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(54) **SAFETY DEVICE FOR REVOLVERS**

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(57) **ABSTRACT**

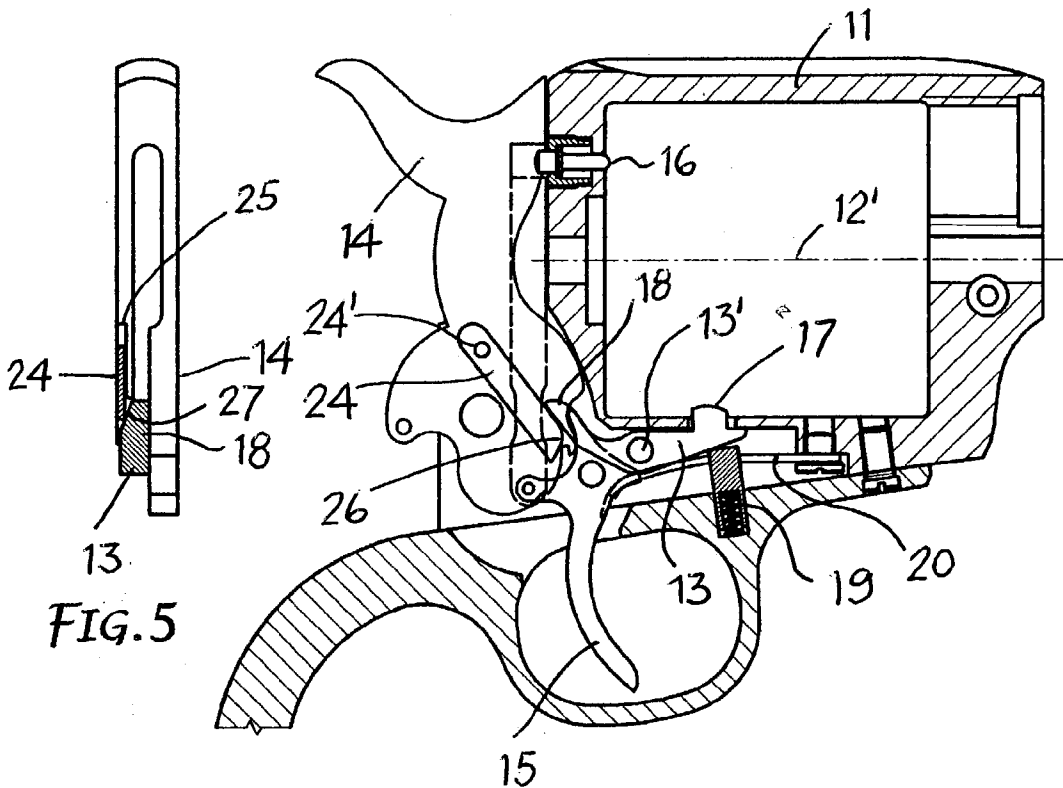
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The present invention concerns a safety device for a firearm such as a revolver, which includes a flexible, elastic element (24) fixed to the hammer and having a free end (26) interacting with the tail of a cylinder blocking lever (13) to move the latter from an active block position to an inactive release position of the cylinder consequent to a rotation of the hammer from a rest position to a cocked position passing through an intermediate, safety half-cocked position.





