US 20160010932A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2016/0010932 A1**

(43) **Pub. Date: Jan. 14, 2016**

LEIMER

(54) **GAS-OPERATED FIREARM**

(71) Applicant: **L&O HUNTING GROUP GMBH**, Isny (DE)

(72) Inventor: **Jan LEIMER**, Mestecko Trnavka (CZ)

(21) Appl. No.: **14/793,997**

(22) Filed: **Jul. 8, 2015**

(30) **Foreign Application Priority Data**

Jul. 9, 2014 (DE) 10 2014 109 567.7

Publication Classification

(51) **Int. Cl.**

F41A 5/26 (2006.01)

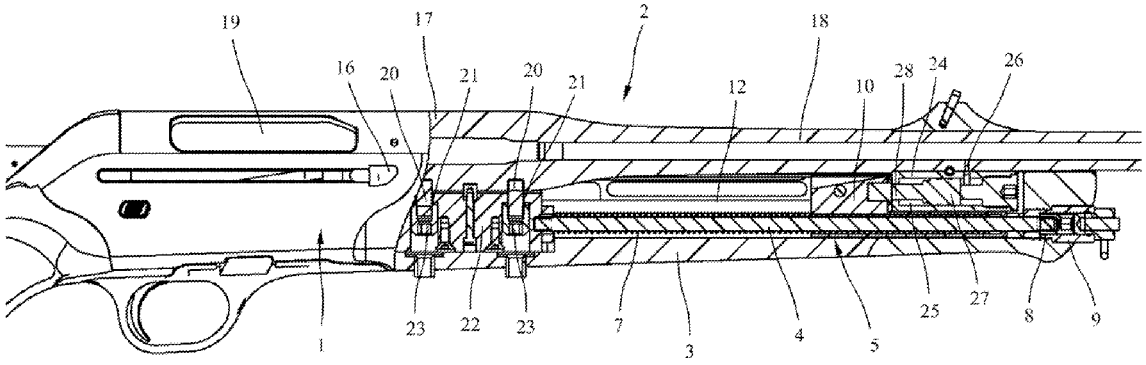
F41A 21/28 (2006.01)

(52) **U.S. Cl.**

CPC .. ***F41A 5/26*** (2013.01); ***F41A 21/28*** (2013.01)

(57) **ABSTRACT**

A gas-operated firearm with a lock housing, a guide rod projecting forward from the lock housing, as seen in the shooting direction, for a lock activation device, which is located so it can be displaced on the guide rod and which interacts with a lock for its movement between a locking position and an unlocking position, and a barrel with a gas withdrawal block fastened on the lock housing, which contains at least one gas withdrawal borehole that opens into the barrel, and a pressure piston that is guided so that it can be displaced in the gas withdrawal block for the displacement of the lock activation device against the force of a lock spring. A simplified installation and dismantling of the barrel can thus be made possible in that the barrel contains a rear part, which can be placed on the lock housing and can be firmly connected with it, and a front part, which freely projects from the lock housing, without a firm connection with the guide rod.



