Oct. 19, 1954 O. WINTER 2,692,038

KEY FOR OFFICE MACHINES

Filed May 4, 1950 2 Sheets-Sheet 1

FIG. 1.

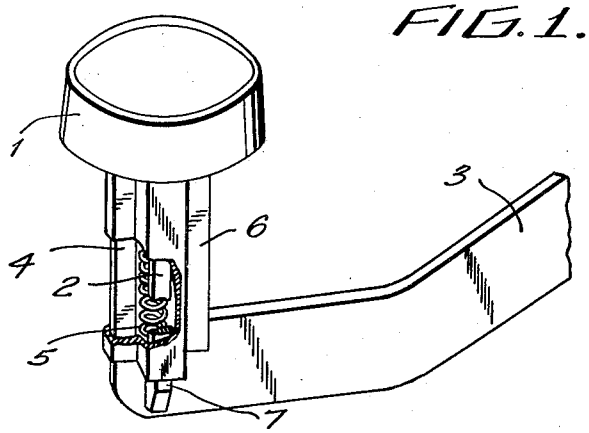


FIG. 3.

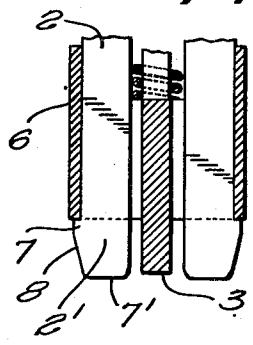


FIG. 2.

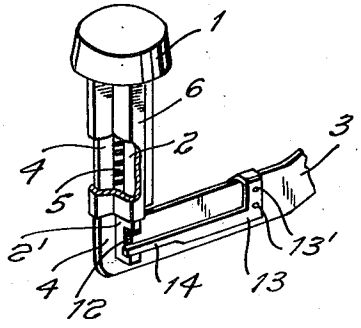
INVENTOR.
OTTO WINTER
BY
Michael S. Striker
Agt

Oct. 19, 1954 O. WINTER 2,692,038

KEY FOR OFFICE MACHINES

Filed May 4, 1950 2 Sheets-Sheet 2

FIG. 5.



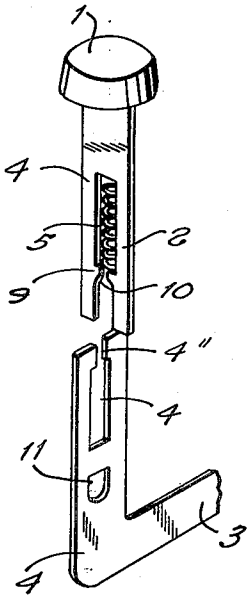
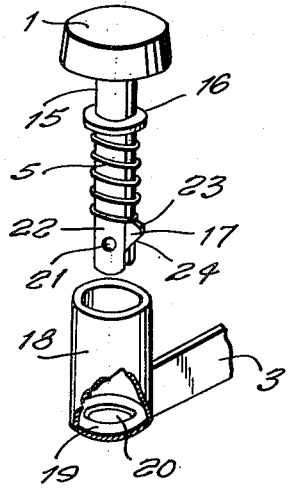


FIG. 4.

FIG. 6.



INVENTOR.
OTTO WINTER
BY

Patented Oct. 19, 1954

2,692,038

UNITED STATES PATENT OFFICE

2,692,038

KEY FOR OFFICE MACHINES

Otto Winter, Wilhelmshaven, Germany, assignor to Olympia Werke West Gesellschaft mit beschrankter Haftung

Application May 4, 1950, Serial No. 159,883

Claims priority, application Germany May 11, 1949

11 Claims. (Cl. 197—103)

1

The present invention relates to an improvement in office machines, such as typewriters, calculating machines, bookkeeping machines and the like.

In the copending application Serial No. 151,374, filed March 23, 1950, an office machine is disclosed in which a key adapted to be depressed is connected to a first member which actuates a second member on a depression of the key, a resilient element being inserted between the members, and a device being provided for limiting the relative motion of said members.

It is an object of the present invention to avoid difficulties caused by the limiting device with respect to the manufacture and the mounting and dismounting of the office machine.

It is another object of the present invention to avoid a loss of the limiting device.

