

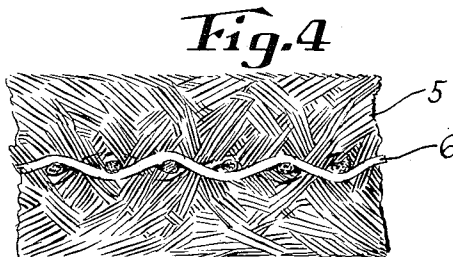
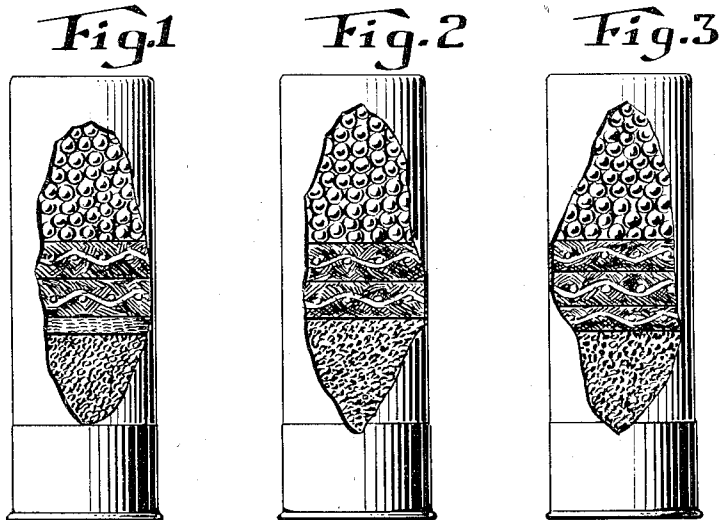
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AMMUNITION

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UNITED STATES PATENT OFFICE.

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AMMUNITION.

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This invention relates to ammunition, particularly to shot shells and contemplates the improvement of shot shells by the provision of more effective and satisfactory wads, which wads, notwithstanding their superiority, are nevertheless comparatively inexpensive to produce.

In the manufacture of shot shells, the powder charge in the base of the shell tube is separated from the shot load above by a "wad column," comprising one or more disks or wads of a somewhat elastic material. Frequently a soft paper wad is placed immediately over the powder charge and one or more hair felt wads are placed upon the paper wad and below the shot. The wads should be of an axially compressible material, in order to provide for enlargement of the powder chamber under the pressure generated by the combustion of the powder before the shot load begins to move. The wads should also expand laterally under the axial compression so that they will contact closely with the bore of the gun, and form a seal or "gas check" in the rear of the shot, thus preventing the penetration of gas under high pressure among the shot and consequent scattering thereof.

The wad material most extensively used hitherto is matted hair felt, such felt being formed by compressing with a certain amount of glue or size a mass of tangled hair fibres. In such felt nearly all of the hair lies parallel to the surface of the sheet and the felt thus exhibits a minimum of compressibility in a direction at right angles to its surface. It is readily apparent that if a substantial amount of the hair were arranged in a direction perpendicular to the surface, a compressive force applied to the surface and axially to the hair would be much more effective in reducing the thickness of the felt and at the same time causing it to expand laterally.

One object of this invention is to utilize for shot shell wads a felt in which a substantial part of the hair is arranged axially of the wad, that is, perpendicular to its flat faces.

A further object of the invention is to provide shot shell wads with an interior reinforcement.

With these, and other objects, in view the invention comprises the novel construction

and arrangements of parts illustrated in the drawing, and to be hereinafter more fully described.

In the drawings, Fig. 1 is an elevation partly in section of a shot shell illustrating one arrangement therein of the wads of the present invention.

Fig. 2 is another fragmentary sectional elevation of a shot shell showing a slightly different arrangement of wads.

Fig. 3 is a fragmentary sectional elevation of a shot shell showing another variation in the arrangement of the wads.

Fig. 4 is an enlarged detailed section of the wad material.

The invention contemplates a wad for shot shells in which a substantial portion of the hair or other fibre is arranged axially, that is, generally parallel to the longitudinal axis of the shot shell and perpendicular to the faces of the wad. To facilitate the securing of the fibre in such position, the wad stock may comprise a center of a sheet of material having substantial tensile strength and elasticity, and also capable of having groups of hair fibres passed transversely therethru. A woven fabric, preferably a coarse and loosely woven fabric, such as burlap is suitable for this purpose. The hair making up the body of the wad is arranged on both sides of the burlap center, and is passed upward and downward thru the weave of the burlap by the action of suitable punching needles. In this way, a substantially homogeneous and reinforced felt is secured. This process of manufacture permits of the use of shorter hair than can be matted into ordinary felt. The rigidity and elasticity of the felt is readily controlled by mixing with the hair varying amounts of size.

Such felt also has the characteristic that a substantial part of the hair fibres are arranged at right angles to the surface of the felt rather than parallel to the surface, the fibres extending axially thru the woven center in a manner similar to pile woven fabrics. The felt is therefore quite compressible axially and expansible radially under axial compression. A more perfect gas check is thus formed than with ordinary felt wads.

Moreover, the wads may be made of such rigidity that the customary paper "over powder" wad (Fig. 1) hitherto used to cover the powder and separate it from the felt wads above may be dispensed with.

Shot shells so constructed are illustrated in Figs. 2 and 3.

The thickness of the wads and the number superposed to make up the wad column
5 may be varied, as shown in the drawings, to suit the requirements of different shells. These and other embodiments and modifications of the invention all fall within the scope of the appended claim.

What is claimed is:

In a wad for shot shells, a woven fabric
10 center, a felt of short hair secured to said center whereby a portion of said hair passes transversely through the fabric and a substantial portion of said hair is arranged to
15 extend substantially axially of the wad.

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