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GUN TUBE AND METHOD OF MANUFACTURING SAME.

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1,384,718.

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Fig. 1.

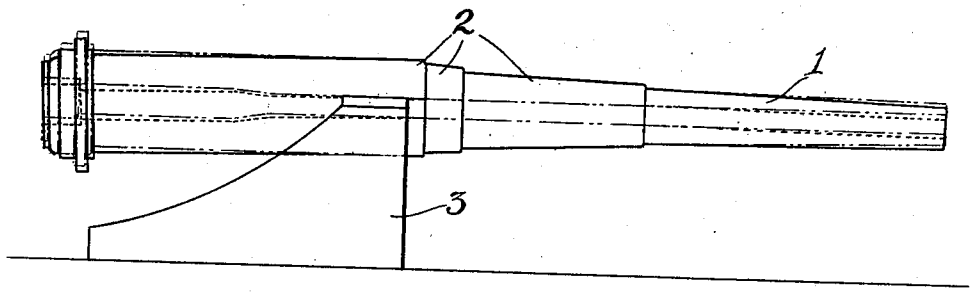


Fig. 2.

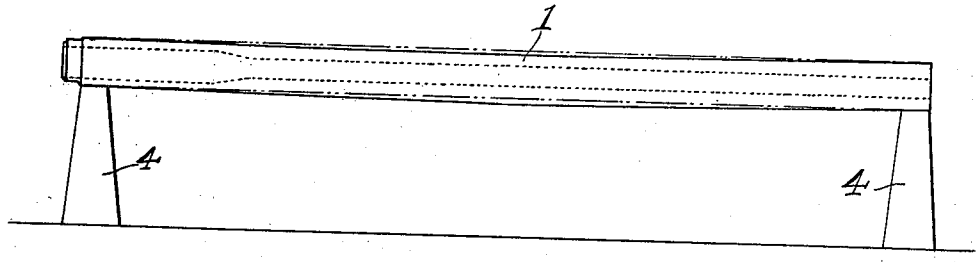
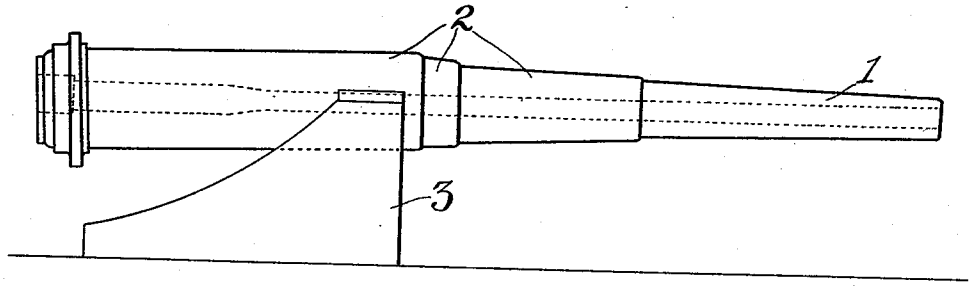


Fig. 3.



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GUN-TUBE AND METHOD OF MANUFACTURING SAME.

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To all whom it may concern:

Be it known that I, ALBERT E. GUY, major, Ordnance Department, United States Army, a citizen of the United States, stationed at Washington, D. C., have invented an Improvement in Gun-Tubes and Method of Manufacturing Same, of which the following is a specification.

The invention described herein may be used by the Government, or any of its officers or employees in prosecution of work for the Government, or by any other person in the United States, without payment of any royalty thereon.

This invention relates to improvements in the manufacture of gun tubes and more especially to the method of boring same, whereby the natural droop of the gun will be counteracted, or compensated for, so that the axis of the bore of the gun will be straight when the gun is mounted in position for firing.

Owing to the length of the modern gun tube, and method of mounting same, a droop or depression of the outer unsupported ends of the tube due to its weight, causes a curvature of the bore.

When the gun is fired the droop of the gun and consequent curvature in the bore causes molecular vibrations in the material of the gun tube and the beats thus occasioned, force the hard steel of the body of the projectile into the rifling grooves of the tube.

The contact between the parts as above referred to, not only reduces the range of the gun but destroys its accuracy, said contact being of sufficient force to cause the surface of the projectile to be embedded in the rifling grooves, thus scoring the surface of the shell in such a manner as to further retard its progress after it leaves the gun.

The contact above referred to, damages the rifling to such an extent that it is rendered useless, and if the gun has been relined, causes a drag so intense that the lining is caused to creep to an unusual degree, and thereby reduces the life of the gun.

Similar numerals indicate corresponding parts in all the figures of the drawings in which:—

Figure 1 is a side view of a modern rifle barrel and its support, showing in full lines the natural droop of the gun and in dotted lines the curvature of the bore. In dot and dash lines the gun is shown without its natural droop.

Fig. 2 is a side view of the inner tube of the gun, supported at its ends to bend same as when mounted for firing. In dotted lines the bore is shown bored on a straight axis.

Fig. 3 is a view similar to Fig. 1 showing the gun having its nautral droop and the bore on a true axis or straight line.

Referring to the drawings by numerals 1 indicates the gun tube, 2 the outer jackets and 3 the mount of a modern long range rifle.

The gun is usually mounted at the balancing point, which is in rear of its center owing to the relative thickness of the gun tube at the breech and muzzle. Said mounting of the gun at one point is necessary for convenience in elevating and traversing the gun in aiming.

Mounting the gun at one point in its length, supports its entire weight with one-half thereof in front and one-half in rear of said point free for depression under the influence of gravity, and it is due to the above conditions that a droop in the gun is the result.

While all lengths of guns have more or less droop, the development of the modern coast defense or other long range rifle has increased the droop in the gun and the damage due to beating caused by vibration. The high velocity of the projectile through said type of gun, also increases the damage due to droop.

The projectile in its passage through the gun, tends to travel in a straight line, and owing to the curvature of the bore due to the natural droop of the gun, the same is vibrated or whipped from its initial or natural position in relation to the line of travel of the projectile to a position opposite to said position and back again during the progress of the projectile, and it is this vibration and beating together of the parts, increasing in intensity as the shell approaches the muzzle, that causes the damage to both the gun and projectile.

There are a variety of ways in which this invention may be applied in the construction of a gun, but for purposes of illustration the method shown is to mount the tube 1 of the gun, prior to applying the outer sleeves, on

supports 4—4 (see Fig. 2,) said supports so located and the gun tube so arranged as to place in the tube an artificial bend, identical to that caused by the natural droop of the gun when mounted ready for firing.

With the tube in the position above described, it is bored and rifled on a true or perfectly straight line.

When the tube is removed from the supports 4—4 and supported throughout its entire length, the axis of the gun will again assume a straight line and the bore with its rifling, which had been bored on a straight axis, will assume a curved line equal to or corresponding with the natural droop of the gun if mounted in the usual way for firing, but in an opposite direction.

Therefore when the gun is mounted, the tube will sag or droop and the bore will become straight.

For convenience the tube, when positioned for boring as shown in Fig. 2, is inverted from the position it will occupy when mounted, and should it be necessary any preferred pressure means (not shown) may be employed to produce said artificial bend.

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

1. The method of manufacturing a gun tube, consisting of forming a tube on a true line, springing a tube out of a true line and boring and rifling.

2. The method of manufacturing a gun tube, consisting of bending the tube in a direction of its natural droop when mounted and boring.

3. The method of manufacturing a gun tube, consisting of bending the tube in the same direction and to the same extent as its natural droop when mounted and boring.

4. A gun tube, the axis of the bore of which is straight when the tube is flexed an amount equal to that due to droop.

ALBERT E. GUY.