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FIREARM BARREL COMPRISING A BREECHBLOCK DISPLACEABLE TRANSVERSELY TO THE BORE AXIS

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Fig. 2

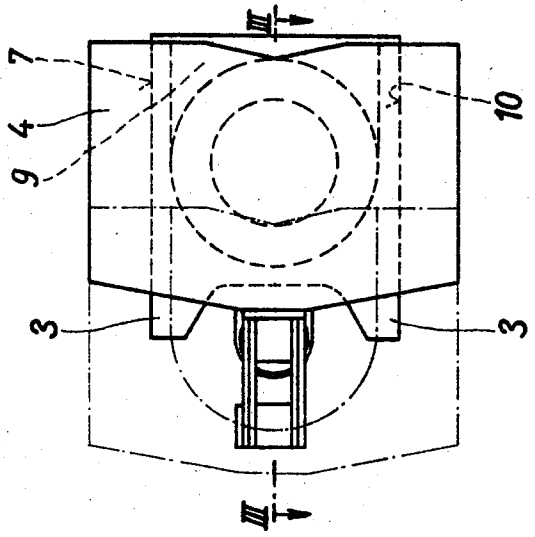

Fig. 1

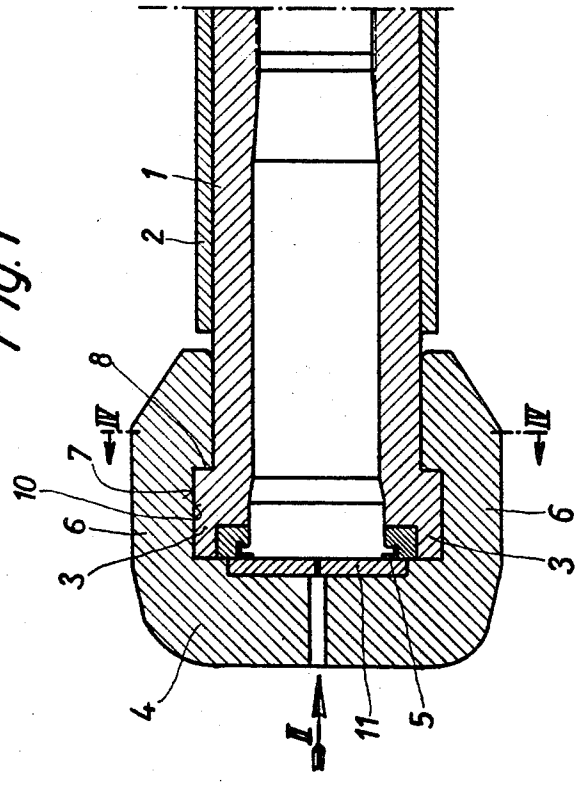

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Fig. 4

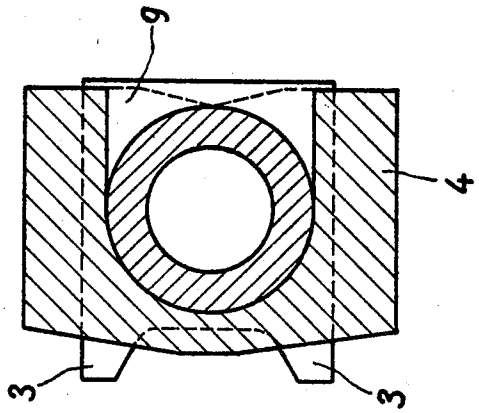
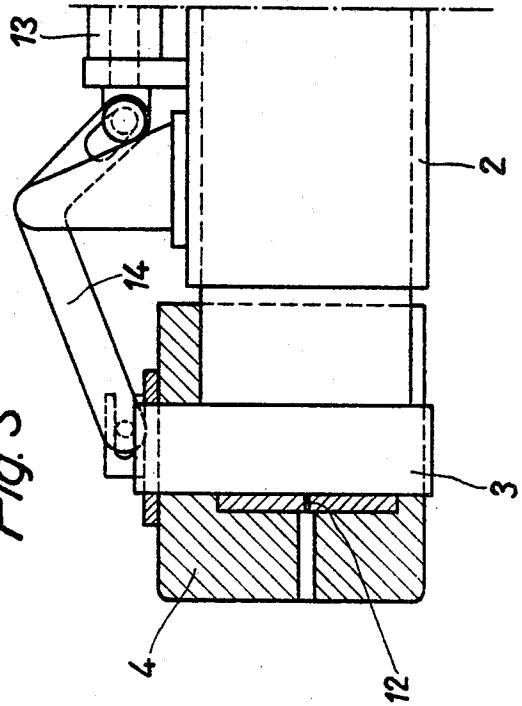


