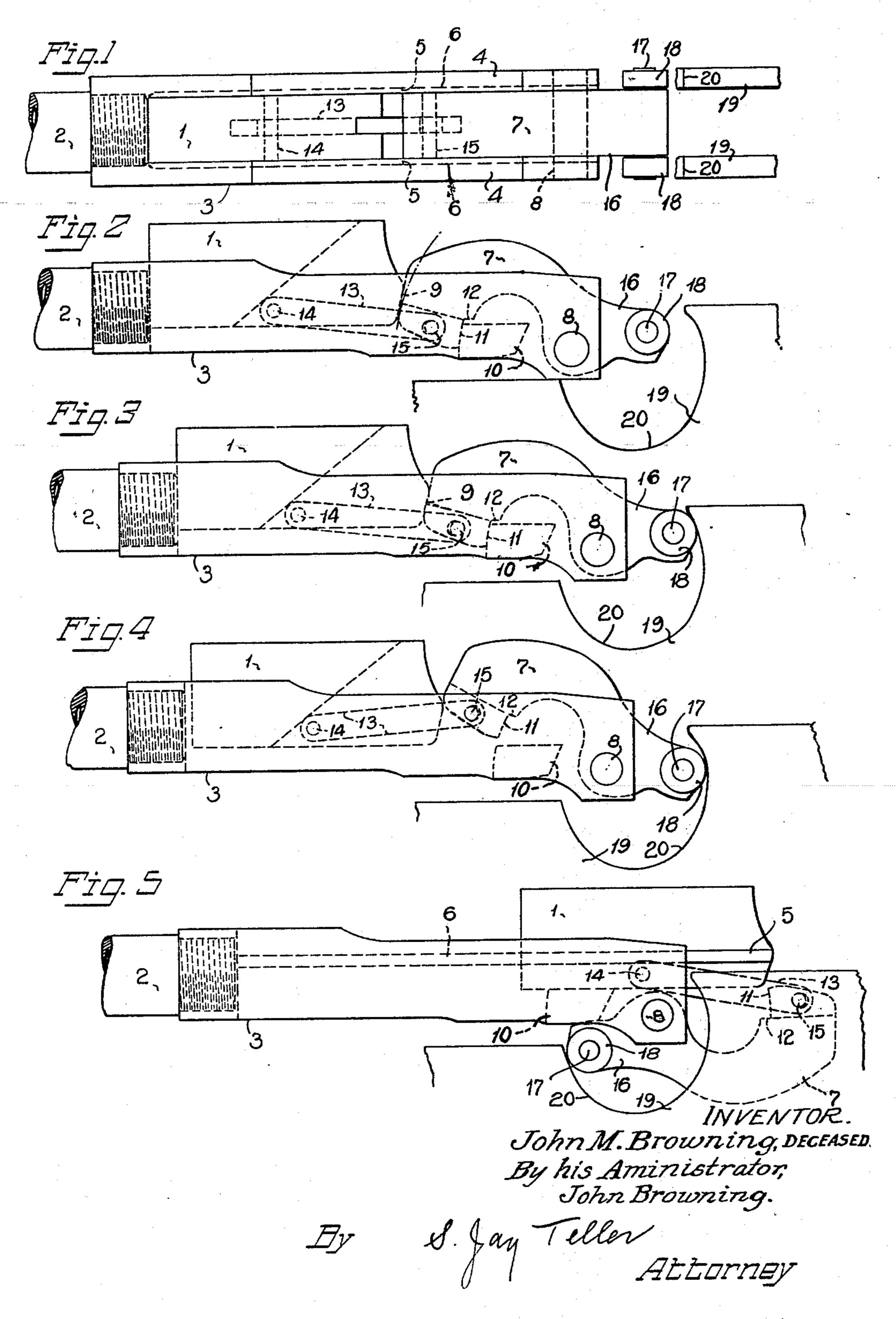
BREECH MECHANISM FOR FIREARMS

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BREECH MECHANISM FOR FIREARMS

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The invention is applicable to firearms where the unlocking action of the breech generally and more particularly to firearms of the class wherein the barrel and barrel extension and also the breech slide or bolt move a rearward upon recoil to a limited extent, and wherein the breech bolt is then permitted to move rearward separately from the barrel and barrel extension and to a greater extent, being returned to its forward locked posi-

