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G. V. SCHAFER

3,132,588

BUCKSHOT SHELLS FOR SHOTGUNS

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Fig. 1.

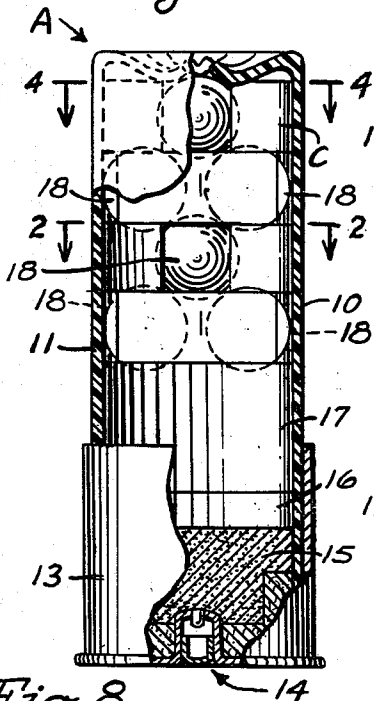


Fig. 2.

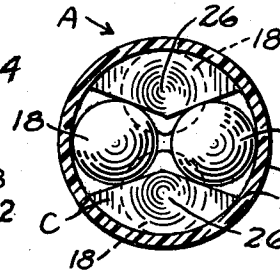


Fig. 3.

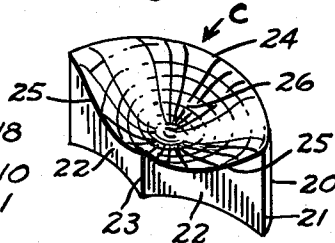


Fig. 4.

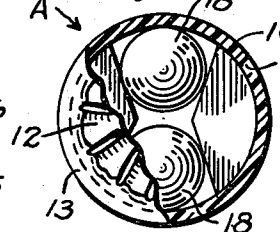


Fig. 5.

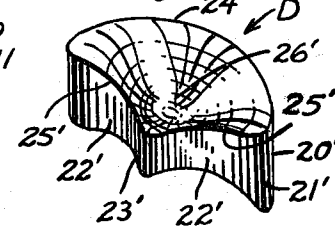


Fig. 8.

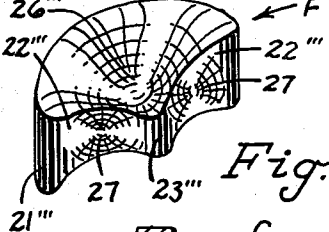


Fig. 6.

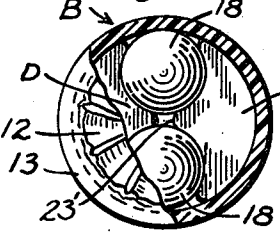


Fig. 7.

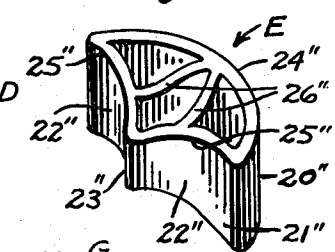
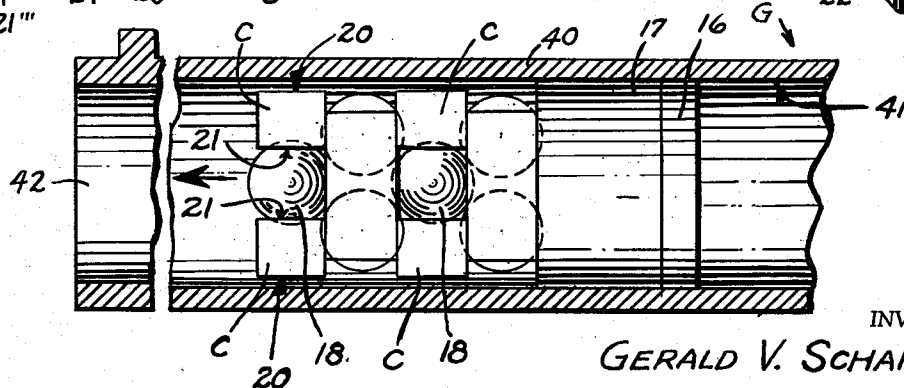


Fig. 9.



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## BUCKSHOT SHELLS FOR SHOTGUNS

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13 Claims. (Cl. 102-42)

This invention relates to buckshot shells for shotguns and to means carried by the shells for improving the functioning of the buckshot and of the shotguns, loaded with the shells, when fired.

An important object of the invention is to provide buckshot shells for shotguns which shells contain means for improving the buckshot patterns. For example, patterns with an average spread of 15 inches can be expected at 40 yards, with other spreads in proportion.

