

Davis

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[54] GUN RECOIL REDUCER

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89/14.3; 102/42 C

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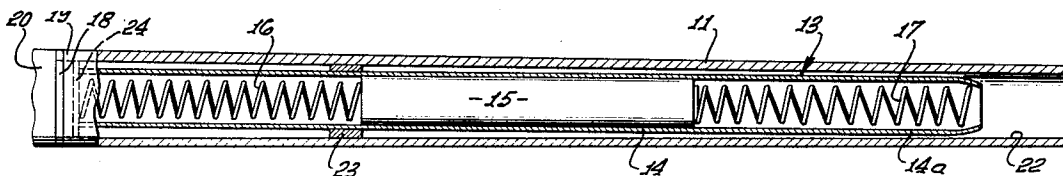
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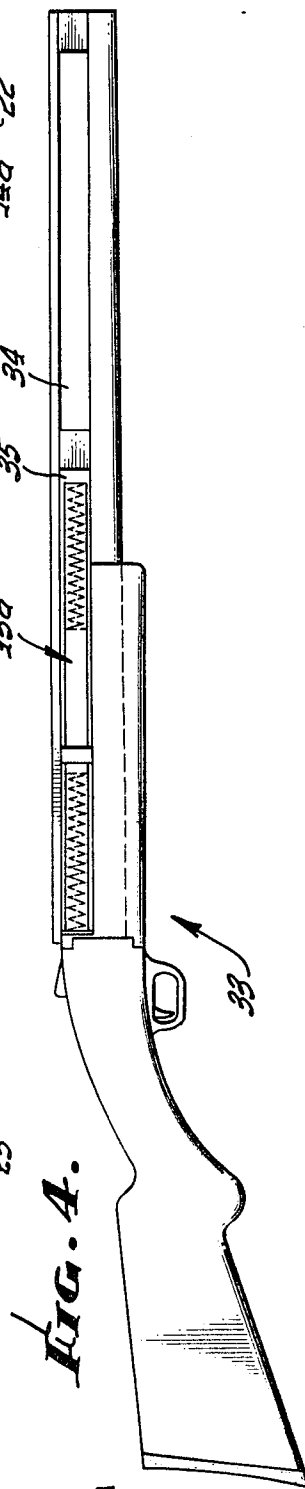
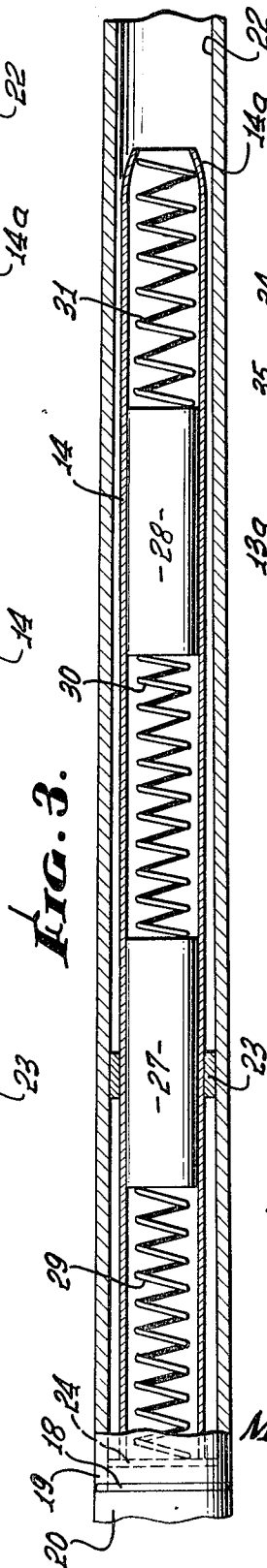
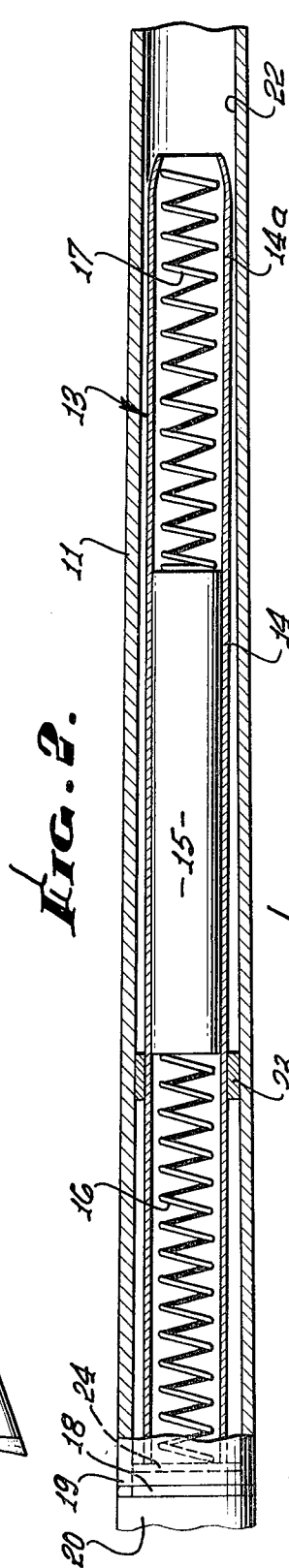
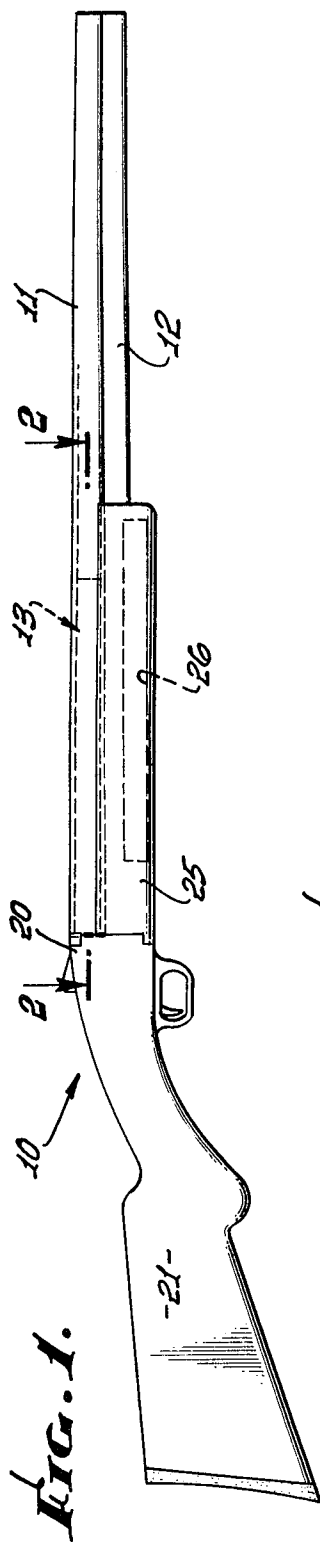
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[57] **ABSTRACT**