An office machine according to the present invention comprises in its broadest aspects in combination a key adapted to be depressed, a first member connected to this key, a second member adapted to be actuated by the first member on a depression of the key, a resilient element inserted between the members, and a device forming one piece with one of the members for limiting the relative motion of the members.

Preferably, the device for limiting the relative motion of the members is resiliently connected to at least one of the members.

According to an embodiment of the present invention, the first member is resilient and the device for limiting the relative motion of the members forms one piece with the first member.

According to another embodiment of the present invention, a key-shaped extension is connected to the second member and a groove is provided in the first member for engagement by the key-shaped extension. Preferably, the key is rigidly connected to the second member. Preferably, a device is connected to the second member and partly encloses the same, key-shaped extensions forming part of the device and being arranged parallel to the second member. Preferably, the second member is designed as a lever.

According to an embodiment of the present invention, the member connected to the key to be depressed is forked and has resilient prongs which are provided, respectively, with preferably lateral projections which engage a notch element or recess in the lever.

Preferably a guiding sleeve having a cross-shaped cross section encloses the forked member and the lever, the guiding sleeve engaging with one end thereof the projections of the forked member. Preferably, the lever is also forked.

2

According to another embodiment of the present invention, a pin is rigidly connected to the key and carries a projection on the lower portion of the pin, the lever being rigidly connected to a cylinder having a bottom having an aperture adapted to be engaged by the projection, the resiilent element being inserted between the pin and the bottom of the cylinder. Preferably, the pin is provided with a collar arranged on the upper portion thereof and the resilient element abuts against the collar and the bottom of the cylinder. Preferably, the projection is pivotally secured to the pin so that it passes the aperture in the bottom of the cylinder when the key mechanism is mounted, after which the projection turns about its pivot and engages the bottom of the cylinder.

The novel features which I consider as characteristic for my invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings, in which:

Fig. 1 is a perspective view, partly broken away, of one embodiment of the present invention;

Fig. 2 is an exploded view of the device shown in Fig. 1;

Fig. 3 is a section on an enlarged scale of the lower part of Fig. 1;

Figs. 4, 5, and 6 show, respectively, in perspective view three more embodiments of the present invention.

Referring now to the drawings, and first to Figures 1 to 3, a key 1 adapted to be depressed by the finger of the operator is rigidly connected to a first member 2 designed as a fork. A second member is preferably designed as a lever 3 provided with a forked extension 4 aligned with the forked member 2 but arranged transversely to the same, the prongs of the member 2 and the extension 4 forming a hollow space in which a resilient element designed as a compression spring 5 is inserted. A sleeve 6 having a cross-shaped cross section is attached to the lever 3 and serves as a guide for the forked member 2 and the forked-shaped extension 4 during their relative motion. The prongs 2' of the fork-shaped lever 2 are resilient and consist, for instance, of hardened spring steel. In the position shown in Figure 2, the prongs 2' are unstressed. At their lower end, the prongs 2' are provided with lateral projections 7 connected by

inclined faces 8 with the lower end faces 7' of the prongs in order to facilitate the introduction of the forked member into the sleeve 6.

The operation of this device is as follows:

When the forked member 2 is introduced into the sleeve 6, the prongs 2' are pressed towards each other for a distance corresponding to the projecting part of the lateral projection 7. If the forked member 2 is fully inserted into the sleeve 6, the lower parts of the prongs 2' extend beyond the sleeve 6 and return into their unstressed position, the lateral projection 7 engaging the lower edge of the sleeve 6.

When it is intended to separate the parts, the lateral projections 7 are pressed towards each other after which the forked member 2 under the pressure of the spring 5 slides upwards and the parts are separated from one another.

Referring now to Figure 4, the key 1 is again connected to the forked member 2 with which the forked extension 4 of the lever 3 cooperates under insertion of a helical compression spring 5 as in the embodiment according to Figures 1 to 3. The forked member 2 is provided with inwardly directed lateral projections 9, the lower parts of which are provided with inclined portions 10. The extension 4 of the lever 3 is provided with a notch element or recess 11 which is engaged by the lateral projections 9.

The operation of this device is as follows:

Before mounting the device, the parts have the relative position shown in Figure 4. For mounting purposes, the key 1 and the forked member 2 are pressed downwards. The forked member 2 is guided by the extension 4 which is provided with an oblong recess 4' having a narrow extension 4'' reaching to the upper edge of the extension 4. In this embodiment, the sleeve 6 of the embodiment shown in Figures 1 to 3 can be dispensed with.

