

Dec. 2, 1969

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3,481,444

SELECTIVE BLOCKING MEANS FOR KEY MACHINE

Filed Oct. 24, 1967

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FIG. 3

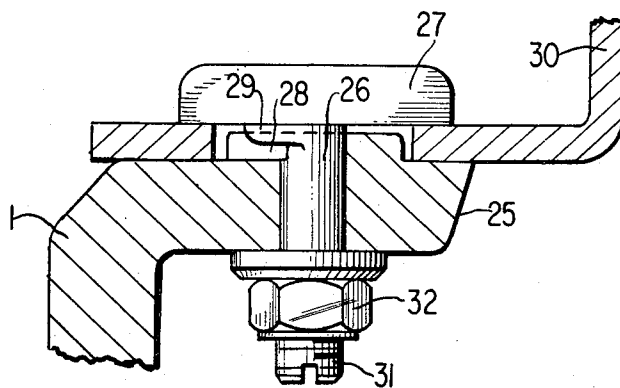


FIG. 9

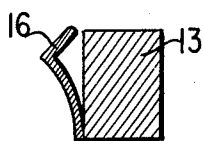
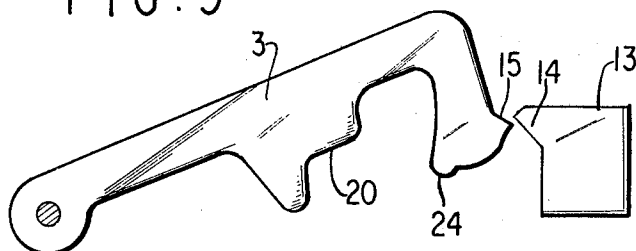


FIG. 10a



FIG. 10b

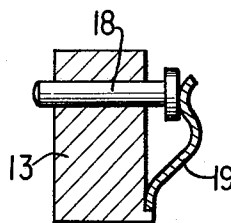


FIG. 10c

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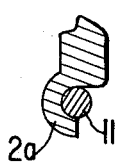
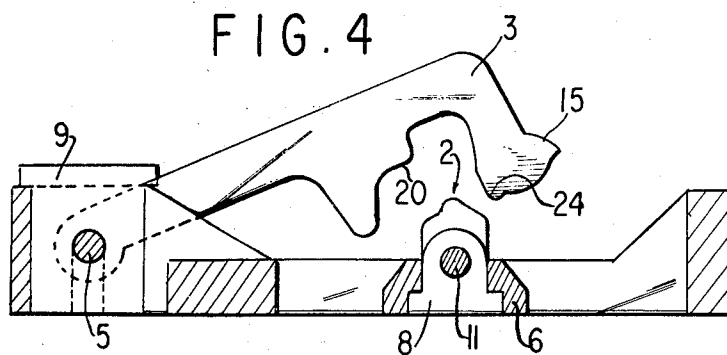