A recoil reducer is formed to be readily installable in and removable from the location of a barrel of a hand gun, such as a shot gun, so as not to require extra equipment on the gun to mount the reducer.

8 Claims, 4 Drawing Figures





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GUN RECOIL REDUCER

BACKGROUND OF THE INVENTION

This invention relates generally to recoil reducers, and more particularly concerns the construction of recoil reducers applicable to hand guns such as shotguns.

While various types of recoil reducers have been made in the past, none of them to my knowledge possess the unusual advantages in construction and mode of use of the reducer of the present invention. For example, many such prior reducers are permanently built into hand guns and cannot be readily removed and used in other guns. Also, the option of easily removing and replacing the reducer, when desired in the field, is not available.

SUMMARY OF THE INVENTION

It is a major object of the present invention to provide a recoil reducer readily installable and removable from a hand gun such as a shot gun, without requiring extra equipment on the gun to mount the reducer. As will be seen, the reducer is constructed in a tubular body which may advantageously be of gun bore size for reception therein; it includes a mass carried for movement in the body and relative to which the body is movable, and cushioning means such as a coil spring carried in the body to transmit inertial loading exerted by the mass in response to reaction or recoil movement of the barrel, and tending to reduce the reaction force produced when the gun is fired.

Further, the gun may be a double barrel shotgun as used by trap and skeet shooters, and the tubular body is receivable in the second barrel, whenever desired, just as a shell would be received, so that the first barrel may be used for firing while the second barrel is used for recoil reduction. In this regard, the body may have a rim or flange at the end thereof to engage the breech end of the gun barrel so that the body will not slip endwise in the second barrel when the breech is closed for firing. Also, the body may have an enlargement to closely fit the second barrel bore, which may be tapered.

Other features and advantages of the invention include the provision of two masses and three coil springs within the body; the provision of a body consisting of metal or plastic material; the storing of the body in a magazine area of the gun; and the installation of the body in a portion of the second barrel which has been reduced in length, for weight reduction.

These and other objects of the invention, as well as the details of illustrative embodiments, will be more fully understood from the following description and drawings, in which:

DRAWING DESCRIPTION

FIG. 1 is a side elevation showing a shotgun incorporating the invention;

FIG. 2 is an enlarged elevation section taken on line 2-2 of FIG. 1;

FIG. 3 is a view similar to FIG. 2, and showing a modified recoil reducer; and

FIG. 4 is a view of a modified shotgun incorporating the invention.

