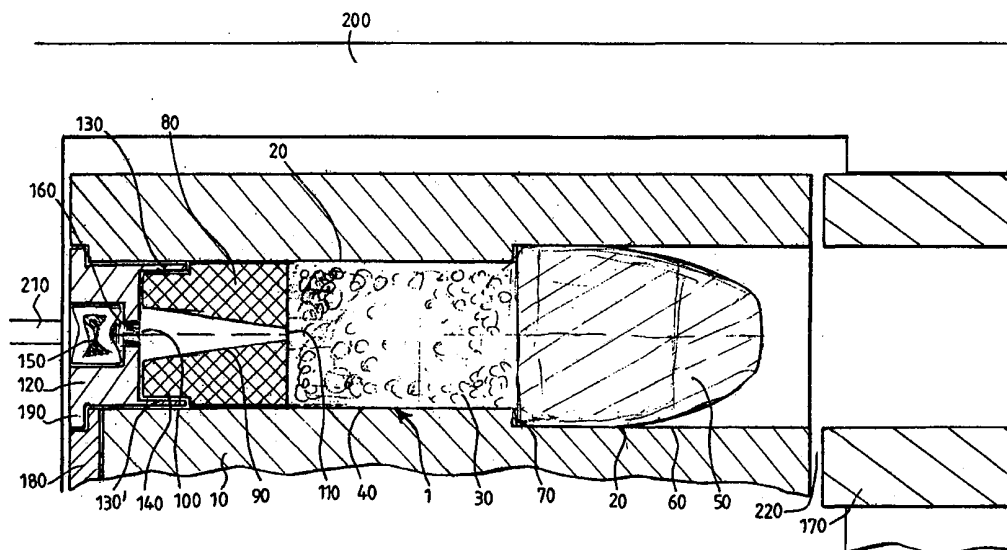




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(54) Title: MULTIPLE SHOT, BULLET DISCHARGING WEAPONS



(57) Abstract

A muzzle loading weapon having a bullet propulsion system for the propulsion of a bullet from a bullet chamber, the chamber comprising a first portion to receive combustible powder and a second portion to receive the bullet, characterised in that a blocking element is fixedly located in operable communication with the powder receiving portion of the chamber and distal to the bullet receiving portion of the chamber, a flash hole being provided in the blocking element, a replaceable end cap being locatable over the blocking element, a primer being associated with the end cap, whereby detonation of the primer serves to ignite powder in the bullet chamber *via* the flash hole, thereby to cause combustion of the powder and propel a bullet from the chamber, provides greatly improved accuracy and efficiency.

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Multiple Shot, Bullet Discharging Weapons

The present invention relates to multiple shot, bullet discharging weapons relying on the ignition of a combustible powder for the propulsive force.

Guns have continuously evolved over the centuries, with early weapons, especially pistols, requiring time, skill and concentration to load, but providing very little accuracy. By contrast, modern weapons can not only shoot many rounds a second, but also have extreme accuracy.

However, the modern weapons that have such accuracy rely on preloaded ammunition which typically comprises a cartridge case containing a combustible powder, a bullet closing the case and tightly fitting in one end and a primer at the other end which, when activated, serves to initiate combustion of the powder, leading to an explosive release of exhaust gases, forcing the bullet out of the cartridge case and down the barrel of the weapon. Such preloaded ammunition can be provided in magazines of any desired size, and is exceedingly easy to use.

An alternative style of weapon, that remains popular, is colloquially known as the "black powder" weapon. In this type of weapon, there is no cartridge case, and powder is loaded into a chamber and then a bullet rammed into place on top of the powder. Ignition of the powder, as before, serves to force the bullet from the weapon.

In general, black powder weapons are unsuited for use with the more powerful "nitro" powder, used in preloaded ammunition. Essentially, if nitro powder is used in black powder weapons, then the weapons will tend to explode or, at least, become seriously damaged or be dangerous to the user. This can be overcome by suitable strengthening of the weapon, but there is no black powder, or muzzle loading type, weapon on the market which is designed for use with nitro powder.

Muzzle loading weapons also tend to be inaccurate owing to the way that the powder is ignited. A percussion cap containing a small amount of primer material is placed over a nipple which has a flash hole leading to the powder to one side at the back of the powder chamber. When the cap is hit with a hammer, the initiation charge ignites the combustible powder through the tube, and the force of the explosion destroys the cap. However, as the powder is ignited from one side, the powder burns unevenly, and there is also blowback through the flash hole. There is, thus, reduced force and reduced accuracy. In addition, this type of muzzle loading weapon cannot be used in a manner similar to the modern revolver, for example, and this is a major drawback for black powder shooting events.

