Sept. 28, 1965 F. H. WOODCOCK 3,208,180

RECOIL PAD FOR GUN STOCKS

Filed Feb. 12, 1965

FIG. 1

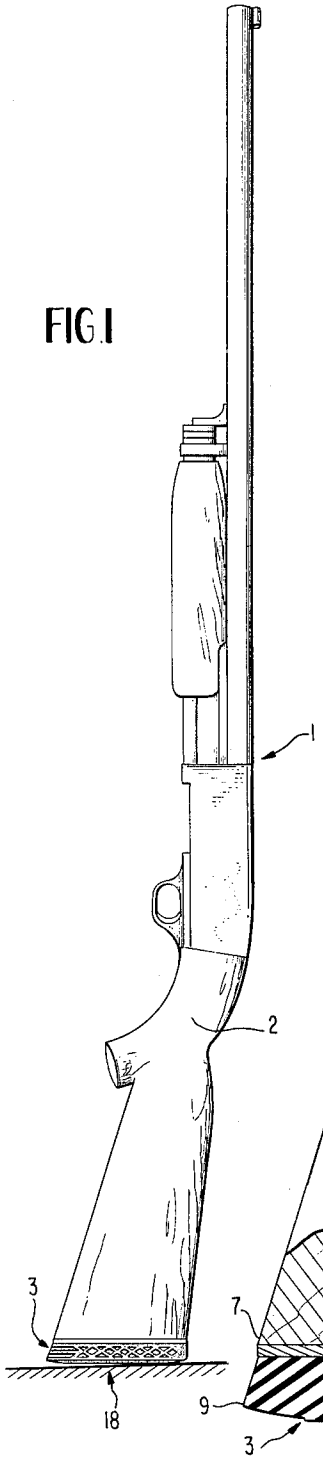


FIG. 2

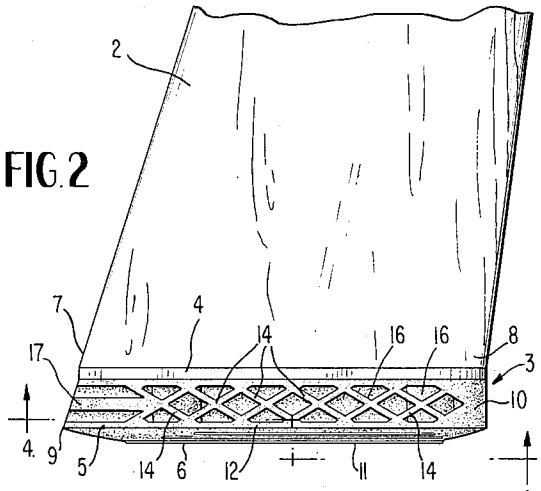


FIG. 4

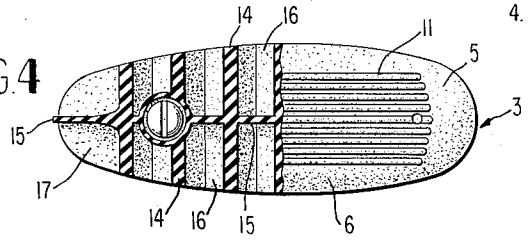


FIG. 5

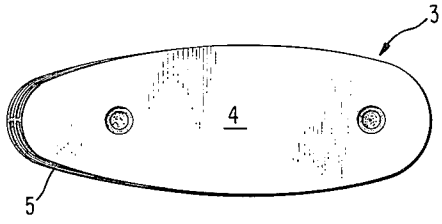
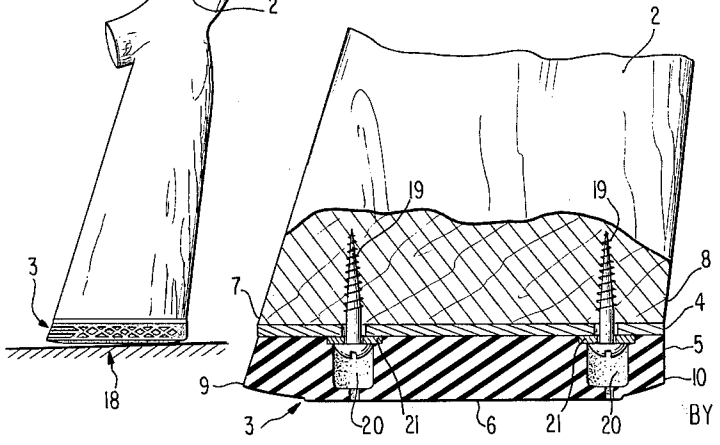


FIG. 3



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RECOIL PAD FOR GUN STOCKS

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The present invention relates to recoil pads for gun stocks and more particularly aims to provide increased utility and effectiveness in such pads by a novel distribution of areas of relative softness and relative firmness.

