Jan. 2, 1968 T. J. FINNEGAN 3,360,880

SAFETY DEVICE INSERTABLE IN THE CHAMBER OF A FIREARM

Filed April 21, 1966 3 Sheets-Sheet 1

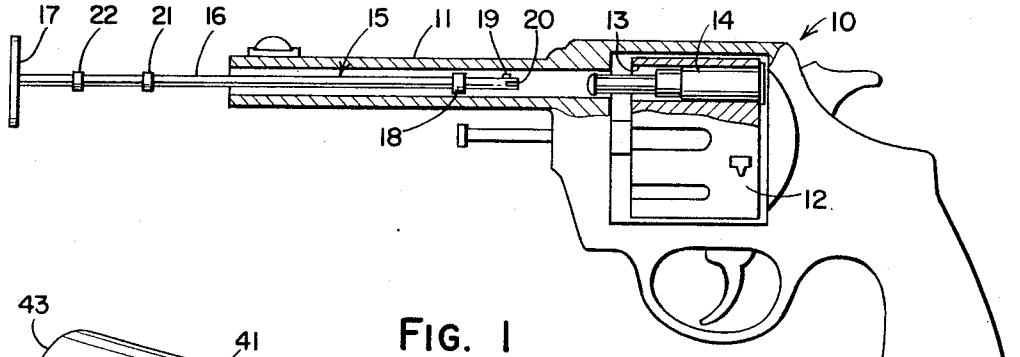

FIG. 1

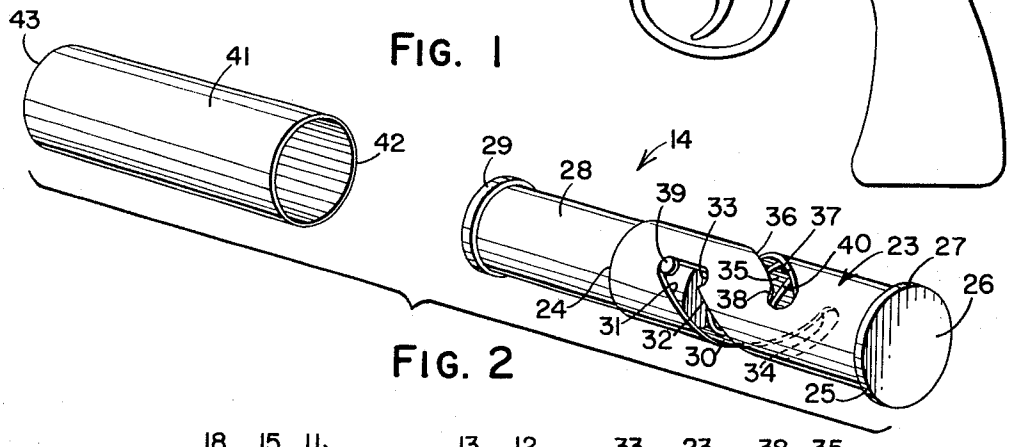

FIG. 2

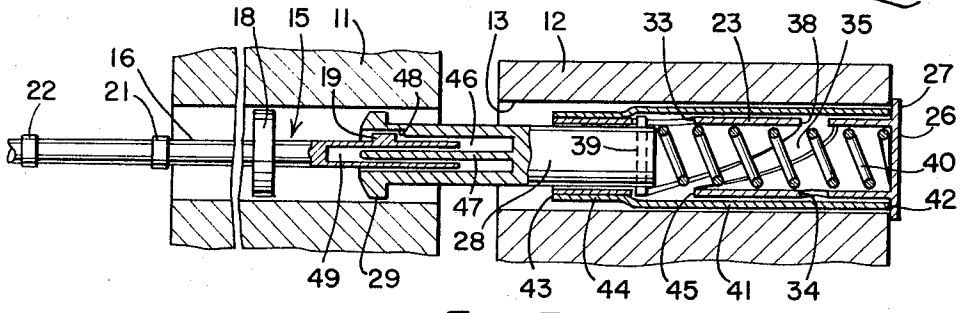

FIG. 3

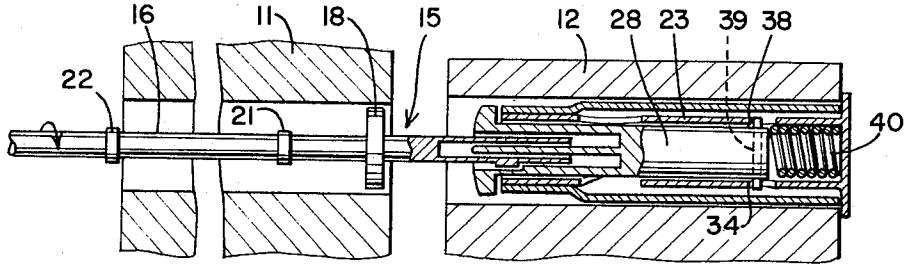

FIG. 4

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SAFETY DEVICE INSERTABLE IN THE CHAMBER OF A FIREARM

