

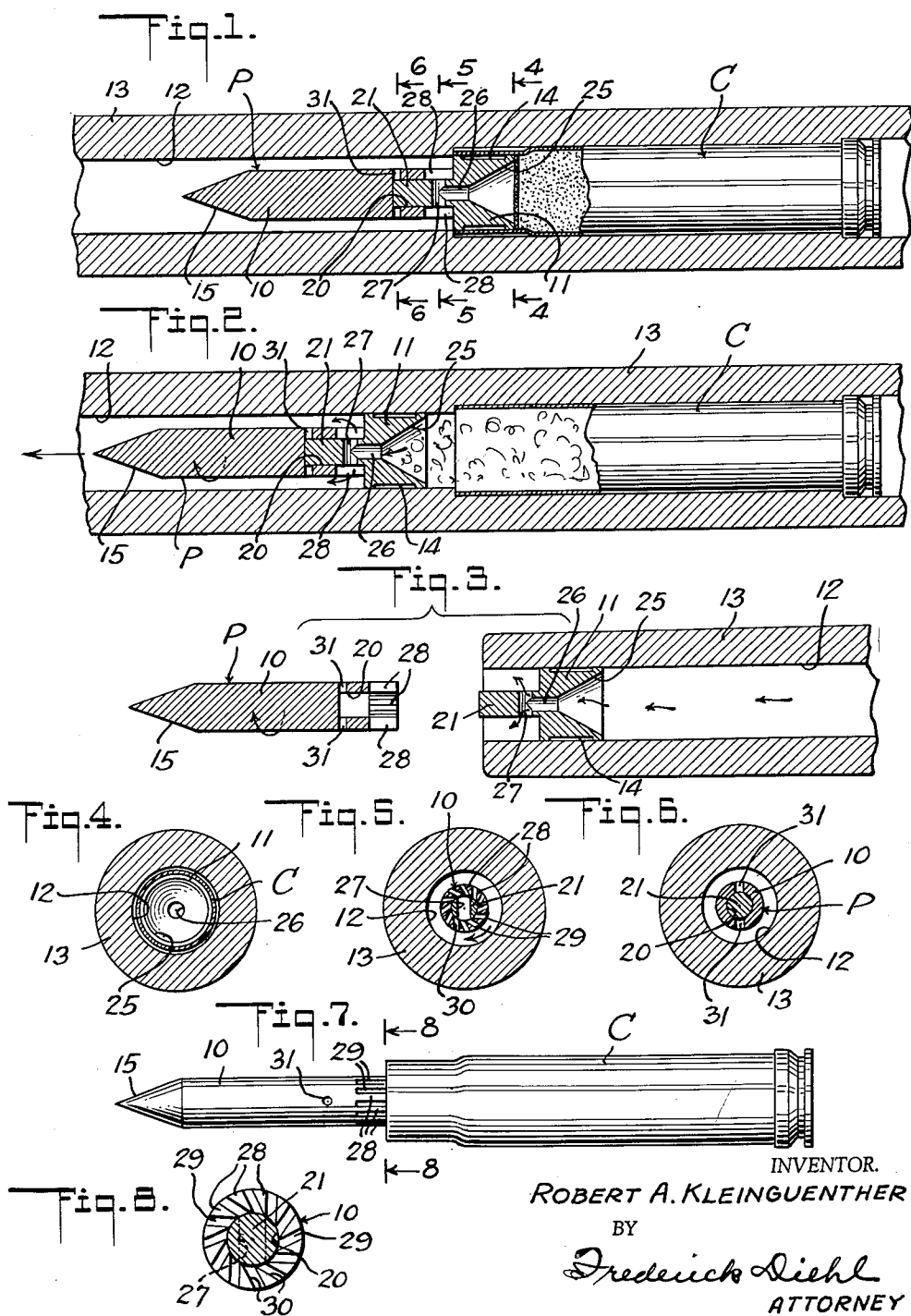
Nov. 27, 1962

R. A. KLEINGUENTHER

3,065,696

PROJECTILE FOR FIREARMS

Filed Nov. 23, 1959



INVENTOR.
 ROBERT A. KLEINGUENTHER
 BY
Frederick Diehl
 ATTORNEY

1

3,065,696

PROJECTILE FOR FIREARMS

Robert A. Kleinguenther, 14627 Fairacres Drive,
Whittier, Calif.

