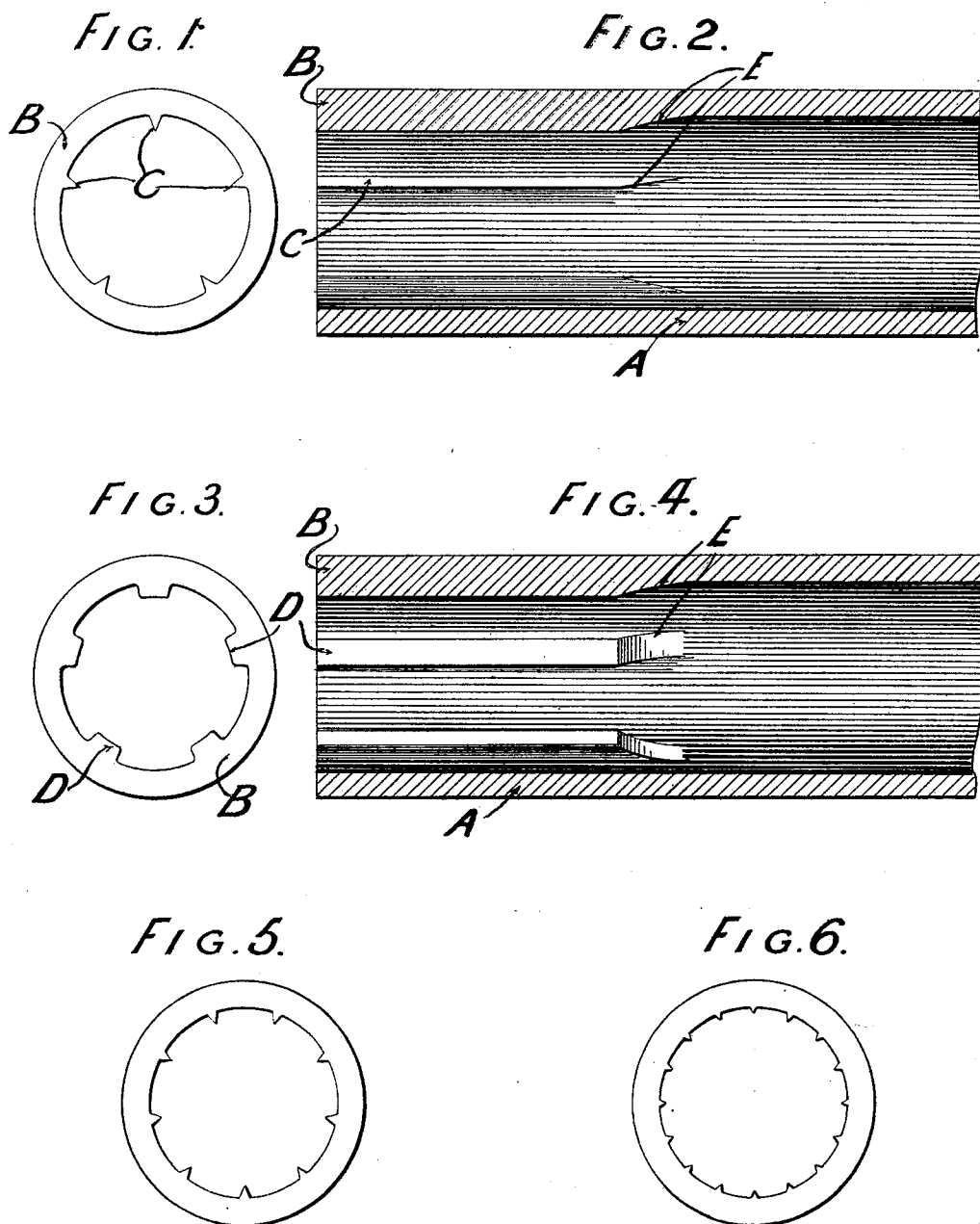


(No Model.)

C. D. DURNFORD.
GUN BARREL.

No. 587,801.

Patented Aug. 10, 1897.



WITNESSES.

E. B. Bolton
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UNITED STATES PATENT OFFICE.

CHARLES DAY DURNFORD, OF LONDON, ENGLAND.

GUN-BARREL.

SPECIFICATION forming part of Letters Patent No. 587,801, dated August 10, 1897.

Application filed November 29, 1895. Serial No. 570,426. (No model.) Patented in England July 10, 1895, No. 12,858.

To all whom it may concern:

Be it known that I, CHARLES DAY DURNFORD, a subject of the Queen of Great Britain and Ireland, residing at Shooter's Hill, London, in the county of Kent, England, have invented certain new and useful Improvements in Gun-Barrels, of which the following is a specification.

The invention has been patented in England, No. 12,858, July 10, 1895.