10 tion automatically.

known practice to provide toggle links for tively to the barrel during the recoil action locking the breech bolt in its firing position of the firearm. There is also provided a and further to provide means operative upon barrel extension 3 which is connected with 15 recoil for breaking the toggle to permit the the barrel 2, the said barrel extension and 65 breech bolt to move rearward. Such toggle barrel preferably being movable rearward to link mechanisms are objectionable, as they in- a limited extent upon recoil following the volve the transmission of the recoil pressure discharge of the firearm. The breech bolt 1 through two separate links and through three is suitably guided between the side walls 4, 4 so separate pivotal connections. In accordance of the barrel extension 3 for rearward move- 70 with the present invention the objections in- ment as stated, being provided at its sides cident to the earlier mechanisms are avoided with tongues 5, 5 which enter grooves 6, 6 by providing a single pivoted lock link or bolt in the said side walls. which directly engages the breech bolt to The breech bolt 1 is normally held in its 25 normally hold it in firing position. Upon re- forward locked position by means of a lock- 75 30 the lock bolt for transmitting motion from ment of the breech bolt. When the barrel ex-80 ing means, however, is normally so positioned rearward, as is preferred, the bolt 7 is piv-

35 shown a diagrammatic embodiment of the through the bolt 7 and through the side walls 85 invention, but it will be understood that the 4,4 of the barrel extension. drawing is for illustrative purposes only and When the parts are in normal positions is not to be construed as defining or limiting as shown in Fig. 2, the breech bolt 7 directly the scope of the invention, the claims form- engages at its front with the rear end of the

upon for that purpose.
Of the drawing:

45 breech mechanism embodying the invention.

Fig. 2 is a side view of the parts shown in Fig. 1, the said parts being shown in their

mechanism begins.

Fig. 4 is a view similar to Fig. 2, but showing the parts in intermediate positions.

Fig. 5 is a view similar to Fig. 2, but show- 55 ing the parts in the positions of complete recoil.

Referring to the drawing, 1 represents a breech slide or belt which normally closes the rear end of the barrel 2 as shown in Figs. 60 In firearms of the class referred to it is 1 and 2, but which is movable rearward rela-

coil the lock bolt is automatically moved out ing bolt 7 which is pivotally mounted at the of obstructive relationship with the breech rear thereof for movement about a transbolt, and there is preferably provided a con-verse horizontal axis. This pivotal axis is necting means between the breech bolt and preferably out of the path of rearward movethe former to the latter. The said connect- tension and breech bolt are both movable In the accompanying drawing there is is a transverse pivot pin 8 which extends

ing a part of this specification being relied breech bolt at 9 and serves to firmly lock the 90 breech bolt against rearward movement relatively to the barrel extension. The rear-Fig. 1 is a plan view, largely diagram- ward thrust on the breech bolt, resulting matic, of a barrel extension, breech bolt and from the discharge of the firearm, is transmitted directly to the lock bolt. This thrust 95 may be taken entirely upon the pivot pin 8, but it is usually desirable to provide addiforward firing positions.

tional means for taking a part of the thrust Fig. 3 is a view similar to Fig. 2, but show- and for thus assisting in resisting the rearing the parts moved rearward to the position ward pressure exerted on the lock bolt by the is positioned to be engaged by a shoulder 11 on the lock bolt. The engaging surfaces of the abutment 10 and the shoulder 11 are preferably concentric with the pivotal axis

of the bolt at 8.

Preferably, the engaging surfaces of the When the barrel and barrel extension move 75 lock bolt 7 and the breech bolt 1, as shown at 9 in Fig. 2, are not concentric with the is preferred, advantage is taken of this movepivotal axis at 8, but are at a slight angle to ment to relatively move the lock bolt to efa concentric arc as clearly indicated. Thus fect unlocking. The particular means where-5 when the lock bolt 7 is moved downward, by this result is obtained may be varied but 80 there is a wedging action between the sur- as shown the lock bolt is provided with a faces at 9 and the concentric surface on the rearward extension or arm 16 carrying a abutment 10. This wedging action serves transverse bearing pin 17 on which are to force the breech bolt forward to its ex-mounted rollers 18, 18. Two cam plates 19, treme position and further serves to limit 19 are provided in relatively fixed positions 85 downward movement of the lock bolt. on the main frame of the firearm, and each Should this wedging action fail, by reason of these two plates 19, 19 is provided with a of wear or otherwise, to limit the downward movement of the lock bolt, a shoulder 12 on 5 the said bolt is positioned to engage the upper Preferably there is an initial combined so surface of the abutment 10 and thus positively limit the movement.

