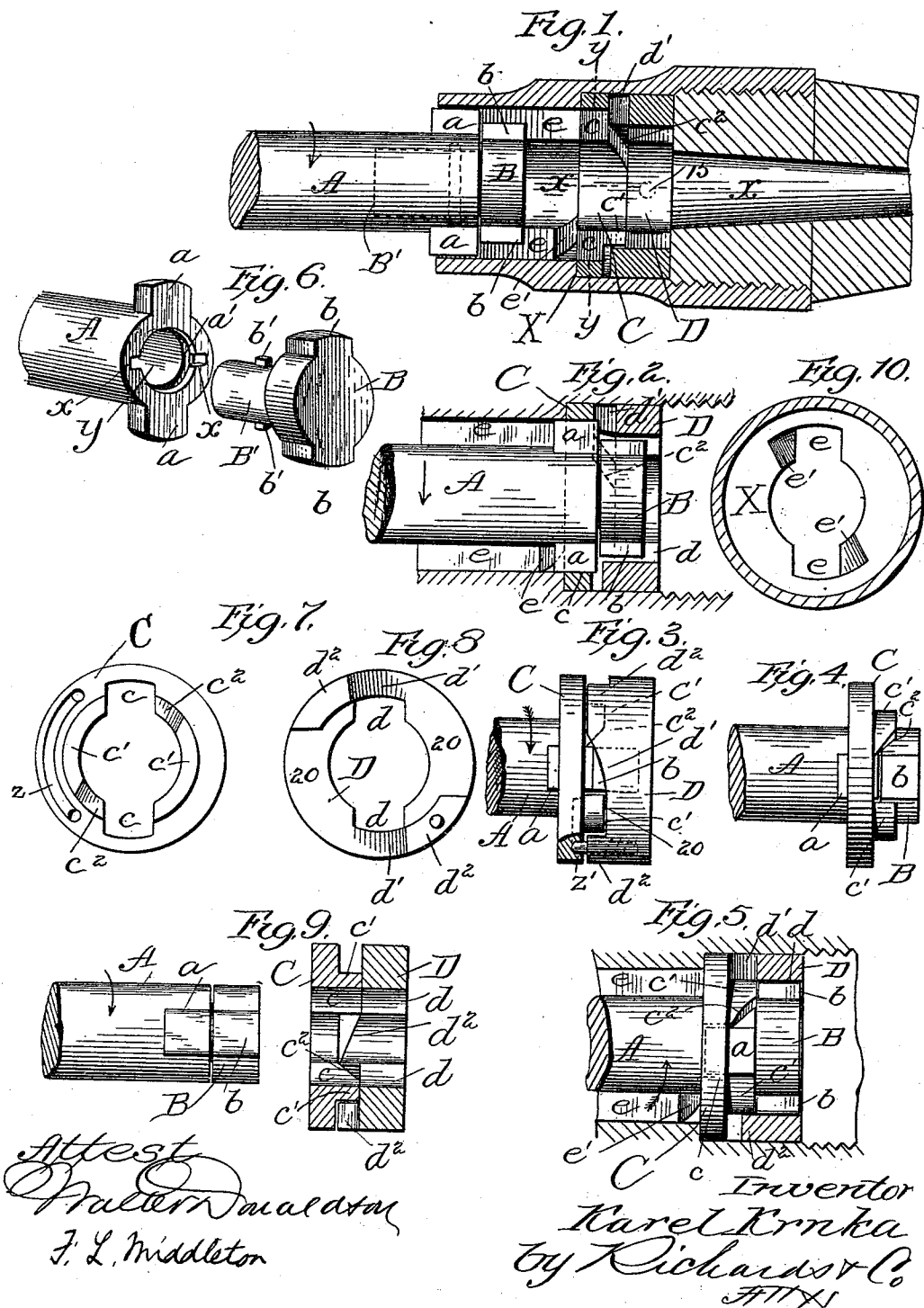


(Model.)

K. KRNKA.
BREECH BOLT FOR FIREARMS.

No. 495,741.

Patented Apr. 18, 1893.



UNITED STATES PATENT OFFICE.

KAREL KRNKA, OF PRAGUE, AUSTRIA-HUNGARY.

BREECH-BOLT FOR FIREARMS.

SPECIFICATION forming part of Letters Patent No. 495,741, dated April 18, 1893.