FIG. 5

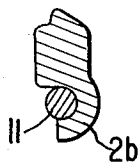


FIG. 6

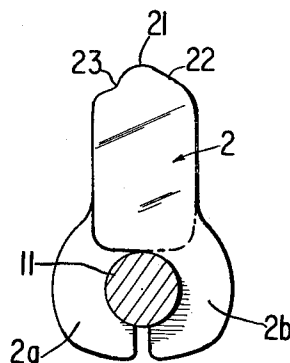


FIG. 7

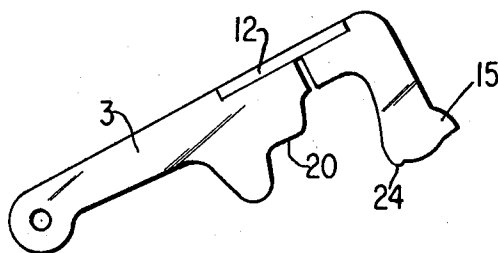


FIG. 8

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FIG. 7a

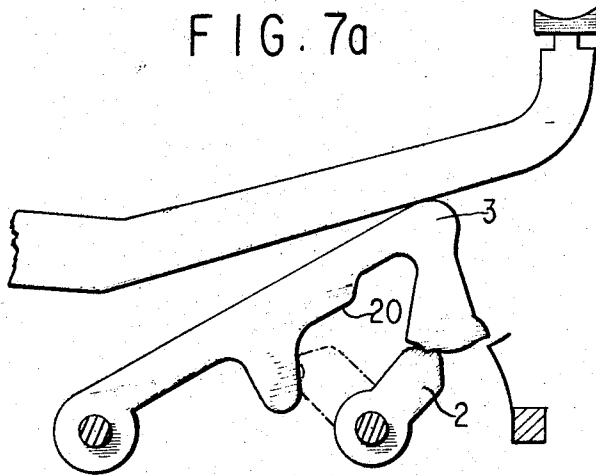


FIG. 7b

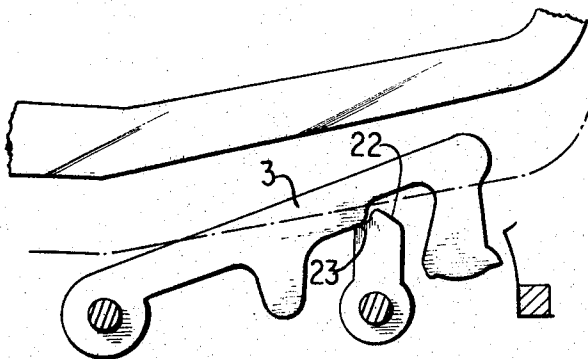
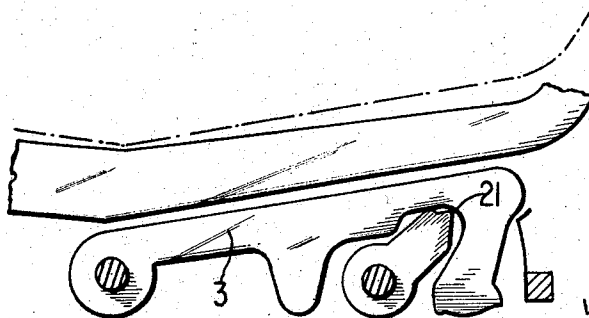


FIG. 7c



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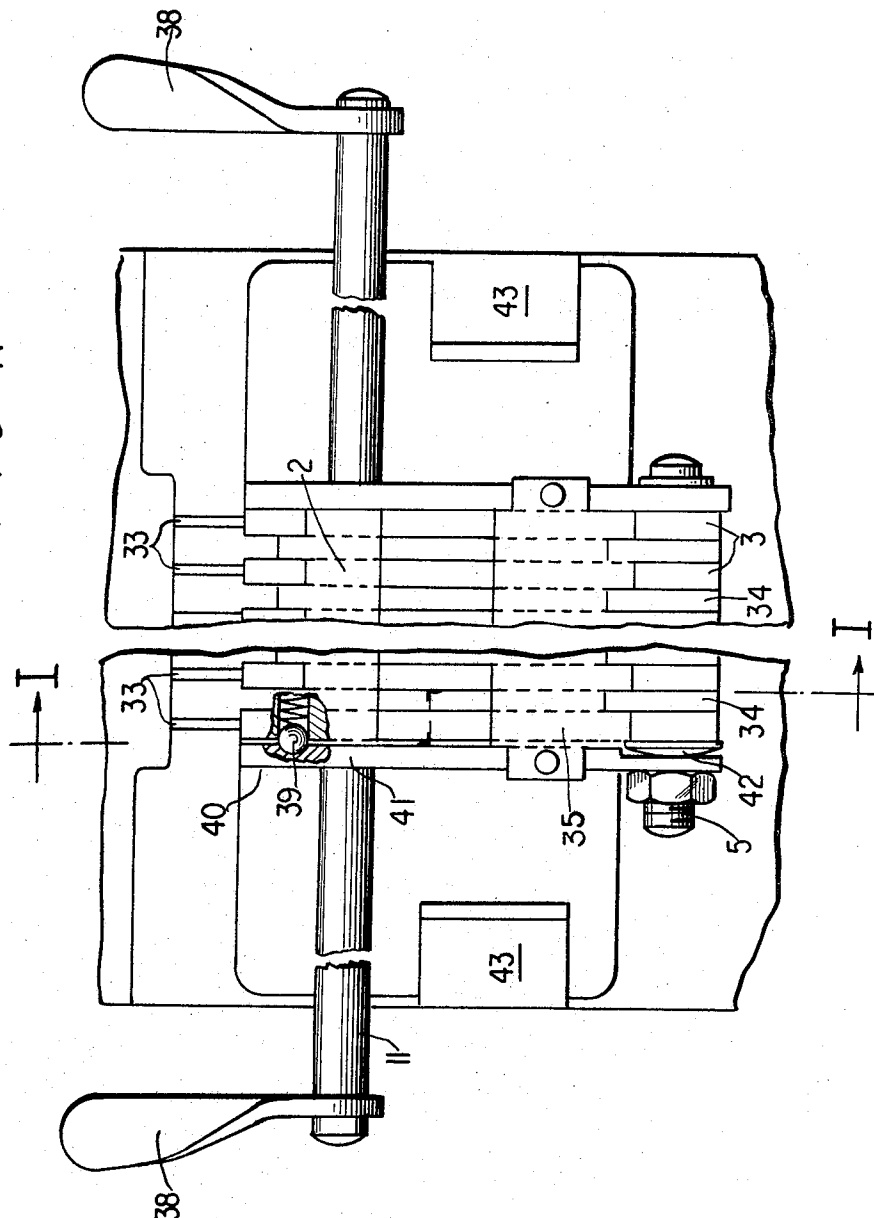
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FIG. 11



