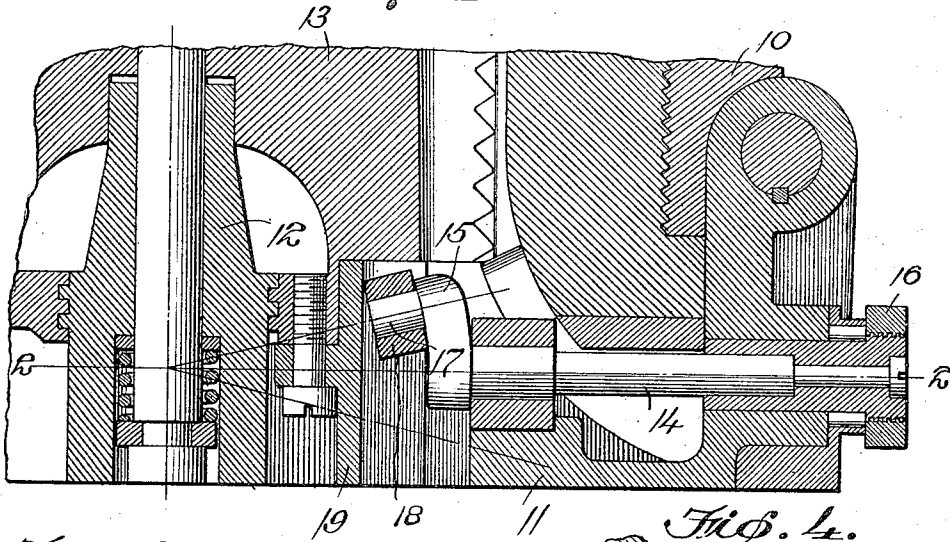


D. F. ASBURY.  
BREECH MECHANISM.  
APPLICATION FILED JULY 13, 1920.

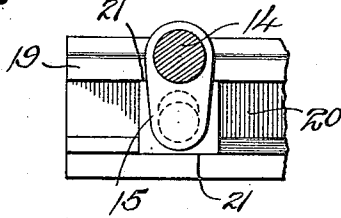
1,414,975.

Patented May 2, 1922.

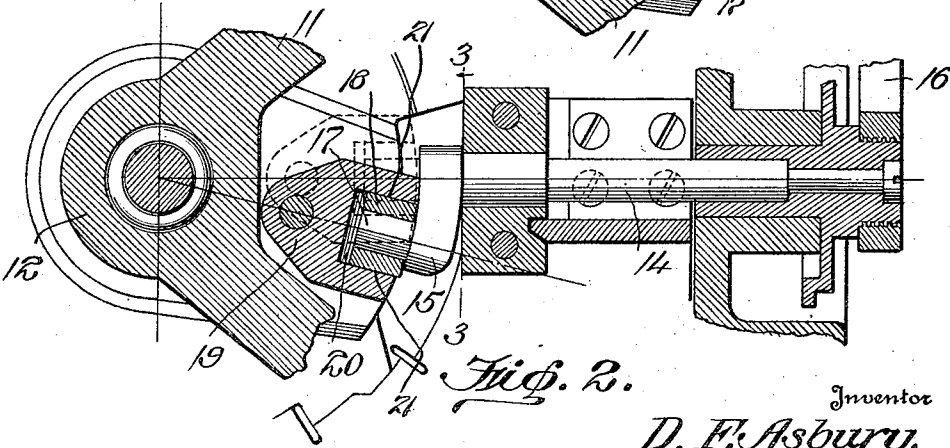
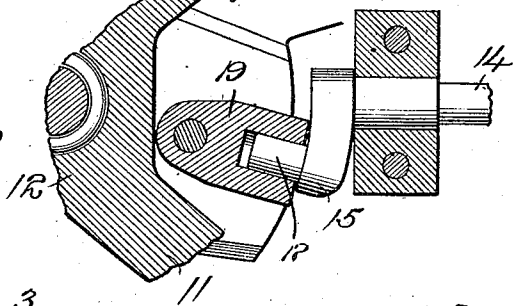
*Fig. 1.*



*Fig. 3.*



*Fig. 4.*



*Fig. 2.*

Inventor  
*D. F. Asbury,*

By *Henry T. Bright*  
Attorney

# UNITED STATES PATENT OFFICE.

DORSEY F. ASBURY, OF WASHINGTON, DISTRICT OF COLUMBIA.

## BREECH MECHANISM.

1,414,975.

Specification of Letters Patent.

Patented May 2, 1922.

Application filed July 13, 1920. Serial No. 395,868.

*To all whom it may concern:*

Be it known that I, DORSEY F. ASBURY, a citizen of the United States, and resident of Washington, in the District of Columbia, have invented certain new and useful Improvements in Breech Mechanisms, of which the following is a specification.

