Patented July 2, 1940 2,206,048

UNITED STATES PATENT OFFICE

2,206,048

PROPELLANT CHARGE

Ernest R. Rechel and Thomas Stevenson,
Philadelphia, Pa.

No Drawing. Application January 17, 1940,
Serial No. 314,266

1 Claim. (Cl. 52—13)

(Granted under the act of March 3, 1883, as
amended April 30, 1928; 370 O. G. 757)

The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to us of any royalty thereon.

This invention relates to a propellant charge.

It is well known that double base powders have a higher potential than single base powders and with a given volume of charge, other conditions remaining the same, they are capable of giving higher velocities.

A serious disadvantage with double base powders is the fact that at sub-zero temperatures they yield higher pressures than at normal temperatures. Occasionally these pressures become high enough to burst the gun. Although very little is known about the phenomenon it is believed that the freezing of nitroglycerin causes an alteration in its physical structure which renders it susceptible to detonation by the shock or concussion imparted by the high velocity gases from the usual primer.

The purpose of this invention is to provide a propellant charge in which a double base powder is ignited by heat rather than by high velocity gases. Test firings have demonstrated that the red phosphorus type of non-corrosive and non-explosive primer is different from other primers in that it gives a reduced pressure with double base powders at sub-zero temperatures and thereby eliminates the danger of bursting the gun.

As an example of this type of primer the following mixture gives excellent results:

	Per cent
Red phosphorus	5 to 25
Barium nitrate	40 to 70
Antimony sulfide	10 to 25

This type of primer is more fully described in copending application of Pritham, Rechel and Stevenson, Serial No. 194,384 filed March 7, 1938, Patent Number 2,194,480 patented March 26, 1940.

We claim:

A propellant charge comprising a double base powder wherein nitroglycerin is one of the base constituents and a non-corrosive and non-explosive primer including red phosphorus.

ERNEST R. RECHEL.
THOMAS STEVENSON.