Aug. 4, 1931. R. W. JAMES 1,817,377

PROJECTILE

Filed Aug. 15, 1928

FIG. 1

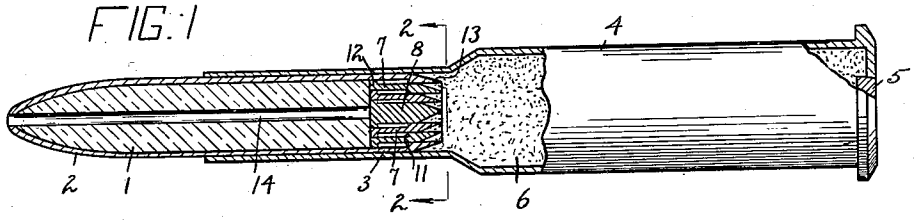


FIG. 2

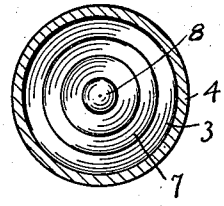


FIG. 3

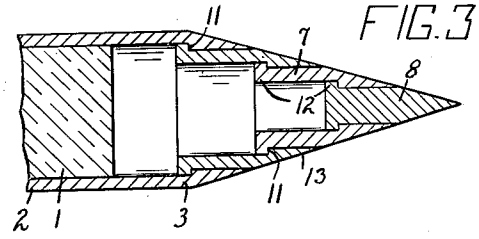


FIG. 4

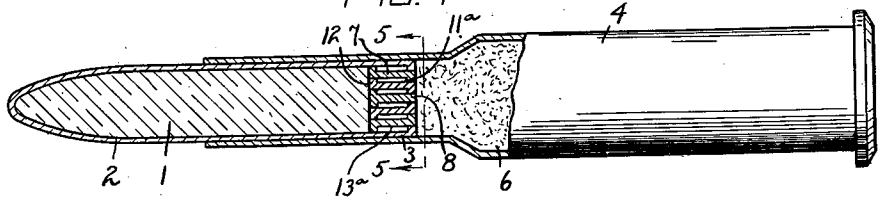


FIG. 5

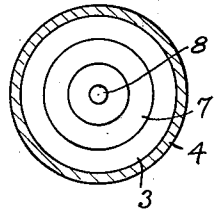
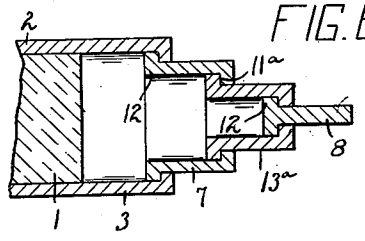


FIG. 6



ROY W. JAMES
INVENTOR.

BY R. W. Smith
ATTORNEY.

Patented Aug. 4, 1931

1,817,377

UNITED STATES PATENT OFFICE

ROY WALTER JAMES, OF COVINA, CALIFORNIA

PROJECTILE

Application filed August 15, 1928. Serial No. 299,652.

This invention is a projectile having a rear end adapted to axially expand when the projectile is in flight, so as to form a rear end of diminishing cross-sectional area toward its outer end, thereby eliminating the partial vacum otherwise tending to form in rear of the projectile and which would retard the flight thereof; the axially expandible rear end of the projectile being adapted to telescope when the projectile is at rest before discharge thereof, in order to provide a rear impact surface which will receive maximum propelling energy of the explosive charge.

The invention will be readily understood from the following description of the accompanying drawings in which:

Fig. 1 is a side elevation, broken away, of a bullet constructed in accordance with the invention.

Fig. 2 is a transverse section on the line 2—2 of Fig. 1.

Fig. 3 is an axial section through the bullet, showing the position of the same during flight.

Fig. 4 is a view similar to Fig. 1 showing a modified form of the invention.

Fig. 5 is a transverse section on the line 5—5 of Fig. 4.

Fig. 6 is a view similar to Fig. 3, showing the modified construction.

In the embodiments of the invention illustrated, the projectile is shown as a bullet, although the invention is applicable to any size or type of projectile adapted to be propelled by an explosive charge.

The core 1 of the bullet has a usual jacket 2 which projects beyond the rear end of the core, as sleeve 3. The bullet is mounted in a cartridge 4 which is provided with the usual percussion cap 5 for exploding the propelling charge 6.