My invention relates to breech mechanisms for guns and particularly to improvements in structure for effecting rotation of the plug as disclosed in U. S. Patent 1,020,849 granted to George L. Smith and myself March 19, 1912 and wherein plug rotation is effected through the medium of a crank shaft rotatable on the carrier and connected to the plug by a cross head sliding in a cross head bearing fixed to the plug. It will be understood, however, that certain features of my present invention are applicable to forms of plug operating structures which do not employ a crank shaft as exemplified in my copending application filed July 13, 1920 Serial No. 395,869.

It is the purpose of my invention to provide the cross head with flat bearing surfaces that can be easily scraped and fitted and thereby facilitate assembly, reduce the cost of manufacture and enable the cross head to exert a uniform pressure throughout its extent against the cross head bearing; to provide a structure wherein the cross head only rotates on the crank pin whereby its leverage with respect to the crank is constant and minimum; and to provide a plug rotating structure which includes a pivoted actuating arm and means between the arm and plug including a member whose axis intersects the axis of the plug at all times, is disposed at an angle to the pivotal axis of the arm and intersects the latter in or substantially in the axis of the plug.

Other purposes of my invention will become apparent from the detail description taken in connection with the accompanying drawing wherein I illustrate and describe my invention as embodied in a plug rotating structure of the general type disclosed in Patent 1,020,849.

In the drawings—

Fig. 1 is a fragmental horizontal section of a breech mechanism having my invention incorporated therein, the breech plug being partially unlocked;

Fig. 2, a section on the line 2—2 of Fig. 1, with plug fully locked;

Fig. 3, a section on the line 3—3 of Fig. 2; and

Fig. 4, a view similar to Fig 2 showing a modified form of my invention.

Referring to Figures 1, 2 and 3, 10 is the gun, 11 the hinged carrier, 12 the carrier spindle, and 13 the plug rotatably supported by the spindle. The plug 13 is of the type disclosed in Patent 1,020,849 and is adapted to be rotated to and from locked position by mechanism embodying a shaft 14 rotatably mounted in the carrier with its axis intersecting the rotating axis of the plug 13. On its inner end the shaft 14 is provided with a crank arm 15 while its outer end carries a handle 16 for effecting rotation thereof. The arm 15 carries a crank pin 17 so disposed that a continuation of its axis will always intersect the axis of the plug 13 and furthermore will always intersect the continuation of the axis of the pivot of the arm 15 in the axis of the plug. The crank pin 17 is rotatably engaged in a cross head 18 which latter is slidably mounted in a cross head bearing 19 fixed to the plug 13, said cross head bearing being provided with a cross head receiving groove 20 extending longitudinally of the plug. I construct the cross head 18 substantially square to provide flat bearing surfaces 21 which can be easily scraped and fitted, thus facilitating assembly and enabling uniform pressure to be transmitted to the bearing throughout the extent of the cross head. Furthermore by the arrangement and construction previously described the cross head only rotates on the crank pin with the result that its leverage with respect to the crank is always constant and minimum. It will also be observed that the arrangement of cross head, cross head bearing, crank pin and crank arm will permit plug translation during its rotary movement in the manner disclosed in my prior Patents 1,310,045 and 1,323,947.

In Fig. 4 I have disclosed a structure wherein the cross head is eliminated by contacting the crank pin 17 directly with the walls of the groove 20 in the member 19 which latter is rigid with the plug. This arrangement is rendered possible by so disposing the crank pin that a continuation of its axis will intersect the axis of the plug as previously referred to. The arrangement shown in Fig. 4 is also such as would permit plug translation during its rotary move-

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ment in the manner disclosed in my prior Patents 1,310,045 and 1,323,947.

While I have shown the arm 15 associated with a shaft 14 rotated by a handle 16 the employment of the shaft and handle is not essential when my invention is viewed in its broadest aspect; the only essential being that the actuating arm be pivoted to the carrier with its pivotal axis intersecting the axis of the plug and that operating means be provided between the arm and plug which includes a member whose axis intersects the axis of the plug at all times, is disposed at a constant angle to the pivotal axis of the arm and intersects the arm's pivotal axis in the axis of the plug.

I claim:—

1. In a breech mechanism, a rotatable plug, a pivoted actuating arm, means for pivoting the arm, and plug operating means between the arm and plug including a member whose axis intersects the axis of the plug at all times.

2. In a breech mechanism, a rotatable plug, a pivoted actuating arm, means for pivoting the arm, and an operating connection between the arm and plug, the axis of said connection intersecting the axis of the plug at all times.

3. In a breech mechanism, a rotatable plug, a pivoted actuating arm, means for pivoting the arm, and plug operating means between the arm and plug whose axis is disposed at an angle to the pivotal axis of the arm at all times.

4. In a breech mechanism, a rotatable plug, a pivoted actuating arm, means for pivoting the arm, and an operating connection between the arm and plug; the axis of said connection being disposed at an angle to the pivotal axis of the arm at all times.