At the end of the mounting movement, the lateral projections 9 engage the upper edge of the recess 11 which has a length which allows the forked member 2 to actuate the lever 3 by a compression of the spring 5 on a depression of the key 1 by the finger of the operator. On the return movement, the lateral projections 9 come again in engagement with the upper end of the recess 11 and thus limit the relative motion of the member 2 and the extension 4. For dismounting the key 1, the pronged ends of the member 2 are slightly pressed outwards whereupon the key 1 and the member 2 can be removed from the extension 4.

Referring now to Figure 5 of the drawings, the member 2 connected to the key 1 is in contradistinction to the embodiments shown in Figures 1 to 4 not resilient. The member 2 has longitudinal recesses 12 near the lower end of the prongs 2'. The lever 3 carries a substantially U-shaped resilient device 13 which is preferably welded to the lever 3 at 13' and provided with key-shaped extensions 14 engaging the recesses 12 of the member 2.

The operation of this device is substantially the same as that shown in Figures 1 to 3. The resilient device 13 partly encloses the lever 3 and the key-shaped ends 14 engage the lower edge of the sleeve 6 under the pressure of the spring 5.

Referring now to Figure 6 of the drawings, the key 1 is connected to a cylindrical pin 15 provided with a collar 16 shaped as an annular disc arranged near the upper end of the pin 15. The helical compression spring 5 wound about the pin 15 abuts with its upper end against the collar 16. At the lower end 22 of the pin 15 a lateral projection 17 is pivoted at 21 to the pin 15. The lever 3 is connected to a hollow cylinder 18 having an open upper end and being provided with a bottom 19 having a central aperture 20.

The operation of this device is as follows:

For mounting the key 1 and its associate parts, the latter are brought into the position above the cylinder 18 which is shown in Figure 6. Then the pin 15 is introduced into the hollow cylinder 18 so that the lower end 22 of the pin 15 extends through the aperture 20, the projection 17 turning upwards about the pivot 21 and turning afterwards downward again so that its upper edge 23 engages the lower face of the bottom 19. In order to facilitate this motion, the projection 17 is provided with an inclined face 24 so that the projection 17 is gradually pressed into the pin 15 before it reaches the position in which it engages the lower face of the bottom 19. Preferably a spring (not shown) is provided inside the pin 15 for pressing the projection 17 into the position shown in the drawings. The spring 5 abuts with its lower end against the upper face of the bottom 19 of the cylinder 18.

If it is intended to dismount the device, the projection 17 is pressed inwards, whereupon the pressure of the spring 5 causes the pin 15 to move upwards so that the key 1 is dismounted.

If desired, the lateral projection 17 may be rigidly connected to the pin 15 and the bottom 19 of the cylinder 18 may be made resilient so that it can let pass the projection 17 while the lower end 22 of the pin 15 is being introduced into the aperture 20.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of office machines, differing from the types described above.

While I have illustrated and described the invention as embodied in a connection of the key of an office machine, I do not intend to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of my invention.

Without further analysis, the foregoing will so fully reveal the gist of my invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What I claim as new and desire to secure by Letters Patent is:

1. An office machine comprising in combination a key adapted to be depressed; a first member connected to said key; a second member adapted to be actuated by said first member on a depression of said key; a resilient element inserted between said members; a device connected to said second member and partly enclosing the same; key-shaped extensions forming part of said device and being arranged parallel to said second member; and recesses in said first member for engagement, respectively, by said key-shaped extensions.

2. An office machine comprising in combination a key adapted to be depressed; a member connected to said key; a lever adapted to be actuated by said member on a depression of said key; a resilient element inserted between said

member and said lever; a device connected to said lever and partly enclosing the same; key-shaped extensions forming part of said device and arranged parallel to said lever; and recesses in said member for engagement, respectively, by said key-shaped extensions.

3. An office machine comprising in combination a key adapted to be depressed; a flat forked member rigidly connected to said key and having prongs; lateral projections arranged, respectively, on said prongs; a lever arranged normal to said flat forked member adapted to be actuated by said member on a depression of said key; a resilient element inserted between said member and said lever; and means on said lever for engagement, respectively, by said projections.

