Jan. 20, 1931. J. D. PEDERSEN 1,789,835

GUN BARREL

Original Filed June 9, 1927 2 Sheets-Sheet 1

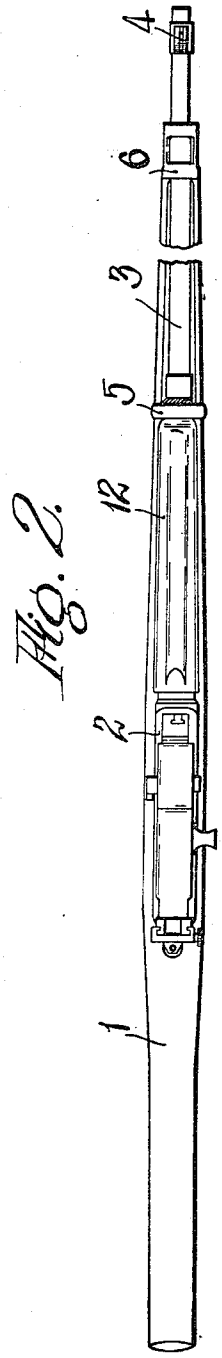


Fig. 2.

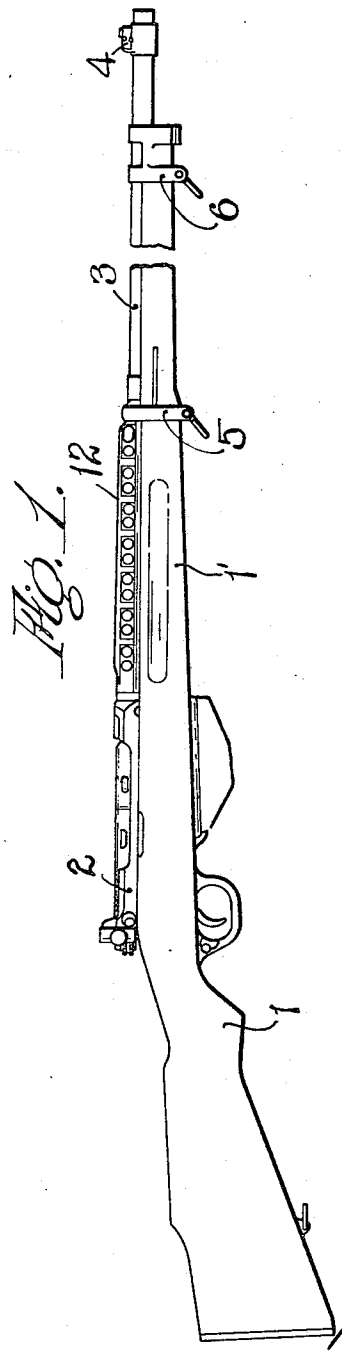


Fig. 1.

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GUN BARREL

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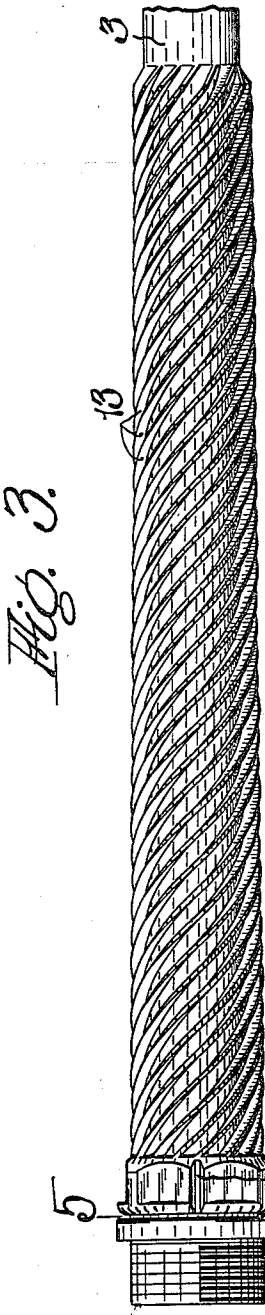


Fig. 3.

