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TEAR GAS GUN

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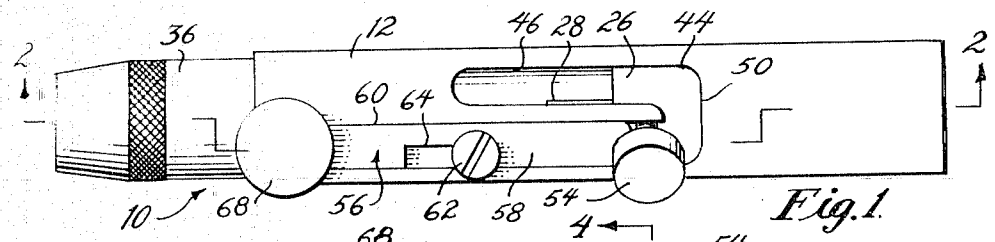

Fig. 1.

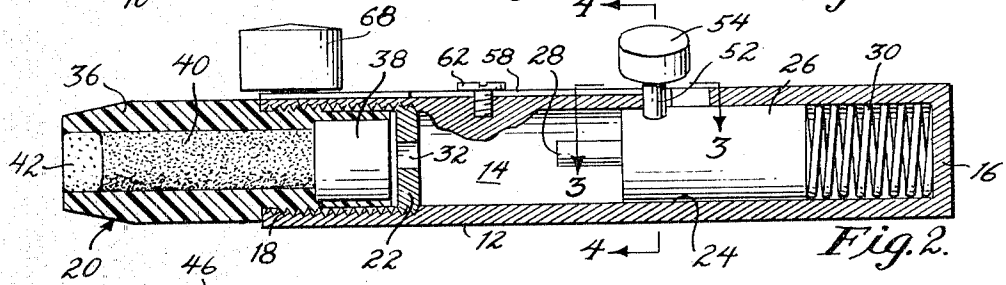

Fig. 2.

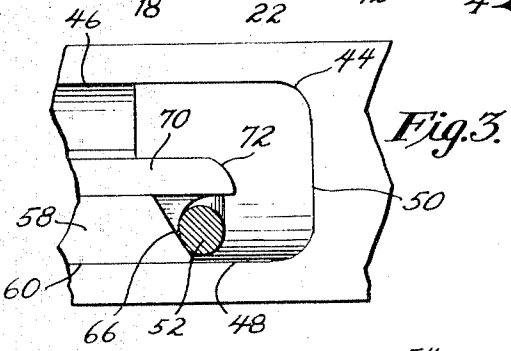

Fig. 3.

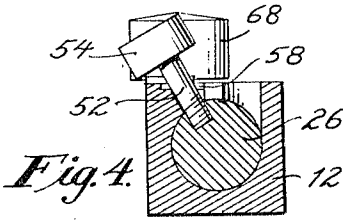

Fig. 4.

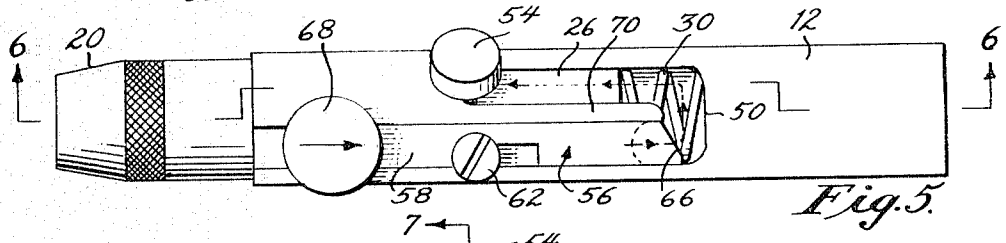

Fig. 5.

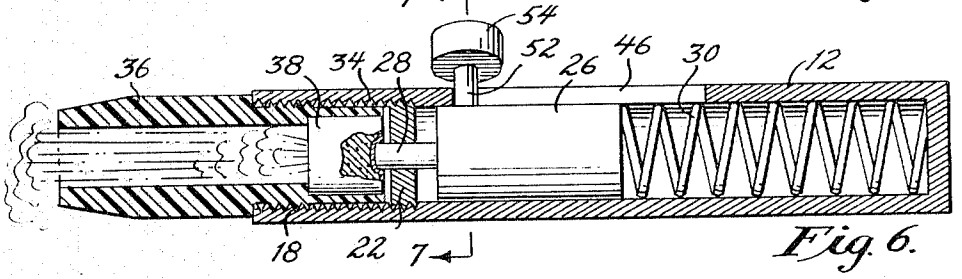

Fig. 6.

