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(54) **HANDHELD FIREARM WITH AN ADJUSTABLE SHOULDER BRACE**

HANDFEUERWAFFE MIT VERSTELLBARE SCHULTERSTÜTZE

ARME DE POING AVEC SUPPORT D'ÉPAULE AJUSTABLE

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(56) References cited:
US-A1- 2014 190 056
US-A1- 2016 069 636
US-A1- 2016 305 738
US-A1- 2017 023 328
US-A1- 2019 017 777

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Description

Technical field

[0001] The invention relates to a handheld firearm with an adjustable shoulder brace according to independent claim 1, that is seated in the firearm chassis using a pair of rods, slidingly mounted in a guide, wherein the current position of the shoulder brace is lockable by a locking mechanism that comprises a transversal locking element, seated vertically adjustably under the pair of arms wherein both the opposite ends of the locking element are guided in opposite corresponding vertical grooves formed in the firearm chassis and the locking element is biased by a spring towards the rods where at the bottom side of each of the rods, at least two spaced apart pairs of corresponding recesses are produced for snapping of the locking element and the locking element can be manually pushed out of the recesses by means of a control button. according to the appended independent claim 1.

Prior Art

[0002] Some handheld firearms are provided with a shoulder brace - butt - the length of which can be adjusted. The reason for it is mainly a reduction of the firearm dimensions, which facilitates its carrying, storage or its entire usage. The adjustment of different distances of the brace from the trigger also makes it possible to take into account different sizes of the figure or arm length of the particular user.

[0003] There are a number of known manners of solving the adjustment of the shoulder brace length.

[0004] A number of known solutions use a tube that is attached to the firearm in a tilting way. A smaller pipe is slid into the tube, the entire shoulder brace being fixed to the pipe.

[0005] US2016069636 provides a state of the art releasable stock for a rifle.

[0006] Other solutions use smaller lateral rails that are, in case of a change of the length of the shoulder brace, slid at the sides towards the front in the shooting direction.

[0007] An extensible shoulder brace is known e.g. from the documents DE3130562A1, CN111457786, US2020200505A, ES2751696 or US10527385.

[0008] Every such telescopic shoulder brace enables adjustment of at least two positions - completely retracted, completely extended. It may further comprise various intermediate positions allowing the user to adjust the extension length as necessary in every particular case.

[0009] To prevent spontaneous retraction of the shoulder brace during shooting from the firearm, the firearm is fitted with a mechanism that is able to lock the butt in defined positions. In one of the known embodiments of the locking mechanism, a transversal locking pin is used that is mounted vertically adjustably under the pair of arms of the shoulder brace. Both the opposite ends of the locking pin are guided in opposite corresponding vertical grooves formed in the firearm chassis. The locking pin is biased by a spring towards the rods of the shoulder brace wherein at the bottom side of each of the rods at least two spaced apart pairs of corresponding recesses are arranged for snapping of the locking pin. The locking pin is then directly controlled by the shooter with the use of a button.

[0010] Depending on the used gauge, and thus the recoil of the firearm, these mechanisms are exposed to relatively high stresses, because the entire recoil must only be absorbed by the transversal locking pin guided in opposite grooves in the firearm chassis. Therefore, all the parts are made of metallic materials. This may be a clear drawback in the competitive environment.

[0011] The object of the invention is to propose such a shoulder brace structure that would not exhibit the above-mentioned drawbacks of the prior art.

Disclosure of invention

[0012] The said object is achieved with a handheld firearm with an adjustable shoulder brace according to appended claim 1, that is seated in the firearm chassis using a pair of rods, slidingly mounted in a guide. The current position of the shoulder brace is lockable by a locking mechanism that comprises a transversal locking element, seated vertically adjustably under the pair of arms. Both the opposite ends of the locking element are guided in opposite corresponding vertical grooves formed in the firearm chassis. The locking element is biased by a spring towards the rods. At the bottom side of each of the rods, at least two spaced apart pairs of corresponding recesses are produced for snapping of the locking element and the locking element can be manually pushed out of the recesses by means of a control button. The principle of the invention is that the locking element is attached to a carrier wherein the carrier is seated in the firearm chassis in a swinging way about an axis that is arranged in a hole in the firearm chassis between the rods. An advantage of the solution according to the invention is that the inserted carrier makes it possible to distribute the shooting recoil into two nodes, namely via the opposite ends of the locking element to the opposite corresponding vertical grooves formed in the firearm chassis on the one hand, and to the seat of the carrier in the firearm chassis on the other hand. This facilitates the use of a plastic firearm chassis.

[0013] According to the invention, the control button is vertically slidingly seated in the holder of the trigger mechanism and in the breech housing wherein a transversal pin that bears on the carrier from above passes through the control button.

Brief description of drawings

[0014] The invention will be described in more detail with reference to an example of a particular embodiment of a handheld firearm with an adjustable shoulder brace

according to the invention, illustrated in the attached drawings wherein individual figures show:

Fig. 1 - a detail of the rods of the shoulder brace and the locking mechanism in the "locked" position, without the firearm chassis for clarity
Fig. 2 - a detail of the rods of the shoulder brace and the locking mechanism in the "unlocked" position, without the firearm chassis for clarity
Fig. 3 - a greater detail of the shoulder brace and the locking mechanism in the "locked" position, without the firearm chassis for clarity
Fig. 4 - a greater detail of the shoulder brace and the locking mechanism in the "unlocked" position, without the firearm chassis for clarity
Fig. 5 - a top view of a detail of the locking mechanism between the rods of the shoulder brace, without the firearm chassis for clarity
Fig 6 - the rear end of the firearm with a partly extended shoulder brace
Fig. 7 - Y-Y cross-section of the firearm in the place of the locking element
Fig. 8 - Z-Z cross-section of the firearm in the place of the carrier axis
Fig. 9 - a side view of the firearm handle with the indication of the Y-Y and Z-Z sections
Fig. 10 - the locking mechanism with the control button in the "locked" position
Fig. 11 - the locking mechanism with the control button in the "unlocked" position

Description of preferred embodiments

[0015] Individual structural assemblies of an embodiment example of a handheld firearm with an adjustable shoulder brace 7 and a locking mechanism according to the invention are shown in Figs. 1 to 11.

