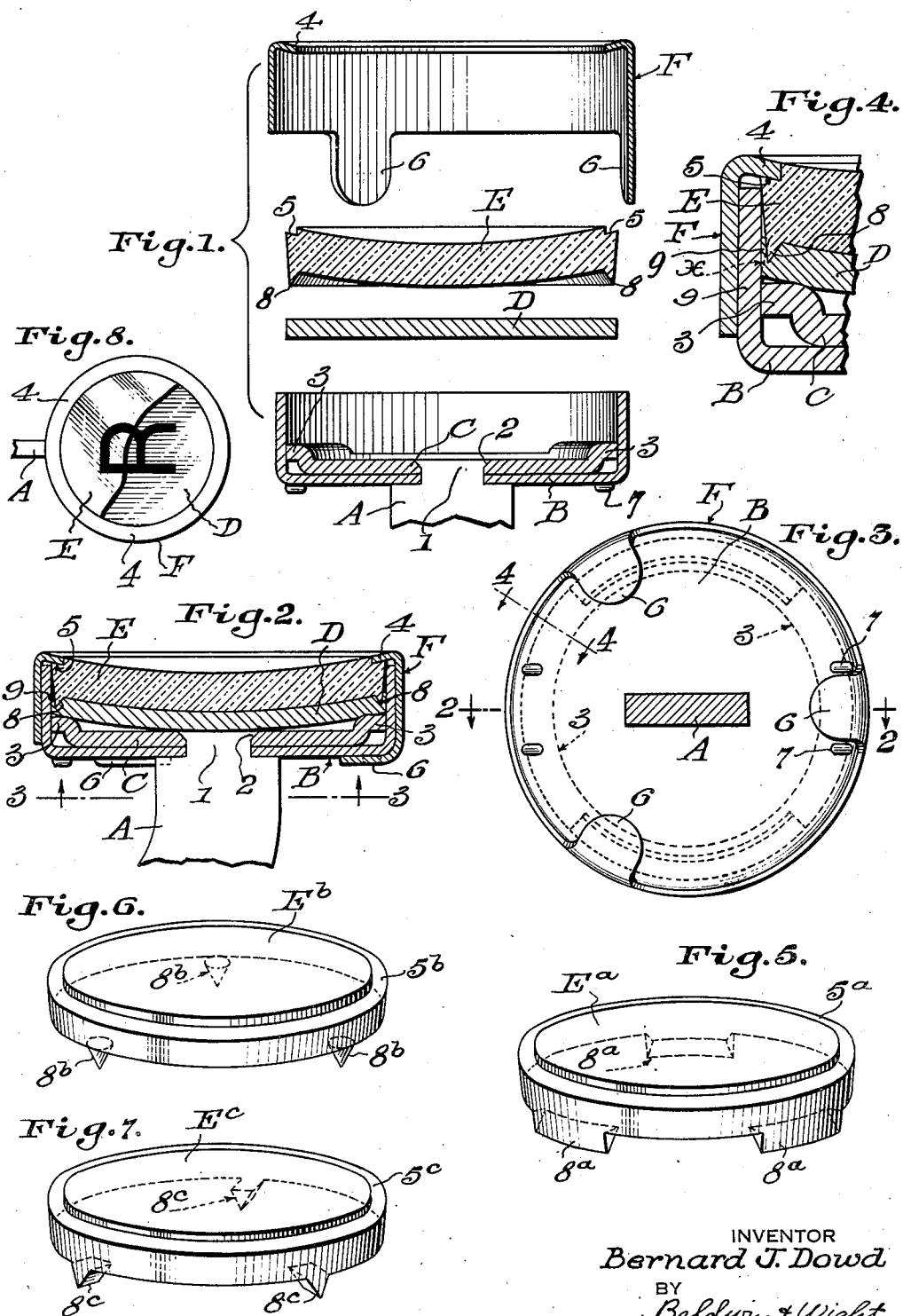


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TYPEWRITING MACHINE
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TYPEWRITING MACHINE

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9 Claims. (Cl. 197—102)

This invention relates to typewriting machines, and more particularly to keys for typewriting machines.

One form of typewriter key in general use comprises a metal cup mounted on the end of a key lever and receiving a key card displaying a character through a transparent cover disc held in the cup and above the key card by a key cap ring. The parts are clamped together by engagement of the cap ring with the cup and the friction of the contacting parts is relied upon to prevent relative movement of the key card and cover disc. However, during long continued use, slight relative sliding movement between the card and cover disc occurs. No matter how slight such movement may be, it results eventually in rubbing and smudging of the inked top face of the card, disfiguring it and giving a dull and cloudy appearance to the whole key.

