Nov. 9, 1954 E. P. SIMMONS 2,693,659

SHOTGUN BARREL WITH SIGHT RIB

Filed Feb. 26, 1951

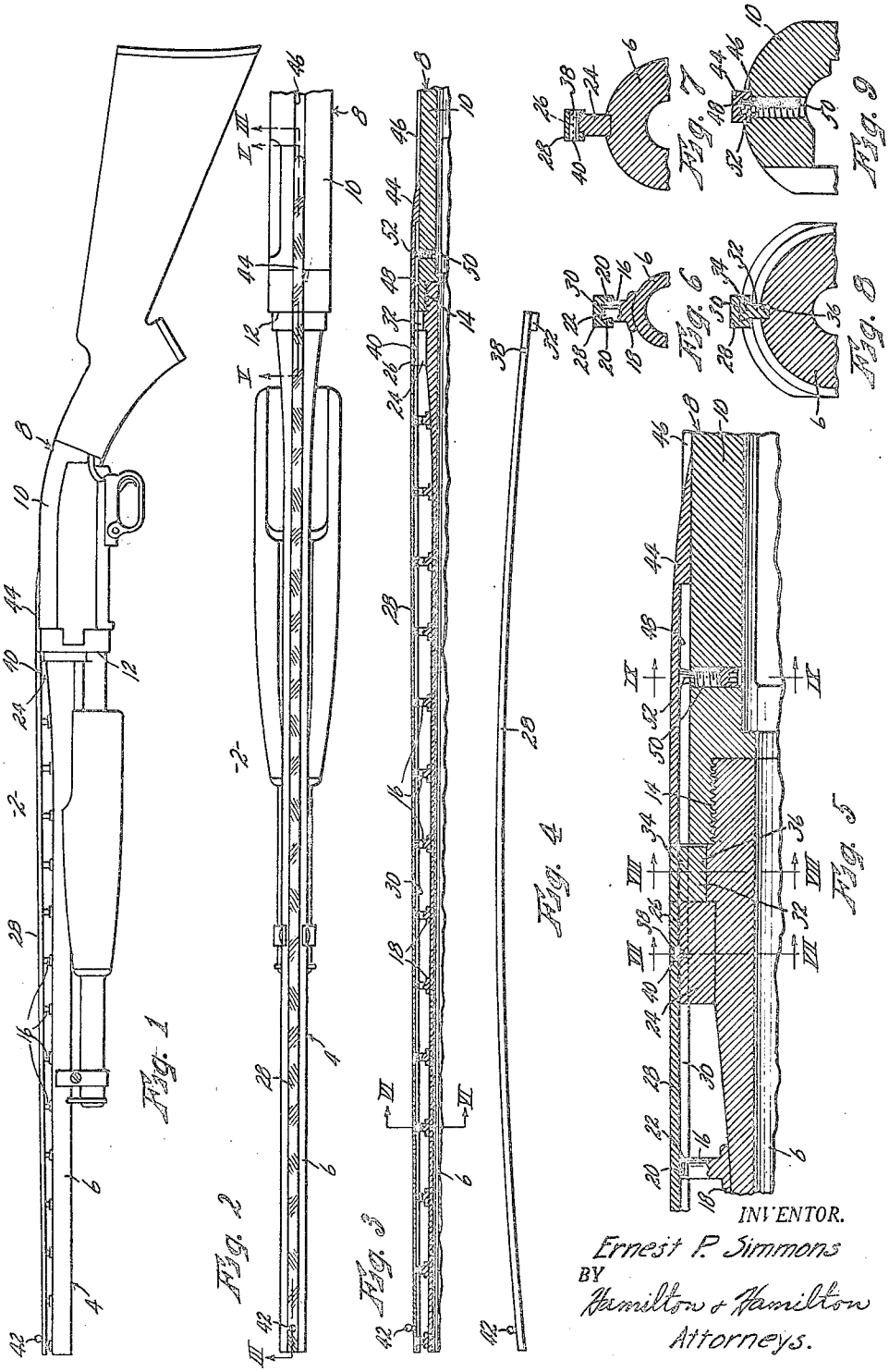


Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Fig. 6

Fig. 7

Fig. 8

Fig. 9

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United States Patent Office

2,693,659

Patented Nov. 9, 1954

2,693,659

SHOTGUN BARREL WITH SIGHT RIB

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Application February 26, 1951, Serial No. 212,719

