Nov. 3, 1936. J. A. B. SMITH 2,059,615

TYPEWRITING MACHINE

Filed Nov. 15, 1933

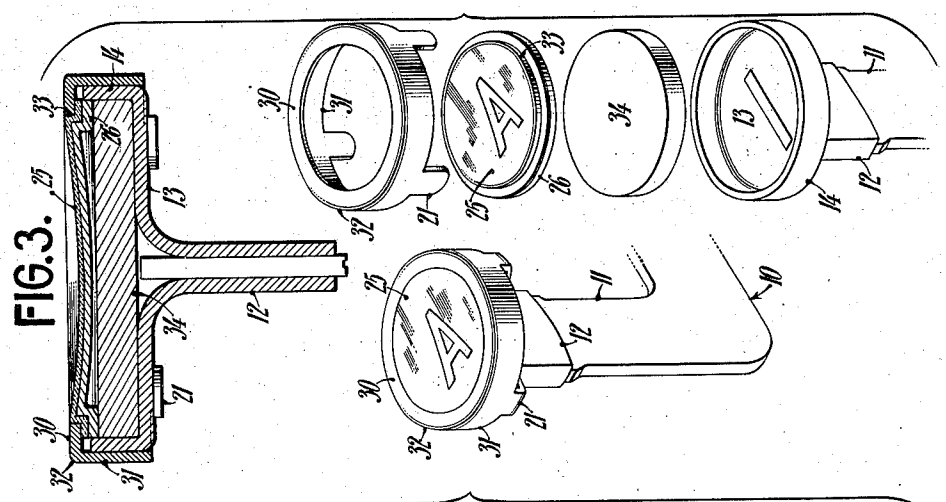


FIG. 3.

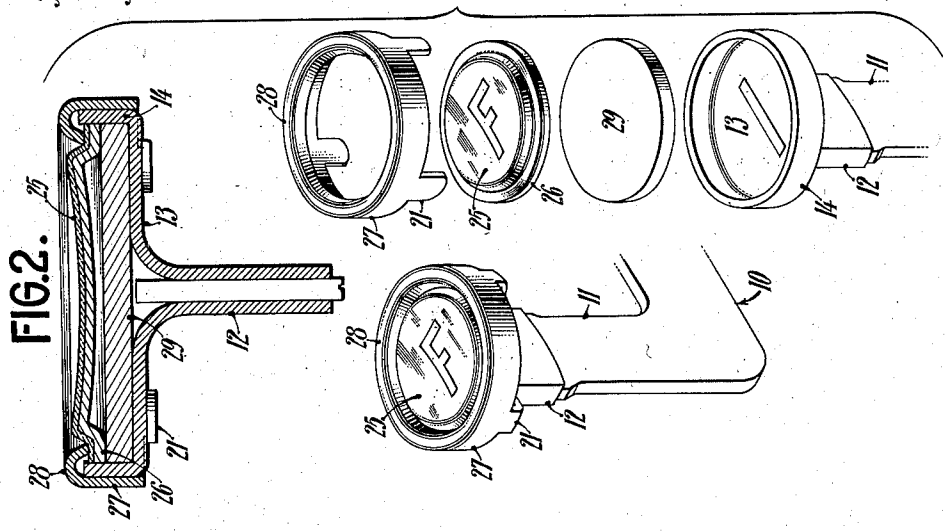


FIG. 2.

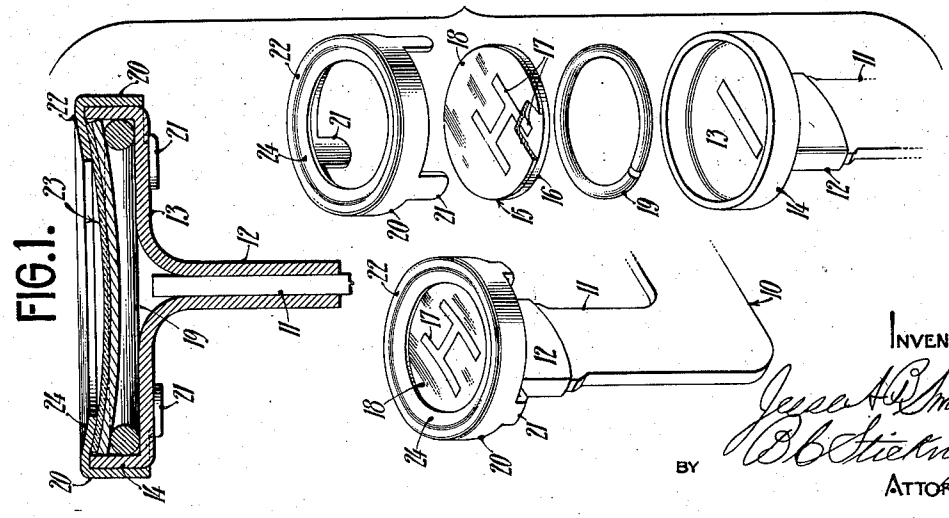


FIG. 1.

