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I. R. RINKEWICH

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GUN TYPE GARDEN HOSE NOZZLE

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2 Sheets-Sheet 2

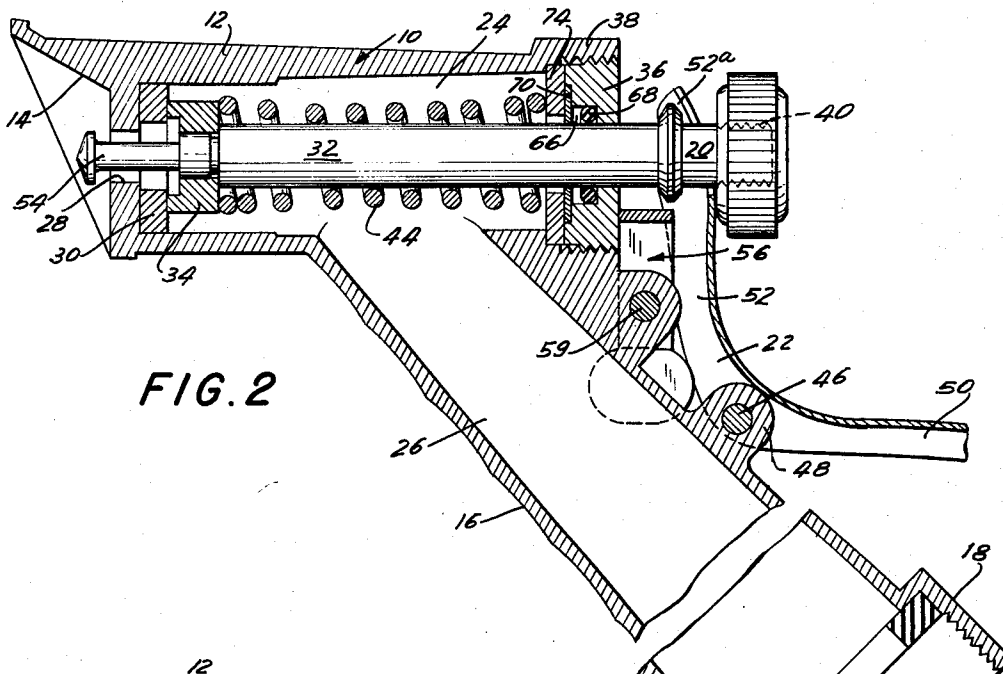


FIG. 2

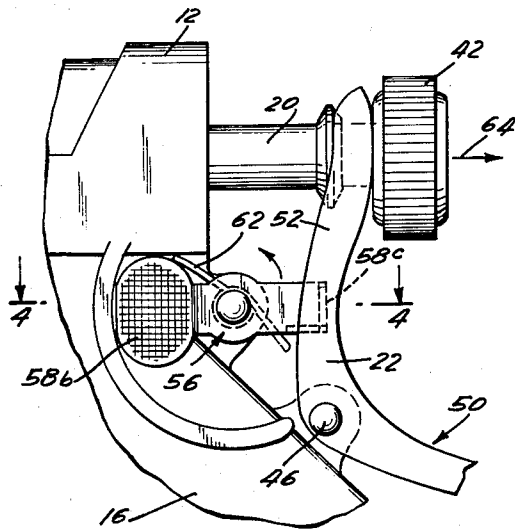


FIG. 3

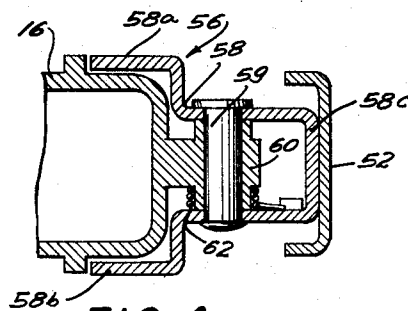


FIG. 4

INVENTOR.
ISAAC RINKEWICH

BY *James V. Franklin*
ATTORNEYS

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GUN TYPE GARDEN HOSE NOZZLE

Isaac R. Rinkewich, Brooklyn, N.Y., assignor to Melnor Industries, Inc., Brooklyn, N.Y., a corporation of New York

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4 Claims. (Cl. 239—459)

This invention relates to a gun type fluid control device employable particularly as a garden hose nozzle.

A gun type garden hose in being shaped in the general form of a gun body is made to comprise a barrel section terminating in a nozzle and a handle or grip section terminating in a hose connection, a valve chamber being formed in the barrel section and a hose connecting chamber being formed in the handle or grip section, the said chambers communicating with each other and with the nozzle orifice for the flow of a fluid such as water there-through. A valve for controlling the water flow is slidably mounted in the barrel section and the operation of said valve is controlled by a movable member in the form of a trigger mounted on the gun body. The valve member and the trigger are related so that these parts are spring biased to a valve closing position, the trigger being manually operated to move the valve to open position against the action of the spring. It is desirable in a hose nozzle of this type to latch the trigger in valve opening position so that these may be held without further manual effort against their spring biasing action. It is also desirable to so construct these parts that the unlatching of the trigger and valve may be effected rapidly and with facility.