3 Claims. (Cl. 42—76)

This invention relates to new and useful improvements in sight ribs for shotguns, having particular reference to sight ribs of the type known commonly as "ventilated," and is an improvement over the devices shown in my copending applications Serial No. 16,813, filed March 24, 1948, now Patent No. 2,620,583, and Serial No. 83,821, filed March 28, 1949, now Patent No. 2,669,052.

It has become common practice to provide shotguns with a sight rib extending longitudinally to the gun barrel and spaced thereabove. This sight rib interrupts the shimmering heat waves which rise from the barrel after extended periods of firing, and which would otherwise interfere with the user's line of sight. The rib itself is maintained relatively cool by the circulation of air thereabout. In order to prevent the unequal heating of the barrel and rib, and the resultant unequal thermal expansion thereof, from imposing an undue bending stress on the barrel, the rib has been carried for longitudinal sliding movement relative to the barrel, and rigidly attached to the barrel at only one point in its length. Due to this "single-point" connection, and to the substantial mass of such a sight rib, considerable difficulty has been experienced in maintaining the rib connection tight and rigid under the repeated hammer-like blows imposed thereon by the recoil of the gun. Bolt and screw connections have at least a small amount of inherent looseness which increases under the hammering action of the rib thereon as the gun recoils. Rigid stops welded respectively to the barrel and rib, as in my Patent No. 2,669,052, are also subject to an objectionable hammering if the slightest play exists between the stops. The primary object of the present invention is accordingly the provision of a connecting means for attaching a sight rib to a shotgun barrel which is tight and rigid, though separable, and which cannot be loosened by the recoil force of the gun.

Another object is the provision of novel means whereby the sliding connections between the rib and barrel, though freely operable, are rendered snug and rattle-proof at all times.

Other objects are simplicity and economy of construction, dependability, ruggedness, and adaptability for use on various types of guns.

With these objects in view, as well as other other objects which will appear in the course of the specification, reference will be had to the drawing, wherein:

Fig. 1 is a side elevation of a shotgun of common design, showing a ventilated sight rib embodying the present invention mounted thereon.

Fig. 2 is an enlarged fragmentary plan view of the gun and sight rib shown in Fig. 1.

Fig. 3 is a fragmentary sectional view taken on line III—III of Fig. 2, with parts left in elevation.

Fig. 4 is a side elevation of the sight rib shown removed from the gun.

Fig. 5 is an enlarged fragmentary section taken on line V—V of Fig. 2.

Fig. 6 is an enlarged fragmentary section taken on line VI—VI of Fig. 3.

Fig. 7 is a fragmentary section taken on line VII—VII of Fig. 5.

Fig. 8 is a fragmentary section taken on line VIII—VIII of Fig. 5.

Fig. 9 is a fragmentary section taken on line IX—IX of Fig. 5.

Like reference numerals apply to similar parts

throughout the several views, and the numeral **2** applies to a shotgun of standard design comprising a barrel assembly **4** including a barrel **6**, and a breech assembly **8** including a breech housing **10**. Said barrel and breech assemblies may be separated at **12**, said separation being accomplished by rotating the barrel axially relative to breech housing **10**. Said barrel has a threaded connection **14** with the breech housing **10**, as shown in Figs. 3 and 5, the details of this connection being well known in the art.