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TYPEWRITING MACHINE

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6 Claims. (Cl. 197—102)

This invention relates to the keys of typewriting machines.

For many years glass finger-keys have been used, because the hardness of the glass prevents it from being scratched or marred by the fingers of the operator. This quality has rendered the keys specially valuable for use on trial machines, since, when the trial machine is returned to the manufacturer, its glass keys retain their original polished condition. It has been a constant objection to glass keys, however, that they are held in place by annular metal key-caps, which have inturned overhanging flanges to hold the glass disks down in the key-lever cups. These flanges project considerably above the glass key-disks, and punish the fingers of the operators.

Many operators prefer to use a key which is molded in one piece and placed upon the key-stem, and many machines have accordingly been provided with such molded keys.

An objection to the molded key is that, being made of celluloid, shellac, or the like, it is apt to become scratched or defaced, and it is not desired to put out machines on trial that have the molded keys. The molded keys have an advantage that their tops are concave, but they have a further disadvantage that they are easily ignitible, for which reason a prejudice exists against them. Some kinds of molded keys are apt to become misshapen from usage or from heat.

It is a feature of the present invention to provide the key-levers with keys which are not open to the foregoing objections. A celluloid concaved character-disk is a part of each of the three forms of the invention disclosed, but it is not in the old objectionable form of an exposed molded head. In each instance, the character-disk is confined within the walls of a usual metal key-cup, mounted upon the key-stem of the Underwood standard typewriting machine. Other kinds of molded material may be employed as a substitute for celluloid.

In one form of the invention, the character-disk has a crown which is molded with a central concave broad area, and it also has a bottom projecting brim, which supports an inturned cap or clip which holds the character-disk upon the key; said character-disk being supported by an anti-friction device in the form of a bed or disk of cardboard or the like, filling the bottom of the cup. The concave top of the key is only slightly below or is substantially flush with the ridge of the inturned clipping flange, so that said ridge forms a continuation of the concaved key-surface, and the projecting ridge is not felt by the finger when placed upon the concaved character-disk.

In modified form of the invention, the character-disk is concaved, and the inturned clipping flange of the cap is made level with the key, and rests upon the projecting brim that borders the character-disk, and, by its downward pressure, holds the brim and disk down upon the base or support.

The inflammable celluloid is protected against ignition by being confined within the metal cup and being overbordered by the metal key-cap, and it is also protected from being scratched or marred.

Other features and advantages will hereinafter appear.

The accompanying drawing shows three forms of the invention, depicted in three groups, of which the first group is marked Figure 1, the second group is marked Figure 2, and the third group is marked Figure 3. The upper portion of each group shows in vertical section the key which is seen in perspective in the lower part of the group, accompanied by perspectives of the key-elements.

Referring to Figure 1, 10 represents a key-lever having a stem 11, upon which is fixed a flat socket-portion 12 of a key-cup of ordinary construction, which includes a floor 13 and annular shell or side portion 14. The key-disk 15 is formed of joined layers of celluloid, the lower layer 16 having impressed thereon a character 17, and the upper layer 18 being transparent and exceptionally thin, and hard, to resist scratching.

This disk is shown flat in detail perspective, but it is concave within the cup 13, 14, as shown in section. In the bottom of the cup is placed a metal ring 19, which fits within the cup-shell 14 and forms an annular seat for the key-disk 15.

The disk is held on by an annular cap, having sides or shell 20 and ears 21, which clasp or fasten under the bottom of the cup 13.

The brim 22 of this cap overlies the border of the key-disk, and is concaved sufficiently to produce forced concavity of the flexible key-disk, as indicated at 23; both the key-disk and the cap 22 being concave; the concavity of the brim being indicated at 24. The disk may be placed upon the annular seat in flat condition, and may be given the illustrated concaved contour by means of the downward pressure of the key-cap thereon; although in some cases the compound key-disk may be molded in the concave form before being placed in the key.

The cap-brim 22 holds the key-disk permanently under compression, inasmuch as it forces the border of the disk down upon the annular seat and presses the latter down against the bottom of the cup, and sufficient friction is engendered to prevent the key from accidentally rotating while in use.

In the grouping shown at Figure 2, having the same key-lever stem and key-cup 11, 12, 13, 14,

a two-ply molded celluloid disk is formed with a broad central concaved portion 25, bordered by a brim 26. In construction, the key disk is similar to 15; but, instead of being used in flat condition, it is molded into shape prior to being placed in the cup.

