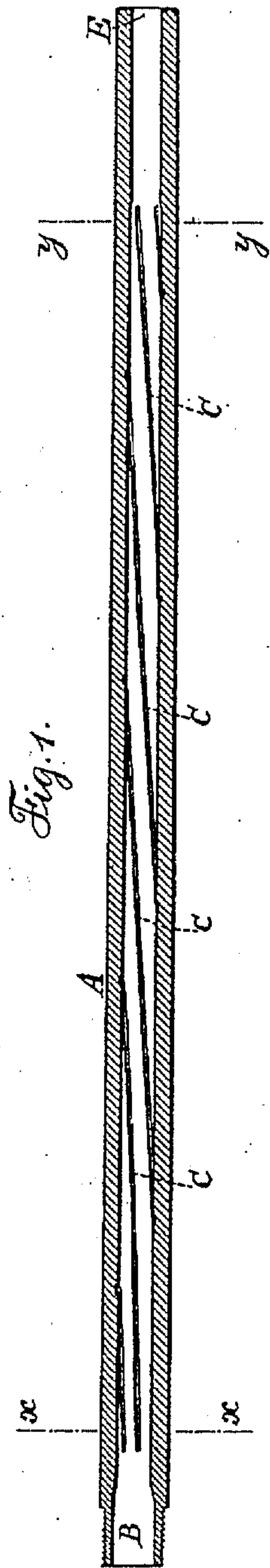


(No Model.)

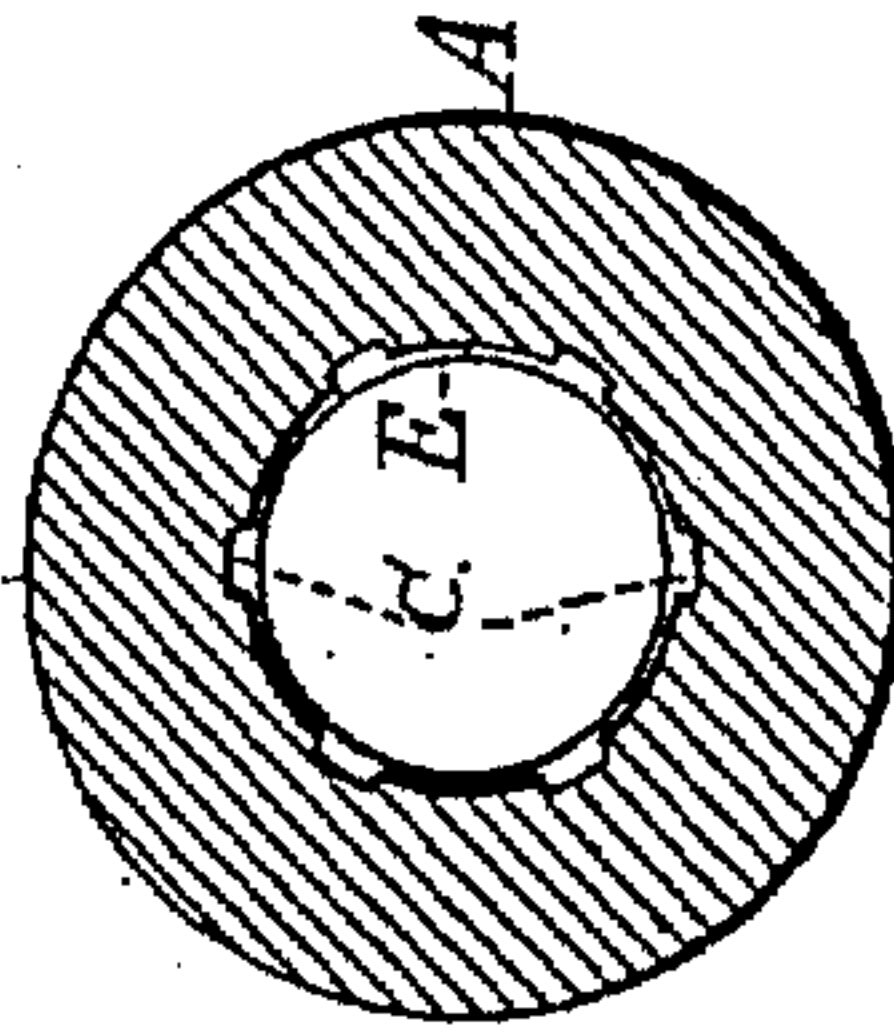
J. W. CARVER.  
RIFLED GUN BARREL.