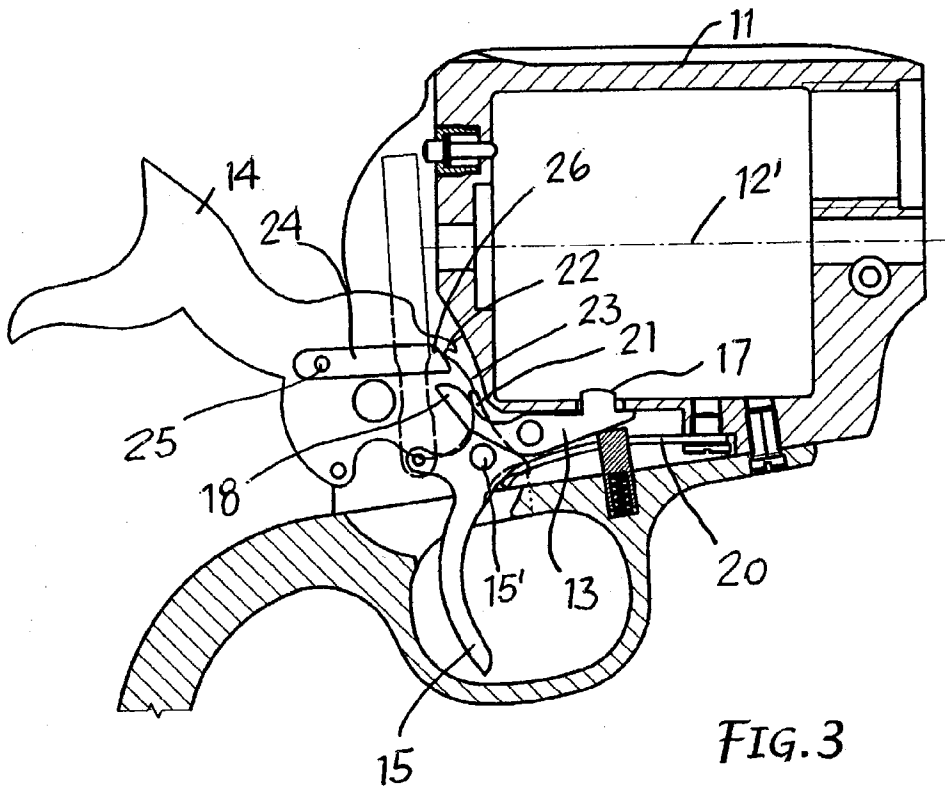


FIG. 3

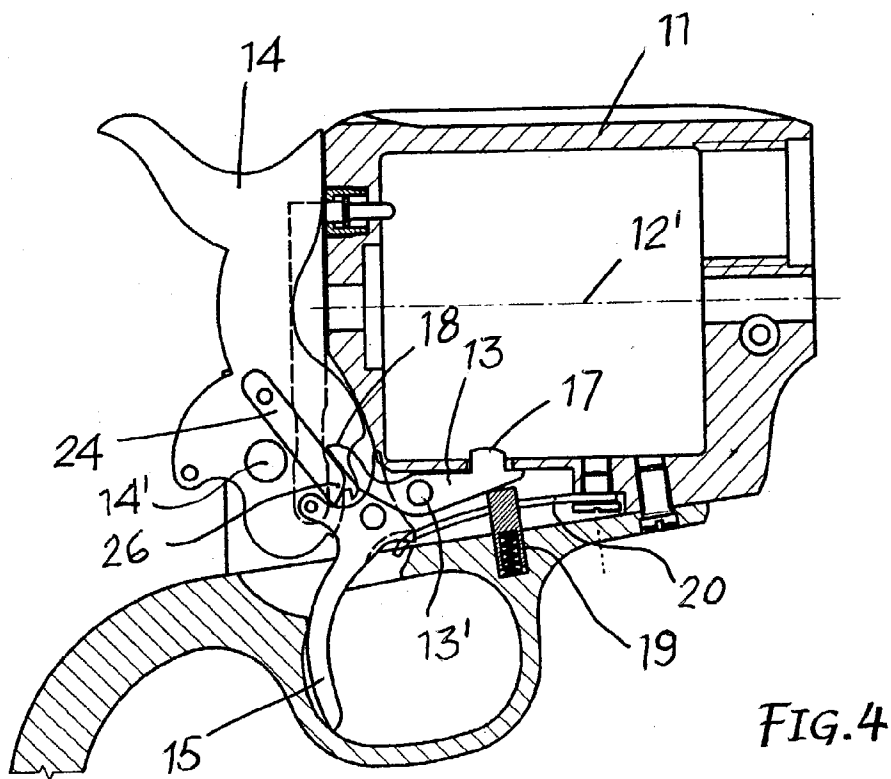


FIG. 4

## SAFETY DEVICE FOR REVOLVERS

### FIELD OF THE INVENTION

[0001] This invention concerns the firearms in general and refers in particular to a safety device for breech loading guns, such as cylinder loading handguns, that is revolvers.

### BACKGROUND OF THE INVENTION

[0002] In revolvers the ammunitions are inserted, as is known, into respective chambers provided in a revolving cylinder which is mounted on the frame of the gun. The cylinder may be rotated both mechanically, intermittently to move round, after each shot, to place a new cartridge in line with a firing pin driven by the hammer of the firearm, and freely, by hand at the moment of access to remove the fired shell cases and to load further ammunition.

[0003] The mechanical rotation of the cylinder is caused by the hammer which interacts with a cylinder blocking lever or bolt. This cylinder blocking lever, thrust by a spring, normally remains in an active interception and blocking position of the cylinder at the point in which it has stopped. But the cylinder blocking lever is moved into an idle position, that is neutral, releasing the cylinder by means of the hammer when it turns, passing through an intermediate safety or half-cocked position, between a rest position after each shot and a cocked or rearming position for the next shot.

[0004] When the hammer turns directly from the rest position to the cocked position, the cylinder blocking lever is momentarily neutralised, allowing the mechanical rotation of the cylinder (via a well known device) in order to bring a new bullet in line with the firing pin.

[0005] If on the other hand the hammer is blocked in the intermediate safety, half-cocked position, the cylinder blocking lever is held in the inactive position away from the cylinder allowing it to be revolved manually. When the hammer passes directly from the cocked position to the firing position, it does not influence the cylinder blocking lever which thus remains in the active cylinder block position.

