May 17, 1932. R. B. ROSENSTIEL 1,858,560

SHOTGUN

Filed March 24, 1931

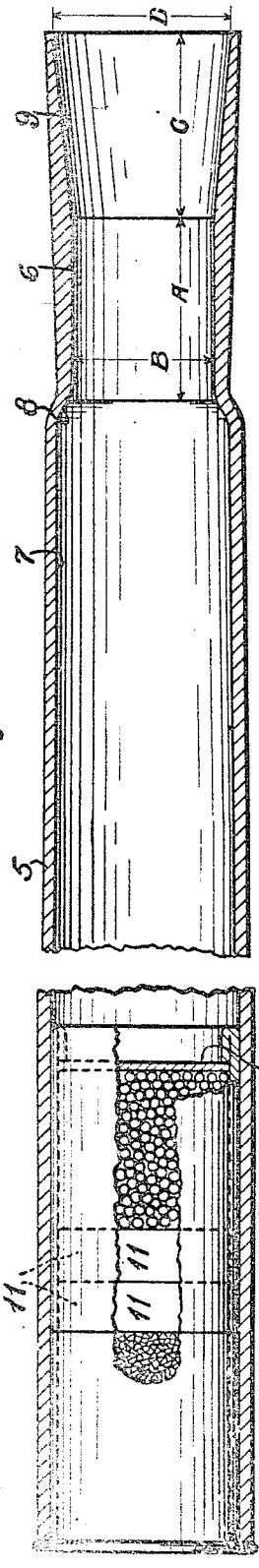

Fig. 1.

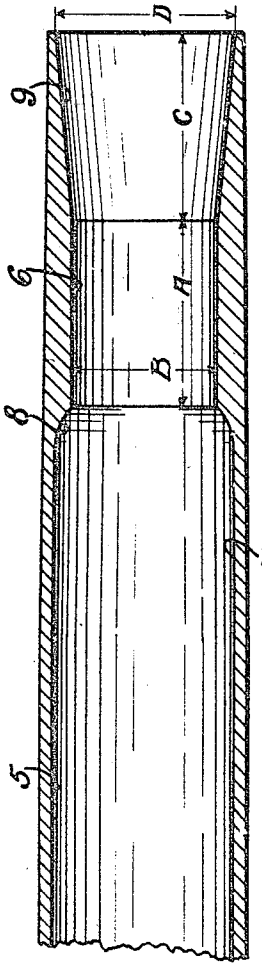

Fig. 2.

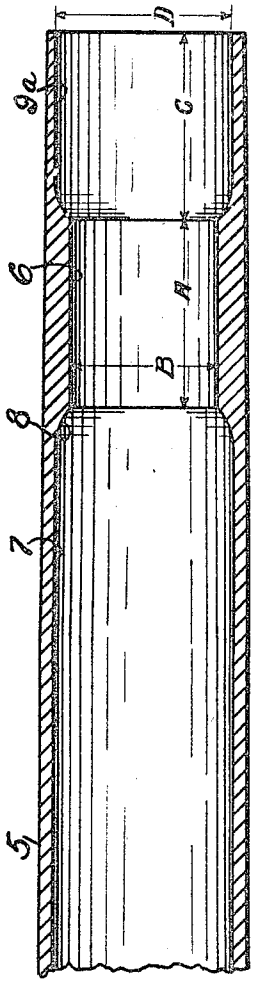

Fig. 3.

Inventor

Ralph B. Rosenstiel

By Price & DeBuck

Attorneys

Patented May 17, 1932 1,858,560

UNITED STATES PATENT OFFICE

RALPH B. ROSENSTIEL, OF FREEPORT, ILLINOIS

SHOTGUN

Application filed March 24, 1931. Serial No. 524,913.

My invention relates to improvements in shot-gun barrels.

A loaded shot-gun shell contains a charge of powder and a load of shot pellets, there being one or more thick wads of felt or similar material between the powder and the shot and a thin wad of paper or the like over the shot which is retained in place by crimping or turning back the end of the shell casing. I have observed that there is not a uniform distribution of shot over a given pattern or target when the shell is fired in a gun having a barrel of ordinary construction. I have discovered that the thick wads of a loaded shell which are placed between the powder and the shot interfere materially with the flight of the shot in a uniform manner. I have discovered too that the gases produced upon explosion of the powder also serve to distort the stream of shot. Accordingly, one of the objects of my invention is to provide a barrel for a shot gun of such construction that the wads between the shot and the powder and the explosive gases behind them will be momentarily checked or retarded in their flight through the gun barrel and thus permit the shot to continue on its flight through the gun barrel uniformly and in an undistorted straight stream.