[0016] The shoulder brace 7 has two rods 5 arranged next to each other that are seated in the firearm chassis 10 in a sliding way in a guide 17 (see e.g. Figs. 7, 8 and 9).

[0017] The current position of the shoulder brace 7 is lockable by a locking mechanism that, in the embodiment shown, comprises a transversal locking element 1, seated vertically adjustably under the pair of rods 5 in such a way that both the opposite ends of the locking element (1) are guided in the opposite vertical grooves 9 formed in the firearm chassis 10. The locking element 1 is attached to a carrier 3 and the carrier 3 is mounted in the firearm chassis 10 in a swinging way about the axis 6, which is arranged in a hole 8 in the firearm chassis 10 between the rods 5 (see e.g. Figs 1, 3, 5, 7 and 8).

[0018] The locking element 1 is biased, via the carrier 3 by a spring 4 towards the rods 5 wherein at the bottom edge of each of the rods 5, several spaced apart pairs of corresponding recesses 2 are formed that are arranged transversally against each other for snapping of the locking element 1. The pairs of corresponding recesses 2 for snapping of the locking element 1 define the position of the shoulder brace with respect to the firearm. In the example shown, it is the "completely retracted" and "completely extended" position and several "intermediate positions". The spring 4 bears on a supporting pin 14 (see Figs. 10 and 11).

[0019] The locking element 1 can be pushed out of the recess 2 with the use of a control button 12 that acts on the carrier 3 against the direction of the action of the spring 4. The control button 12 is seated in a vertically sliding way over the handle 11 in such a way that it passes through the holder 15 of the trigger mechanism and the housing 16 of the breech. In the control button 12, a transversal pin 13 is arranged that may bear on the protruding projections of the carrier 3 from above (see Figs. 10 and 11).

[0020] During handling of the shoulder brace 7, the control button 12 is pressed downwards (see Fig. 11) so that the transversal pin 13 compresses the protruding projections of the carrier 3 against the direction of the action of the spring 4, and the carrier 3 is thus tilted downwards about the axis 6 (see Fig. 2) and pushes the locking element 1 out of the respective pair of corresponding recesses 2 at the bottom edge of the rods 5. Then, the unlocked shoulder brace 7 can be extended or retracted as necessary.

[0021] On releasing the control button 12 (see Fig. 10), the spring 4 pushes the carrier 3 together with the locking element 1 upwards, so the locking element 1 slides on the bottom edges of the rods 5 until it snaps into the nearest pair of recesses 2.

1	locking element
2	recess
3	carrier
4	spring
5	rod
6	carrier axis
7	shoulder brace
8	hole for carrier axis
9	groove
10	firearm chassis
11	handle
12	carrier control button
13	transversal pin
14	supporting pin of the spring
15	trigger mechanism holder
16	breech housing
17	guide

Claims

1. A handheld firearm with an adjustable shoulder brace (7) that is seated in a firearm chassis (10) using a pair of rods (5), slidingly mounted in a guide (17), wherein the current position of the shoulder brace (7) is lockable by a locking mechanism that comprises a transversal locking element (1), seated vertically

adjustably under the pair of rods (5) wherein both the opposite ends of the locking element (1) are guided in opposite corresponding vertical grooves (9) formed in the firearm chassis (10) and the locking element (1) is biased by a spring (4) towards the rods (5) where at the bottom side of each of the rods (5), at least two spaced apart pairs of corresponding recesses (2) are produced for snapping of the locking element (1) and the locking element (1) can be manually pushed out of the recesses (2) by means of a control button (12), whereby the locking element (1) is attached to a carrier (3) wherein the carrier (3) is seated in the firearm chassis (10) in a swinging way about an axis (6) that is arranged in a hole (8) in the firearm chassis (10) between the rods (5), whereby the control button (12) is seated in a vertically sliding way in a holder (15) of the trigger mechanism and in the breech housing (16) wherein a transversal pin (13) that bears on the carrier (3) from above passes through the control button (12) and the control button (12) acts on the carrier (3) against the direction of action of the spring (4).

Patentansprüche

1. Eine Handfeuerwaffe mit einer verstellbaren Schulterstütze (7), die mithilfe eines Stangenpaars (5) in einem Schusswaffenchassis (10) sitzt und in einer Führung (17) verschiebbar montiert ist, wobei die aktuelle Position der Schulterstütze (7) durch einen Verriegelungsmechanismus verriegelbar ist, der ein Querverriegelungselement (1) umfasst, das vertikal verstellbar unter dem Stangenpaar (5) sitzt, wobei beide gegenüberliegenden Enden des Verriegelungselements (1) in gegenüberliegenden entsprechenden vertikalen Nuten (9) im Schusswaffenchassis (10) geführt sind und das Verriegelungselement (1) durch eine Feder (4) in Richtung der Stangen (5) vorgespannt ist, wobei an der Unterseite jeder der Stangen (5) mindestens zwei voneinander beabstandete Paare korrespondierender Aussparungen (2) zum Einrasten des Verriegelungselements (1) erzeugt sind und das Verriegelungselement (1) mittels eines Bedienknopfes (12) manuell aus den Aussparungen (2) herausschiebbar ist, wodurch das Verriegelungselement (1) an einem Träger (3) befestigt wird, wobei der Träger (3) im Schusswaffenchassis (10) um eine Achse (6) schwenkbar gelagert ist, die in einem Loch (8) im Schusswaffenchassis (10) zwischen den Stangen (5) schwingend gelagert ist, wobei der Bedienknopf (12) vertikal verschiebbar in einer Halterung (15) des Abzugsmechanismus und im Verschlussgehäuse (16) sitzt, wobei ein von oben am Träger (3) anliegender Querstift (13) den Steuerknopf (12) durchsetzt und der Steuerknopf (12) entgegen der Wirkrichtung der Feder (4) auf den Träger (3) einwirkt.