Filed Nov. 23, 1959, Ser. No. 854,822
4 Claims. (Cl. 102—51)

My invention relates generally to firearms and more particularly to ammunition therefor.

An objection of my invention is to provide ammunition in the nature of a projectile which is structurally characterized by means utilizing the gas pressure generated in the chamber of the firearm upon discharging the latter to not only propel the projectile but also to impart rotary motion or spin to the projectile, so as to dispense with rifling the barrel with its attendant disadvantages of causing excessive friction in the barrel and high pressure in the chamber as well as deformation of the projectile, all to the end of enabling the chamber pressure to be greatly reduced and a smaller charge of the most rapid burning powder to be used to enormously increase the velocity of the projectile and obtain vastly increased penetration of the target.

Another object of my invention is to provide a projectile of the above described character which may include a case containing the powder charge so as to form a cartridge having the usual primer or may omit the case and directly contain the powder charge to be fired electrically.

A further object of my invention is to provide a projectile as above set forth which can be used in any type of hand firearm, shoulder firearm either rifled or smooth bore such as shotguns, ordnance and recoilless guns.

Still another object of my invention is to provide a projectile which is composed of separable sections of which a rear section has a sliding gas-tight fit in the bore of the barrel so as to be propelled therein by the gas pressure in the chamber when the weapon is fired, whereas a forward section which provides the bullet or shell, is supported clear of the bore by the rear section for unrestricted rotation on the rear section by the gas pressure in the chamber acting upon the forward section through the rear section, all in a manner to cause the forward section to be propelled from the barrel separately from the rear section with the correct amount of spin to insure accurate and true flight with minimum resistance and maximum velocity.

With these and other objects in view, my invention resides in the combinations, arrangements and functional relationships of elements as set forth in the following specification and particularly pointed out in the appended claims.

In the accompanying drawings,

FIGURE 1 is a fragmentary longitudinal axial sectional view showing the projectile embodying my invention in the form of a cartridge loaded into the chamber of a firearm;

FIGURE 2 is a view similar to FIGURE 1 and illustrating the projectile initiating its movement through the barrel immediately after firing;

FIGURE 3 is a view similar to FIGURES 1 and 2 and illustrating the forward section of the projectile separated from the rear section thereof and clear of the muzzle end of the barrel;

FIGURES 4, 5 and 6 are enlarged transverse sectional views taken, respectively, on the lines 4—4, 5—5 and 6—6 of FIGURE 1;

FIGURE 7 is a view of the projectile in side elevation; and

FIGURE 8 is an enlarged transverse sectional view taken on the line 8—8 of FIGURE 7.

Referring specifically to the drawings, my invention

2

may or may not include a cartridge case C which is shown for the purpose of illustration as one embodiment of my invention comprising a projectile designated generally at P composed of a forward bullet or shell forming body section 10 and a rear base or propelling section 11 on which the forward section is rotatably mounted yet is automatically separable from the rear section following discharge of the firearm.

The rear section 11 is in the form of a cylinder the external diameter of which has a sliding, gas-tight fit at its end portions in the bore 12 of the firearm barrel 13, with the intermediate portion of the cylinder annularly grooved as indicated at 14 to reduce the area of frictional contact of the cylinder with the wall of the barrel bore. In the cartridge form of the invention illustrated, the base section 11 has a force fit in the front end of the case C and is assembled to the latter following the powder charge.