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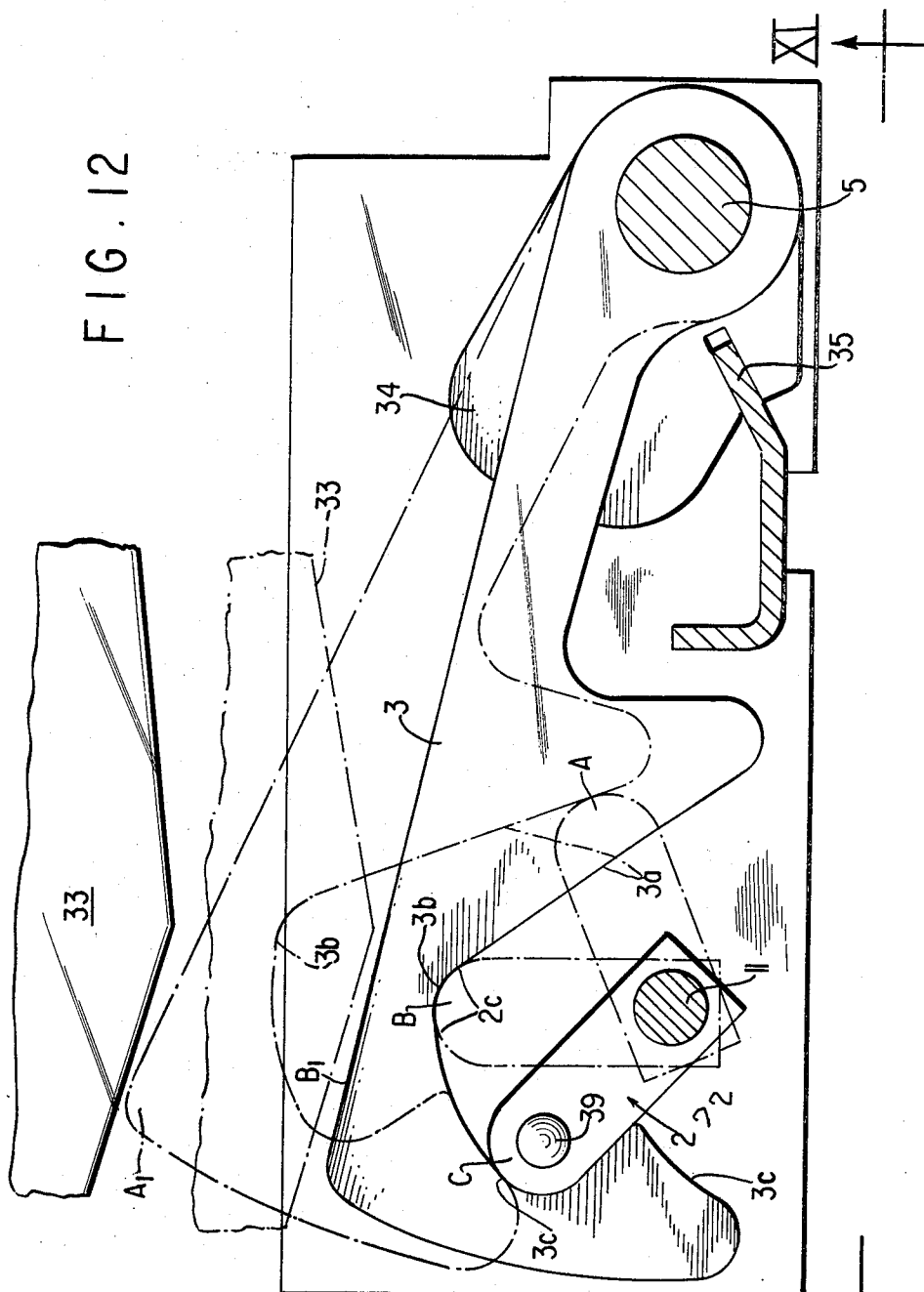
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3,481,444 SELECTIVE BLOCKING MEANS FOR KEY MACHINE

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J 32,110
Int. Cl. B41j 5/22

U.S. Cl. 197—107

15 Claims 10

ABSTRACT OF THE DISCLOSURE

A novel apparatus for mounting on a key operated machine to selectively block actuation of at least one key thereof without damage to the keys even if handled improperly by the operator of the machine.