US-A-5,487,232 discloses a black powder, single-shot rifle having a primer carrier carrying a primer which fits over a nipple, in line with the charge. The carrier is made of plastic, with a tab extending outwards to indicate that the firearm is charged.

US-A-5,623,779 discloses a muzzle-loading firearm having an insert for fixing in a barrel of a rifle, the powder and bullet being rammed into the end of the insert. A primer carrier is associated with the other end of the insert, and the primer discharges through a hole in the insert to ignite the black powder.

Both of these patents relate to hunting rifles, so that large and complex mechanisms which are difficult to clean are of little or no problem, given that very few shots are likely to be discharged in any given day. These mechanisms, however, are not applicable to target weapons, which are typically discharged 100 or more times in a session.

Thus, there is a need to provide a black powder firearm which is capable of multiple discharge with minimum inconvenience.

It has now, surprisingly, been found that it is possible to provide a black powder weapon, which has good power and accuracy, by providing a primer which discharges through a flash hole in a fixed blocking element to ignite powder in a chamber beyond the blocking element, thereby to expel a bullet from the chamber. This system is highly accurate, and provides even combustion of the powder.

Thus, in a first aspect, the present invention provides a multiple shot, bullet discharging weapon comprising: multiple chambers from which a bullet is discharged, each chamber having a first portion to receive combustible material, preferably a combustible powder, and a second portion to receive a bullet; and

for each chamber, a blocking element being fixedly located in a bore comprising the chamber, the blocking element being in operable communication with the powder receiving portion of each chamber and distal to the bullet receiving portion of the chamber, a flash hole being provided in the blocking element, each bore being configured to receive a replaceable end cap such that the end cap is anterior to the blocking element and that a wall or walls of the end cap engage the inside of the bore, a primer being associated with the end cap, whereby detonation of the primer serves to ignite powder in the bullet chamber *via* the flash hole, thereby to cause combustion of the powder and propel a bullet from the chamber, the end cap being prevented from ejection, in the firing position, by the frame of the weapon.

Preferably, the blocking element as well as the bore is configured to receive a replaceable end cap, so that the end cap is located over the blocking element and that a wall or walls of the end cap are immediately proximate to or engage the blocking element as well as engaging the inside of the bore.

The bore, of which the chamber forms a part, may be of any suitable configuration. While there is no requirement that every section of the bore be coaxial, such as where the end cap receiving portion may be offset from the rest of the bore, for example, it will be appreciated that it is generally preferred for each part of the bore to be on the same axis. In addition, the bore may effectively be discontinuous, where the

blocking element is integral with that part of the weapon in which the bore is formed, continuity only being provided by the flash hole, in such a situation.

Thus, for the greatest accuracy, it is preferred for all of the elements in the bore to be in line and substantially, or completely, on a single axis, as illustrated in the accompanying Figure 1. However, it will also be appreciated that variations may be made by those skilled in the art where appropriate, and as desired.

It is a particular advantage of the present invention that the weapon can be a revolver, for example. This means that, in contrast to previous muzzle loading weapons, a revolver very similar to that for use with preloaded ammunition can now be made as a black powder weapon. In other words, a multiple shot black powder weapon can now be provided. It is also a very significant advantage that the weapon of the present invention is able to loaded with nitro powder, rather than black powder, as the propulsion mechanism allows the weapon to be built to be able to withstand the forces involved. This permits of greater accuracy and is much cleaner. From this, it will also be understood that the weapons of the present invention, while often referred to herein as "black powder" weapons, are not restricted to the use of black powder and, indeed, may be used with any appropriate powder or propulsive material, and references to weapons of the invention as "black powder" weapons should be construed accordingly.

Most muzzle loading weapons used balls which, again, lack accuracy over more modern bullets, which are designed so as to be able to be squeezed through a forcing cone, so that the fit in the barrel of the gun is as snug as possible, thereby to prevent wobble and provide extra accuracy. In accordance with the present invention, this is now also possible for black powder weapons.