The body section 10 forming the bullet or shell is of elongated cylindrical form with a pointed nose 15. The rear end of the section 10 is provided with a relatively deep cylindrical pocket 20 forming a bearing co-axially related to the section and receiving a pin 21 providing a journal and projecting co-axially from the forward end of the section 11, with a close rotatable fit between the pin and pocket. Thus, the section 10 is mounted on the rear section 11 for rotation relatively thereto in parallel and coaxial relationship to the bore 12 and spaced from the wall of the bore as clearly shown in FIGURES 1 and 2.

The rear end of the section 11 is open to the interior of the case C by means of a conical recess 25 the smaller forward end of which communicates with an axial passage 26 extending into the pin 21 and terminating in a diametric passage 27 in the pin. The passage 27 opens at its ends to the periphery of the pin 21 adjacent to the rear end of the section 11 to provide nozzles co-acting with vanes or blades 28, (FIGURE 8) formed on the section 10 by slots 29 extending through the wall of the section from the pocket 20 to the periphery of the section as clearly shown in FIGURE 8.

The slots 29 form gas exhaust passages, and their lengths extend tangentially with respect to a circle co-axially related and of a diameter approximately equal to that of the pocket 20, all so that each vane will be provided with an obliquely disposed working surface 30 against which the gases impinge upon leaving the nozzles. The forward section 10 is provided with a diametric passage 31 communicating with the pocket 20 at the bottom thereof to relieve the pocket of vacuum during operation of the invention which is as follows:

In the use of the invention without the case C, the recess 25 will contain a load of powder in solid form for firing electrically and will be of such capacity as to be capable of receiving a precalculated amount of powder. In the use of the invention with the case C seated in the chamber of the barrel 13, the bullet-forming section 10 will be mounted on the pin 21 of the section 11 as shown in FIGURE 1 and can, if desired, be maintained against axial displacement from the pin by magnetizing the end portion of the latter to magnetically attract the section 10.

Upon firing the cartridge, the resulting gases will instantaneously travel through the passages 26, 27 of the section 11 and will impinge against the working surfaces 31 of the vanes 28 as the section 11 is ejected by the gases from the case C into the bore 12 as shown in FIGURE 2, so as to propel the sections through the bore and effect rotation of the section 10 on the pin 21 in the direction of the arrow in FIGURE 5, by the action of the expanding gases against the surfaces 31 of

the vanes 28 as the gases discharge from the nozzles through the slots 29 into the bore 12 around the section 10.

Prior to reaching the muzzle of the barrel, the section 10 will have separated from the section 11, as the slight friction between the latter and the wall of the bore 12 is sufficient to have very slightly reduced the velocity of the section 11 while the initial velocity of the section 10 remains unaffected by mechanically induced friction, to the end that the section 10 will leave the muzzle independently of the section 11 as shown in FIGURE 3, to insure accurate and true flight of the section 10 at maximum velocity.

From the foregoing description, it will be manifest that by eliminating rifling in the barrel and utilizing the pressure of the powder gases to spin the bullet section 10, the resistance to movement of the projectile through the barrel is reduced to a negligible minimum by the relatively slight frictional contact of the propelling section 11 with the wall of the bore 12. Therefore, a much higher velocity with greatly increased penetration of a target can be obtained with a smaller amount of the most rapidly burning powder, all without generating the extremely high gas pressure necessary to overcome the high resistance of the conventional rifling to movement of a bullet at high velocity through the barrel.

It is to be understood that the terms "bullet" and "bullet forming" as used in the specification and claims are to be broadly construed to include any form of solid or explosive body irrespective of the type or calibre of the weapon from which it is fired. Furthermore, the propelling section 11 need not be a cylinder as it is only essential that it be circular at one point for a gas-tight fit in the bore 12.