OBJECTS OF THE INVENTION

It is an object of the invention to provide a novel device for selectively blocking keys of a machine in a simple and reliable manner and which may be easily installed.

It is another object of the invention to provide a blocking means for a key machine which will not damage the keys even when handled improperly or incorrectly by the operator, particularly when upon adjustment of keys which are to be struck, these keys are not completely pressed down whereby the blocking device pertinent to the key is apt to engage in an intermediate position whereby it might be bent when the control is manipulated.

These and other objects and advantages of the invention will become obvious from the following detailed description.

THE INVENTION

The apparatus of the invention for mounting on a key operated machine for selectively blocking actuation of at least one key of said key operated machine when mounted therein is comprised of a control means pivotally mounted on a horizontal axis, said control means being element secured to said frame and cooperating with said positioned under the key levers and being provided with bearing means, said control means being mounted in a frame, said frame having means for attachment to said key operated machine, said control means being pivotable between a plurality of positions and being provided with means to fix it in a desired position, a plurality of individual blocking means provided with bearing means and being pivotally mounted on a horizontal axis, said blocking means being located between said key levers and said control means such that an actuated key lever can contact one of said blocking means and move said blocking means into engagement with said control means in at least one of the positions of said control means, a dog element secured to said frame and cooperating with said blocking means to serve as a limit for the movement of said blocking means, at least one of said blocking means and said dog element being flexible to the extent that upon the exertion of an excessive pressure between said blocking means and said dog element, at least one of said blocking means and said dog element will yield to relieve said excessive pressure without breaking.

The individual blocking means are preferably made of elastic synthetic material so that the levers are flexible and can avoid one another at any incorrect setting.

In a preferred embodiment of the invention, the inner guiding edge of the control means which is preferably a control bar is provided with a groove while the outer guiding edge thereof is flattened. This results in that the blocking levers which are not to be struck lie with a stud

thereof in the groove in the "blocked" position and that the blocking levers which have not been completely depressed are returned to the blocked position by the attenuation of the outer guiding edge by advanced turning of the control bar and, therefore, no deformation will occur.

The blocking levers are also provided with a lug so that they cannot be depressed in the pre-set position whereby typing in this pre-set position is no longer possible. In a more preferred embodiment, the blocking levers are provided with a stud which cooperates with elastic dogs on the frame whereby a certain pressure has to be overcome when the keys are depressed.

In still another preferred embodiment, the blocking levers are disposed in slots arranged in the frame, and the axis of the control bar and of the blocking levers are secured with supporting metal sheets in bridging spaces. Furthermore, the device can be provided with a guide profile and clamping blocks at both sides which aid the assembly of the device in a typewriter.

Finally, in still another embodiment, the position of the blocking levers is fixedly secured by spacers arranged on the blocking lever axis between the blocking levers and forced together by springs. The guide bar is held in the desired position by a ball under spring pressure in engagement with recesses in the frame members for each desired position.

Referring now to the drawings:

FIG. 1 is a plan view of one embodiment of the blocking device of the invention.

FIG. 2 is an expanded partial plan view of the bottom of the embodiment of FIG. 1.

FIGS. 3 and 4 are cross-sectional views of the embodiment of FIG. 1, taken along lines III—III and IV—IV, respectively.

FIGS. 5 and 6 are cross-sectional views of the embodiment of FIG. 1, taken along lines V—V and VI—VI, respectively.

FIG. 7 is an enlarged cross-sectional view of the control device of the embodiment of FIG. 1.

FIGS. 7a, 7b and 7c illustrate the different phases of movement of the locking means and the control bar.

FIG. 8 is a plan view of another embodiment of an elastic blocking means suitable for use in FIG. 1.

FIG. 9 illustrates the cooperation of an individual blocking means cooperating with a dog disposed on the frame.

FIGS. 10a, 10b and 10c show different embodiments of the dog of FIG. 9.

FIG. 11 is a plan view from the bottom of a preferred embodiment of the invention having spacing means and ball fixing means.

