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T. R. THOMAS

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SHOTGUN BORE REDUCER

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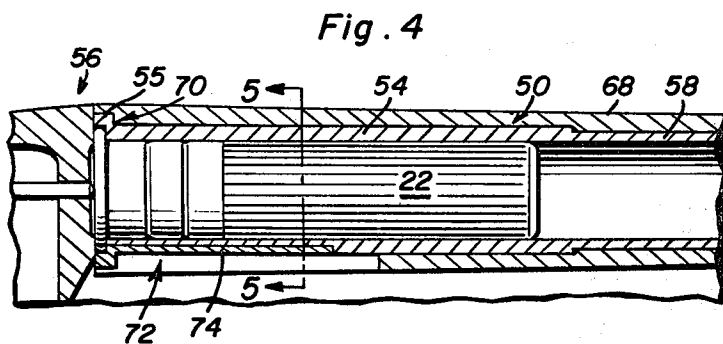
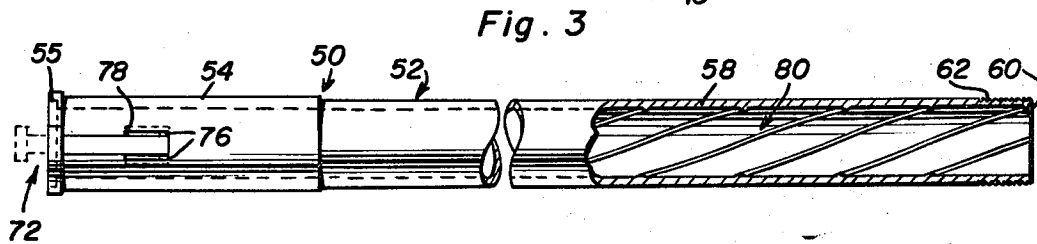
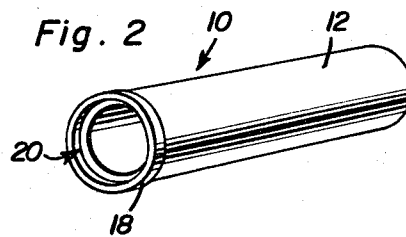
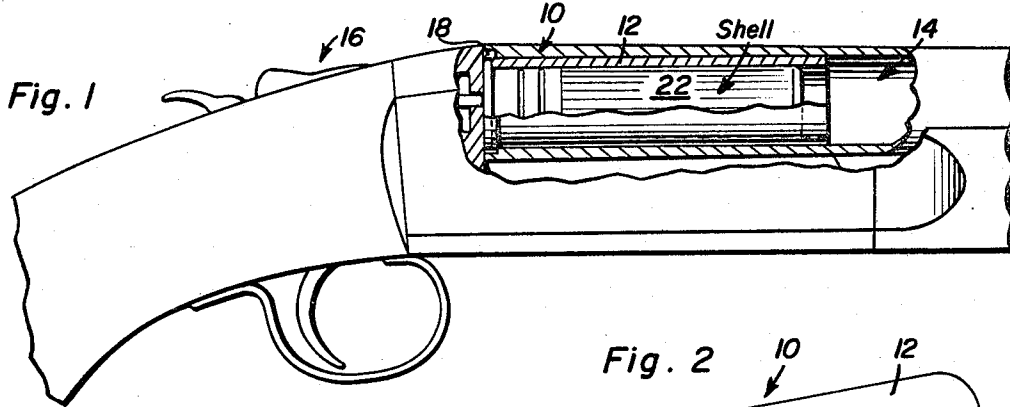


Fig. 5

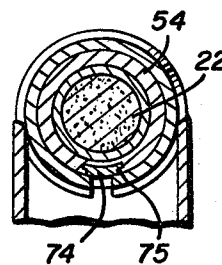
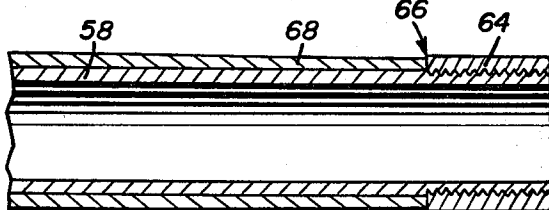


Fig. 6



Thurman R. Thomas
INVENTOR.

BY *Clarence A. O'Brien*
and *Harvey B. Jacobson*
Attorneys

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SHOTGUN BORE REDUCER

Thurman R. Thomas, 421 Wright St.,

High Point, N.C. 27260

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2 Claims. (Cl. 42—77)

ABSTRACT OF THE DISCLOSURE

A bore reducer for shotgun barrels which adapter may be substantially the length of a shell normally utilized in a shotgun or a length sufficient to extend somewhat more than the entire length of the shotgun barrel within which it is utilized, whereby bore reducers constructed in accordance with the invention may be utilized in conjunction with shotguns of varying types and configurations including shotguns provided with shell receiving magazines. In this regard, one embodiment of a bore reducer disclosed herein is utilized in conjunction with each shell of a gauge lesser than that normally accommodated by the shotgun, thereby permitting the loading of the shotgun magazine with shells of a gauge lesser than that normally utilized in conjunction with the shotgun. Thus, the shells of the lesser gauge can be automatically transported to the firing chamber of the gun in the same manner as if they were actually shells of a gauge normally utilized in the gun. In the embodiment of the invention utilizing a reducer of somewhat greater length than the barrel of the gun the reducer is secured within the gun by a threadably engaged collar received on a portion of the reducer extending outwardly from the muzzle of the gun which embodiment further includes a spent shell extractor means adapted to cooperate with an extractor means provided in the gun.