[0006] According to a well known and widely used technique, in order for the hammer to interact with the cylinder blocking lever for the operating method described above, it has been given a particular shape which is also the cause of inconveniences. In fact, a part of the cylinder blocking lever is made flexible, whereas the hammer is equipped with a lug which comes into contact with said cylinder blocking lever. The "flexibility" of that part of the cylinder blocking lever is achieved by cutting a groove in it, so as to form a forked section with at least one of the prongs thinner and relatively flexible. This prong interacts with the lug of the hammer due to the rotations in carrying out the functions envisaged.

[0007] However, the cylinder blocking lever is difficult to make and has a weakened structure in the forked area, as the technicians working in this sector know only too well, becoming quite often a breakage point due to the stress the flexible prong is subjected to when the firearm is used.

### OBJECTS AND SUMMARY OF THE INVENTION

[0008] One object of this invention is to avoid the known technical inconveniences as regards to the safety devices for

revolvers, by eliminating the need for a forked configuration of a part of the cylinder blocking lever, therefore simplifying the manufacture of the lever itself and leaving the structure and the robustness of all its parts integral.

[0009] Another object of the invention is to provide a safety device for revolvers which is simple and efficient, using a flexible means inserted and attached on one side of the hammer, remaining within the shape of the latter, without influencing the thickness or mechanical resistance of the cylinder locking lever or bolt.

[0010] These objects and obvious advantages they bear are achieved by a safety device for revolvers wherein an attached flexible element is fixed to the hammer and having a free end interacting with a tail of a cylinder blocking lever to move this from an active block position to the inactive release position of the cylinder consequent to a turn of the hammer from the rest position to the cocked position passing through an intermediate safety, half-cocked position.

### BRIEF DESCRIPTION OF THE DRAWINGS

[0011] The invention will be described more in detail in the course of the present description and reference will be made to the indicative and not limitative drawings, in which:

[0012] **FIG. 1** shows a cross-section view of a part of a revolver with trigger and hammer released, in the safety position, ready for successive re-arming;

[0013] **FIG. 2** shows the same view as in **FIG. 1**, but with the hammer in the intermediate safety, half-cocked position for releasing the cylinder so that it can turn;

[0014] **FIG. 3** shows a similar view of the revolver with the hammer in the cocked position and cylinder blocked;

[0015] **FIG. 4** shows another similar view of the revolver, but with trigger still pulled, hammer released and cylinder blocking lever in the block position, following firing of a cartridge; and

[0016] **FIG. 5** shows a view of the hammer from the side facing in the direction of the cylinder blocking lever.

### DETAILED DESCRIPTION OF THE INVENTION

[0017] In said drawings there are represented a part of the body or frame **11** of a revolver with a cylinder **12** for the cartridges, a cylinder blocking lever or bolt **13**, a hammer **14**, a trigger **15** and a firing pin **16** controlled by the hammer.

[0018] The cylinder **12** is assembled on the frame, turning on a respective axis of rotation **12'**. It can be turned both at set intervals, operated by a mechanical device, not shown, but however well known, associated with the hammer, to bring each cartridge, one after the other, in line with the firing pin, and revolve freely, idle, when released by the cylinder blocking lever **13**.

[0019] The cylinder blocking lever **13** is the rocking type; it is assembled on an oscillating pin **13'**. On one side of said pin, the cylinder blocking lever has a blocking nose **17** made to engage recesses in the external surface of the cylinder **12**, setting the angular positions so that the cartridges are in line with the firing pin and, on the opposite end, a tail **18** turned towards the hammer **14**. A thrust spring **19** is connected to the cylinder blocking lever **13**, which acts to hold normally

the nose **17** in an active blocking position of the cylinder. The cylinder lever **13**, through its tail part **18**, is on the other hand movable by the hammer, as will be explained later, opposing the action of said spring **19**, in an inactive position for releasing the cylinder **12** to enable the latter to rotate, both mechanically for set distances, and manually freely.

[0020] The hammer **14** is assembled on the frame **11**, turning on a shaft **14'** and in contact with a pressure spring—not shown. The hammer, as is usual, moves, from a rest position after each shot, where it rests against the frame **11**—FIGS. 1-4, and a cocked position of the hammer—FIG. 3, moving through an intermediate safety, half-cocked position—FIG. 2.

[0021] In its turn the trigger **15** rotates on a respective shaft **15'** and is moved by a return spring **20**. Furthermore it has a nose **21** facing towards the hammer **14** and designed to define the safety, half-cocked intermediate position or the cocked position of the hammer. For this purpose, along its profile facing the nose **21** of the trigger **15**, the hammer **14** has at least one first tooth **22** for the intermediate safety, half-cocked position and a second tooth **23** for the hammer cocked position, at an angular distance one from the other, the former higher than the latter, both in a position concentric to the rotation shaft **14'** of the hammer itself.

