

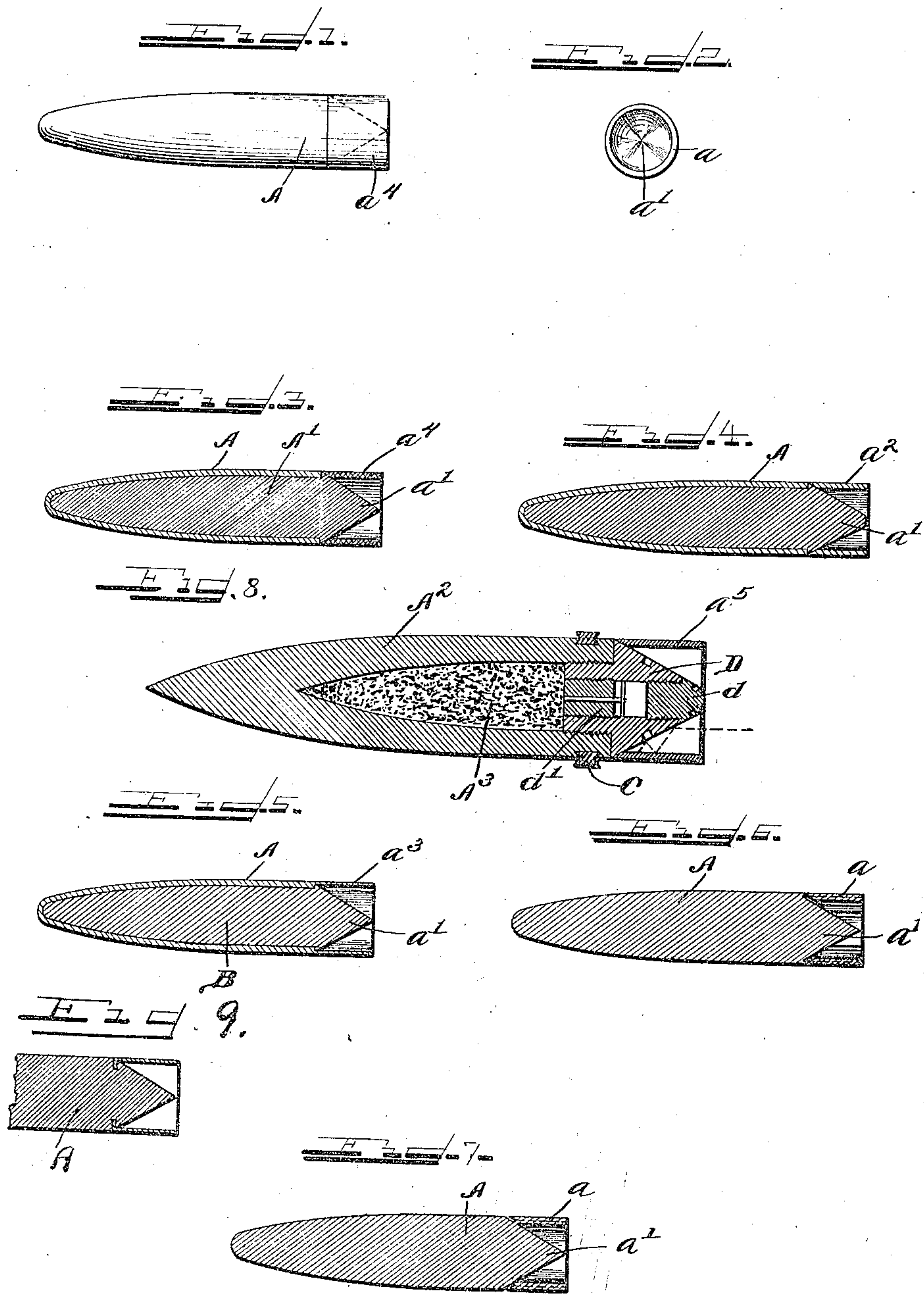
No. 726,291.

PATENTED APR. 28, 1903.

L. P. HOLMBLAD.
PROJECTILE.

APPLICATION FILED AUG. 8, 1900.

NO MODEL.



Witness

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PROJECTILE.

SPECIFICATION forming part of Letters Patent No. 726,291, dated April 28, 1903.