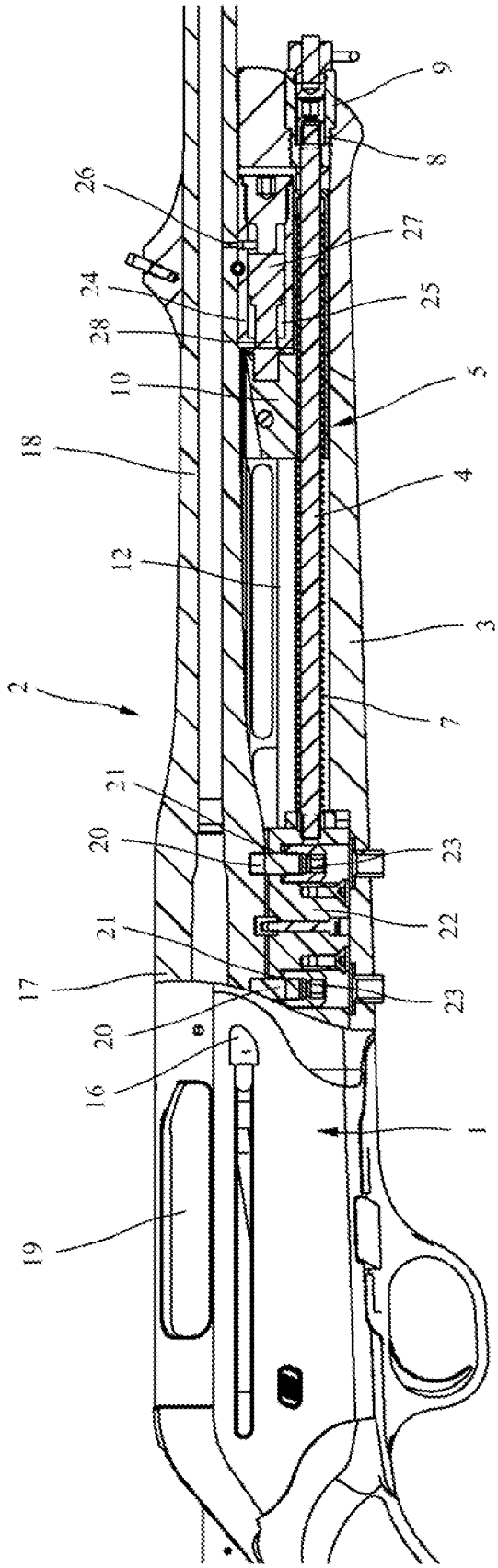


Fig. 1

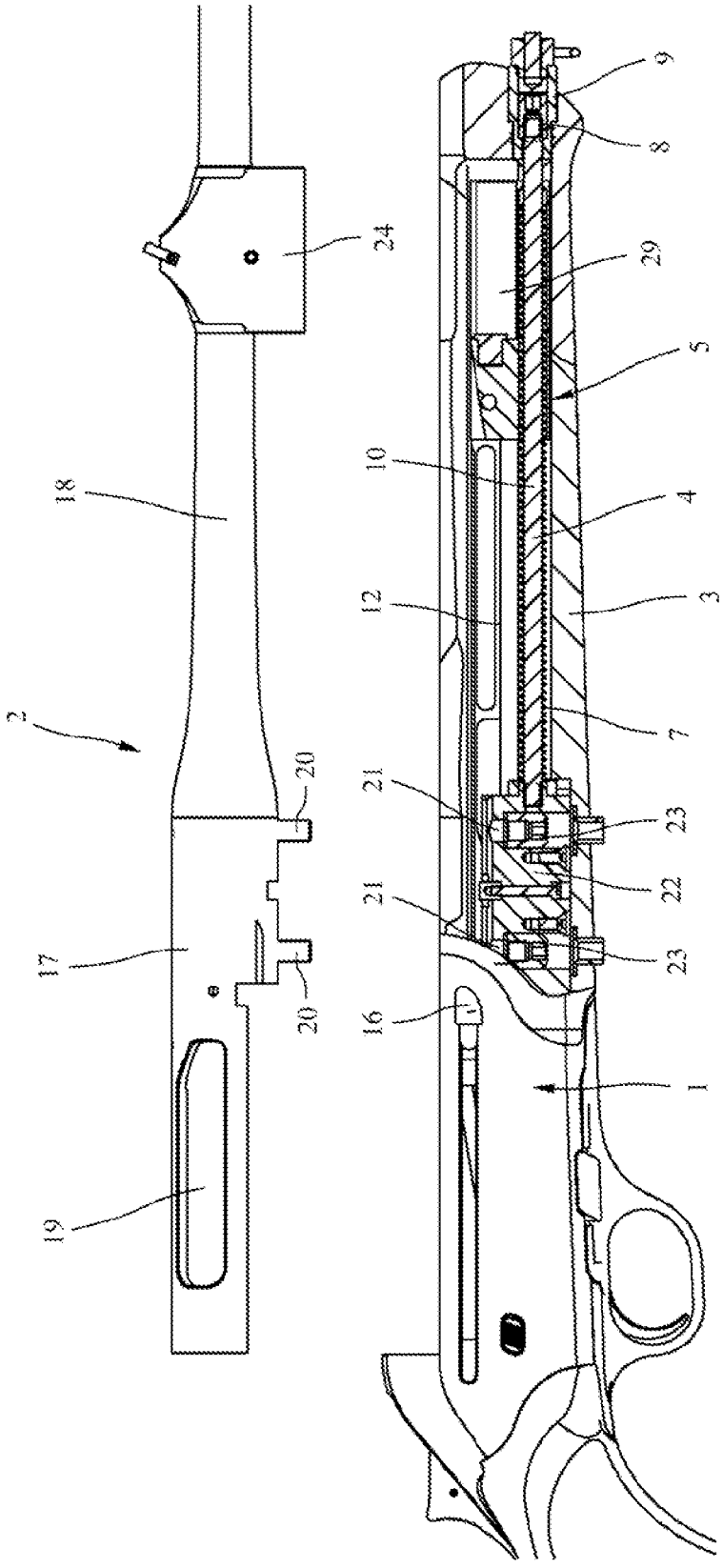


Fig. 2

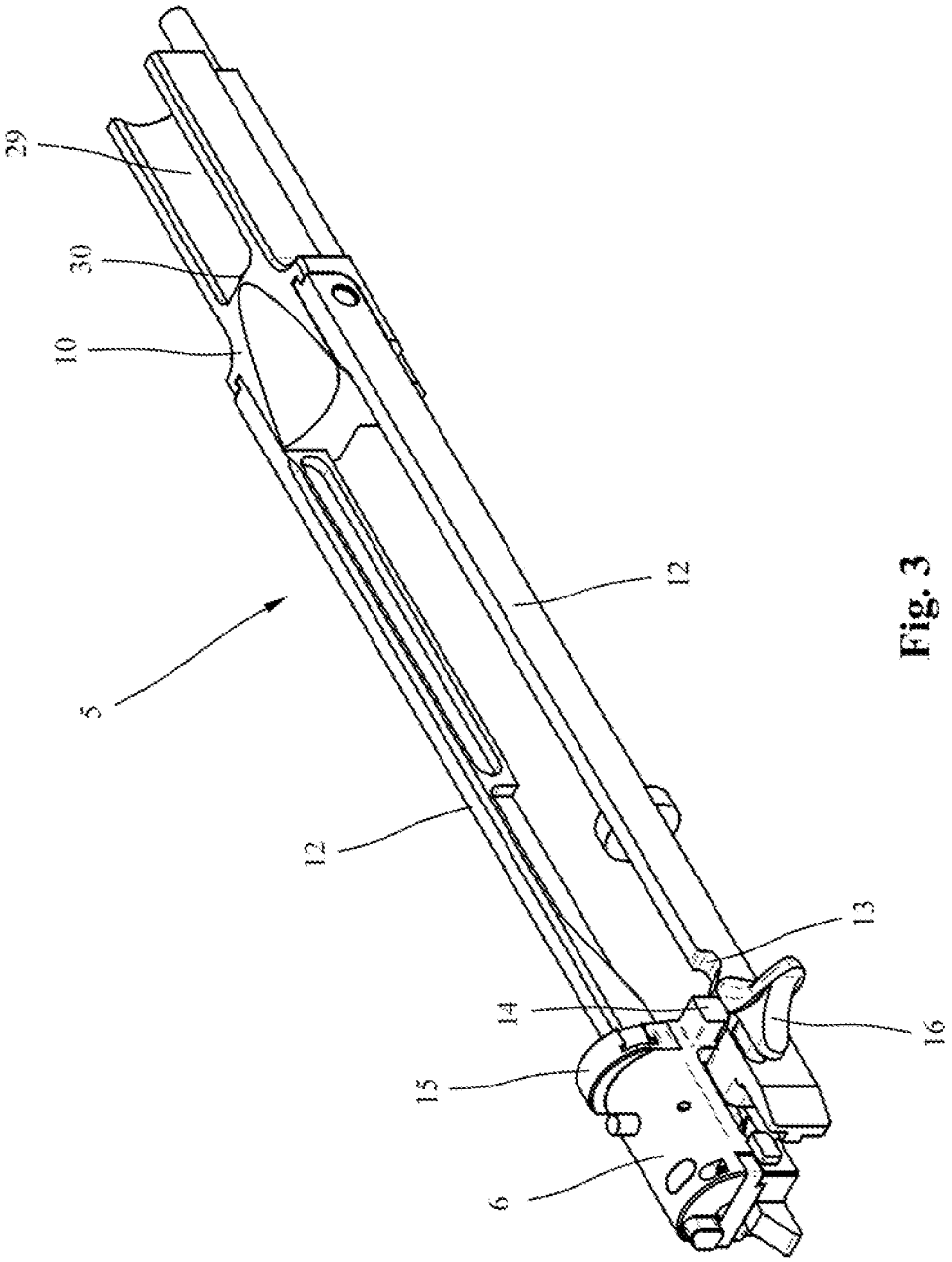


Fig. 3

GAS-OPERATED FIREARM

FIELD OF THE INVENTION

[0001] The invention concerns a gas-operated firearm.

BACKGROUND

[0002] Such a gas-operated firearm is known by the name of Sauer 303. It also contains a system box or a lock housing, a guide rod that projects forward, as seen in the shooting direction, and a lock activation device, which is arranged so it can be displaced on the guide rod and which interacts with a lock for its movement between a locking position and an unlocking position. A barrel with a gas withdrawal block is affixed to the lock housing. It contains at least one gas withdrawal borehole that opens into the barrel and a pressure piston that is guided so it can be displaced axially in the gas withdrawal block, for displacement of the lock activation device against the force of a lock spring. In this known gas-operated firearm, the rear end of the barrel is inserted into a corresponding holder borehole of the lock housing and it is firmly connected by a connecting piece, in the area of the gas withdrawal block, with the front end of the guide rod. For the installation or dismantling of the barrel, the front shaft must first be removed in this known gas-operated firearm and then the connection between the barrel and the guide rod must be loosened, before the barrel can be pulled out from the holder borehole of the lock housing.

