

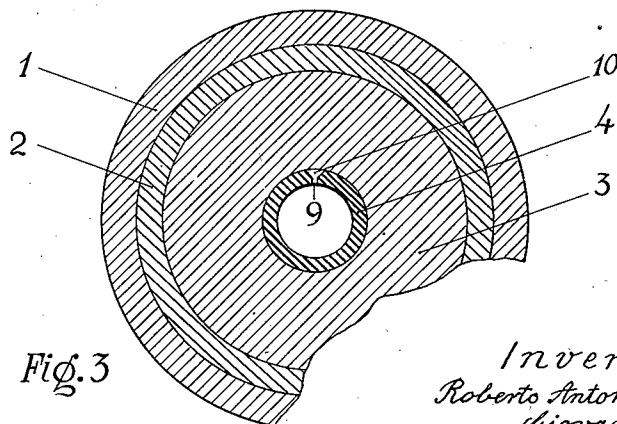
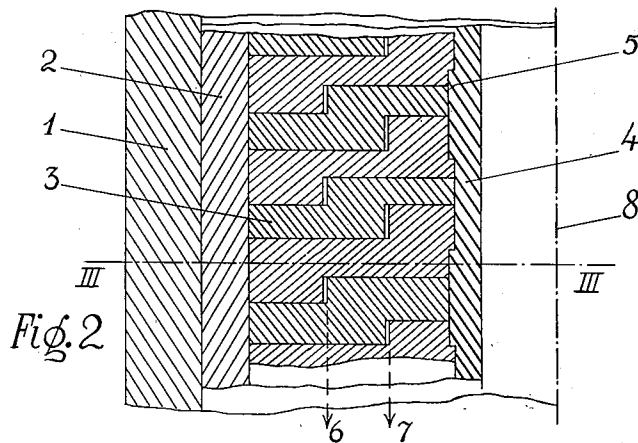
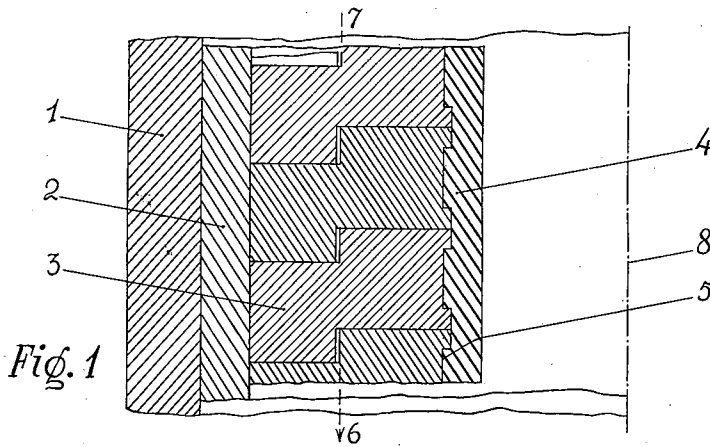
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GUN BARREL

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GUN BARREL

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4 Claims. (Cl. 89—16)

One of the reasons limiting the maximum working pressure of gun barrels of a piece of ordnance is the difficulty of producing metal elements of considerable dimensions, having excellent mechanic properties and allowing of safe employment, which however can easily be secured with elements of small dimensions.

Another reason limiting the use of high maximum pressures is the rapid wear due both to the quality of the metal that must be used for the central tube, and to the presence of grooves in the said tube. The said grooving is rapidly consumed through usage, and requires the gun being withdrawn from service when it no longer suffices to impart to the projectile the required speed of rotation to render its travel duly governed along its trajectory.

The present invention overcomes the said two inconveniences both separately and combined.

The invention relates to a type of gun barrels of any power and gage, in which particular provisions allow to utilize the whole capacity of resistance afforded by the best modern materials, employing these under conditions of perfect reliability as to their elastic behaviour, resistance to breakage and tenacity.

In the first place, the invention is essentially intended to secure the resistance of the barrel being respectively attained by distinct elements, and, particularly the transversal resistance being secured by means of one or more series of rings or discs, concentric with respect to the axis of the barrel, and inserted into one another or the one in front of the other, either forced in cold or screwed on hot. It is also provided that between the adjacent rings or discs suitable packings be applied so as to render gas tight the inner cylindric surface resulting from the rings etc. being adjoined. The connection of the said rings or discs is such as to create also in the middle part of the element resulting from their assembly a pressure sustaining surface interrupted at very brief intervals, and increasing the transversal resistance of the whole, while it also efficiently contributes to the longitudinal resistance.