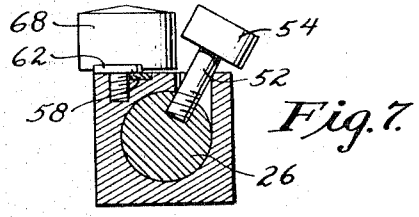

Fig. 7.

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TEAR GAS GUN

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4 Claims. (Cl. 42—1)

This invention relates to a tear gas gun. More particularly, this invention relates to a tear gas gun having a trigger release mechanism for firing an explosive tear gas cartridge.

Heretofore, pocket type tear gas guns have included a firing pin that is released by finger engaging a handle mounted thereon and moving it out of its cocked or safety position into a position where it can be released to fire an explosive cartridge of tear gas. Such tear gas guns suffer from the defect that they are difficult and slow to operate because the user must directly overcome the resilient bias on the firing pin in moving it from the cocked to the firing position. Since the force created by the resilient bias on the firing pin may be quite substantial, it is often difficult to release the handle at its fully cocked position. The tendency is to allow the firing pin to slide forward towards the cartridge before releasing the same. The result is that the firing pin may strike the cartridge with insufficient force to cause ignition of the primer. This is a substantial disadvantage because the user often has only one chance to fire the tear gas gun.

It therefore is an object of the present invention to provide a novel release mechanism for a tear gas gun that permits a quick and full release of the firing pin.

It is another object of the present invention to provide a novel tear gas gun.

Still another object of the present invention is to provide a novel tear gas gun having a trigger release mechanism.

It is yet another object of the present invention to provide a tear gas gun having a novel trigger release mechanism.

Other objects will appear hereinafter.

For the purpose of illustrating the invention, there is shown in the drawings a form which is presently preferred; it being understood, however, that this invention is not limited to the precise arrangements and instrumentalities shown.

FIGURE 1 is a top view of a tear gas gun in accordance with the present invention showing the firing pin in its cocked position.

FIGURE 2 is a longitudinal sectional view of the tear gas gun shown in FIGURE 1 taken along the line 2—2.

FIGURE 3 is an enlarged partial longitudinal sectional view of the tear gas gun shown in FIGURE 2 taken along the line 3—3.

FIGURE 4 is a transverse sectional view of the tear gas gun shown in FIGURE 2 taken along the line 4—4.

FIGURE 5 is a top view of the tear gas gun in accordance with the present invention showing the firing pin in its released position.

FIGURE 6 is a longitudinal sectional view of the tear gas gun shown in FIGURE 5 taken along the line 6—6.

FIGURE 7 is a transverse sectional view of the tear gas gun shown in FIGURE 6 taken along the line 7—7.

Referring now to the drawing in detail, wherein like numerals indicate like elements, there is shown in FIGURE 1 a tear gas gun designated generally as **10**.

As shown, the tear gas gun **10** includes a barrel **12** having a longitudinal bore **14** therein. Although the outer periphery of the barrel **12** is illustrated as square in cross section, it will be clearly recognized by those skilled in the art that other peripheral shapes such as elliptical or cylindrical may be used. The barrel **12** is

open at one end and closed by the wall **16** at its opposite end.

As shown, the bore **14** is cylindrical and extends the length of barrel **12** coaxial with its longitudinal axis. The surface of bore **14** is smooth except adjacent the open end of barrel **12** where a plurality of threads **18** are provided. The threads **18** are of sufficient length to receive mating male threads on the cartridge **20** and on the periphery of the retaining wall **22**. The purpose and function of retaining wall **22** will be described below.

A firing pin designated generally as **24** is reciprocably mounted within the bore **14**. Firing pin **24** comprises a cylindrical piston **26** having an outside diameter approximately equal to the diameter of bore **14** and a pin **28** axially mounted on the piston **26**. A resilient expansion spring **30** is positioned within the bore **14** intermediate the piston **26** and wall **16**. The spring **30** normally biases the piston **26** toward the wall **22**.

