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J. KOUCKÝ

BREECH DEVICE FOR FIREARMS

Filed March 8, 1941

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2 Sheets-Sheet 1

Fig. 1

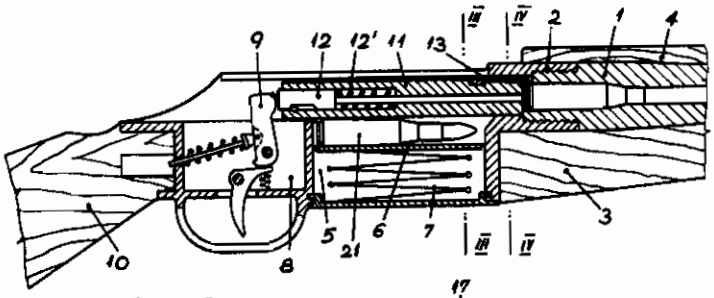


Fig. 2

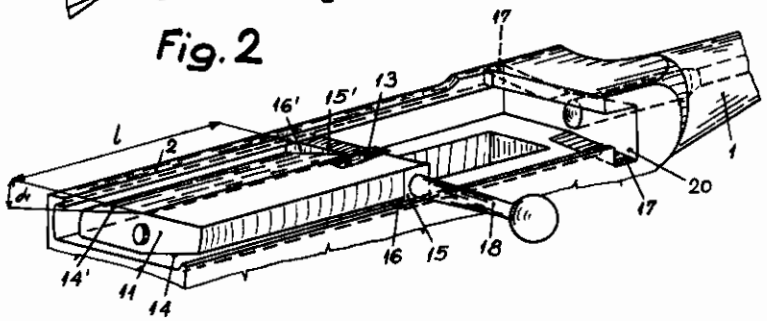


Fig. 3

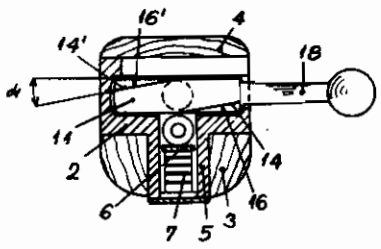
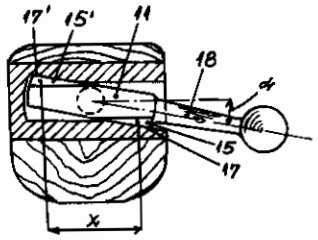


Fig. 4



INVENTOR
J. Koucky

BY E. F. Wendroth

ATTORNEY

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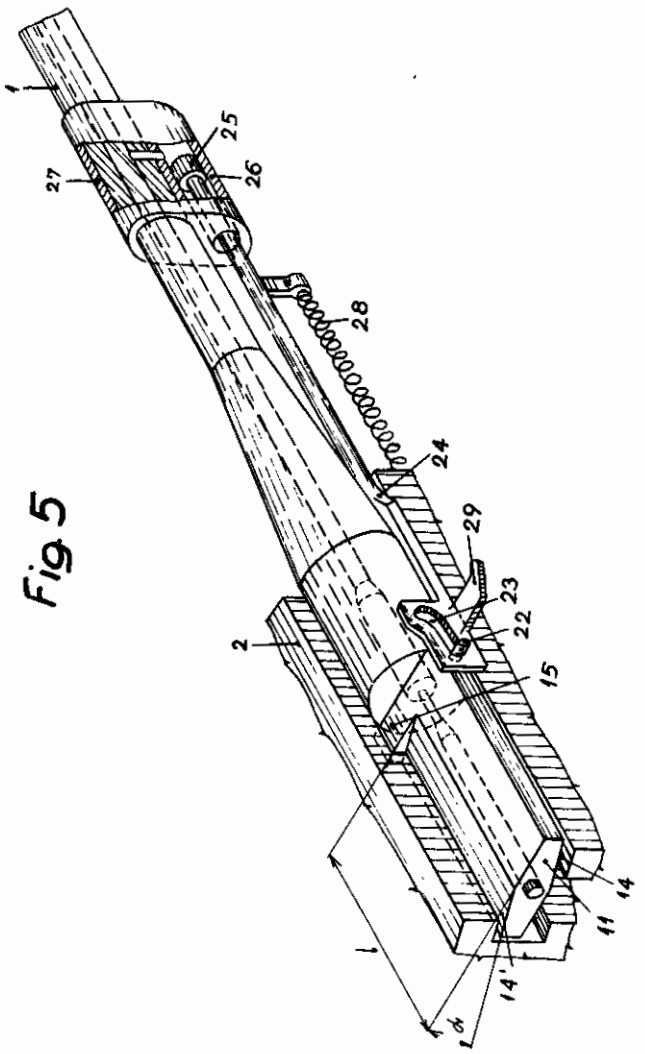

