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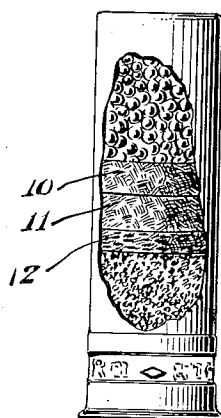


Fig. 1



Fig. 2

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AMMUNITION

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The present invention relates to wads for shot shell ammunition and to materials for such wads. In my Patent No. 1,724,338 for ammunition, dated August 13, 1929, there is disclosed an improved shot shell wad formed from wad material comprising a reinforcing center of woven fabric having a felt of short hair fibres secured to said fabric center, a substantial portion of the hair being arranged to extend substantially axially of the wad. Such wads are quite compressible axially and expansible radially under axial compression, thereby forming a more perfect gas check in the gun than is afforded by older forms of wads, and possessing numerous advantages over wads used theretofore.

The present invention contemplates the provision of a wad material possessing many of the advantages of the wad material disclosed in the above-mentioned patent, while at the same time possessing a simplified construction.

It is an object of the present invention to provide a wad material in which the necessity for a fabric reinforcement is entirely eliminated, and which material is composed substantially in its entirety of a felt of short hair fibres.

These and further objects are fulfilled by the present invention, as will be clear from the following specification of which the accompanying drawings form a part.

In the drawings:

Figure 1 is a view in elevation, partly in section, of an embodiment of a shot shell containing wads made according to the present invention.

Figure 2 is an enlarged fragmentary section of a sheet of wad material made according to the present invention.

According to the present invention, it has been discovered that a material which is entirely suitable for shot shell wads may be formed from short hair fibres by felting said hair fibres together without incorporating

in the material a fabric center or other similar reinforcement. It has been discovered that suitable wad material may thus be produced without the necessity of passing the hair fibres through a reinforcing center. A wad material formed of felted short hair fibres alone is found to be sufficiently tenacious to withstand the abuse of ordinary handling, cutting, etc.; and is found to possess a high degree of expansibility in a radial direction and compressibility in an axial direction, and to possess the numerous advantages characteristic of reinforced hair felt wads, at the same time being of inexpensive and simplified construction.

Suitable wad material may be produced, for example, by arranging a quantity of short hair fibres on a carrier belt or like base of rubber sheeting, fabric, or any other suitable material, and then felting the hair by a process of needle punching, vibration, or other suitable felting operation. By using a base of suitable material, such as rubber or closely woven fabric sheeting, the felting may be effected without attaching the hair to the base. Or, if desired, the hair fibres may be felted on one side of a fabric base, for example by needle punching or vibrating methods, the felt being permitted to attach itself to the fabric by passage of portions of the hair through the interstices of the fabric; and then, after felting, this fabric may be removed from the felted hair by any suitable means, as by cutting.

Variations in rigidity, hardness, texture, etc., of the wad material may be effected by incorporating various amounts of size in the material and by subjecting the material to various degrees of pressure. Uniformity in thickness of the sheets of wad material may be controlled by varying the amount of hair used in the felt and by applying various degrees of pressure to the material after felting.

Referring now to the drawings, Figure 1

shows a shot shell cartridge embodying wads 10 and 11 made according to the present invention. An "over powder wad" 12 of compressed paper or other relatively hard material is provided. Wads made according to the present invention are found to be sufficiently rigid and strong to serve in the capacity of over powder wads and, if desired, may be substituted for the wad 12 of other material. Obviously, any number of wads may be incorporated in the shot shell, to suit particular needs, and these wads may be variously positioned in the cartridge, as desired. In Figure 2 is illustrated in section a sheet of wad material 13 made according to the present invention; showing the hair fibres felted together, a substantial portion of these fibres being arranged to extend in a direction substantially normal to the surfaces 14 of the wad material, rather than parallel thereto, thereby affording compressibility of the material in a direction axially of the finished wad and expansibility in a direction radially of the wad, to effect the results hereinbefore stated. As illustrated in Figure 1, the wads are preferably cupped slightly to present convex surfaces as seen from the rear, thereby providing a spring action of the wads in a lateral direction to grip the sides of the shot shell wall securely, and to provide additional resiliency for effecting an efficient gas check in the bore of the gun. The resilient and somewhat flexible construction of the present wads lends itself particularly well to this cupping expedient, and the spring action afforded by this expedient is greatly enhanced by the expansibility of the present construction, above explained.

As above pointed out, the wad material of the present invention is formed substantially in its entirety of short hair fibres. It is to be understood, however, that the provision of some additional ingredients, such as sizing, is contemplated as falling within the scope of the present invention as hereinafter claimed. The term "unreinforced" as used in the specification and claims is to be understood as referring to a wad material in which a reinforcing center of fabric or other material is eliminated.

What I claim is:

1. A shot shell wad comprising an unreinforced felt composed entirely of short hair, a substantial portion of such hair extending axially of the wad.
2. A shot shell wad comprising a sized, unreinforced felt composed entirely of short hair, a substantial portion of such hair extending axially of the wad.
3. The method of producing shot shell wads which comprises felting an unreinforced body of short hair together in such manner as to direct a substantial portion of the hair transversely of the body, sizing the material, applying pressure, and subsequent-

ly cutting the material into wads in which the transversely directed hair extends axially.

4. The method of producing shot shell wads which comprises felting a body of short hair on a base in such manner as to direct a substantial portion of the hair normally of the base; removing the felted material from said base, and subsequently cutting the material into wads in which the normally directed fibres extend axially.

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