United States Patent [19]

Gogen

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[54] **ANTI-PERSONNEL BULLET FOR RIOT CONTROL**

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[51] **Int. Cl.** **F42b 11/30**

[58] **Field of Search** 102/92, 92.3; 128/DIG. 11

[56] **References Cited**

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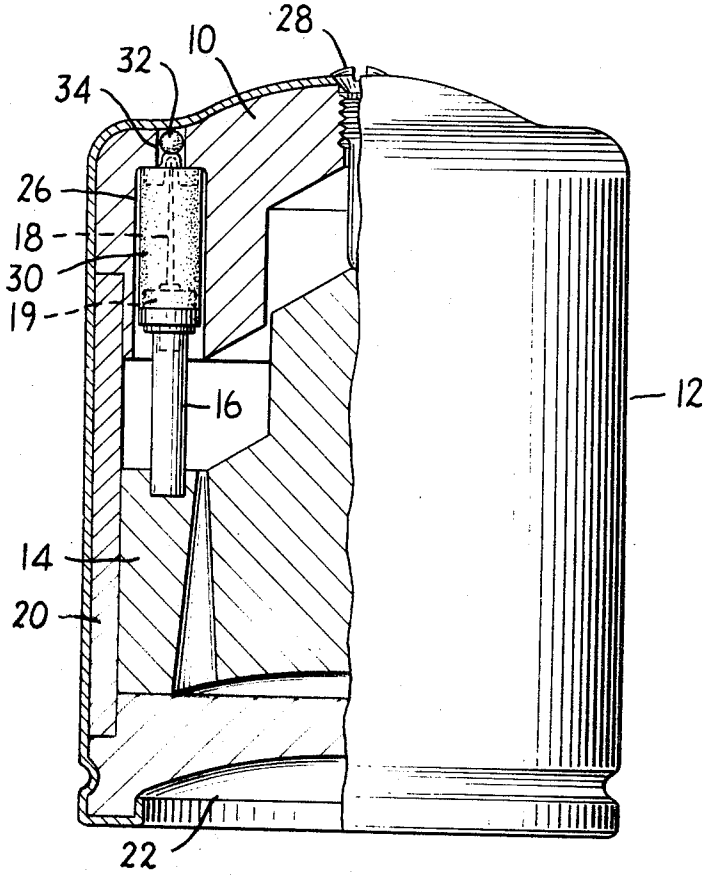
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Attorney—Jordan B. Bierman et al.

[57] **ABSTRACT**

A hard-nosed bullet for mounting on a charged cartridge for use in a firearm is provided having a housing into which an injection plunger is slidably mounted. A plurality of injection pistons are mounted on the plunger, each of which is adapted to slide into one of a plurality of passages within the bullet head. Into each of the passages a sterile capsule containing a flexible injection needle and a fluid is inserted. Upon impact with a target the plunger moves forward, pushing the pistons through the passages, thereby rupturing the capsule and forcing the needles to penetrate the outer surface of the bullet, thus injecting the fluid into the target.