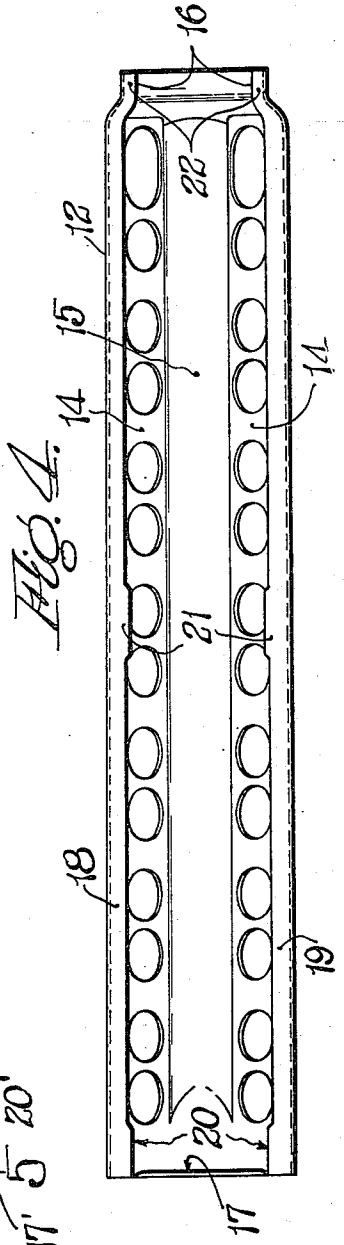


Fig. 4.

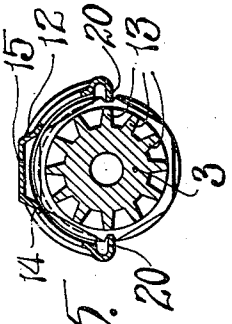


Fig. 5.

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UNITED STATES PATENT OFFICE

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GUN BARREL

Original application filed June 9, 1927, Serial No. 197,718. Divided and this application filed May 7, 1928. Serial No. 275,751.

This invention relates to improvements in guns or rifles, and this application is a division of my application filed June 9, 1927 under Serial No. 197,718.

The object of the invention is the provision of simple and effective means for cooling the gun barrel, and for guarding the hands of the soldier from contact with a hot barrel.

With this object in view, the invention consists in certain features of construction and arrangements of parts as will be hereinafter described in connection with the accompanying drawings, in which:

Fig. 1 is a side elevation of a complete gun embodying the present improvements therein;

Fig. 2 is a plan of the same;

Fig. 3 is a detail view in elevation of the rear part of the gun barrel showing the cooling fins thereof;

Fig. 4 is a view looking at the underside of the metal hand guard or cover for the barrel; and

Fig. 5 is a detail section along line 5—5 of Fig. 3 as it would appear with the cover of Fig. 4 in place upon the barrel of Fig. 3.

Referring to the drawings in detail, 1 is the usual wooden stock or frame for the gun, having a forward grasping portion 1′; 2 is the metal part of the gun frame or receiver; and 3 is the barrel secured to receiver 2 in a suitable manner and having a front sight 4. The stock 1 and the forward part of the barrel are held together in the usual manner by a lower band 5 and upper band 6.

As shown in Fig. 3, the rear portion of the barrel 3 of the gun is formed with a plurality of cooling fins 13 projecting outwardly from around its circumference, said fins extending longitudinally of the barrel in the form of a helix. Preferably the cooling fins are equally spaced apart throughout their length so as to have a parallel relation and the angle of inclination for said helical fins is approximately 45°,—that is, an imaginary plane at right angles to the axis of the barrel would be intersected by each fin at approximately 45°. The advantages of employing such helically disposed fins with approximately this angle of inclination are that they reinforce and impart stiffening strength to the barrel and at the same time permit free circulation of air entirely around the barrel for the cooling effect desired. The helical fins 13 extend lengthwise of the barrel from a point adjacent the rear end or breech thereof for a distance substantially beyond the point of the gun which will be grasped by the hand of the soldier in aiming. It has been found sufficient to have these cooling fins extend forwardly of the barrel as far as the location of the usual lower band 5 of such a rifle, and the depth of said fins should be approximately equal to the thickness of said barrel. Each rib 13 is relatively thin in cross section as compared with the wall thickness of the barrel 3 (as shown in Fig. 5) in order to reduce weight and provide a large number of ribs around the barrel for the more effective cooling thereof.

The forward part of the gun stock 1′ underlies the gun barrel, and the upper side of said barrel is arranged to be covered by a metal hand guard 12 mounted so as to be insulated therefrom by air spacing. In this way, the fin section of the barrel is completely covered and guarded against direct contact by the hand of the soldier. The wooden underlying stock portion 1′ furnishes sufficient insulation for heat from the underside of the barrel; and the metal cover 12 is so mounted in spaced relation with the barrel as to provide a suitable protection for the upper side thereof.

The metal cover 12, preferably stamped out of sheet metal, is formed with a substantially flat imperforate top portion 15 extending along the top of the barrel and with perforated spring tensioned side portions 14 adapted to have an embracing grip on the barrel. The imperforate flat top portion prevents heat waves from rising directly in the line of sight and is of assistance in more quickly catching the front sight of the gun in aiming. The lower edges of the side portions 14 are inwardly turned to provide stiffening ribs 18 and 19, which are formed with extensions (as shown at 20, 21 and 22 in Fig. 4) for bearing contact against the sides of the finned portion of the barrel and thus keep the main part of the

cover spaced from the barrel. The rear end of the cover 15 has a downwardly turned lip 17 for engaging in a groove 17′ at the rear of said barrel 3 to prevent endwise movement of the cover; and the inwardly turned extensions 20 of said flanges 18 and 19 are adapted to snap with spring tension into engagement with grooves 20′ of the barrel, as shown in Fig. 3, to detachably secure the rear end of the cover to the barrel. The front end of the cover is provided with a depressed tongue portion 16 adapted for insertion in a mortise recess provided in the rear side of lower band 5.