Fig 5

INVENTOR
J. Koucký

BY E. A. Wiandt

ATTORNEY

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ALIEN PROPERTY CUSTODIAN

BREECH DEVICE FOR FIREARMS

Josef Koucký, Prag-XIX, Bohemia; vested in the Alien Property Custodian

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The present invention relates to a breech device for firearms especially for those of smaller caliber, quite indifferently whether it be a repeater, an automatic or semi-automatic firearm. The present invention relates to a breech device for such firearms in which projectiles of a greater force of percussion it means, cartridges developing a greater initial pressure and having a higher speed of firing are used.

This object is attained according to the present invention by this that there is arranged in the firearm a breech device characterised by a breech block forming a flat prismatic body, tiltable around the longitudinal axis of the firearm and provided with locking pegs which, in tilting the breech block are co-operating with the cuttings formed in the casing of the firearm respectively in the casing of the breech device. The breech block forms an appropriate quadri-lateral prism the basis of which having a manifold greater length than hight and which is chamfered along a shorter length than the length of the body on the opposite parallel side-walls by parallel planes. Without counting that the arrangement according to the present invention considerably diminishes the hight of the casing and thus also the weight of the firearm, a more advantageous formation of the breech block with regard to a more favourable straining by the pressure of the gases produced in firing the cartridges, is obtained. Thus it is also possible to use cartridges with a greater powder charge and therefore also a more violent force of percussion.

The accompanying drawing shows the arrangement of the device according to the present invention in two modifications. In Figs. 1 to 4 is shown the arrangement in the case of a repeater, which in Fig. 1 shows the longitudinal section of the breech block closed. Fig. 2 is a perspective view of the breech casing with the breech block open. Figs. 3 and 4 are transverse sections of the firearm following the lines III—III and IV—IV of Fig. 1.

Another example of the arrangement of the breech device in an automatic gas operated firearm is perspectively shown in Fig. 5.

The firearm shown in Figs. 1 to 4 consists essentially of the barrel **1**, which is fixed to the casing **2** of the breech by means of a screw thread; **3** is the front part of the stock, **4** is the upper part of the stock. In the under side of the casing **2** is arranged in a known manner the cartridge chamber **5** with the follower **6** charged with the spring **7**. The trigger mechanism **8** is of a known construction and sets the hammer **9** in action. On the rear part of the casing **2** is fixed the butt **10**. In the casing **2** of the breech moves the breech block **11** with the striker **11** charged with a spring **12'** and the ejector **13**.

The breech block **11** is a prismatic body having the shape of a flat slab the two diagonally opposite edges of which are chamfered along the part **l** of their total length (Fig. 2) at the angle α. The length of the base-line of the prism is a multiple of its hight. The chamfering is made in such a manner that the opposite parallel side walls of the prismatic body are cut by parallel planes where the chamfering begins half-length of the base-line of the body. The remaining uncut part of the parallel side-walls of the jacket which belong to the longer side of the basis, form planes for guiding the breech block in executing the movement by which the breech block passes into the closed or open position. The chamfering of the opposite side-walls of the envelope is made by planes which deviate from the uncut part of the side walls by 15° to 30°. By the partial chamfering **14**, **14'** of both edges respectively by cutting off the opposite sidewalls of the jacket of the body to the length **l** are formed the locking lugs **15**, **15'** which are on that side which faces the cartridge chamber and show triangular interlocking surfaces **16**, **16'**. In tilting the breech block the lugs **15**, **15'** fall transversely at the locking angle α, given by the chamfering angle, into the parts **17**, **17'** cut out in the lower and upper interior wall of the casing **2**. The lug **16** bears the bolt lever **18**, which passes through a longitudinal cutting out in the casing **2** of the breech device, which ends in the locked position in a transverse slot **20**, enabling the transverse motion of the bolt lever when locking the breech block.

