

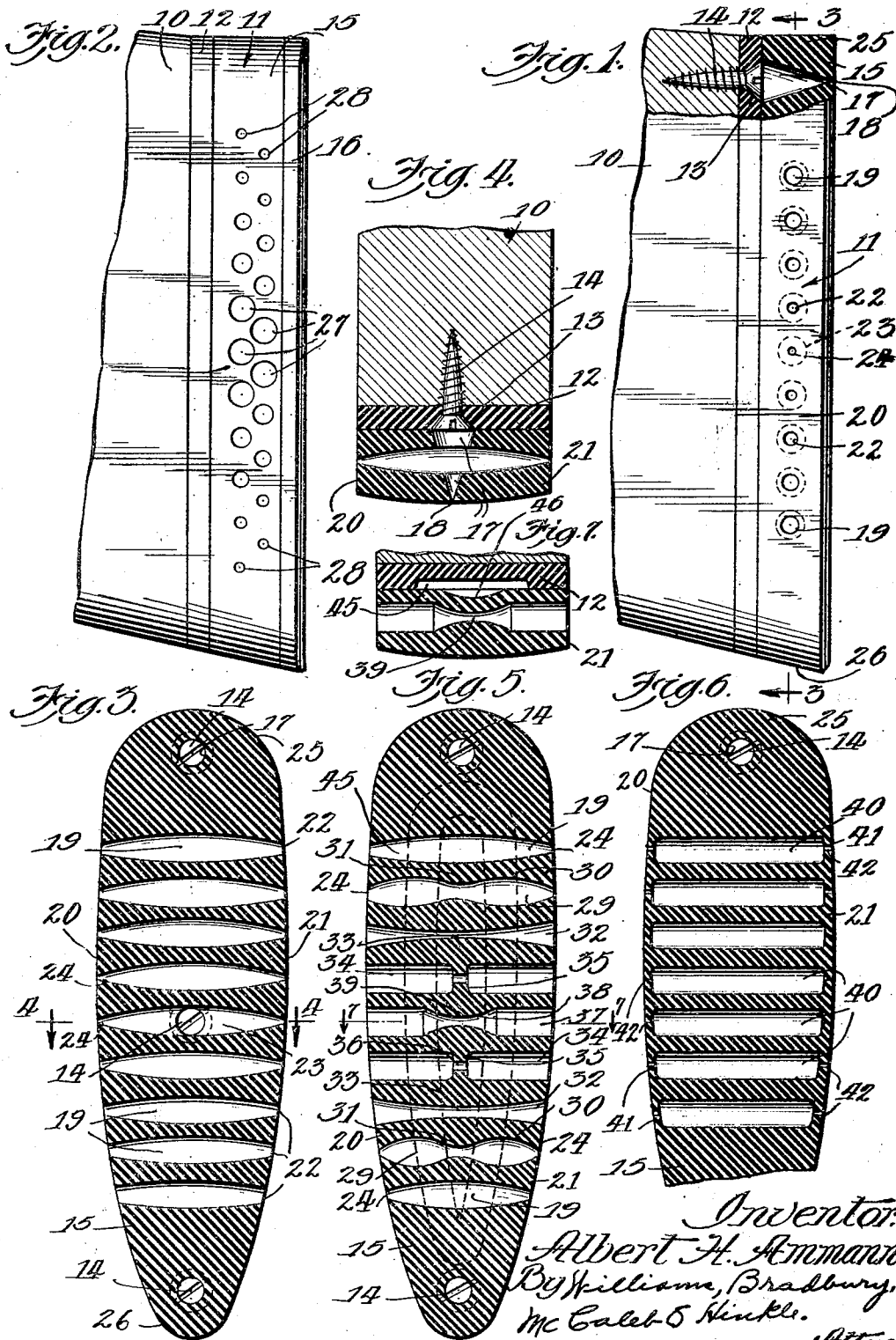
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RECOIL PAD

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UNITED STATES PATENT OFFICE

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RECOIL PAD

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The present invention relates to recoil pads, and is particularly concerned with recoil pads for shotguns, rifles and the like.

One of the objects of the invention is the provision of an improved recoil pad for guns, having more desirable cushioning characteristics than the pads of the prior art.