[0003] With other known gas-operated firearms, the front shaft must always first be dismantled if the barrel is to be removed.

SUMMARY

[0004] The disclosure related to a gas-operated firearm which, in certain embodiments, makes possible a simplified installation and dismantling of the barrel.

[0005] Appropriate refinements and advantageous embodiments of the invention are also disclosed.

[0006] In the gas-operated firearm in accordance with the invention, the barrel has a rear part that can be placed on the lock housing and can be firmly connected with it, and with a front part that projects freely from the lock housing, without a firm connection with the guide rod. In this way, the barrel can be simply removed upward for the dismantling even without a prior dismantling of the front shaft. No connections on the front side of the barrel need to be loosened, and the barrel need not be pulled out of a barrel holder, either. For the installation, the barrel can be simply placed on the lock housing and can be connected with it. Thus, the dismantling and installation of the barrel can be considerably simplified, and a simpler dismantling of the automatic firearm can be attained.

[0007] In a particularly advantageous embodiment, the rear part and the front part of the barrel can be made as a single piece, wherein in the rear part of the barrel, there is a cartridge ejection port.

[0008] A quick and simple fastening of the barrel can be appropriately attained in that retention bolts that protrude on the rear part of the barrel for engagement in corresponding boreholes are located in a support part of the lock housing. With the aid of nuts accessible from the underside of the lock housing, or the like, the barrel can thus be loosened or fastened simply and quickly.

[0009] In another advantageous manner, the lock activation device contains a carrier guided on the guide rod and two push rods fastened on the carrier. The carrier has a holder for the gas withdrawal block that is open toward the top. The gas withdrawal block can be simply inserted into this holder during the installation of the barrel. On the free rear ends, push rods can be provided with control cams interacting with the lock for the movement of the lock between the locking and unlocking positions.

[0010] A simple dismantling with few parts on the barrel can also be made possible in that the pressure piston is integrated in the gas withdrawal block located in the middle area of the barrel.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] Other features and advantages of the invention can be deduced from the following description of a preferred embodiment example with the aid of the drawing. The figures show the following:

[0012] FIG. **1**, a partial longitudinal section of a gas-operated firearm with an installed barrel;

[0013] FIG. **2**, a partial longitudinal section of the gas-operated firearm of FIG. **1** with a dismantled barrel; and

[0014] FIG. **3**, a lock activation device with a lock in a perspective view.