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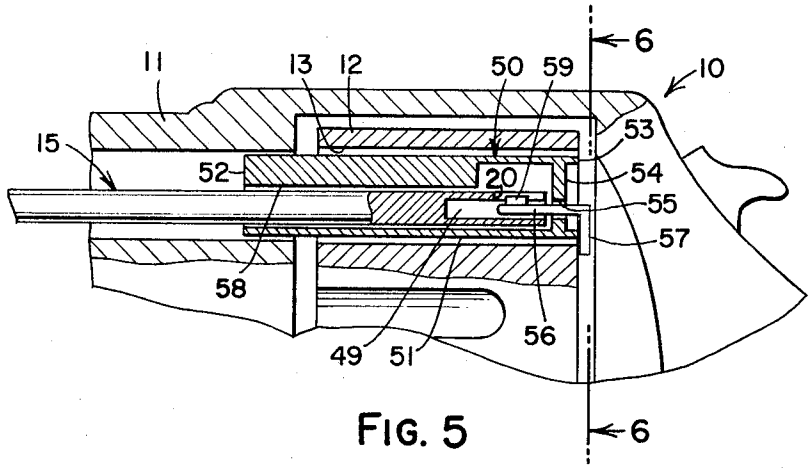

FIG. 5

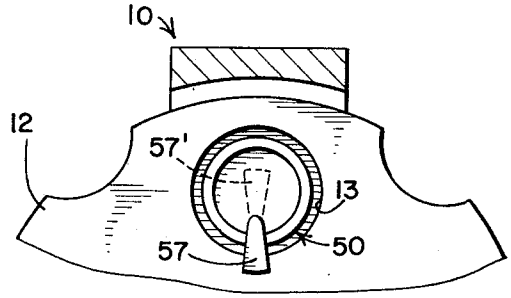

FIG. 6

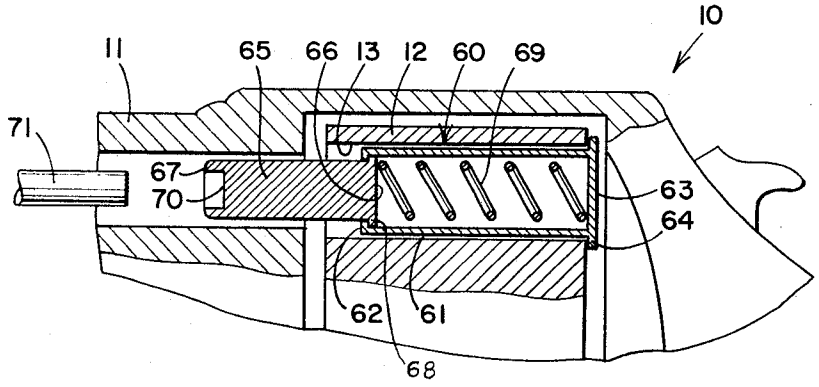

FIG. 7

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SAFETY DEVICE INSERTABLE IN THE CHAMBER OF A FIREARM

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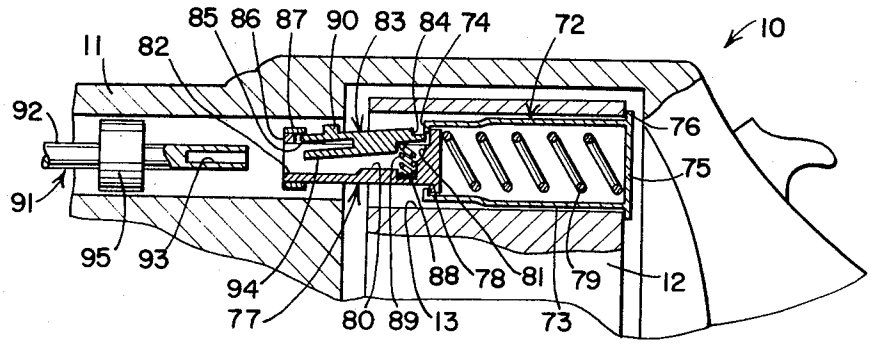