Revendications

1. Arme à feu portative dotée d'une épaulière réglable (7) fixée dans un châssis d'arme à feu (10) à l'aide d'une paire de tiges (5) montées de manière coulissante dans un dispositif de guidage (17), dans lequel la position actuelle de l'épaulière (7) est verrouillable par un mécanisme de verrouillage qui comprend un élément de verrouillage transversal (1), intégré et verticalement ajustable sous la paire de tiges (5), où les deux extrémités opposées de l'élément de verrouillage (1) sont guidées dans des rainures verticales correspondantes opposées (9) formées dans le châssis de l'arme à feu (10) et où l'élément de verrouillage (1) est sollicité par un ressort (4) vers les tiges (5) où, sur le côté inférieur de chacune des tiges (5), au moins deux paires espacées de tiges correspondantes (2) sont faites pour bloquer l'élément de verrouillage (1) et l'élément de verrouillage (1) peut être poussé manuellement hors des évidements (2) au moyen d'un bouton de commande (12), l'élément de verrouillage (1) étant fixé à un support (3) dans lequel le support (3) est placé dans le châssis de l'arme à feu (10) de manière oscillante autour d'un axe (6) qui est disposé dans un trou (8) dans le châssis de l'arme à feu (10), entre les tiges (5), où le bouton de commande (12) est logé de manière à coulisser verticalement dans un support (15) du mécanisme de déclenchement et dans le boitier endommagé (16) où une goupille transversale (13) qui s'appuie sur le support (3) par le haut traverse le bouton de commande (12) et le bouton de commande (12) agit sur le support (3) à l'encontre de la direction d'action du ressort (4).