10 Claims, 3 Drawing Figures



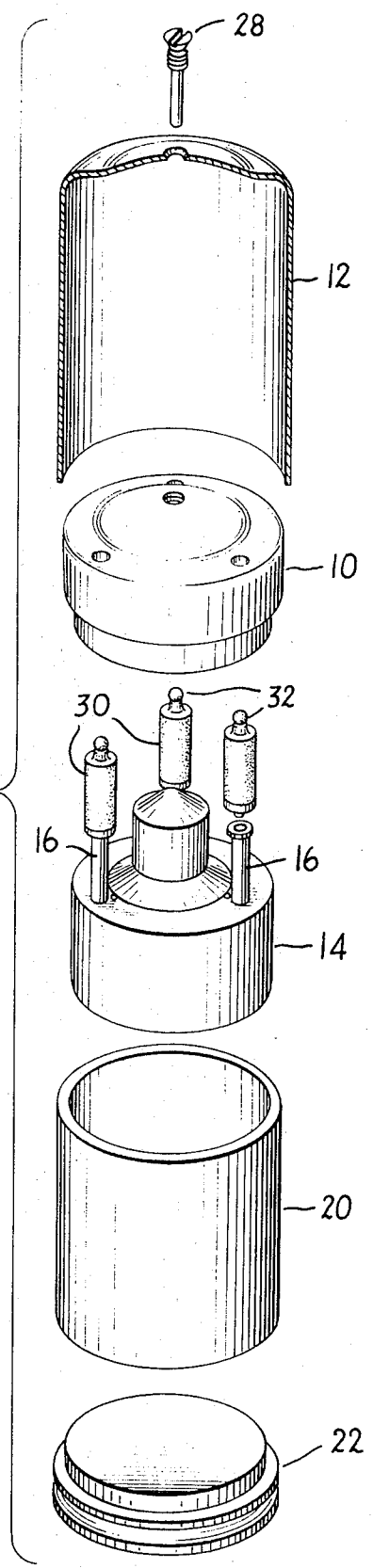


FIG. 1

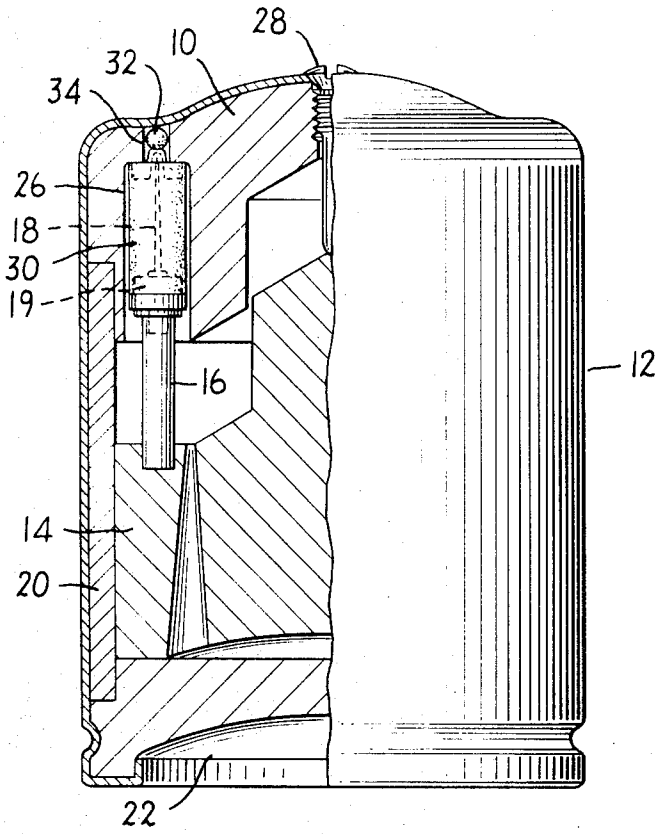


FIG. 2

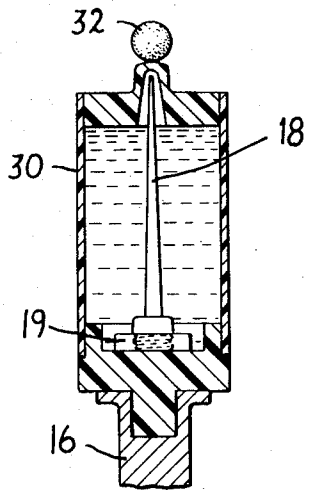


FIG. 3

ANTI-PERSONNEL BULLET FOR RIOT CONTROL

This invention relates to bullets for use in firearms and, more particularly, to a bullet which is capable of injecting one or more fluids into an animal or human target upon impact without causing substantial injury.