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To all whom it may concern:

Be it known that I, KAREL KRNKA, a subject of the Emperor of Austria-Hungary, residing at Prague, Bohemia, Austria-Hungary, have invented certain new and useful Improvements in Breech Apparatus for Firearms, of which the following is a full, clear, and exact description.

My invention has for its object the provision of an improved form of shouldered breech bolt having a movable shouldered head adapted to interlock with parts within the receiver by which the bolt is first firmly seated when given a quarter turn and also locked in position to withstand the recoil.

In the drawings:—Figure 1 is a longitudinal vertical section through the receiver, the bolt being shown as drawn back in unlocked position and in side elevation. Fig. 2 is a similar view with the bolt moved forward to the limit of its free sliding movement just before it is turned one quarter way round to be seated and locked. Fig. 3 is a detail plan view of the bolt and the rings for operating the head, the parts being in the position of Fig. 2 just before the bolt is given a quarter turn. Fig. 4 is a view similar to Fig. 3 with one ring removed. Fig. 5 is a detail sectional view through the receiver similar to Figs. 1 and 2 but here the movable ring is shown in elevation and the bolt has been given its quarter turn to lock the head. Fig. 6 shows in perspective the end of the bolt and the head detached therefrom. Fig. 7 is a face view of the movable ring. Fig. 8 is a similar view of the stationary ring. Fig. 9 is a sectional view of the rings on line $x-x$ of Fig. 1, the bolt being in position to enter the rings. Fig. 10 is a section through the receiver on line $y-y$ of Fig. 1.

The breech bolt A, has oppositely placed lugs or shoulders a, a adapted to move in the guide ways, e, e , of the receiver. The head B has a shank B' adapted to the socket y of the bolt, and said shank has lugs b' adapted to the circular channel a' of said socket into which the lugs fit when introduced through the notches $x x$ in the face of the bolt. This construction allows the bolt and head to be turned with relation to each other without coming apart excepting by removing the bolt and turning the head so that the lugs b' align with the notches x . The head also has shoulders b on opposite sides, of the same width

as those on the bolt but they are not so long as clearly shown in Figs. 1, 2 and 6. The receiver has a recess X and the ways e at their inner ends adjacent to this recess are cut away to form inclines e' arranged opposite each other as in Fig. 10. A movable locking ring C fits snugly within the recess X and adjacent to the inclines e' and this ring has a central opening to admit the cylindrical part of the head and bolt and notches or recess c, c , at opposite points which are deep enough to admit the long shoulders a, a , on the bolt, the short shoulders b on the head of course passing freely through them. These notches are as deep as the ways e of the receiver Fig. 1 and when the bolt is unlocked and drawn back the said notches c of the ring C align with the ways e ready to receive the shoulders on the bolt. On the front side of the ring narrow flanges $c' c'$ extend about the central opening and these end in oppositely arranged inclines c'' inclining backwardly to the notches c . The flanges c' as before stated are narrow and occupy only part of the face of the ring Fig. 7 and immediately about the center opening. Adjacent to the ring C in the receiver the fixed ring D is secured in any suitable way as by a pin 15 shown in dotted lines Fig. 1. This ring has a central opening like ring C and notches d, d , but these notches are shallow and while admitting the shoulders b, b , of the head freely they will not admit the shoulders on the bolt. The ring has on its rear face flanges d'' extending round its outer portion which flanges thus project over and encircle the flanges c' of the movable ring as shown best in Figs. 1, 3, 5 and 9. These flanges end in opposite inclines $d' d'$ lying over the notches d, d , Figs. 1 and 8, and the arrangement is such that when the bolt is in retracted position Fig. 1 all the notches of the rings will be in alignment with the ways e, e , and the inclines $d' d'$ on the rear of the stationary ring will be exposed to the impact of the shoulders a , when the bolt is moved forward.