Fig. 3



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3,399,598

FIREARM BARREL COMPRISING A BREECH-BLOCK DISPLACEABLE TRANSVERSELY TO THE BORE AXIS

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1 Claim. (Cl. 89—24)

ABSTRACT OF THE DISCLOSURE

A breech construction for facilitating quick access for breech loading of a firearm wherein a barrel has a broadened end portion adjacent the breech extremity thereof defining two guiding trackways on opposite sides of the barrel and extending laterally therebeyond on at least a third side of the barrel, and a breechblock member is mounted for movement along the trackways between a firing position wherein the breechblock member receives the breech extremity of the barrel and at least partially surrounds at least part of the chamber portion of the barrel and a loading position wherein the breechblock member is supported by the trackways while the bore is exposed at the breech extremity.

Heretofore, conventional constructions for breech loading firearms have employed a receiver or base piece connected to the breech extremity of a gun barrel and a breechblock mounted adjacent the breech extremity of the barrel for movement between loading and firing positions. In the firing position, the breechblock is locked into position closing the bore of the barrel by the engagement of an interrupted thread on the two pieces, and is movable to the loading position after firing by disengagement of the interrupted thread and withdrawal of the breechblock from the receiver. Due to the increased performance now demanded of firearms, and particularly of barrel strength, it has become necessary to strengthen both receivers and breechblocks against increased gas pressures on firing. This however has brought disadvantages of substantially increased weight and larger dimensions, making increases in firing rate of the firearm difficult. High firing rates, in terms of rounds per minute or per hour, usually are now obtainable only by using automatic loading mechanisms which, in turn, require space adjacent the breech extremity of the barrel.

It has heretofore been proposed to provide a breech construction for a firearm which comprises a breechblock divided into two halves, each of which is pivotally mounted on the barrel. In the closed position, the breechblock engages the rear end of the barrel and bears against annular ribs thereon, being held in the closed position by a bolt. Such a breech construction does not provide adequate strength and gas-tightness for modern weapons, and the pivotal arrangement of the two halves of the breechblock makes loading the weapon difficult and thus results in a low firing rate.

In accordance with the present invention, a breech construction is provided which meets the demands of present firearms while providing advantages of low weight and small axial dimensions. More particularly, the breech construction of this invention leaves the powder chamber within the barrel tube exposed for loading immediately upon movement of a breechblock member from a firing position to a loading position, and is arranged so that the chamber portion of the barrel tube is accessible from three sides. Thus, a loading mechanism can be arranged, if necessary, directly at the exposed bore adjacent the breech extremity of a barrel tube.

It is accordingly an object of the present invention to provide a breech construction for facilitating quick access for breech loading of a firearm wherein the deficiencies and disadvantages of heretofore known breech constructions are avoided and wherein sufficient strength for use with modern firearms is objected without sacrifice in loading and firing rates. In realizing this object of this invention, a transversely displaceable base piece breechblock or receiver member is provided which is limited by guide means at the breech extremity of a barrel tube to linear translation between a firing position wherein the receiver member receives the breech extremity and at least part of a chamber portion of the barrel tube and a loading position wherein the bore of the barrel tube is exposed at the breech extremity. Preferably, the guide means is formed as a pair of guide bars extending beyond the barrel on at least one side of the barrel tube, and the outer diameter of the barrel tube is smaller than the distance separating a pair of parallel outer guide surfaces of the guide bars. When constructed in this manner, increased areas are provided to take up the pressures occurring on firing of the weapon and positive guide surfaces are provided to receive the breechblock member when the breech is open.

Some of the objects and advantages of the invention having been stated, others will appear as the description proceeds, when taken in connection with the accompanying drawings, in which—

FIGURE 1 is a longitudinal section through a breech construction in accordance with this invention;

FIGURE 2 is a front view taken generally as indicated by the arrow **2** in FIGURE 1;

FIGURE 3 is a partial section taken generally along the line **3—3** in FIGURE 2; and

FIGURE 4 is a cross-section taken generally along the line **4—4** in FIGURE 1.

