent for the character disk.

6. A key-cup mounted upon a lever and containing a character disk, said disk having a stem projecting through the bottom of the  
60 key-cup and having a button or finger piece whereby the disk may be rotated, and a shutter over said disk.

7. A changeable character-key comprising a cup having a neck, a stem extending down through said neck and provided therebelow with a button, a revoluble character disk secured to the upper end of said stem, means to  
70 limit the rotation of said disk, a shutter over said disk, a spring to lift the disk, and a detent releasable by a downward pull upon the button.

8. A changeable character-key comprising 75 a cup having a neck, a stem extending down through said neck and provided therebelow with a button, a revoluble character disk secured to the upper end of said stem, means to limit the rotation of said disk, a shutter 80 over said disk, a spring to lift the disk, and a detent releasable by a downward pull upon the button; said detent in the form of a projection carried by the button to engage either of two radial notches provided upon 85 the bottom of the neck.

9. A changeable character-key comprising a cup having a neck, a stem extending down through said neck and provided therebelow with a button, a revoluble character disk 90 secured to the upper end of said stem, means to limit the rotation of said disk, a shutter over said disk, a detent releasable by a downward pull upon the button; said detent in the form of a projection carried by the 95 button to engage either of two radial notches provided upon the bottom of the neck; and a spring coiled around the upper part of said stem and bearing up against the bottom of said disk and seated in a recess formed in the 100 bottom of the key-cup.

10. A changeable character-key comprising a cup having a neck, a stem extending down through said neck and provided therebelow with a button, a revoluble character 105 disk secured to the upper end of said stem, means to limit the rotation of said disk, a shutter over said disk, a transparent disk over said shutter, and a cap upon said cup and having a flange to secure said transparent 110 disk.

11. A changeable character key comprising a key-cup having a neck, a character disk in the cup, a shutter disk over said character disk, and a stem in said neck and connected 115 to one of said disks and projecting below the neck for manipulation to turn the disk.

12. The combination of a support, a character key carried upon said support, a finger piece beneath said support, and means with- 120 in the key and operable by said finger piece to change the character upon the key.

13. The combination of a lever provided with an eye, a key-cup having a neck held by said eye, a character disk and a shutter disk 125 within the key-cup, and a finger piece below said eye and connected to one of said disks to turn the same.

14. The combination of a lever provided with an eye, a key-cup having a neck held by 130



said eye, a character disk and a shutter disk within the key-cup, and a finger piece below said eye and connected to one of said disks to turn the same; said neck having a shoulder to rest upon said eye.

15. The combination of a key-cup, a disk within the cup and having a recess extending around a portion of its edge, a stop fixed in said cup and extending within said recess to limit the rotation of the disk, and a finger piece to rotate the disk.

16. The combination of a key-cup having a neck, a disk within the cup and having a recess extending around a portion of its edge, a stop fixed in said cup and extending within said recess to limit the rotation of the disk, and a finger piece mounted below said neck and connected to said disk by means of a stem.

17. A changeable character key comprising, in combination, a key-cup having in its rim a circular recess in which a shutter disk is fitted, said disk having a nib to fit in a slot formed in the rim of the cup to prevent turning of the disk, a transparent disk seated in said recess upon said shutter disk, a cap fitting upon said cup and having a flange to catch over the transparent disk, a character disk fitting in a smaller recess in said rim below said shutter disk, said character disk having a recess extending around a portion of its edge, a stop fixed in the cup and extending within the edge of the recess to limit the revolution of the character disk, a neck upon said key-cup, a stem fixed to said character disk and extending down through said neck, a compression spring around the upper portion of said stem and bearing up against said character disk and seated in a recess formed in the bottom of said cup, a lever or carrier provided with an eye in which said neck is fitted, said neck having a shoulder to rest upon said eye, and a button secured upon said stem below said neck and having

on its upper face a projection to form a detent to engage either of two radial notches formed in the lower face of said neck.

18. A changeable character key comprising, in combination, a key-cup having in its rim a circular recess in which a shutter disk is fitted, a transparent disk seated in said recess upon said shutter disk, a cap fitting upon said cup and having a flange to catch over the transparent disk, a character disk fitting in said rim below said shutter disk, a neck upon said key-cup, a stem fixed to said character disk and extending down through said neck, a spring, and a button secured upon said stem below said neck and having on its upper face a projection to form a detent to engage either of two radial notches formed in the lower face of said neck.

19. A changeable character key comprising, in combination, a key-cup having in its rim a circular recess in which a shutter disk is fitted, a transparent disk seated in said recess upon said shutter disk, a cap fitting upon said cup and having a flange to catch over the transparent disk, a character disk fitting in said rim below said shutter disk, said character disk having a recess extending around a portion of its edge, a stop fixed in the cup and extending within the edge of the recess to limit the revolution of the character disk, a neck upon said key-cup, a stem fixed to said character disk and extending down through said neck, a compression spring around the upper portion of said stem and bearing up against said character disk and seated in a recess formed in the bottom of said cup, a lever or carrier provided with an eye in which said neck is fitted, and a button secured upon said stem below said neck and having a detent.

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