Many attempts have previously been made to manufacture a bullet such as this, either using a hard or a soft nose. These previous attempts have generally failed for a number of reasons. Those with hard noses utilized permanently exposed needles positioned on the top of the bullet. Such a configuration is dangerous as the entire impact force of the bullet is concentrated in the needle itself causing deep penetration of the needle and injury. The soft-nosed type bullets tended to be unreliable because a great deal of friction was developed as the bullet travelled through the barrel of the gum upon firing. The generated friction often caused sufficient deformation of the soft nose to initiate injection prior to impact at the target. Further still, the friction force generated was often sufficient to alter the trajectory of the bullet enough to cause the bullet to miss the intended target. In addition, if the bullet did not contact the target at the precisely correct angle, the injector was deformed and did not penetrate the target at all. Since a soft-nosed bullet is considerably lighter than the butt of the bullet, the imbalance often caused wobbling in flight which also tended to alter the trajectory of the bullet even if the friction force did not. The trajectory problems caused by imbalance and friction made it extremely difficult to hit the target in the desired area.

An additional drawback often associated with the soft nose type of bullet was that the penetration force of the injector was difficult to control. This oftentimes resulted in the injector penetrating too deeply into the target because of the deformation of the nose, and either entering into the bone structure itself or killing the human or animal. Such serious injuries or fatalities, of course, completely destroy the usefulness of such a bullet. Alternatively, if the needle was rigidly mounted on the front of the bullet all of the impact force will be concentrated on the needle initially and injury will often result.

In addition to all the other difficulties associated with the soft-nosed type bullets, they are not commercially feasible. This is due to the fact that during storage a soft-nosed bullet may change its shape to a slight degree. Upon firing, this unintended shape change has devastating effects upon the trajectory of the bullet, assuming of course that the shape change is sufficiently small to allow the bullet to exit from the barrel of the gun.

In accordance with the present invention, a hard-nosed bullet is provided for mounting on any standard cartridge. The bullet can be manufactured to accommodate any size or calibre gun including hand guns and rifles as well as automatic weapons. The hard nose utilized herein overcomes many of the disadvantages inherent in the prior art devices. Greater reliability is achieved by substantially limiting the amount of friction associated with the bullet as it travels down the gun barrel after firing. This is due to the fact that the hard bullet will not deform during discharge from the gun. This tends to eliminate the problem of premature injection, and also adds substantially to the accuracy of the trajectory since the bullet is not deflected as it leaves the gun barrel.

A weighted head provided herein also adds substantially to the accuracy of the bullet. Since the front of the bullet is made to be heavier than the rear portion, a more accurate trajectory is possible. The bullet will not wobble or tumble as it is traveling towards the target and will hit the target nose first. Such positioning is necessary if the fluid is to be injected properly.

Furthermore, the problem of the injector penetrating the target deeply and causing injury is reduced by the use of the hard nose bullet of the instant invention.

In accordance with the instant invention, the injector is mounted in a passageway in the nose having stop means associated therewith to limit forward motion of the injector. Since the shell is not deformed substantially upon impact, the needle after piercing the shell is forced forward a distance limited by the stop means in the passageway. Entry depth and the danger of death are significantly reduced. Since the passageway has a narrow neck and the needle a wide base, the penetration range of the needle can easily be calculated. This was not possible with the prior art soft nose bullets because the deformation depended in large part upon the angle of impact with the target, a dependency which is reduced by the bullet of the instant invention.

Still further, since the configuration herein allows the injection force to be less than the impact force of the bullet, needle penetration is further limited. Also, because the needle is not exposed upon impact, but appears slightly after, all of the bullet impact force is not concentrated on the needle and target penetration is controlled.

The bullet of the instant invention is provided with one or more injection needles which will penetrate the outer surface of the bullet upon impact with a target. Means are provided to force one or more fluids contained within the bullet through the needles such that these fluids are injected into a target upon impact. Also, means may be provided, if desired, for maintaining the needle in sterile condition until injection.

This bullet is particularly useful to law enforcement agencies for the control of riots and other civil disorders. By inserting capsules having a tranquilizing drug into the bullet, the lives of the rioters may be spared and the civil disorder brought under control at the same time. In addition, such bullets have varied uses other than riot control, many of which will be obvious to one skilled in the art. Since the bullet has the capability of delivering and injecting more than one fluid, the possibilities for use are greatly enhanced. For instance, one might wish to have a first fluid which would impart instant pain, a second fluid containing a tranquilizing substance, and a third fluid containing an antibiotic substance. The bullet can be used on both human and animal targets with equally good results.