The forcing cone in the cylinder of a standard revolver using preloaded ammunition tends to be located in the bullet chamber, so that the forcing cone is actually part of the cylinder. Using the present invention, it is necessary to load a bullet from the end of the chamber from which it will also exit, so that passing it through a

forcing cone in the cylinder would be impractical at best, and impossible at worst. However, it is still possible to incorporate a forcing cone at the beginning of the barrel, if desired. It will be appreciated that this loses some efficiency over weapons using preloaded ammunition, but provides a vast improvement in efficiency over previous black powder weapons.

It will also be appreciated that, having a forcing cone in a black powder weapon also enables the use of rifling in the barrel, thereby improving accuracy yet further.

Given that there can now be no forcing cone in the cylinder, it is not now quite so possible to provide a tight fit between the bullet and the end of the chamber and the bullet and the beginning of the barrel. Accordingly, with the fit not quite so tight as with weapons using preloaded ammunition, it may be appropriate to reduce the size of the cylinder gap. This will be apparent to a man skilled in the art. Thus, the cylinder gap may be reduced if desired.

The chamber comprises two portions, one to receive the bullet and the other to receive the powder. It is not essential that the two portions be specifically segregated in any way. The chamber may have the same bore, so that the powder is first deposited into the chamber and then the bullet rammed in on top of the powder.

The disadvantage of having a chamber having a uniform bore is the danger of compacting the powder too much, leading to the powder exploding on ignition, rather than the normal rapid burning, thereby destroying or damaging the gun, and potentially leading to personal injury. Accordingly, it is preferred to incorporate a shoulder in the chamber, beyond which the bullet cannot pass.

Any shoulder in the chamber between the portion to receive the powder and the portion to receive the bullet will lead to a narrower aperture for the portion to receive the powder, and it is preferred that the diameter of the powder receiving portion of the chamber be the same as that of the aperture to this portion of the chamber, so that there

is no raised portion forming a wall upon which force can be exerted during combustion of the powder.

The nature of the shoulder may be such that it is chamfered, or it may be a straight forward ledge, for example. The configuration of the shoulder can be tailored according to preference, and those skilled in the art will appreciate where to position such a shoulder.

It will be appreciated that, where a shoulder is provided to distinguish between the powder chamber and the bullet chamber, then this predetermines the amount of powder that can be used and may, therefore, be undesirable in certain circumstances. However, it will be appreciated that most weapons tend to be designed for a specific range of loads and that, as such, this is unlikely to present many problems.

Generally, it is preferred that there be no gap between the powder and the bullet, so that an amount of powder may be inserted into the chamber which has slightly more volume than that of the powder chamber, so that, when the bullet is rammed into the chamber, the powder is slightly compressed, thereby to yield greater efficiency. If the powder chamber is not sufficiently full, then this can lead to greater concentrations of powder in one portion of the chamber, thereby leading to uneven and inefficient combustion and, concomitantly, affect the accuracy of aim.

Although it is possible to use a ball in the weapon of the present invention, it is generally preferable to use more accurate bullets, such as those used with preloaded ammunition, including chisel and round nose types.

The nature of the powder is not important to the present invention, provided that the system works to propel the bullet from the chamber. As noted above, black powder weapons tend not to be built robustly enough to be able to be used with nitro powder, but with weapons of the present invention, similar constructs can be used as with weapons using preloaded ammunition, so that, as noted above, there is no reason not to

use nitro powder, provided that the construction of the weapon is sufficiently robust for such use, for the safety of the user.

The blocking element may be provided in any suitable form, provided that it has a flash hole enabling the primer to ignite the powder.

The blocking element may be integral with the block. In a revolver, the block will be the cylinder, each chamber being reamed out of the cylinder, six such chambers being provided in a standard revolver.

Whilst the blocking element may be integral with the block (which will also be referred to herein as the cylinder, although other constructs, such as for rifles, will still be included, even if the block is referred to as the cylinder), it will be appreciated that it may also be preferable to have a separate element introduced. For example, the cylinder may have a bore provided all of the way through, in a manner similar to standard revolvers, and the blocking element may be secured therein at the bottom of the powder chamber. The element may be screwed into place, it may be integral as stated above, or it may be seated on a shoulder, such as may be provided by having a slightly larger bore for receiving the blocking element than for the powder chamber.