I claim:

1. In a firearm, a projectile disposed to be acted upon by a gas pressure generating means comprising: a propelling section having a journal-forming pin projecting from one end axially thereof; an elongated bullet section of less diameter than the propelling section, having a bearing-forming pocket in its rear end and receiving said pin to mount the bullet section thereon for rotation relatively thereto about an axis co-axially related to the longitudinal axis of the projectile; said propelling section having a passage opening to its other end so as to be subjected to gas pressure generated behind the projectile; said propelling section having nozzles extending from said passage to the periphery of said pin; the wall of said bullet section around said pocket having a circular series of impeller vanes extending tangentially with respect to a circle concentrically related to said axis, against which gases issuing from said nozzles when the firearm is discharged, impinge to effect rotation of the bullet section upon said pin; said bullet section having a vacuum relief port extending from said pocket to the exterior of said bullet section.

2. In a firearm having a bore through which the projectile is propelled by pressure generated behind the projectile upon discharging the firearm, a projectile comprising: a bullet-forming forward section having a diameter adapted to be freely received in the bore of the firearm so as to enable said section to be supported in its entirety in spaced relation to the wall of the bore; a propelling rear section having a diameter larger than that of the forward section and adapted to fit the caliber of the bore for sliding movement of said rear section therethrough; and means mounting said forward section on said rear section in telescopic relation thereto for rota-

tion about an axis on said rear section co-axially related to the longitudinal axes of the sections and to the longitudinal axis of the projectile; said forward section having a circular series of vanes extending tangentially with respect to a circle concentrically related to said axis; said rear section having a nozzle-forming passage opening to the rear of the projectile and to said series of vanes, through which the pressure generated behind the projectile when the firearm is discharged, is adapted to act by impinging obliquely against the vanes so as to co-act therewith in effecting rotation of the forward section about said axis and to then discharge from the forward section into the bore from the instant of discharge of the firearm and continuously during propelling of the projectile through the bore by the generated pressure.

3. In a firearm having a bore through which the projectile is propelled by gas pressure generated behind the projectile upon discharging the firearm, a projectile comprising: bullet and propelling sections; means mounting one of said sections on the other of said sections for relative rotation of the sections about an axis co-axially related to the longitudinal axis of the projectile, with the sections being separable axially away from each other; said propelling section having a diameter adapted to fit the caliber of the bore so as to utilize the pressure generated behind the projectile to initially propel the sections as a unit; said bullet section being of sufficiently less diameter than the propelling section to be supported by the latter in spaced relation to the wall of the bore; said propelling section having a nozzle opening to the rear of the projectile so as to conduct gas generated behind the projectile; said bullet section having surfaces defining part of a passage extending through the bullet section in communication with the nozzle and obliquely disposed with respect to the path of travel of the gas discharging from said nozzle so as to continuously effect rotation of the bullet section about said axis by impinging of the gas against said surfaces from the instant of discharge of the firearm, whereby to impart maximum rotational force to the bullet section as the projectile is being propelled through the bore.

4. In a firearm, a projectile disposed to be acted upon by a gas pressure generating means comprising: a propelling section of a diameter to fit the bore of the firearm; a bullet section of less diameter than that of the propelling section; one of said sections having a journal at one end, and the other of said sections having a bearing in one end receiving said journal to mount said bullet section for rotation about an axis co-axially related to the axis of the bore, yet rendering the sections axially separable; said propelling section having a nozzle and a passage extending through said propelling section to conduct gas pressure from behind the projectile to the nozzle upon discharge of the firearm; the bullet section having passage therethrough forming an impeller surface disposed in the path of travel of gases issuing from the nozzle, for co-action therewith in rotating the bullet section as the gases impinge against the surface and then escape from the bore around the bullet section from the instant that the firearm is discharged, whereby to effect maximum rotation of the bullet section as the projectile is being propelled through the bore.

References Cited in the file of this patent

UNITED STATES PATENTS

562,535	Hurst	June 23, 1896
2,507,878	Banning	May 16, 1950
2,793,592	Kroeger	May 28, 1957