One of the prime objects of my present invention resides in the provision of a gun type garden hose nozzle in which the trigger and its actuated valve, once manually moved to a valve opening position, will be latched in such a position in a very simple manner thus relieving the hand of the user from continual application on the trigger, the device being furthermore so designed and constructed that an impulse or further movement imparted to the trigger itself will automatically effect the release of the latch so that all of the parts may return to a normal or valve closing position.

In the gun type garden hose nozzle of the present invention, the valve chamber extends over substantially the length of the barrel section and the valve which is slidably mounted in said barrel section comprises a valve head for coaction with a valve seat at the nozzle end of the barrel section and a stem mounted for reciprocation at the other end of the barrel section, this mounting being the sole mounting support for the slidable valve. It is essential with these parts so interrelated to water-seal effectively the slidable mount of the valve stem.

A further prime object of the present invention pertains to the provision of a gun type garden hose nozzle of this character in which there is provided an efficient supporting mount on the gun barrel for the slidable valve, the said supporting mount being further designed to produce a water-tight seal at the sliding union between the valve stem and its mounting.

A further prime object of the invention resides in the devising and constructing of a gun type garden hose nozzle of this character in which the trigger operated valve and the water-seal mounting for the valve are so coordinated as to produce a device which not only is

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simple in construction but in which the parts, made few in number, may be readily assembled and disassembled and in which such parts when assembled are firmly secured together.

To the accomplishment of the foregoing objects and such other objects which may hereinafter appear, my invention relates to a gun type fluid control device employable particularly as a garden hose nozzle as defined in the following claims and set forth in the following specification taken together with appended drawings in which:

Fig. 1 is a perspective view of the gun type fluid control device of the present invention;

Fig. 2 is a view thereof on an enlarged scale with parts taken in vertical cross-section;

Fig. 3 is a fragmentary view of parts shown in Figs. 1 and 2;

Fig. 4 is a fragmentary view taken in cross-section in the plane of the line 4—4 of Fig. 3;

Fig. 5 is a perspective view of the latch member detached from the gun body; and

Fig. 6 is a perspective exploded view of the parts of the valve supporting mount.

Referring now in detail to the drawings, the gun type fluid control device, especially designed as a garden hose nozzle, comprises a gun shaped body generally designated as 10, shaped to provide a barrel section 12 terminating in a nozzle 14 and a handle or grip section 16 terminating in a hose connection 18, a valve 20 being slidably mounted in said barrel section 12 and a trigger in the form of a lever 22 mounted on the handle 16 of said gun body, the said trigger lever 22 being connected for operating the valve 20.

The gun body 10 is formed interiorly to provide a valve chamber 24 extending substantially the length of the barrel section 12 and a hose connecting chamber 26 communicating with the valve chamber 24, the latter in turn communicating with a nozzle orifice 28, for the flow of a fluid therethrough, such as for the flow of water when the gun type nozzle is connected to a garden hose at its hose connection 18. At the nozzle end of this fluid control device, there is provided a valve seat 30 either integral with the gun body or made of a separate ring inserted into the valve chamber 24.

The valve 20 is made to comprise a valve stem 32 and a valve head 34, the valve head being adapted to coact with the valve seat 30, the valve stem being slidably mounted for reciprocation in a gland member 36, the said gland member being affixed to the end 38 of the barrel 12. The valve stem 32 extends to the exterior of the gun body, the outer end of said stem being threaded as at 40 for threadedly receiving a knob or head 42, the threaded arrangement being for the purpose of enabling axial adjustment of the knob 42 on the stem. The stem 32 is spring biased to valve closing position by means of a coil spring 44 received by the stem 32, the said coil spring being anchored between the valve head 34 and the gland member 36.

The trigger 22 is preferably in the form of a lever pivoted or fulcrumed as at 46 on a stud 48 integral with the handle section 16, the said trigger lever thus providing a lower arm 50 adapted for hand actuation and an upper arm 52 adapted for engaging the knob or head 42 of the valve stem to operate the valve, the upper end 52^a of this arm being forked for reception of the outer end of the valve stem as clearly shown in Figs. 1 and 2 of the drawings.

With the parts thus far described, it will be seen, having particular reference to Fig. 2 of the drawings, that the valve 20, spring biased by the spring 44 is normally moved and held in valve closing position, thus closing the nozzle

orifice 28, and that upon manual depression of the trigger lever arm 50, the trigger lever arm 52 will move the valve 20 slidably in the supporting gland member 36 and against the action of the spring 44 to open the valve 30—34. The character of the water spray may be changed by the extent of the movement of the valve 20, the spray being controlled in turn by a valve extension 54 movable in the nozzle orifice 28. The spray characteristic may also be modified by the axial adjustment of the knob or head 42 at the outer end of the stem.

