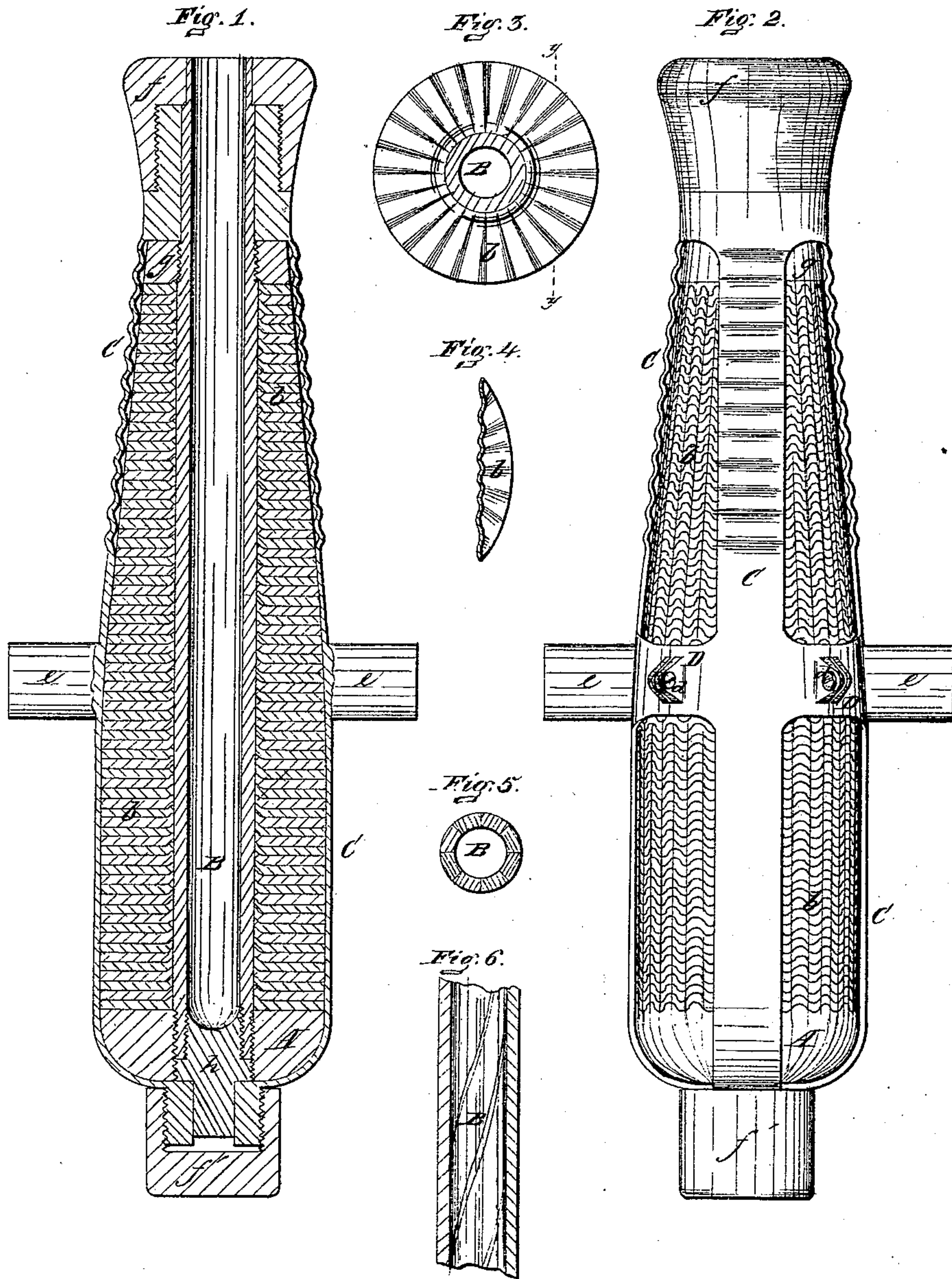


N. THOMPSON.  
Ordnance.

No. 153,634.

Patented July 28, 1874.



WITNESSES:

*Sydney Smith.*  
*Arthur D. Kerr.*

INVENTOR:

*Nathan Thompson.*  
*By Attorneys.*  
*Brown & Allen*



# UNITED STATES PATENT OFFICE.

NATHAN THOMPSON, OF BROOKLYN, NEW YORK.

## IMPROVEMENT IN ORDNANCE.

Specification forming part of Letters Patent No. **153,634**, dated July 28, 1874; application filed August 8, 1872.

*To all whom it may concern:*

Be it known that I, NATHAN THOMPSON, of Brooklyn, in Kings county and State of New York, have invented an Improvement in Ordnance, of which the following is a specification:

This invention relates to a novel construction of ordnance, whereby great strength and elasticity in the material composing the body of the gun are obtained; and it consists, first, in combining, with the central tube or bore portion of the gun, a series of corrugated annular disks, fitted to slide over said tube closely, and with their corrugated faces fitting snugly against each other, whereby a certain degree of elasticity is obtained, and the danger of rupture resulting from the expansion of the interior of the bore as compared with that of the outer periphery of the gun is obviated. It further consists in combining, with the above-described elements, a solid breech-piece, which is secured thereto by a series of corrugated bands or stirrups operating to retain the whole together in their longitudinal direction. It also consists in constructing the central tube or bore portion of the gun of a series of segmented strips formed in drop dies, by which the rifle-grooves are produced in the same operation, and the material by such process rendered more homogeneous than it could be by any other known process. The disks surrounding its periphery, being also radially corrugated and flanged by a similar process, are rendered homogeneous, and the skin of the metal preserved in all the parts, thus obtaining the greatest possible strength combined with slight elasticity, and sufficient compensation for expansion and contraction of the several parts of which the gun is composed.