The key-cap, having annular form 27, is formed at the top with an inwardly-rolled bead 28, which overlies the edge 14 of the key-cup and extends inwardly beyond said edge, and seats down upon the brim 26, and holds the same down upon a bed 29, which may consist of a thick cardboard disk; the key-cap being held down firmly by the clips or ears 21, and by its downward pressure clasping the brim 26 down upon the support or bed 29. In order to avoid punishment of the finger-ends, the bead 28 may lie in the same surface as the concave portion 25 of the key-disk; this advantage being enhanced by rounding the flange 28 of the key-cup, as shown at Figure 2. The disk 25 may be made of two layers of celluloid, the upper one transparent, and the lower one having a character thereon, as seen at Figure 1, and may then be molded as seen at Figure 2.

At Figure 2, the key-disk 25, 26 is prevented from rotation during use, by reason of the downward pressure which the key-cap permanently exerts upon the disk, to force it down upon the cardboard bed, producing friction between the two disks and also friction between the bed-disk and the bottom of the key-cup. The two disks are constantly held in this clamped condition, so that rotation is prevented. The cardboard is somewhat yielding and affords an efficient frictional support for the purpose.

In the group shown at Figure 3, having similar key-cup 12, 13, 14, the character-disk with its transparent top is broadened, and this disk and its top are flush with the top 30 of the key-cap 31. The key-cap 30 is flat, with a somewhat rounded corner 32; and this forms a key which is agreeable for the fingers to touch. The cap 30 extends only a little beyond the edge 14 of the key-cup, and the key-disk is molded with a projecting brim 26. The latter is bedded upon a cardboard disk 34 as at Figure 2; and the pressure of the cap 30 holds the brim 26, character-disk or crown 25, the cardboard and the cup-floor tightly together in the manner already explained with reference to Figure 2.

It will be seen that after the machine is constructed, its key-cups may be equipped with any one of the three forms of the concaved character-disk fittings above described. Caps may be removed from keys of any completed machine, and the character-disks may be removed and replaced by any other set of character-disks and supports.

Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others.

Having thus described my invention, I claim:

1. A typewriter-key having a key-cup, a crown of molded material provided with a character, a brim projecting from the bottom of said crown and confined within said cup, and an annular cap applied upon said cup and having an inturned flange, and pressing downwardly to hold said flange down upon said brim, the latter being supported against the downward pressure of said cap, the crown being substantially flush with the top of the cap.

2. In a type-operating key for a typewriting machine, the combination with a character-bearing crown of hard molded material surmounting a bottom brim integral therewith, of a support, and an annular cap enclosing the brim and having an internal flange pressing down upon said brim, said crown fitting within said cap and rising through the same, said cap being co-operative with said support to clip said brim tightly down upon said support; said crown being substantially flush with the top of said cap, to afford a broadening of the striking surface of the key.

3. In a type-operating key for a typewriting machine, the combination with a character-bearing crown surmounting a bottom brim, of a support, an annular cap enclosing the brim and having an internal flange pressing down upon said brim, said crown fitting within said cap and rising through the same, said cap being co-operative with said support to clip said brim tightly down upon said support; said crown being substantially flush with the top of said cap, to afford a broadening of the striking surface of the key, said support being in the form of a cup, and a friction disk of relatively yieldable material confined in said cup and supporting said brim and crown, and subject to the specified downward pressure of said brim, to prevent accidental rotation of said crown.

4. A typewriter-key having a key-cup with provision for mounting upon a key-stem, a character-disk in the form of a two-ply crown of celluloid provided with a character and including a brim projecting from the bottom of said crown, and an annular cap clasped upon said cup and having an inturned flange pressing downwardly upon said projecting brim, the brim being supported against the downward pressure of said cap, and the cap being flush with the top of the crown, said two-ply character-disk being molded with a central concaved broad character-bearing area, and including as its top ply a thin shaped disk of transparent celluloid having a crown-portion and a brim-portion.

5. A typewriter-key having a key-cup with provision for mounting upon a key-stem, a two-ply crown of transparent and opaque celluloid, the opaque ply being provided with a character, a brim projecting from the bottom of said crown, and an annular metal cap clasped upon said cup and having an inturned flange for retaining said brim and pressing downwardly thereon, the brim being supported against the pressure of said cap, the celluloid being protected against ignition by the metal key-cap, and the crown being flush with the top of the cap, said character-crown being molded with a central concaved broad character-bearing area, and the upper ply being the transparent celluloid.

6. In a typewriting machine, the combination of a key-cup, a character-disk formed with a crown and a brim, and a key-cap secured to said cup and having an inturned flange holding said brim down upon said cup, said flange being flush with said crown and affording a broadened expanse of finger-striking surface.

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