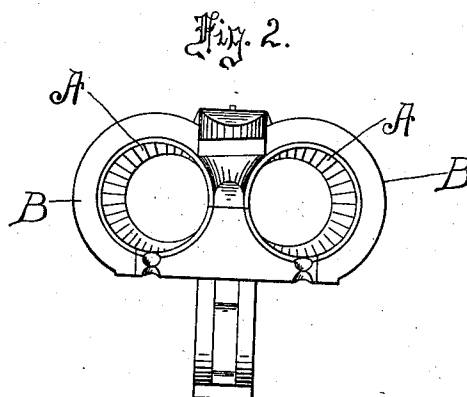
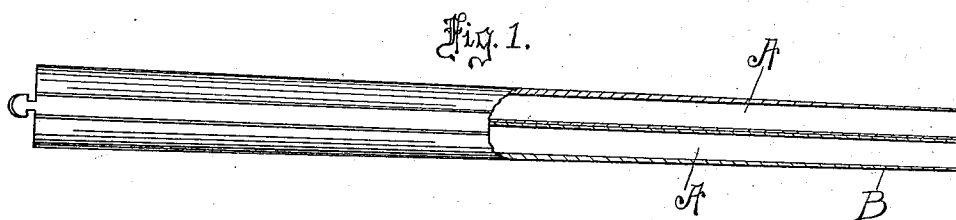


(No Model.)

J. SINGER.
GUN BARREL WITH BLUED OR BROWNEB BORE.
No. 578,030.

Patented Mar. 2, 1897.



Witness.

M. M. Lee.
F. M. Townsend

Inventor.

by Joseph Singer
Hazard Townsend
his Attys.

UNITED STATES PATENT OFFICE.

JOSEPH SINGER, OF LOS ANGELES, CALIFORNIA.

GUN-BARREL WITH BLUED OR BROWNEB BORE.

SPECIFICATION forming part of Letters Patent No. 578,030, dated March 2, 1897.

Application filed March 22, 1893. Serial No. 467,179. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH SINGER, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Non-Leading and Non-Pitting Gun-Barrel, of which the following is a specification.

With gun-barrels of all grades great difficulty has always been experienced in preventing them from leading and pitting. This "pitting," as it is called, is partly caused by rust and partly by the action of the acids in the powder. Especial difficulty is experienced in keeping the gun from pitting when shooting along the sea-coast, the action of the salt air seeming to assist the action of the acids and rust in corroding the bore of the gun. Heretofore no satisfactory means of preventing pitting has been known, and many valuable guns are rendered comparatively worthless from pitting because of the roughness of the bore of the barrels. When a gun is used upon the sea-coast, it is necessary to clean and oil the gun at the close of each day's shooting, or otherwise the inside of the gun-barrel will soon become so corroded as to necessitate reborring the gun. Another difficulty to be overcome in preserving the good shooting qualities of guns is the tendency to lead. To avoid this, chilled shot are sometimes used, but such shot are injurious to the gun, especially so with close-choke guns. Various wire brushes have been devised for removing the lead, but if the gun is allowed to stand after becoming leaded it is very liable to pit under the lead and thus become impaired, so that heretofore it has required the most careful and constant attention to prevent guns which are in use from pitting.

I have discovered that by providing a gun-barrel having its bore blued or browned that not only is it prevented from pitting or rusting, but that it is also less liable to lead.

During two years of experimental and practical use of my gun after the bore was blued there has been no sign of leading or pitting at any time, and the gun is yet free from any pitting or leading, although the gun has been put through very severe tests. Since it was blued it has never been cleaned immediately

after using, but has been set aside for many weeks at a time before being cleaned. As high as two hundred and fifty rounds have been fired from it in one day.

Bluing the bore of my gun greatly improved its shooting qualities, both in pattern and penetration.

My invention or discovery comprises a gun-barrel having a blued or browned bore. The accompanying drawings illustrate my invention.

Figure 1 is a plan view of the barrel of a double-barreled shotgun, parts being broken away to show the bore of the barrel. Fig. 2 is a view looking into the breech of the barrel.

In practice the bore A of the gun-barrel B is cleansed from all grease, and a solution of certain acids commonly used for browning or bluing metals is applied to the bore A of the barrel by means of a swab or sponge. (Not shown.) The gun-barrel is then allowed to stand for five or ten hours, according to the action of the acids upon the metal. Then the bore of the barrel is brushed with a steel brush, or a stiff bristle brush moved lengthwise of the barrel without rotating to remove the rust and corrosion caused by the acids. The solution is again applied and in five or ten hours the bore of the barrel is brushed as before. This operation is continued until the desired quality of blue or brown is obtained. After the last brushing the rust is killed by heating the gun-barrel by means of hot water or otherwise to a temperature of about 212°. The gun-barrel is then ready for use.

In practice I have found that my improved gun-barrel may stand for two weeks or more after shooting without being cleaned, and that when the gun is cleaned the bore of the gun is intact with no visible signs of pitting or rust. I have also found by long use that the bluing or browning absolutely prevents leading and that the action of the acids in the explosives used has no effect upon the surface of the bore of the barrel.

The nitropowders are especially active in pitting shotgun-barrels, but I have found in practice that they do not affect the bore of my improved gun-barrel in any degree, but that the longer a gun is used the harder and

smoother the surface of the bore becomes. I have also found that the bluing or browning of the bore does not injure the shooting qualities of the gun in any degree whatever.

5 Now, having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The new article of manufacture set forth comprising a gun-barrel having a blued or browned bore.

JOSEPH SINGER.

Witnesses:

ALFRED I. TOWNSEND,
F. M. TOWNSEND.