July 3, 1956 W. O. HERSEY 2,753,079

WATER GUN

Filed May 4, 1953 2 Sheets-Sheet 1

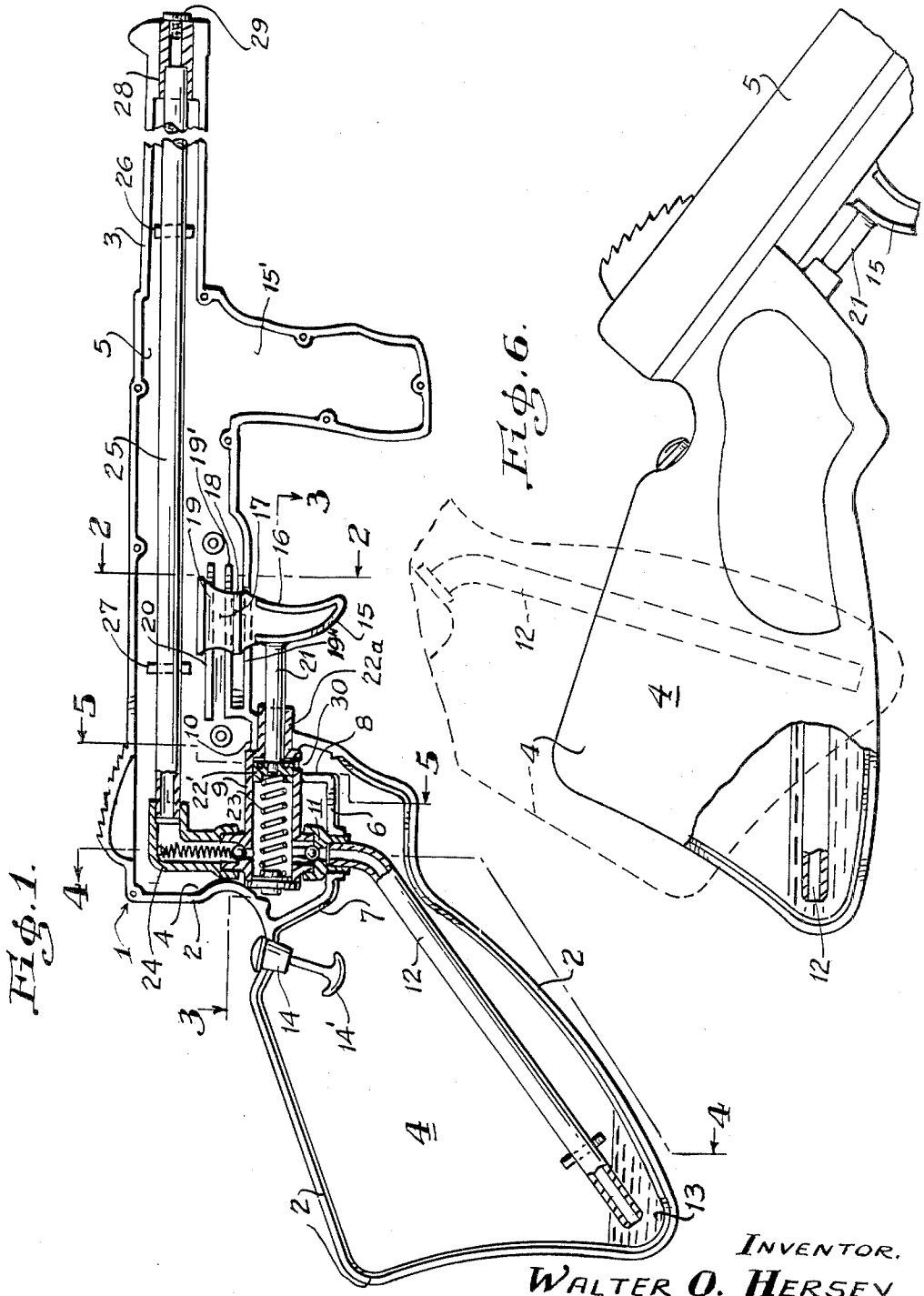

Fig. 1.

Fig. 6.

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July 3, 1956 W. O. HERSEY 2,753,079

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Filed May 4, 1953 2 Sheets-Sheet 2

Fig. 4.

