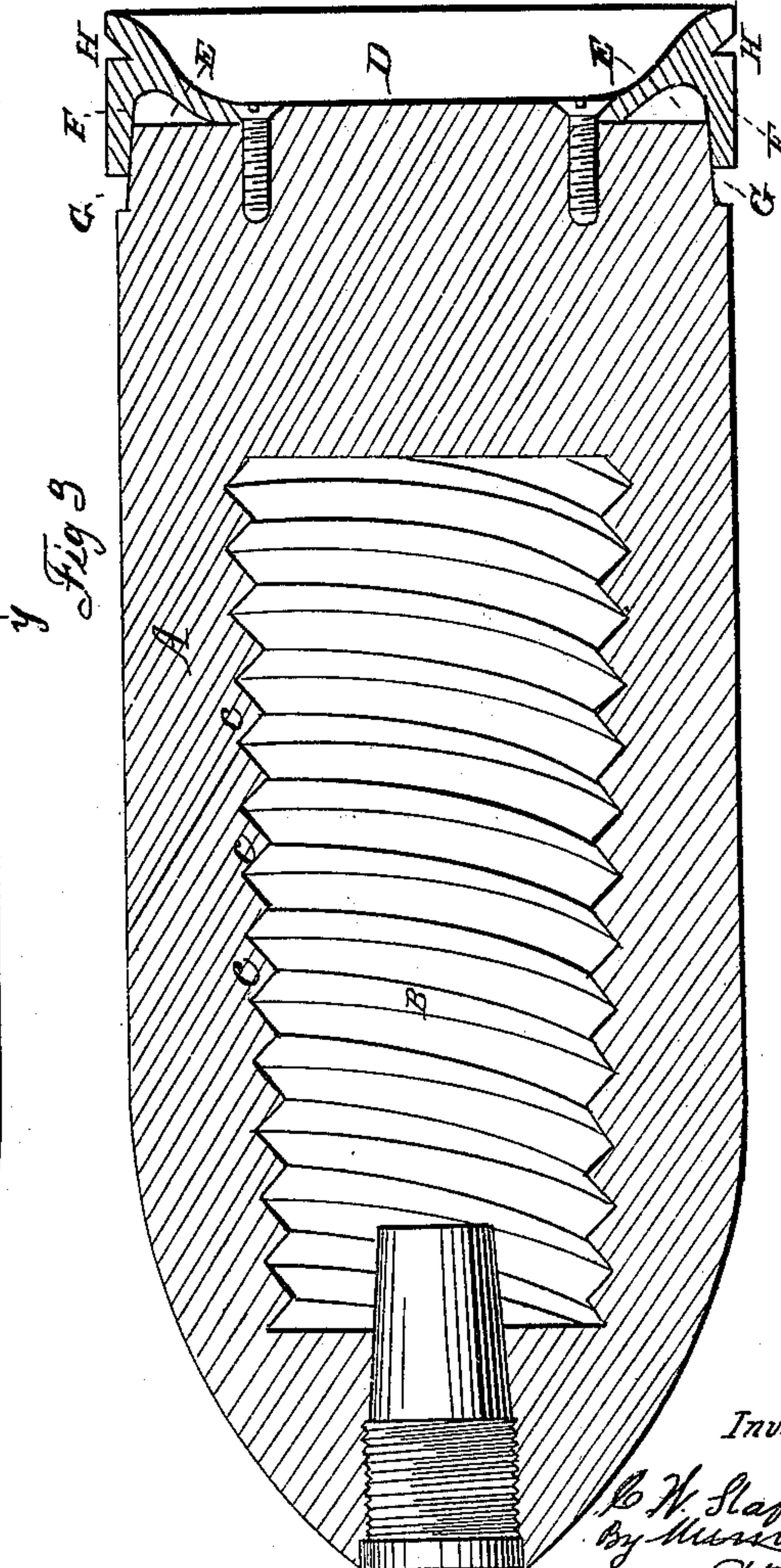