Another object is the provision of an improved pad which is peculiarly adapted to be constructed with different cushioning characteristics at different parts of the pad to suit the feel of the user or to protect the parts of his shoulder, according to their sensibility or weakness.

Another object is the provision of a recoil pad in which the resiliency or cushioning effect may be conveniently adapted to suit the needs of each individual marksman, preferably without changing the external appearance or other characteristics of the recoil pads.

Another object is the provision of a pad having a plurality of air pockets provided with throttling vents of different sizes and locations, whereby the resiliency of the pad may be controlled and regulated as desired.

Another object is the provision of an improved recoil pad structure, whereby the resiliency may be varied at different sides or edges, as well as at the top and bottom of the pad.

Other objects and advantages of the invention will be apparent from the following description and from the accompanying drawings, in which similar characters of reference indicate similar parts throughout the several views.

Referring to the single sheet of drawings:

Fig. 1 is a side, elevational view of a gun stock and recoil pad constructed according to the present invention;

Fig. 2 is a similar view of another modified form of the invention;

Fig. 3 is a sectional view taken on the plane of the line 3—3 of Fig. 1, through the air pockets and throttling ports;

Fig. 4 is a sectional view taken on the plane of the line 4—4 of Fig. 3, showing the mode of attachment of the recoil pad to the gun stock;

Fig. 5 is a view similar to Fig. 3, of a modified form of pad having a number of air pockets of different characteristics;

Fig. 6 is another view, similar to Fig. 3, of another modification;

Fig. 7 is a sectional view similar to Fig. 4, of the modified type of pad shown in Fig. 5, taken on the plane of the line 7—7 of Fig. 5.

Referring to Figs. 1 to 4, 10 indicates a conventional gun stock to which a pad, indicated in its entirety by the numeral 11, has been applied.

In the preferred embodiment of the pad 11, the pad includes a supporting plate 12 of hard rubber or other rigid material, which may be formed with apertures 13 for receiving screw bolts 14 for securing the pad to the gun stock 10. The pad 11 may also include the resilient central portion 15 of soft and resilient rubber, and a rear part 16 of the same material, or the parts 15 and 16 may consist of an integral piece of resilient rubber, as shown in Fig. 1. In some embodiments of the invention, the resilient portion 15 of the pad may be cemented directly to the gun stock 10 but the resilient body 15 is preferably cemented to a supporting plate 12 and the body 15 is preferably provided with outwardly tapering perforations 17 registering with the wood screws 14 and terminating in a fine pin aperture 18, so that screws 14 may be inserted by stretching the small aperture 18, after which the aperture will close and conceal the securing screws 14.

The resilient body portion 15 of the pad is preferably provided with a plurality of transverse air pockets 19 which preferably extend from one side 20 of the pad to the other side 21. The air pockets 19 are thus in communication with the atmosphere at both sides of the pad, but the air pockets are preferably provided with means for restricting the discharge of the air from the pockets 19 when the pad is subjected to impact on recoil.

Various different results may be attained by changing the size, location and shape of the air pockets and the restricting discharge ports, and the present embodiments are to

be regarded as exemplary of some of the many forms of the invention.

Referring to Figs. 3, 5 and 6, it will be observed that the cross-sectional shape of the pad corresponds to the cross-sectional shape of the gun stock to which it is applied, and the pad is preferably provided with a plurality of air pockets, some of which may be provided with restricting or throttling ports.

In the embodiments of Figs. 1 and 3, the air pocket tapers in size from the middle of the pad toward both sides 20 and 21, but the amount of taper varies in different ports. Thus, the air pockets 19 at the ends of the pad have the least taper of all, and the discharge ports 22 are relatively large, but the centrally located air pocket 23 has a maximum amount of taper and its discharge ports 24 are very small. The discharge ports of the other pockets intermediate the pockets 19 and 24 decrease in the amount of taper from the middle outward toward both ends 25 and 26 of the pad.

When a recoil pad of the type of Fig. 1 is subjected to impact, the air in the air pockets 19, 23, is forcibly ejected from the lateral ports 22, 24 and the resilient characteristics of the pad may be varied by changing the size of the throttling apertures 22, 24. It will be observed that the throttling action will be greater in the type of pocket shown with the smallest aperture 24, thereby causing the pad at this point to resist recoil by virtue of the resiliency of the air in the pocket, and the resilient resistance of the pad depends somewhat upon the violence of the impact. That is, a more violent impact causes a larger pressure of air in the pocket 23, because the air cannot pass out of the throttling aperture 24 quick enough to release the pressure.