Another important object of the invention is to provide buckshot shells for shotguns which shells contain the means as above, which also function to increase velocity by aligning the buckshot in such manner that the friction between the buckshot and the shell case and the friction between the buckshot and the gunbarrel are reduced.

Still another important object of the invention is to provide buckshot shells for shotguns which shells contain the means referred to above which also aids in effective penetration of the buckshot because the spherical shot is less distorted during its passage through the shotgun barrel than is the case when using conventional shotgun shells.

In addition an important object of the invention is to provide buckshot shells containing means as above which, for a given velocity, lower the breech pressure in the shotgun during propellant combustion.

Still another important object is to provide shotgun shells as above, the use of which will cause less recoil of the shotgun for a given velocity.

I am aware of shells containing small granules of various substances mixed with or in which relatively fine shot is imbedded, but not in any regular pattern, as well as shells in which the shot is adhesively held together, or in which projectiles of cylindrical shape are separated so that, when fired they are said to take spiral paths within a gun barrel and not fuse together, but these are not the shells of my invention, since the shells I provide are preferably adapted to contain buckshot of substantially spherical shape and of a relatively large size, such as the shot commonly known as No. 0 buck, of about .30 caliber (although larger caliber shot may be used) and the individual shot separated one from another in a regular pattern transversely and longitudinally of the shell casing with a layer, as two of the shot, in substantially the same horizontal plane (when the shell is upended) but not in the same vertical planes as those of the two shot in the next adjacent layer.

An additional important object is to provide articles of manufacture which are termed herein as patterned bodies for insertion in the buckshot shell casings in order to provide the means referred to heretofore in this specification.

Other objects and advantages of this invention will be apparent during the course of the following detailed description, taken in connection with the accompanying drawing, forming a part of this specification, and in which drawing:

FIG. 1 is an elevational view of one form of the buckshot-shell of the invention, with parts of the casing broken away in order to reveal buckshot and patterned bodies therein.

FIG. 2 is a horizontal sectional view, substantially on the line 2-2 of FIG. 1.

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FIG. 3 is a perspective view of one form of patterned body.

FIG. 4 is a horizontal sectional view, substantially on the line 4-4 of FIG. 1.

FIG. 5 is a perspective view of another form of a patterned body.

FIG. 6 is a top plan view of a buckshot shell with parts broken away in order to reveal buckshot and the patterned body of FIG. 5.

FIG. 7 is a perspective view of a cellular form of patterned body which may be incorporated in the buckshot shells of FIGS. 1 or 6.

FIG. 8 is a perspective view of another form of patterned body.

FIG. 9 is a fragmentary longitudinal sectional view of a shotgun barrel, with buckshot, patterned bodies and wads in position as being propelled therethrough.

In the drawing, wherein for the purpose of illustration are shown several embodiments of the invention and wherein similar reference characters designate corresponding parts throughout the several views, two forms A and B, respectively, of the buckshot shell for shotguns and four forms C, D, E and F, respectively, of the patterned bodies are shown. The letter G designates a shotgun.

Both forms A and B of the shells are alike, except for the specific patterned body included, and similar reference characters will be used to designate the like parts of both shells.

The shells A and B each include a casing 10, having a substantially cylindrical tubular side wall 11 with the outer end portion thereof preferably folded inwardly in order to provide a closure 12 as is well known in the art. The casing may be of waxed paper, cardboard or the like.

The shells A and B may also include a rear end cap 13 which may be of metal and attached to the rear end portion of the side wall 11 and carry a conventional detonating means 14.

In communication with the detonating means 14 is a supply of suitable propellant, as powder 15, filling a portion of the casing and retained by wadding, such as the wads 16 and 17. All of the foregoing is conventional construction, well known in the art.

Buckshot 18 for use is preferably that commonly known as "No. 0 buck" of about .30 caliber. Larger buckshot may be used. The buckshot is substantially spherical, and is disposed in regular patterns within the casings 10, as may be appreciated from FIGS. 1, 2 and 4, or FIG. 6 or FIG. 8. That is, for example, two of the buckshot 18 are arranged with their centers substantially 180° apart within the casing and at the same level or horizontal plane (considering the shell A or B as upstanding upon its end cap 13) with the two buckshot 18 of the next level also substantially 180° apart, both in the same horizontal plane, but in vertical planes with their vertical axes spaced 90° from the vertical axes of the first mentioned two buckshot 18. This pattern of spacing of the buckshot may be repeated, from the closure 12 to adjacent the wad 17, throughout the casing 10.

The buckshot 18 are retained in the positions described above by the patterned bodies.