In mounting the cover on the barrel, the tongue portion 16 is first inserted in its mortise recess of the lower band 5 and then the rear end of said cover is struck or pressed downwardly hard enough to spring its sides 14 outwardly over the rear end of said barrel until the extensions 20 come into engagement with the grooves 20′, when they will spring inwardly for secure engagement therewith. The cover will thus be held upon the barrel by a spring tension engagement of its sides and may be easily pried loose when desired. It is held spaced from the barrel throughout the greater portion of its area and comes in contact with the barrel only at its front end, rear end and at the side extensions 20, 21 and 22. The air can thus freely circulate between the cover and the barrel for cooling the latter. The purpose of having the helical fins 13 disposed at an angle of inclination of approximately 45° is so that a free circulation will be provided from the underside of the barrel where it is partially covered and closed by the wooden stock 1′ to the upper side of the barrel and out through the perforations of the cover 12. It will be observed that by this angle of inclination, the plurality of channel passages are provided around the barrel, leading from the underside thereof to the upper side thereof, which prevent any pocketing of air on the underside of the barrel.

The proper angle of inclination for the helical fins enables them both to provide the desirable circulating passages for the air around the barrel and also to act as stiffening means for the barrel lengthwise, which is a very desirable feature in preventing the distortion or bending of the barrel under the severe use to which it is subjected in actual service.

What I claim is:

1. A gun comprising in combination, a barrel having a plurality of cooling fins projecting outwardly from around its circumference, a wooden stock underlying said fins and a metal hand guard overlying said fins and mounted in spaced relation thereto, said hand guard having a flat imperforate top portion and perforated side portions.

2. A gun comprising in combination, a barrel and a wooden stock, an upper band and a lower band for holding the same together, a perforated metal hand guard insulated from said barrel by air spacing, and secured thereto by a mortise engagement with the lower band, and a spring-clamp engagement with the rear part of said barrel.

3. A gun comprising in combination, a barrel, a hand guard mounted on said barrel in spaced relation thereto, said cover comprising a flat imperforate top portion located along the top of said barrel and spring tensioned perforated side portions with interengaging tongue and groove elements between said cover and said barrel for detachably retaining said cover in place under the spring tension of said side portions.

4. A gun comprising in combination, a barrel, a stock embracing the lower side of the barrel, and a cover plate embracing the upper side of said barrel, said barrel being formed with a plurality of relatively thin cooling fins projecting from its circumference in a helical disposition and forming in conjunction with said stock a plurality of air cooling passages leading from the lower side to the upper side of said barrel, said cover plate having perforations therein for venting to the atmosphere the upper portions of said air cooling passages.

5. A gun comprising in combination, a barrel, a stock embracing the lower side of said barrel, and a cover plate embracing the upper side of said barrel, said barrel being formed for a part of its length from adjacent the breech thereof with a plurality of relatively thin cooling fins projecting from its circumference in a helical disposition and forming in conjunction with said stock a plurality of air cooling passages leading from the lower side to the upper side of said barrel, said cover plate having perforations distributed lengthwise thereof for venting to the atmosphere the upper portions of said air cooling passages throughout the length of the finned portion of said barrel.

6. A gun comprising in combination, a barrel, a stock embracing the lower side of said barrel, and a cover plate embracing the upper side of said barrel, said barrel being formed with a plurality of relatively thin cooling fins projecting from its circumference in a helical disposition and forming in conjunction with said stock a plurality of air cooling passages leading from the lower side to the upper side of said barrel, said cover plate being formed with a flat imperforate top and perforated sides for venting to the atmosphere the upper portions of said air cooling passages.

7. A gun comprising in combination, a barrel, a stock embracing the lower side of said barrel, and a detachable cover plate embracing the upper side of said barrel, said barrel being formed with a plurality of relatively

thin cooling fins projecting from its circumference in a helical disposition and forming in conjunction with said stock a plurality of air cooling passages leading from the lower side to the upper side of said barrel, said detachable cover plate being held in spaced relation to said barrel by border portions engaging therewith and formed with a flat imperforate top and perforated sides for venting to the atmosphere the upper portions of said air cooling passages.

In testimony whereof I have affixed my signature.

JOHN D. PEDERSEN.