DETAILED DESCRIPTION

Referring first to FIGS. 1 and 2, the shotgun 10 of FIG. 1 incorporates upper and lower barrels 11 and 12, the latter to be used for shooting and the former for recoil reduction in accordance with the principles of the invention. If desired, the lower barrel may be used for recoil reduction, since the invention permits selection of which barrel is to be so used. The recoil reducer is indicated generally at 13 as having been inserted into the upper barrel via its breech end 19, as during loading of the lower barrel.

FIG. 2 shows the recoil reducer 13 to include a tubular body 14 extending within and generally parallel to the barrel 11, and sized to be carried to move with the barrel in a reaction direction when the gun is fired. A mass 15 is carried for movement lengthwise of and within the tubular body 14, i.e. relative to the latter when the gun is fired, due to sudden movement of the body and barrel to the left. The mass may for example consist of a metal cylinder or other suitable configuration, and body 14 may consist of metal, plastic or other material. Finally, cushioning means, as for example compression springs 16 and 17, are carried in the body 14 to transmit to the body in inertial loading exerted by the mass in response to such reaction movement of the barrel, so as to reduce the reaction produced when the gun is fired. Thus, when the barrel and body 14 move sharply to the left, the mass 15 tends to maintain its position so that spring 17 is compressed and rightward force is produced and transmitted via body 14 to the barrel 11 to reduce the recoil. The spring 17 then expands and the mass moves to the left and compresses spring 16, after which the mass travels back and forth and shortly comes to rest in the position seen in FIG. 2 after having been cushioned by the springs to develop anti-recoil forces.

It will be noted that the left end of the body 14 is flanged at 18 to engage the breech end 19 of barrel 11; also, the flange is held in that position, which is the same as the flanged end of a shotgun shell, by the gun structure 20 closed at the gun break point against the flange when the gun is closed after loading and preparatory to shooting using the other (lower) barrel. In this regard, it is desirable to use the lower barrel for shooting since the recoil force is more squarely directed at the user's shoulder, via the stock 21, than when the upper barrel is so used.

It will also be observed that the tubular body 14 is sized for close reception in the barrel bore 22, particularly at the forward end 14a of the body, thereby to prevent sideward whipping of the body as the mass oscillates back and forth. Such close reception may also be enhanced by providing one or both enlargements 23 and 24 on the body 14 to fit the bore 22 near the left end of the tubular body, the bore typically being slightly tapered in the rightward direction.

Accordingly, the recoil reducer is easily installed, whenever desired, in either barrel of a shotgun, and into the positions which might otherwise receive a shell; it is easily removable and transported as auxiliary equipment by the shooter; it is simple and inexpensive, and is found to operate with very substantial effectiveness in reducing recoil. If desired, the reducer may be retained and transported in the shell magazine 25 of the gun, as by insertion in the bore 26.

FIG. 3 shows another form of reducer construction, employing two slidable weights or masses 27 and 28 located between three coil springs 29, 30 and 31 for even greater recoil reduction. Otherwise, the construction of the recoil reducer is the same as in FIG. 2, and employs the same identifying numerals.

Finally, FIG. 4 shows a modified shotgun 33 in which a portion of the upper barrel has been removed at 34 forwardly (rightwardly) of the shortened barrel extent 35 that receives the recoil device as indicated at 13a. The latter is similar to device 13 in FIG. 2. Accordingly, both gun weight and recoil are reduced, for more accuracy in trap and skeet shooting.

I claim:

1. In a double barrel shotgun, the combination comprising

- a. an elongated tubular body extending forwardly and removably retained within one of the barrels to move with the one barrel in a reaction direction when the gun is fired, the body having close fitting reception in the barrel at locations along the body length, the body having a forwardly open end and there being an inwardly flared forward shoulder on the body, and there being a flange on and projecting outwardly of the body at the rearward end thereof engaging the breech end of said one barrel, the other barrel being free to receive a shell,
- b. a mass carried for movement in the body and relative to which the body is movable, and

c. cushioning means carried in the body to transmit thereto inertial loading exerted by the mass in response to said reaction movement of the one barrel, and tending to reduce the reaction produced when the gun is fired, said cushioning means including a first coil spring located between said mass and said forward shoulder.

2. The combination of claim 1 wherein there is an enlargement on the rearward portion of the body to block sideward movement of the body in the bore.

3. The combination of claim 1 wherein the body is metallic.

4. The combination of claim 1 wherein the body consists of plastic material.

5. The combination of claim 1 wherein said cushioning means includes a second coil spring located between said mass and the rearward end of the tubular body.

6. The combination of claim 5 including a second mass and third coil spring in the body, the second mass located between the second and third coil springs.

7. The combination of claim 1 wherein said mass comprises an elongated metallic element sized to slide lengthwise of and within said tubular body.

8. The combination of claim 1 wherein the one barrel receiving the body is foreshortened relative to the other barrel.

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