The object of my invention is to form or fit in gun-barrels such devices as, when shot is used, will have a somewhat similar effect to that produced by the ordinary choke-bore, but in an improved manner, while at the same time these devices will not prevent the use of ball in the same barrels, but will rather improve such use. The devices that I employ for this purpose are a number of longitudinal and parallel "lands" or small projections inside the barrel at or near the muzzle thereof, as will now be fully and particularly explained.

In the accompanying drawings I have shown the muzzle of a gun-barrel, on an enlarged scale, as formed according to my invention, and Figure 1 is an end elevation, and Fig. 2 is a longitudinal section, of the barrel in one style of formation. Fig. 3 is an end elevation, and Fig. 4 is a longitudinal section, of the barrel in another style of formation, and Figs. 5 and 6 are end elevations of the barrel in other styles of formation.

In the gun-barrel A, preferably extending to the muzzle B thereof, are arranged a desired number of lands or small projections, which most conveniently, perhaps, are created with such barrel A, although they may also be fitted therein and attached thereto, and which may be of any shape in cross-section—as, for example, of a V shape, as shown at C in Figs. 1 and 2, with acute or sharp apices, or these apices may be rounded off or flattened, as shown at D in Figs. 3 and 4, which two shapes I consider are the most efficient, although I do not limit myself thereto. These lands or projections may extend so far along the barrel as may be deemed expedient in each case. As a general rule a length of about two calibers is very suitable, especially when they terminate at and with the muzzle, as is shown in the drawings, and in every case they are throughout their lengths

parallel with each other and with the axis of the barrel. The inner ends of the lands or projections are preferably tapered, as shown at E in Figs. 2 and 4, in such wise that they make an appearance on and gradually rise out of the interior surface of the barrel, and when they have thus attained their full size they most conveniently maintain the same dimensions, both in height and breadth, for the remainder of their lengths, although when desired, either in height and breadth or in height or breadth, they may be increased or decreased, as may be deemed advisable in each case, and when formed in this manner also their lines are still throughout their lengths parallel with each other and with the axis of the barrel, although their surfaces may not be parallel. Any number of these lands or projections may be so arranged in each barrel. In Figs. 1, 2, 3, and 4 five are shown; in Fig. 5 nine are shown, and in Fig. 6 sixteen are shown, and in the same manner any other suitable number may be used and arranged.

In every case it is plainly evident that whatever may be the number of the lands or projections in a barrel, and whatever may be the shapes and sizes of the same, they will and must to a certain extent diminish the transverse area of the barrel at or near the muzzle thereof, and therefore, as is indeed obvious, these lands or projections can in transverse section be so formed of such shapes and sizes and can be so arranged in such numbers that the diminution thereby created in the transverse area of the barrel shall be as great as the greatest that is at the present time created in any case by the ordinary "choke," or so much more or less than the same as may be deemed expedient or desirable or necessary in each particular case. Therefore when shot is used these lands or projections will have a somewhat similar effect to that produced by the ordinary choke-bore in the concentration of the shot, but in an improved manner, as they will not only concentrate the shot, but will and plainly must assist in directing the same. Again, these lands or projections will not prevent the use of ball in the same barrel, whether such ball is spherical or cylindrical or otherwise, but will rather improve such use, as they will cut

or force themselves into the surface of the ball as it passes along the barrel and before it leaves the muzzle thereof, and thus they will center this ball in the barrel before its
5 exit, especially if it be not a true and exact fit for and to such barrel, and therefore they will and plainly must assist in directing the same. At the same time the check that will be inflicted on the shot or ball by these lands
10 or projections, and especially when their inner ends are tapered and gradually decrease into nothingness, will be exceedingly slight—far too slight to produce any evil effect.

When this invention is applied to double-
15 barreled guns, it may very generally be convenient, even as it now very commonly is in the ordinary double-barreled guns, not to provide the same amount of choke for each barrel, or, that is to say, in and with this my invention to vary the numbers and sizes and
20 shapes, or any or either of them, of the lands or projections in the one barrel in respect of those in the other barrel. This formation or arrangement, as is indeed obvious, can be
25 properly carried out in any suitable manner.

It is well known that rifling—that is, causing what is projected from the barrel to assume a rotating movement on its own axis—is not only useless as regards shot, but is posi-

tively harmful. In firing shot the great ob- 30
ject to be attained is the concentration of the shot and the prevention of its spreading. This is commonly obtained by the choke-bore; but rifling causes the shot to spread more
35 than is its normal tendency, and it is obvious that such must be the case, for by the rifling the whole charge of shot is caused to rotate on its axis, and therefore, when not restrained by the barrel, centrifugal force must and does cause the shot to spread, which
40 is very harmful and just the opposite to what is desired.

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

A gun-barrel having its main caliber reduced to form a choked portion at its end by a series of longitudinal lands extending parallel with the axis of the gun, said lands projecting inwardly from the main inner wall of
50 the barrel to enter the ball and to enter between the shot, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

CHARLES DAY DURNFORD.

Witnesses:

JAS. HART,
FRED. JONES.