Recoil pads are attachments designed for more or less permanent affixation to the back or bottom end of a gun stock to provide a cushion for absorbing much of the force of recoil and thus eliminate or considerably lessen the shock, discomfort and sometimes bruising or other physical injury done to the shoulder of the shooter when the gun is repeatedly fired.

These pads are generally made in the form of a body of natural or synthetic rubber or equivalent resilient material bonded to a suitable hard back plate of metal, plastic, fiber or the like which adapts the body to be secured to the end plate of the gun stock as by a pair of screws or the like, and various designs of webs, open cells and the like have been proposed for incorporating a desired degree of softness and resilience in the bodies. In the best prior art pads with which I am acquainted the heel and toe ends of the pad are made solid and the intermediate portion comprising most of the length of the pad is formed with a plurality of intersecting and connected webs that define a number of hollow voids or open ended cells. These latter provide reduced support for the outer surface of the pad in its intermediate portion, between the heel and toe ends, so that this portion is quite soft and resilient, while the heel and toe ends are solid and hence are both much less soft and resilient. This has been the accepted and standard best practice in pad construction, and the present invention departs from this by disposing the areas of relative softness and firmness in a different arrangement.

The primary purpose of the present invention is to accommodate the cushioning function of the pad more realistically and usefully to the gun holding position practiced by most shooters so that the pad will better perform its best cushioning objectives.

A related object is to accomplish the foregoing without in any way impairing the durability of the pad or its capacity to retain its original saape and form throughout a long lift of standing in racks and on floors and other hard surfaces where the imposed weight of the gun would have a tendency to crush a pad or pad portion of desirable softness and cause it to become permanently distorted by taking on a flattened set.

The foregoing and other objects are attained by the pad construction illustrated in the accompanying drawing, which has been successfully reduced to practice and found to be entirely satisfactory in actual use and which is accordingly at present preferred, but it is to be understood that within the broad principles of the invention the novel concepts may be embodied in other and further modified forms, all of which, to the extent that they incorporate the principles defined by the appended claim, are to be deemed within the scope and purview thereof.

In the drawing,

FIGURE 1 is a side elevational view of a standard type of shotgun equipped with a recoil pad embodying the new invention, the gun being shown standing straight upright as on a floor;

FIG. 2 is a detail side elevational view of the gun stock with the pad affixed thereto;

FIG. 3 is a similar view with the pad shown in central longitudinal vertical cross section;

FIG. 4 is a bottom view, partly in plan and partly in transverse horizontal cross section, taken on the line 4—4 of FIG. 2; and

FIG. 5 is a top plan view of the pad, i.e., a view showing in plan the back plate to which the cushion body is bonded and which is directly affixed to the gun stock end plate.

In these figures the reference numeral **1** designates any conventional type of gun, such as a shotgun, having a stock **2** generally made of walnut or other fine hardwood. In some cases the stock is finished with a metal or hard plastic end plate (not shown in the present drawing). Application of the new cushion pad, designated generally **3** in the drawing, to the stock end can be made to such a plate, or it can be made directly onto the wood of the stock as shown in the figures. In either case the pad is best secured in place by wood screws as will be explained.

The pad **3** consists of a relatively thin base plate **4** and a relatively thick cushion body **5**, secured permanently together to form the unitary pad combination.

The base plate **4** is best made of hard plastic, fiber or metal, and conforms in overall shape to the generally elliptical outline shape of the stock end so that it can be fitted smoothly onto the end with its side edges well aligned with the side edges of the stock.

The cushion body **5** is made of rubber, either natural or synthetic, or equivalent rubberlike material having desirable cushion properties of softness, resilience and elasticity as is well understood and regularly used in the prior art recoil pad cushion bodies. The body is considerably thicker than the plate **4**, as best shown in FIG. 3, and it is securely bonded to the plate **4** in any suitable manner, as by being vulcanized directly onto the plate.

The body **5** conforms generally in overall outline shape to that of the plate **4** so that its side edges register accurately with those of the plate, although it is immaterial if the body edges be rounded off somewhat toward the edges of the outer surface **6** of the body. The two ends of the body may also depart somewhat from the shape of the plate **4** by extending in more or less the planes of the adjacent surfaces of the stock which, as shown in FIG. 3, conventionally make a more acute angle with the stock end surface at the toe end **7** than at the heel end **8**. Thus the toe **9** of the pad may extend out farther beyond the plan projection of the adjacent end of the plate **4** than the heel **10** extends out beyond the plan projection of the adjacent end of the plate, all as shown in FIG. 3.

The body **5** is a single unitary ruber or equivalent molding, and its special shape and design form the subject of the present invention and will now be described.

The outer surface of the body may be formed with shallow longitudinal corrugations or ridges **11** as shown in FIG. 4 for the dual purpose of providing ornamentation and increasing the coefficient of friction of the surface.

The heel end **10** of the body is made solid, so that its softness and resilience are exactly that of the rubberlike material of which the body is made, i.e., the softness is not in any way increased by any reduction of material at the heel end.