FIG. 8

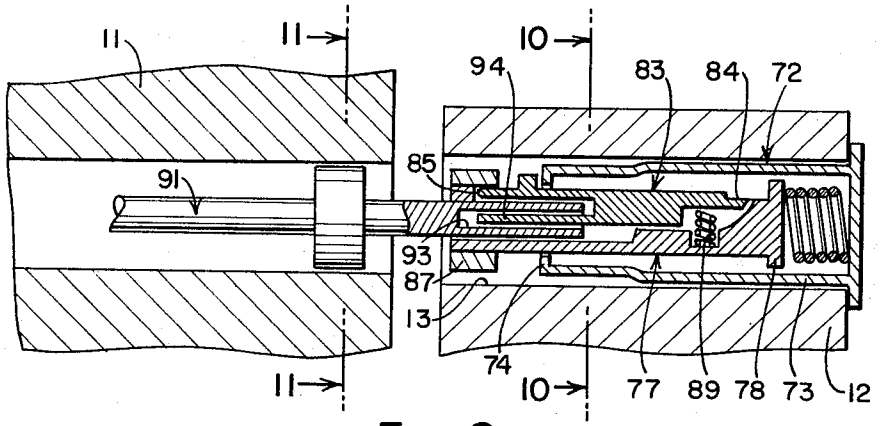

FIG. 9

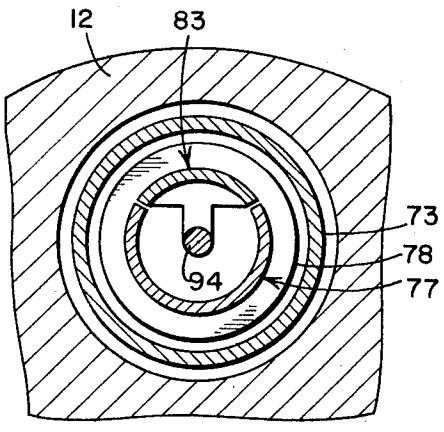

FIG. 10

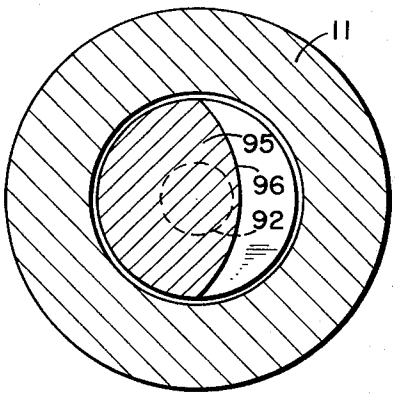

FIG. 11

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SAFETY DEVICE INSERTABLE IN THE CHAMBER OF A FIREARM

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Filed Apr. 21, 1966, Ser. No. 544,211
5 Claims. (Cl. 42—66)

ABSTRACT OF THE DISCLOSURE

This disclosure relates to a casing and plunger structure in the shape of a cartridge insertable within the chamber of a revolver such that when the particular opening in the chamber is aligned with the revolver barrel, the plunger will extend from the cartridge-like casing into the barrel and thus lock the gun. The gun can only be unlocked for use by inserting an instrument through the barrel of the revolver to key into the plunger and return it within the casing such as to be out of interference with the gun barrel.

This invention relates generally to safety devices for firearms and more particularly to an improved safety device for use in the firing chamber of rifles, pistols, and comparable firearms.

Many safety devices for firearms have been developed which include plugs or locks of various configurations adapted to be installed within the barrel or chamber of the firearm to prevent loading a round of ammunition into the firearm. Many of these devices include sleeves which are radially expansible by means of a tool to tightly engage the bore of the barrel or chamber. With such devices, there is the possibility of scratching or marring the smoothly machined surfaces of the chamber or barrel with the result that the firing accuracy of the firearm is impaired.

Other types of safety devices for firearms are those which include a cartridge or thimble secured to a rod, the cartridge being adapted to fit within the firing chamber with the rod extending through the barrel and locked thereto by a locking mechanism. An example of such a device is shown in the U.S. patent to Parker No. 2,327,334, wherein the locking device is shown installed in a revolver. While the installed locking device prevents loading and rotation of the cylinder, it is apparent that the revolver must be of the "break action" or pivot type since the thimble and rod are inserted and removed through the rear of the cylinder. In other words, Parker's locking device is not designed for use in rigid frame revolvers in which the cylinder is mounted for lateral pivoting with respect to the revolver frame.