In attaining my aforesaid object, I provide in a shot gun barrel, near its muzzle end, a substantally straight bore which is of reduced caliber as compared with the caliber of the bore in the breech end of the barrel, and I form the bores in the barrel so as to provide a shoulder at the intersection of the bores. The shoulder does not materially interfere with the passage of the shot and it serves to check or retard momentarily the flight of the heavy wads following the shot thus choking back the explosive gases and preventing both the wads and the gases from getting into the stream line of shot and interfering with its passage. The straight bore of reduced caliber concentrates the shot into a compact stream and the pellets of shot proceed uniformly in their path of flight.

I have also discovered that, unless the muzzle end of the gun barrel is constructed so as to permit easy and quick escape of the thin wad over the shot, the wad is likely to be momentarily wedged in the end of the barrel sufficiently to cause it to rock or tilt in the barrel and thus cause it to interfere in a substantial manner with the uniform flow of the shot. It is another object of my invention, therefore, to overcome the difficulty just noted. I have found I can accomplish the desired result by providing a bore at the muzzle end of the barrel which is of larger caliber, at least at the exit end of the barrel, than the wad used to retain the shot in the shell.

Other objects of my invention will appear from the following description of certain preferred embodiments which are illustrated in the accompanying drawings and in which,—

Fig. 1 is a longitudinal sectional view, on an enlarged scale, of fragmentary portions of a gun barrel embodying the principles of my invention and showing a loaded shell in position for firing;

Fig. 2 is a similar view of a construction resembling that shown in Fig. 1; and

Fig. 3 is a similar view illustrating a modified construction.

Like characters of reference designate like parts in the several views.

Referring first to the construction shown in Fig. 1, it will be noted that the gun barrel 5 is drawn in adjacent its muzzle end to provide a bore 6 which is substantially straight, that is to say, of uniform diameter from one end to the other, and which is of substantially less caliber than the caliber of the main bore 7 in the breech end of the barrel. The bores 6 and 7 are formed so as to provide an abrupt or pronounced shoulder 8 at their meeting line or line of intersection. The bore 9 at the muzzle end of the barrel is tapered and of gradually increasing diameter from the forward end of the straight bore section 6 to the exit end of the barrel. It will be noted that the length of the bore 6, indicated by the line A, is greater than the diameter of the bore indicated by the line B. The length of the bore 9 represented by the line C is also greater than its diameter at its exit end, which is indicated by the line D.

When a shell is fired, in a barrel of the construction described, the shot pellets stream

through the barrel carrying the thin wad 10 ahead of them. The forward thick wad 11 strikes the shoulder 8 which momentarily checks or retards its forward progress. The flight of the rearward wad 11 following and the explosive gases back of it is likewise checked momentarily. In passing through the straight bore section 6, the shot pellets are concentrated and guided in a straight onward flight. The gradually increasing diameter of the bore section 9 permits the wad 10 to expand and pass from the gun barrel without friction. It will be noted that the diameter of the exit end of the bore section 9 is substantially greater than that of the wad 10 which insures free and quick exit of the wad from the barrel, it being impossible for the wad to be wedged momentarily at the exit end of the barrel.

I have found that a charge of shot delivered through a gun barrel constructed as above described proceeds in an undistorted stream and that the shot pellets are substantially uniformly distributed over a given pattern at a given distance. There is a complete absence of any concentration of the shot pellets on any one portion of the pattern.

The gun barrel shown in Fig. 2, internally, is substantially the same as that shown in Fig. 1. In the construction shown in Fig. 2, the outside surface of the gun barrel is straight or smooth, the bores 6, 7 and 9 and the shoulder 8 being provided by boring out the interior of the barrel from heavier stock, as distinguished from drawing in the lighter stock used in producing the barrel shown in Fig. 1.

In the modified construction shown in Fig. 3, the bores 6, 7 and 9*a* and the shoulder 8 are produced by boring out the interior of the barrel from heavy stock substantially as described in connection with the construction shown in Fig. 2. In this modified construction, however, the bore 9*a* increases rapidly in caliber from its intersection with the bore 6 and then is of uniform diameter throughout to its exit end. This construction insures complete freedom through the bore section 9*a* for the passage of the wad 10 preceding the stream of shot pellets and insures practically no interference whatsoever with the stream of shot by the wad.