FIG. 12 is a cross-sectional view of FIG. 11, taken along the line I—I.

In FIG. 1, the blocking device of the invention is comprised of frame 1 with control bar 2 mounted on an axis 11 disposed in frame 1. The blocking levers 3 (FIG. 2) are arranged in slots 4 recessed in the frame 1 and are mounted on an axis 5 disposed in frame 1. Bridging space 6 is provided with a supporting metal sheet 8 while bridging spaces 7 are not provided with said metal sheets. A support metal sheet 9 is disposed in one of recesses 4 in which axis 5 is externally journaled at both ends and several of said support sheets 9 may be arranged in different recesses 4.

The blocking levers 3 are held in recesses 4 by means of leaf-type springs 10 also arranged in recesses 4 and interspersed by axis 5 against one side of recess 4 to create friction between the side and the blocking lever 3. Each blocking lever 3 is provided with a leaf-type spring 10 which springs may be replaced with coil springs, elastic rubber discs or the like. Blocking lever 3 is elastic

and may be made of a sufficiently flexible material or may be flexibly constructed as in FIG. 8 where two parts of the blocking lever are connected by spring 12.

As can be seen from FIG. 9, the blocking lever 3 is provided with a projection 20 which cooperates with guide edge 21 of control bar 2 (see FIG. 7) so that blocking lever 3 cannot be pressed down to any extent and, therefore, typing in this preset position is impossible. The control bar 2 is also provided with an attenuation 22 and groove 23. The attenuation 22 acts to press an incompletely depressed blocking lever 3 back into its locked position so that the blocking levers 3 cannot be bent by operation of control bar 2. The blocking levers 3 are secured with blunt stud 24 in blocked position in groove 23 of the control bar 2. Control bar 2 is mounted on axis 11 and segments 2a and 2b almost completely envelop axis 11 except for a small space opposite bar 2 (see FIGS 5, 6 and 7). The axis 11 is disposed in the frame at either end and between these ends in bridging spaces 6, 7 with bridging space 6 being provided with a supporting metal sheet 8 made from wear-resistant material.

Each blocking lever 3 has, in addition, a lug or stud 15 which cooperates with a corresponding stud 14 of a dog 13, which dogs are arranged in an appropriate manner on frame 1 (see FIG. 9). The dogs may be, for example, pierced and seated on a central shaft, which is fixedly secured on frame 1. If, due to increasing pressure on the blocking lever, the pressure point between the studs 14, 15 is exceeded, the stud 14 of the dog 13 will elastically recede before the stud 15 of the blocking lever 3, so that the stud 15 of the blocking lever 3 becomes engaged below the stud of the dog 13. In the place of the stud 14, a spring 16 which is attached to the dog 13 by means of screws or the like can be used or the dog 13 can be constructed of plastic whereby an elastic lug 17 may be cast-molded directly onto the dog 13. Instead of stud 14, a bolt 18 stressed by a spring 19, which spring 19 is secured, for example, with screws to the dog 13 can be used (see FIGS. 10a, 10b and 10c). The frame 1 is provided on both sides with a guide profile 25 (FIG. 3) in which a clamp block 27 seated on a bolt 26 provided with a coil 31 is disposed. This clamp block is provided with a stud 29 which can engage the guide profile 25. With guide profile 25 and the clamp blocks 27 the device of the invention can be secured in the understructure 30 of a typewriter by tightening the nuts 32.

In the modified embodiment of the invention illustrated in FIGS. 11 and 12, spacers 34 are arranged on axis 5 between blocking levers 3, which are so bulky that one blocking lever 3 is in opposite relation to each key lever 33. The spacers 34 are prevented from turning by a profile bar 35.

A guide bar 2 is mounted on axis 11 which can be turned into three different position A, B and C by means of a lever 38. The guide bar 2 with guide edges 2c is locked in the positions A, B and C by a spring-loaded ball 39 which engages recesses 40 in a frame wall 41.

The blocking lever 3 has inverted edges 3a, 3b and 3c and the blocking levers 3 and the spacers 34 are held in the axial direction under pressure by spring 42, so that the blocking levers 3 are held in any position desired by the rolling friction occurring on their lateral faces. The device can also be secured to typewriters of any known make with the aid of clips 43.