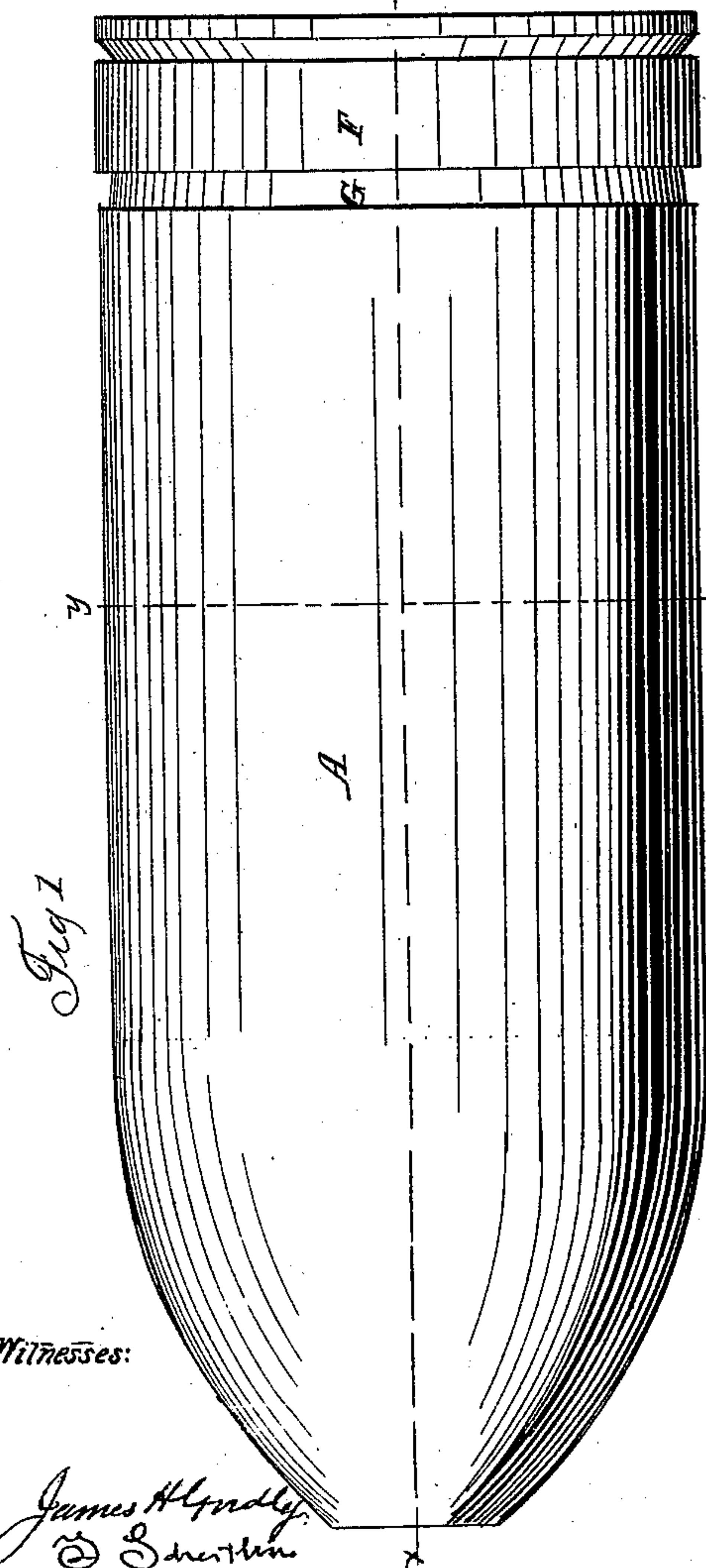
