

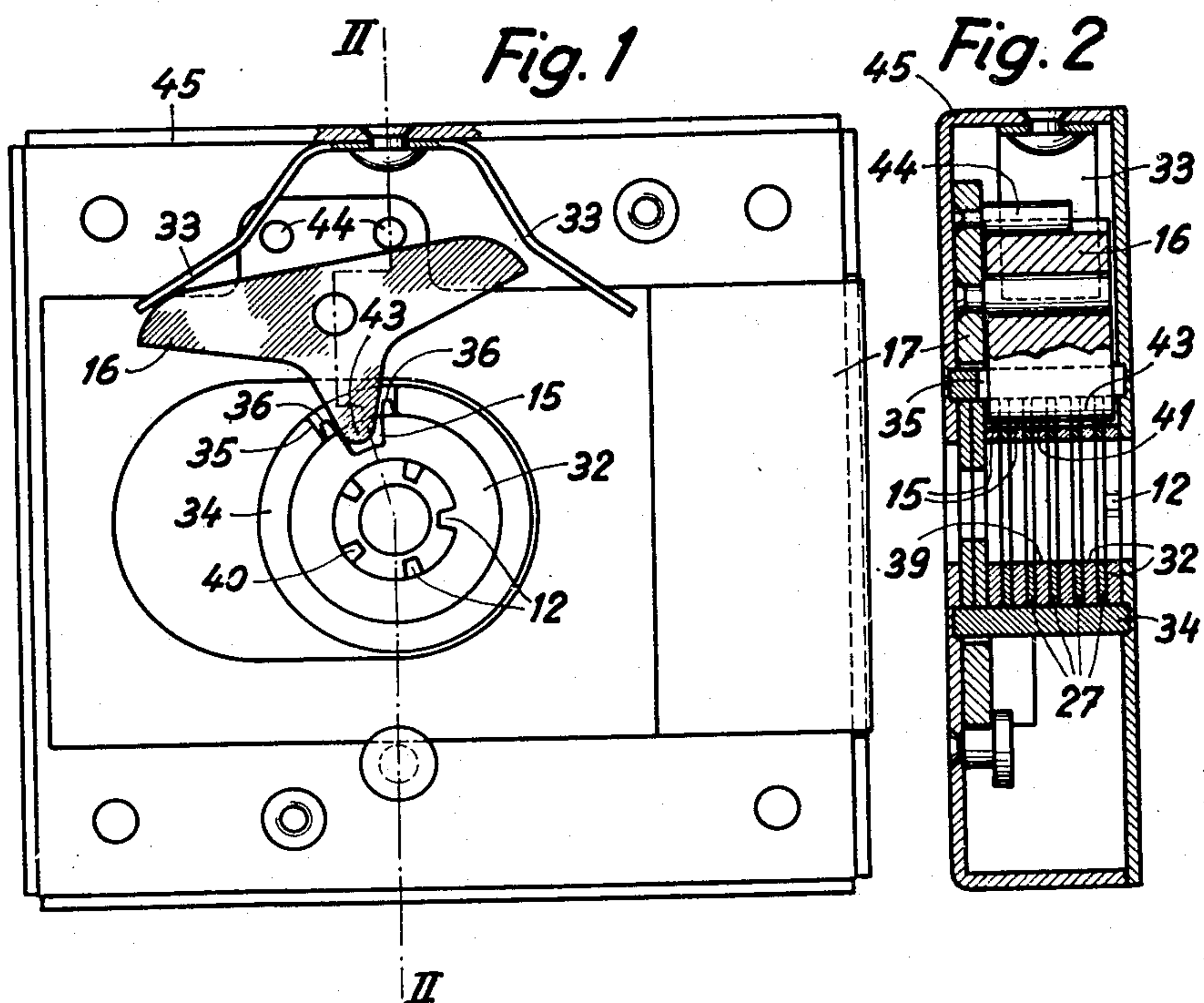
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SAFETY LOCK

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SAFETY LOCK

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5 Claims. (Cl. 70—134)

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The invention relates to safety locks comprising a rotatable safety body and a lock member operable by said body.

This application is a division of my pending Patent application Ser. No. 80,240, filed March 8, 1949, now abandoned.

In the lock embodiment shown in my application Ser. No. 80,340 a lever 16 pivotally mounted on the lock case operates with the rotatable safety body on the one hand, and with the lock member 17 on the other hand. The closing movement of the lock member 17 is caused by the lever 16 against the constraint of a spring 33. This spring achieves the return movement of the lock member from the closing position to the opening position, as soon as the lever 16 is released by the rotary safety body. Locks of this kind show the disadvantage that the spring is unable to withdraw the lock member if for any reason a lateral pressure is exerted on the lock member so that the friction occurring between the lock member and its guide in the lock case cannot be overcome by the spring.

