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LOW VELOCITY PRACTICE CARTRIDGE FOR FIREARMS

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The present invention relates to an improved target practice cartridge for use in conventional firearms, and having the length, cross sectional size, configurations, external markings and shape of a conventional cartridge ordinarily used therein, and enabling loading and ejection of the practice cartridge in the manner of a conventional cartridge, and the firing from the barrel of a firearm of a pellet of any desired shape, at low velocity.

The invention has utility in enabling practice in the use of a conventional firearm, by close duplication of normal firing conditions, so that no changes in sight picture, trigger pull, weight of the firearm, a normal "hold" are involved, so that a user can practice firing in places where use of the firearm with conventional, high velocity cartridges is not feasible or safe.

The main object of the present invention is to provide target practice cartridges of the character indicated above, which are adapted for target practice at reduced ranges, either in or out of doors, which reduce objectionable noise and expense, and which provide for normal firearm practice.

Another object of the invention is to provide a practice cartridge of this kind which is practical and efficient in use, and which can be made in serviceable forms at relatively low cost.

Other objects will appear from the following description, and from the annexed drawings, in which like reference characters designate like parts throughout the several views and wherein:

Figure 1 is a side elevational view of a practice cartridge according to the invention;

Figure 2 is a longitudinal sectional view on line 2—2 of Figure 1;

Figure 3 is an enlarged transverse section on line 3—3 of Figure 2; and

Figure 4 is a transverse section, on the same scale as Figure 3, on line 4—4 of Figure 2.

The illustrated cartridge 10 comprises an elongated pellet tube 16 having an axial bore having an open forward end 19 through which a pellet P is discharged toward a target. The tube 16, for a substantial part of its length, has a gently forwardly tapered outer surface 28 merging at its forward end into a more sharply tapered, relatively short portion 22 which merges at its forward end into a smaller diameter portion 24, also short in length and of uniform outside diameter. Portion 24 terminates in a reduced cylindrical portion 26, defining with the portion 24 and a relatively short shoulder 28, these portions being arranged to fit corresponding portions of the cartridge chamber of a firearm.

The tube 16 terminates at its larger rear end in a short reduced diameter cylindrical rear portion 30, which with the portion 30 defines an annular shoulder 32.

At its rear end the tube 16 is closed by an end wall 34. Formed in the end wall 34 and communicating with the bore 18 is an annular series of forwardly converging ports 36 spaced ninety degrees apart.

Removably engaged on the rear end portion 30 of the tube 16 is a relatively short tubular head 12 which has a cylindrical forwardly tapered outer surface 37 matching the taper of the outer surface 20 of the tube 16. At the larger rear end of the head 12 is an integrally formed cylindrical, relatively short portion 40 of increased diameter, formed intermediate its ends with a circumferential extractor groove 42 to enable ejection of the cartridge 10 from a firearm after firing thereof.

The external configuration, cross sectional size, and/or combined length of the head 12 and tube 16 are such as to closely simulate the corresponding characteristics of a conventional cartridge, so that the practice cartridge 10 can be loaded in and ejected from a firearm in the manner of a conventional cartridge. This is a characteristic of importance, in view of the fact that the practice obtained through use of the cartridge is designed to produce increased facility on the part of the user in the handling of the firearm.

The bore 38 of the head 12 has open forward and rear ends 39 and 41 respectively, and the forward end 39 has a counterbore 43, larger in diameter than the bore 38 and of substantially the same diameter as and receiving the reduced rear end portion 30 of the tube 16. The counterbore 43 defines with the forward end of the head 12 an annular shoulder 45. The head 12 is detachably secured on the tube portion 16, and a bayonet slot 44 in its forward end 39 receiving a pin 46 projecting radially outwardly from the portion 30 of the tube 16. An annular resilient sealing gasket 48 to reduce the amount of escaping gases to a minimum, is engaged on the portion 30 and compressed between the tube shoulder 32 and the forward end 39 of the head 12.

A solid cylindrical firing pin 14, shorter than the head 12, is slidably engaged in the bore 38 of the head and has intermediate its ends a notch 52 (Figure 3) through which extends a cross pin 54 driven into a transverse bore 47 formed in the head 12. Sliding movement of the firing pin 14 in opposite directions is limited by engagement of the cross pin 54 with opposite ends of the notch 52. The firing pin is thus permanently assembled with the head 12, for limited axial sliding movement in opposite directions within the head.

In its rear end 50 the firing pin 14 has an axial recess 56, in which is engaged an insert 58 of a material softer than the firing pin of a firearm, so that the firing pin of the arm will not be damaged. The insert 58 can be formed of fiber, while the firing pin 14 can be of mild steel or the like.

To load the cartridge 10 for firing, the head 12 is removed from the tube 16 and a percussion cap 60, of the type used in children's toy pistols, is positioned in the counterbore 43 against the shoulder 45. Alternately, a conventional cartridge primer, or a bit of detonating compound in any shape, can be used instead of the cap 60.

The head 12 is then secured on the tube 16. With a pellet P positioned in the bore 18 at the rear end thereof, the cartridge is loaded in the firearm in the normal manner. On firing of the firearm, the firing pin thereof, not shown, will strike the firing pin 14 and drive the firing pin 14 forwardly in the head 12 and detonate the cap 60. The gases from the explosion of the percussion cap 60 pass through the ports 36 behind the pellet P and expel the pellet, at relatively low velocity, from the forward end 19 of the tube bore 18. After firing, the cartridge can be ejected from the arm in the normal manner, reloaded, and used again.