DETAILED DESCRIPTION

[0015] FIGS. **1** and **2** show a partial longitudinal section of a gas-operated firearm with a system box or lock housing **1**, a barrel **2** fastened on the lock housing **1**, and a front shaft **3**. A guide rod **4**, protruding forward as seen in the shooting direction and parallel to the bore axis of the barrel **2**, is fastened to the lock housing **1**. On the guide rod **4**, which protrudes forward freely and is not fastened on the barrel **2**, a lock activation device **5** for the movement of the lock **6**, which is shown separately in a perspective view in FIG. **3** and is explained in more detail below, is guided so that it can be displaced. Furthermore, there is a lock spring **7** on the guide rod **4**, via which the lock actuation device **5** is pressed forward. Via an external thread **8** on the front free end of the guide rod **4** and a threaded sleeve **9**, which is provided with a corresponding internal thread, the front end of the front shaft **3**, as seen in the shooting direction, is fastened on the guide rod **4**.

[0016] The lock actuation device **5**, shown in perspective in FIG. **3**, has a carrier **10**, which is guided so it can be displaced on the guide rod **4**, and two push rods **12** which are fastened on the carrier **10**. A ramp-shaped control cam **13** is provided on the rear free ends of the two push rods **12**, as seen in the shooting direction; via the control cam, the lock **6**, which is provided with lateral projections **14**, can be moved, by a displacement of the actuation device **5**, between an upper locking position, shown in FIG. **3**, and a lower unlocking position. Via the lock spring **7**, which is located on the guide rod **4** and clamped between the lock housing **1** and the carrier **10**, the lock actuation device **5** is pressed forward into the locking position shown in FIG. **3**, as seen in the shooting direction. In this position, the lock **6** is pressed upward, so that a locking block **15**, which projects upward from the upper side of the lock **6**, arrives on the barrel **2** for engagement in a locking groove that is not shown. If, on the other hand, the lock activation device **5** is pushed, either via the lock grip **16** or the gas pressure during the release of a shot against the force of the lock spring **7** in a shooting direction, as seen from behind, the lock **6** can move downward as a result of the

control cam **13**, and the locking block **15** for the opening of the lock can fail to engage with the locking groove on the barrel **2**.

[0017] From FIGS. **1** and **2**, it is clear that the barrel **2** has a rear part **17**, which can be placed on the lock housing **1** and can be firmly connected with it, and a front part **18**, which freely projects from the lock housing **1**. An ejection port **19** for ejection of cartridges is provided on the rear part **17** of the barrel **2**, which is enlarged in its diameter in comparison to the front part **18**. The rear part **17** and the front part **18** of the barrel **2**, as seen in the shooting direction, are made as a single piece in the embodiment shown. The two parts **17** and **18** of the barrel **2** can, however, also be made as individual parts, stuck together, and, for example, be firmly connected with one another by welding or by some other suitable connection.

[0018] For the fastening of the barrel **2** on the lock housing **1**, two radially projecting retention bolts **20** are provided on the rear part **17** of the barrel **2** lying on the lock housing **1**. The retention bolts **20**, provided with an external thread, can be inserted radially into the rear part of the barrel **2** or be directly shaped on the barrel **2**. The retention bolts **20** are made for engagement in two boreholes **21**, located next to one another, in a projecting support part **22** of the lock housing **1**. With two nuts **23**, accessible from the underside of the lock housing **1**, the barrel **2** can be fastened on the lock housing **1**, with its front part **18** freely projecting forward, via the two retention bolts **20**. The rear end of the front shaft **3** is also fastened on the support part **22** of the lock housing **1**. A gas withdrawal block **24**, projecting downward on the front part **18**, is provided in the middle section of the barrel **2**.

[0019] As can be seen from FIG. **1**, the gas withdrawal block **24** has a gas cylinder **25** with a gas withdrawal borehole **26**, which opens into the barrel **2**, and a pressure piston **27**, which is guided so it can be displaced axially in the gas cylinder **25**. The pressure piston **27** contains a piston rod **28**, which projects through a rear borehole in the gas withdrawal block **24** and which interacts with the carrier **10** of the lock activation device **5** for the movement of the lock **6** into the unlocking position.