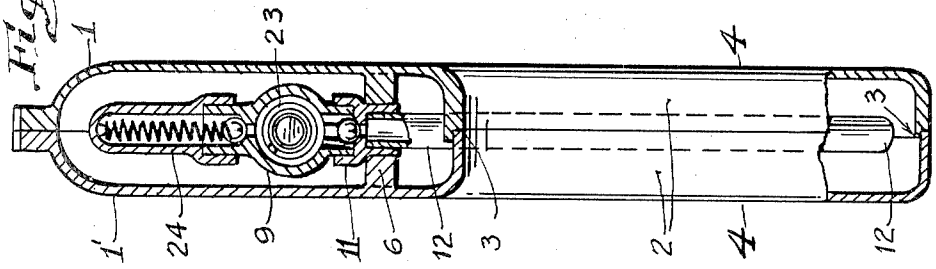


Fig. 5.

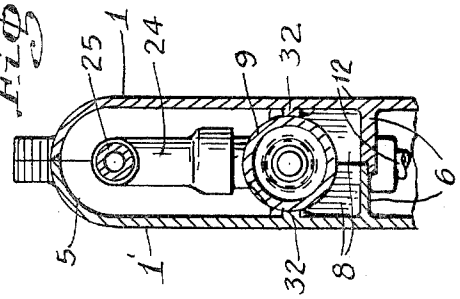


Fig. 2.

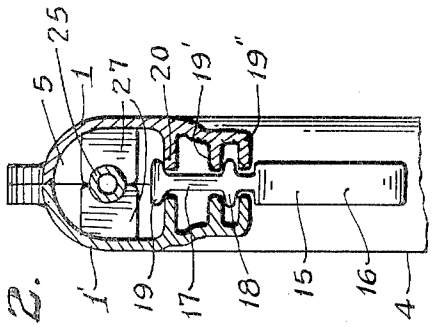
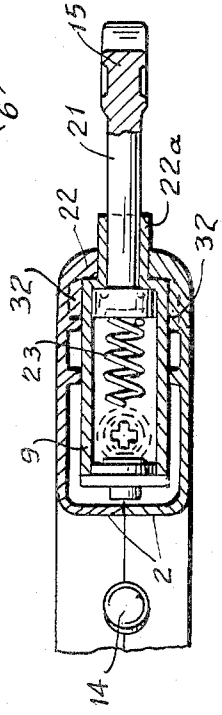


Fig. 3.



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United States Patent Office 2,753,079 Patented July 3, 1956

2,753,079

WATER GUN

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Application May 4, 1953, Serial No. 352,867

5 Claims. (Cl. 222—79)

This invention relates to a water gun.

It is an object of this invention to devise a water gun which has a large water compartment and which will insure continued and uninterrupted discharge of water on operation of the gun barrel at various positions of the gun with respect to the horizontal position of the barrel, and will do so until substantially all of the water in the storage compartment has been used up.

In order to accomplish this objective, I form the gun in the form of a rifle or carbine wherein the axis of the stock is at an acute angle to the axis of the barrel. I form the stock in the form of a sealed hollow compartment with a sealable water inlet. I provide a pump in the gun and connect the inlet of the pump to the corner of the compartment in the stock, which is lowermost when the gun barrel is horizontal, by a conduit positioned in the stock and connected to said lowermost corner, the discharge of the pump being connected to the barrel.

This invention will be further described and the objectives of the invention further made clear to those skilled in this art by reference to the drawings, in which

Fig. 1 is a plan view of one of the halves of the gun with the parts of the gun in position, shown in part elevation and part section;

Fig. 2 is a section taken on line 2—2 of Fig. 1;

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

Fig. 4 is a section taken on line 4—4 of Fig. 1;

Fig. 5 is a fragmentary view of the gun; and

Fig. 6 is a fragmentary view of the gun.

The gun is formed of two shells 1 and 1′ which are mirror images of each other except at the juncture between the shells, and it will be sufficient to describe one of the shells indicating the point of difference.

Fig. 1 shows the gun with the shell 1′ removed. The shell has a circumambient wall 2 which is mounted as shown at Figs. 1 and 4 to form a joint when the gun is assembled and a wall 3 at the barrel to form a butted joint when the gun is assembled. The slip joint referred to above constitutes the difference between the halves.

The stock 4, formed between the wall 2 and sides 4′, is hollow. This stock, as is conventional for stocks of rifles, carbines, and similar guns, fired from the shoulder position, is disposed so that its axis is at an obtuse angle to the axis of the barrel 5. The chamber formed between the wall 2 and the sides 4 of the hollow stock is provided with a transverse partition 6 integral with the wall of the gun half. Said partition has upwardly extending sections 7 and 8 and a horizontally extending section 32 which extends from the section 8 to the circumambient flange wall 3 (see Figs. 1, 3, 5). The section 7 terminates at the wall of the stock 8 and is grooved to receive and seal the pump cylinder 9. The end of the cylinder abuts a cylindrical boss 10 in the wall 2 and thus together with the walls 6, 7, 8, and 32 forms a transverse partition which seals the compartment in the hollow stock. Thus the water compartment in the

hollow stock is separated from the hollow barrel formed when the two halves of the gun are joined.