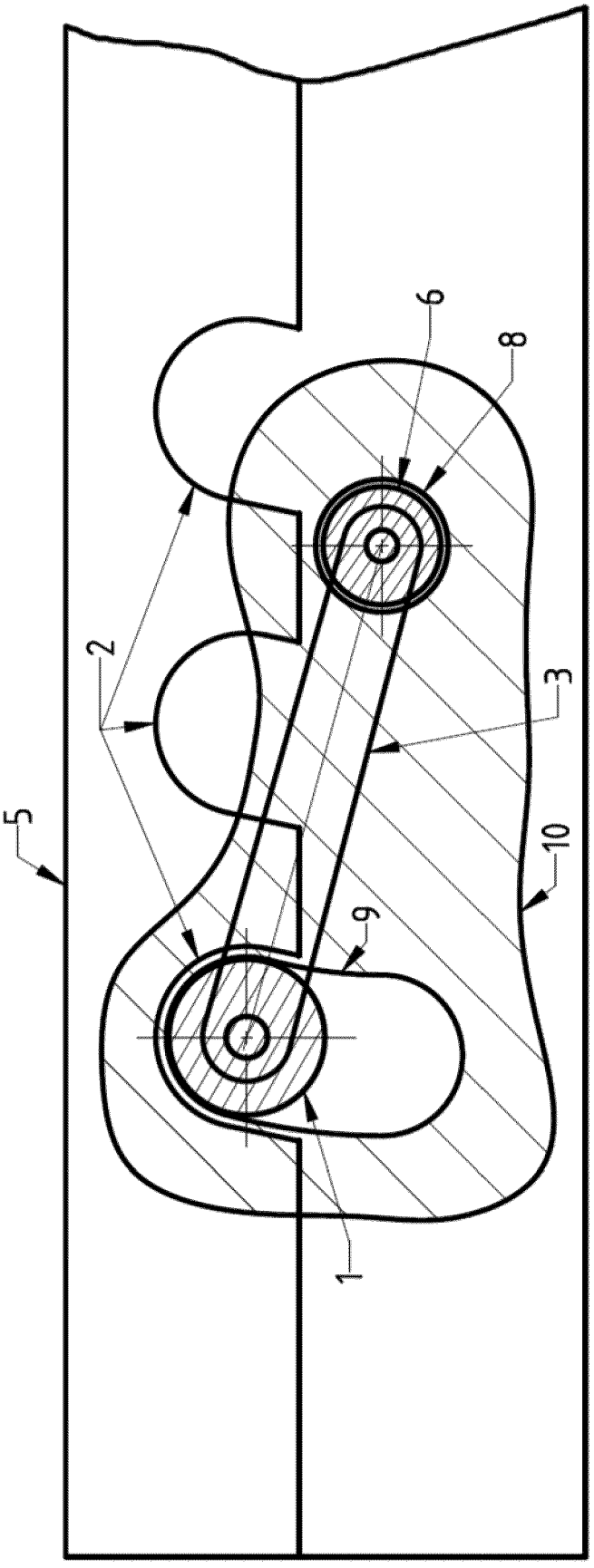

Fig. 1

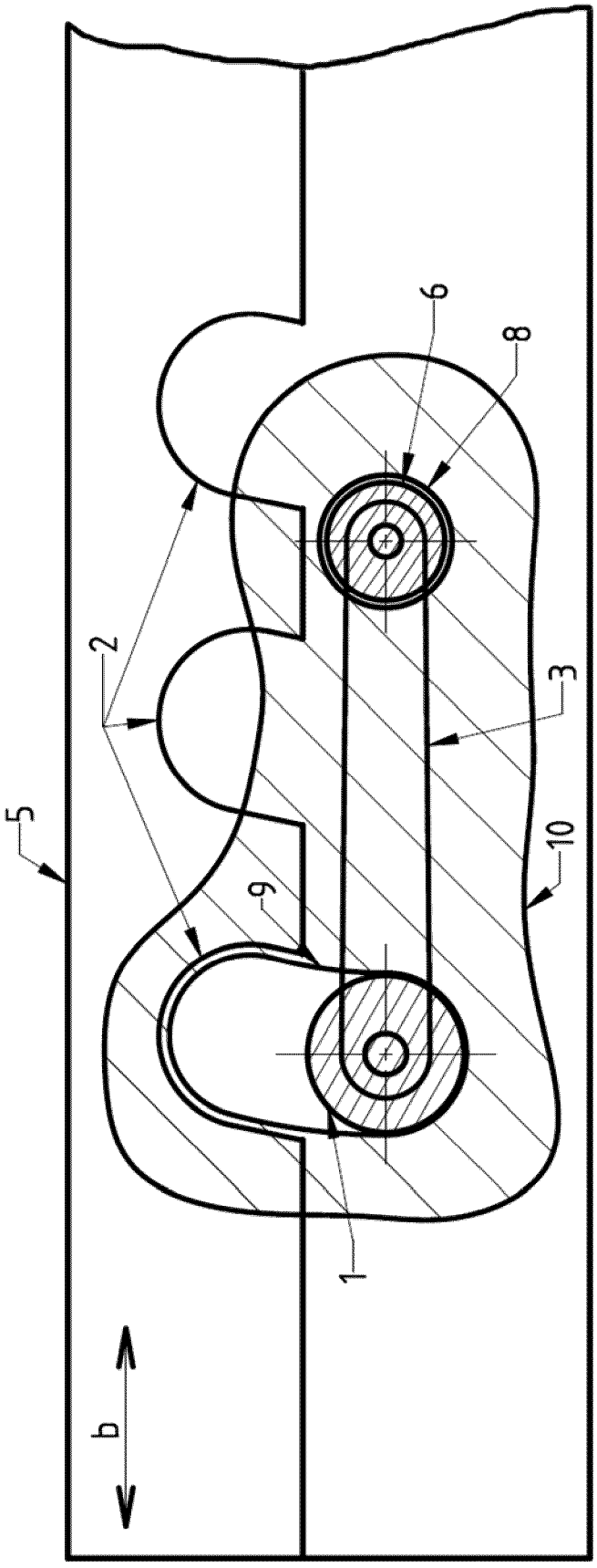

Fig. 2

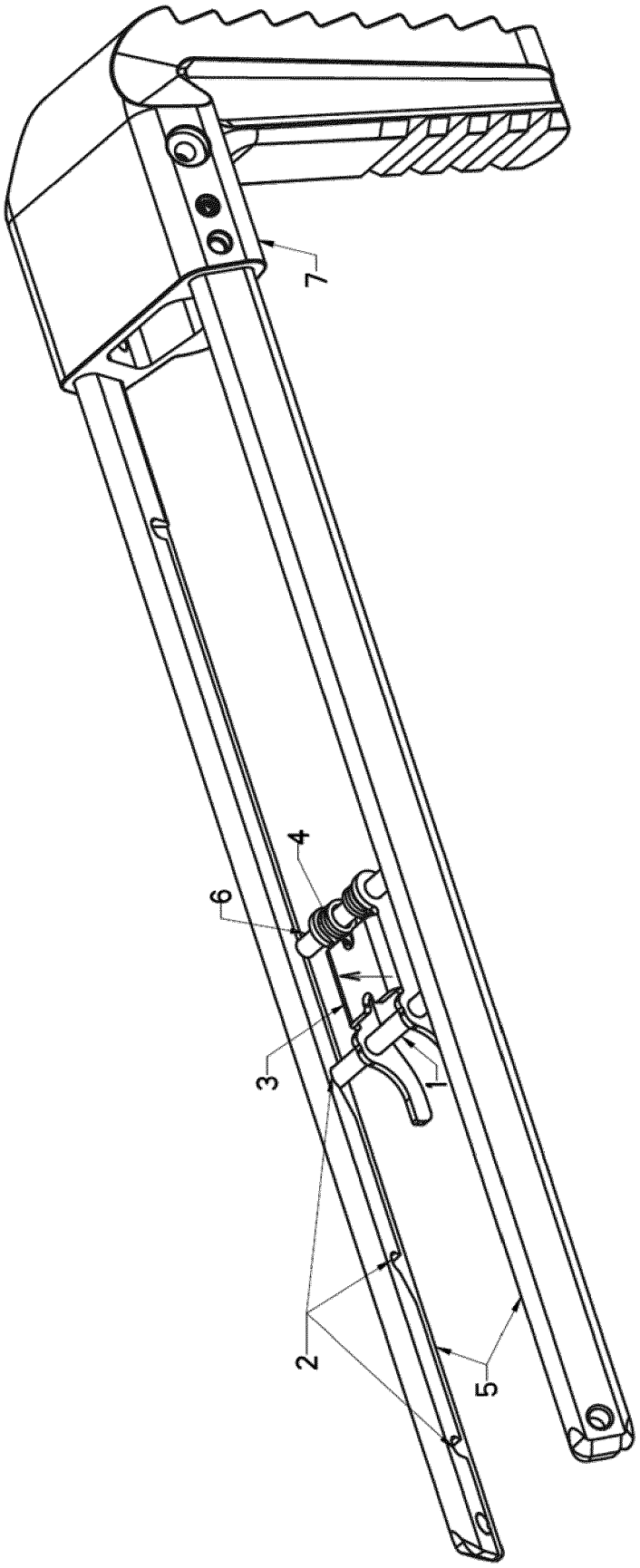

Fig. 3

