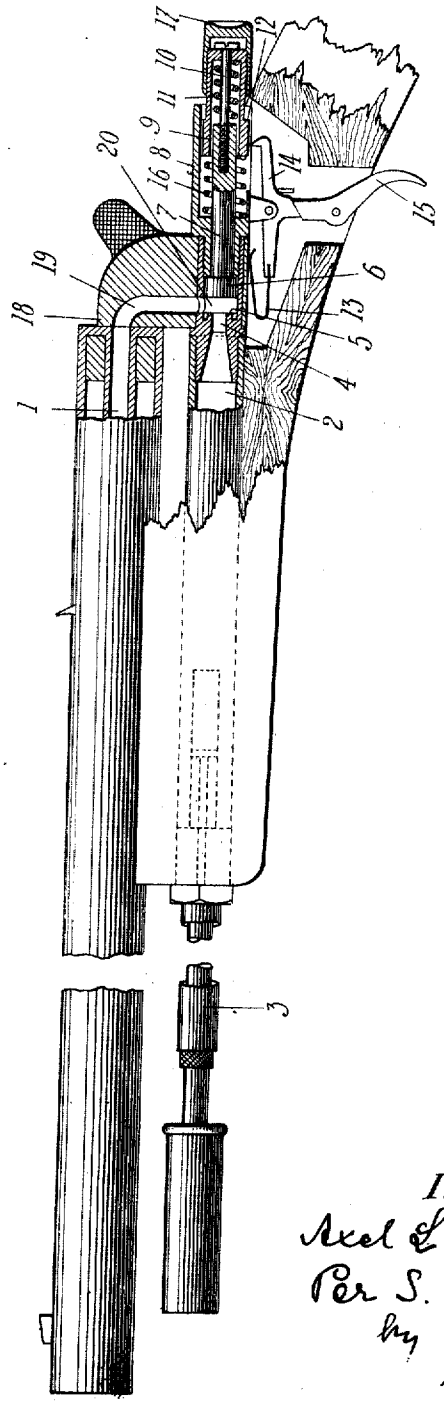
No. 843,573. PATENTED FEB. 12, 1907.

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AIR GUN.

APPLICATION FILED SEPT. 7, 1905.



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AIR-GUN.

No. 843,573. Specification of Letters Patent. Patented Feb. 12, 1907.

Application filed September 7, 1905. Serial No. 277,366.

To all whom it may concern:

Be it known that we, AXEL LINUS BLOMÉN and PER SAMUEL EWERLÖF, subjects of the King of Sweden, and residents of Sundbyberg, Sweden, and Stockholm, Sweden, respectively, have invented new and useful Improvements in Air-Guns, of which the following is a specification, reference being had to the drawing accompanying and forming a part hereof.

The present invention relates to improvements in such air-guns that are provided with an air-receptacle, an air-pump, and a valve controlled by the trigger and adapted to open a passage between said reservoir for the air and the barrel when the shot is to be discharged.

The object of the invention is to make effectual use of the expansion of the compressed air in such guns, which necessitates opening the said valve so rapidly as possible and that it should always shut perfectly close against its seat.

The invention consists, briefly, in that the said valve is yieldingly connected with a sleeve or other body of any suitable form adapted to engage the pawl acted upon by the trigger, so as to effect a certain tension between the valve and the sleeve when the latter engages the pawl, which tension will press the valve toward the seat. The effect of this will be that the valve, which is acted upon, as usual, by a spring, springs, or the like, tending to close the valve, at first remains pressed against the seat a moment after releasing the pawl, notwithstanding that the valve-springs have already begun to expand, and is then pulled very rapidly from its seat, so that the air confined in the receptacle will give the projectile inserted in the rear of the barrel a strong blow. By this arrangement we further gain the advantage that the pressure in the air-receptacle cannot be raised above a certain limit, since the valve may be adjusted to yield at a certain pressure, and thus works as a safety-valve.

In the accompanying drawing we have shown one form of our invention.

The figure represents a side view, partly in section, of the air-gun.