A port 30 adjacent the end of the pump cylinder is positioned in the cylinder underneath the barrier wall 32 and between the partition 8 and the wall of the gun adjacent the boss 10. The partition 6 has a port which receives the ball check valve to which is connected the conduit 12 extending to the lowermost corner 13 of the water chamber. A port in the wall closed by a plug 14 permits introduction of water. It will be observed that the port is in line with the pump barrel axis.

The barrel 5 is formed with a hollow hand grip 15′. Between the hand grip 15′ and the pump barrel is positioned a trigger 15 having a finger grip 16 and a T-head 19 positioned on the stem 17 and the grip also carries lower ridges 18. The barrel between the grip 14 and the pump is formed with three inwardly extending longitudinally spaced flanges 20, 19′, and 19″. These flanges and the corresponding flanges of the cooperating half-gun shell 1′ are spaced to form a slot in which the stem 17 is slidably positioned with the T-head sliding on top of the flange 20 and the ridges 18 between the flanges 19″ and 19′.

The finger grip is connected to a rod 21 which passes through the bearing 22*a* formed integrally with the barrel and passes through the boss 10. The piston rod makes a sliding fit with some small play to provide air communication between the cylinder 9 and the air. The piston rod is connected to the piston 22′ backed by a spring 23. The cylinder is connected to a spring loaded discharge valve 24 to the tube 25 positioned inside the barrel 5. The tube is held and centered between bosses 26 and 27 on each half of the gun section. The end of the tube is connected at the nozzle 28 to a discharge orifice or jet 29.

The gun is filled with water by withdrawing the plug 14. The plug has a hook extension 14′ of flexible material to permit its introduction into the port. The form of the hook and the flexibility of the material permit the end of the hook 14′ to be inserted in the port but when the plug is withdrawn the hook prevents the accidental complete withdrawal unless particular care is taken to manipulate the plug for this purpose. The plug makes a snug but not an air tight fit, thus providing for some air leakage into the water compartment above the water therein but preventing appreciable water leakage.

With the gun in a position to hold the barrel horizontal the stock may be filled with water up to the entry port and the level will be established at the pump cylinder. By manipulation of the finger grip of the trigger the piston is pushed into the cylinder and on relieving the pressure the spring 23 returns the piston and the finger grip. In this manner water is pumped from the water compartment and discharged through the nozzle 29 under considerable pressure. As the piston 22′ is pushed inwardly any water leakage getting by the piston returns via the port 30 into the water compartment. As the piston is pushed outwardly by the spring 23, water rises in the tube 12 to fill the pump cylinder. Air leakage between the rod 21 and the bearing 22*a* through the port 30 into the water compartment supplemented, if necessary, by leakage about the stopper 14 will maintain atmospheric pressure above the water in the water compartment in the stock. At the extreme outward position of the piston, as shown in Fig. 1, the piston covers the port 30 so that no leakage of water in the pump cylinder, when it is full, can occur around the piston and through the port 30. In this manner packing of the piston is not necessary and an ordinary sliding fit of the cylindrical piston against the wall of the cylinder is sufficient.

It will be observed that because the stock is at an acute angle to the barrel and because of the conduit 12 ending

adjacent the lowermost corner 13, which is the lowermost corner of the stock with respect to the barrel when the barrel is horizontal, the water will continue to be discharged until practically all of the water is used up. Only a small portion in the very bottom below the end of the conduit will remain.

It will also be observed that the barrel may be rotated clockwise or counterclockwise from horizontal to a position where the lower wall 2 of the stock is substantially horizontal as shown in full and dotted position in Fig. 6. The water in the chamber will cover the end of the conduit 12 and be discharged even when the water level is low. This is because the spacing of the end of the conduit 12 from the lower wall 2 is small and also because the corner 13 is substantially in a line with the lower wall 2 so that no large water pocket is below the end of the conduit and the corner 13 when the wall 2 is substantially horizontal. By this construction substantially full utilization of the water charge in the water compartment is made whether the barrel is in horizontal position or above or below the horizontal position of the barrel.

The gun may be carried with the barrel in any position, even pointing downwardly, without the water draining from the stock, since the transverse partition formed by 7, 6, 8, and 32 and the pump cylinder form with the stopper 14 and the valve 11 a water tight compartment.

