June 28, 1966 C. A. HOFFMAN 3,257,666

RECOIL PAD

Filed Dec. 16, 1963

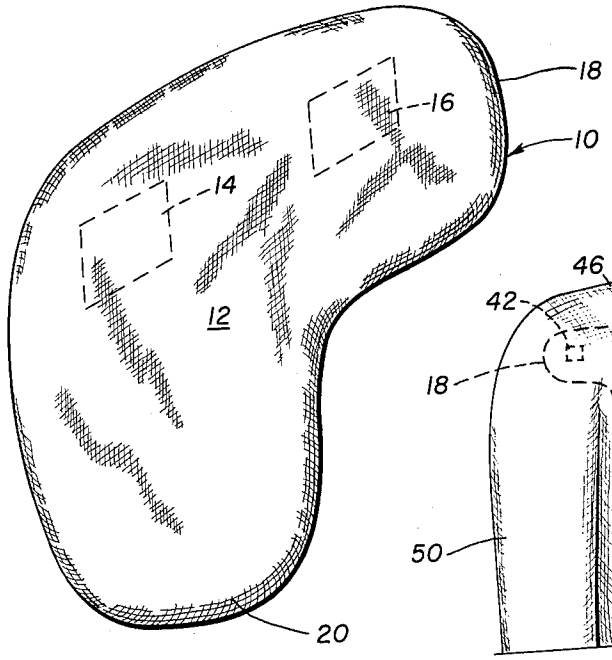


Fig_1

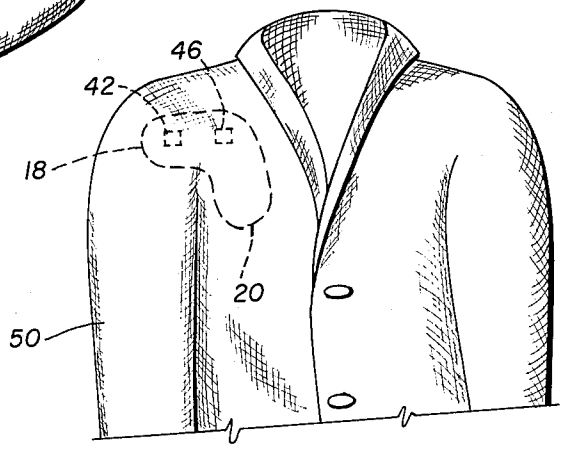


Fig_2

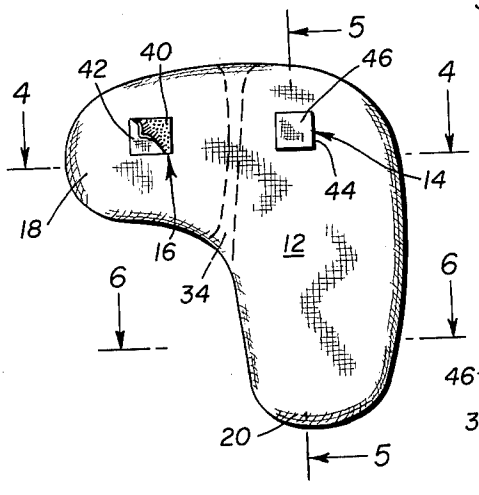


Fig_3

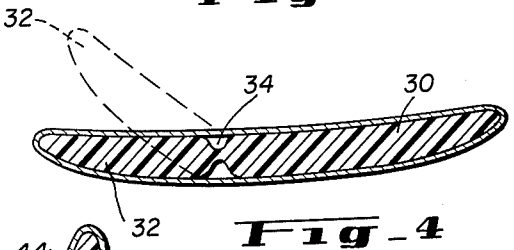


Fig_4

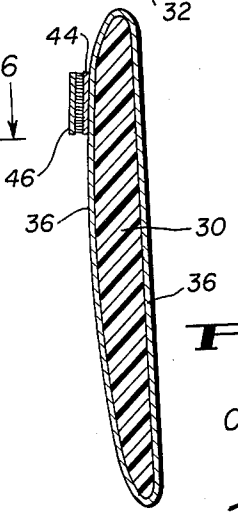


Fig_5

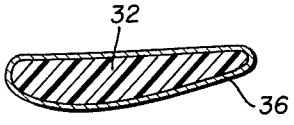


Fig_6

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3,257,666

RECOIL PAD

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4 Claims. (Cl. 2—2)

This invention relates to shock absorbing pads and more particularly to shooting recoil pads to disperse the shock effect developed by the discharge of heavy shoulder-supported firearms.

