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[54] **FIREARM RECOIL PAD SHOCK ABSORBER**  
**7 Claims, 3 Drawing Figs.**

[52] U.S. Cl. .... **42/74**

[51] Int. Cl. .... **F41c 23/00**

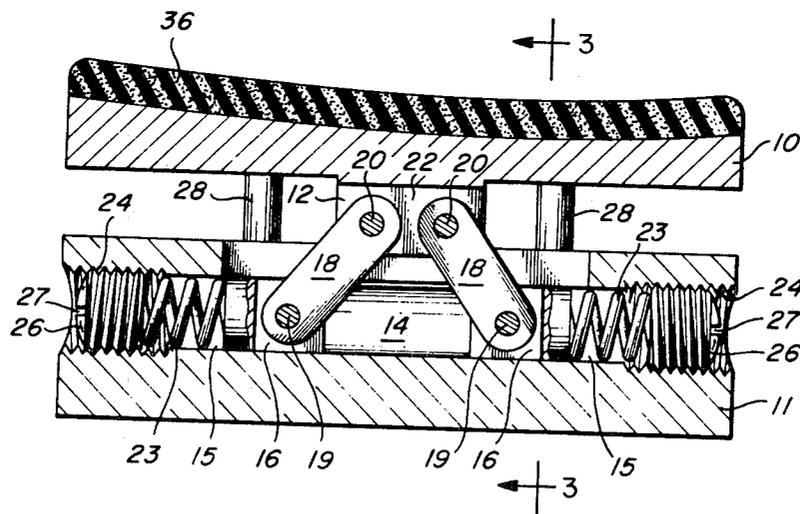
[50] Field of Search ..... **42/74;**  
**267/103, 142**

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**UNITED STATES PATENTS**

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**ABSTRACT:** An improved shock absorber, particularly a shock absorber adapted for use as a recoil pad in handheld firearms. A pair of body members are secured in movable relationship to each other. A projection from the first body member extends into a mortise in the second body member. Pistons are disposed in bores in the second body member and contact springs which are also disposed in said bores. The outer portions of the bores are threaded to receive adjusting screws. As the first body member moves toward the second body member, the pistons compress the springs thereby absorbing recoil from the firearm. The individual user can adjust the amount of spring compression by moving the adjusting screws inwardly to increase compression or outwardly to decrease compression of the springs.