While I have described a particular embodiment of my invention for the purpose of illustration, it should be understood that various modifications and adaptations thereof may be made within the spirit of the invention as set forth in the appended claims.

I claim:

1. A water gun, comprising a hollow stock, a hollow barrel, the axis of said stock being disposed at an obtuse angle to said barrel, said stock having a lowermost corner, a transverse partition between the walls of said stock closing one end of said stock, a pump cylinder in said gun, a piston in said pump cylinder, a trigger, a rod connecting said piston and said trigger, an inlet port to said cylinder on one side of said piston, an outlet port from said cylinder, an inlet conduit extending into said hollow stock and connected to said inlet port, an outlet conduit connected to the outlet port from said pump cylinder and to the muzzle at the end of said barrel, a port in said pump cylinder on the other side of said piston, said port being in fluid communication with the interior of said hollow stock.

2. A water gun comprising a hollow stock, a hollow barrel, the axis of said stock being disposed at an obtuse angle to said barrel, said angle being substantially greater than a right angle, said stock having a lowermost corner, a transverse partition between the walls of said stock closing one end of said stock, a pump cylinder in said gun, a piston in said pump cylinder, a trigger, a rod connecting said piston and said trigger, an inlet port to said cylinder, at one end of said cylinder, an outlet port from said cylinder, on the same side of said piston, an inlet conduit extending into said hollow stock and connected to said inlet port, an outlet conduit connected to the outlet port from said pump cylinder and to the muzzle at the end of said barrel, a port in said pump cylinder on the other end of said cylinder, said port being in fluid communication with the interior of said hollow stock, said port being placed also to be covered by said piston when the piston is at the extreme position in said cylinder away from said inlet port.

3. A water gun comprising a hollow shoulder stock, a hollow barrel, the axis of said stock being disposed at an obtuse angle to said barrel, said angle being substantially greater than a right angle, said stock having a lowermost corner, an inclined lower edge, an inclined upper edge and a third edge extending from said lowermost corner

substantially normal to said barrel, a transverse partition between the walls of said stock closing one end of said stock, a pump cylinder in said gun disposed on the other side of said partition from said one end of said stock, a piston in said cylinder, a trigger, a bearing connected to one end of said cylinder in axial alignment therewith, a rod passing through said bearing and connecting said piston and said trigger, said rod being received in said bearing by a sliding fit with sufficient clearance to permit air to pass into said cylinder, an inlet port in said cylinder and located at one end of said cylinder, an outlet port from said cylinder, on the same side of said piston, an inlet conduit extending through said partition into said hollow stock and connected to said inlet port, said inlet conduit extending throughout substantially its entire length closely adjacent said inclined lower edge of said stock and terminating adjacent said lowermost corner of said stock, an outlet conduit connected to the outlet port from said pump cylinder and to the muzzle at the end of said barrel, a port in said pump cylinder on the other end of said cylinder, said port being in fluid communication with the interior of said hollow stock, said port being placed also to be covered by said piston when the piston is at the extreme position in said cylinder away from said inlet port.

4. A water gun comprising a barrel, a hollow enclosed chamber, a water inlet to said chamber, a closure for said inlet, a pump cylinder in said gun between said chamber and said barrel, a piston in said pump cylinder, a trigger, a rod connecting said piston and said trigger, an inlet port to said cylinder on one side of said piston, an outlet port from said cylinder, an inlet conduit extending into said hollow chamber and connected to said inlet port, an outlet conduit connected to said outlet port and to the muzzle at the end of said barrel, a port in said pump cylinder on the other side of said piston, said port being in fluid communication with the interior of said hollow chamber, said last named port being placed also to be covered by said piston when the piston is at the extreme position in said cylinder away from said inlet port.

5. A water gun comprising a hollow barrel, a hollow shoulder stock disposed at an obtuse angle to said barrel, said shoulder stock having an enclosed hollow chamber formed therein, a pump cylinder in said gun disposed between said shoulder stock and said barrel, a piston in said cylinder, a trigger, a bearing connected to one end of said cylinder in axial alignment therewith, a rod passing through said bearing and connecting said piston and said trigger, said rod being received in said bearing by a sliding fit with sufficient clearance to permit air to pass into said cylinder, an inlet port in said cylinder and located at one end of said cylinder, an outlet port from said cylinder, on the same side of said piston, an inlet conduit extending into said chamber and connected to said inlet port, an outlet conduit connected to said outlet port and to the muzzle at the end of said barrel, a third port in said pump cylinder on the other end of said cylinder, said last named port being in fluid communication with the interior of said hollow chamber, said third port being placed also to be covered by said piston when the piston is at the extreme position in said cylinder away from said inlet port.

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