tween the breech bolt and the lock bolt which the position shown in Fig. 2 to the position is normally inoperative, but which upon re-shown in Fig. 3. As soon as the position 95 coil automatically becomes operative to piv-shown in Fig. 3 is reached, the rollers 18, 18 5 link 13 pivotally connected with the breech ward and the front end moving upward. As 100 means of a pivot pin at 15. At least one of link 13 to assist in the upward and rearward 105 when the parts are in normal position, the 15 construction being intentionally such that all pressure will be transmitted directly through the engaging surfaces at 9 as already described.

There is provided a suitable means opmeans operative for the purpose described. Fig. 5. 55 to a position enabling it to transmit pressure return movement to its normal locked posi- 120 as shown, this upward movement of the con- Fig. 4, then through the position shown in 125 necting link may be effected by giving the Fig. 3 and finally reaching the position lock bolt an initial upward movement toward shown in Fig. 2. a position out of its locking or obstructive What is claimed is: relationship with the breech bolt 1. It will 1. In a breech mechanism for a firearm,

breech bolt. I have shown such additional as soon as the lock bolt has been swung upmeans in the form of an abutment 10 which ward to a slight extent, the angular position extends transversely between the two side of the operating link 13 is changed and that walls 4, 4 of the barrel extension and which any lost motion in the bearings of the said link 13 is taken up. The recoil action of the 70 breech bolt is then transmitted through the link 13 to move or at least assist in moving the lock bolt to a position entirely out of the path of the breech bolt as shown in Fig. 5.

rearward to a limited extent upon recoil, as cam surface 20 in position for engagement

by the corresponding roller.

rearward movement of the barrel extension and breech bolt in fixed relationship with There is provided a connecting means be-each other, the parts moving rearward from otally move the lock bolt out of its locking engage the cam surfaces at 20 and the lock or obstructive relationship with the breech bolt is forced to turn in the clockwise direcbolt. Preferably this connecting means is a tion, the rear arm 16 thereof moving downbolt 1 with the lock bolt 7. This link 13 is the front end of the lock bolt moves upward, preferably centrally located, being pivoted the angular position of the operating link 13 to the breech bolt 1 by means of a pivot pin at is changed, and thereupon the recoil action 14 and being pivoted to the lock bolt 7 by of the breech bolt is transmitted through the the link bearings, as for instance that at 15, movement of the lock bolt. The action of the has sufficient play to prevent the transmis- cams upon the rollers 18, 18 is combined with sion of any pressure through the said link 13 the thrust through the link 13 to continue the movement of the lock bolt in the clockwise direction, the parts finally reaching the relative positions as shown in Fig. 5 which is the fully recoiled position. It will be observed that the arm 16 engages the bottom of the abutment 10 to prevent any relative 50 erative upon recoil to render the connecting movement beyond the position shown in 115

When the said means is a link such as 13, In accordance with customary practice, the said link is automatically moved about the breech bolt is properly biased, as for inits pivotal connection with the breech bolt stance by a spring (not shown), for forward from the breech bolt to the lock bolt so as to tion as shown in Fig. 1. It will be undermove the latter out of its obstructive relation-stood that during return movement the moship. When the connecting link and lock tions heretofore described are reversed, the bolt are pivotally connected with each other parts passing through the position shown in

65 be obvious from an inspection of Fig. 4 that the combination of a breech bolt movable 130

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rearward upon recoil, a lock bolt pivoted 5. In a breech mechanism for a firearm, behind the breech bolt and normally directly the combination of a breech bolt movable engaging the breech bolt to obstruct rear- rearward upon recoil, a pivoted lock bolt ward movement, means operative upon recoil normally directly engaging the breech bolt ⁵ to initially move the lock bolt about its to obstruct rearward movement, the pivotal 70 pivot toward a position out of obstructive axis of the lock bolt being behind the norrelationship with the breech bolt, and a con-mal position of the breech bolt and below necting means operative after the said ini- the path of rearward movement thereof, tial movement of the lock bolt and serving means operative upon recoil to initially move 10 as the result of the recoil action of the breech the lock bolt upward about its pivot toward 75 bolt to continue the said movement of the a position out of obstructive relationship lock bolt.

