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GAS IGNITER

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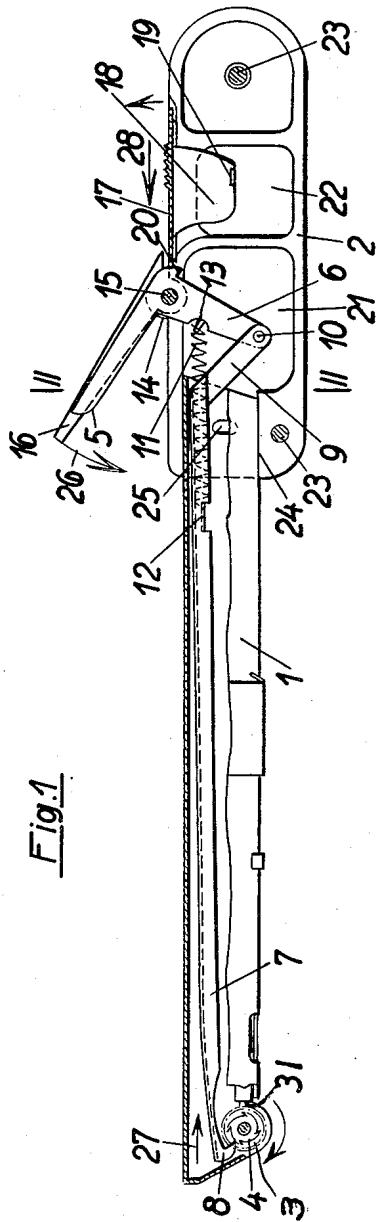


Fig. 1

Fig. 2

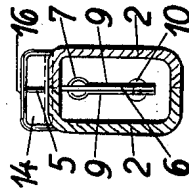
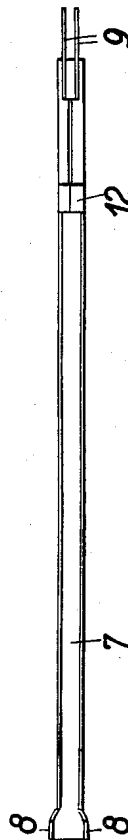


Fig. 3



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GAS IGNITER

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4 Claims. (Cl. 67—6.1)

1

This invention relates to a gas igniter, all parts of which, excepting the actuating member, are enclosed in a casing, and in which motion is transmitted by gearing elements from the actuating member, situated adjacent to one end of the casing, to the spark-emitting parts, arranged adjacent to the other end.

Known gas igniters of this type are constructed similarly to small arms, a push rod, which with its toothed end acts on the friction wheel, being subjected to the force of a pre-loaded spring by the pulling of a trigger, and being moved out of the range of a stop by continued pulling. By the now released resilient force of the spring the rod is pushed against the friction wheel and turns the latter. The push rod is held only temporarily to the pivot pin of the trigger, by an engaging projection. Another known gas igniter contains a rod, which is mounted in the casing so as to be longitudinally slidable and acts similarly to a firing pin. By means of a trigger and a pawl this rod is moved forwardly against the force of a spring and then released by the pawl, whereupon the rod springs back under the spring force and thereby turns the friction wheel by means of claws provided on the rod.

All these devices have the disadvantage of comparatively large space requirement, necessitating a wide casing. The last-mentioned device, moreover, has a very complicated mechanism and its manufacture is expensive.

In another gas igniter known, the friction wheel is actuated by a draw rod, which is permanently articulated to a trigger and at the same time forms the narrow side wall of the casing. This structure has also proved disadvantageous because the draw rod is arranged without protection and exposed to damage.

The said drawbacks of the known devices are eliminated in the gas igniter constituting the subject of this invention, in which only the spark-emitting parts and a driver, which consists of a push rod and is permanently articulated to the actuating member, are accommodated in a narrow tubular sleeve, whereas a handle adjoining said sleeve accommodates all other elements, in particular those required for transmitting motion from the actuating member to the push rod. This gas igniter is distinguished by its simple, inexpensive structure, the movable parts of which, owing to their permanent articulation, are subjected to very slight wear only and are, moreover, effectively protected by the casing from being soiled and damaged. Other advantages of this novel structure will become apparent from the following description.

2

On the accompanying drawings, an embodiment of the gas igniter according to the invention is shown by way of example,

Fig. 1 showing the device in a partially sectional side view, in its inoperative position, and Fig. 2 being a cross section along the line II—II of Fig. 1, with the trigger depressed.

