Dec. 16, 1947. N. ANDERSON ET AL 2,432,706

PROPELLANT RETAINER

Filed Feb. 7, 1944

Fig. 1.

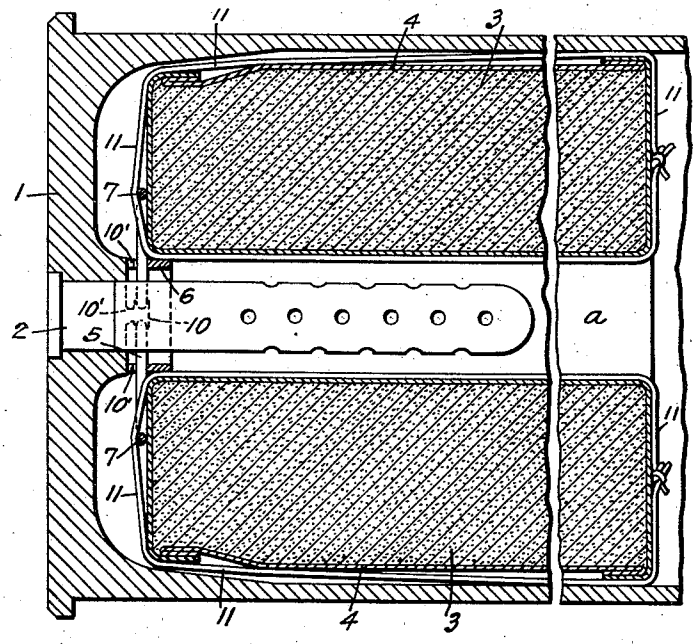


Fig. 2.

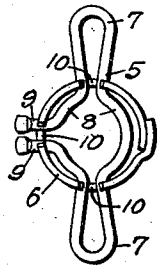


Fig. 3.

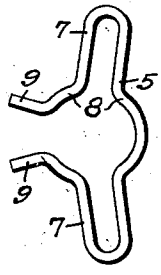


Fig. 5.

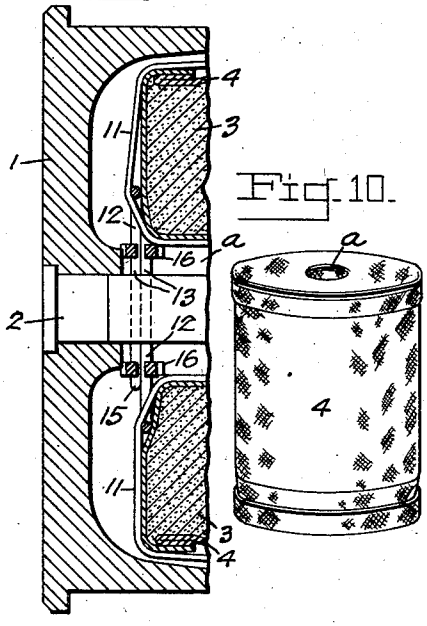


Fig. 9.

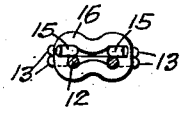


Fig. 4.

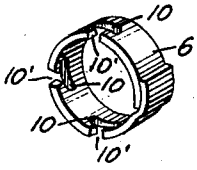


Fig. 10.

Fig. 6.

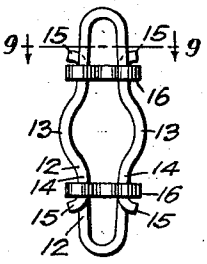


Fig. 7.

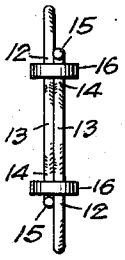
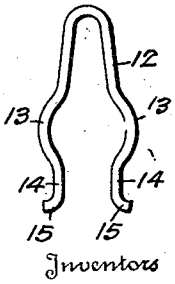


Fig. 8.



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PROPELLANT RETAINER

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Application February 7, 1944, Serial No. 521,420

2 Claims. (Cl. 102—38)

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This invention relates to a device for retaining propellent charges in cartridge cases.

Certain semi-fixed ammunition now in very general use comprises a metal cartridge case having a primer tube extending for a considerable distance into the case and in close proximity to the charge, the charge being contained in a bag or bags, an appropriate number of which are loaded into the case, forming successive increments.

It is important in loading ammunition of this character that the first increment be secured firmly to the case adjacent to its base. Devices have been designed for this purpose, consisting of screw eyes secured in the base of the case, through which a cord is threaded and tied about the powder bags. This means it is inconvenient, since it involves the use of special tools, and considerable time is consumed in effecting the tie.

The object of this invention is to provide a retainer formed of suitable material, preferably spring wire of suitable gauge and resiliency that can be quickly and conveniently forced over the primer tube to a point adjacent its rear end, and adjacent the inner wall of the base of the cartridge case and grip the tube in a way to resist any force that might be applied to it in effecting an efficient tie.

The device about to be described provides a convenient means for quickly, conveniently, and accurately assembling the device with the primer tube, and whose retentive characteristics insure that the charge will not be dislodged during handling of the piece of ammunition, and not become dislodged or broken up in firing the charge.