Application filed August 8, 1900. Serial No. 26,234. (No model.)

To all whom it may concern:

Be it known that I, LAURITZ P. HOLMBLAD, a subject of the King of Denmark, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Projectiles; and I do hereby declare that the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention provides means for avoiding the retardation due to the vacuum formed behind a projectile in transit.

The invention consists in the matters hereinafter described, and more fully pointed out and defined in the appended claims.

In the drawings, Figure 1 is a side elevation of a projectile embodying my invention. Fig. 2 is a rear elevation of the same. Figs. 3 and 4 are longitudinal sections of the same. Figs. 5, 6, and 7 are longitudinal sections illustrating details of the rearwardly-directed flange. Fig. 8 is a longitudinal section of an explosive projectile or shell embodying my invention. Fig. 9 is a fragmentary view, in longitudinal section, showing the flange secured to the projectile-body by spinning.

As shown in said drawings, A indicates a projectile-body having a pointed or tapered rear end and provided at its rear end with a rearwardly-extending flange a , which, as shown, is relatively thin and adapted to break away from the body of the projectile upon leaving the gun. Said projectile may be cast or otherwise constructed integrally and provided with a rearwardly-directed flange, which may be integral or not, as preferred. If preferred, the projectile may be constructed, as indicated in Figs. 3, 4, and 5, with a sheath of metal inclosing a central core of like or of different metal in a familiar manner. Said outer sheath may extend rearwardly, forming the flange a^3 , which at its point of union with the sheath and the body of the projectile is preferably grooved, the more readily to permit the same to be broken therefrom as the projectile leaves the gun. As shown in Fig. 3, said central body at its rear end is of greater diameter than the inner diameter of said sheath and tapers rear-

wardly from the end of the same. A flange, preferably of a different and more frangible metal, is secured on the inclined rear end a' and incloses said tapered rear end. In Fig. 4 said flange is shown as integral with the sheath A' and provided at the point of junction with an internal groove. The central body or core of said projectile fills said sheath entirely in a familiar manner and is provided with a flange, also filling said groove, from which point it tapers rearwardly to approximately the same length as said flange and terminates in a slightly-rounded point. The form illustrated in Fig. 5 is similar to that illustrated in Fig. 4, with the exception that instead of a groove the entire flange a^3 is made relatively thin. Figs. 6 and 7 illustrate projectiles constructed integrally, with the flange a also integral therewith. As shown, said flanges are weakened at the point of connection with said projectile by means of a groove cut in said flange in such a manner that when the same breaks away from the projectile the rear surface of the same is uniformly smooth and tapering. Such a groove is shown in Fig. 6 on the inner side of the flange and in Fig. 7 on the outer side thereof.

Obviously my invention may be embodied in explosive projectiles or shells, as shown in Fig. 8, in which A^2 indicates the pointed hollow body of the shell or projectile, A^3 the explosive contained therein, and D a base-plug having screw-threaded engagement with the body A^2 and provided with a central screw-threaded aperture adapted to receive the tapered plug d and the fuse-plug d' , of familiar form, respectively, at the inner and outer ends of the same. The base-plug D and the plug d are provided with spanner-notches to permit the same to be engaged by suitable wrenches, and the plug d' is provided with a transverse slot on its outer end adapted to permit engagement of the same with a screw-driver. The flange a^3 , as shown, is of a different metal than the body A^2 , though, obviously, the same may be constructed integrally, if preferred, and is rigidly secured to the base-plug.

C indicates a rotative band of copper or other soft metal seated on the rear end of the

body A² in a familiar manner and designed to give rotation to the projectile by engaging the rifling of the gun.

It should be noted that the extreme rear end of the projectile as embodied in the forms illustrated in Figs. 4 and 8 is blunt—that is, the taper of the conical rear portion instead of continuing uniform to the extreme point is provided with a curved end of a small area for a purpose subsequently to be described.