A plurality of posts **16** are carried in longitudinally spaced relation on the upper side of barrel **6**, each of said posts having an enlarged foot **18** which is silver soldered or otherwise rigidly and permanently fixed to the barrel. Said posts project radially upwardly from the barrel, and are substantially equally spaced. The upper end portion of each post has notches **20** formed in diametrically opposite sides thereof, on a diametric line transverse to the barrel, thereby forming an inverted wedge shaped head **22** on each of said posts, as best shown in Figs. 5 and 6. A stop block **24** is fixed to barrel **6** in spaced relation in front of the line of separation **12** between the barrel and breech assemblies, being silver soldered, welded, or otherwise permanently and rigidly fixed to the barrel. Said block is elongated in a direction parallel to the barrel, in order to permit a stronger connection thereof to the barrel, and is of a width transverse to the barrel substantially equal to the diameter of posts **16**. It extends upwardly from the barrel, the upper edge thereof being in alignment with the upper ends of posts **16**, and is formed at its upper edge portion to present a wedge shaped head **26** corresponding in shape to heads **22** of post **16**, and in alignment therewith. Preferably the heads **22** of post **16**, and the head **26** of block **24**, are formed in a single operation after the posts and block are secured to the barrel, in order to insure accurate alignment of the head portions.

A sight rib **28** comprising an elongated metallic bar substantially coextensive with barrel **6** is adapted to be supported at the upper ends of posts **16** and block **24**, being maintained in spaced apart relation above the barrel by posts **16** to permit circulation of air therebetween. A groove **30** of dovetail cross-sectional shape is formed in the lower side of the rib, said groove extending longitudinally the full length of the rib. The groove corresponds in cross-sectional shape to the shape of heads **22** of posts **16** and head **26** of block **24**, whereby said rib may be slid longitudinally into engagement with said heads, said heads being engaged in groove **30**. Since the rib must be freely slidable on the heads of the posts to permit unequal thermal expansion of the rib and barrel, it is apparent that a certain degree of looseness must exist between the rib and the post heads, and that this looseness would result in objectionable rattling and pounding noises were not provision made for taking up the looseness. I accomplish this purpose by forming the rib with a slight vertical bow, as shown in Fig. 4. The rib is resilient, and is straightened by its engagement with posts **16** and block **24**, as shown in Figs. 1 and 3. The vertical stress set up between the rib and each of the posts by the resilience of the rib provides snug, rattle-proof connections.

A depending stop lug **32** is fixed to rib **28** at the rearward end thereof. Said lug is formed at its upper edge to present a wedge shaped head **34** which fits into groove **30** of rib **28**, and is silver soldered or otherwise rigidly fixed therein, as shown in Fig. 8. Said lug extends downwardly from the rib, abutting solidly at its forward end against the rearward end of block **24**, and having its rearward end spaced very slightly forwardly from the forward end of breech housing **10**. The lower edge portion of lug **32** is carried slidably in a groove **36** formed longitudinally in barrel **6**. Said groove, which secures lug **32** and the rearward end of the rib against horizontal transverse movement, is open at its rearward end whereby said lug may enter it as the rib is slid forwardly into position.

During assembly, after the rib has been positioned as described, a horizontal hole **38** is drilled transversely through rib **28** and the head portion **26** of block **24**,

and a pin 40 driven therein to lock the rib firmly to the gun. This is done while lug 32 is pressed firmly against block 24, to insure that there will be no play between the block and the lug, and to insure that the recoil impact will be absorbed by the abutting block and lug, rather than by pin 40. The upper surface of rib 28 may be knurled to reduce sun glare, as indicated in Fig. 2, and may carry sight beads such as front sight bead 42, if desired.

A sight rib extension 44 is disposed in a groove 46 formed longitudinally in the upper surface of breech housing 10, and is in alignment with rib 28. Said extension is similar in cross-sectional shape to rib 28, having a dovetail groove 48 formed longitudinally in the lower face thereof, and its forward end is flush with the forward end of the breech assembly. The extension is held firmly in groove by a screw 50 threaded upwardly through housing 10 and having an inverted frusto-conical head 52 which fits into groove 48. When the screw, which is accessible from the interior of housing 10, is screwed downwardly head 52 thereof seats extension 44 firmly in groove 46.