Where the blocking element is a separate element, then this may be secured within the bore by any recognised means. For example, the element may be slightly tapered towards the rear and be intended to sit on a shoulder abutting the powder chamber. If a similar configuration is provided in the bore and the element is substantially cooled, then it can easily be inserted and, once it has warmed up, will be essentially immovable. In one preferred configuration, the blocking element is screwed in so that it may be replaced individually, if it becomes corroded, rather than replace the entire cylinder. Other means will be readily apparent to those skilled in the art.

In some circumstances, especially where nitro powder is used, it may be preferable to incorporate part, or all, of the powder receiving portion of the chamber in

the blocking element. This has advantages in making the bore, and can also allow different blocking elements to be provided having different powder receiving capacities to provide for different strength weapons.

The shape of the flash hole provided through the blocking element should be such as to enable efficient transfer of heat generated by the primer to the combustible powder. One preferred configuration is a tapering hole, getting narrower towards the aperture to the powder chamber, thus providing a very specific and central ignition point for the powder, thereby ensuring even combustion.

It is also possible for the flash hole to have the same diameter all the way along, but suitable configurations will be apparent to those skilled in the art. However, it is specifically preferred that the aperture to the powder chamber be narrow, in order to avoid any significant amount of powder penetrating the flash hole.

The length of the flash hole will be determined by the size of the blocking element, the blocking element substantially providing a first degree of obturation to the combusting powder. As such, the blocking element should be sufficiently strong that it is substantially completely unaffected, physically, by repeated discharge of the weapon. Suitable sizes of the blocking element will, therefore, be readily apparent to those skilled in the art.

Behind the blocking element is located the end cap containing the primer. This has a particular advantage over the prior art muzzle loading weapons, in that it becomes possible to use a complete, enclosed primer in a closed system, rather than the inefficient percussion cap method.

The configuration of the end cap is such that it is located within the bore immediately behind the blocking element and in a manner such that detonation of the primer can ignite the powder *via* the flash hole. Various configurations will again be apparent to those skilled in the art, and these will generally be dependent on the nature

of the primer, which will generally be centre fire or rim fire. In any event, it is especially preferred that the primer be sealed within the end cap from outside inspection, once it has been loaded into the bore.

A preferred form of end cap is in the nature of a brass cylinder having one closed end, the open end of the cylinder locating into the bore. While brass is a generally preferred material, it will be appreciated that other sufficiently resilient materials may be, such as rigidised plastics. Other suitable materials will be readily apparent to those skilled in the art.

It is preferred that the walls of the cylinder extend sufficiently far into the bore that they provide for stable insertion, as well as helping to provide a closed system on ignition of the powder, when the superheated combustion gasses will blow back down the flash hole into the end cap, which can then expand and engage the walls of the bore to provide a completely closed system at this point, directing all of the power of the combusting powder to the bullet, and preventing potentially injurious discharge through the rear of the cylinder.

In order to conserve space and optimise the system, it is preferred that the walls of the end cap extend sufficiently far into the bore that they engage the blocking element. Thus, the rear portion of the blocking element may have a groove or recess into which the walls of the end cap can fit. Thus, on the outside, the walls of the end cap may engage the bore, whilst on the inside they are immediately proximate to or engage the wall of the blocking element. In this configuration, at the position where the walls engage the blocking element, it may be preferable to slightly crimp the walls of the end cap to provide an interference fit with the blocking element. Alternatively, a friction band, such as might be made from a rubbery material, may be incorporated into the inside of the walls of the end cap, or, less preferably, onto the recess of the blocking element, also to provide a friction assisted fit. Other configurations will be apparent to those skilled in the art.

Where a recess is provided in the blocking element for mating with the walls of the end cap, it may be desirable to provide a blocking element in two parts. The first part is that having a wider diameter, and may be in the form of a sleeve which locates into the bore and is securable there. The second part then comprises some, but preferably all, of the flash hole, and is locatable, preferably by screwing, into the sleeve portion. The narrower diameter of the outside of the second portion then permits the walls of the end cap to pass over a part of the second portion protruding from the sleeve portion.

In the event that the primer is a centre fire primer, then it is preferred that the primer is sealed into the end cap in a manner similar to that for preloaded ammunition and, indeed, the types of primer used may be identical with those used in preloaded ammunition. Thus, the primer may be inserted into a chamber in the end cap having an aperture which, upon insertion of the end cap, will lead substantially directly into the flash hole. In the event that the primer is a rim fire primer, then this may be associated with an initiator in the end cap, the initiator typically being sealed in by a suitable membrane. Upon detonation, the initiator provides flame, instantly rupturing the membrane and igniting the powder *via* the flash hole.