Retaining wall **22** comprises a disk having a central aperture **32** and a threaded periphery. The threads on the periphery of wall **22** are the same size as the threads **18** in the barrel **12**. Accordingly, the wall **22** may be threadedly mounted within the barrel **12**. If desired a slot **34** may be provided on one face of the wall **22** so that a screwdriver may be used to thread the wall **22** into the barrel **12**. The aperture **32** is coaxial with the longitudinal axis of the bore **14**. Accordingly, the spring **30** will bias the pin **28** through the apertures **32**.

The threads **18** provide a means for removably mounting the tear gas cartridge **20** on the barrel **12**. As shown the cartridge **20** comprises a casing **36** having male threads thereon for threadedly engaging the threads **18** within the barrel **12**. A primer cap **38** is supported adjacent the rear end of the casing **36**. In the embodiment shown, the primer cap **38** is adapted to be center fired by a force such as is provided by the pin **28** when projected forward by the force of spring **30**. A tear gas powder is held within the casing **36** by a wad **42**. The construction of the cartridge **20** including the type of tear gas power **40** and primer cap **38** is well known in the art and need not be described in further detail.

A J-shaped slot **44** is provided in the side wall of the barrel **12**. The slot **44** consists of a long leg **46**, a short leg **48** and a transverse leg **50**. The J-shaped slot **44** provides an opening into the bore **14** through which a cocking arm **52** extends. As best shown in FIGURE 4 the cocking arm **52** is threadedly mounted in a side wall of piston **26**. The cocking arm **52** supports an enlarged button-like head **54** on its free end. The head **54** provides a means whereby the cocking arm **52** may be conveniently engaged by the user's finger to move the firing pin **24** into its cocked position within the short leg **48**.

The tear gas gun **10** is shown with its firing pin **24** in the cocked position in FIGURES 1, 2 and 3. Thus the piston **26** has been moved rearwardly against the bias of spring **30** which is thereby compressed. To retain the firing pin in the cocked position, the cocking arm **52** has been moved through the transverse slot **50** into the short slot **48**. The cylindrical piston **56**, of course, rotates within the bore **14** to permit the displacement of cocking arm **52** through the transverse slot **50**. The bias of spring **30** tends to force the firing pin **28** toward the cartridge **20** but this is prevented by the engagement of cocking arm **52** with the end of short leg **48**. This is best shown in FIGURE 3.

With the firing pin disposed as described above, the tear gas gun **10** is ready for firing. In previous tear gas guns, firing was accomplished by gripping the head **54** with a finger and moving the cocking arm **52** through the transverse slot **50** until it was aligned with the long leg **46**. The head **54** was then released and the spring **30** allowed to rapidly accelerate the piston **26** and pin **28** toward the

rtridge 20. The pin 28 would strike the primer cap 38 ereby causing the primer to ignite and drive the tear s 40 and wad 42 from the casing 36. This type of lease mechanism suffers from the defect that there is a ndency to permit the bias of spring 30 to move the piston slowly toward the cartridge 20 after the cocking arm has been aligned with the leg 46 but before the head 54 s been released. The result is that the firing pin 24 may t be accelerated to its fullest extent before impact with e primer cap 38. A misfire may therefore result. In w of the purposes to which the tear gas gun 10 is pri-arily intended, i.e., protection against assailants, it is pos-le that there may not be sufficient time to re-cock and -fire the gun 10.

In order to overcome the foregoing deficiency, and to sure that the firing pin 24 is accelerated to the fullest tent by the spring 20, a novel trigger release mechanism has been provided. The trigger release mechanism 56 mprises a slide 58 reciprocably mounted within a recess in the wall of barrel 12. The recess 60 guides the de 58 in alignment with and over the short leg 48. The de 58 is held within the recess 60 by means of a readed fastener 62 that is threadedly engaged with the rrel 12. The head of fastener 62 overlies the slide 58 t is spaced slightly away from it so as to permit ciprocable movement within the recess 60. The fastener extends through a cut-out portion 64 of the slide 58. e ends of cut-out portion 64 limit the movement of the de 58.