15 rearward upon recoil, a lock bolt pivoted be-recoil action of the breech bolt to continue 80 hind the breech bolt and normally directly the said movement of the lock bolt upward engaging the breech bolt to obstruct rear- and rearward to a position permitting the ward movement, a connecting link pivotally rear portion of the breech bolt to move rearconnected with the lock bolt and the breech ward beyond the said pivotal axis. breech bolt.

30 the combination of a breech bolt movable move the lock bolt about its pivot toward 95 35 ally connected with the lock bolt and the the lock bolt and serving as the result of the 100 erative to rivotally move the lock bolt as the said movement of the lock bolt. 40 upon recoil to initially move the lock bolt rearward upon recoil, a lock bolt pivoted 105 45 movement of the lock bolt as the result of pivot and engaging a shoulder on the lock 110

the combination of a breech bolt movable nected with the lock bolt and the breech bolt to obstruct rearward movement, the pivotal rearward pressure transmitted from the lock bolt about its pivot toward a position breech bolt, and a connecting means operative after the said initial movement of the 60 lock bolt and serving as the result of the 8. In a breech mechanism for a firearm, the 125 recoil action of the breech bolt to continue the said movement of the lock bolt to a position permitting the rear portion of the breech bolt to move rearward beyond the 65 said pivotal axis.

with the breech bolt, and a connecting means 2. In a breech mechanism for a firearm, operative after the said initial movement of the combination of a breech bolt movable the lock bolt and serving as the result of the

²⁰ bolt respectively and normally inoperative 6. In a breech mechanism for a firearm, 35 to pivotally move the lock bolt as the result the combination of a breech bolt movable of rearward pressure transmitted from the rearward upon recoil, a lock bolt pivoted bebreech bolt, and means operative upon re- hind the breech bolt and normally directly coil to move the connecting link about its engaging the breech bolt to obstruct rear-25 pivotal connection with the breech bolt to a ward movement, an abutment mounted in 30 position enabling it to move the lock bolt fixed relation to the axis of the lock bolt pivot out of obstructive relationship with the and engaging a shoulder on the lock bolt to resist rearward pressure on the said lock bolt, 3. In a breech mechanism for a firearm, means operative upon recoil to initially rearward upon recoil, a lock bolt pivoted a position out of obstructive relationship behind the breech bolt and normally direct- with the breech bolt and out of engagement ly engaging the breech bolt to obstruct rear- with the abutment, and a connecting means ward movement, a connecting link pivot- operative after the said initial movement of breech bolt respectively and normally inop-recoil action of the breech bolt to continue

the result of rearward pressure transmitted 7. In a breech mechanism for a firearm, from the breech bolt, and means operative the combination of a breech bolt movable about its pivot toward a position out of ob- behind the breech bolt and normally directstructive relationship with the breech bolt ly engaging the breech bolt to obstruct rearand to thus move the connecting link to a ward movement, an abutment mounted in position enabling it to continue the said fixed relation to the axis of the lock bolt the recoil action of the breech bolt.

bolt to resist rearward pressure on the said 4. In a breech mechanism for a firearm, lock bolt, a connecting link pivotally conrearward upon recoil, a pivoted lock bolt respectively and normally inoperative to piv-50 normally directly engaging the breech bolt otally move the lock bolt as the result of 115 axis of the lock bolt being behind the normal breech bolt, and means operative upon recoil position of the breech bolt and out of the to initially move the lock bolt about its pivot path of rearward movement thereof, means toward a position out of obstructive rela-55 operative upon recoil to initially move the tionship with the breech bolt and to thus 120 move the connecting link to a position enout of obstructive relationship with the abling it to continue the said movement of the lock bolt as the result of the recoil action of the breech bolt.