With the foregoing in mind, it is accordingly a primary object of this invention to provide an improved safety device for firearms wherein the safety device is designed to provide positive locking against accidental or unauthorized use of the firearm.

Another object of this invention is to provide an improved safety device adapted for use in all types of revolvers and in a wide variety of automatics and rifles.

Another object is to provide an improved safety device capable of use without the necessity of being expanded or wedged into operative position to the end that no damage will result to the firearm.

Yet another object is to provide an improved safety device in several embodiments characterized by a simple and rugged construction.

Briefly, these and many other objects and advantages of this invention are attained in several illustrative embodiments by providing a locking device which is movable into and out of a firing chamber of a firearm. The

locking device includes locking means for selectively holding the device in a first position in which the device extends into the barrel of the firearm. Accordingly, when installed in revolvers, for example, the cylinder defining the firing chamber is prevented from rotating or moving laterally with respect to the barrel, thereby effectively preventing loading and firing of the firearm.

In accordance with a further feature of the invention, the locking means is designed to co-function with a key means insertable through the barrel to actuate the locking means, whereby the locking device may be moved from the first position, thus enabling the firearm to be operated in the normal manner.

A better understanding of the invention will now be had be referring to various embodiments thereof as illustrated in the accompanying drawings, in which:

FIGURE 1 is a side elevational view, partly in cross section, of a conventional revolver with the novel locking device in one embodiment positioned therein and further showing a key means partially inserted into the barrel of the revolver;

FIGURE 2 is an exploded perspective view of the locking device of FIGURE 1;

FIGURE 3 is a fragmentary sectional view of the locking device of FIGURE 1 in a first extended position;

FIGURE 4 is a fragmentary sectional view of the locking device of FIGURE 1 in a retracted position;

FIGURE 5 is a fragmentary sectional view of a locking device and key means in accordance with another embodiment of the invention;

FIGURE 6 is a fragmentary sectional view taken in the direction of arrows 6—6 of FIGURE 5;

FIGURE 7 is a fragmentary sectional view of a locking device and key means in accordance with still another embodiment of the invention;

FIGURE 8 is a fragmentary sectional view of a locking device and key means in accordance with another embodiment of the invention illustrating the locking device in a first or locked position;

FIGURE 9 is a fragmentary sectional view of the locking device and key means of FIGURE 8 illustrating the locking device in a second or unlocked position;

FIGURE 10 is a sectional view taken in the direction of arrows 10—10 of FIGURE 9; and,

FIGURE 11 is a sectional view taken in the direction of arrows 11—11 of FIGURE 9.

Referring first to FIGURE 1, there is shown a conventional revolver having a frame 10, a barrel 11, and a cylinder 12. In the conventional manner, the cylinder 12 includes a plurality of chambers, one of which is shown at 13 in alignment with the barrel 11.

In accordance with one embodiment of the invention, a locking device 14 is shown positioned within the firing chamber 13 and extending outwardly within the barrel 11. The locking device 14 is inserted into the chamber 13 when the cylinder 12 is laterally displaced from the revolver frame 10 in the position in which cartridges would normally be loaded into the chambers of the cylinder. It will be apparent that when the locking device 14 is positioned as shown, the cylinder 12 is prevented from rotating with respect to the barrel, thus effectively preventing loading and normal operation of the revolver.

In order to move the locking device 14 to a position in which the revolver is operable, a key 15 is provided and, as shown, includes an elongated key rod 16 having a handle 17. Secured to the rod 16 is a cylindrical guide member 18 of diameter slightly less than the inner diameter of the barrel 11 to thus serve as a means for guiding and centering the rod 16 with respect to the barrel 11 and the locking device 14.

The end of the rod 16 opposite the handle 17 includes a radially projecting flange 19 and a circumferentially

spaced open-ended slot 20 for engaging the locking device 14 in a manner to be subsequently described.

The rod 16 may also include a pair of spaced index rings 21 and 22 for giving a visual indication of the position of the locking device 14 when the key 15 is engaged therewith as will become clearer as the description proceeds.

Referring now to FIGURE 2, it will be seen that the locking device 14 includes a cylindrical casing 23 having an open outer end 24 and an inner end 25 closed by means of a circular end plate 26. As shown, the end plate 26 includes an annular rim 27 of preferably greater diameter than that of the casing 23 and diameter of the chamber 13.