While I have described my improved gun barrel as being useful in the uniform distribution of the shot pellets over a given pattern at a given distance and a gun embodying my improvements is very desirable for target shooting, it is even more desirable and useful for hunting purposes. In hunting with a gun having a barrel of ordinary construction, it frequently happens that a slug of bunched or concentrated shot will be delivered to a rabbit or a duck, often practically tearing it to pieces. With a gun having a barrel embodying the principles of my invention, game is not torn to any appreciable extent since the shot pellets in the stream of shot are so uniformly distributed therein.

While I prefer to employ the constructions described above, it is to be understood that my invention is not to be limited to the precise forms shown except so far as the appended claims may be so limited by the prior art, it being understood that changes may be made without departing from the spirit of my invention.

I claim:—

1. A shot-gun barrel having near its muzzle end but spaced back therefrom a single substantially straight bore of reduced caliber as compared with the caliber of the main bore in the breech end of the barrel, there being a shoulder at the intersection of said bores, said main bore being smooth and uninterrupted, the bore of the barrel at its muzzle end being of larger caliber than said straight bore.

2. A shot-gun barrel having near its muzzle end but spaced back therefrom a single substantially straight bore of reduced caliber as compared with the caliber of the main bore in the breech end of the barrel, there being a shoulder at the intersection of said bores, said main bore being smooth and uninterrupted, the length of the bore of reduced caliber being at least as great as its diameter, the bore of the barrel at its muzzle end being of larger caliber than said straight bore.

3. A shot-gun barrel having near its muzzle end but spaced back therefrom a single substantially straight bore of reduced caliber as compared with the caliber of the main bore in the breech end of the barrel, there being a shoulder at the intersection of said bores, said main bore being smooth and uninterrupted, the bore of the barrel at its muzzle end being of larger caliber than said straight bore, the lengths of said straight bore and the bore at the muzzle end being at least as great as their respective diameters.

4. A shot-gun barrel having near its muzzle end but spaced back therefrom a single substantially straight bore of reduced caliber as compared with the caliber of the main bore in the breech end of the barrel, there being a shoulder at the intersection of said bores, said main bore being smooth and uninterrupted, the bore of the barrel at its muzzle end being tapered and increasing in caliber from said straight bore to the muzzle end.

5. A shot-gun barrel having near its muzzle end but spaced back therefrom a single substantially straight bore of reduced caliber as compared with the caliber of the main bore in the breech end of the barrel, there being a shoulder at the intersection of said bores, said main bore being smooth and uninterrupted, the bore of the barrel at its muzzle end being tapered and increasing in caliber

from said straight bore to the muzzle end, the length of said straight bore being at least as great as its diameter.

6. A shot-gun barrel having near its muzzle end but spaced back therefrom a single substantially straight bore of reduced caliber as compared with the caliber of the main bore in the breech end of the barrel, there being a shoulder at the intersection of said bores, said main bore being smooth and uninterrupted, the bore of the barrel at its muzzle end being tapered and increasing in caliber from said straight bore to the muzzle end, the lengths of said straight and tapered bores being at least as great as their respective diameters.

7. A shot-gun barrel having near its muzzle end but spaced back therefrom a single substantially straight bore of reduced caliber as compared with the caliber of the main bore in the breech end of the barrel, there being a shoulder at the intersection of said bores, said main bore being smooth and uninterrupted, the bore of the barrel at its muzzle end being also substantially straight but of larger caliber than said bore of reduced caliber.

8. A shot-gun barrel having near its muzzle end but spaced back therefrom a single substantially straight bore of reduced caliber as compared with the caliber of the main bore in the breech end of the barrel, there being a shoulder at the intersection of said bores, said main bore being smooth and uninterrupted, the bore of the barrel at its muzzle end being also substantially straight but of larger caliber than said bore of reduced caliber, the length of said straight bore being at least as great as its diameter.

9. A shot-gun barrel having near its muzzle end but spaced back therefrom a single substantially straight bore of reduced caliber as compared with the caliber of the main bore in the breech end of the barrel, there being a shoulder at the intersection of said bores, said main bore being smooth and uninterrupted, the bore of the barrel at its muzzle end being also substantially straight but of larger caliber than said bore of reduced caliber, the lengths of said straight bores being at least as great as their respective diameters.

RALPH B. ROSENSTIEL.