May 21, 1935. E. McGAVOCK 2,002,036

SHOT CONCENTRATOR

Filed Aug. 11, 1933

Fig. 1.

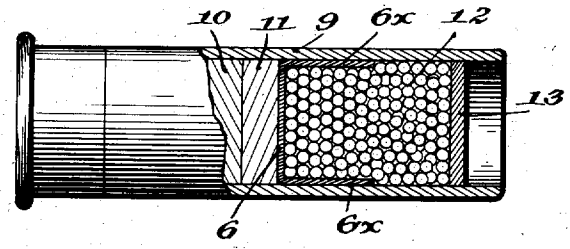


Fig. 2.

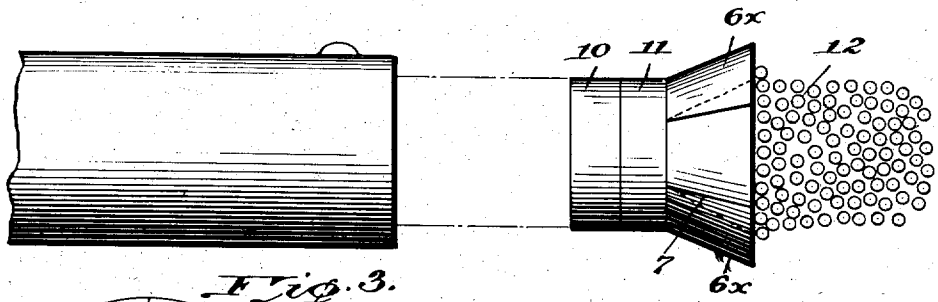


Fig. 3.

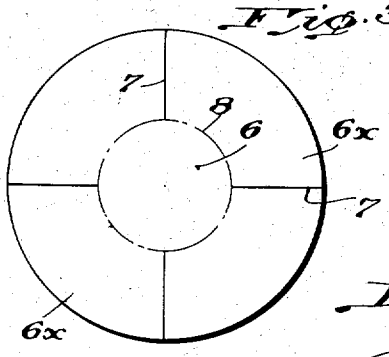


Fig. 4.

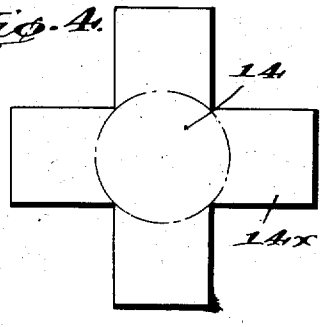
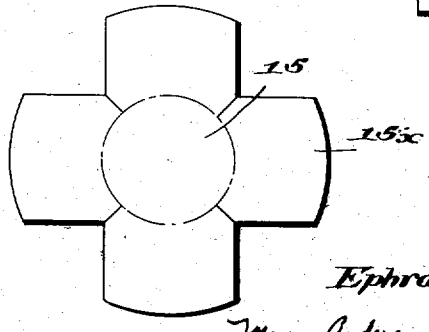


Fig. 5.



WITNESSES

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Patented May 21, 1935 2,002,036

UNITED STATES PATENT OFFICE

2,002,036

SHOT CONCENTRATOR

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Application August 11, 1933, Serial No. 684,731

2 Claims. (Cl. 102—15)

My invention relates to improvements in shot concentrators for cartridge shells, and it consists in the combinations, constructions and arrangements herein described and claimed.

An object of my invention is to provide a concentrator which may be used in a cartridge in a gun having a full choke barrel for long range killing, which will prevent the scattering of the shot or the ruining of the effect of the shot pattern.

A further object of the invention is to provide a device which will prevent the mashing or flattening of the shot on the walls of the barrel.

A further object is to provide means for preventing the blast of gas from blowing through the shot when they leave the muzzle of the barrel.

A further object is to provide a device which is simple in its nature and inexpensive to manufacture for accomplishing the above named results.

My invention is illustrated in the accompanying drawing forming part of this application, in which:

Figure 1 is a side view of a cartridge, a portion of the view being in section to illustrate the interior construction.

Figure 2 is a view of a portion of the gun barrel and the relation of the wads and shot concentrator just after the gun has been fired.

Figure 3 is a face view of a blank for forming the shot concentrator.

Figure 4 is a similar view of a modified form of blank, and,

Figure 5 is another modified form of blank.

In carrying out my invention I make use of a blank 6 like that shown for instance in Fig. 3. This blank is cut from a thin tough flexible sheet such as one made of fabric or paper. The circular blank thus formed is cut on radial lines 7, extending inwardly from the outer edge to a circular line 8 which is approximately the diameter of the interior of the cartridge.