It will be appreciated that other forms of primer may also be provided, such as those detonated by an electrical charge.

Once the round has been fired from the weapon, it is necessary to remove the end cap. In some weapons, this may be achieved merely by tipping the cylinder up, and letting the end caps fall out. However, in a typical revolver, this may be assisted by the use of an extractor, such as is commonly known for weapons using preloaded ammunition. A conventional "star extractor" may suffice, for example. However, given that the end cap is shorter than the conventional cartridge case, it may be desirable to provide a ring extractor, where the ridge around the base of the end cap (if provided) sits on the ring which is comprised in the extractor, so that the extraction process exerts even pressure all around the end cap in order to remove it. Other suitable

extractors are the "full moon" and "half moon" extractors. Any other suitable method may be employed to extract the end cap.

Once the round has been fired, the powder chamber may be cleaned if desired, or reused straightaway. Cleaning is not essential to the present invention, and it will be immediately apparent to those skilled in the art as to when it will be necessary to clean the chamber, and this may be effected by well known means.

Reloading may be by simply pouring powder into the chamber and subsequently introducing a bullet. However, it will be appreciated that it is very much preferred if a standard amount of powder is introduced each time, so that a measuring device is preferably used, or at least, a measured amount of powder. In the event that the weapon is a revolver, rapid reloaders may be appropriate, which can instantly dispense six aliquots of powder into the chambers. Similar reloaders may then also be used to load up the six bullets. Suitable pressure means may also be employed in order to ensure that the bullets are rammed into the appropriate depth in the chamber. This may be effected by means of a suitable lever to engage the loader and the cylinder, for example.

For faster reloading, it may even be desirable to provide detachable cylinders which can be preloaded prior to use. A potential drawback is that this may lead to slight variations in aim, with different cylinders.

Although it is not an essential part of the invention, it will be appreciated that the nature of the present invention, especially where a shoulder is provided in any part of the bore, makes it very difficult to ream out the bore to convert it into a weapon suitable for use with preloaded ammunition.

It will be appreciated that the weapons of the present invention may be of many types and that, whilst they have been illustrated herein with respect to revolvers, other weapons, especially rifles, may be suitably adapted for use with the present invention. For example, rifles with falling block or raised block loading mechanisms may be

adapted to provide similar advantages to those obtainable with revolvers. Other forms of weaponry adaptable to the present invention will be readily apparent to those skilled in the art.

The present invention further provides a method for the discharge of a bullet from a chamber comprising use of a system as defined above.

Thus, there is provided a method for the discharge of a bullet from a chamber, wherein the chamber has a first portion to receive combustible powder and a second portion to receive a bullet; a blocking element being fixedly located in a bore comprising the chamber, the blocking element being in operable communication with the powder receiving portion of each chamber and distal to the bullet receiving portion of the chamber, a flash hole being provided in the blocking element, the blocking element and bore being configured to receive a replaceable end cap such that the end cap is located over the blocking element and that a wall or walls of the end cap are immediately proximate to or engage the blocking element and also engage the inside of the bore, a primer being associated with the end cap, comprising detonating the primer to ignite powder in the bullet chamber *via* the flash hole, thereby to cause combustion of the powder and propel the bullet from the chamber, the end cap being prevented from ejection, in the firing position, by the frame of the weapon.

The present invention will now be illustrated further with respect to the accompanying drawing, in which:

Figure 1 represents a preferred embodiment of the present invention.

In Figure 1, part of the cylinder, frame and barrel of a weapon of the present invention which, here, is a revolver, is generally shown at (1). The cylinder (10) generally comprises a cylindrical bore (20).

Combustible powder (30) is provided in powder chamber (40), whilst a bullet (50) is provided in the bullet chamber (60). A shoulder (70) between the powder chamber (40) and the bullet chamber (60) prevents the bullet from compacting the powder (30) in powder chamber (40). Blocking element (80) is located immediately behind powder chamber (40) and has flash hole (90) located therein. Flash hole (90) has an entry aperture (100) and an exit aperture (110) and, in this embodiment, exit aperture (110) is narrower than entry aperture (100). As with the rest of the construction of the weapon, where a part is typically constructed of metal, the blocking element is typically made of weapons grade steel.