The present invention, in the second place, is intended to lessen the serious drawbacks due to wear, in order to warrant a longer life of the very highly resistive barrels. In this case the unlimited employment of special projectiles that do not require the presence of grooves in the bore of the gun, is contemplated.

These projectiles allow of solving the important problem of using very high charges for

naval gun barrels as well as of land guns, particularly of anti-aircraft weapons.

It is therefore provided, if so desired, to use a smooth bore to cooperate with the complex of resistances as above stated.

In order to have said inner tube uninterrupted, it may be made of a material allowing of a high elastic deformation, or even of a material previously so treated as to allow of same (special steel). It may even be conveniently slotted so as to be perfectly tight, when not in service, from the forcing of the adjacent external rings, and in such a manner that, on firing, its expansion will not allow of any appreciable leakage of gases. By way of precaution, in this case, a gas exhaust tube is provided longitudinally, along the slotting, from the outer part of the inner tube discharging in the direction of the muzzle of the gun. With such an inner tube it will be always possible to transmit all the cross or transversal effort on to the adjacent rings or discs that constitute the principal resistance core of the gun. But to provide for a greater security as to the longitudinal resistance and for the plug, the whole complex is covered by an outer element. The latter may be all of one piece and of a material having a low elasticity modulus, or of a previously self-reinforced steel; as it may even be as well of steel longitudinally slotted to allow of the free expansion of the rings or discs without exerting an excessive strain on the said outer element. If however a normal outer covering is provided, between this and the outer series of rings or discs, a cushion tube may be inserted, this being made of a material allowing of a very high elastic deformation as above stated.

The annexed drawing illustrates, by way of example, two embodiments of the present invention, Fig. 1 showing a fractional longitudinal cross-section of one embodiment, Fig. 2 showing a similar view of another embodiment, and Fig. 3 showing on a reduced scale a cross-section on the line III—III of Fig. 2.

In each of the figures 1 shows the outer jacket or tube on which the plug is applied; between the said tube and the series of rings or discs 3, the cushion tube 2 is inserted, this being made of a material allowing of a very high elastic deformation; 4 is the inner tube which may be rigidly connected with the disks 3 by pressing the material of the tube from the inside into the grooves 5, or by longitudinally forcing the heated disks on the tube. The zones between the cylindric faces 6 and 7 are considerably re-

inforced by the assemblage of the zig-zagged disks which are mounted hot or screwed.

8 is the axis of the gun barrel. 9 (Fig. 3) is a longitudinal slot in the inner tube 4, and 10 a gas exhaust channel in the inner tube 4.

We claim:

1. A gun barrel having a breech plug comprising a bored inner tube having circumferentially extending grooves on its outer surface, a plurality of contiguous annular disks hot mounted on the said inner tube and provided with inner projections fitting into the outer grooves of the tube, a tube of highly elastic material enclosing the said disks, and an outer jacket enclosing the last-named tube and carrying the plug.

2. A gun barrel having a breech plug comprising a bored inner tube having circumferentially extending grooves on its outer surface, a plurality of annular disks having zig-zagged cross-sections fitting together, these disks being hot mounted on the said inner tube and provided with inner projections fitting into the outer grooves of the tube, a tube of highly elastic material enclosing the said disks, and an outer

jacket enclosing the last-named tube and carrying the plug.

3. A gun barrel having a breech plug comprising a bored inner tube having a slit parallel to its axis and having circumferentially extending grooves on its outer surface, a plurality of contiguous annular disks hot mounted on the said inner tube and provided with inner projections fitting into the outer grooves of the tube, a tube of highly elastic material enclosing the said disks, and an outer jacket enclosing the last-named tube and carrying the plug.

4. A gun barrel having a breech plug comprising a bored inner tube having a slit parallel to its axis and a channel along this slit and having circumferentially extending grooves on its outer surface, a plurality of contiguous annular disks hot mounted on the said inner tube and provided with inner projections fitting into the outer grooves of the tube, a tube of highly elastic material enclosing the said disks, and an outer jacket enclosing the last-named tube and carrying the plug.

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