To relieve the hand of the operator from the task of continually depressing the actuating arm 50 of the trigger lever, I provide the latch member generally designated as 56, mounted on the gun body and movable between a released position, such as shown in Figs. 1 and 2, and a position for engaging the trigger lever 22 to latch the same in the position as shown in Figs. 3 and 4 of the drawings, to hold the valve 20 in an open position. This latch member in the preferred form comprises a U-shaped element 58 pivotally mounted by means of a pivot pin 59 astride a lug 60 integral with the handle 16 (see particularly Figs. 3 and 4 of the drawings), the free branches 58^a and 58^b of the U-shaped element terminating in finger engaging members as best shown in Fig. 5 for manually moving the latch member, the connecting branch 58^c of the U element defining the part which latchingly engages the arm 52 of the trigger lever as best shown in Figs. 3 and 4 of the drawings.

This latch member 56 is spring biased to its released position by means of a coil spring 62 mounted on the lug 60 and anchored as best shown in Figs. 3 and 4 to move the latch member to its normal and released position. The latch member 56 and the trigger lever 22 are furthermore so related that with the parts in the latching position as shown in Figs. 3 and 4, the arm 50 of the trigger is still capable of being further depressed thereby moving the valve 20 further in the direction of the arrow 64 (see Fig. 3). By reason of this interrelation, an impulse or further movement imparted to the trigger itself will automatically effect the release of the latch 56, thereby permitting all of the parts to return to a normal or valve closing position.

The gland member 36 forms the sole supporting mount for the slidable valve 20, and the valve chamber 24 extends rearwardly to this gland member. To provide an efficient supporting mount for the slidable valve and to so construct this supporting mount as to produce a water-tight seal at the sliding union between the valve stem and its mount, and for the further purpose of enabling these parts to be made few in number and also to be capable of being readily assembled and disassembled, all in relation to the trigger and latch controls, the gland member 36 is made to comprise a ring shaped element threadedly mounted on the end 38 of the gun barrel 12 for detachable attachment thereto, the said gland member being internally recessed at 66 (see particularly Figs. 2 and 6) for the reception of a sealing O ring 68.

To close the recess and confine the O ring to the recess, a closure is provided which in a preferred form comprises a backing washer 70 mounted in a second recess 72 formed in the gland member 36, a main washer 74 being used to surmount the backing washer. As will be seen from Fig. 2, the valve spring 44 is anchored at its inner end directly against the main washer 74. By means of this construction, a very effective water-tight seal is produced for the valve and a sturdy supporting mount for the valve is obtained, particularly by means of parts which are easily manufactured and which are readily assembled. It will be observed that in spite of the fixed pivotal attachment of the trigger lever and the latch, the valve 20 and all of its parts may be readily disassembled and removed for repair or replacement of these parts by unscrewing the gland member 36, ready access being thereby also had to the O ring recess 66 for similar repair or replacement.

The structure and operation as well as the several ad-

vantages inherent in the gun type fluid control of the present invention will be fully apparent from the above detailed description. It will be further apparent that changes may be made in the structure described without departing from the spirit of the invention defined in the following claims.

I claim:

1. A gun type fluid control device comprising a gun body formed to provide a barrel section terminating in a nozzle and a handle section terminating in a hose connection, a valve chamber in said barrel section, a hose connecting chamber in said handle section communicating with said valve chamber for the flow of a fluid therethrough, a valve slidably mounted in said barrel section and spring biased to valve closing position, a trigger-lever mounted on said gun body and having an arm engaging said slidable valve for moving the same against said spring bias to valve opening positions, and a latch member for said trigger-lever mounted on said gun body spring biased to an unlatching position, said latch member being manually movable against its spring bias to engage said trigger-lever to latch the same in a position to hold the valve open, the trigger-lever being mounted to be hand movable beyond such position so as to automatically release the latch member.

2. The fluid control device of claim 1 in which said latch member comprises a U-shaped element pivotally mounted on said gun body astride the handle section, the free branches of the U terminating in finger engaging members for manually moving the latch member and the connecting branch of the U defining the part which latchingly engages the trigger-lever.

3. The fluid control device of claim 1 in which said latch member comprises a U-shaped element pivotally mounted on said gun body astride the handle section, the free branches of the U terminating in finger engaging members for manually moving the latch member and the connecting branch of the U defining the part which latchingly engages the trigger-lever, the latch member being spring biased by a coil spring located about the pivot mounting of said latch member.

4. A gun type fluid control device comprising a gun body formed to provide a barrel section terminating at one end in a nozzle and a handle section terminating in a hose connection, a valve chamber in said barrel section, a hose connecting chamber in said handle section communicating with said valve chamber for the flow of a fluid therethrough, said barrel section having a valve seat at its nozzle end and provided with a gland element at its other end, said ends also defining the ends of said valve chamber, a valve in said valve chamber having a valve head for coaction with said valve seat and having a stem mounted for reciprocation in said gland element, said stem having an adjustable knob at its outer end, a coil spring on said valve stem for biasing said valve to valve closing position, said spring being anchored at one of its ends against said gland member, a trigger-lever mounted on said gun body and having an arm engaging said knob for moving the slidable valve against the bias of said spring to valve opening positions, and a latch member for said trigger-lever mounted on said gun body between said arm and said gland, said latch member being spring biased to an unlatching position, said latch member being manually movable against its spring bias to engage said trigger-lever arm to latch the trigger-lever in a position to hold the valve open, the trigger-lever being mounted to be hand movable beyond such position so as to automatically release the latch member.

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