[0020] In accordance with FIG. **3** and on its front part, as seen in the shooting direction, the carrier **10** has a U-shaped cross section with a holder **29** and a rear stop **30** for the piston rod **28** of the pressure piston **27**. The gas withdrawal block **24** can be simply stuck into the holder **29** of the carrier **10**, which is open upward, during the installation of the barrel **2**.

[0021] The gas-operated firearm described here functions in the following manner:

[0022] Upon releasing a shot, a part of the power gases are conducted through the gas withdrawal borehole **26** from the barrel **2** into the gas cylinder **25**. By the gas pressure conducted into the gas cylinder **25**, the pressure piston **27** is pressed to the rear, as seen in the shooting direction. The lock actuation device **5** is thereby also pushed to the rear, with the carrier **10** and the two push rods **12**, against the force of the lock spring **7**. By the backward movement of the two push rods **12**, the lock **6** can move downward, so that the locking block **15** can arrive on the barrel **2** from the locking and the lock **6** can open the cartridge storage in the barrel to the rear. During the backward movement of the lock **6**, the empty cartridge shell is ejected via the ejection port **19** and the lock is under tension. Then, a new cartridge can be brought to the height of the cartridge storage via the magazine spring of a magazine, which is not depicted here. By means of the lock spring **7**, the lock is pressed forward via the lock actuation device **5**, with the carrier **10** and the two push rods **12**, and thereby, the new cartridge is pressed into the cartridge storage. The lock **6** arrives once again into the locking position, via the control cam **13** on the push rods **12**, and the lock is closed.

[0023] For the dismantling of the barrel **2** in the gas-operating firearm described here, the two shell-shaped nuts **23**, which are accessible from the underside of the lock housing **1** and are provided, for example, with a hexagon socket, are loosened with the aid of a hexagon wrench. Then, the entire barrel **2** can be readily removed upward. No prior dismantling of the front shaft **3** is required. Also, for the installation of the barrel **2**, it must merely be placed on the lock housing **1** with the front shaft **3** fixed via the guide rod **4** in such a way that the two retention bolts **20** are moved into the boreholes **21**, provided for the purpose, in the support part **22** of the lock housing **1**, and the gas withdrawal block **24** into the holder **29** of the carrier **10** of the lock activation device **5**, guided on the guide rod **4**. By tightening the nuts **23**, the barrel **2** is then fixed. In this way, a particularly fast and simple installation and dismantling of the barrel **2** is made possible.

What is claimed is:

1. Gas-operated firearm with a lock housing, a guide rod, which projects forwards from the lock housing, in a shooting direction, a lock activation device, which is situated so it can be displaced on the guide rod and which interacts with a lock for its movement between a locking position and an unlocking position, and a barrel, which is fastened on the lock housing, with a gas withdrawal block that contains at least one gas withdrawal borehole that opens into the barrel, and a pressure piston that is guided so it can be displaced in the gas withdrawal block for the displacement of the lock activation device against the force of a lock spring, wherein the barrel contains a rear part, which can be placed on the lock housing and which can be firmly connected with it, and a front part, which freely projects from the lock housing, without a firm connection with the guide rod.

2. Gas-operated firearm according to claim **1**, wherein the rear part and the front part of the barrel are made of one single piece.

3. Gas-operated firearm according to claim **1**, wherein a cartridge ejection port is located in the rear part of the barrel.

4. Gas-operated firearm according to claim **1**, wherein retention bolts for engagement into corresponding boreholes, projecting on the rear part of the barrel, are located in a support part of the lock housing.

5. Gas-operated firearm according to claim **1**, wherein the lock activation device contains a carrier guided on the guide rod, and two push rods fastened on the carrier.

6. Gas-operated firearm according to claim **5**, wherein the carrier of the lock activation device contains a holder, which is open toward to top, for the gas withdrawal block.

7. Gas-operated firearm according to claim **5**, wherein control cams that interact with the lock for the movement of the lock between the locking position and an unlocking position are located on the free rear ends of the push rods.

8. Gas-operated firearm according to claim **7**, wherein lateral projections for engagement with the control cams on the push rods are provided on the lock.

9. Gas-operated firearm according to claim **1**, wherein the pressure piston is integrated in the gas withdrawal block, which is located in the middle section of the barrel.

* * * * *