Object of my invention is to remedy this inconvenience.

Another object of my invention is to provide a control member cooperating with the safety body and being tiltably mounted on the lock member, the tiltable control member, in its end positions, bearing against stops of the lock member, whereby it is rigidly connected with the lock member to open and close the latter on rotation of the safety body.

Another object of my invention is to provide springy means alternately acting upon the tiltable control member to bring the latter into engagement with said rotatable safety body.

A further feature of my invention is that the springy parts alternately press the tiltable control member against rotatable tumblers provided with cut-outs, in order to bring the tiltable control member at first into engagement with a groove as soon as the latter has been formed by the cut-outs having been brought into alignment with one another by rotation of the key, so that afterwards the tiltable control member is pressed against one of the stops of the lock member.

Other objects and features will be apparent as the following description proceeds, reference being had to the accompanying drawing, illustrating, by way of example, one embodiment of my invention, and wherein

Fig. 1 is a top view of the interior of the lock casing, and

Fig. 2 is a section along the line II—II of Fig. 1.

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The lock member or bolt 17 and the cylinder 34 are mounted in the lock case 45. The lock member 17 is to be moved to and fro. The cylinder 34, which is rotatable, comprises in its interior a certain number of tumblers 32 with cut-outs 15 and cams 12 which are to cooperate with corresponding cams of a key not shown. Adjacent tumblers 32 rotatable in the cylinder 34 are separated from each other by intermediate washers 27 which, by noses 36 engaging a cut-out 35 of the cylinder 34, are fastened against rotation relative to the cylinder 34. About in the middle of the length of the cylinder 34 there is a dummy tumbler 39 fastened against rotation relative to the cylinder 34 in the same manner as the intermediate washers 27. This dummy tumbler 39 has a cam 40. The intermediate layer and the dummy tumbler 39 comprise cut-outs 41 having the same shape as the cut-outs 15 of the tumblers 32. While the cut-outs 41 of the intermediate washers and of the dummy tumbler are continuously aligned with regard to one another, i. e. lie continuously in the same sector of the cylinder 34, the tumblers 32, on the other hand, may be rotated by means of the key not shown from a position in which the cut-outs 15 of the tumblers are not in alignment with the cut-outs 41 of the intermediate washers and of the dummy tumbler to a position in which all the cut-outs 15, 41 are aligned to form a groove. Fig. 1 shows how an arm 43 of a tilting control member 16 pivotally mounted on the lock bolt 17 engages this groove. A spring having two arms 33 is fixed to the lock case 45 while the lock bolt 17 carries two stops 44. In Fig. 1 the tilting member 16 is under the constraint of the left-hand spring-arm 33 and is pressed onto the right-hand stop 44. Now, if the rotary safety body comprising the tumblers 32 is turned by the key not shown out of the position of Fig. 1 in a clockwise direction, the left-hand side edges of the cutouts 15 press onto the arm 43 of the tilting member 16 and due to the fact that the latter bears against the right-hand stop 44 so that a rigid connection exists between the tilting member 16 and the lock bolt 17, the lock bolt, together with the tilting member 16 is moved towards the right into closing position, while the arm 43 finally leaves the groove and locks the bolt 17 against return movement owing to its being supported on the circumference of the tumblers 32. If it be desired to unlock the lock again by turning the key in the anticlockwise direction of Fig. 1, the right-hand arm 33 of the spring turns the tilting member 16 in the clockwise direction at the moment when the cut-

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outs 15 come into reach of the arm 43, so that the latter enters the groove and the tilting member 16 finally bears against the left-hand stop 44. Now, a rigid connection between the tilting member 16 and the lock bolt 17 exists again, allowing the latter to be moved towards the left into the position shown in Fig. 1. Now, on continuing the opening movement of the key, the tumblers 32 are turned relatively to the intermediate washers 27 and to the dummy tumbler 39, the arm 43 leaves the cut-outs and the above-mentioned groove no longer exists. Now, the arm 43 of the tilting member 16, under the constraint of the left-hand spring arm 33 bears against the circumference of the tumblers 32. If it be now tried to close the lock by means of a key not set to the combination of the lock, in that this key is rotated in the clockwise direction of Fig. 1, there is no possibility of all the cut-outs 15 of the tumblers 32 being aligned with the cut-outs 41 of the washers 27 and of the dummy tumbler 39. Therefore, the tilting member 16 cannot be operated by the safety body comprising the tumblers. However, if the tumblers 32 are turned by the correctly set key, their cut-outs 15 are aligned with the cut-outs 41 of the washers 27 and of the dummy tumbler 39. As soon as this alignment occurs, the left-hand spring arm 33 makes the arm 43 of the tilting member 16 enter the now existing groove and the position shown in Fig. 1 is again reached. Similar conditions occur on opening the lock.