[0022] A flexible element **24** designed to intercept from the side the tail **18** of the cylinder blocking lever **13** is assembled on a side of the hammer **14**, so as to move said cylinder lever **13** from the active block position to the release cylinder position—FIGS. 1 and 2.

[0023] This flexible element **24** has the shape of a steel blade and it is fixed, at **24'**, in a groove or recess **25** cut in the side of the hammer—FIG. 5—so as to remain within the shape of the latter. The blade **24** has however a free rounded or bevelled end **26** facing the tail **18** of the cylinder blocking lever, on the same plane as the tail itself. This tail **18**, seen in cross-section, will have in preference an inclined plane **27** on one side—FIG. 5—starting from the top and increasing towards the bottom with respect to the plane of the tail itself. With the hammer **14** in the rest position as shown in FIG. 1, the cylinder blocking lever **13**, thrust by the spring **19**, is in the active position for the block of the cylinder **12**. In this case the free end **26** of the flexible or spring element **24** on board the hammer **14** is below the tail **18** of the cylinder blocking lever **13** on an interception plane with the same.

[0024] Starting from this position, as soon as the hammer turns to the cocked position—FIG. 3—passing through the intermediate safety, half-cocked position—FIG. 2, the flexible element or blade **24** intercepts and causes the cylinder blocking lever **13** to turn in its inactive cylinder release position.

[0025] If the hammer is stopped by the nose **21** of the trigger **15** in the safety, half-cocked position—FIG. 2, the cylinder lever **13** is held in the inactive position allowing the manual free rotation of the cylinder **12** to remove the fired cartridges and to load new ammunition.

[0026] When the hammer is rotated in the cocked position ready to fire, as shown in FIG. 3, the end **26** of the flexible

element or blade **24** rises above the tail **18** of the cylinder lever **13** releasing it. The cylinder lever **13** thrust by the respective spring **19**, engages the cylinder in order to block it in the angular position reached. The firearm is then ready to fire, which takes place as soon as the hammer is released by the trigger. The hammer, now driven by the respective spring, moves towards the firing pin, hitting it to fire the ammunition in line with it. By this movement of the hammer, the flexible element or blade **24** returns with its free end **26** below the tail of the cylinder lever **13**, helped in this case by the inclined plane **27** of the tail itself. In fact, the inclined plane obliges this flexible element or blade **24** to flex sideways, and pass alongside the tail **18** of the cylinder lever **13**, and then to return, due to the elastic reaction, to position below and on a line with the tail itself.

1. Safety device for a firearm such as a revolver, which includes a body housing a cylinder for the ammunition, a cylinder blocking lever to stop the cylinder in each of a plurality of angular positions, a hammer, a trigger controlling the hammer and a firing pin controlled by the hammer in order to fire each cartridge, where the cylinder blocking lever (**13**) rocks on a pin (**13'**) and moves between an active cylinder block position and an inactive cylinder release position, and where said cylinder blocking lever has, on one side of said pin, a nose (**17**) designed to engage and block the cylinder and, on the other end, a tail (**18**) facing towards the hammer and designed to interact with said hammer, wherein an attached flexible, elastic element (**24**) is fixed to the hammer and has a free end (**26**) interacting with the tail (**18**) of said cylinder blocking lever (**13**) to move this from the active block position to the inactive release position of the cylinder consequent to a turn of the hammer from the rest position to the cocked position passing through an intermediate safety, half-cocked position.

2. Safety device according to claim 1, wherein said elastic element comprises a flexible blade (**24**) fixed to the hammer remaining within the shape of the hammer.

3. Safety device according to claim 2, wherein said elastic blade (**24**) is positioned and set in a recess provided in one side of the hammer and is on a plane containing the tail of the cylinder blocking lever, the elastic blade acting on the side of the cylinder locking lever.

4. Safety device according to claim 3, wherein the free end (**26**) of said elastic blade (**24**) has a rounded or bevelled end portion, and the tail (**18**) of the cylinder blocking lever (**13**) has, in cross section, a lateral inclined plane starting from the top side of said tail.

5. Safety device according to claim 4, wherein the cylinder blocking lever has a solid cross section tail.

6. Safety device according to claim 4, wherein the free end (**26**) of said elastic blade (**24**) is positioned below the tail (**18**) of the cylinder blocking lever (**13**) when the hammer is in the rest position, moves the cylinder blocking lever in the inactive position when the hammer is or passes into the intermediate safety, half-cocked position, is located above the tail of the cylinder blocking lever when the hammer is in the cocked position, and passes alongside said tail when the hammer moves into the rest position.

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