The intermediate portion **12** of the body, extending from the solid heel portion **10** to the toe portion **9** as seen in FIG. 2, is made softer and more resilient than the solid heel portion **10** by means of a plurality of webs **14** which extend laterally out from a central longitudinal web **15** (see FIG. 4) to both sides of the body, defining a plurality of open ended hollow cells **16**. In accordance with customary practice, these transverse webs **14** may be of crisscross design, or diagonally extending in a series of X-shaped formations as shown in FIG. 2. The open cells

in this intermediate portion of the body, and the reduced support here afforded the outer surface **6**, combine to make this intermediate portion of the outer surface appreciably softer than the heel end **10** of the body.

The toe end **9** of the body is made still softer and more resilient. In the illustrated embodiment of the invention this is accomplished by discontinuing the transverse criss-cross webs **14** in the toe portion and substituting simply a single planar horizontal or transverse web **17** which extends outwardly from both sides of the central web **15** in parallelism to and midway between the outer surface **6** of the body and its inner face which is directly bonded to the plate **4**. The minimal support provided the outer surface of the body by this toe end portion of the central web **15** makes the toe portion of the body appreciably softer than the intermediate portion **12**. Indeed, the toe portion very readily yields to small forces and pressures which have the effect of tending to collapse the central web **15**, bending the outer surface at the toe inwardly toward the transverse web **17** and then compressing that web and the inner and outer surface layers of the body, all of which is accomplished with the application of less pressure than is required to compress the intermediate portion **12** of the body, and of course much less also than is required to compress the solid heel portion **10**.

The principal advantages of the foregoing construction are as follows:

In actual shooting use of the gun equipped with the new pad, the hard heel end is never engaged with the shooter's shoulder. That engagement is made entirely by the intermediate and toe portions **12** and **9** or, particularly in the case of young shooters and women, the gun is held so high on the shoulder that much or practically all of the contact of pad with shoulder is confined to the toe end **9**. In such case the shooter reaps the full benefit of the very soft cushion quality of the new toe portion construction.

It may be apprehended that the high degree of new softness incorporated in the toe might make the pad vulnerable to damage, i.e., distortion at the toe end consequent upon continuous pressures resulting from standing the gun on its stock end upright in a rack or on the floor. However, such is not the case, for the reason evident in FIG. 1. There the gun is shown standing straight upright, with the barrel exactly vertical as if the gun were stood straight upright against a wall, at no inclination. It will be noted that with the gun in this position the toe end of the pad cushion body is not in contact with the floor surface **18**. But this is an extreme position of the gun. In ordinary stacking the gun is leaned at an angle against the adjacent wall, always with the barrel toward the wall, so that the heel end of the pad cushion bears the full brunt of the floor engagement and the pressure of the gun's weight, and with the toe end elevated above the floor surface. The heel end portion of the new pad, being solid and much less soft than the rest of the pad, well withstands this pressure, so that the softer and more delicate toe end remains well protected for the performance of its cushioning function and does not become crushed or in any way distorted and does not take a set in any collapsed condition.

The pad may be affixed to the stock by screws **19** having shanks standing through holes in the back plate **4** and heads in countersunk holes **20** formed in the cushion body and accessible by a screw driver inserted through small openings in the outer surface of the body, as shown in FIG. 3. Metal washers **21** may be embedded in the cushion body directly against the plate **4** to reinforce the screw connection and protect the hard rubber or equivalent material of the plate from breakage when the screws are tightened.

It is to be understood that within the broad principles of the invention the critical different degrees of softness in the cushion body of the pad may be achieved by means and structure differing from the details of the construction herein illustrated as embodying the preferred construction which has been adopted in actual commercial practice, and that all such modifications, to the extent that they incorporate the principles defined by the appended claim, are to be deemed within the scope and purview thereof.

I claim:

A recoil pad for a gun stock comprising a backing plate of relatively thin hard material having an outline shape and size conforming substantially to the end of a stock and adapted to be secured thereto, and a relatively thick and soft resilient rubberlike cushion body having a substantially smooth and unbroken inner surface bonded to the plate, a substantially smooth and unbroken outer surface, a substantially solid heel portion, a central web extending from said heel portion to the toe end of the body, a first set of transverse webs extending from the central web to the outer edges of the body throughout the intermediate portion of the body and providing relatively firm resilient support for the outer surface in said intermediate portion, and a second set of transverse webs extending from the central web to the outer edges of the body in the toe end portion of the body and providing relatively soft resilient support for the outer surface in said toe end portion of the body, said first set of transverse webs being X-shaped or criss-cross, providing a large number of small open cells of triangular cross section and said second set of transverse webs comprising a single web extending from each side of the central web in parallelism to and midway between the inner and outer surfaces of the body, providing relatively large openings between said toe end portion webs and said inner and outer surfaces of the body and leaving said outer surface directly supported in said toe end portion only by said central web.

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