The air pockets 19, having larger discharge apertures, provide a softer pad at that point for the reason that there is less rubber, but this portion of the pad is also adapted to give more readily when subjected to impact by recoil, because the air is more readily expelled from the apertures 22.

Referring to Fig. 2, it will be observed that the apertures may be made of different sizes from one end of the pad to the other end, all of the apertures being of substantially the same cross-section from one side of the pad to the other, but the resilient characteristics of the pad being varied by the size of the discharge ports. In Fig. 2, the centrally located apertures 27 have been made quite large, thereby making the pad softer at the middle where it strikes the shoulder, so that the pad may give to conform itself more readily to the shape of the shoulder, while the apertures 28 near the ends of the pad have been made smaller. In each of these cases, however, the air is expelled in a lateral direction from the air pockets 27, 28, and the resilient charac-

teristics of the pad depend upon the size and shape of the air pockets at any point.

Referring to Fig. 5, the pad of this embodiment has been provided with a number of different apertures of different shape and characteristics. The top and bottom air pockets 19 are of substantially the same shape previously discussed with respect to Fig. 1, tapering in size toward both sides of the pad and provided with throttling apertures 24. The next air pockets 29 are provided with restricting apertures 24 at the lateral surfaces of the pad, the pockets increasing in size to a maximum at 30, and tapering again to a restriction at the middle 31.

The operation of an air pocket of this type is as follows.

When the pad is placed against the shoulder, the near side of the pad, that is, the side toward the face or body of the marksman, has its corner pressed more tightly against the body than the opposite corner or the far side. The throttling apertures 24 at the near side are closed by the pressure exerted on the recoil pad by the user, and consequently the discharge of air from the air pocket at the near side is throttled at the centrally located restriction 31, while the discharge of air from that part of the pocket located on the far side is controlled and throttled by the restriction 24.

The type of air pocket shown at 32 tapers from each side of the pad inward to a centrally located restriction 33. The enlarged apertures 32 at the edges of the pad make the rubber thinner at this point, and therefore make the pad very soft and resilient at the edges where the edges engage the shoulder. However, the centrally located restriction 33 operates in substantially the same way as the restriction 31 in throttling the movement of air from one side of the pad to the other when the apertures at one side have been closed by the pressure exerted by the shoulder.

The air pockets 34 are substantially cylindrical in shape and provided with a centrally located wall 35 having a restricted opening 36, which will operate substantially the same as the restrictions 31 and 33. The air pocket 37 is of substantially the same shape as the pockets 34, being provided with a tapered portion 38 leading to a restriction 39.

Referring to Fig. 6, this modified form of pad is provided with a plurality of air pockets 40 substantially cylindrical in shape, extending transversely of the pad and substantially closed at each end by walls 41. The walls 41 may be punctured by throttling apertures 42 of different size, and if desired, the perforations may be made by the user of the pad to suit his own desires as to the feel and resiliency of the pad. In some embodiments, the air pockets 40 may be made without per-

forations or throttling apertures, or a limited number of the pockets may be provided with throttling apertures. In other embodiments, the throttling apertures may be plugged to make the pads stiffer at any particular point, and to transfer the brunt of the impact resulting from recoil, to some part of the shoulder which is less sensitive and capable of bearing the blow.

Any number of air pockets may be employed, or a plurality of rows of pockets may be employed, and any of the various shapes of pockets may be employed in any of the devices shown.

Referring to Fig. 7, the supporting plate or base 12 of the pad of Fig. 5 is preferably formed with an oblong cavity 45 which is located under the central and restricted portion of the pad and adapted to permit the pad to give more at the middle.

The body 21 of the pad may also be provided with a groove 46 located beneath the restriction 39 so as to remove some of the rubber at this part of the pad and make the pad softer at the middle in spite of the increased amount of rubber which is due to the restriction 39. The groove 46 preferably extends from end to end of the pad being of the same length as the cavity 45 but if desired groove 46 may have throttling apertures at each end of the pad.