> combination of a breech bolt movable rearward upon recoil, a lock bolt pivoted behind the breech bolt and normally directly engaging the breech bolt to obstruct rearward movement, the surfaces of engagement be- 130

tween the lock bolt and breech bolt being at an angle to an arc concentric with the axis of lock bolt movement so as to provide a wedging action as the said bolt moves into its lock-5 ing position, means operative upon recoil to initially move the lock bolt about its pivot toward a position out of obstructive relationship with the breech bolt, and a connecting means operative after the said initial move-10 ment of the lock bolt and serving to continue the said movement of the lock bolt as the result of the recoil action of the breech bolt.

15 rearward upon recoil, a breech bolt movable relextension, the pivotal axis of the lock bolt 80 20 relatively to the barrel extension, means oper- barrel extension and breech bolt to initially 85 movement of the barrel extension and breech bolt to initially move the lock bolt about its pivot toward a position out of obstructive re-25 lationship with the breech bolt, and a connecting means operative after the said initial movement of the lock bolt and serving as the result of the recoil action of the breech bolt to continue the said movement of the 20 lock bolt.

10. In a breech mechanism for a firearm, the combination of a barrel extension movable rearward upon recoil, a breech bolt movable rearward upon recoil, a lock bolt pivoted 35 to the barrel extension behind the breech bolt able rearward upon recoil, a lock bolt piv- 100 40 bolt and the breech bolt respectively and normally inoperative to pivotally move the and means operative upon the combined rear-45 ward recoil movement of the barrel extension tension and breech bolt to initially move the 110 50 breech bolt.

the combination of a barrel extension mov- of the lock bolt. 55 to the barrel extension behind the breech bolt ble rearward upon recoil, a breech bolt mov- 120 relatively to the barrel extension, a connecting link pivotally connected with the lock bolt and the breech bolt respectively and normally inoperative to pivotally move the lock bolt as the result of rearward pressure transmitted to the link from the breech bolt. and means operative upon the combined rearward recoil movement of the barrel extension

and breech bolt to initially move the lock bolt about its pivot toward a position out of obstructive relationship with the breech bolt and to thus move the connecting link to a position enabling it to continue the said movement of the lock bolt as the result of the recoil action of the breech bolt.

12. In a breech mechanism for a firearm, the combination of a barrel extension movable rearward upon recoil, a breech bolt mov- 75 able rearward upon recoil, a lock bolt pivoted to the barrel extension and normally directly 9. In a breech mechanism for a firearm, the engaging the breech bolt to obstruct rearcombination of a barrel extension movable ward movement thereof relatively to the barrearward upon recoil, a lock bolt pivoted to being behind the normal position of the the barrel extension behind the breech bolt breech bolt and out of the path of rearward and normally directly engaging the breech movement thereof, means operative upon the bolt to obstruct rearward movement thereof combined rearward recoil movement of the ative upon the combined rearward recoil move the lock bolt about its pivot toward a position out of obstructive relationship with the breech bolt, and a connecting means operative after the said initial movement of the lock bolt and serving as the result of the 20 recoil action of the breech bolt to continue the said movement of the lock bolt to a position permitting the rear portion of the breech bolt to move rearward relatively to the barrel extension to a position beyond the said 95 pivotal axis.

13. In a breech mechanism for a firearm, the combination of a barrel extension movable rearward upon recoil, a breech bolt movand normally directly engaging the breech oted to the barrel extension behind the breech bolt to obstruct rearward movement thereof bolt and normally directly engaging the relatively to the barrel extension, a connect-breech bolt to obstruct rearward movement ing link pivotally connected with the lock thereof relatively to the barrel extension, an abutment fixedly mounted on the barrel ex- 105 tension and engaging a shoulder on the lock lock bolt as the result of rearward pressure bolt to resist rearward pressure on the said transmitted to the link from the breech bolt, lock bolt, means operative upon the combined rearward recoil movement of the barrel exand breech bolt to move the connecting link lock bolt about its pivot toward a position out about its pivotal connection with the breech of obstructive relationship with the breech bolt to a position enabling it to move the lock bolt, and a connecting means operative after bolt out of obstructive relationship with the the said initial movement of the lock bolt and serving as the result of the recoil action of 115 11. In a breech mechanism for a firearm, the breech bolt to continue the said movement