The operation of my device is as follows: The projectile being placed in a gun in the usual manner and discharged therefrom, the force of the explosive is resolved by the tapered rear end and the inner surface of the flange into a direct propulsive force in a straight line, as indicated by the dotted lines on Fig. 8. This has a tendency to force the rear end of said flange slightly outward into closer engagement with the rifling of the gun, in which case the flange of itself acts as a rotating band. By or at about the time, however, the outer edge of the flange reaches the muzzle of the gun the expansive force of the gases within the gun acts to break the flange away from the projectile, which free from said flange, presents at its rear end a uniformly-tapered surface, as shown, and continues in its flight, said taper at the rear end obviously acting to prevent the formation of a vacuum behind the same. Inasmuch as the propulsive force of the explosive charge is as effectively applied as in the ordinary form of projectile, with little or no vacuum behind the projectile the projectile will have a much greater range than the ordinary types.

In the forms of my invention shown in Figs. 4 and 8 the conical rear portion of the projectile is blunt instead of continuing to a point, as shown in the other views. By forming the rear end blunt, as shown in the figures referred to, a slight vacuum is formed at the rear of the projectile during its flight, such vacuum being sufficient to hold the projectile to its course and prevent the deviation from its path which might occur if the rear portion thereof continued to a point, thereby entirely preventing the formation of any vacuum in the rear of the same.

Obviously the flange may be secured to the projectile in any desired manner, and as it is light and thin, presenting a relatively broad surface to the air, it is carried forwardly but a comparatively short distance and soon comes to the earth. If preferred, to facilitate the breaking of the flange from the projectile-body longitudinal grooves may be provided in said flange, either on the outer or the inner side of the same, as shown in Fig. 6.

I claim as my invention—

1. A projectile having a closed conical rear end the point of which is blunt and provided with a rearwardly-extending flange or sleeve rigidly secured thereto but adapted to break

from said projectile when discharged from a gun, substantially as described.

2. A projectile tapered at its rear end and provided with a rearwardly-extending flange or sleeve rigidly secured thereto but adapted to break from said projectile when discharged from a gun.

3. A projectile tapered at each end and provided with a rearwardly-directed flange or sleeve rigidly secured thereto and surrounding the taper at the rear end and adapted to break away from the projectile, upon the discharge of the gun.

4. A projectile tapered at each end and provided with a rearwardly-directed flange rigidly secured thereto and surrounding the extremity of the same said flange being reduced in thickness at the point where the same is united with the projectile and adapted to break away from the same upon the discharge of the gun.

5. A projectile comprising a body tapered at the rear end a flange of uniform diameter with said body rigidly secured thereto and extending rearwardly and inclosing the tapered end of the same said flange being provided with grooves and adapted to break away from the body when discharged from the gun.

6. A projectile comprising a body tapered at each end and provided at its rear end with a flange of frangible metal extending rearwardly and inclosing the rearwardly-tapered end said flange being adapted to break away from the projectile-body when the same is discharged from the gun.

7. A projectile, comprising a hollow pointed casing adapted to contain an explosive material and provided at its rear end with a base-plug having engagement with said casing, the outer end thereof being tapered, an aperture through said plug, a plug engaged therein and tapered at its outer end to correspond with the taper of the base-plug and a rearwardly-directed frangible flange having approximately the same diameter as said casing to which it is rigidly secured and extending rearwardly around said plugs.

8. A projectile comprising a hollow pointed casing adapted to contain an explosive material and provided at its rear end with a base-plug, the outer end thereof being tapered, an aperture through said plug, a plug adapted to close said aperture and tapered on its outer end to correspond with the taper of the base-plug, a rearwardly-directed frangible flange having approximately the same diameter as said casing to which it is rigidly secured and extending rearwardly over the taper of said plugs, said flange being provided with grooves and adapted to break away from the projectile after the discharge of the gun.

9. A projectile comprising a hollow pointed casing adapted to contain an explosive charge and provided at its rear end with a base-plug the outer end of which is tapered, an aperture through said plug, an apertured

fuse-plug at the inner end of the same, a tapered plug adapted to close the outer end of said base-plug and tapered at its outer end to correspond with the taper of said base-plug
5 and a rearwardly-directed frangible flange having approximately the same diameter as said casing to which it is rigidly secured and extending rearwardly over the taper of said plugs, said flange being provided with longitudinal grooves and adapted to break away
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from the projectile after the discharge of the gun and a band of soft metal rigidly secured on the butt of said casing.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

LAURITZ P. HOLMBLAD.

In presence of—

C. W. HILLS,

LOUIS J. DELSON.