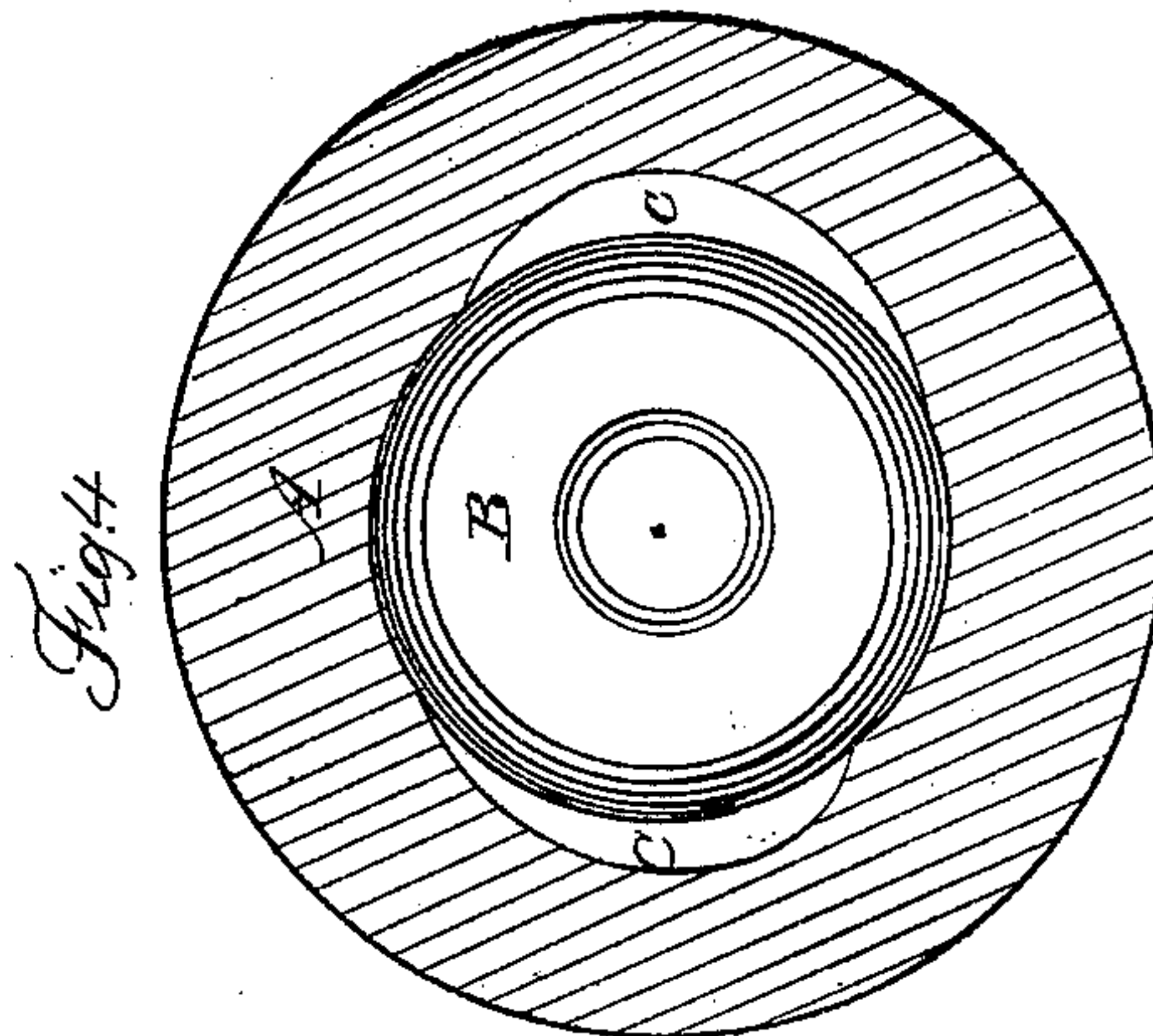