From the above it follows that both the closing movement and the opening movement of the lock member 17 are positively executed by the rotary safety body owing to the rigid connection alternately established between one of the stops 44 and the tilting member 16. Therefore, operation of the lock member 17 by means of a spring is omitted. The springy parts 33 serve merely the purpose of bringing the tilting member 16 into engagement with the tumblers.

While I have described and illustrated one embodiment of my invention, I do not wish to unnecessarily limit the scope of my invention, but reserve the right to make such modifications and rearrangements of the several parts as may come within the purview of the accompanying claims: What I claim is:

1. In a safety lock, in combination, a lock case; a lock member shiftably mounted in said lock case; a control member pivotally mounted on said lock member; stop means fixedly secured to said lock member and adapted to block said control member in two angularly spaced positions of the same against movement relative to said lock member in one direction; and rotatable means adapted to be rotated by a proper key and during such rotation engaging and pivoting said control member into one of said positions whereupon further rotation of said rotatable means in the same direction causes shifting of said lock member.

2. In a safety lock, in combination, a lock case; a lock member shiftably mounted in said lock case; a control member pivotally mounted on said lock member; stop means fixedly secured to said lock member and adapted to block said control member in two angularly spaced positions of the same against movement relative to said lock member in one direction; rotatable means adapted to be rotated by a proper key and during such rotation engaging and pivoting said control member into one of said positions whereupon further rotation of said rotatable means in the

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same direction causes shifting of said lock member; and spring means urging said control member to pivot into engagement with said rotatable means.

3. In a safety lock, in combination, a lock case; a lock member shiftably mounted on said lock case; a plurality of parallel flat tumblers mounted rotatably about a common axis in said lock case and having notches in the periphery thereof adapted to be aligned in the direction of the axis of rotation of said tumblers when said tumblers are rotated by proper key; a spring loaded tiltable control member pivotally mounted on said lock member and having a projecting edge portion pressing against the periphery of said tumblers and extending in the direction of said axis of rotation thereof so as to engage a groove formed by aligned notches in said tumblers; stop means fixedly secured to said lock member and adapted to block said control member in two angularly spaced positions thereof against movement relative to said lock member in one direction so that further rotation of said tumblers after said control member engages said stop means effects shifting of said control member.

4. In a safety lock, in combination, a lock case; a lock member shiftably mounted on said lock case; a cylindrical hollow member rotatably mounted in said lock case and being formed with a cut-out opening in the wall thereof; tumbler discs rotatably mounted in said cylindrical hollow member coaxially therewith, each of said tumbler discs having a notch in the periphery thereof adapted to register with said cut-out opening in the wall of said cylindrical hollow member when rotated upon insertion of a proper key; a tiltable control member pivotally mounted on said lock member and having a projection projecting into said cut-out opening in said cylindrical member, and adapted to project into said notches when the same are registering with said cut-out opening; and stop means fixedly secured to said lock member and blocking said tiltable control member in two angularly spaced positions thereof against rotating relative to said locking member in one direction so that rotation of said tumbler discs effects pivoting of said control member to one of said positions whereupon further rotation of said tumbler discs effects shifting of said lock member.

5. In a safety lock, in combination, a lock case; a lock member shiftably mounted on said lock case; a cylindrical hollow member rotatably mounted in said lock case and being formed with a cut-out opening in the wall thereof; tumbler discs rotatably mounted in said cylindrical hollow member coaxially therewith, each of said tumbler discs having a notch in the periphery thereof adapted to register with said cut-out opening in the wall of said cylindrical hollow member when rotated upon insertion of a proper key; a tiltable control member pivotally mounted on said lock member and having a projection projecting into said cut-out opening in said cylindrical member, and adapted to project into said notches when the same are registering with said cut-out opening; stop means fixedly secured to said lock member and blocking said tiltable control member in two angularly spaced positions thereof against rotating relative to said locking member in one direction so that rotation of said tumbler discs effects pivoting of said control member to one of said positions whereupon further rotation of said tumbler discs effects shifting of said lock member; and spring means urging said control

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member to engage the periphery of said tumbler discs with said projection so as to engage with said projection a groove formed by said notches when aligned and registering with said cut-out opening.

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