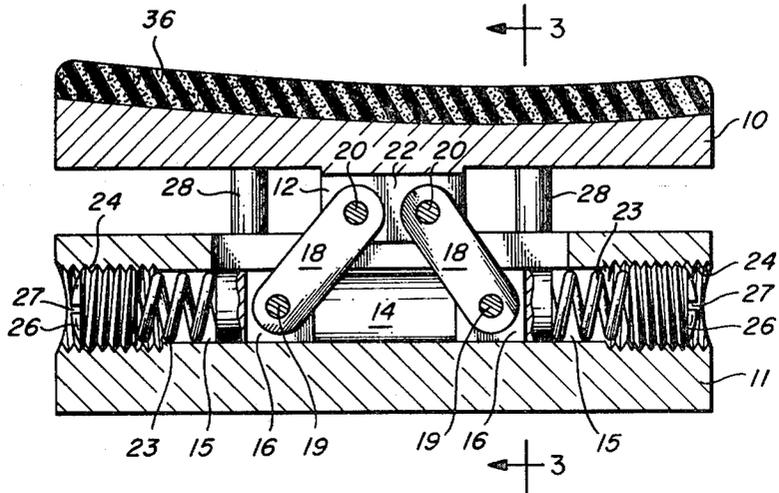


FIG. 2

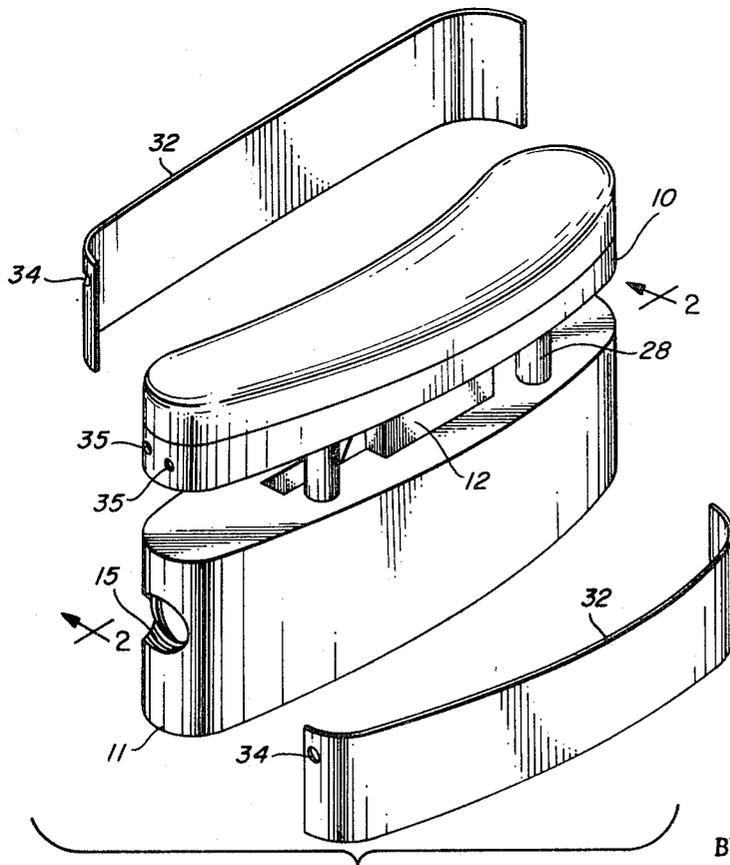
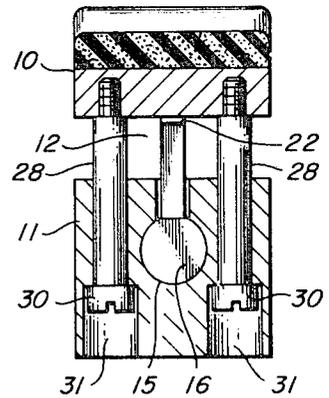


FIG. 1

FIG. 3



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## FIREARM RECOIL PAD SHOCK ABSORBER

My invention relates to shock absorbers, and more particularly to shock absorbers which are adaptable for use as recoil pads in conjunction with firearms.

Previous attempts to solve the problems of recoil which occur when firearms of relatively high power are used have suffered a number of drawbacks. The most prevalent recoil pad on the market generally comprises a pad of foam rubber or other resilient material which is secured to the butt end of a gun stock. Such devices are unadjustable and, while they may be adequate for one individual with one particular firearm, they are singularly unadaptable. Prior devices which are alleged to be adaptable for more than one individual's use or for use with more than one particular firearm, are generally highly complex and expensive to manufacture. Further, these devices, because of their complexity, are subject to failure under normal field conditions.

It is an object of my invention, therefore, to provide a recoil pad which is relatively simple in operation and inexpensive to manufacture.

It is another object of my invention to provide a recoil pad which is adjustable in the field and without a breakdown of the pad or of the firearm to effect such adjustment.

A better understanding of my invention may be obtained from the following specification and claims when taken in light of the accompanying drawings in which:

FIG. 1 is an isometric view of a shock absorber in the form of a recoil pad in accordance with my invention with a portion removed for clarity;

FIG. 2 is a sectional view taken along lines 2—2 of FIG. 1; and

FIG. 3 is a sectional view taken along lines 3—3 of FIG. 2.

With reference to the drawings, my shock absorber generally comprises a first body member 10 and a second body member 11. Ordinarily, the first body member 10 is considered as the movable member and the second body member 11 is considered to be the stationary body member. In the embodiment shown, the general shape of the body members conforms with that of the butt end of a hand-held firearm such as a rifle or shotgun. Ordinarily, the device would be secured to the rifle or shotgun by screwing or gluing the second body member 11 to the appropriately sized butt end of the firearm.

The first or movable body member has a generally rectangularly shaped projection 12 extending toward the second or stationary body member. The stationary body member 11 defines a mortise 14 which receives the projection 12 when the movable body member 10 moves toward the stationary body member 11. Ordinarily, the first body member 10 will move a sufficient distance to meet the facing surface of the stationary body member 11, but it is not required to do so. Motion of the body members relative to each other is along the general line which the firearm will travel due to the force of recoil. As shown in the drawings, both body members have an elongated oval shape. The stationary body member 11 defines a bore 15 running the long axis of the body member and communicating between the mortise 14 and the exterior of the stationary body member.

Pistons 16 are hingedly connected to the projection 12 by links 18. The links 18 are mounted in slots centrally disposed in the pistons 16 and secured by pins 19 which permit free movement of the link within the piston. The other end of each link is secured to the projection 12 by pins 20. The projection 12 has a slot 22 which is centrally disposed and pins 20 extend through both sides of the projection 12 to movably secure the links 18 to the projection.