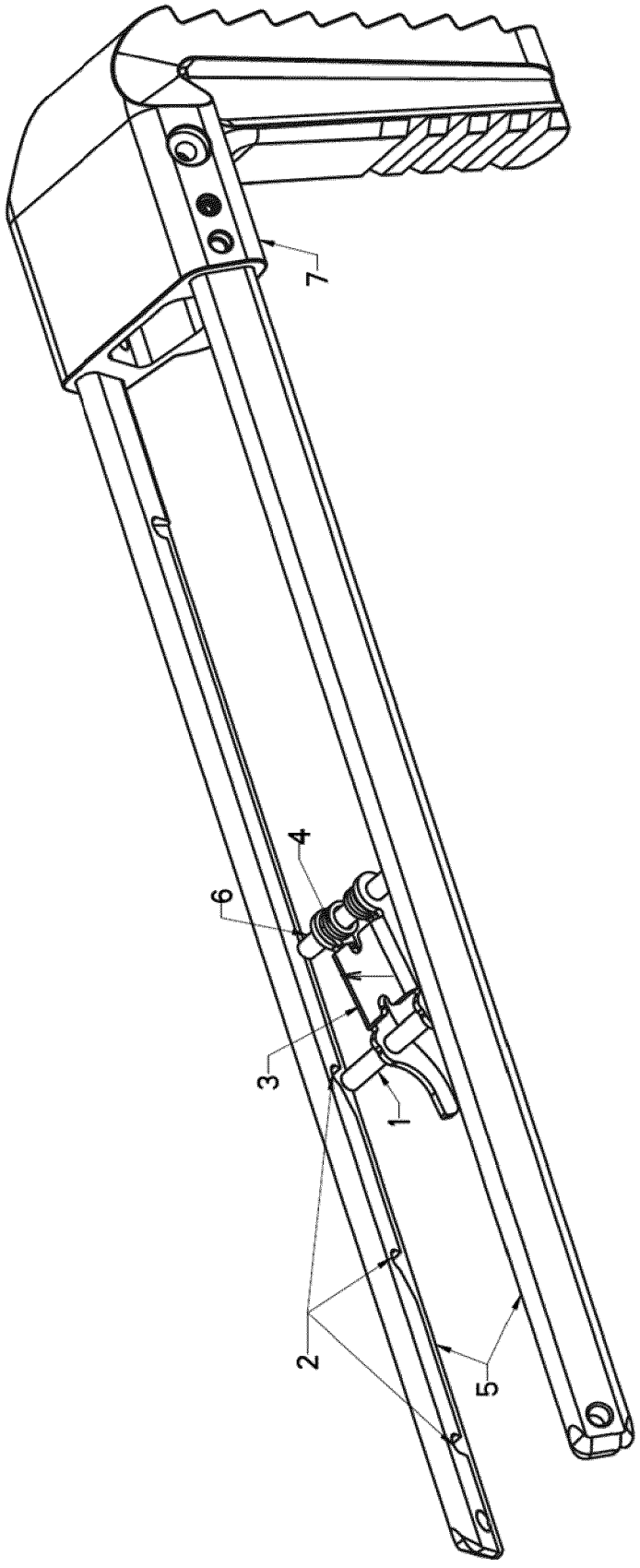

Fig. 4

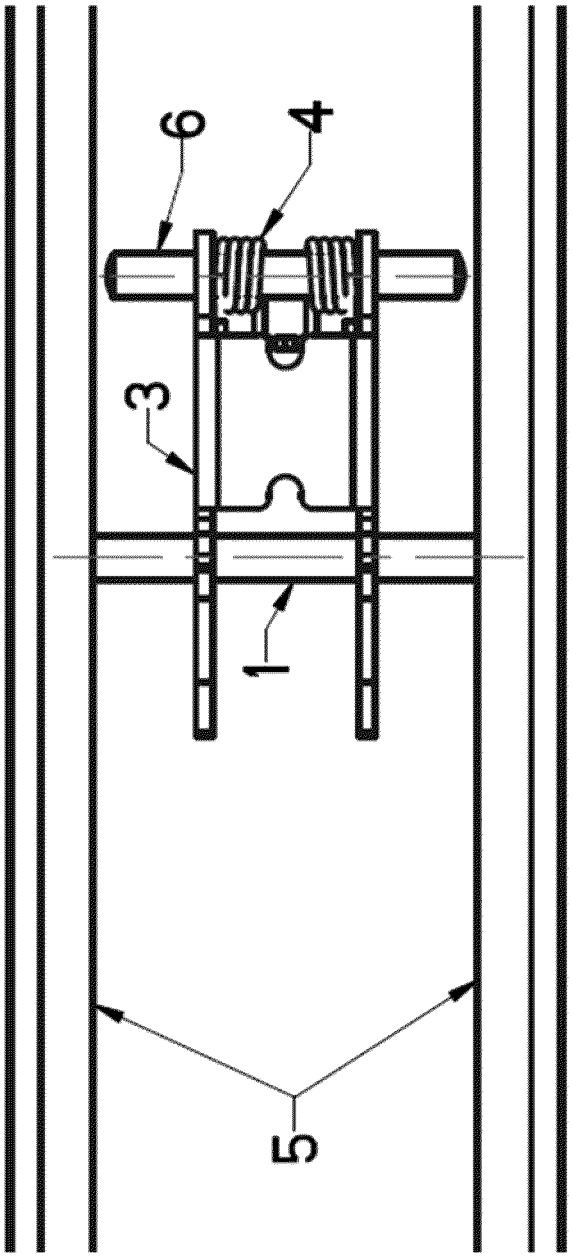

Fig. 5

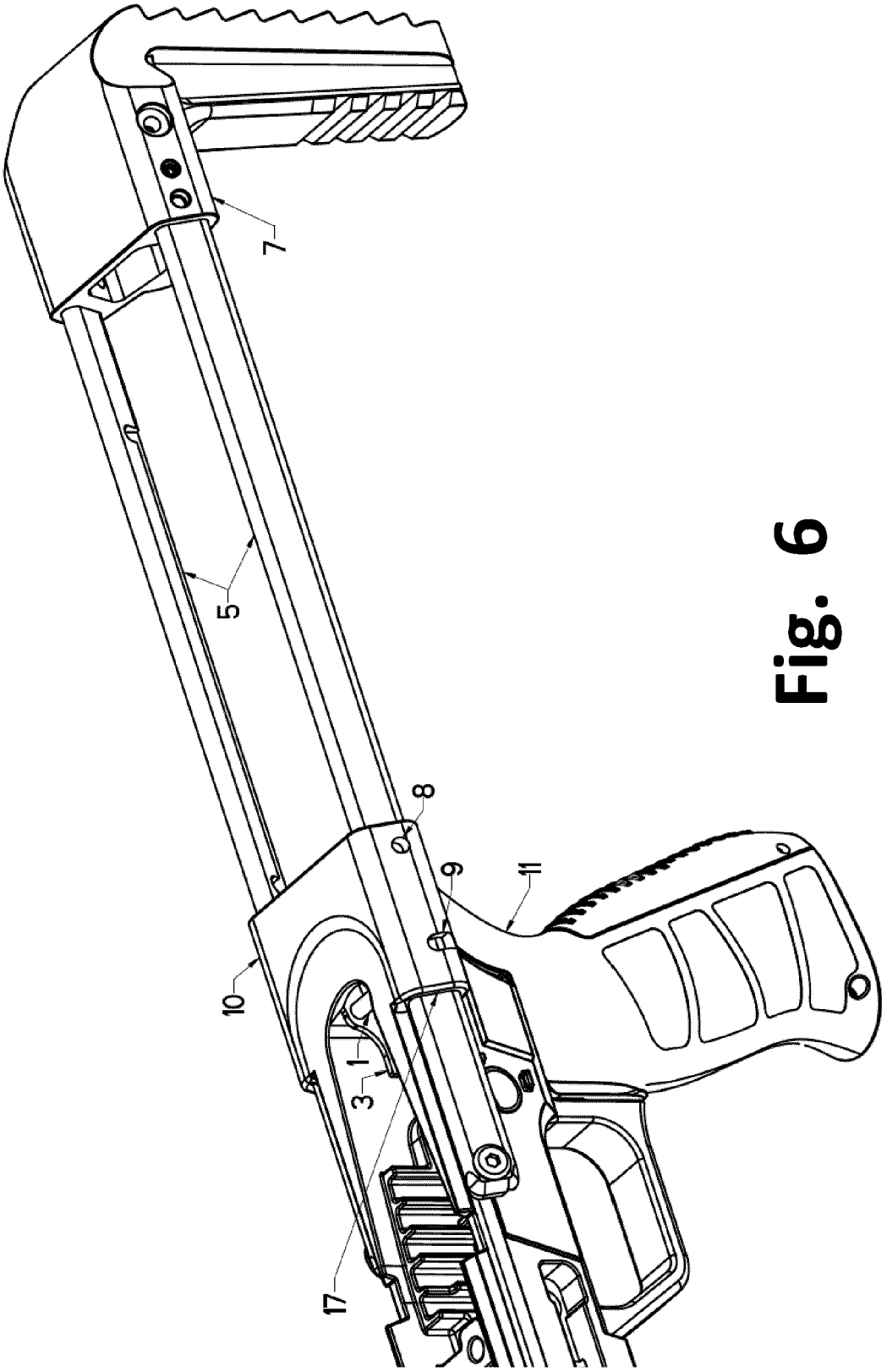

Fig. 6