End cap (120) is in the form of a cylinder having a closed end, the open end being defined by walls (130, 130') which, it will be appreciated, form a continuous wall in this instance.

Walls (130, 130') locate about a recess (140) on blocking element (80). It is preferred to make the fit between the bore (20), the walls (130, 130') and the recess (140) as snug as possible so that, on insertion of the end cap (120), the walls (130, 130') are flush with both the recess (140) and the bore (20).

A primer (150) is sealed into end cap (120). On detonation, the flame, or heat, from the primer exits through aperture (160) along flash hole (90) and through aperture (110) to ignite the powder (30), thereby forcing bullet (50) from the chamber (60) into the barrel (170), only the beginning of which is depicted. In addition, the superheated combustion gasses wash back down the flash hole (90) to the end cap (120), and the combination of heat and pressure may serve to temporarily expand the end cap (120), which is typically made of brass, to tightly grip the bore (20) to provide a complete, obturating seal at the rear of the weapon. Further, in the firing position, end cap (120) is prevented from being ejected from the bore by the part of the frame (200).

After firing, extractor (180) may be used to eject end cap (120) by action upon lip (190) provided around the periphery of the end cap (120). At this stage, powder chamber (40) may be cleaned if desired.

Other features of the weapon, shown in part, are the frame (200) and the firing pin hole (210), through which the firing pin can impact on the primer (150) sealed into the end cap (120). The cylinder gap is also depicted at (220).

What is claimed is:

1. A multiple shot, bullet discharging weapon comprising:
multiple chambers from which a bullet is discharged, each chamber having a first portion to receive combustible material and a second portion to receive a bullet;
and
for each chamber, a blocking element being fixedly located in a bore comprising the chamber, the blocking element being in operable communication with the combustible material receiving portion of each chamber and distal to the bullet receiving portion of the chamber, a flash hole being provided in the blocking element, each bore being configured to receive a replaceable end cap such that the end cap is anterior to the blocking element and that a wall or walls of the end cap engage the inside of the bore, a primer being associated with the end cap, whereby detonation of the primer serves to ignite the combustible material in the bullet chamber *via* the flash hole, thereby to cause combustion of the combustible material and propel a bullet from the chamber, the end cap being prevented from ejection, in the firing position, by the frame of the weapon.
2. A weapon according to claim 1, wherein each blocking element and bore is configured to receive a replaceable end cap such that the end cap is located over the blocking element and that a wall or walls of the end cap are immediately proximate to or engage the blocking element and also engage the inside of the bore.
3. A weapon according to claim 2 or 3, wherein all of the elements of each bore are in line.
4. A weapon according to any preceding claim, which is a revolver.
5. A weapon according to any preceding claim and having a barrel, having a forcing cone at the beginning of the barrel.

6. A weapon according to any preceding claim, and having a barrel, wherein there is rifling in the barrel.
7. A weapon according to any preceding claim, comprising a shoulder in each chamber, beyond which the bullet cannot pass.
8. A weapon according to any preceding claim, wherein the combustible material is a powder.
9. A weapon according to claim 8, wherein the powder to be used is nitro powder.
10. A weapon according to any preceding claim, wherein each blocking element is integral with the block in which the system is constructed.
11. A weapon according to any preceding claim, wherein each end cap is a cylinder closed at one end.
12. A weapon according to any preceding claim, wherein each primer is a centre fire primer.
13. A weapon according to any preceding claim, further comprising an extractor.
14. A weapon according to claim 13, wherein the extractor is a star extractor.
15. A weapon according to claim 13, wherein the extractor is a ring extractor.
16. A weapon according to claim 13, wherein the extractor is a half moon extractor.
17. A weapon according to claim 13, wherein the extractor is a full moon extractor.

18. A weapon according to any preceding claim, wherein all or part of the powder receiving portion of the chamber is incorporated into the blocking element.