The operation is believed apparent from the foregoing description. When the barrel 6 is heated by firing the gun, it will expand, moving posts 16 in groove 30. As the gun is fired and recoils, the rib is moved by the action of block 24 against lug 32. The rib can be easily removed by separating the barrel and breech assemblies and removing pin 40. The rib is locked in assembly when the barrel and breech assemblies are joined since lug 32 depends between block 24 and the forward end of the breech housing. The rib can be removed from the barrel only when the barrel and breech assemblies are separated, by removing pin 40. As shown in Fig. 5, it is necessary to provide a slight clearance between the rearward end of rib 28 and lug 32, and the forward end of extension 44 and breech housing 10, in order to permit easy assembly of the barrel and breech assemblies. Though very slight, this clearance would permit hammering between lug 32 and block 24 if they were not held tightly together by pin 40. I have formerly attempted to hold these members together by means of a vertical screw passing downwardly through the rib into the block, but this was found to have a certain amount of inevitable transverse play, which gradually increased and permited relative movement between the block and lug. Pin 40 cannot work loose, and provides a truly rigid connection. Said pin is not relied on to secure the rib against transverse or upward movement, this being accomplished by the head 26 of block 24, and by the engagement of lug 32 in groove 36 of the barrel.

Although I have disclosed a specific embodiment of my invention, it is apparent that minor changes of structure could be made without departing from the spirit of the invention.

What I claim as new and desire to protect by Letters Patent is:

1. In combination with a shotgun having a barrel, a plurality of support members fixed to said barrel in longitudinally spaced relation therealong and extending upwardly therefrom, an elongated rib extending longitudinally relative to said barrel and carried for longitudinal sliding movement at the outer ends of said support members, a stop member rigidly fixed to said barrel and extending upwardly therefrom, said rib having a longitudinal recess formed in the lower side thereof to receive said stop member, a depending lug rigidly secured to said rib and abutting against the rearward end of said stop member, said barrel having a longitudinal groove formed in the upper surface thereof for slidably receiving the lower end portion of said lug, and a pin extending transversely through said rib and said stop member.

2. In combination with a shotgun having a barrel, a plurality of support members fixed to said barrel in longitudinally spaced relation therealong and extending upwardly therefrom, each of said support members having a dovetail head at its upper end, an elongated rib extending longitudinally above said barrel, said rib having a dovetail groove formed longitudinally in the lower face thereof in sliding engagement with the head portions of said support members, a block permanently and rigidly secured to said barrel in forwardly spaced relation from the rearward end of said rib, said block having a dovetail head disposed slidably in the groove of said rib, a depending lug rigidly secured to said rib at the rearward end thereof, the forward face of said lug abutting solidly against the rearward face of said block, said rib and the head portion of said block having a hole extending therethrough transversely to said rib, and a tightly fitted pin disposed in said hole, and said barrel having a groove formed longitudinally in the upper surface thereof for slidably receiving the lower end portion of said depending lug.

3. In combination with a shotgun having a barrel, a plurality of support members fixed to said barrel in longitudinally spaced relation therealong and extending upwardly therefrom, each of said support members having a dovetail head at its upper end, a normally vertically bowed rib of resilient material extending longitudinally above said barrel, said rib having a dovetail groove formed longitudinally in the lower face thereof in sliding engagement with the head portions of said support members, said rib being resiliently stressed and held in substantially straight position by its engagement with said support members, a block permanently and rigidly secured to said barrel in forwardly spaced relation from the rearward end of said rib, said block having a dovetail head disposed slidably in the groove of said rib, a depending lug rigidly secured to said rib at the rearward end thereof, the forward face of said lug abutting solidly against the rearward face of said block, said rib and the head portion of said block having a hole extending therethrough transversely to said rib, and a tightly fitted pin disposed in said hole, said barrel having a groove formed longitudinally in the upper surface thereof for slidably receiving the lower end portion of said lug.

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