Oct. 1, 1929. W. FOSS 1,730,201

OPERATING VALVE FOR AIR GUNS

Filed Nov. 1, 1927

Fig. 1.

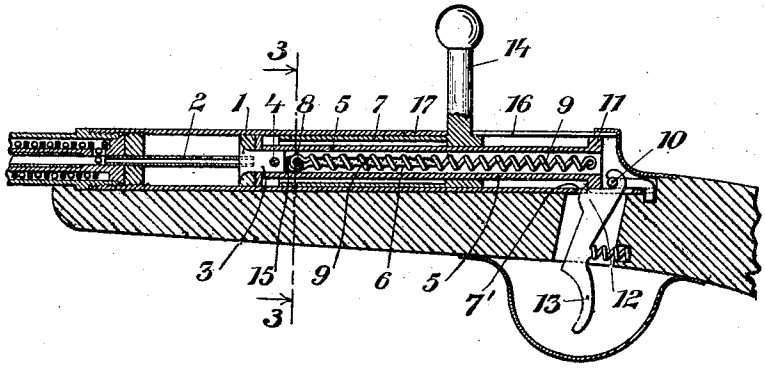


Fig. 2.

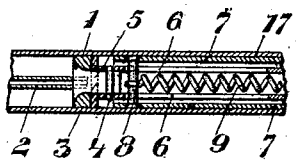
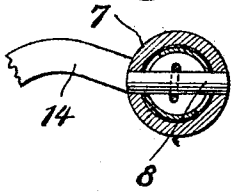


Fig. 3.



Inventor
Wilhelm Foss

By

Attorney

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WILHELM FOSS, OF ZELLA-MEHLIS, GERMANY

OPERATING VALVE FOR AIR GUNS

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The valve mechanism according to this invention is adapted for Mauser air-guns of any type, for guns with tipping barrel or with stationary barrel, for ordinary single-loading guns, and for magazine-guns, and one of its primary characteristics is that the valve is operated by means of a pull-spring, attached at one end to a transverse bolt of the main sleeve and at the other end to a transverse bolt of a valve-sleeve guided in this main sleeve so that, after a rear ring-flange of the valve-sleeve has come into engagement with the catch in the trigger, the pull-spring is tensioned by the forward and downturning movements of the operating handle. The operating handle is moved in a longitudinal direction in a curved guide-slot of the main casing in order to facilitate the cocking or setting of the valve when very strong springs are employed. The longitudinal slots in the valve sleeve, which serve as passages for the transverse suspending bolt of the sleeve, have at their front-ends, one a downwardly directed, and the other an upwardly directed, extension, in order that the transverse suspension-bolt of the spring, at the turning down of the operating handle after cocking to cause its engagement with the corresponding notch, may enter the extensions of the slots without the necessity of rotating the valve-sleeve in a lateral direction.

These arrangements are adapted for Mauser air-guns of any type and a substantial advantage is attained thereby in that cocking is effected by pressing the operating-handle forwardly together with the main sleeve. The Mauser air-guns of an older type are cocked by pulling back the operating-handle with the main sleeve. It is evident that the cocking of such a lock by human force can be more easily accomplished by pressing forwardly than by pulling backwardly in other words, a stronger spring may be employed and it will only be necessary for the operator to expend the same amount of energy in pressing forward that he would have expended in pulling backward. A further advantage is that at the forward pressing movement an auxiliary support can more easily be given to the gun by pressing the barrel-muzzle against any vertical surface, the gun being in the normal horizontal cocking position, so that cocking is considerably facilitated. When, for any reason, the valve does not come into engagement with the catch of the trigger, the valve will jump forward again and propel the projectile from the barrel. Therefore, as the gun is held in horizontal position, the operator holding the gun is protected from injury.

A different condition obtains when Mauser air-guns are cocked by pulling the operating-handle back with the main sleeve. Guns of this type must possess a comparatively great spring-power to obtain the necessary air-pressure so that, when pulling-back the main sleeve, the gun cannot be held in a horizontal position, but is generally placed vertically on the ground, and the operator holding the gun bends over the same in order that, when pulling back, the weight of his body may act upon the operating-handle and main sleeve to facilitate cocking. Thus when the valve is not held by the catch of the trigger, it will move forwardly, expelling the projectile which might injure the operator holding the gun.

Cocking by means of a pull-spring is further assisted by the moving of the operating handle forwardly in a curved guide-slot. Also, by the use of a pull-spring, as a means for operating the valve, more accurate shooting is insured.

An embodiment of the invention is illustrated, by way of example, in the accompanying drawing, in which:—

Fig. 1 shows, in longitudinal section the valve of a magazine Mauser air-gun embodying the present invention.