Slidably positioned within the outer end 24 of the casing 23 is a generally cylindrical plunger 28, which, as shown, terminates at its outer end in an increased diameter rim 29.

The casing 23 includes a first helical slot 30 being defined by an outer edge 31 and an inner edge 32. The helical slot 30 terminates at its outer end in an outer locking seat 33 and at its inner end in an inner locking seat 34. In a similar manner, the casing 23 further includes a second helical slot 35 being defined by an outer edge 36 and an inner edge 37. As shown, the second helical slot 35 terminates at its inner end in an inner locking seat 38. The second helical slot 35 is symmetrical with the first helical slot 30 and both slots are disposed so as to be diametrically opposite each other throughout their respective longitudinal extents. Thus, the inner locking seats 34 and 38, respectively, are positioned so as to be diametrically opposite each other.

The plunger 28 is locked in engagement with the casing 23 by means of a pin 39 extending transversely therethrough with its ends projecting outwardly into the diametrically opposed helical slots 30 and 35, respectively. A coiled spring 40 is positioned within the casing 23 in engagement with the plunger 28 to normally bias the plunger outwardly into the extended position shown. The foregoing arrangement of the pin 39 cooperating with the helical slots, along with the spring 40, constitutes a locking means whereby the position or axial extent of the locking device 14 may be selected, as will become clearer as the description proceeds.

Referring still to FIGURE 2, the locking device 14 further includes a tubular sleeve 41 having inner and outer ends 42 and 43, respectively. The sleeve 41 is adapted to be received over the casing 23 with the inner end 42 in engagement with the rim 27 and is designed of such length that the outer end 43 will be positioned proximate the outer end 24 of the casing 23.

Referring now to FIGURE 3, it will be seen that the sleeve 41 is secured to the casing 23 by means of a swaged fit shown at 44. It will further be seen that the second helical slot 35 terminates at its outer end in an outer locking seat 45 which is defined in the casing 23 at a position diametrically opposite the first mentioned outer locking seat 33. As shown, the pin 39 extends radially outwardly into the helical slots 30 and 35 such that inward longitudinal movement or retraction of the plunger 28 against the spring 40 will be stopped by means of the engagement of the ends of the pin 39 with the outer locking seats 33 and 45. It will thus be apparent that the plunger 28 cannot be fully retracted within the casing 23 to clear the barrel 11 unless the plunger is rotated as well as moved axially to the right. Accordingly, the plunger 28 is effectively locked in the extended position shown in which the plunger extends into the barrel 11 to thus prevent lateral movement or rotation of the cylinder 12 with respect to the barrel 11.

In order to engage and actuate the locking device to a position in which the cylinder 12 may be rotated or moved laterally, the plunger 28 is provided with means for receiving the key 15 by which the plunger 28 may be axially moved and rotated to a retracted position within

the casing 23 as shown in FIGURE 4. Towards this end, the plunger 28 includes a concentric opening 46 within which a pin 47 is disposed. The plunger 28 further includes a slot 48 communicating with the opening 46. This structural arrangement provides a socket means for receiving the key 15 in a manner to be now described.

As shown, an end of the rod 16 of the key 15 includes an opening 49 for receiving the pin 47 of the plunger 28. The tab 19 is adapted to be received within the slot 48 such that rotation of the rod 16 is imparted to the plunger 28. It will thus be apparent that the plunger 28 may be axially moved and rotated by the key 15 to the retracted position shown in FIGURE 4 in which the ends of the pin 39 will be engaged by the inner locking seats 34 and 38, respectively, to thus hold the plunger 28 in the retracted position clear of the barrel 11. Upon withdrawal of the key 15 through the barrel 11, it is evident in FIGURE 4 that the cylinder 12 may be moved laterally or rotated with respect to the barrel 11 whereupon the locking device 14 may be withdrawn rearwardly from the cylinder 12.

Referring still to FIGURES 3 and 4, it will be seen that the key 15 is provided with means for giving a visual indication of the extended and retracted positions of the locking device. Towards this end, it will be noted that when the key 15 is engaged with the plunger 28 in its extended position shown in FIGURE 3, the index ring 21 is positioned proximate the end of the barrel 11. Thus, both index rings 21 and 22 will be visible. Upon moving the key 15 to lock the plunger 28 in the retracted position shown in FIGURE 4, it is apparent that the index rings will be so positioned with respect to the end of the barrel that only the ring 22 will be visible. Thus, the operator is made aware that the plunger is in its retracted and locked position whereupon the key may be withdrawn from the barrel.

