

July 18, 1944.

J. H. CHURCH

2,353,693

ROTATING BAND

Filed Sept. 28, 1942

Fig. 1

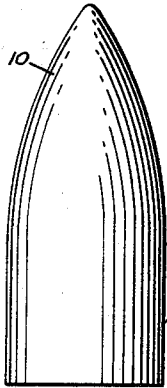


Fig. 2

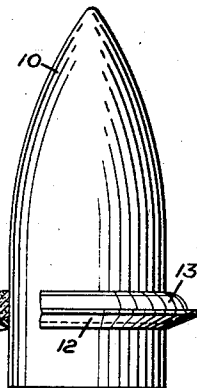


Fig. 3

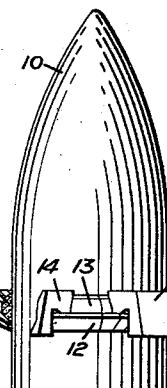


Fig. 4

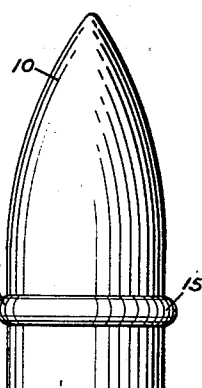


Fig. 5

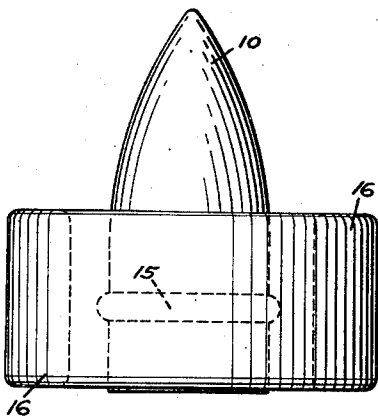


Fig. 6

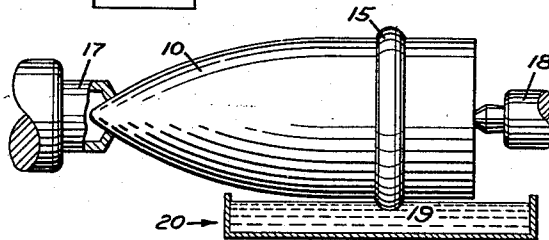


Fig. 7

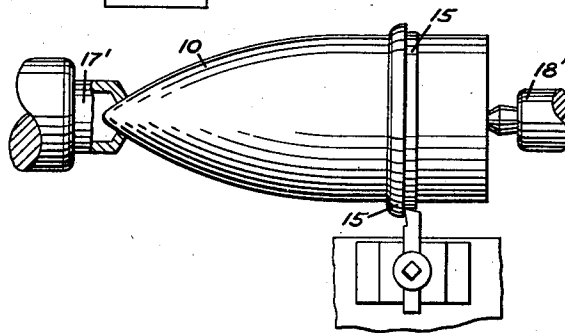
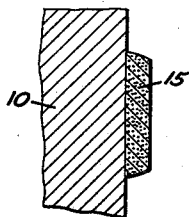


Fig. 8



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UNITED STATES PATENT OFFICE

2,353,693

ROTATING BAND

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Application September 28, 1942, Serial No. 459,915

3 Claims. (Cl. 29—1.2)

(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 me of any royalty thereon.

The present invention relates to a method of applying rotating bands to projectiles.

It is among the objects of the present invention to apply a rotating band to a projectile without the necessity of machining, cutting or grooving such projectile and without tendency toward displacement, fringing or irregular skirting.

In accomplishing the above objects a powdered metal material is applied to the projectile brazed thereto and then used as a base for taking up the metal (e. g. copper) of the rotating band.

In the drawings Figs. 1 to 7 are diagrammatic side views and show successive stages in application of the rotating band, while Fig. 8 is a cross sectional detail on an enlarged scale of the band as applied at position 11.

As shown in Fig. 2, the annular plate or cuff 12 is attached to the projectile at position 11 and then a purely powdered base metal or mixture of metals is placed on the annular plate or cuff 12. The metals may vary but they should be sufficiently highly powdered to sinter together with heating and the preferred mixtures include copper, nickel, cobalt, lead, zinc, antimony and so forth.

The preferred combinations are of copper and nickel powder using 25% to 75% of each metal.

The powder mixture 13 as shown in Fig. 3 is then compressed into the projectile 10 by the clamping jaws 14, the jaws 14 applying sufficient pressure and having such interior shape to form the desired shape and cross section as indicated at 15 in Fig. 4.

The projectile 10 as shown in Fig. 5 is then placed in a cylindrical casing 16 provided with a high frequency induction coil which heats up the band 15 until the finely powdered compressed metal thereof sinters together and is brazed to the projectile.

The projectile 10 is placed between the rotating elements 17 and center bearing point 18 as shown in Fig. 6 positioned so that the sintered band 15 will dip into and soak up the molten copper 18 from the bath 19.

Then as shown in Fig. 7 the projectile 10 is placed between the center pin 18' and the holder member 17' of a lathe and the band 15 will be firmly brazed to the projectile base and will be substantially devoid of tendencies toward displacement, fringing or irregular skirting.

I claim:

1. A method of applying a rotating band to a projectile which comprises encircling the projectile with a quantity of powdered metal, compressing said metal and then simultaneously sintering and brazing it to the projectile wall, impregnating the sintered material with a molten metal, and finally shaping the sintered and impregnated band.

2. A method of applying a rotating band to a projectile which comprises encircling the projectile with a quantity of powdered metal, compressing said metal, subjecting the projectile and the powdered metal to heating influence of a high frequency coil whereby the band is simultaneously sintered and brazed to the projectile, subjecting the sintered and brazed band to a bath of molten metal to impregnate said band, and finally shaping the band.

3. A method of applying a rotating band to a projectile which comprises encircling the projectile with a quantity of powdered metal, compressing said metal, subjecting the projectile and powdered metal to the influence of heat whereby the band is simultaneously sintered and brazed to the projectile, subjecting the band solely to a bath of molten metal whereby said band is impregnated, and finally shaping the band.

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