In Fig. 3 the driver is shown alone in a bottom plan view.

A tubular projecting arm 1 and a hollow handle composed of two shell parts 2 form the casing of the gas igniter. At the free end of the projecting arm 1 the friction wheel 3, having a spur toothing, is mounted, which friction wheel is provided on each side with a spur-toothed driver or ratchet wheel 4. A flint 31 is in engagement with the toothing of the friction wheel 3. The hollow handle 2 carries at its upper side a trigger lever, consisting of a bell crank lever, the outer arm 5 of which, receiving the finger pressure, extends forwardly at an oblique angle, and the other arm 6 of which projects into the front cavity 21 of the handle 2. The longitudinally movable gearing element or pawl, consisting of a push rod 7, which according to the invention forms the driver itself and is made from a strip of sheet metal pressed in the form of a channel-section rail, is situated in the projecting arm 1. At its front end, facing the friction wheel, the flanged longitudinal edges on one side of the rod have worked out of them two driver claws 8, which cooperate with the teeth of the two driver wheels 4. At its cranked other end the push rod 7 is connected by means of two lugs 9, extending at an oblique angle to the longitudinal axis of the rod on the same side as the claws 8, through the articulation 10 with the arm 6 of the trigger lever, so that an eccentric bearing of the push rod 7 results relative of its longitudinal axis. Thus the push rod 7 is adapted to turn the friction wheel in one sense of rotation. Opposite to the side of the projecting arm 1 where the sparks are emitted, the push rod 7 extends tangentially in respect of a point of the friction wheel toothing which point is less than 180 deg. from the point where the flint engages said toothing, with reference to the sense in which the friction wheel is turned by the push rod.

It has been found suitable to form the lugs 9 by stamping and pressing directly out of the flanges of the channel-section rail 7, which flanges are prolonged at this point. The pivot pin 10 connects the lugs 9 with the arm 6 of the trigger lever. By bending the flanged edges together that end of the push rod 7 which carries

3

the lugs 9 is given the cross sectional shape of a tube, which serves for receiving a helical spring 11. The latter bears with one end on a constriction 12 of the tube cross section, whereas the other end of the spring is seated on a punched stud 13 arranged on the lever arm 6 between pivots 10 and 15. The two parts 6 and 9 are arranged to form a V. The spring 11 urges these members apart until the trigger lever abuts at the stop of the handle. Then the claws 8 are in their foremost position (Fig. 1). The spring 11 imparts to the push rod 7 also a turning moment, by which the force-transmitting connection between the driver claws 8 and the driver wheels 4 is secured.

The bearing of the trigger lever 5, 6 is effected at the upper narrow side of the handle 2 by bearing eyes 14 provided there and by a pin 15 passed through the latter and through the bell crank lever fitted between them. In order that the finger pressure be received more conveniently, the bell crank lever 5, 6 has associated therewith a special trigger plate 16, pressed, e. g., in the shape of a bowl, which engages with the outer lever arm 5 and is pivotally mounted by means of side lugs on the pin 15, together with the bell crank lever 5, 6. The width of the trigger plate 16 exceeds the thickness of the lever arm 5.

It has been found suitable to provide a locking means for locating the trigger lever in at least one end position. Such locking means may consist, e. g., of a slide 17, which is slightly longitudinally slidable at the upper narrow side of the hollow handle and cooperates with a notch or projection 20 situated on the bell crank lever 5, 6 adjacent to its pivotal axis. The slide 17 serves at the same time as a cover for shutting off a second cavity 22 of the hollow handle 2, which cavity may be used for keeping spare flints. Being guided in the opening of the cavity by means of two cheeks 18 bent in the cross section of a U, the slide 17 is slidably and pivotally movable. When the slide is swung out at the rear end, its front end is retained by the rear edge of the trigger plate 16. The complete removal of the cover 17 out of the hollow handle 2 is prevented by two retaining lugs 19 bent out at the edge of the cheeks 18.

The projecting arm 1, which is suitably made from a rolled-up strip of sheet metal, has the form of a flattened tube, which at its end carrying the friction wheel 3 is laterally open but closed at its end face, and is of U-shaped cross section. The hollow handle is divided along a longitudinal plane of symmetry into two shell parts 2, which are detachably interconnected preferably by two screws 23. At their front end the shell parts 2 together form an opening 24, which is accurately adapted to the cross-sectional shape of the projecting arm. A projection 25 projecting inwardly from one shell part into the opening 24, extends to a corresponding aperture of the projecting arm 1 for holding the latter in the longitudinal direction. The parting joint between the two shell parts 2 widens at the upper narrow side of the handle to form a narrow slot for the passage of the bell crank lever 5, 6. In use and for reasons of economical manufacture it has been found of advantage to make the shell parts of the handle from plastics, e. g., Bakelite.