There are many types of devices intended to ease the impact from shoulder held firearms. Some devices are secured to the end of the butt of the gun while others are attached to the clothing or to the person of the user. For example, in U.S. Patent No. 849,266 a small pad is sewn or otherwise permanently secured on the inside of a garment to be used by the shooter. The particular pad suggested by the inventor is a rubber pad having air spaces, felt, hair or other soft material. A modified type is shown in U.S. Patent No. 1,587,946 which utilizes a pad which fits in the pocket of a coat adjacent the shoulder and the chest of the shooter, which cushion is composed of an inflatable rubber tube wound into the form of a pad. A still further type is shown in Patent No. 2,986,738 which utilizes a pad laid over the shoulder of the user with the pad being identified merely as cushioning material of a half inch thick, and in one case as foam rubber. All of these patents attempt to absorb the recoil of the shoulder-held firearm, and to cushion the recoil so as to protect the user's shoulder or chest.

I have found a number of disadvantages in the prior art devices. First of all, the air inflated rubber devices simply do not absorb much of the recoil of the rifle and the same is true of sponge rubber, felt, hair, etc. Sponge rubber, as well as many other types of materials which include felt, hair, layers of cloth and the like, has interconnected air spaces which permit the recoiling gun to flatten the material, actually moving the air aside so that the recoil of the rifle is not fully absorbed and the shoulder of the user takes the brunt of the power of the recoil. Additionally, in different weather conditions different types and weights of garments are utilized by the hunter. In warmer weather a light shirt may be all that is necessary for the hunter, whereas in colder weather more garments or heavier garments are needed to keep the shooter comfortable. If the recoil pad is permanently attached to the clothing or is attached to the body of a user, very little selection is permitted in the positioning of the recoil pad to suit the individual shooter or to suit the individual's needs at various times. For example, a high powered rifle may be held differently than a shotgun. Thus the shooter normally needs the recoil pad at a different position.

According to the present invention I have provided a removable recoil pad for garments which is easily removed and easily repositioned by the user. The shooting pad of the present invention is an L-shaped pad which is specifically intended to cover the fleshy part of the shoulder of the shooter as well as the hollow above the armpit where the normal shooter holds the butt of the gun. The device is provided with a foamed plastic which includes a myriad of completely enclosed voids which absorb and disperse a major portion of the recoil of a firearm, protecting the areas adjacent the gun butt from damage resulting from the blow imparted by the recoil of the firearm. The device is provided with releasable cloth fasteners to prevent any fastener bulge or metal which might accidentally be forced against the shooter to the shooter's injury.

Included among the objects and advantages of the present invention is a shock absorbing pad arranged to disburse a major portion of the recoil shock of a shoulder held firearm.

Another object of the invention is to provide an easily releasable pad which is light and may be prepositioned to the desires of the shooter.

Another object of the invention is to provide a shock absorbing pad which may be changed from garment to garment with a minimum of alteration of the particular garments.

Still another object of the invention is to provide a shooting pad which is contoured to the configuration of the anatomy of the shooter in actual shooting position to prevent damaging blows from being imparted upon the body of the shooter.

These and other objects and advantages of the invention may be readily ascertained by referring to the following description and appended illustrations wherein:

FIG. 1 is a top plan view of a shooting pad according to the invention;

FIG. 2 is a schematic plan view of the pad in use in a garment;

FIG. 3 is a rear plan view of the invention showing the fastening means thereof;

FIG. 4 is a cross-sectional view of the device illustrated in FIG. 3 taken along lines 4—4;

FIG. 5 is a sectional view of the device of FIG. 3 taken along section lines 5—5; and

FIG. 6 is a cross-sectional view of the device of FIG. 3 taken along section line 6—6.

The shooting pad of the invention is shown in general by the numeral **10** and it includes a body portion **12** having a general L or angle shape with one arm **18** which is arranged for covering the fleshy part of the shoulder and an angle extension **20** therefrom which is arranged to cover a portion of the chest and the hollow above the armpit. The device is arranged for fastening to a garment by means of fasteners **14** and **16**, described in detail below.

The body of the material is preferably molded of a foamed plastic which is a lightweight material having a myriad of completely closed voids in the body, and it is shaped and contoured to fit the body of the user. One foamed material which is preferable for the pad is "Ethafoam" manufactured by the Dow Chemical Company of Midland, Michigan. "Ethafoam" is the trademark of an expanded polyethylene produced by Dow Chemical Company. It has a density of about 1.8–2.2 pounds per cu. ft. The capillary action of such foamed plastic is nil, showing the completely enclosed voids in the material. The particular material has a high work energy loss in comparison to deflection showing the great absorbent characteristics of the shooting pad.