In Fig. 1 I have shown a cartridge 9 which is designed to be filled with powder, not shown, and which has wads 10 and 11 disposed therein. In charging the cartridge the sections 6x of the blank 6 are bent on the circular line 8 so as to form a cup when placed in the interior of the cartridge. The shot 12 is then placed in position, and a wad 13 is inserted to hold the latter.

It will be seen from the drawing that the sections 6x which form the sides of the cup project forwardly for a distance which is substantially half of the distance between the bottom of the cup and the wad 13. The depth of the cup thus formed may vary within limits, but it should terminate some distance short of the wad 13, as clearly shown in the drawing.

When the gun is fired the contents of the cartridge of course are driven forwardly. The provision of the side walls of the cup gives the shot a greater bedding area and prevents the mashing or flattening of the shot on the walls of the cartridge due to the great pressure of the enclosure. The wads 10 and 11 pass out in the manner shown in Fig. 2 and the sides of the cup tend to flare outwardly because of their flexible construction. This tendency to flare prevents the gas from blowing through the shot where it might tend to deflect certain of the shot and to spoil the pattern. Since the gas is prevented from blowing through the shot the full force of the gas for propelling the shot is utilized. When the cup is about ten feet from the muzzle it opens up entirely and falls to the ground and the shot is propelled forwardly without scattering unduly to complete the desired pattern.

In Fig. 4 I have shown a modified form of blank 14 having arms 14x which may be bent to form a cup and in Fig. 5 I have shown another modified form 15 having arms 15x for forming the cup so that it will be apparent that the cup may be made in various ways.

I have found from experience that the concentrator will not work efficiently if this cup extends to the wadding 13, or in other words, if it completely covers the shot. Without this concentrator, in the discharge of a full choke gun, that portion of the shot next to the propelling wad bulges over the side of the wad and the blast of gas following blows them away, causing these shot to fly wild. Also the shot nearest the propelling wad where my concentrator is not used, has a tendency to mash on the walls of the barrel. The shot near the front, i. e., near the retaining wad such as that shown at 13 in Fig. 1, even if distorted by pressure against the barrel, usually land in the shot pattern. A cup of the depth of that shown in the drawing is sufficient to provide an additional bedding area, but will leave the shot as stated, as distinguished from a cup for instance which encloses the entire body of the shot.

I am aware that cups of the same depths substantially have been used, but such cups are not flexible, do not spread on leaving the muzzle, and on the contrary tend to turn end for end or tumble, thus throwing the shot entirely out of the pattern and causing a result which is just the opposite of that which I intend. In certain construc-

tions in which the body of the shot is entirely enclosed in an enveloping casing, the latter is propelled with the shot and opens after being fired. In other words, the shot bursts out of the package. It is impossible to estimate just when the package is going to release the shot, and as the package will probably be rotating in the air at the time of the release, the shot pattern is likely to be ruined. This cannot occur with my invention, since the cup does not rotate but flares outwardly, preventing the gas from going through the shot and then drops to the ground.

I am also aware of a construction in which a cup-like member is divided into compartments, but the purpose of this is to spread the shot and not to concentrate it, as it is in my invention, and the difference in effect is due to the difference in construction. It will thus be seen that I have provided a device in which that portion of the body of the shot which is near the wadding is protected and kept from flattening in the barrel, that the full charge of the gas is exerted on the body of the shot, and will not blow through it, that there will be no tumbling of the protective casing or cup, and that the shot pattern for long range shooting will be undisturbed through the scattering of the shot due to mashing of the barrel or to the gas blowing through the shot, or to the turning or tumbling of the cup-shaped casing.

I claim:

1. The combination with a cartridge having a propelling wadding, of a shot concentrator comprising a cup-shaped member of thin tough flexible material, said cup-shaped member having a substantially circular disk portion, and integral segments radiating therefrom adapted to be folded together to form the entire side walls of the cup, a portion of a charge of shot disposed normally within the cup, another portion being disposed outside of the cup within the cartridge, and a wadding for retaining the shot, said wadding being spaced from the cup.

2. The combination with a cartridge having a propelling wadding, of a shot concentrator comprising a circular disk of thin, tough, flexible material and of greater diameter than the bore of the gun, said disk having radial slits extending inwardly from the outer edge and terminating on a circle substantially the diameter of the bore, said segments being adapted to be folded together to form a cup, a portion of a charge or shot disposed normally within the cup, another portion being disposed outside the cup within the cartridge and the wadding for retaining the shot, said wadding being spaced from the cup.

EPHRAIM McGAVOCK.