From the foregoing description of the embodiment of FIGURES 1–4, it will be apparent that the locking device 14 is operable only by means of a key or tool having an engaging portion designed to have a complementary fit within the plunger 28. Thus, when the locking device is in the extended position shown in FIGURES 1 and 3, axial movement imparted to the plunger will not be sufficient to retract the plunger from its position extending into the barrel, such movement being restrained by the engagement of the ends of the pin 39 in the locking seats 33 and 45. In a similar manner, the locking device, when in the retracted position shown in FIGURE 4, may be moved to extend into the barrel 11 only by first engaging the plunger with the key 15 to rotate the plunger out of its locked position from which the compressed spring 40 acts to move it axially to the left as it rotates outwardly from within the casing 23.

Referring now to FIGURES 5 and 6, another embodiment of a locking device is indicated generally at 50 positioned within the revolver of FIGURE 1. The locking device 50 includes a generally cylindrical casing 51 terminating in outer and inner ends 52 and 53, respectively. The locking device 50 is adapted to be inserted into the chamber 13 through the barrel 11 and is designed of such length that the outer end 52 extends into the barrel 11 when the inner end 53 is positioned proximate to the rear end of the cylinder 12 as shown. Thus, the cylinder 12 is prevented from being moved laterally or rotated with respect to the barrel.

In order to provide a means for locking the locking device 50 in the position shown, the cylindrical casing 51 is provided with a circular end wall 54 proximate to the inner end 53. The end wall 54 includes an eccentrically positioned opening 55 through which is rotatably received a shaft 56. Secured to an end of the shaft 56 is a locking flange 57 which extends radially a sufficient distance to overlap and thus engage the rear end of the cylinder 12. It will be seen that the locking device 50 cannot be removed axially through the barrel 11 when the

locking flange 57 is in the position shown. It will, of course, be apparent that the locking device is prevented from moving a significant distance to the right because of the proximity of that portion of the revolver frame 10 which is disposed rearwardly of the chamber 13.

The locking device 50 of FIGURE 5 is designed to be operated by the key 15 shown and described with reference to FIGURES 1 to 4 with the exception that the guide member 18 must first be removed from the rod 16. Accordingly, the key 15 is inserted into the barrel 11 and is received in the casing 51 through an eccentrically positioned opening 58 which registers with the shaft 56. The openings 58, is, of course, designed of such diameter so as to accommodate the end of the rod 16 including the tab 19, which itself performs no function in the operation of the locking device 50 of FIGURES 5 and 6.

Upon insertion of the rod 16 into the opening 58, it will be seen that the opening 49 receives the shaft 56. In order to rotate the shaft 56 and locking flange 57, a tab 59 is provided on the shaft 56 and is received in the slot 20 provided in the end of the rod 16. It will thus be seen that rotation of the rod 16 will, in turn, rotate the locking flange 57 and, as best shown in FIGURE 6, the flange 57 may be rotated from the cylinder engaging position to the position shown in dotted lines at 57' wherein the locking device 50 is free to be removed through the barrel 11.

Referring now to FIGURE 7, another embodiment of a locking device is indicated generally at 60 positioned within the revolver of FIGURE 1. The locking device 60 includes a generally cylindrical casing 61 terminating at its outer end in an inturned annular rim 62. The other end of the casing 61 is closed by means of a circular end plate 63 having a rim 64 of greater diameter than that of the chamber 13 so that the casing 61 is received within the chamber 13 with the rim 64 in engagement with the rear end of the cylinder 12 as shown.

In order to block the cylinder 12 against lateral movement or rotation with respect to the barrel 11, the locking device 60 includes a generally cylindrical plunger 65 slidably received in the casing 61 and extending into the barrel 11. The plunger 65 terminates in inner and outer ends 66 and 67, respectively, the inner end 66 including an increased diameter rim 66 adapted to engage the inturned rim 62. A coiled spring 69 is positioned within the casing 61 so as to be interposed between the end plate 63 and the inner end 66 of the plunger 65 to thus normally bias the plunger 65 into the extended position shown.

The locking device 60 is inserted into the chamber 13 when the cylinder 12 is laterally displaced from the revolver frame 10 in the position in which bullets would normally be loaded into the chambers of the cylinder. After insertion, the plunger 65 is pushed into the casing 61 against the force of the spring 69 and then the cylinder 12 is moved laterally back to the position shown, whereupon the plunger is released and moves into the barrel 11 under the force of the spring.