able rearward upon recoil, a breech bolt mov- 14. In a breech mechanism for a firearm, able rearward upon recoil, a lock bolt pivoted the combination of a barrel extension movaand normally directly engaging the breech able rearward upon recoil, a lock bolt pivotbolt to obstruct rearward movement thereof ed to the barrel extension behind the breech bolt and normally directly engaging the breech bolt to obstruct rearward movement thereof relatively to the barrel extension, an 125 abutment fixedly mounted on the barrel extension and engaging a shoulder on the lock bolt to resist rearward pressure on the said lock bolt, a connecting link pivotally connected with the lock bolt and the breech bolt 130

respectively and normally inoperative to piv- with the lock bolt upon the combined rearotally move the lock bolt as the result of ward recoil movement of the barrel extension rearward pressure transmitted to the link and breech bolt to initially move the said from the breech bolt, and means operative bolt about its pivot toward a position out of upon the combined rearward recoil movement of the barrel extension and breech bolt to initially move the lock bolt about its pivot toward a position out of obstructive relationship with the breech bolt and to thus move lock bolt as the result of the recoil action of the connecting link to a position enabling it the breech bolt. to continue the said movement of the lock 18. In a breech mechanism for a firearm, bolt as the result of the recoil action of the the combination of a barrel extension movbreech bolt.

the combination of a barrel extension mov- oted to the barrel extension behind the breech 80 able rearward upon recoil, a breech bolt mov- bolt and normally directly engaging the bolt to obstruct rearward movement thereof the lock bolt and the breech bolt respectively 85 relatively to the barrel extension, an arm ex- and normally inoperative to pivotally move tending rearward from the lock bolt, means the lock bolt as the result of rearward presengaging said arm and operative upon the sure transmitted to the link from the breech combined rearward recoil movement of the bolt, an arm extending rearward from the barrel extension and breech bolt to initially lock bolt, and a cam fixed against recoil move- 90 move the lock bolt about its pivot toward a ment and cooperative with the said arm upon position out of obstructive relationship with the combined rearward recoil movement of the breech bolt, and a connecting means operative after the said initial movement of the itially move the said bolt about its pivot to-30 lock bolt and serving as the result of the re- ward a position out of obstructive relation- 95 coil action of the breech bolt to continue the ship with the breech bolt and to thus move said movement of the lock bolt.

the combination of a barrel extension mova-35 ble rearward upon recoil, a breech bolt movable rearward upon recoil, a lock bolt pivoted to the barrel extension behind the breech bolt and normally directly engaging the breech bolt to obstruct rearward movement thereof relatively to the barrel extension, a connecting link pivotally connected with the lock bolt and the breech bolt respectively and normally inoperative to pivotally move the lock bolt as the result of rearward pressure transmitted to the link from the breech bolt, an arm extending rearward from the lock bolt, and means engaging said arm and operative upon the combined rearward recoil movement of the barrel extension and breech bolt to initially move the lock bolt about its pivot toward a position out of obstructive relationship with the breech bolt and to thus move the connecting link to a position enabling it to continue the said 55 movement of the lock bolt as the result of the recoil action of the breech bolt.

17. In a breech mechanism for a firearm, the combination of a barrel extension movable rearward upon recoil, a breech bolt mova-60 ble rearward upon recoil, a lock bolt pivoted to the barrel extension behind the breech bolt and normally directly engaging the breech bolt to obstruct rearward movement thereof relatively to the barrel extension, a cam fixed 65 against recoil movement and cooperative

obstructive relationship with the breech bolt 70 and a connecting means operative after the said initial movement of the lock bolt and serving to continue the said movement of the

able rearward upon recoil, a breech bolt mov-15. In a breech mechanism for a firearm, able rearward upon recoil, a lock bolt pivable rearward upon recoil, a lock bolt pivoted breech bolt to obstruct rearward movement to the barrel extension behind the breech bolt thereof relatively to the barrel extension, and normally directly engaging the breech a connecting link pivotally connected with the barrel extension and breech bolt to inthe connecting link to a position enabling it 16. In a breech mechanism for a firearm, to continue the said movement of the lock bolt as the result of the recoil action of the breech bolt.

In testimony whereof I have hereunto set my hand this 31 day of May, 1929. JOHN BROWNING,

Administrator of the Estate of John M. Browning, Deceased.

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