April 13, 1954 R. R. STUDLER 2,674,822

FOREARM HANDGUARD PROTECTOR

Filed May 3, 1951

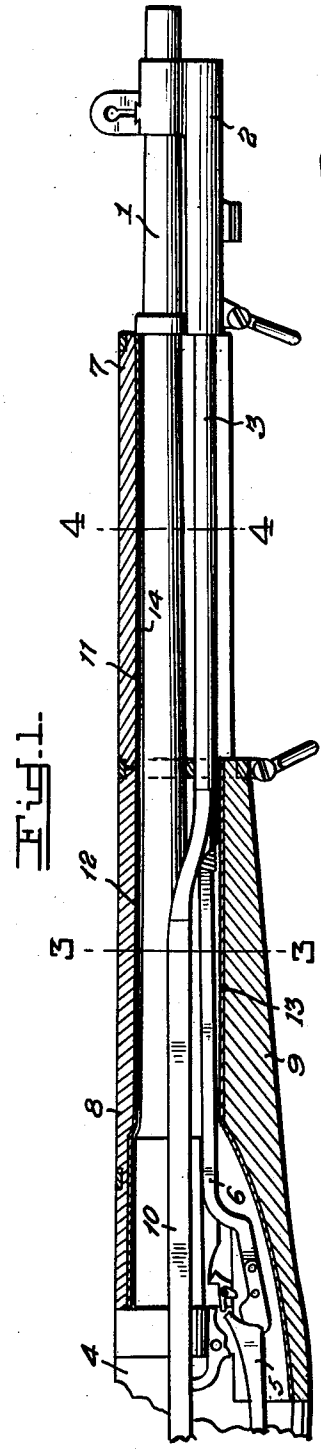


Fig. 1.

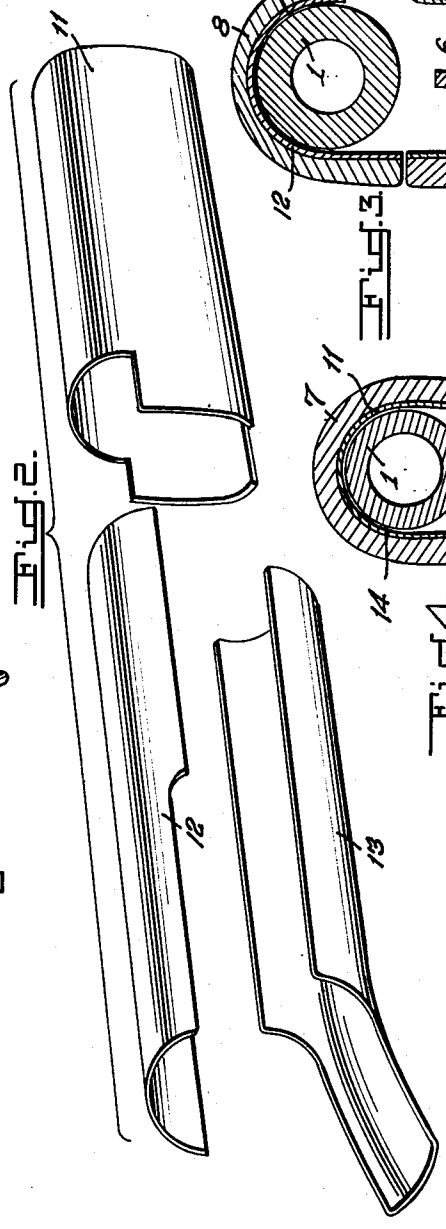


Fig. 2.

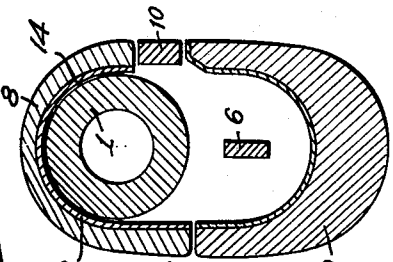


Fig. 3.

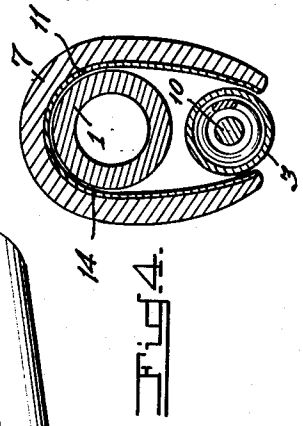


Fig. 4.

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FOREARM AND HANDGUARD PROTECTOR

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2 Claims. (Cl. 42—71)

(Granted under Title 35, U. S. Code (1952), sec. 266)

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The invention described in the specification and claims may be manufactured and used by or for the Government for governmental purposes without the payment of any royalty thereon.

The present invention relates generally to a device to be adapted to small arms of the type equipped with forearms or handguards of wood or other nonmetallic material.

The use of wood handguards in small arms such as rifles, to protect the user from the metallic parts of the firearm which become extremely hot from continued use over extended periods of time, is well known. Such handguards are provided in addition to the well known wood stock.

In dry climates the wood parts are apt to dry out and shrink. This drying out may also be caused by the heat generated by firing of the piece. In order to keep the wood parts in condition, they are occasionally soaked in oil, usually raw linseed. The wood absorbs the oil, and when the piece is fired for any length of time, this oil will come into contact with the barrel and other hot metal parts. This, in addition to drying out the wood generates considerable smoke which may become objectionable to the user.

An object of this invention is the provision of means to inhibit to a large extent the drying out of the wood parts and to prevent the oil with which the wood is impregnated from burning and smoking.