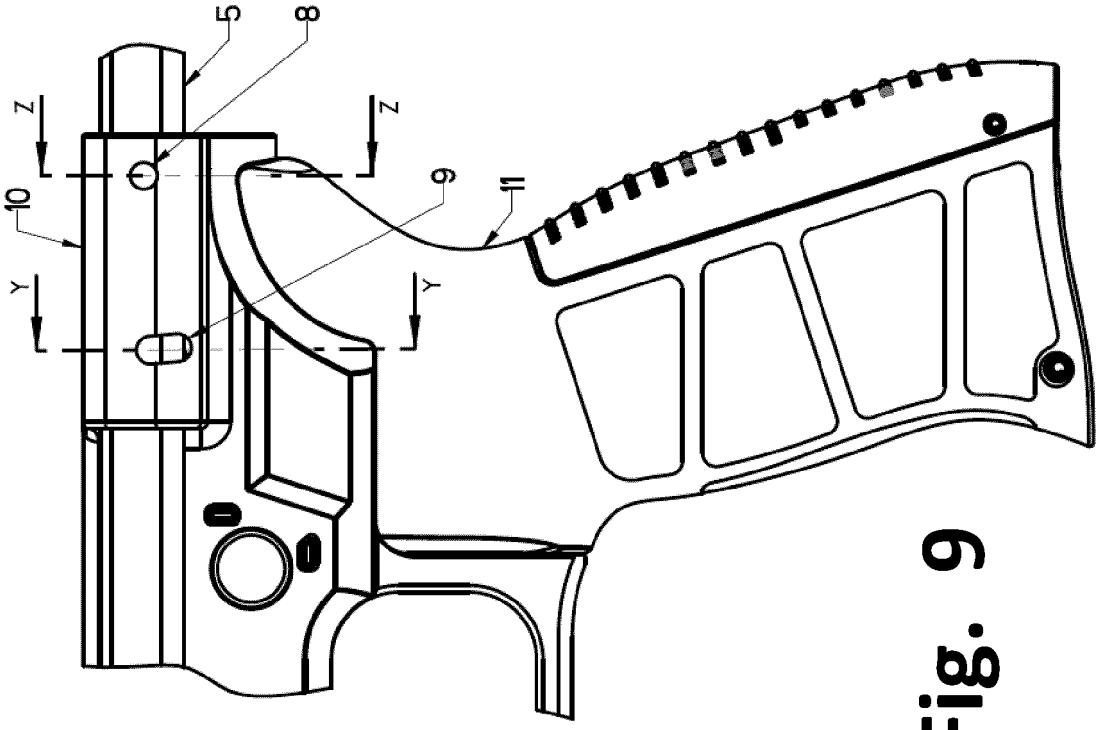

Fig. 9

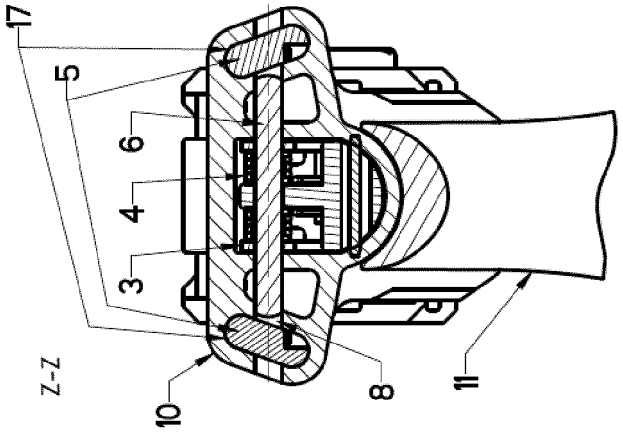

Fig. 8

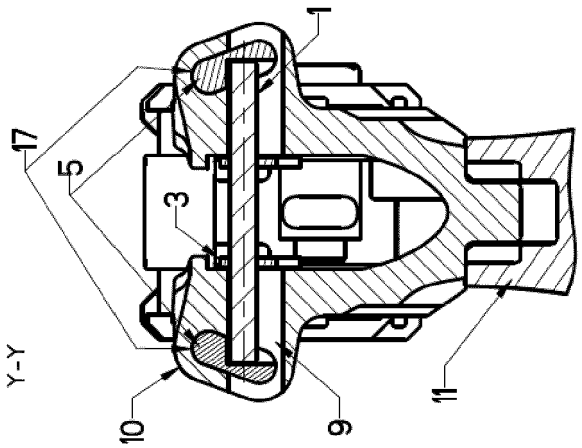

Fig. 7