An object of the present invention is to provide a key structure of the general character referred to but which is so constructed as to prevent any relative sliding movement of the key card and cover disc.

Other objects will become apparent from a reading of the following description, the appended claims, and the accompanying drawing, in which:

Figure 1 is a deployed sectional view of one form of key embodying the invention and showing parts separated from each other;

Figure 2 is a sectional view of the form of key shown in Figure 1 but showing the parts assembled, the section being taken on the line 2—2 of Figure 3;

Figure 3 is a view partly in section and partly in bottom plan, the section being taken on the line 3—3 of Figure 2;

Figure 4 is a fragmentary sectional view on the line 4—4 of Figure 3 but drawn on an enlarged scale;

Figure 5 is a perspective view of a modified form of transparent cover disc;

Figure 6 is a perspective view of another modified form of transparent cover disc;

Figure 7 is a perspective view of a further modified form of cover disc; and

Figure 8 is a top plan view of a key assembly embodying the invention, drawn on a reduced scale.

For the purposes of illustration, the invention is shown as being embodied in a typewriter key including a key lever A, only a part of which is shown, to which is secured a key cup B. The key lever is formed with a shank 1 extending up

through the cup bottom and through a washer C, the shank being peened out as at 2 for securing the lever, the cup, and the washer together. The washer is formed with circumferentially extending raised portions providing ledges 3—3 lying adjacent the cup outer wall and forming a resultant central depression in the cup bottom.

A key card D of cardboard or other suitable material, preferably yieldable, is positioned within the cup and is covered by a transparent disc E adapted to be engaged by the operator's fingers for key actuation and for protecting the key card D. The key card D and cover disc E are held in the cup by a cap ring F which has a flange 4 seated in a recess 5 extending around the periphery of the cover disc. The cap ring is provided with ears 6 adapted to be turned under the bottom of the cup for holding the parts assembled. One of the ears extends between spaced locating projections 7—7 on the bottom of the cup, thus preventing the cap ring from turning or shifting relative to the cup.

With the exception of the construction and novel association of the key card D and cover disc E whereby they are held against relative movement, as is described hereinafter, the key as described above is of known construction.

Keys constructed in accordance with the present invention include a character-displaying key card such as the card D and a transparent cover disc such as the disc E in contact with the card, the card and cover disc being constructed or equipped to prevent relative shifting or sliding movement, thus eliminating rubbing and smudging of the character-displaying surface of the card.

In the embodiment shown in Figures 1 to 4 inclusive and 8, the card D is formed of yieldable cardboard which may be flat before assembly. The cover disc is made of shatter-resisting transparent material such as "Lucite" methyl methacrylate molded plastic, and is formed with a peripheral flange, bead, or rib 8 which extends downwardly from the bottom of the disc. The rib 8 is V-shaped in cross section radially of the disc, the sharp lower edge of the rib adapting it to be forced down under the top surface of the card D and to be sunk into the body of the card, squeezing the marginal edge portion 9 of the latter out against the cup wall. The rib 8 being small, it is possible to force the disc E down into face-to-face contact with the card D thereby substantially preventing air from contacting and oxidizing the printed surface of the card. For finger comfort in operation, it is preferred that

the cover disc be concave on its top surface. To prevent distortion of the card character when viewed through the cover disc, the latter preferably is convex on its bottom surface. The face-to-face contact between the key card and cover disc prevents distortion which would occur due to refraction if there were a space between the character-displaying portion of the card and the cover disc.

When the cover disc is forced down against the card D, the latter is conformed to the bottom convexity of the disc. As the central portion of the card D is forced into the cup bottom central depression, the card edge tends to assume a position inclined with respect to the vertical as indicated by the dotted line *x* in Figure 4. The edge is, however, forced outwardly against the cup wall by the rib 8. The clearance available for outward movement of the marginal card material is indicated by the space between the dotted line *x* and the adjacent inner surface of the cup wall. Considerable pressure is required to force the rib 8 down into the key card and to bring the cover disc into face-to-face contact with the key card. Since the rib 8 is quite thin, the cover disc should be formed of material adapted to resist shattering. A tough material, such as the "Lucite" methyl methacrylate referred to above, possesses the desired characteristics.

In a key structure as described above, the key card and cover disc are interlocked together against relative rotary and straight-line or side-wise movement. There can be no smudging of the character-bearing surface of the card, and the character will always be displayed clearly and without distortion.

