June 1, 1943. F. D. HAWKINS 2,320,430

RECOIL PAD

Filed March 21, 1941

Fig.1.

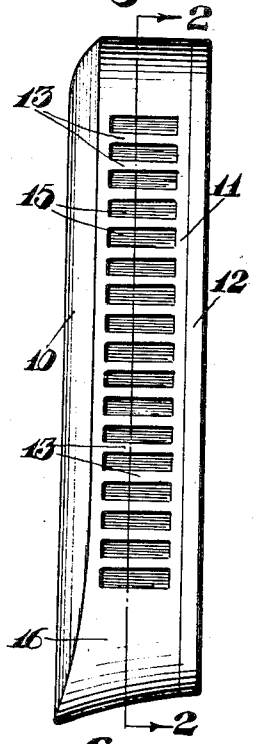


Fig.2.

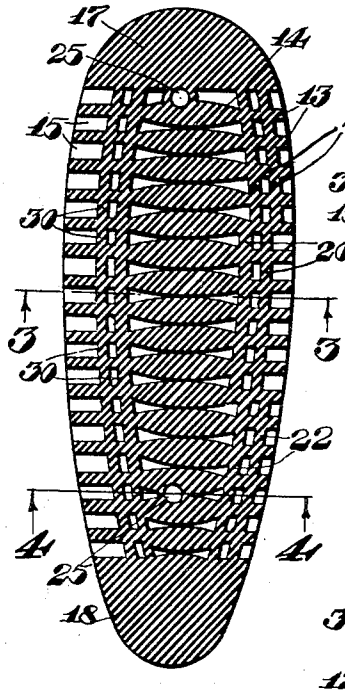


Fig.3.

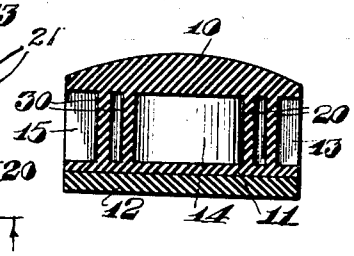


Fig.4.

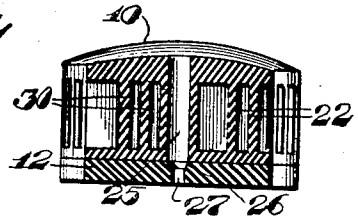


Fig.5.

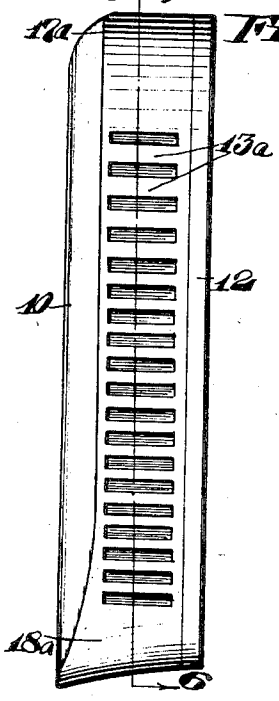


Fig.6.

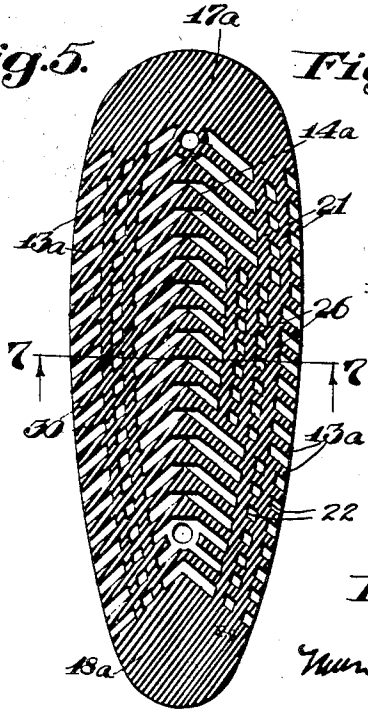
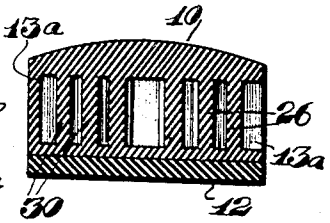


Fig.7.