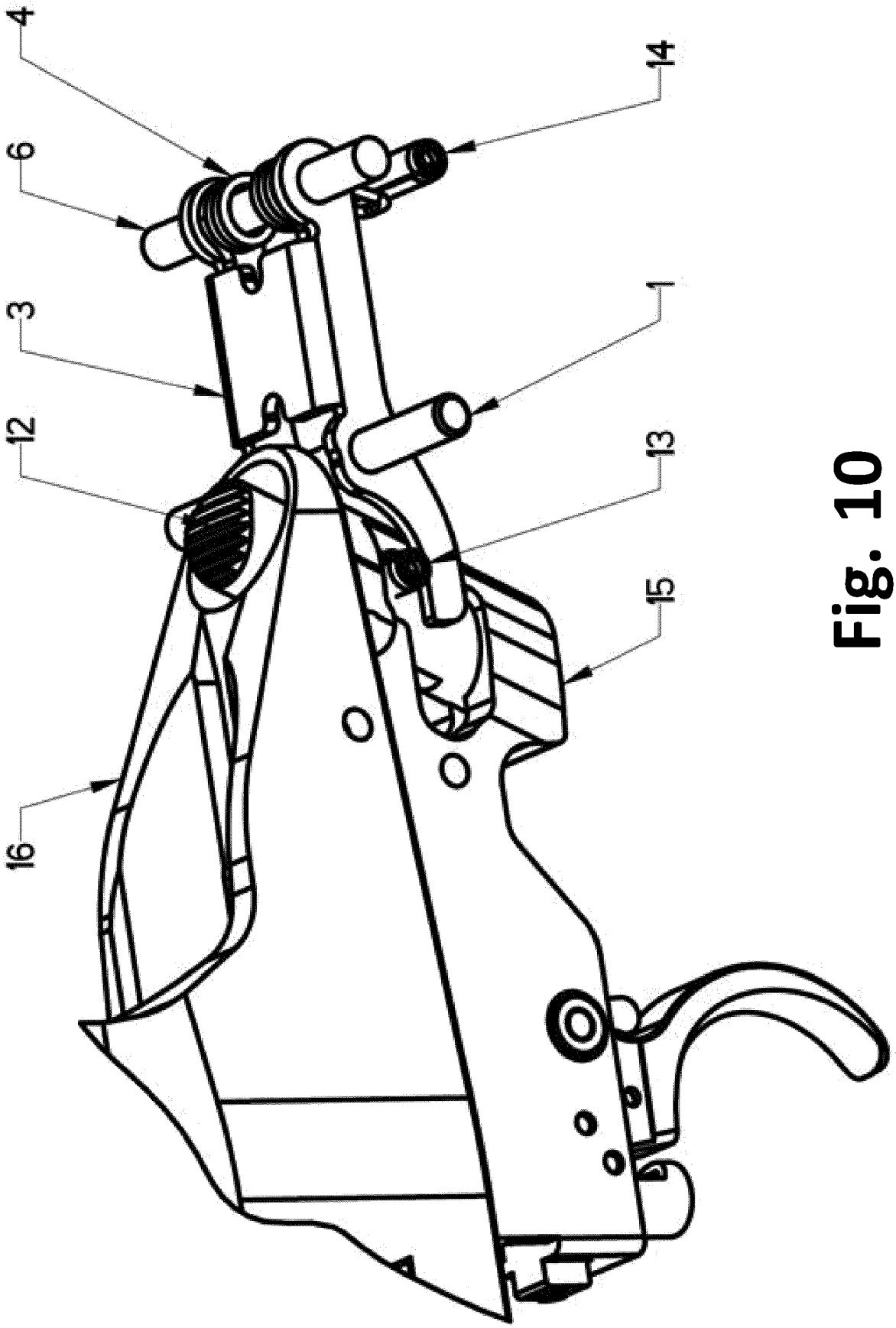

Fig. 10

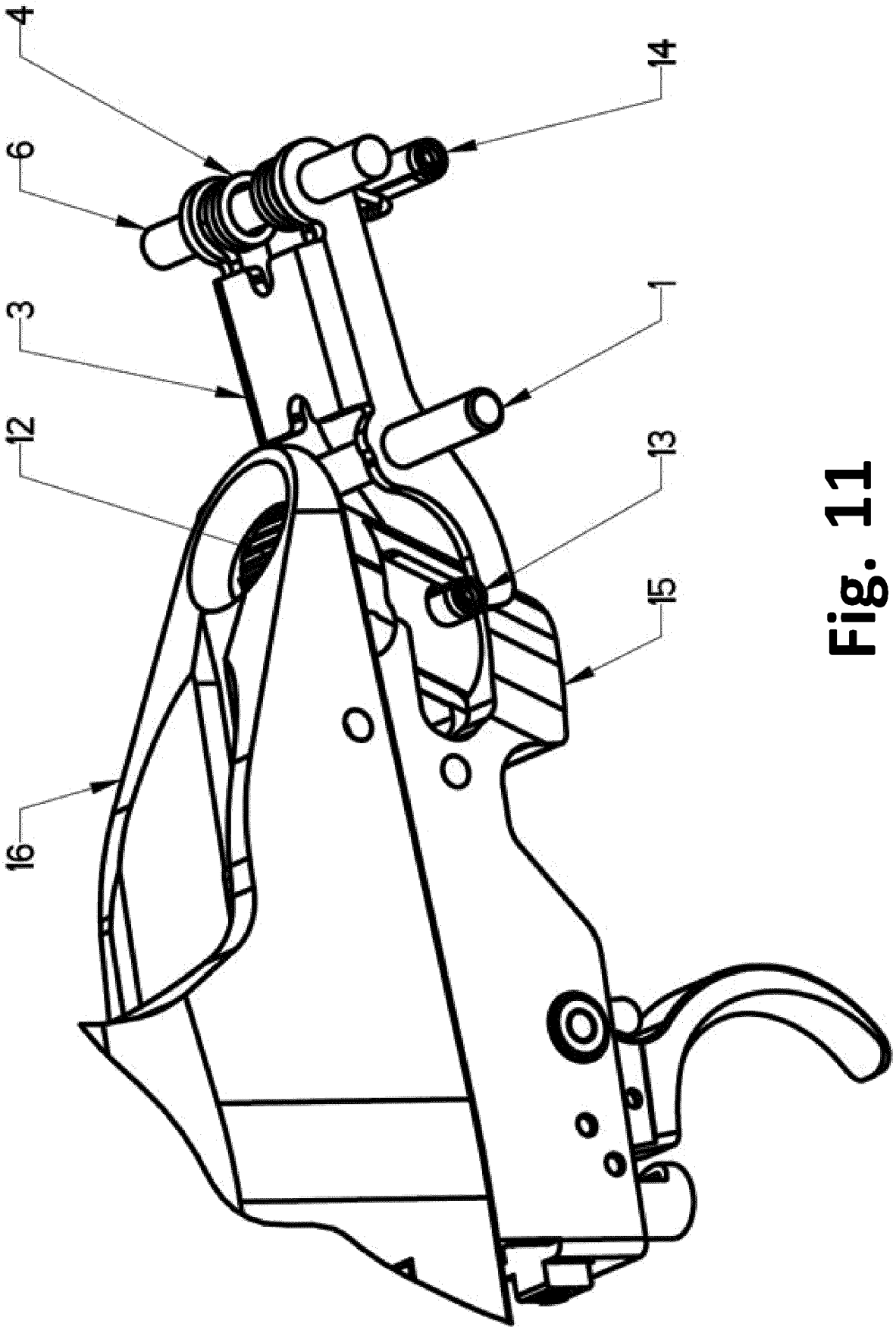

Fig. 11

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 2016069636 A **[0005]**
- DE 3130562 A1 **[0007]**
- CN 111457786 **[0007]**
- US 2020200505 A **[0007]**
- ES 2751696 **[0007]**
- US 10527385 B **[0007]**