Springs 23 are disposed in the bore 15 of the stationary body member 11 and in contact with the pistons 16. The outermost portions of the bore 15 are threaded 24 to receive restraining screws 26. Slots 27 in restraining screws 26 provide means whereby the position of the restraining screws may be adjusted.

Arresting screws 28 extend through bores defined by the stationary body member 11 and threadedly engage and hold the first body member 10. The heads 30 of the arresting screws 28 travel within counterbores 31 and the upward motion of the first body member 10 is limited to the travel of the heads 30 of the arresting screws 28 in the counterbores 31. Upward motion of the first body member is arrested when the head of the arresting screws 28 engage the shoulders formed by the juncture of the counterbores with the main, smaller, bores defined by the second body member.

In the embodiment shown, a shield 32 or fascia is formed of two curved metal pieces secured to the movable body member as by screws inserted through holes 34 and 35 defined by the fascia member and the first body member respectively. Of course, the fascia may be secured to the second body member rather than the first body member, as desired. In the embodiment shown, the fascia members 32 are of light sheet metal, but any acceptable substitute could be used. For instance, a bendable fabric material could be secured both to the movable and stationary body members to prevent dirt or foreign material from entering into the mechanism of the recoil apparatus.

Materials of construction from which my shock absorber is fabricated are preferably lightweight materials so that the balance of the firearm to which the device is affixed will not be adversely affected. Ordinarily, the body members may be constructed of aluminum alloy. Material employed for use in the spring members are preferably those materials, such as steel, which have the necessary resilient characteristics. Weight is not of primary consideration for spring members since they represent a minor portion of the total weight of the shock absorber. Remaining parts required for fabrication of my shock absorber are of such materials as meet the strength and weight requirements as disclosed in general terms by the specification herein. Shield or fascia members are generally fabricated out of lightweight sheet metal, but, as hereinbefore stated, may be of a fabric of other flexible material.

In the embodiment shown in the drawings, a pad portion 36 is secured to the movable body member 10. The pad material may be of sponge or foamed rubber or similar material for comfort of the user. The pad 36 may also be formed of Bakelite, hard rubber, or the like, or dispensed with, if desired. If the pad 36 is eliminated, first body member 10 should be appropriately adapted for shoulder contact.

From the foregoing, it is apparent that the relative positions of the movable and stationary body members may be reversed without adverse affect on the functioning of the device. In such a situation, the first body member would become the stationary body member and the second body member would become the movable body member. Appropriate adaptation of contact surfaces would then be provided whereby the pad 36 would be affixed to the second body member 11 and the first body member would be secured to the butt end of a rifle or shotgun.

Various modifications may be made in my invention without departing from the spirit or scope thereof, and it is to be understood that I limit myself only as defined by the appended claims.

I claim:

1. A shock absorber comprising a first body member and a second body member, said first body member having a projection extending therefrom and said second body member defining a mortise to receive said projection, said second body member defining a pair of bores, the axes of said bores being substantially perpendicular to the direction of travel of said projection in said mortise, said bores communicating between said mortise and the exterior of said second body member, a pair of pistons disposed in said bores on substantially opposite sides of said mortise, link members hingedly connecting said pistons with said projection on said first body member, spring means disposed in said bores exteriorly of said pistons, restraining means disposed in said bores whereby the motion of said spring means is restrained when said first body member

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is moved toward said second body member, and arresting means whereby the travel of said first body member away from said second body member is limited.

2. The shock absorber of claim 1 wherein said restraining means comprises a pair of restraining screws which threadedly engage said bores whereby the spring compression in said bores due to the action of said pistons may be adjusted.

3. The shock absorber of claim 2 wherein one of said body members is adapted to be secured to the butt end of a firearm.

4. The shock absorber of claim 2 wherein said projection on said first body member defines a slot wherein said link members are hingedly secured by pins, and said pistons define slots in their rearward portions and said link members are hingedly secured to said pistons by pins.

5. The shock absorber of claim 4 wherein said bores are coaxial.

6. The shock absorber of claim 5 wherein said arresting means comprises a plurality of arresting screws threadedly engaging said first body member and traveling in counterbores defined by the second body member whereby the heads of said arresting screws engage the shoulders formed by the juncture of said counterbores with the main bores defined by the stationary body member, thereby arresting movement of said first body member away from said second body member.

7. Shock absorber of claim 6 wherein a fascia is secured to at least one of said body members, said fascia enclosing the space between said first and second body members.

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