In order to move the locking device 60 to a retracted position, the plunger 65 is provided with means for cofunctioning with a key means insertable through the barrel 11. Towards this end, the outer end 67 of the plunger is provided with a circular recess 70 adapted to receive an end of a key rod 71. The key rod 71 is moved axially to the right to push the plunger 65 into the casing 61 against the spring 69. When the outer end 67 of the plunger clears the end of the barrel, the cylinder 12 is moved laterally a distance sufficient to allow the outer end 67 of the plunger to contact the end of the barrel, whereupon the key rod 71 may be withdrawn from the cylinder 12 which is then moved laterally to a point where the locking device may be withdrawn rearwardly from the chamber 13.

It will be apparent that the embodiment of FIGURE 7 provides an effective locking device characterized by its simple and rugged design.

Referring now to FIGURE 8, another embodiment of a locking device is indicated generally at 72 positioned within the revolver of FIGURE 1. The locking device 72 includes a generally cylindrical casing 73 terminating at its other end in an inturned annular rim 74. The outer end of the casing 73 is closed by means of a circular end plate 75 having a rim 76 of greater diameter than that of the chamber 13 so that the casing 73 is received within the chamber with the rim 76 in engagement with the rear end of the cylinder 12 as shown.

In order to block the cylinder 12 against lateral movement or rotation with respect to the barrel 11, the locking device 72 includes a generally cylindrical plunger 77 slidably received in the casing 73 and extending into the barrel 11. The plunger 77 terminates at its inner end in an increased diameter rim 78 adapted to engage the inturned rim 74 of the casing 73. A coiled spring 79 is positioned within the casing 73 so as to be interposed between the end plate 75 and the inner end of the plunger 77 to thus normally bias the plunger into the extended position shown.

As in the case of the embodiments of FIGURES 1–4 and FIGURE 7, the locking device 72 is inserted into the chamber 13 when the cylinder 12 is laterally displaced from the revolver frame 10 in the position in which rounds of ammunition would normally be loaded into the chambers of the cylinder. After insertion, the plunger 77 is pushed into the casing 73 against the force of the spring 79 and then the cylinder 12 is moved laterally back to the position shown whereupon the plunger is released and moves into the barrel 11 under the force of the spring.

The locking device 72 includes means in addition to the spring 79 for retaining the plunger 77 in the extended position shown such that the plunger will not be inadvertently moved inwardly or to the right within the casing 73. Towards this end, the plunger 77 includes an upwardly opening slot or recess 80 having an upwardly curved end wall shown at 81. The slot or recess 80 communicates with a central bore 82 forming a substantially cylindrical key way communicating with the outer end of the plunger as shown. A pivotable latch member 83 is positioned within the slot 80 and bore or key way 82 and includes a detent portion 84 on its inner end adapted to engage the rim 74 of the casing 73 when the latch member 83 is in the locked position shown in FIGURE 8. The end of the latch member 83 opposite the inner end defining the detent portion 84 is rounded as shown at 85 for smooth pivoting movement against a flange portion 86 on the outer end of the plunger 77. The rounded pivot end 85 is retained against the flange 86 by an end ring 87 secured over the outer end of the plunger 77. It will thus be seen that when the latch member 83 is positioned as shown, the plunger 77 is accordingly prevented from being moved to the right sufficiently to enable the plunger to clear the barrel 11.

In order to maintain the latch member 83 in the locked position shown, the plunger 77 is provided with a circular recess 88 communicating with the slot 80 and receives a coiled spring 89 which bears against the under side of the latch member 83 proximate to the detent portion 84. The plunger 77 may also include an upwardly projecting flange portion 90, the function of which will become clearer in the subsequent description of the locking device 72.

In a manner similar to the above-described embodiments of the invention, the locking device 72 is adapted to be actuated or unlocked from the position shown in FIGURE 8 by means of a key or tool insertable into the barrel 11. Towards this end, a key or tool 91 is shown positioned within the barrel preparatory to engaging the plunger 77 on latch member 83. The key 91 includes an elongated rod 92 having a central bore 93 defined in its

inner end. The latch member 83 includes a guide pin 94 spaced from the rounded end 85 and positioned to be received within the bore 93 of the key 91. The key 91 may include a guide member 95 to serve as a means for guiding and centering the rod 92 with respect to the barrel 11 and locking device 72.

FIGURE 9 illustrates the engagement of the key 91 with the locking device 72 wherein the plunger 77 is retracted within the casing 73 and FIGURE 10 further illustrates the structural relationship of the plunger 77 and latch member 83 within the casing 73.