No. 460,102.

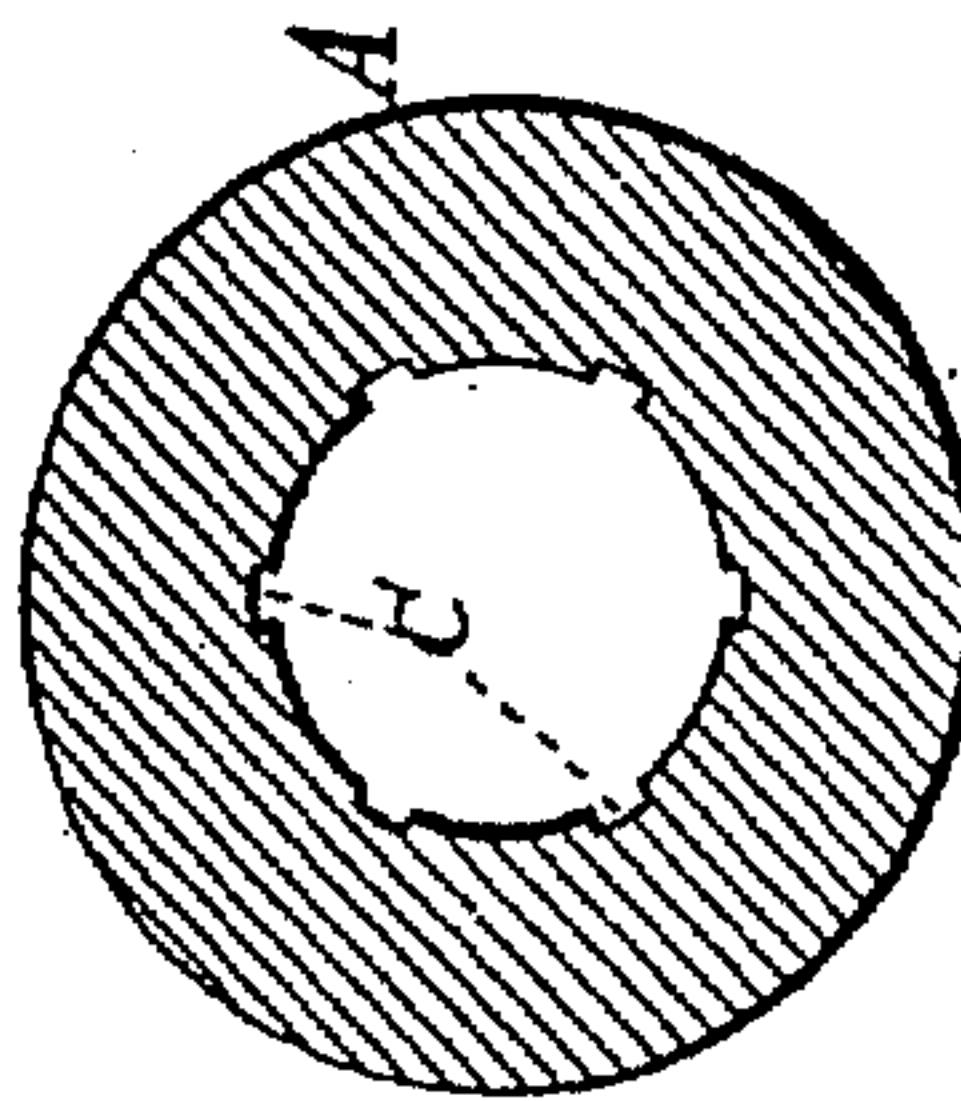
Patented Sept. 22, 1891.