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RECOIL PAD

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4 Claims. (Cl. 42—74)

This invention relates to recoil pads for guns.

An object of the invention is the provision of a pad formed entirely of resilient material, such as rubber or some composition having elastic qualities, in which transverse ribs connect a top and bottom together with said ribs being thickened intermediate the ends thereof so that when a rearward thrust is exerted by a gun the pad will be compressed and then extended to eliminate shocks to the muscles of the operator of the gun.

Another object of the invention is the provision of a recoil pad for guns which is formed of resilient and elastic materials in which a top and bottom portion are connected together by transverse ribs having thickened portions intermediate their ends, while the ribs generally are relatively thin so that when a thrust is exerted by the gun on the pad which engages the shoulders of the operator the pad will be compressed to some extent along a longitudinal central line while the outer longitudinal edges will be compressed to a greater extent thereby protecting the muscles of the operator against injury.

A further object of the invention is the provision of a recoil pad for guns formed of elastic and resilient materials which will be in contact with that portion of the body of the operator adjacent the shoulder, the portions of the pad at each side of a longitudinal central line being compressible to a greater extent to protect those parts of the body where the longitudinal outer edges of the pad come in contact with the body.

This invention will be best understood from a consideration of the following detailed description, in view of the accompanying drawing forming a part of the specification; nevertheless, it is to be understood that the invention is not confined to the disclosure, being susceptible of such changes and modifications as define no material departure from the salient features of the invention as expressed in the appended claims.

In the drawing:

Figure 1 is a longitudinal side view of a pad constructed in accordance with the principles of my invention.

Figure 2 is a vertical section taken along the line 2—2 of Figure 1.

Figure 3 is a transverse horizontal section taken along the line 3—3 of Figure 2.

Figure 4 is a transverse horizontal section taken along the line 4—4 of Figure 2.

Figure 5 is a vertical side view of a modified form of the pad.

Figure 6 is a vertical section taken along the line 6—6 of Figure 5.

Figure 7 is a transverse horizontal section taken along the line 7—7 of Figure 5.

Referring more particularly to Figs. 1 to 4, inclusive, 10 designates a top or inner portion which is curved transversely as shown more particularly in Fig. 3, while 11 designates a bottom or inner portion which is cemented or vulcanized to a base member 12 that is secured to the outer end of the stock of the gun. The outer surface of the member 10 is of a configuration which corresponds to the usual design of the outer end of the gun stock.

The portion 11 is relatively flat at its opposite faces and has substantially the same thickness throughout and is spaced from the member 10 by spaced transverse ribs generally designated by the numeral 13.

It will be noted from Figure 2 that the transverse ribs 13 are relatively thin, but the central portions, as shown at 14, are thickened to provide greater resistance along a longitudinal line upon the thrust of the gun during firing. The thickened portions are approximately elliptical in plan view. The opposite ends of the elliptical portions merge into the thin walls of the outer ends of the ribs. The spaced ribs 13 have narrow passages therebetween, as shown at 15, which open through the side walls 16 of the pad.

The opposite ends of the pad are closed by thick walls 17 and 18, and the ribs 13 and the thickened portions are located between said walls. The outer edges of the walls 17 and 18 are curved to conform to the curvature of the ends of the pad.

A plurality of pairs of spaced ribs, indicated by the numerals 20, 21 and 22 run longitudinally of the pad and upon one side of the thickened portions 14. Thus, in effect these ribs enclose the thickened portions. It will be noted that the ribs 21, 22 are located in staggered relation with the pairs of ribs 20 and that all of the ribs are curved to conform to the curvature of the adjacent side edge of the pad.

