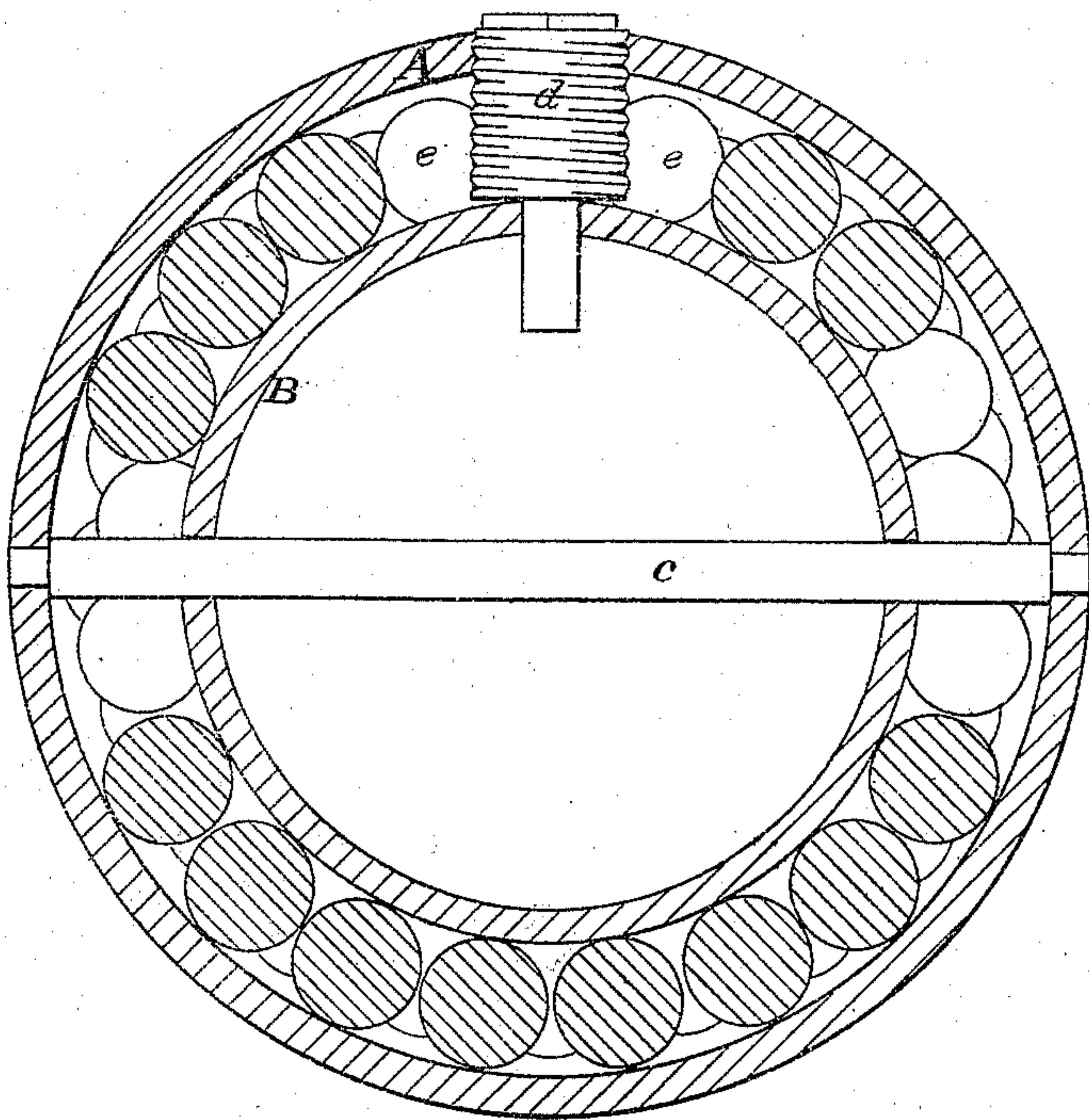


J. T. SENN.  
Explosive Shells.

No. 137,491.

Patented April 1, 1873.



WITNESSES.

*Villette Anderson*  
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INVENTOR.

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# UNITED STATES PATENT OFFICE.

JOHN T. SENN, OF TROY, ALABAMA, ASSIGNOR OF ONE-HALF HIS RIGHT  
TO SIMON SCHWARZ, OF SAME PLACE.

## IMPROVEMENT IN EXPLOSIVE SHELLS.

Specification forming part of Letters Patent No. **137,491**, dated April 1, 1873; application filed  
January 11, 1873.

*To all whom it may concern:*

Be it known that I, JOHN T. SENN, of Troy, in the county of Pike and State of Alabama, have invented a new and valuable Improvement in Bombs; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a central section of my invention.

This invention has relation to the construction of shells especially adapted for use in howitzers and other smooth-bore guns of short range; and it consists in the concentric arrangement of two hollow spheres, one within the other, and sufficiently smaller to leave a space between its outer surface and the inner wall of the exterior case to admit of the arrangement of shot or musket balls between the two, the inner shell being charged with the powder or other explosive material.

In the accompanying drawing, the letter A designates the exterior case, which may be cast in sections, to be bolted together or otherwise secured after the introduction of the inner case and the balls. B represents the interior sphere, which may be cast entire, in the usual manner, or in sections. It is, however, preferably cast entire, as it is desirable, when the projectile explodes, that this portion of it should part in as many pieces as possible in order to scatter the shot, which lie next its exterior, in every direction. The inner sphere is concentrically fixed in position, with relation to the outer shell, by means of a bolt, c.

If the space between the spheres is large, shot of large size may be used to fill it, and, in this case, they must be placed in position before the sections of the exterior case are

bolted together. Ordinarily, however, it is preferred to employ for this filling musket-balls or shot *e* of sufficiently small size to pass through the fuse-hole. In this case the sections may be secured together, and thus the case may be manufactured entirely without charging any portion of it until it is about to be used; then the explosive material is to be introduced into the inner sphere, and the shot are passed through the fuse-hole into the space between the two cases, after which the fuse-plug *d* is inserted, and the shell is ready for use.

The hole in the inner shell is of less diameter than that of the outer shell. The fuse-plug is shouldered to rest against the outer wall of the inner shell, thus steadying this shell in position and preventing it from rotating about the bolt.

This shell is designed to be very effective in use. When exploded the interior case receives the first impulse of the expansion, and will fly into many pieces, driving before them the shot and pieces of the exterior case in every direction.

What I claim as my invention, and desire to secure by Letters Patent, is—

The shell, constructed as herein described, having the two separate and independent hollow spheres A B, one within the other, connected together by means of the bolt *c*, and provided with the shouldered fuse-plug *d*, extending from the outer into the inner shell, as shown and described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JOHN T. SENN.

Witnesses:

JOHN BARRON,  
WILLIS C. WOOD.