Now supposing the bolt to be pushed forward the short shoulders b, b , being fitted to the shallow notches d, d , in the fixed ring pass freely through the notches in the movable ring C and into or partially into the notches in the fixed ring. This forward movement of the bolt is however limited by the shoulders a , thereof passing into the

notches *c* of the movable ring and striking against the exposed inclined shoulders *d'* of the fixed ring as in Figs. 2 and 3. The bolt is not yet seated and in order to do this and jam it hard up in its seat the bolt is partially rotated in the direction of the arrow Figs. 1, 2 and 3. This causes the rear edges of the shoulders *a* to work against the inclines *e'* at end of the guideways and this forces the bolt forward. During this turning-action of the bolt the head *B* is held from turning by its lugs *b* bearing in the notches *d, d'* of the fixed ring. As the lugs *a* are at this time in the notches of the movable ring, said ring will be turned when the bolt is turned and thus the notches in the said ring will be thrown out of line with those of the fixed ring and the shoulders *a* will move out of line with the ways *e* thus forming a lock as in Fig. 5. To secure this locking action and provide good bearings in rear of the head the flanges *c'* are provided which as stated are inclined and when the ring is turned these bear on the rear edges of the head lugs *b* as shown in Figs. 2, 3 and 4 and press the same forward. During this turning movement the lug *a* has ridden over and down the cam surface *d'* of the ring *D* and now lies in front of the smooth part *20* Figs. 5 and 8 it having been drawn forward with the advancing movement of the head under the action of the flange *c* on the movable ring. Now by rotating the bolt in the other direction as in Fig. 5 the forward edge of the shoulder *a* rides up the incline *d'* (it being understood that the flange *c* turns back with the shoulders *a*) and the bolt is thus retracted slightly from its seat and this takes place before the openings *c d* align with each other again after which the bolt is free to be entirely retracted.

The ring *C* has a groove *z* terminating at each end in a pocket. Into this groove a spring bolt *z'* enters from the stationary ring *D*. This connection serves to limit the movement of the ring *C* and determine its position accurately.

I claim—

1. In combination, the breech piece, a sliding and rotary bolt within the receiver having shoulders and a shouldered head swiveled to the end of the bolt, and locking means operated by the bolt and located within the receiver, whereby said head is locked against recoil, substantially as described.

2. In combination, the receiver, the shouldered bolt, within the receiver, having a socket at its end, the shouldered head having a shank adapted to said socket and arranged to be detached from said bolt when the head is turned a quarter way round, and locking means operated by the bolt and located within the receiver to engage the shouldered head, substantially as described.

3. In combination the receiver having movable locking means therein, the bolt having shoulders for operating the same and the shouldered head swiveled to the end of the

bolt and detachable therefrom, substantially as described.

4. In combination, the receiver, the rotary bolt therein having shoulders, a shouldered head swiveled to the end of the bolt, a movable locking ring having a central opening to receive the bolt and notches to receive the shoulders on said bolt whereby it is turned with the bolt and having also the inclines to act on the shouldered head; and the fixed ring having a central opening to receive the head and notches adapted to receive the shoulders on said head and having also the inclines on its rear face to act on the shoulders of the rotary bolt, substantially as described.

5. In combination the receiver, the movable ring therein, the bolt having shoulders for engaging and turning the said ring and the swiveled shouldered head on the bolt to be locked in place by the movable ring, substantially as described.

6. In combination the receiver, the rotary bolt therein having shoulders a shouldered head swiveled to the end of the bolt, a movable locking ring having a central opening to receive the bolt and notches to receive the shoulders on said bolt whereby it is turned with the bolt and having also the inclines to act on the shouldered head; the fixed ring arranged adjacent to the movable ring having a central opening to receive the head and notches adapted to receive the shoulders on said head and having also inclines on its rear face to act on the shoulders of the rotary bolt, and the spring pin carried by the fixed ring and adapted to enter pockets in the movable ring when said ring is moved fully in either direction by the rotary bolt, substantially as described.

7. In combination the receiver, the movable ring having deep notches and flanges with inclines running in one direction, the fixed ring *D* having shallow notches and inclines running in the opposite direction to those on the ring *C* the bolt having long shoulders adapted to the deep notches in the ring *C* and adapted to bear on the inclines of the ring *D* and the swiveled head on the bolt having short shoulders adapted to the shallow notches of the ring *D* and arranged to be engaged by the flanges of the ring *C*, substantially as described.

8. In combination the receiver having ways *e* with inclines *e'* at the inner ends thereof the movable notched locking ring, the bolt having shoulders to engage the inclines *e'* and the notches of the locking ring, and the swiveled head on the bolt to be engaged by the locking ring when the bolt is turned, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

KAREL KRNKA.

Witnesses:

LADISLAV VOJÁČETE,
ADOLPH FISCHER.