Figure 5 shows a modified form of concavo-convex cover disc E^a having a top marginal recess 5^a and being provided with three spaced circumferentially extending ribs 8^a the cross sectional shapes of which are the same as or similar to that of the rib 8 on the disc E shown in Figures 1 to 4.

The modified concavo-convex cover disc E^b shown in Figure 6 is formed with a top marginal recess 5^b and is provided with a plurality of, in the present instance three, spaced conical projections 8^b extending from the bottom of the disc with their apices pointing downwardly for entrance into the key card.

The further modified cover disc E^c shown in Figure 7 likewise is concavo-convex and is formed with a top marginal recess 8^c. It includes a plurality of, for example, three, circumferentially spaced radially extending ribs or projections of V shape extending downwardly from the bottom of the disc proper.

The modified forms of cover discs shown in Figures 5, 6, and 7 may all be used in assembly with the cup B, key card C, and cap ring F described with reference to Figures 1 to 4. The four forms of cover disc disclosed all are adapted to cooperate with an associated key card in a manner to prevent relative sliding movement of the discs and cards, and to provide for the displaying of the character without distortion. The structures shown and described embody the invention in practical and preferred forms, but changes may be resorted to without departing from the invention as defined in the claims.

I claim:

1. In a key for a key-operated machine, a support; a character-displaying key card element thereon; a transparent cover disc element on the key card element and in surface contact with the

character-displaying portion thereof; and means integral with one of said elements and extending into the other element for preventing relative sliding movement between the elements.

2. In a key for a key-operated machine, a cup; a key card of yieldable material in the cup; a transparent cover disc in the cup on top of the key card and having a downward projection; and means for clamping the cover disc down in face-to-face contact with the key card and with said projection projecting below the top surface of the key card for preventing relative rotary and straight-line movement between the key card and cover disc.

3. In a key for a key-operated machine, a cup; a key card of yieldable material in the cup; a transparent cover disc in the cup on top of the key card and having a downwardly extending integral annular rib substantially V-shaped in cross section with a sharp lower edge; and means for holding the cover disc down in face-to-face contact with the key card and with said rib projecting below the top surface of the key card and into the body of the key card for preventing relative rotary and straight-line movement between the key card and the cover disc.

4. In a key for a key-operated machine, a cup; a key card of yieldable material in the cup; a transparent cover disc in the cup on top of the key card and having a downwardly extending integral annular rib; and means for holding the cover disc down in face-to-face contact with the key card and with said rib projecting below the top surface of the key card and into the body of the key card for preventing relative rotary and straight-line movement between the key card and the cover disc.

5. In a key for a key-operated machine, a cup; a yieldable key card in the cup; a transparent cover disc in the cup having a convex bottom face and a downward projection; and means for holding the cover disc down in face-to-face contact with the key card and with said projection sunk below the top of the key card and extending into the body thereof for preventing relative rotary and straight-line movement between the key card and cover disc.

6. In a key for a key-operated machine, a cup; a key card of yieldable material in the cup; a transparent cover disc in the cup on top of the key card and having a plurality of downwardly extending projections; and means for holding the cover disc down on the key card and with said projections sunk into the key card for preventing relative rotary and straight-line movement between the key card and cover disc.

7. In a key for a key-operated machine, a cup; a key card of yieldable material in the cup; a transparent cover disc in the cup on top of the key card and having a plurality of spaced circumferentially extending ribs projecting downwardly from the bottom of the cover disc adjacent the periphery thereof; and means for holding the cover disc down on the key card with said ribs sunk into the key card for preventing relative rotary and straightline movement between the key card and the cover disc.

8. In a key for a key-operated machine, a cup; a key card of yieldable material in the cup; a transparent cover disc in the cup on top of the key card and having a plurality of spaced, radially extending ribs projecting downwardly from the bottom of the cover disc adjacent the periphery thereof; and means for holding the cover disc down on the key card with said ribs sunk into the

key card for preventing relative rotary and straight-line movement between the key card and cover disc.

- 5 9. In a key for a key-operated machine, a cup having a bottom, an annular wall and a raised ledge at opposite sides of the cup extending inwardly from the annular wall and providing a central depression in the cup bottom; a yieldable key card in the cup; a transparent cover disc convex on its lower surface in said cup and having an
10 integrally formed downwardly extending periph-

eral rib substantially V-shaped in cross section; and means for holding the cover disc down in face-to-face contact with the key card, and with the key card pressed downwardly into the cup central depression to conform to the convexity 5 of the cover disc, said rib being sunk into the marginal portion of the key card over said ledge adjacent the cup annular wall for preventing relative rotary movement between the key card and cover disc.

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