It will be evident, therefore, that I have invented an improved recoil pad, the characteristics of which may be adapted to suit the individual needs of any marksman or to protect the sensitive parts of the shoulder of any user. The pad may be made as soft as desired at either edge, or at any point on the pad, by varying the size of the holes, and the pad may be made as resilient as desired under impact, by varying the size, shape and location of the throttling discharge ports.

While I have illustrated a preferred embodiment of my invention, many modifications may be made without departing from the spirit of the invention, and I do not wish to be limited to the precise details of construction set forth, but desire to avail myself of all changes within the scope of the appended claims.

Having thus described my invention, what I claim is new and desire to secure by Letters Patent of the United States, is:

1. A recoil pad for guns comprising a supporting base, and a resilient rubber member formed with a plurality of air pockets, said pockets having throttling apertures whereby the resiliency of the pad is regulated in its different portions under impact.

2. A recoil pad comprising a resilient rubber pad adapted to be secured to a gun or the like for engaging the body of the user, said pad having a plurality of transversely extending air pockets from which air is expelled on recoil of gun, and some of said air

pockets having throttling discharge apertures at the lateral surfaces of said pad.

3. A recoil pad comprising a resilient rubber pad adapted to be secured to a gun or the like for engaging the body of the user, said pad having a plurality of transversely extending air pockets from which air is expelled on recoil of gun, some of said air pockets having throttling discharge apertures at the lateral surfaces of said pad, said throttling apertures decreasing in size toward a point between the ends of the pad.

4. A recoil pad comprising a resilient rubber pad adapted to be secured to a gun or the like for engaging the body of the user, said pad having a plurality of transversely extending air pockets from which air is expelled on recoil of gun, said air pockets being closed at both sides of the pad and provided with throttling perforations located at predetermined points to vary the resilient cushioning effect.

5. A recoil pad comprising a resilient rubber pad adapted to be secured to a gun or the like for engaging the body of the user, said pad having a plurality of transversely extending air pockets from which air is expelled on recoil of gun, certain of said air pockets tapering in width toward the side of said pad to throttle the discharge of air on recoil.

6. A recoil pad comprising a resilient rubber pad adapted to be secured to a gun or the like for engaging the body of the user, said pad having a plurality of transversely extending air pockets from which air is expelled on recoil of gun, certain of said air pockets having a throttling restriction located intermediate the ends to throttle discharge of air from the near side toward the far side of said pad.

7. A recoil pad comprising a supporting plate adapted to fit the end of a gun stock, and a resilient rubber body carried by said plate and having a plurality of transverse apertures extending from side to side of the pad, and restrictions surrounding certain of said apertures at the side surfaces of said pad to throttle discharge of air from said apertures on recoil.

8. A recoil pad comprising a supporting plate adapted to fit the end of a gun stock, and a resilient rubber body carried by said plate and having a plurality of transverse apertures extending from side to side of the pad, and restrictions surrounding certain of said apertures at the side surfaces of said pad to throttle discharge of air from said apertures on recoil, said restrictions decreasing in size toward a point intermediate the ends of said pad.

9. In a recoil pad, a resilient rubber body adapted to be secured to the stock of a gun, said body having a plurality of transversely extending air pockets, certain of said air

pockets being tapered in diameter toward both ends of the pocket to restrict discharge of air from the pocket on recoil.

10. In a recoil pad, a resilient rubber body adapted to be secured to the stock of a gun, said body having a plurality of transversely extending air pockets, certain of said air pockets being tapered from both ends toward the middle of the pocket to restrict discharge of air from one end of the pocket to the other on recoil.

11. In a recoil pad, a resilient rubber body adapted to be secured to the stock of a gun, said body having a plurality of transversely extending air pockets, certain of said air pockets being tapered in diameter at both ends and at the middle, to restrict discharge of air on recoil.

12. In a recoil pad, a resilient rubber body adapted to be secured to the stock of a gun, said body having a plurality of transversely extending air pockets, certain of said air pockets being cylindrical in shape with a wall intermediate the ends of the pocket, said wall having a throttling restriction.

In witness whereof, I hereunto subscribe my name this 16th day of October, 1930.

ALBERT H. AMMANN.

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