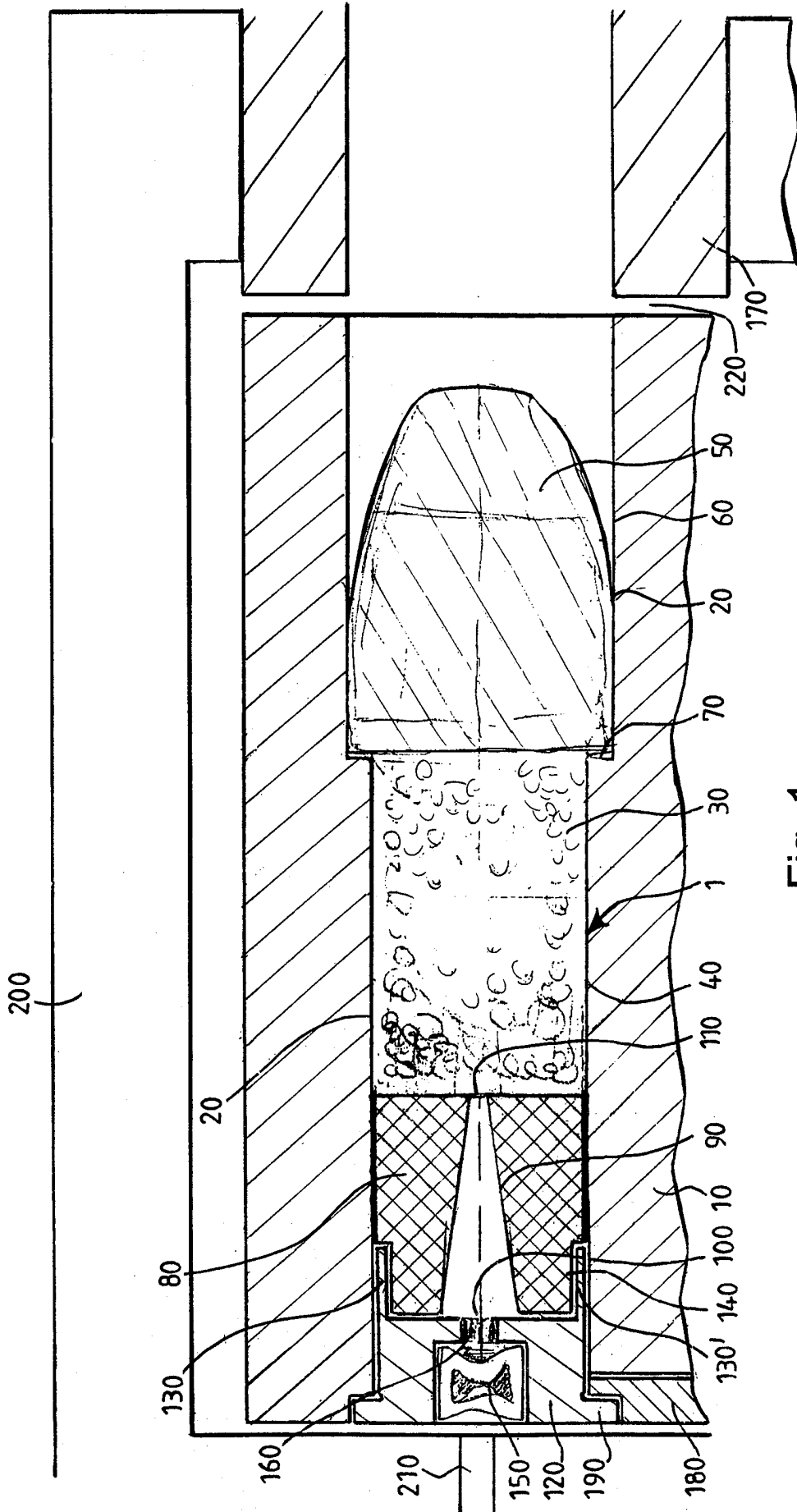


Fig. 1

INTERNATIONAL SEARCH REPORT

National Application No
PCT/GB 98/03212

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 F41C3/14 F41A15/20

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
IPC 6 F41C F41A

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	FR 2 590 011 A (NOGUIER) 15 May 1987 see abstract see page 2, line 7 - line 17 see page 3, line 1 - line 3; figures ---	1-4,6-8, 13
A	US 5 623 779 A (RAINEY) 29 April 1997 cited in the application see abstract see column 6, line 53 - line 64; figures 12,13 ---	1,13
A	US 3 765 116 A (ZAID) 16 October 1973 see figures 1-3 -----	1

Further documents are listed in the continuation of box C. Patent family members are listed in annex.

° Special categories of cited documents :

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 98/03212

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
FR 2590011	A	15-05-1987	NONE	
US 5623779	A	29-04-1997	US 5737863 A	14-04-1998
US 3765116	A	16-10-1973	NONE	