5. In a breech mechanism, a rotatable plug, a pivoted actuating arm, means for pivoting said arm, and plug operating means between the arm and plug including a member whose axis is disposed at all times at an angle to the pivotal axis of the arm and intersects the latter in the axis of the plug.

6. In a breech mechanism, a rotatable plug, a pivoted actuating arm, means for pivoting said arm, and an operating connection between the arm and plug, the axis of said connection being disposed at all times at an angle to the pivotal axis of the arm and intersecting the latter in the axis of the plug.

7. In a breech mechanism, a rotatable plug, a pivoted actuating arm, means for pivoting said arm, and plug operating means between the arm and plug whose axis is disposed in inclination to the pivotal axis of the arm.

8. In a breech mechanism, a rotatable plug, a pivoted actuating arm, means for pivoting said arm, and an operating connec-

tion between the arm and plug, the axis of said connection being disposed in inclination to the pivotal axis of the arm.

9. In a breech mechanism, a rotatable plug, a pivoted actuating arm, means for pivoting the arm, and plug operating means between the arm and plug permitting fore and aft movement of the latter during rotation thereof and including a member whose axis intersects the axis of the plug at all times.

10. In a breech mechanism, a rotatable plug, a pivoted actuating arm, means for pivoting the arm, and an operating connection between the arm and plug permitting fore and aft movement of the latter during rotation thereof, the axis of said connection intersecting the axis of the plug at all times.

11. In a breech mechanism, a rotatable plug, a cross-head slidably mounted thereon, a pivoted arm, and a pin on said arm engaging said cross-head, the axis of said pin intersecting the axis of the plug at all times.

12. In a breech mechanism, a rotatable plug, a cross-head slidably mounted thereon and having flat bearing surfaces with respect thereto, a crank shaft having a crank pin which engages said cross-head, and means for rotating said crank shaft.

13. In a breech mechanism, a rotatable plug, a cross head slidably mounted thereon and having flat bearing surfaces with respect thereto, a pivoted actuating arm, and a pin on said arm engaging said cross-head, the axis of said pin intersecting the axis of the plug at all times.

14. In a breech mechanism, a rotatable plug, a cross-head slidably mounted thereon, a pivoted actuating arm having its pivotal axis at right angles to the axis of the plug, and a pin on said arm engaging the cross-head, and having only rotary movement with respect thereto.

15. In a breech mechanism, a rotatable plug having a slot provided with opposite flat walls, a pivoted actuating arm having its pivotal axis disposed at right angles to the axis of the plug, and means in said slot operated by the arm and coacting with said flat walls to rotate the plug.

16. In a breech mechanism, a rotatable plug, a pivoted actuating arm having its pivotal axis intersecting the axis of the plug, and a cross head between the arm and plug having the same angular movement as the plug and at the same time having arcuate movement about the point of intersection of the pivotal axis of the arm with the axis of the plug.

17. In a breech mechanism, a rotatable plug, an actuating arm, and operating means between the plug and arm, said means including a member having an axis at an angle to the axis of the plug and moving with the angular movement of the plug.

18. In a breech mechanism, a rotatable plug, an actuating arm, and operating means between the plug and arm including a member having only rotary movement with respect to the arm and substantially only arcuate movement with respect to the plug. 5
19. In a breech mechanism, a rotatable plug, a pivoted actuating arm having a pin, and means for pivoting the arm, the axis of the pin being always in the same radial section of the plug and the same radial section of the arm. 10
20. In a breech mechanism, a rotatable plug, a pivoted arm, means between the plug and arm for rotating the plug having an axis always in the same radial section through the axis of the plug and the same radial section through the axis of the pivot of the arm. 15
21. In a breech mechanism, a rotatable plug, an actuating arm, and a plug operating member connecting the plug and arm having only arcuate movement with respect to the plug. 20
22. In a breech mechanism, a rotatable plug, an actuating arm, and a plug operating member connecting the plug and arm having only rotatable movement with respect to the actuating arm. 25
23. In a breech mechanism, a carrier, a rotatable plug, a plug operating member having arcuate movement with respect to the plug, an actuating handle connected with the operating member and having pivotal movement with respect to the carrier and only rotatable movement with respect to the operating member. 35
24. In a breech mechanism, a rotatable plug, a pivoted actuating lever, and an operating member connecting the plug and lever, said member's axis having conical movement during pivotal movement of the lever. 40
25. In a breech mechanism, a rotatable plug, an operating member connected to the plug, the axis of said member intersecting the axis of the plug at a given point during all plug operating movements thereof, and means for moving the operating member. 45
26. In a breech mechanism, a rotatable plug, an operating member for moving the plug, the axis of said member having conical movement during plug operating movement of the member, and means for moving the member. 50
- In testimony whereof I hereunto affix my signature in the presence of two witnesses. 55

DORSEY F. ASBURY.

Witnesses:

JOHN H. SIGGERS,  
FLORENCE A. BLINN.