4. An office machine comprising in combination a key adapted to be depressed; a first flat member connected to said key; a second flat member arranged normal to said first flat member and adapted to be actuated by said first flat member on a depression of said key; a resilient element inserted between said members; a sleeve fixed to said second member having a cross-shaped cross section and guiding said flat members during the relative motion thereof; and a device forming one piece with said first member and cooperating with said sleeve to limit the relative motion of said members.

5. An office machine comprising in combination a key adapted to be depressed; a first flat member connected to said key; a second flat member arranged normal to said first flat member and adapted to be actuated by said first flat member on a depression of said key; a resilient element inserted between said members; a sleeve having a cross-shaped cross section and guiding said flat members during the relative motion thereof; a key-shaped extension connected to said second flat member; and a recess in said first flat member for engagement by said key-shaped extension.

6. An office machine comprising in combination a key adapted to be depressed; a first flat member connected to said key; a second flat member arranged normal to said first flat member and adapted to be actuated by said first flat member on a depression of said key; a resilient element inserted between said members; a sleeve having a cross-shaped cross section and guiding said flat members during the relative motion thereof; a device connected to said second flat member and partly enclosing the same; key-shaped extensions forming part of said device and being arranged parallel to said second flat member; and recesses in said first flat member for engagement, respectively, by said key-shaped extensions.

7. An office machine comprising in combination a key adapted to be depressed; a flat forked member rigidly connected to said key and having resilient prongs; projections arranged, respectively, on said prongs; a flat lever arranged normal to said first flat member and adapted to be actuated by said member on a depression of said key; a resilient element inserted between said member and said lever; and a guiding sleeve having a cross-shaped cross section and enclosing said flat forked member and said flat lever, said guiding sleeve engaging with one end thereof said projections of said forked member.

8. An office machine comprising in combination a key adapted to be depressed; a flat forked member rigidly connected to said key and having resilient prongs; projections arranged, respectively, on said prongs; a flat forked lever arranged normal to said first flat member and adapted to be actuated by said member on a depression of said key; a resilient element inserted between said member and said lever; and a guiding sleeve having a cross-shaped cross section and enclosing said flat forked member and said flat lever, said guiding sleeve engaging with one end thereof said projections of said forked member.

9. An office machine comprising, in combination, a key adapted to be depressed; a substantially vertical flat forked member rigidly connected to said key and having resilient prongs arranged at the lower end thereof; projections arranged respectively on the lower ends of said prongs; a flat lever arranged normal to said flat forked member and adapted to be actuated by said member on a depression of said key; a resilient inserted between said flat forked member and said flat lever; and a substantially vertical guiding sleeve having a cross-shaped cross section and enclosing said flat forked member and said flat lever, said guiding sleeve having an upper end and a lower end, said lower end of said guiding sleeve engaging said projections of said flat forked member.

10. An office machine comprising, in combination, a key adapted to be depressed; a substantially vertical flat forked member rigidly connected to said key and having resilient prongs arranged at the lower end thereof; projections arranged respectively on the lower ends of said prongs; a flat forked lever arranged normal to said flat forked member and adapted to be actuated by said member on a depression of said key; a resilient element inserted between said flat forked member and said flat forked lever; and a substantially vertical guiding sleeve having a cross-shaped cross section and enclosing said flat forked member and said flat lever, said guiding sleeve having an upper end and a lower end, said lower end of said guiding sleeve engaging said projections of said flat forked member.

11. An office machine comprising, in combination, a key adapted to be depressed; a substantially vertical flat forked member rigidly connected to said key and having resilient prongs arranged at the lower end thereof; projections arranged respectively on the lower ends of said prongs; a flat lever arranged normal to said flat forked member and adapted to be actuated by said member on a depression of said key, said flat lever having a forked extension aligned with said flat forked member and arranged transversely to the same; a resilient element inserted between said forked member and said forked extension; and a substantially vertical guiding sleeve having a cross-shaped cross section and enclosing said flat forked member and said forked extension of said flat lever, said guiding sleeve having an upper end and a lower end, said lower end of said guiding sleeve engaging said projections of said flat forked member.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
285,096	Yost	Sept. 18, 1883
823,137	Richards	June 12, 1906
1,508,001	Kurowski	Sept. 9, 1924

FOREIGN PATENTS

Number	Country	Date
8,818	Great Britain	of 1912
365,595	Germany	of 1922