To the above recited ends, the device comprises a retainer wire or wires primarily in expanded or spread shape, but adapted to be forced into final shape and retained therein by a holding ring or keeper or keepers, the arrangement being such that the distortion of the wire when forced over the primer causes the retainer to grip the primer tube with a force abundantly sufficient to retain the charge, and itself be retained on the tube during firing of the charge.

In the drawings:

Figure 1 is a fragmentary sectional view of the rear portion of a cartridge case showing the first increment of the powder charge retained therein by our improved means.

Figure 2 is a face view of the device in form for placement upon the primer tube.

Figure 3 is a face view of the retainer while in expanded or spread condition, or in the shape in which it is before it is confined in its holding ring.

Figure 4 is a perspective view of the holding ring.

Figure 5 is a view similar to Figure 1, but showing the application of a slightly modified form

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of the device, made of two loops of wire instead of one.

Figure 6 is a face view of the modified form.

Figure 7 is an edge view, and Figure 8 is a view expanded, of one of the loops.

Figure 9 is a cross-section on line 9—9 of Figure 6.

Figure 10 is a perspective view of the form of powder bag for the retention of which, the retainer is especially designed.

Referring to the drawing, the numeral 1 designates the cartridge case and 2 the primer tube, both of well known design. An increment of the powder charge is shown at 3. This in the present instance is contained in a tubular bag 4 having a longitudinal opening *a* therethrough. As is well known, the material of the bag is so thin and otherwise characterized as not to interfere with the ignition of the charge, and adapted to be consumed upon the explosion of the charge.

The retainer in its completed form as shown in Figure 2 will be first described. It comprises two parts, a continuous retaining wire 5 and a holding ring 6, the wires presenting two oppositely disposed loops 7 and a central slightly elliptical portion 8, which is the tube engaging portion, and two laterally extending arms 9. The ring is in one piece with overlapped ends brazed or otherwise secured together. It is provided with three slightly elongated circumferential slots 10 of a width and an end shape to snugly embrace the wire, each slot 10 being intersected by an axial slot 10' of a width sufficient to permit the passage of the inner portions of the loops 7, and the arms 9 when the sides of the loops and the arms are pinched together, when said sides and arms thereafter expand into the slots 10, thus completing the assembly which is now adapted to be placed on to the primer tube and positioned against the inner wall of the cartridge case, as shown in Figure 1. When in the positioned indicated the loops 7 extend radially from the tube and form eyes through which the tying cords 11 are threaded. These cords are carried forward through the cylindrical opening *a* in the charge increment and tied at its front, as clearly shown in Figure 1. As shown in this figure, the holding ring 6 does not touch the primer tube, the intimate attachment of the retainer depending upon the binding force of the elliptical portion 8 of the wire, increasing the frictional contact between the retainer and tube.

The shape of the wire before it is attached to the holding ring 6 is shown in Figure 3, it being obvious that when the arms 9 are sprung together and the inner parts of the loops are pinched together and forced into the slots 10 and 10' in the ring, they will assume the shape shown in Figure 2. After assembly, the ends of the arms 9 are flattened, as shown in Figure 2, to pre-

vent accidental removal of these arms from the slots 10.

In Figures 6 through 9 and in Figure 5 which illustrates the modification, there are shown two identical yoke-shaped retaining wires 12 having slightly oval central portions 13 and legs 14 with outturned ends 15, the yokes being adapted to be longitudinally assembled in reverse directions. In assembling the yokes, the legs are pressed together and passed through identical keepers 16, the outturned ends 15 preventing separation of the yokes. As stated, the central portion of the yokes are slightly oval to assure a tight frictional fit on the primer tube, due to the shape, character of the wire, and the very considerable force with which the retainer is pushed on the primer tube. This firm contact between the tube and retainer in this form, is due to the fact that the wire contact is incident to the side by side position of the two yokes.

In Figure 5 it is shown that the cords 11 are threaded through the rounded ends of the yokes, which form eyes, as in the main forms.

We have illustrated the powder charge increment as contained in a tubular bag that lends itself advantageously to the reception of the ties shown, but obviously bags of other shape may be secured in the case, with the illustrated retainer.

In effecting the tie, the separate cords 11, of proper length, will be threaded through the loops 7 and through the central opening *a* in the powder bag and their ends will be tied together as shown.

We claim:

1. A device for retaining a propellent charge in a semi-fixed ammunition cartridge case having a primer tube therein, said device comprising two yoke-shaped members, the loop ends of which form eyes for the passage of tie cords when the members are assembled, said members being formed with central oppositely disposed bowed portions and oppositely disposed legs, said members being adapted to be assembled longitudinally in reverse directions, and keepers embracing the legs of said members to hold said members in assembled position.

2. In semi-fixed ammunition, the combination of a cartridge case, a primer tube therein having an uninterrupted peripheral surface, a device for anchoring an ammunition increment of a propellent charge in said cartridge case, said device including a pair of substantially U-shaped members, each having a bight portion and leg portions diverging therefrom, each of said leg portions having an arcuate section intermediate the ends thereof, said members being in side-by-side relationship with the respective bight portions of said members extending in opposite directions and said arcuate sections of corresponding leg portions of said members being aligned, means joining the free ends of said leg portions of one member to respective leg portions of the other member intermediate the bight and arcuate sections thereof, said arcuate sections being frictionally retained on said primer tube surface by the inherent resiliency of said leg portions and means on said bight portions for attaching the ammunition increment to said device.

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