When firing the breech block is located in the position shown in Fig. 4, when the lugs **15**, **15'** engage in the cut out parts **17**, **17'** and the breech block rests on both walls **14**, **14'** on the upper and under guiding walls inside the casing. The back pressure of the propellant gases that acts at the moment of firing on the breech block is taken up by the planes **16**, **16'**, supposing that both reactions are acting in the centres of gravity of both planes, which centres of gravity are at the distance x from one another. As the breech block may be considered as a bearer supported in the graviating points of the locking planes being charged by a force acting about in the middle, is the strain according to the present invention much more favourable than in the known breech blocks, as the cylinder breech blocks with locking lugs projecting above the surface of the cylinder.

The strain is much more favourable because the bearing length is shorter and therefore under the same conditions the breech block may be more charged respectively stronger and more explosive charges may be used.

After firing the rifleman swings round the bolt lever together with the breech block from the position shown in Fig. 4 into the position shown in Fig. 3 at the angle α disengaging the teeth 15, 15' and the cut out parts 17, 17' and the full profile of the prismatic body of the breech block is placed against the transverse section of the bore of the hollow, so that by pulling back the bolt lever the breech block can be brought to the open position. During this movement the empty cartridge case is pulled out in a known manner and at the end of the movement ejected from the casing 2 and at the same time the firing mechanism is tensioned. By the forward movement of the breech block a new cartridge 21 is brought into the cartridge chamber and after having accomplished the locking movement the breech block is swung round at the locking angle α. As it is quite sufficient if the locking angle is about 15 to 30°, the movement of locking and unlocking requires much less time than in the devices up to now in which it has been generally necessary to swing round the breech block by 90°. This fact increases the speed of firing which in modern firearms is one of the most important requirements.

According to the invention the breech block may also be used in automatic firearms as may be seen in Fig. 5 in which is shown a perspective view and a fragmentary section of a gas operated firearm.

The firearm shown in the drawing consists of the barrel 1, the casing 2 for the breech, in which the breech block 11, which is constructed in quite the same manner as that in the preceding case, is movably located. The breech block is again chamfered at the two opposite edges where the chamferings 14, 14' begin also about the middle of the base-length of the prismatic body of the breech block. For actioning and governing there is a nut 22 fixed on the locking lug 15 which engages into the groove 23 at the end of the piston rod 24, whilst the piston 25 of the piston rod reaches into the gas cylinder 26 and is guided in a known manner in the casing 2 of the breech device. The gas cylinder is tightly fixed to the barrel by means of a sleeve 27. The forward movement of the breech device is assured by the buffer spring 28. The governing groove is chosen so that at the first shock of the gases on the piston the breech block remains still closed during a certain time and only when the piston 25 after having travelled through a certain distance leaves the gas chamber, it is when the projectile has left the barrel, through the effect of the curved part of the groove 23 a swinging of the breech block 11 around the locking angle α takes place. After the unlocking has taken place, the piston rod 24 brings the breech block 11 into the rear end position. At the forward movement the pin 22 is at the upper front end of the groove 23. As the lugs are completely in touch with the hollow of the breech block, the cartridge chamber cannot be coiled. For operating the breech by hand a tension cam 29 is adjusted on the piston rod.

The executions described are given only by way of example and may be varied in details without departing from the scope of the invention especially as far as the governing of the breech block and the like are concerned.

JOSEF KOUCKÝ.