FIGURE 11 illustrates a preferred construction of the guide member 95 which has an arcuate peripheral surface 96 permitting the key 91 to be moved laterally when in the barrel 11 for purposes to become clearer in the subsequent description of the operation of the locking device 72.

In operation and referring first to FIGURE 8, it will be seen that the cylinder 12 is prevented from being rotated or moved laterally due to the extension of the plunger 77 into the barrel 11. Moreover, the coiled spring 89 acts against the latch member 83 to pivot the same upwardly wherein the detent portion engages the rim 74. Accordingly, it is apparent that the plunger 77 cannot be inadvertently moved to the right.

In order to unlock the locking device, the key 91 is moved within the barrel 11 until the pin 94 is received within the bore 93 of the key rod 92. This engagement forces the latch member 83 to pivot downwardly about the rounded end 85, thereby moving the detent portion 84 out of engagement with the rim 74 to enable the key 91 to move the plunger to the right within the casing 73 against the spring 79 until the outer end of the plunger clears the barrel as shown in FIGURE 9.

In this position, the arcuate surface 96 on the guide member 95 enables the key 91, locking device 72, and thus the cylinder 12 to be moved laterally a sufficient distance so that when the key is withdrawn, the plunger 77 will not move into the barrel 11. The lateral movement of the cylinder 12 is then continued and the locking device may be withdrawn from the chamber 13. The revolver is thus ready for normal operation.

To reinsert the locking device 72 into the revolver, the locking device is placed in the chamber 13 and the plunger is then pushed within the casing 73 upon depressing the latch member 83 by means of pushing downwardly on the projecting flange 90. The plunger 77 is manually retained in the retracted position until the cylinder 12 is moved laterally to align the chamber 13 with the barrel 11. At this point, the spring 79 acts to move the plunger outwardly into the barrel to accordingly lock the revolver.

In all of the above described embodiments of the invention, the locking device is characterized by its compact construction wherein the means for locking or holding the locking device in a position to prevent loading and firing of the revolver are disposed within the locking device itself. Thus, the need for clamps or other external members mountable on the revolver is eliminated. Moreover, the locking device of the invention is operable without the necessity of being expansible into wedged or tightly gripped engagement with the chamber or barrel of the firearm to the end that the possibility of scratching or otherwise damaging the firearm is eliminated.

It will be apparent to those skilled in the art that, although the locking device of the invention has been described for use with revolvers, the unique and compact design enables the locking device to be used in other types of firearms as well. Various such changes falling within the scope and spirit of this invention may occur to those skilled in the art. Accordingly, the locking device is not to be thought of as limited to the specific embodiments set forth.

What is claimed is:

1. A safety lock for use with a firearm including a barrel and a firing chamber, comprising: a hollow casing adapted to be received in said chamber; a plunger slidably received in said hollow casing; spring means in said casing in engagement with said plunger for biasing said plunger to a first position in which said plunger extends into said barrel, said plunger including a cross pin and said casing having a helical slot means receiving said pin whereby longitudinal movement of said plunger results in rotation of said plunger with respect to said casing; and key means adapted to co-function with said plunger for enabling release of said plunger from said first position to a retracted position free of said barrel.

2. The subject matter of claim 1, in which said helical slot means terminates at one end in an inner locking seat for receiving said pin to hold said plunger in a retracted position in opposition to the force of said spring means, whereby upon rotation of said plunger said pin is freed from its engagement with said inner locking seat thereby permitting said plunger to move longitudinally to said first position.

3. The subject matter of claim 2, in which said plunger includes socket means defined in its outer end; and said key means includes projecting means on its inner end for fitting within said socket means, whereby said plunger is movable between said first position and said retracted position in response to longitudinal and rotational movement of said key means.

4. A safety lock for use with a firearm including a barrel and a firing chamber, comprising: a hollow casing adapted to be received in said chamber; a plunger slidably received in said hollow casing; means disposed in said chamber to hold said plunger in a first position in which said plunger extends into said barrel; a latch member on said plunger pivotable from a locked position in engagement with said casing to an unlocked position out of engagement with said casing to prevent said plunger to be retracted into said casing from said first position; and key means adapted to co-function with said latch member for enabling release of said plunger from said first position to said retracted position free of said barrel.

5. The subject matter of claim 4, including spring means on said plunger in engagement with said latch member for normally biasing said latch member into said locked position.

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