Beneath the rear of the barrel 1 an air-reservoir 2 is applied, as usual, and to the front end of the same is fixed an air-pump 3, by means of which air can be compressed in the reservoir 2. The rear end of the latter has a rather large opening 4, the edge of which forms the seat 5 for a valve 6, adapted to close said opening. The stem 7 of the valve is guided in a casing 8. Onto the rear part of the valve-stem is passed a sleeve 9 or the like adapted to reciprocate on the stem. The head of a screw 10 or the like passing through a hole in the bottom of the sleeve and screwed into the stem acts as a stop for the rearward movement of the sleeve relatively to the stem. A spring 11 or springs or other elastic body or bodies placed within the sleeve and pressing on the rear end of the stem and on the inside of the bottom of the sleeve tends to keep the sleeve pressed against the head of the screw. The sleeve has a shoulder 12, adapted to engage the pawl 14. A spring 13 tends to keep the pawl engaged with said shoulder until released by the trigger 15. Within the casing 8 is another spring 16, (or springs or other elastic body or bodies,) which presses against the front edge of the sleeve 9 and against a shoulder in the casing 8, thus tending to move the sleeve rearward or when the latter engages the head of the screw to open the valve.

The shoulder 12 of the sleeve has such a position that the valve must be shut and the three springs 11 13 16 compressed ere the pawl can engage the shoulder, the object of the pawl being to keep the valve shut when air is pumped into the reservoir 2 and until the shot is to be discharged. As the valve when closed is subjected to a pressure in a direction toward the seat, it will shut close even when the packing has set and the pawl 14 and shoulder 12 have been worn.

For facilitating the shutting of the valve a cap 17 is screwed on the rear end of the sleeve, and a space is left between the bottom of the said cap and the head of the screw 10 sufficient for the play of the sleeve on the valve-stem. Instead of this cap other suitable means may be used. The chamber 20, formed between the opening 4 and the valve 6 when the latter is open, communicates with the barrel 1 by means of a breech-piece 18, suitably mounted close behind the rear of the barrel and having a passage 19, which connects the chamber 20 with the barrel 1 when the breech-piece is closed. The breech-piece is turnable to the side for allowing of the projectile being inserted.

The air-gun described is used and works in the following manner: The valve 6 is shut by pressing the cap 17 forward until the pawl 14 engages the shoulder 12. This being done air is pumped into the reservoir 2 and a projectile—for instance, an arrow—is inserted in the rear of the barrel, whereupon the breech-piece is turned to the position shown in the drawing. Then the shot can be discharged. The maximum of pressure obtainable in the reservoir 2 is obviously dependent of the tension of the spring 11, and the valve 6 thus acts as a safety-valve, making a bursting of the air-reservoir quite impossible and having besides the effect that the pressure in the air-reservoir will be exactly the same for every shot, which is, as well known, a considerable advantage in gun practice. When the trigger 15 is moved backward by the finger, the pawl 14 is released from the shoulder 12, and the spring 16 immediately begins to expand. The valve 6 does, however, not leave its seat at once, because the spring 11 also expands; but thereafter the valve is extremely suddenly pulled away from its seat, whereupon the air rushes out through the passage 19 and darts the projectile.

The arrangements shown in the drawing may of course be modified with regard to details without departing from the idea of this invention. So may, for instance, the sleeve 9 have any suitable form, the only requirement being that it is movable relatively to the valve 6 and yieldingly connected to it. The guide for the valve may have any suitable form. The trigger device may be of any suitable construction, and so on.

Having now described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination with an air-gun having an air-reservoir, an air-pump and a valve acted upon by a trigger device and pawl and adapted to close and open a passage between the reservoir and the barrel, of a body adapted to engage the pawl, and a spring between said body and said valve, substantially as and for the purpose set forth.

2. The combination with an air-gun having an air-reservoir, an air-pump and a valve acted upon by a trigger device and adapted to close and open a passage between the reservoir and the barrel, of a sleeve passed on the rear end of the valve-stem, a spring inserted between the valve-stem and the bottom of the sleeve, and a screw fastened in the stem and passing through a hole in the bottom of the sleeve, so that the backward movement of the sleeve relatively to the stem is stopped by the head of the screw, substantially as set forth.

3. The combination with an air-gun, having an air-reservoir, an air-pump, and a valve controlling the communication between the reservoir and the barrel, of a sleeve passed on the valve-stem, a spring adapted to move the sleeve rearward on the stem, a stop connected to the stem and adapted to limit the backward movement of the sleeve on the stem, another spring adapted to open the valve by pressing on the front edge of the sleeve, a shoulder on the sleeve adapted to engage a pawl engaged by the trigger, and a cap screwed on the rear end of the sleeve and leaving a space between its bottom and the said stop so as not to interfere with the movements of the sleeve relatively to the stem, substantially as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

AXEL LINUS BLOMÉN.
PER SAMUEL EWERLÖF.

Witnesses:
EWALD DELMAR,
KARL RUNOSKOG.