Referring now more particularly to the drawings, the breech construction of this invention is there shown and will now be more particularly described. A barrel tube **1** is non-rotatably mounted in a cradle tube **2**, by which the breech construction of the firearm is supported in a suitable carrier (not shown).

In order to limit movement of a breechblock member **4** to linear translation transverse of the barrel tube **1**, this invention provides guide means at the breech extremity of the barrel tube **1**, preferably in the form of a pair of parallel guide bars **3**. The guide bars **3** extend transversely to the central longitudinal axis of a bore extending through the barrel tube **1** extending laterally therebeyond on at least a third side thereof, and preferably are formed integrally with the barrel tube **1**. The guide bars **3** have outer guide surfaces **7** thereon, formed to be parallel one to another and to the bore axis of the barrel tube **1**. Preferably, the external diameter of the barrel tube **1** is less than the distance between the parallel outer guide surfaces **7**, in order to form pressure surfaces **8** to take up the axial component of force resulting from firing pressures within the bore.

The breechblock member **4** is mounted on the guide means provided by the guide bars **3** for movement between a firing position (solid lines in FIGURE 2) wherein the member receives the breech extremity and at least part of the chamber portion of the barrel tube **1** and a loading position (phantom lines in FIGURE 2) wherein the bore is exposed at the breech extremity of the barrel tube **1**. In order to seal the breech against gas pressures arising on firing, an annular packing **5** is arranged in the breech extremity of the bore in the barrel tube **1**, and an inset plate **11** of heat resistant steel is set into the breechblock member **4**. A passage **12** is provided through the breechblock member **4** for a firing mechanism, preferably electrical, for firing powder charges in the chamber portion of the barrel tube **1**.

In order to provide substantial strength for the firearm including the breech construction of this invention, while permitting the use of a breechblock member **4** of short axial dimensions and relatively light weight, the breechblock member **4** is provided with supporting arms **6** arranged opposite each other and extending forwardly along the barrel tube **1** of the weapon. When the breechblock member **4** is in the firing position, the breech extremity of the barrel tube **1** and at least part of the chamber portion thereof are received within the member **4** and substantially encircled by the arms **6**, while the member **4** engages the pressure surface **8** on at least three sides of the bore (FIGURE 2). By the engagement of the member **4** with the pressure surface **8** and the encirclement of at least part of the chamber portion by the arms **6**, the member **4** when disposed in the firing position reenforces the chamber portion against the pressure forces within the bore and transmits the axial component of such forces to the barrel tube **1** at the pressure surface **8** provided by the broadened end portion thereof. To facilitate this operation while permitting mounting of the breechblock member **4** upon the guide means **3**, the breechblock member **4** is provided with a U-shaped opening **9** corresponding substantially to one-half the cross-sectional configuration of the barrel tube **1** and a rectangular passage **10** corresponding substantially to the overall cross section of the guide bars **3**.

In operation, the breechblock member **4** may be displaced transversely of the bore axis of the barrel tube **1** by a hydraulic cylinder **13** mounted on the cradle tube **2** and acting through a lever **14** (FIGURE 3).

In the drawings and specification, there has been set forth a preferred embodiment of the invention, and although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being defined in the claim.

What is claimed is:

1. A breech construction for facilitating quick access for breech loading of a firearm comprising:

a barrel having a bore therein defining a bore axis, a breech extremity, a chamber portion of said bore of predetermined cross-sectional area adjacent said breech extremity and a broadened end portion adjacent said breech extremity defining a pressure surface for receiving the axial component of pressure forces within said bore and two guiding trackways on opposite sides of said barrel, said trackways extending laterally beyond said barrel on at least a third side thereof and being of a predetermined cross-sectional configuration, and

a breechblock member movable along said trackways between a firing position wherein said member receives said breech extremity and at least part of said chamber portion and a loading position wherein said member is supported by said trackways while said bore is exposed at said breech extremity, said member including a transverse passage corresponding in cross-sectional configuration to that of said trackways and a pair of oppositely disposed guide and support arms extending axially beyond said breech extremity, forwardly of said broadened end portion and along said chamber portion when said member is in the firing position, said arms being connected together on one side in such a manner that said member includes a U-shaped opening in the region of said chamber portion beyond said trackways and engages said pressure surface on three sides of said bore, so that said member when disposed in said firing position reinforces said chamber portion against pressure forces within said bore and transmits the axial component of such forces to the barrel at said pressure surface.

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