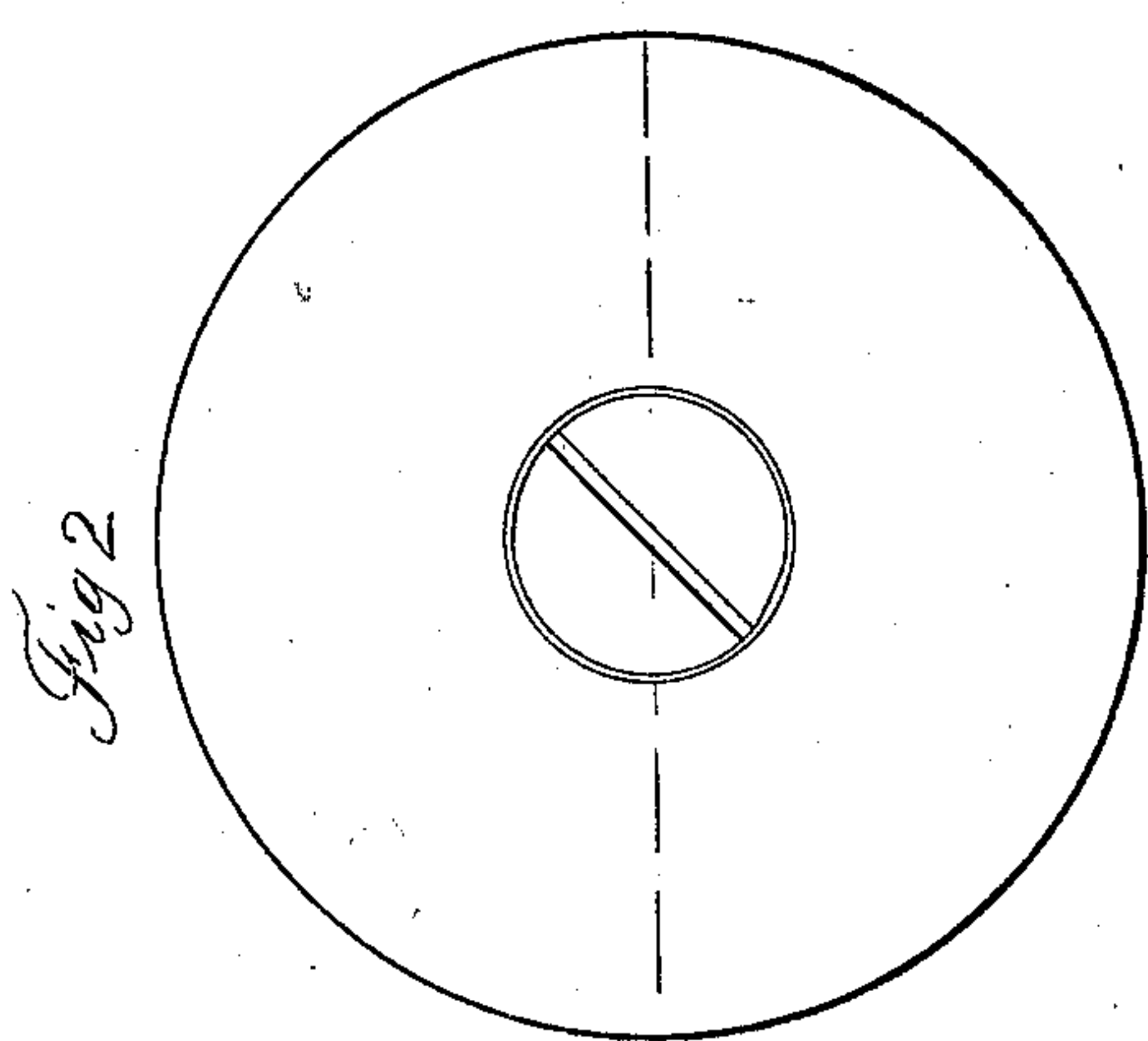