The pad is formed of some elastic and resilient material such as rubber or a composition having resilient and elastic qualities. The materials are cast in a form so that the ribs 13, the thickened portions 14, ribs 20 to 22, inclusive, the walls 17, 18 and the members 10 and 11 are integrally connected together.

The members 10 and 11 are provided with horizontal passages 25 through which a screw is passed. The head of the screw, however, is adapted to engage a seat 26 at the inner end of a passage 27 formed in the member 12 and in

alinement with the passage **25** for connecting the pad to the outer end of the stock of a gun.

Referring more particularly to Figs. 5 to 7, inclusive, it will be seen that the pad illustrated is similar in many respects to the pad shown in Figs. 1 to 4, inclusive, except that the ribs **13***a* are bent intermediate their ends so that the ends are inclined toward each other from the thickened portions **14***a*.

The thickened portions are located at the apex of the angle formed by the inclined rib sections and are of less capacity than the thickened portions **14** shown in Fig. 2.

Pairs of longitudinal ribs in a modified form are substantially the same as those shown in Fig. 2 and, therefore, the same reference numerals are applied. It will be noted that all of the other elements of the modified form are substantially the same as similarly placed elements of the form shown in Figs. 1 and 4, and, therefore, the same reference numerals are applied thereto except end portions **17***a* and **18***a*. The only difference between the end walls is that the inner edges of these walls conform to the particular shape of the bent ribs. The results obtained by both types of cushions are substantially the same.

The pair of longitudinal ribs **30** in both forms run the full length of the pad between the ends **17**, **18** and **17***a*, **18***a*, although the same type of pair of staggered ribs **20**, **21** and **22** may be employed at both sides of the pad.

When a thrust is exerted by the gun when being fired the cushion is compressed but it readily returns to normal condition when the pressure is released. The pressure exerted by the gun is substantially constant on all points of the pad since the flexibility of the pad varies from the side edges to the central longitudinal line passing through the thickened portions of the ribs.

This central longitudinal line of the pad which contacts that part of the human body adjacent the shoulder receives the full thrust while the portions of the pad at each side of said line which have a greater degree of flexibility and resilience aid in dissipating the force of the thrust so that the force of the impact is tapered off from the central line through the more compressible portions of the ribs at the sides of the pad.

Thus the greater degree of compressibility of the longitudinal regions of the pad at each side of the central line eliminates any danger of the edges of the gun stock from bruising the contacted portion of the body of the operator of the gun.

I claim:

1. A recoil pad for guns comprising an elongated member formed of resilient material and having a top and bottom, transverse ribs joining the top and bottom and forming a resilient cushion between the top and bottom, the central portions of the ribs being thickened, and pairs of longitudinal ribs joining the top and bottom adjacent the side edges of the pad, one pair of the longitudinal ribs at one side of a longitudinal central line being closer to said line than the other pairs of ribs on the same side of the line.

2. A recoil pad for guns comprising an elongated member formed of resilient material and having a top and bottom, transverse ribs joining the top and bottom and forming a resilient cushion between the top and bottom, the central portions of the ribs being thickened, and a plurality of spaced longitudinal ribs joining the top and bottom and disposed in staggered relation adjacent one side edge.

3. A recoil pad for guns comprising an elongated cushion formed of elastic material and having a curved top and flat bottom portion, relatively thin ribs connecting the top and bottom together along a portion of the pad which is intermediate the ends of said pad, and relatively thin ribs disposed longitudinally adjacent the side edges of the pad, the longitudinal ribs at one side of the pad being disposed in pairs with one pair being located nearer a longitudinal center line than the other pairs.

4. A recoil pad for guns comprising an elongated member formed of resilient material and having a top and bottom, transverse ribs joining the top and bottom and forming a resilient cushion between the top and bottom, the central portions of the ribs being thickened, pairs of spaced longitudinal ribs joining the top and bottom, the pairs of ribs at one side of the pad being located in staggered relation and connected to the transverse ribs.

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