*Fig. 3.*



*Fig. 2.*



Witnesses:  
J. Staib  
Charles Smith

Inventor:  
James Wood Carver  
per Lemuel W. Terrell *att'y*

# UNITED STATES PATENT OFFICE.

JAMES WOOD CARVER, OF PAWLET, VERMONT, ASSIGNOR, BY MESNE ASSIGNMENTS, OF TWO-THIRDS TO GEORGE H. CARVER, OF NATIONAL CITY, CALIFORNIA.

## RIFLED GUN-BARREL.

SPECIFICATION forming part of Letters Patent No. 460,102, dated September 22, 1891.

Application filed October 22, 1888. Serial No. 283,770. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES WOOD CARVER, of Pawlet, in the county of Rutland and State of Vermont, have invented an Improvement in Rifled Gun-Barrels, of which the following is a specification.

Rifled gun-barrels heretofore made are usually provided with helical grooves extending from the chamber or breech of the gun to the muzzle, so as to communicate a rotary motion to the projectile as it is driven along the gun. In this instance, however, the projectile is not smooth upon its exterior surface, and the fins that are formed thereon are liable to divert the projectile in its flight and render the aim inaccurate. Efforts have been made to avoid this by lessening the depth of the rifling-grooves gradually, so that they die out, or nearly so, at the muzzle.

In my present improvements the rifling-grooves are the same depth from end to end, and they do not extend to the muzzle, but stop short thereof a sufficient distance for the bore of the gun to be smooth and slightly smaller than the rest of the bore. Thereby the projectile receives the necessary rotary movement in passing through the barrel by the action of the rifling-grooves; but such projectile or the base thereof is slightly compressed in passing through the smaller portion of the bore of the gun, and in so doing the fins or projections that have fitted into the rifling-grooves are entirely removed and the exterior of the projectile is smoothed, so that there are no fins or projections to interfere with the flight of the projectile.

This improvement is especially useful in hand fire-arms; but the same may be used in cannon or large ordnance.

In the drawings, Figure 1 represents my improvement by a longitudinal section of the barrel. Fig. 2 is a cross-section at the line  $x$ , and Fig. 3 is a cross-section at the line  $y$ , the two latter figures being in larger size.

Usually the barrel A is provided with a

chamber B at the rear end for the reception of the cartridge, it being understood that my improvements are available only with breech-loading fire-arms. The rifling-grooves C are of ordinary depth and number, and they extend from the chamber B to near the muzzle E, and their forward ends terminate or die out by short inclines from the bottoms of the grooves to the surface of the bore, and the bore of the barrel from the ends of the rifling-grooves to the muzzle E is slightly smaller than the portion of the bore which is rifled. This smoothed portion is comparatively short, in order that the rotation of the projectile upon its axis may not be impeded materially, and when the piece is fired the projectile or the soft-metal base thereof is expanded into the rifling-grooves, and these give to the projectile a rotation about its axis, and when the projectile reaches the ends of the rifling-grooves it is very slightly compressed—say, about the two-hundredth part of an inch in an ordinary rifle—and this renders the exterior of the projectile smooth and uniform and there is no escape of gases around the projectile, and the whole force of the explosion is concentrated in giving to the projectile a maximum speed as it passes out of the muzzle.

I claim as my invention—

The barrel for breech-loading fire-arms, having rifling-grooves of uniform depth extending from the chamber or breech to near the muzzle, and the bore of the fire-arm smoothed from the ends of the rifling-groove to the muzzle and of a slightly smaller diameter than the rest of the bore, substantially as set forth.

Signed by me this 12th day of October, A. D. 1888.

JAMES WOOD CARVER.

Witnesses:

DANIEL W. BROMLEY,  
JENNIE SCULLY.