The energy required for the injection of the fluids upon impact with a target is less than required for bullet penetration deeply into the human or animal target as used in the prior art. This energy can be calculated and the amount of charge in the cartridge determined so that the bullet itself, and therefore the injector, when used within a predetermined range, will not penetrate the target sufficiently to cause any substantial or permanent damage.

In its preferred form, the bullet is provided with a head which is manufactured to be heavier than the rear of the bullet. Behind the head is provided an injector plunger which is movable toward the head at the time

of impact. On the plunger is situated a plurality of injection devices which, upon the forward movement of the plunger, travel down passageways provided in the head. Within each of these passages is inserted a sterile capsule containing a flexible needle and a fluid. The entire mechanism is surrounded by a thin metal shell such as lead, which the needles penetrate upon impact. The needle is not exposed until after the bullet has superficially penetrated the target. Means are provided for forcing the fluid into the target as the needles pierce the hard outer shell of the bullet. Furthermore, means are provided at the rear of the bullet for preventing the firing of the cartridge from displacing the plunger and ejecting the fluid until the bullet has reached the target.

A preferred embodiment of the present invention is shown in the accompanying drawings in which like numerals refer to like parts.

FIG. 1 is an exploded side view of the preferred form of the present invention;

FIG. 2 is a partial side cutaway view of th present invention showing the relationship between the elements; and

FIG. 3 is a side cutaway view of the capsule showing the injection needle and fluid.

As shown in FIG. 1, bullet head 10 is positioned immediately below the top surface of a thin, easily penetrable lead shell 12 which encloses the entire bullet. Immediately behind the head 10 is situated the injector plunger assembly 14 upon which are mounted three injector pistons 16. The injector plunger assembly 14 is movable within a cylindrically shaped injector plunger housing 20 which mounts directly to the peripheral portion of head 10. Butt cap 22 is provided at the rearward portion of housing 20, and is mounted somewhat spaced from plunger assembly 14. When the bullet is fired, energy is transferred to the butt cap. Because of the space between the butt cap and plunger assembly, the energy is not transferred to the plunger assembly, thereby avoiding accidental activation of the plunger. A casing (not shown) is disposed immediately below butt cap 22 and contains the charge which will propel the bullet toward its target.

As can be more clearly seen if FIG. 2, the bullet head 10 is provided with three passages 26 into which capsules 30 are inserted. An injector piston 16 is adapted to travel through the passages as it is forced forwardly by the action of plunger 14 in response to the transfer to momentum from the bullet after impact to the plunger. When plunger 14 is in its initial position, the piston 16 extends only partially into passage 26. During manufacture of the bullet, a capsule 30, shown in FIG. 3, containing a sterile needle and the fluid to be injected is inserted into the forward portion of passage 26 in front of the piston. Each of the needles 18 has a base 19 which limits movement of the needle through the passage 26 upon penetration of shell 12.

Immediately adjacent the front end of each of the passages 26 on bullet head 10 is provided a groove 34, having a cross sectional area smaller then the base of needle 18. Into each of these grooves 34 is place a non-toxic seal 32 to prevent contamination of the needle as it ruptures the capsule and penetrates the outer shell 12 in response to the transfer of momentum to the plunger upon impact.

A plunger lock screw 28 may be provided, if desired, for use prior to loading the bullet into the gun. This screw is placed into the front of shell 12 through a passageway in the center of head 10 and maintains plunger 14 in position at the rear of housing 20 during handling or storage, thus preventing accidental rupture of capsule 30. Screw 28 is removed prior to use of the bullet.