As best shown in FIGURES 3 and 5, the end of slide adjacent the short leg 48 forms an acute angle with e longitudinal axis of the slide 58. In other words, the d 66 of slide 58 forms a cam in which the surface ereof extends away from the wall 16 as it gets closer to e leg 46. The end of slide 58 thereby forms a cam-ng surface 66 which will impart a rearward and trans-rse force to the cocking arm 52 when it is brought into gagement with it. A finger handle 68 is mounted on e opposite end of slide 58.

The trigger release mechanism 56 operates as follows: With the firing pin 24 cocked as shown in FIGURE 1, e handle 68 is engaged and moved rearwardly as indi-ted by the arrow in FIGURE 5. The handle 68 is made ge enough to provide a good finger grip for the user. r this purpose, it has been found that a diameter of proximately three-eighths of an inch permits the user more than adequately engage the handle 68. As the de 58 is moved toward wall 16, the camming surface 66 gages the cocking arm 52 and biases it rearwardly and o the transverse slot 50. This is illustrated by the tted lines and arrows in FIGURE 5. To continue the ovement of the cocking arm 52 through the transverse t 50, the end of wall 70 which defines the bight por-n of the J-shaped slot 44 has been rounded as shown in GURE 3. This rounded end 72 has a generally angu-direction that is away from the wall 16 as the end approaches the long leg 46 of slot 44. The result is at the end 72 is a continuation of the cam surface 66. us, the cam 66 biases the cocking arm 52 over to the ll end 72. When this position is reached, the force spring 30 causes the cocking arm to slip along the unded surface 72 and into alignment with the long leg of slot 44. Once the cocking arm slides out of en-gement with the end wall 72, the spring 30 freely celerates the piston 26 and pin 28 toward the primer

cap 38. Since the arm is fully released as soon as it slides into alignment with the long leg 46, the firing pin 24 is accelerated to its maximum extent by the spring 30 prior to striking the primer cap 38. Moreover, the trigger release mechanism releases the firing pin 24 from the cocked position much more rapidly than can be done by manually engaging the head 54.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof and, accordingly, reference should be made to the appended claims, rather than to the foregoing specification as indicating the scope of the invention.

We claim:

1. A tear gas gun comprising a barrel, a longitudinal bore within said barrel, a firing pin reciprocably mounted within said bore, means for mounting an explosive tear gas cartridge adjacent one end of said bore, resilient means for normally biasing said firing pin towards said cartridge mounting means, a J-shaped slot in a wall of said barrel, the longer leg of said slot extending along the longitudinal axis of said barrel, a cocking arm mounted on said firing pin and extending through said slot, a reciprocable slide mounted on said barrel, at least a portion of said slide being reciprocable over the shorter leg of said slot, said slide including a cam for engaging said cocking arm and moving it into said longer leg, and a handle on said slide.

2. A tear gas gun comprising a barrel, a longitudinal bore within said barrel, a firing pin reciprocably mounted within said bore, said firing pin including a piston slidably received within said bore and a pin axially mounted on said piston, means for mounting an explosive tear gas cartridge adjacent one end of said bore in axial alignment with said firing pin, a spring for normaly biasing said firing pin piston towards said cartridge mounting means, a J-shaped slot in the wall of said barrel, said J-shaped slot including a long and short leg extending along the longitudinal axis of said barrel and a transverse leg joining the ends of said long and short leg, a cocking arm mounted on said firing pin piston and extending through said slot, an elongated reciprocable slide mounted on said barrel, one end of said slide being reciprocable over the short leg of said slot, said one end including a cam for engaging said cocking pin and moving it through said transverse leg and into said long leg, and a handle mounted on said slide.

3. A tear gas gun in accordance with claim 2 wherein said means for mounting an explosive tear gas cartridge adjacent one end of said bore includes an internal thread within said bore adjacent said one end, and firing pin retaining means within said bore, said firing pin retaining means comprsing a disk-shaped wall, screw threads on the periphery of said disk for matingly engaging said screw threads within said bore, said wall being threaded into said bore, and a central opening in said bore for receiving the axial pin mounted on said piston.

4. A tear gas gun in accordance with claim 2 wherein the end of the barrel wall defining the bight of said J-shaped slot is at an angle to a closed end of said bore and toward said long leg whereby said cocking arm is cammed through said transverse leg.

No references cited.

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