In order to use the gas igniter described, the trigger plate 16 is pressed downwardly in the sense of the arrow 26 by the thumb of the hand embracing the hollow handle 2, whereby the push rod 7 is retracted in the sense of the arrow 27 and

4

the friction wheel advanced in the clockwise sense. After the release of the trigger plate 16, the extending spring 11 returns the push rod 7 forwardly into its initial position. The illustrated embodiment of the device permits of locating the trigger plate 16 in the depressed position in order to achieve on the one hand a suitable form for packing, and on the other hand to prevent a dangerous use of the gas igniter by children. The locking is effected most simply by sliding the slide 17 in the sense of the arrow 28 while the trigger plate 16 is held down, whereby the front end of the slide comes to lie below the projection 20. To remove a spare flint out of the space 22, only the rear end of the slide must be lifted with the fingernail.

The flint guide accommodated in the projecting arm 1 and the flint spring may be constructed in any desired manner, known per se.

What we claim is:

1. A gas igniter which comprises a tubular sleeve, means for emitting sparks accommodated in said sleeve adjacent to one end thereof, a driver consisting of a push rod accommodated in said sleeve and adapted to operate said means for emitting sparks, a handle adjoining the other end of said sleeve, a pivot mounted in said handle, a trigger for actuating the igniter, said trigger comprising a two-armed trigger lever movable about said pivot between two end positions, part of said trigger lever protruding out of the handle, a trigger plate adjacent to the part of the trigger lever protruding out of the handle, said trigger plate being wider than the thickness of said protruding part of the trigger lever, a projection on said trigger lever adjacent to said pivot, and a locking slide arranged at the handle and being movable into the range of said projection, for locking the trigger lever in one end position, said handle containing connecting means between the push rod and the trigger lever, and means for permanently articulating said connecting means to said trigger lever.

2. A gas igniter which comprises a hollow handle composed from two shell parts joined along a longitudinal plane of symmetry of the handle, said shell parts together forming an opening at one end of the handle, a tubular sleeve one end of which is inserted into said opening, means for emitting sparks accommodated in said sleeve adjacent to the other end thereof, a driver consisting of a push rod accommodated in said sleeve and adapted to operate said means for emitting sparks, an actuating member mounted in said handle, means for dividing the handle cavity into a front chamber and a rear chamber, and means for closing said rear chamber, said front chamber containing connecting means between the push rod and the actuating member, means for permanently articulating said connecting means to the actuating member, and a compression spring inserted between the push rod and the actuating member, said rear chamber being adapted to accommodate spare flints.

3. A gas igniter which comprises a tubular sleeve, means for emitting sparks accommodated in said sleeve adjacent to one end thereof, a driver consisting of a push rod accommodated in said sleeve and adapted to operate said means for emitting sparks, a handle adjoining the other end of said sleeve, a pivot mounted in said handle, a two-armed trigger lever movable about said pivot between two end positions, for actuating the igniter, said trigger lever having adjacent to

5

said pivot a portion forming a rest, and a locking slide arranged at the handle and movable into the range of said rest for locking the trigger lever in one of said end positions, said handle containing means permanently articulating said push rod to said trigger lever.

4. A gas igniter which comprises a tubular sleeve, means for emitting sparks accommodated in said sleeve adjacent to one end thereof, a driver consisting of a push rod accommodated in said sleeve and being in engagement on one side with said means for emitting sparks to operate the same, a handle adjoining the other end of said sleeve, a pivot mounted in said handle, a two-armed actuating lever mounted on said pivot, said handle containing a lug firmly connected to and extending at an angle to said push rod on the same side thereof which is in engagement with said means for emitting sparks, said lug being permanently articulated to one arm of said

6

lever and forming a V with said arm, and a compression spring interposed between said push rod and a point of said lever arm situated between said pivot and the connection of said arm to said lug and urging the push rod into engagement with said means for emitting sparks, said lever being arranged to operate said means for emitting sparks against the force of said spring through the intermediary of said lug and push rod.

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