In the accompanying drawing, forming part of this specification, Figure 1 represents a horizontal section of a gun, constructed in accordance with my invention; Fig. 2, a top view of the same; Fig. 3, a face view of one of the annular disks by which the central tube or bore portion is encompassed. Fig. 4 is perspective view of a section of said disk, taken on the line *y y* of Fig. 3. Fig. 5 is a transverse section of the central tube, and Fig. 6 is a longitudinal section of the same in part.

I will now describe the drawing in detail, and in the several figures of which the same letters indicate corresponding parts.

A represents the breech-block or solid portion at that end of the gun within which, in a central position, the barrel or bore portion B of the gun is attached by screw-threads or other suitable means. A plug, *h*, is also screwed into the rear end of the bore portion B, which holds it and the breech-block A firmly together. The rearward extension of said plug, being of polygonal form, is clamped by the extensions of the straps C, and is thus prevented from turning or becoming unscrewed. The central bore portion or tube B is encompassed by a series of annular and radially corrugated disks, *b*, extending from the face of the breech-block to near the extremity or muzzle-end of the bore B, said breech-block, as represented in Figs. 1 and 2, being of solid metal, but it may be made up of a series of struck-up disks, of cup form, and having corrugated flanges to nest one against the other, and against the corrugated disks *b*, which encircle the barrel. In this mode of construction of the breech-block the barrel B may be screwed into the cup portion of the innermost of these disks, or it may simply be seated in a recess or rabbet formed for its reception, the whole being clamped together, as hereinafter described. Straps or binders C, constructed in two or more parts, are then fitted over the portions before described, being formed to fit the hemispherical exterior of the breech-block A, and extending thence toward the muzzle of the bore, are at both ends united or connected by an annular ring, *f f'*, and on the inner periphery of each of which is a screw-thread to engage with similar threads on the extremities of said straps or binders C, by which means the breech-block, bore portion, and annular disks are all firmly clamped together. The longitudinal straps C have combined with them a circumferential band, D, which is formed thereon in sections, so that they may be connected by lugs and clamping-screws *d*; said band D being suitably located for the connection of the trunnions *e*, on which the gun is pivoted. These longitudinal straps or binders C are corrugated transversely of their length, so as to afford compensation for expansion



and contraction, and a sufficient degree of elasticity to prevent fracture by the discharge of the piece. These straps may either be fitted outside of the periphery of the disks *b*, or may be let into channels extending lengthwise thereof.

In order to resist the undue strain to which a gun is subjected when firing at a great elevation, the side straps *C* may be made much wider than those above and below the barrel, by which additional strength is obtained in that direction.

The disks *b* are formed with a diagonal flange around their inner periphery, and may be similarly flanged at their outer periphery, which tends to give them greater strength and elasticity. They may also be corrugated radially, as represented in Figs. 2, 3, and 4, which adds to their radial strength.

The bore portion *B* may be of tubular form entire, or it may be made up of a series of staves, which are held together to form a cylinder by the encircling-disks *b*, and the outer periphery of this bore portion may be made slightly tapering from the breech to the muzzle, so that the disks will wedge in a slight degree thereon in being closed up by the follower *g*. In forming this bore portion in sections or staves, as represented in Figs. 5 and 6, the rifling may be done by the same dies or rolls in which they are formed, by which means the skin of the metal is preserved throughout their entire surface. The cylinder being supposed to be formed of eight staves the angle of the rifle-groove in each would be one-eighth of the spiral curve around its inner periphery, so that in forming the cylinder the rifle would be continuous from end to end.

It is obvious that a part of the advantages above referred to may be obtained by combining with the central tube a series of compressed disks, provided with flanges without the corrugations, as represented in Fig. 1, and that instead of the longitudinal strap *C* a series or rods, arranged closely around the periphery of the disks, and secured to cylindrical straps at either end, might be substituted. These rods for a portion of their length may also be of zigzag form to represent corrugations when placed side by side.

The several portions of this gun may also, if desired, be galvanized to prevent rusting.

The rear end of the barrel or bore portion *B* is fitted with screw-threads on its internal and external peripheries, the one of which should be right-handed, and the other left-handed, the exterior engaging with a corresponding thread on the breech portion *A*, the other receiving the plug *h* from the rear, by which means the rifled barrel is prevented from being rotated by the ejection of the shot through such rifled bore.

In the arrangement of the disks *b* around the bore the direction of the fiber should be arranged to cross that of each adjacent one, in a manner to secure the greatest possible resistance to explosive force.

What is here claimed as new, and desired to be secured by Letters Patent, is—

1. The combination, in a piece of ordnance, of a central tube and a series of radially-corrugated annular disks, provided with a flange or flanges, in the manner substantially as herein shown and described.

2. A piece of ordnance formed by the combination of a central tube, either cylindrical or tapered on its periphery, a series of stamped or compressed annular disks with the binders *C*, their clamp-screws *f f'*, and the screw-follower *g*, substantially as set forth.

3. The stamped or compressed corrugated disks *b*, substantially as described, when adapted to fit one against another, and to be combined with a gun-barrel or tube, whereby to re-enforce the same, as specified.

4. The barrel *B*, made up of sections or staves, when said staves have rifled channels formed in them by the same dies in which they are struck into form, substantially as set forth.

5. The straps or binders *C* extending longitudinally of the gun, and provided with circumferential portions *D* for connection, by lugs and screws, for support of the trunnions, substantially as shown and described.

6. The angular-headed plug *h*, barrel *B*, having right and left hand screw-threads, and the divided clamps and lock-nut, whereby the barrel is prevented from turning, if rifled, when firing the charge.

NATHAN THOMPSON.

Witnesses:

W. MORRIS SMITH,  
ARTHUR D. KERR.