BARREL TO RECEIVER CONNECTION ON A FIREARM

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This invention relates to the attachment of the barrel of a firearm to the receiver thereof and, more particularly, to such an arrangement for the type of breech loading firearm shown in our application Serial No. 246,306, filed September 12, 1951, of which this application is a continuation-in-part, said application having now matured into Patent No. 2,685,754, granted on August 10, 1954.

This invention is applicable either to manually operated firearms, such as those actuated by a slidable fore-end, or to firearms of autoloading types such as the gas piston operated designs, both of which are shown in the parent application.

It is the object of our invention to produce an economical and efficient means of securing the firearm barrel and receiver to each other and, at the same time, to reinforce the barrel in a manner which permits the use of a lighter weight barrel.

We contemplate that the best means of accomplishing this objective is to provide a depending barrel bracket formed integrally with a breech ring, which is so fitted about the chambered portion of the barrel as to provide a reinforcing bandage thereon. This barrel bracket may be retained on the barrel hub by the closeness of its fit thereon and by engagement between a rearwardly facing shoulder on the barrel and the forwardly facing end surface of a barrel extension threadably secured to the barrel hub.

The rearwardly facing surface of the barrel bracket may be engaged with the front wall of the receiver and secured thereto by a bolt passing through both members, the barrel extension passing through a bore in the front wall of the receiver and extending into the interior thereof.

The exact nature of the invention as well as other objects and advantages thereof will become more apparent from consideration of the following specification referring to the attached drawings in which:

Fig. 1 is a partial vertical longitudinal sectional view of an assembled rifle incorporating our invention.

Fig. 2 is a partial side elevational view of the barrel assembly employed in the rifle shown in Fig. 1.

Fig. 3 is a rear end elevational view of the barrel assembly of Fig. 2.

Fig. 4 is a front end elevational view of the receiver of the rifle shown in Fig. 1.

Fig. 5 is a partial vertical longitudinal sectional view, showing a modified lock nut arrangement.

Referring to the specification by characters of reference, it can be seen that the rifle comprises a receiver 1 and barrel 2. As is usual in arms of this type, the receiver provides a housing and support for fire control mechanism and breech locking mechanism, neither mechanism being material to this invention and not therefore discussed further here. Both are described in detail in the parent application above identified.

The barrel 2 is formed to define at its rear end a hub 3 on which the breech ring 4 of a barrel bracket 5 is pressed. Preferably, the breech ring is formed with an inside diameter between .001” and .003” smaller than the outside diameter of the barrel hub, resulting in an interference fit which holds the barrel hub under compression.

Obviously, the surfaces must be smooth and corners broken at the leading edge of the breech ring to permit an interference fit of this kind without galling and seizing of the surfaces.

A barrel extension 6 is threadably secured to the rear end of the barrel hub and drawn up tightly against the rear face of the breech ring. This barrel extension reaches into a counterbore in the receiver and cooperates with the breech locking mechanism, as described in the parent application. Both the breech ring of the barrel bracket and the barrel extension surround and reinforce the chambered portion of the barrel, which is subjected to very high internal pressures each time the arm is fired.

That portion of the barrel bracket not engaged by the barrel extension has a cross-section which substantially matches that of the forward face 7 of the receiver and these surfaces are drawn toward each other by a bolt 8 passing through aligned holes in both members and secured by a nut 9 containing a locking insert 10. This nut may be secured to a fore-end guide tube 11. As shown in Fig. 5, the nut on the bolt 8 may be a partially split jam nut 12 engaged in a conical counterbore 13 in the barrel bracket front surface.

It could be assumed that the most desirable condition for the engaging faces of barrel bracket and receiver would be that of perfect flatness and continuous mutual engagement. Such a condition, however, is difficult to attain in commercial production and is difficult to maintain later, as it is subject to being disturbed by accidental deformation of parts or the entrapment of foreign material when the rifle is disassembled. With any departure from perfect surface engagement, there may arise a condition permitting excessive barrel whip or vibration, for the barrel bracket will be drawn to a tight fit adjacent the bolt 8 while the major forces of recoil, barrel whip, etc., will be applied by the barrel.

We have found that we can readily maintain good support of the barrel if we provide for what we may call “bipodal” locating. By this we mean that we provide locating areas which are separated and on opposite sides of the bolt which draws the surfaces together.

The easiest way to provide these spaced contacting surfaces is simply to relieve the front face 7 of the receiver or the rear face of the barrel bracket over an area which extends from near the barrel axis to a point below the bolt 8. Thus, we have provided two spaced, limited area engaging surfaces, one above, identified by the numeral 14 and one below the retaining bolt, identified by the numeral 15. In this way, perfect engagement of the barrel bracket and receiver is readily maintained.

Although it is not intended that firearms employing this joint will be taken from ordinary carrying or cleaning, it should be obvious that disassembly for repairs, etc., is much simpler than in those cases where the barrel is threaded into the receiver in the conventional way.

The reinforcement of the chamber portion of the barrel permits the use of a lighter weight barrel, which is extremely desirable for a hunting rifle but does not permit the chamber portion to expand to an undesirable extent when subjected to high internal pressure. Excessive expansion of a chamber, even though well within the elastic limit of the barrel material, is to be avoided as tending to produce hard extraction, because during such expansion a brass cartridge case may expand sufficiently to take a permanent set and be seized when the chamber portion of the barrel contracts as the internal pressure is relieved.
Although we have shown and described only one specific embodiment of our invention, we intended that the scope of our invention should only be considered to be limited as defined in the attached claims.

We claim:

1. In a firearm having a barrel and a receiver with an apertured forward wall to receive said barrel, the combination comprising a barrel bracket formed with a bore having circumferentially continuous engagement in a forced interference fit with the exterior of the chambered portion of said barrel to exert a compressive force on and thereby reinforce said chambered portion, means threaded on said barrel to additionally secure the barrel bracket on said barrel, and tension exerting means engaged only between the forward wall of the receiver and the barrel bracket forming the sole means of securing the bracket in engagement with the receiver, and thereby securing the barrel to said receiver.

2. The combination described in claim 1, the forward face of the forward wall of said receiver and the rearward face of said barrel bracket each being formed to define mutually parallel contacting surfaces divided into two spaced areas adjacent the top and bottom surfaces of said receiver, said contacting surfaces being separated by an area of non-contacting surfaces formed by localized depression of one of said faces, said tension exerting means passing through said area of non-contacting surfaces.

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