The pad of the shooting pad is preferably a one-piece molded section of the foamed plastic which includes an elongated portion **30**, FIGS. 4 and 5, and a short angled extension portion **32** which is arranged at generally right angles thereto and joined to the elongated body **30** by means of a narrow land **34** of material between the two sections. The land **34** is formed by grooves on both sides of the material. The plastic is flexible and resilient enough to permit bending of the extension **32** out of line with the body **30** as shown in FIG. 4 for conforming with the body of the user hunched over a gun butt.

In one particular size the device has dimensions of about 6½ inches by 6½ inches and is about ¾ inch thick. In such a size, the weight of the completed article is about ¾ ounce. The plastic body is covered by a covering **36** which in one preferred form is the two-way stretch nylon cloth which conforms closely to the surface of the

plastic body. The cloth permits flexure of the pad and prevents movement of the pad within the covering. Thus the flexure of the pad also stretches the cloth so that the fasteners are always in the same relative position.

The fastener used for fastening the pad of the invention is preferably the recently developed nylon cloth fastener which consists of two parts. As shown in FIG. 3, one part **40** is fastened to the cloth covering **36** of the pad while the other part **42** adheres to the part **36** attached to the pad by means of the hook and eye configuration of the fabric. In one type of fastener, the hooks are made of cut loops of semi-rigid monofilament nylon while the eye portion is made of soft looped nylon onto which the hooks of monofilament nylon readily grab. The part **42** is sewn to the inside of the garment on which the device is to be placed along with its companion of the fastener part **14**. Where desired the part attached to the garment may be made of larger dimensions than the one attached to the pad so that the pad may be easily shifted around inside the garment to suit the user.

As shown in FIG. 2, the garment **50** is provided with the fastener part sewn directly onto the inside of the garment on the shoulder and arm. The shooting pad has its fastener parts attached to the covering for being placed in position as desired. As the cloth fasteners are easily separated, the shooting pad is easily removed or replaced by placing the fastener parts together with light pressure. One advantage of placing the pad inside the garment is to minimize the danger of catching the gun butt on the pad when it is being brought up into shooting position. Additionally, the curved and beveled edge configuration permits the pad to conform to the shape of the body when the shoulder is bent around in position to hold a shoulder weapon without raised edges.

While the device has been illustrated with reference to a particular illustration, there is no intent to limit the spirit or scope of the invention to precise details so defined except as set forth in the appended claims.

I claim:

1. A removable recoil pad for the garment of a shooter comprising a generally L-shaped body for extending over the shoulder and toward the armpit of a user, one leg of said body being secured to the other leg thereof by a thin land of material formed by grooves on opposite sides thereof, said material being a lightweight resilient foamed plastic having a myriad of completely closed voids, a covering over said pad, at least one part of a cloth fastener being secured to said covering adjacent the top thereof and the other part of said fastener being releasably secured to said one part and adapted to be secured inside the shoulder portion of a garment.

2. A removable recoil pad for the garment of a shooter comprising a generally L-shaped body for extending over the shoulder and toward the armpit of the user, one leg of said body being secured to the other leg thereof by a thin land of material formed by grooves on opposite sides thereof, said material being a lightweight resilient foamed plastic having a myriad of completely closed voids, a covering over said pad, one part of a pair of cloth fasteners being secured to said covering at spaced apart positions and the other parts of said pair of fasteners being releasably secured to said one part and adapted to be secured in cooperative spacing inside the shoulder portion of a garment.

3. A removable recoil pad for the garment of a shooter comprising a generally L-shaped body, one leg of said body being integrally secured to the other leg thereof by a thin land of material formed by grooves on opposite sides thereof, said material being molded of a lightweight resilient foamed polyethylene plastic having a myriad of completely closed voids and being generally water impervious, a two-way stretch nylon cloth covering over said pad, one part each of a pair of cloth fasteners being secured to said covering at spaced apart positions and the other part of said pair of fasteners being releasably secured to said one part and adapted to be secured in cooperative spacing inside the shoulder portion of a garment.

4. A removable recoil pad for the garment of a shooter comprising a generally L-shaped body, one leg of said body being integrally secured for angular movement in relation to the other leg thereof by a thin land of material formed by grooves on opposite sides thereof and extending the width of the body, said material being molded of a lightweight resilient foamed polyethylene plastic having a myriad of completely closed voids, a two-way stretch nylon cloth covering over said pad, one part each of a pair of nylon cloth fasteners being secured to said covering at spaced apart positions and the other parts of said pair of fasteners being releasably secured to said one part and adpted to be secured in cooperative spacing inside the shoulder portion of a garment.

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