C. W. STAFFORD.  
Sabot for Projectiles.

No. 45,567.

Patented Dec. 20, 1864.



Witnesses:

*James H. Lindley*  
*J. S. Schermer*

Inventor:

*C. W. Stafford*  
*By Munn & Co*  
*Attys*



# UNITED STATES PATENT OFFICE.

C. W. STAFFORD, OF NEW YORK, N. Y., ASSIGNOR TO AMERICAN PROJECTILE COMPANY, OF SAME PLACE.

## IMPROVEMENT IN SABOTS FOR PROJECTILES FOR RIFLED ORDNANCE.

Specification forming part of Letters Patent No. 45,567, dated December 20, 1864.

*To all whom it may concern:*

Be it known that I, CHARLES W. STAFFORD, of the city, county, and State of New York, have invented a certain new and useful Improvement in Projectiles; and I do declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side view of a field-shell, illustrating my invention. Fig. 2 is a rear view of the same. Fig. 3 is a longitudinal section thereof at *x x*. Fig. 4 is a transverse section at *y y*.

Similar letters of reference indicate corresponding parts in the several figures.

My present invention consists in a peculiar construction of packing for centering and supporting the shot within the bore, closing the windage, and (when used in a rifled gun) communicating rotary motion to the shot. For this purpose I employ a compound packing, consisting, essentially, of (first) an annular flange fitting over a wedge-shaped rabbet at the rear of the shot, so that when driven forward it will close the windage, center the shot within the bore, and support it in this position, and (second) an expansible cup-shaped disk, which by the pressure of the expanding gases will be forced into and made to completely fill the grooves, but relieved of the weight of the shot by the action of the annular flange above referred to. This flange may be of any desired length longitudinally of the shot, and may be so proportioned in relation to the depth and length of the rabbet in which it fits as to be forced into the grooves or not, as preferred, when it has been driven forward to the fullest extent by the action of the expanding gases.

In order that others skilled in the art to which my invention appertains may be enabled to fully understand and use the same, I will proceed to describe its construction and operations.

A may represent the main body of the shell, cast with a chamber, B, for containing the explosive charge. The walls of this chamber are formed with V-shaped spiral grooves C C, to adapt it to break at certain times, and thus produce a larger number of fragments.

By forming the grooves in spiral and V shape, as explained, the difficulty of construction is lessened by reason of the facility afforded for the withdrawal of the core from the pattern. Grooves in this form are also very effective in their operation.

D represents a disk of brass or other ductile metal bolted or otherwise secured to the rear end of the shell. This disk may or may not be formed with a central aperture fitting a stem or projection on the back of the shell, as illustrated in Fig. 3, and its central part may, if desired, be covered with a rigid washer, to equally distribute the force of the expanding gases. The said disk is of cup form, concave at back, so that near its periphery a space, E, will exist between the disk and the back of the shell. This space is covered by an annular flange, F, formed upon the disk D, and partially occupying a tapering rabbet, G, on the rear part of the shell A. The periphery of the disk D is also provided with a groove, H, as described in my patent issued October 6, 1863. This groove and so much of the rabbet G as is not occupied by the flange F may be filled with tow, saturated with any suitable lubricant. The purpose and effect of the peculiar spiral grooves within the shell have already been sufficiently explained.

The operation of the packing device is as follows: The first explosion of the charge, acting against the disk D and opposed by the inertia of the shell A, presses the disk forward into the cavity E, and this, owing to the concave form of the disk, forces its periphery into close contact with the bore, and causes it to fill the grooves if the piece be rifled. At the same time the annular flange F being pressed forward on the wedge-shaped rabbet G, is thereby forcibly pressed outward in contact with the bore and into the grooves. The entire periphery of the packing is thus made effective.

This packing may be very securely attached to the shot. It is valuable from its simplicity, cheapness, and effectiveness, both as to closing the windage and taking the rifle-grooves. It provides two spaces for lubricants, and is expanded radially by two causes—to wit: the oblique position or concave form of the disk and the wedge shape of the end of the shell over which it is driven.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

The cup-shaped packing-disk D, provided with an annular flange, F, fitting upon a wedge-shaped rabbet, G, as herein described, and for the purpose set forth.

The above specification of my improvement in explosive shells signed this 26th day of September, 1863.

C. W. STAFFORD.

Witnesses:

OCTAVIUS KNIGHT,  
CHARLES SMITH.