A series of sleeves 7 telescope in the sleeve 3 and plug 8 is telescopically mounted in the innermost sleeve. The sleeves 3 and 7 have interior shoulders, and the plug 8 and sleeves 7 are provided with outwardly projecting flanges 12 at their inner ends. When the bullet is at rest, the sleeves 7 and plug 8 nest within the sleeve 3 as shown in Figs. 1 and 4; and during flight of the bullet the inertia of the nesting parts projects the same rearwardly until the flanges 12 are engaged by the cooperating interior shoulders of sleeves 3 and 7, thereby positioning parts 7 and 8 so as to project rearwardly beyond one another at the rear end of the bullet. This rearward projection is of diminishing close-sectional area toward its outer end, and consequently eliminates the formation of a partial vacuum in rear of the bullet during its flight. When the bullet is at rest, the nesting parts 7 and 8 form a rear impact surface for the explosive charge, which is transverse to the axis of the bullet and consequently receives a maximum propelling impulse of the charge.

In the form of the invention illustrated in Figs. 1 to 3, the interior shoulders of sleeves 3 and 7 are approximately midway of the length of said parts as shown at 11; and the outer surfaces of sleeves 3 and 7 and plug 8, which project beyond one another when the bullet is in flight, taper as shown at 13. The projection at the rear end of the bullet thus gradually tapers to a point at its outer end.

The bullet may have an axial bore 14 opening therethrough, so that when the bullet is in flight, the pressure through said bore and against the plug 8, will assist in axially expanding the telescopic parts.

In the modification of the invention illustrated in Figs. 4 to 6, the interior shoulders of sleeves 3 and 7 are at the outer ends of said parts as shown at 11*a*, and the outer surfaces of sleeves 3 and 7 and plug 8 are cylindrical throughout their lengths as shown at 13*a*. As a consequence, the projection formed at the rear end of the bullet during its flight, diminishes in cross-sectional area toward its outer end, and thereby prevents the formation of a vacuum in rear of the bullet, although this reduction in area is not a constant taper.

In the last described modification of the invention, a flat impact surface is formed at the rear of the nesting parts when the bullet is at rest as shown in Fig. 4, while in the first described form of the invention, the rear impact surface formed by the nesting parts has annular grooves therein, formed by the tapering surfaces 13 as shown in Fig. 1. In

either case, the energy of the explosive charge is directed squarely against the rear impact surface in the direction of flight of the bullet, and as a consequence the maximum propelling energy of the charge is utilized.

I claim:

1. A projectile having an axial bore opening through its respective ends and a telescopic rear end forming an impact surface in alinement with the bore, the telescopic rear end being adapted for rearward axial expansion responsive to air pressure through the bore when the projectile is in flight.

2. A projectile having an axial bore opening through its respective ends and a telescopic rear end forming an impact surface in alinement with the bore, the telescopic rear end being adapted for rearward axial expansion responsive to air pressure through the bore when the projectile is in flight, and said telescopic rear end being of diminishing cross-sectional area toward its outer end when axially expanded.

3. A projectile having an axial bore opening through its respective ends and a telescopic rear end forming an impact surface in alinement with the bore, the telescopic rear end being adapted for rearward axial expansion responsive to air pressure through the bore when the projectile is in flight, and said telescopic rear end including a series of telescopic nesting sleeves, each sleeve having a laterally projecting exterior abutment shoulder at its inner end and a laterally projecting interior abutment shoulder axially spaced from its inner end and adapted to engage the exterior shoulder of the next inner nesting sleeve for limiting rearward axial expansion of the sleeves.

4. A projectile having an axial bore opening therethrough, a series of telescopic nesting sleeves at the rear end of the projectile, each sleeve having a laterally projecting exterior abutment shoulder at its inner end and a laterally projecting interior abutment shoulder axially spaced from its inner end and adapted to engage the exterior shoulder of the next inner nesting sleeve for limiting rearward axial expansion of the sleeves, and a plug telescopically nesting in the innermost sleeve and having a laterally projecting exterior abutment shoulder at its inner end adapted to engage the interior shoulder of the proximate sleeve for limiting rearward axial expansion of the plug, the plug having an impact surface at its inner end in alinement with the bore of the projectile whereby the plug and sleeves are adapted for rearward axial expansion responsive to pressure through the bore of the projectile when it is in flight.

In testimony whereof he has affixed his signature to this specification.

ROY WALTER JAMES.