In operation, the bullet is loaded and fired from a conventional firearm. The ignition of the powered charge within the casing does not disturb the position of the injector plunger 14 because the force of the exploding charge is absorbed by the butt cap 22. The bullet, because of the fact that the head is considerably heavier than the butt, will accurately follow a trajectory which can be calculated in accordance with the size of the charge. The charge is calculated so that the bullet when hitting a target will not penetrate deeply into the flesh of the target, but still will have enough energy to cause injection. Upon impact, the plunger 14 moves from its initial position at the rearmost part of housing 20 toward the bullet head 10. As the plunger 14 is forwardly moved, the piston 16 is forced down passage 26 toward the front of the bullet. This motion causes rupture of the fluid-containing capsule 30 by needle 18, and further movement causes the needle 18 along with the fluid to be forced through non-toxic seal 32 which is positioned in a groove 34 on the outer surface of head 10. The needle 18 penetrates the seal 32 and the thin outer lead shell 12 of the bullet, thereby coming in contact with the flesh of the animal or human target and injecting the fluid therein.

It should be noted that each of the needles 18 is manufactured of a substance which will permit a certain amount of flexibility along the length of the needle. Therefore, should the bullet hit the target at an angle which permits contact with less than all of the needles 18, those needles 18 which are in contact with the target will tend to flex moving the bullet into a position in which it is perpendicular with the surface of the target and, therefore, allowing the remainder of the needles 18 to pierce the flesh of the target and deliver the fluid contained within each of these needles.

It should be further noted that the impact force of the bullet itself is dependent entirely upon the charge contained within the cartridge. Although the force required to inject the fluid is dependent upon the inertia of the piston 14, it may be less than the bullet impact force, therefore allowing injection without substantial penetration and resulting injury. These various forces can be calculated such that the bullet itself does not have sufficient energy to penetrate the target to any appreciable extent causing death or permanent injury and also permit the plunger 14 to have sufficient inertia to perform the injection operation.

The amount of charge necessary to produce any required impact force within a particular target range can easily be calculated by one skilled in the art. In addition, taking into account the mass of the injection plunger and the velocity of the bullet, the injection force can be calculated. By varying the mass of the plunger, the friction of the sides of the housing and the charge, the appropriate injection force and impact force can be obtained which will limit injury and still accomplish the intended purpose of the bullet.

It is understood that variations and modifications may be made which are not specifically described herein but which will be obvious to those skilled in the art. It is intended to cover all such modifications and variations which fall within the spirit and scope of the invention as defined in the appended claims.

What is claimed is:

1. A hard-nosed bullet for mounting on a cartridge of the type used in a firearm comprising a housing, an injection plunger slidably mounted for movement in said housing in response to an abrupt change in the forward momentum of the bullet after the bullet has been fired, a plurality of injection pistons, each of said pistons being mounted on said plunger, said bullet having a plurality of passages extending therethrough, each of said pistons extending at least partially into one of said passages, a plurality of capsules each containing a fluid and an injection needle, each of said capsules mounted in one of said passages in front of one of said pistons, said injection plunger causing the movement of said pistons through said passages upon the occurrence of said abrupt change in forward momentum to rupture the capsule and force the injection needles and fluid through said passages.

2. The bullet according to claim 1 wherein said bullet is weighted such that the front portion of the bullet is heavier than the rear portion.

3. The bullet according to claim 1 wherein each of said passages comprises an elongated opening having a front portion and a rear portion, said rear portion being adapted to accept one of said capsules and one of said pistons and said front portion having a substantially smaller cross section than said rear portion.

4. The bullet according to claim 3 further comprising a plurality of non-toxic seals, one of which is disposed within the front portion of each of said passages.

5. The bullet according to claim 1 wherein said needle contained within said capsule further comprises a base, said base having a larger cross section than the cross section of the front portion of said passage.

6. The bullet according to claim 1 further comprising an outer shell, said shell being penetrable by each of said needles when said needles are forced through said passages.

7. The bullet according to claim 6 further comprising a cap to seal the rear portion of said shell, said cap being spaced from said plunger such that accidental displacement of plunger upon firing is minimized.

8. The bullet according to claim 1 further comprising a removable lock screw to maintain said plunger in a position such that accidental rupture of said bullet is prevented.

9. The bullet according to claim 1 wherein said fluid and said needle are sterile and maintained in this condition by said capsule until said capsule is ruptured.

10. The bullet according to claim 1 further comprising means for limiting the extension of said needle to a desired length beyond the surface of said bullet.

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