Now as for the patterned body C shown particularly in FIG. 3, the same includes a shell side wall-contacting arcuate face 20 adapted to engage a portion of the inner face of the side wall 11. From each lateral edge 21 of the face 20 extends a buckshot-contacting face 22, with the two faces 22 converging so as to join one another as at the juncture 23 which may be an edge of somewhat less height than the width of the face 20. Defined by the edges 24 of the face 20 and the edges 25 of the faces 22 are buckshot-receiving concavities 26. Thus, each patterned body C has two of these concavities 26. By way

of example, the length of the arcuate face 20 may be substantially  $\frac{3}{16}$  inch, its width substantially  $\frac{1}{4}$  inch, the edges 25 each  $\frac{5}{16}$  inch, the edge 23 substantially  $\frac{3}{16}$  inch. The size and depth of the concavities 26 are such as to receive a portion of the buckshot, substantially as may be seen in FIGS. 2 or 4.

The patterned bodies D differ from the patterned bodies C in the provision of curved or concave faces 22' and a narrow curved edge 23', in place of the edge 23, for the juncture of the faces 22' of the patterned body D, where faces and edges similar to those of the patterned body C are designated by like numerals followed by an exponent.

FIG. 7 illustrates a cellular form of patterned body, designated as E, and similar reference numerals, followed by the exponent '' are employed for corresponding parts of the forms C and D.

FIG. 8 illustrates, by way of example, a form F of patterned body which is provided with a dimple or minor concavity 27 in each of its faces corresponding to the faces 22 of the form C. Otherwise, the form F is preferably like the form C. The exponent ''' will be employed for parts of the patterned body form F equivalent to these or the other forms.

The patterned bodies C, D, E and F may be made of any suitable material which has some degree of resiliency for cushioning the buckshot, is readily moulded or stamped to shape, is inexpensive and not apt to disintegrate upon firing of the shell in which it is encased. Such materials may be shell wadding felt, compacted and held together with any suitable adhesive such as glue. They may also be constructed of stout cardboard, resins such as polyethylene, or nylon.

After the wadding is in place within the open-ended shell casing 10, two of the patterned bodies are placed, with their junctures 23, 23', or 23'' facing and their faces 20, 20', 20'' or 20''', as the case may be, in contact with the inner face of the casing side wall 11. Two buckshot 18 are then disposed so as to lie between opposite faces 22 of the two patterned bodies in a somewhat wedged relation therewith and disposed substantially 180° apart. Two more of the patterned bodies, with their face junctures 23, 23', 23'' or 23''', as the case may be, facing one another are then positioned with the concavities enclosing the upper portions of the two buckshot, then two more of the buckshot are disposed in the wedged relation, and so on until the shell is fully loaded, whereupon the closure 12 is folded over the outermost two buckshot. It should be borne in mind that there is no need to ascertain which concave face of the patterned body is uppermost or lowermost since both of these particular faces are alike. This permits a faster loading of the shell. The dimples or minor concavities 27 are adapted to receive a small portion of the buckshot as is obvious.

FIG. 9 illustrates how the patterned bodies and buckshot (together with the wads) pass through the barrel 40 of the shotgun F. It will be seen that, while the arcuate faces, such as the faces 20 of the patterned bodies C may have some limited sliding contact with the inner surface 41 of the gunbarrel, the buckshot are cradled on and disposed between the patterned bodies. Neither are they scattered during passage through the barrel nor impinge on one another and become fused together or deform one another. Although some sliding contact may occur between buckshot and the gun barrel, especially when going through the choke 42, no undue lateral force is extended. Obviously, the buckshot remains in its initially disposed place during the life of the unfired shell, since the patterned bodies, unlike fine or coarse materials in which shot is imbedded, do not move about while in the shells. The buckshot and patterned bodies, being in a compact mass as they travel through the gunbarrel do not permit the buckshot to spin during such travel. Spinning tends to cause shot to yaw or its path to assume a curve.

What has been said about the spacing of the buckshot

18 from each other while in the shotgun barrel is characteristic of the buckshot within the casing 10 and spaced from each other in a positively spaced-apart pattern.

While there is illustrated two buckshot per layer, this number may be increased. The inside diameter of a 12-gauge barrel, for instance, at the end of the choke portion, is approximately .720 inch. If two buckshot per layer are used each buckshot would be approximately .360 inch. If three buckshot per layer are used the three buckshot would be of such a diameter that they would fit snugly in a .720 inch circle.

As described previously, with the exception of the first two inserted buckshot, a patterned body is disposed under each buckshot. The buckshot of each succeeding layer rest on the patterned body of the preceding layer, the result being that buckshot never rest on buckshot but always rest on or between patterned bodies. Each buckshot, except the first two inserted buckshot, is cradled as on a cushion and all are disposed between patterned bodies. Each cradled buckshot is lifted as by a cushion and in turn lifts the patterned body ahead, each buckshot is thus held in a parallel course in its flight along the gun barrel and tends to hold this parallel course in flight after leaving the muzzle, giving smaller and more compact patterns than are obtained without the use of the patterned bodies.