This embodiment operates in the following manner: When guide bar 2 is rotated out of the mid-position B into position A (dotted line, FIG. 12), the blocking levers 3 are swung into position A₁, closely below the unblocked key lever 33. In this position of the blocking lever 3, all of the keys 33 are blocked since upon being depressed they abut against the back of the blocking levers 3. When the guide bar 2 is returned to the mid-position B, the blocking levers 3 retain position A₁ as they are pressed together by the spring 42 in the axial direction, thereby

causing frictional forces between their lateral faces and the lateral faces of the spacers 34 which are not swingable. These friction forces prevent the no longer supported blocking levers 3 from falling back.

Now, the desired keys are struck, and thus the corresponding blocking levers 3 held in their position by friction only are swung downwardly into position B₁ by the bottom edge of the key lever 33. It is not possible to drag any adjacent blocking lever 3 as these are separated by the nonrotatable spacers 34. The guide bar 2 is then further swung about the axis 11 into position C thus blocking the blocking levers 3 in position A₁ as well as those in position B₁. More keys cannot be struck, since the blocking levers brace themselves with their opposite edge 3c on the guide bar 2 and thereby block the corresponding key lever 33. The blocking levers 3, depressed previously on the striking of the keys, can also bear against the guide bar 2. Should any other keys be blocked, only the guide bar 2 will be swung first into position A, then into position B and then the desired keys are struck and finally guide bar 2 is returned to position C.

Various other modifications of the apparatus of the invention may be made without departing from the spirit or scope thereof and it is to be understood that the invention is to be limited only as defined in the appended claims.

We claim:

1. An apparatus mountable on a key operated machine for selectively blocking actuation of at least one key of said key operated machine when mounted therein which comprises a control means pivotally mounted on a horizontal axis, said control means being positioned under the key levers and being provided with bearing means, said control means being mounted in a frame, said frame having means for attachment to said key operated machine, said control means being pivotable between a plurality of positions and being provided with means to fix it in a desired position, a plurality of individual blocking means provided with bearing means and being pivotably mounted on a horizontal axis, said blocking means being located between said key levers and said control means such that an actuated key lever can contact one of said blocking means and move said blocking means into engagement with said control means in at least one of the positions of said control means, a dog element secured to said frame and cooperating with said blocking means to serve as a limit for the movement of said blocking means, at least one of said blocking means and said dog element being flexible to the extent that upon the exertion of an excessive pressure between said blocking means and said dog element, at least one of said blocking means and said dog element will yield to relieve said excessive pressure without breaking.

2. The apparatus of claim 1 wherein the means for fixing the position of the control means is a spring actuated ball (39) which engages recesses (40) of a stationary side wall (41).

3. The apparatus of claim 1 wherein the individual blocking means are made of elastic plastic materials.

4. The apparatus of claim 1 wherein the individual blocking means are comprised of two pieces elastically connected by a spring.

5. The apparatus of claim 1 wherein the control means is control bar (2) provided with a control edge (21), an attenuation (22) and groove (23) and the blocking means (3) are provided with blunt stud (24) on which is seated groove (23) in the blocked position and attenuation (22) forces incompletely depressed blocking means (3) back into blocked position on continued turning of control bar (2) and control edge (21) cooperates with lug (20) of blocking means (3).

6. The apparatus of claim 1 wherein the axis of the control means is supported at either end and at intermediate points by supports in bridging spaces.

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7. The apparatus of claim 1 wherein the position of blocking means (3) fixed in recesses (4) in frame (1) is effected with spring means (10) which forces the blocking means (3) against the side of recess (4).

8. The apparatus of claim 1 wherein the means to fix the blocking means is comprised of spacers (34) arranged on axis (5) between blocking means (3), profile bar (35) preventing the rotation of the spacers (34) and spring means (42) mounted on axis (5) restraining the blocking means (3) in an axial direction.

9. The apparatus of claim 1 wherein the support means for the blocking means is arranged at either end and at intermediate points by metal sheets seated in recesses in the frame.

10. The apparatus of claim 1 wherein the blocking means (3) is provided with a stud (15) which cooperates with stud (14) of elastic dog means (13) secured to frame (1).

11. The apparatus of claim 1 wherein the dog means (13) is provided with a spring dog (16).

12. The apparatus of claim 1 wherein the dog means (13) is one piece provided with an elastic lug (17).

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13. The apparatus of claim 12 wherein the dog means is made of plastic.

14. The apparatus of claim 1 wherein the dog means (13) is provided with a bolt (18) stressed by spring (19).

15. The apparatus of claim 1 wherein the frame (1) is provided with a guide profile at either end on which a clamp block (27) is mounted on bolt (26) and on which is provided a stud (29) for engaging recess (28).

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