Another object of this invention is the provision of a heat reflecting and insulating shield between the wood parts and the heated metal parts, (1) to prevent the oil in the wood from coming in contact with the metal parts, (2) to hold down the temperature of the wood, and (3) to provide a thermal conductive path to the cooler metal parts and to the atmosphere to more quickly dissipate the heat generated by constant firing of the weapon.

A still further object of this invention is the provision of a layer of material impervious to oil placed between the wood and the metal parts in such a manner that the oil will be prevented from coming in contact with the hot metal parts.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification, and in which like numerals are employed to designate like parts throughout the same:

Fig. 1 is a longitudinal section of the forward portion of a rifle with some parts in elevation, and showing the shields in place.

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Fig. 2 is an exploded isometric view of the shields.

Fig. 3 is a transverse section taken on line 3—3 of Fig. 1.

Fig. 4 is a transverse section taken on line 4—4 of Fig. 1.

Referring to the drawings, 1 is the barrel of the firearm, 2 is the gas cylinder and 3 represents a cylindrical liner for accommodating the gas cylinder piston operating rod mechanism (not shown). Located rearwardly of the barrel is compartment 4 for receiving the firing mechanism (not shown). Also located in the lower portion of receiver 4 are follower arm 5 and follower rod 6 actuable with the gas cylinder operating rod when the gun is fired.

The wood parts of the rifle comprise a front handguard 7 shaped to form an inverted U which fits about and conceals the barrel and substantially all except the lower quarter segment of cylindrical liner 3, as clearly shown in Fig. 4. Rear handguard 8 is also an inverted U section and is disposed rearwardly of and in axial alignment with the front handguard 7, to enshroud the rear section of the barrel, one leg being shorter than the other for a portion of its length to form a recess to accommodate operating rod 10. The wood stock 9 positioned about the rear lower section of the cylindrical liner 3 and extending rearwardly of receiver 4 is U shaped for a substantial part of its length, the legs of said U being in vertical alignment with legs of rear guard 8, both members forming an ellipse in transverse cross section with the major axis vertical, as clearly shown in Fig. 3.

Shields 11, 12 and 13, as illustrated in Fig. 2 are contoured to conform to the inner surface configuration of wood parts 7, 8 and 9 respectively, and are inserted between the wood part and the metal. The shields are intimately bonded in any convenient manner to the wood parts and a gap or "air space" 14 is provided between each liner and its corresponding metal part. In addition, liner 11 is recessed at the top to accommodate one end of liner 12 with a tight fit to effectively form a continuous conductive path and shield for handguards 7 and 8.

One form of the invention contemplates making the shields of metal having high reflecting properties and high thermal conductivity, as for example aluminum. Some of the heat that is generated in firing will be reflected back to the barrel. However, since both the upper and lower liners provide an effective conductive path to the cooler parts of the weapon, as for example

the metal parts disposed in receiver 4, the heat will travel this path and will be more readily dissipated by the cooler parts and by the surrounding atmosphere. Thus it is obvious that the wood parts will remain relatively cool, the drying out process will be slowed down considerably, and the oil will be prevented from coming in contact with the hot metal parts.

Another modification envisages the use of inorganic heat insulating shields such as asbestos sheathing or fiber glass pressed to conform to the required shape as shown in Fig. 2.

A third modification contemplates the use of thermo-setting plastics such as Bakelite or rubber compositions which are good heat insulators.

A fourth modification contemplates the use of any material which is impervious to oil to prevent the oil from coming in contact with the hot metal parts of the gun, to thereby inhibit the generation of objectionable smoke caused by burning of the oil.

The latter three modifications are used for the express purpose of providing a shield to prevent the oil impregnated in the wood from coming in contact with the hot metal parts. However, another obvious advantage is that the wood parts will remain cool.

Numerous other modifications and alterations of the structure which has been disclosed herein for purposes of illustration will be apparent to one skilled in the art, and it is obvious that the same may be made without departing from the spirit and scope of the invention as defined in the following claims.

I claim:

1. In a small arm weapon having a wood stock, a metal barrel and metal receiver parts, a first wood handguard enshrouding the anterior half of said barrel, a second wood handguard enshrouding a posterior portion of said barrel, and first, second and third shields formed of metal having high reflective and high thermal conductive properties interposed between said wood stock, said first handguard, and said second handguard respectively, and the metallic parts of said weapon, said second and third shields being joined together to provide a continuous thermal conductive path to the cooler metallic parts of said weapon and in intimate contact with the entire inner surface of its respective wood part.

2. In a small arm weapon having a receiver, a barrel secured to the forward end of said receiver, a gas cylinder liner disposed below said barrel and having its longitudinal axis in the same vertical plane as the longitudinal axis of said barrel, a U-shaped wood stock embracing a portion of said cylinder liner and forming a part of said receiver, an inverted U-shaped wood handguard enshrouding a portion of said barrel and having the legs of said handguard in vertical alignment with the forward portion of the legs of said wood stock, a second inverted U-shaped wood handguard enshrouding said barrel immediately forward of said first handguard, a first insulating shield of metal having high reflective and high thermal conductive properties interposed between said wood stock and said cylinder liner, a second insulating shield of metal having high reflective and high thermal conductive properties interposed between said first handguard and said barrel, and a third insulating shield of metal having high reflective and high thermal conductive properties interposed between said barrel and said second handguard, each said shield being in intimate contact with the entire inner surface of its respective wood part.

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