It will be noted, such as in FIGS. 3, 5, 7 and 8, that the width of the wall 20, 20', 20'', or 20''', as the case may be, is greater than the width of either face 22, 22', 22'' or 22''', as the case may be, so that the buckshot have a tendency, due to this, to move slightly toward each other (but not contact each other) whereby they do not tend to forcibly contact and push outwardly the side wall of the shell as one after another buckshot is inserted in the shell while loading since the weight of the large buckshot in the loaded shell is considerable, as is obvious.

While the patterned bodies of FIGS. 3, 5 and 8 are of solid material, they may be cellular. One example of such cellular construction is shown in FIG. 7. This provides a patterned body normally lighter in weight than the patterned bodies of FIGS. 3 and 5, which is an advantage in some cases.

Considering the size of the buckshot and the patterned bodies, the shells may be readily and correctly loaded by hand with the buckshot and patterned bodies.

Various changes in the size, shape and arrangement of parts may be made to the forms of the invention herein shown and described without departing from the spirit of the invention or scope of the claims.

What is claimed is:

1. Buckshot shell for shotguns, said shell including a casing, buckshot propellant and a plurality of buckshot within the casing; a plurality of means, one for each buckshot, within said casing for positively and individually separating each of said buckshot, one from another; and wadding between said propellant and said means.

2. Buckshot shell according to claim 1 characterized in that said means comprises a plurality of resilient bodies, one for each buckshot, and each of the same shape.

3. Buckshot shell according to claim 2 characterized in that each of said bodies has a face contacting the wall of said casing and a buckshot-receiving seat spaced from said face.

4. Buckshot shell according to claim 2 characterized in that each of said bodies has a face contacting the wall of said casing, two faces contacting two buckshot and a seat upon which a third of said buckshot is disposed.

5. Buckshot shell for shotguns, said shell including a casing, buckshot propellant and a plurality of buckshot within said casing, a plurality of means, one for each buckshot, within said casing for positively separating each of said buckshot and individually, one from another, with said buckshot and said means disposed in equally spaced apart layers, of at least two buckshot and of at least two

of said means, transversely of said casing, and wadding between said propellant and said means.

6. Buckshot shell according to claim 5 characterized in that said casing is elongate, said buckshot of one of said layers are disposed with an axis of each substantially parallel to the longitudinal axis of said casing and said axis of each of the buckshot of one layer being offset from said axis of the buckshot of the next layer.

7. Buckshot shell for shotguns, said shell including a casing, buckshot propellant and a plurality of buckshot within said casing, a plurality of individual means positively separating said buckshot one from another, said buckshot and means being disposed in layers, transversely of said shell, with the buckshot of one layer being staggered with reference to the buckshot of the next adjacent layers, and the individual means of one layer thereof being staggered with reference to the individual means of the next adjacent layer of said means, and wadding between said propellant and said means.

8. As an article of manufacture a patterned body for separating substantially spherical buckshot, one from another, in a substantially cylindrical shotgun shell casing, said body having an arcuate casing wall-contacting face, a pair of buckshot contacting faces, converging together from the ends of said arcuate face, and a buckshot receiving concavity with its mouth defined by edges of said arcuate face and a pair of faces.

9. The article of manufacture according to claim 8 characterized in that said article is of cellular construction with the cells thereof spaced from said faces.

10. As an article of manufacture a patterned body of resilient material for separating substantially spherical buckshot, one from another, in a substantially cylindrical shotgun shell casing, said body having an arcuate casing wall-contacting face, a pair of buckshot contacting faces, converging together from the ends of said arcuate face, and a buckshot receiving concavity with its mouth defined by edges of said arcuate face and said pair of faces.

11. As an article of manufacture a patterned body for separating substantially spherical buckshot, one from another, in a substantially cylindrical shotgun shell casing, said body having an arcuate casing wall-contacting face, a pair of buckshot contacting faces, converging together from the ends of said arcuate face, and a buckshot receiving concavity with its mouth defined by edges of said arcuate face and said pair of faces, the width of said pair of faces being less than the width of said arcuate face, whereby said buckshot received by said concavity will tend to roll away from said edge of said arcuate face while said shell is being loaded.

12. The article of manufacture according to claim 11 characterized in that said pair of faces are longitudinally curved, whereby to receive portions of buckshot thereagainst.

13. As an article of manufacture a patterned body for separating substantially spherical buckshot, one from another, in a substantially cylindrical shotgun shell casing, said body having an arcuate casing wall-contacting face, a pair of buckshot contacting faces, converging together from the ends of said arcuate face and each provided with a dimple, whereby a portion of a buckshot may be accommodated therein, and a buckshot receiving concavity with its mouth defined by edges of said arcuate face and said pair of faces.

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