Fig. 2 is a cross-section through the valve head and the front-side of the valve-sleeve.

Fig. 3 is a section on line 3—3 of Fig. 1.

Referring to the drawings, the valve-head 1 has, in the construction shown representing a magazine-gun, a push-tube 2 of the usual type. On the valve-shaft 3 a valve sleeve 5 is fixed by means of a rivet 4. The valve-sleeve 5 has two opposite longitudinal slots 6 in which a transverse bolt 8 is reciprocatingly guided, being attached to and carried by the

reciprocating main sleeve 7. A pull spring 9 is attached at one end to the transverse bolt 8 and at the other end to a transverse bolt 10 fixed in the end of the valve sleeve 5. When the main sleeve 7 has been pulled back, a ring flange 11 of the valve-sleeve 5 engages with the catch 12 of the trigger 13 and is held by the same. When the operating handle 14 is pushed forwardly, the pull-spring 9 is tensioned, and when the operating-handle 14 is being turned on the axis of the main sleeve to bring it into engagement with the corresponding notch, the transverse bolt 8 will come into engagement with the opposite downwardly and upwardly directed extensions 15 of the longitudinal slots 6. The guide groove 16 in the main-casing or receiver 17, is designed to guide the operating-handle 14 and is curved, thus facilitating the placing of the pull-spring 9 under tension.

The bolt 8, to which one end of the spring 9 is attached, is caused to turn with the main sleeve 7 and would, if these extensions 15 were not provided, cause a rotation of the valve sleeve 5, the rear end flange 11 of which is locked by the catch or sear 12 of the trigger 13. These extensions 15, therefore, permit rotation of the bolt 8 with the main sleeve 7 without rotating at the same time the valve sleeve 5.

The locking of the flange 11 of the valve sleeve 5 is effected by moving the operating handle 14 in a rearward direction. During this movement, the rear face of the valve sleeve 5 abuts against the front face of the flange 11, so that, when the operating handle 14 is drawn back for the purpose of charging the air-gun, the valve sleeve 5 is moved backwardly until its flange 11 is caught by the catch or sear 12 of the trigger 13. Thereupon, the main sleeve 7 alone may be moved in the forward direction and thereby the spring 9 is stressed and the gun is cocked. The main sleeve 7 is provided with a slot 7′ at its rear end, into which the catch 12 of the trigger 13 slides when moving the operating handle 14 in the backward and forward directions, so that only the flange 11 of the sleeve 5 is locked.

Due to the fact that the stressing of the spring 9 is effected by moving the operating handle 14 in the forward direction, it is desirable to facilitate this movement by giving this notch 16 a curved instead of a rectangular shape, since in this latter instance, it would be necessary to overwind the full tension of the spring at first by pulling the handle in the forward direction, and then to turn the same in a cross-direction. If the spring possesses considerable tension, it may be that the strength of the operator will be insufficient to accomplish this turning movement under the full tension of the spring. By giving the notch 16 the shape illustrated, this forward movement of the operating handle 14 and the stressing of the spring are facilitated to a great extent, as the cocking movement is not composed of two movements in different directions.

I claim:—

1. A valve mechanism for air-guns, comprising the combination with a trigger having a catch, a main sleeve and an operating-handle of a valve-sleeve, a transverse bolt fixed in said main sleeve, a transverse bolt fixed in the rear-end of said valve-sleeve, a pull-spring attached at the rear-end to said transverse bolt of said valve-sleeve and at the front end to said transverse bolt of said main sleeve and designed to operate said valve, and a ring-flange on the rear end of said valve-sleeve designed to engage with said catch of said trigger so that by pushing forward and turning down said operating-handle said pull-spring is put under tension.

2. A valve mechanism as specified in claim 1, comprising the combination with the main sleeve and its operating-handle, and with the valve pull-spring, of a sleeve mounted in the main sleeve and having a curved guide slot for said operating handle to facilitate the placing under tension of said valve-pull-spring.

3. A valve mechanism as specified in claim 1, comprising the combination with the main sleeve and its operating handle the transverse bolts in said main sleeve and the valve-pull-spring of a valve-sleeve having two opposite longitudinal slots, one slot having a downwardly directed extension at its front end and the other slot having an upwardly directed extension at its front-end for the purpose of causing the transverse bolt of the main sleeve to engage at the rotating of the main sleeve by the operating-handle after the placing under tension of the valve-pull-spring with said extensions of said opposite longitudinal slots without the necessity of rotating also said valve sleeve.

In testimony whereof I have hereunto set my hand.

WILHELM FOSS.