The pellet can take any desired form, and as shown can be a smooth slug, or alternatively, a round ball, a dart, or rilled slug. Further, the bore 18 of the tube 16 can also be rilled if desired.

The provision of the gasket 48, it should be noted, provides a gas seal and also provides sufficient cushion to as-
3. In a target practice cartridge, an elongated pellet tube having forward and rear ends, said tube having an outer surface formed to fit the cartridge chamber of a conventional firearm, said tube having an axial bore opening through said forward end, an end wall closing the rear end of the tube, gas ports extending through said end wall and communicating with said bore, said tube having a reduced diameter rear end portion extending to said rear end and defining an annular tube shoulder spaced forwardly from said rear end, a tubular head having forward and rear ends, and an axial bore opening through the head ends, the bore of the head being smaller in diameter than said rear end portion of the tube, a counterbore in the forward end of the head slidably and rotatably receiving the rear end portion of the tube, said counterbore defining with the head bore a head shoulder spaced rearwardly from the forward end of the head, a percussion cap in said counterbore between the head shoulder and the end wall at the rear end of the pellet tube, a firing pin slidably engaged in the bore of the head and having forward and rear ends, the forward end of the firing pin being engageable with said percussion cap so as to detonate the cap between the forward end of the firing pin and the end wall of the pellet tube, and a pellet positioned in the pellet tube bore at said end wall.

4. In a target practice cartridge, an elongated pellet tube having forward and rear ends, said tube having an outer surface formed to fit the cartridge chamber of a conventional firearm, said tube having an axial bore opening through said forward end, an end wall closing the rear end of the tube, gas ports extending through said end wall and communicating with said bore, said tube having a reduced diameter rear end portion extending to said rear end and defining an annular tube shoulder spaced forwardly from said rear end, a tubular head having forward and rear ends, and an axial bore opening through the head ends, the bore of the head being smaller in diameter than said rear end portion of the tube, a counterbore in the forward end of the head slidably and rotatably receiving the rear end portion of the tube, said counterbore defining with the head bore a head shoulder spaced rearwardly from the forward end of the head, a percussion cap in said counterbore between the head shoulder and the end wall at the rear end of the pellet tube, a firing pin slidably engaged in the bore of the head and having forward and rear ends, the forward end of the firing pin being engageable with said percussion cap so as to detonate the cap between the forward end of the firing pin and the head end of the pellet tube, and a pellet positioned in the pellet tube bore at said end wall, and releasable means securing the head on the reduced end portion of the pellet tube, comprising a radial pin on said rear end portion and a bayonet slot in the forward end of the head engaged with said pin.

5. In a target practice cartridge, an elongated pellet tube having forward and rear ends, said tube having an outer surface formed to fit the cartridge chamber of a conventional firearm, said tube having an axial bore opening through said forward end, an end wall closing the rear end of the tube, gas ports extending through said end wall and communicating with said bore, said tube having a reduced diameter rear end portion extending to said rear end and defining an annular tube shoulder spaced forwardly from said rear end, a tubular head having forward and rear ends, and an axial bore opening through the head ends, the bore of the head being smaller in diameter than said rear end portion of the tube, a counterbore in the forward end of the head slidably and rotatably receiving the rear end portion of the tube, said counterbore defining with the head bore a head shoulder spaced rearwardly from the forward end of the head, a percussion cap in said counterbore between the head shoulder and the end wall at the rear end of the pellet tube, a firing pin slidably engaged in the bore of the head and having forward and rear ends, the forward end of the firing pin being engageable with said percussion cap so as to detonate the cap between the forward end of the firing pin and the head end of the pellet tube, and a pellet positioned in the pellet tube bore at said end wall, a cross pin in the head bore and a notch in the firing pin receiving the cross pin, said notch being wider than the cross pin and having ends engageable with the cross pin to limit endwise movement of the firing pin in the head in opposite directions.

6. In a target practice cartridge, an elongated pellet tube having forward and rear ends, said tube having an outer surface formed to fit the cartridge chamber of a conventional firearm, said tube having an axial bore opening through said forward end, an end wall closing the rear end of the tube, gas ports extending through said end wall and communicating with said bore, said tube having a reduced diameter rear end portion extending to said rear end and defining an annular tube shoulder spaced forwardly from said rear end, a tubular head having forward and rear ends, and an axial bore opening through the head ends, the bore of the head being smaller in diameter than said rear end portion of the tube, a counterbore in the forward end of the head slidably and rotatably receiving the rear end portion of the tube, said counterbore defining with the head bore a head shoulder spaced rearwardly from the forward end of the head, a percussion cap in said counterbore between the head shoulder and the end wall at the rear end of the pellet tube, a firing pin slidably engaged in the bore of the head and having forward and rear ends, the forward end of the firing pin being engageable with said percussion cap so as to detonate the cap between the forward end of the firing pin and the end wall of the pellet tube, and a pellet positioned in the pellet tube bore at said end wall, and releasable means securing the head on the reduced rear end portion of the pellet tube.
counterbore between the head shoulder and the end wall at the rear end of the pellet tube, a firing pin slidably engaged in the bore of the head and having forward and rear ends, the forward end of the firing pin being engageable with said percussion cap so as to detonate the cap between the forward end of the firing pin and the end wall of the pellet tube, and a pellet positioned in the pellet tube bore at said end wall, and a gasket on the reduced end portion between the tube shoulder and the forward end of the head.

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