The present invention relates to bore reducers for shotgun barrels, and more particularly to tubular members which may selectively be utilized in conjunction with break-action, automatic or bolt action shotguns so as to adapt the shot gun to fire smaller gauge shells than would normally be utilized in the gun.

More particularly, the present invention contemplates the provision of bore reducers which may vary in length from the approximate length of a shotgun shell to somewhat slightly more than the full length of the gun barrel so as to provide a maximum of flexibility whereby a single shotgun may be advantageously adapted for a particular type of shooting, be it for game, trap shooting or target practice, for example.

Numerous shotgun bore reducers have been proposed heretofore to permit the use of smaller gauge shells than normally utilized in the gun. As will become apparent hereinafter most of these bore reducing devices are not adapted to be utilized in automatic or bolt action shotguns nor are they adapted to protect the entire length of the bore of the gun so as to insure that, for example, the bore of the gun is not adversely affected when firing shells of a lesser gauge than normally utilized.

Accordingly, it is a primary object of the present invention to provide an improved shotgun bore reducer which overcomes the inherent disadvantages associated with bore reducers proposed heretofore.

It is another object of the present invention to provide a shotgun bore reducer constructed in accordance with the principles of the present invention wherein separate exemplary embodiments of the bore reducer may advantageously be utilized in conjunction with either a break-action breech-loading shotgun or an automatic shotgun, such as provided with a magazine feed means, so as to facilitate the utilization of the gun to automatically fire shells of a lesser gauge than normally utilized in the gun.

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A further object of the present invention is to provide an exemplary embodiment of a shotgun bore reducer constructed in accordance with the principles of the present invention particularly adapted to be placed within the shotgun barrel and extend from the breech of the barrel along the entire length thereof and project outwardly somewhat from the muzzle of the barrel so as to facilitate releasably securing the reducer within the barrel of the shotgun to preclude the possibility of adversely affecting the inner surfaces of the shotgun barrel when firing shells of lesser gauge or diameter than normally used in the gun.

Still another object of the present invention is to provide shotgun bore reducers constructed in accordance with the principles of the present invention which are so designed so as to fit within the shotgun bore to be reduced in such a manner as to minimize the possibility of undue vibration, rupturing or distortion of the bore reducer in use.

Still another object of the present invention is to provide shotgun bore reducers which are extremely simple in construction, relatively inexpensive to manufacture and easy to operatively position within a shotgun.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a fragmentary side elevational view of a break-action breech-loading single barrel shotgun with portions of the barrel, stock and firing mechanism broken away to show certain interior details as well as the operative placement of one embodiment of a bore reducer constructed in accordance with the principles of the present invention;

FIGURE 2 is a rear perspective view, as seen from the breech end, of the shotgun bore reducer of FIGURE 1;

FIGURE 3 is an elevational view of another embodiment of a shotgun bore reducer constructed in accordance with the principles of the present invention wherein there is provided a bore reducer of somewhat greater length than the barrel of the gun with which it is to be utilized and further showing a portion of the muzzle end of the reducer in section;

FIGURE 4 is an enlarged fragmentary longitudinal vertical sectional view of the interchangeable barrel of FIGURE 3 shown operatively positioned within the bore of a shotgun such as illustrated in FIGURE 1;

FIGURE 5 is a vertical sectional view taken substantially along the plane of the line 5—5 of FIGURE 4; and

FIGURE 6 is an enlarged fragmentary longitudinal vertical sectional view of the muzzle end of the interchangeable barrel of FIGURE 3 wherein details of the means of securing the barrel within the bore of a shotgun are illustrated.

Referring now to the drawings and particularly the exemplary embodiment of the invention illustrated in FIGURES 1 and 2 it will be seen that the shotgun bore reducer indicated generally at 10 comprises a tubular body portion 12 having an outer diameter sized so as to snugly but removably slide within the bore 14 of a shotgun indicated generally at 16. As will become apparent as the description proceeds the embodiment 10 of the shotgun bore reducer of the present invention is suitable not only for use with break-action breech-loading single barrel shotguns but also shotguns of other types such as break-action breech-loading side by side double barrels or over and under as well as automatic and bolt-action shotguns. It will be apparent that the shotgun bore reducer 10 has an external configuration generally identical to the dimensions of a shotgun shell of the gauge which would normally be utilized with the shotgun 16 were the reducer

10 of the present invention not being utilized in conjunction therewith.

Toward this end, it will be seen that the tubular body 12 of the shotgun bore reducer 10 is provided with an annular axial boss or rim 18, analogous to that normally provided on a shotgun shell casing. This rim 18 is provided with an annular recess indicated generally at 20 sized so as to accept the rim of a shotgun shell such as indicated at 22 which is of a lesser gauge than that normally used in the shotgun 16.

As seen best in FIGURE 1 the shotgun bore reducer 10 is snugly but removably received within the bore 14 of the shotgun 16 with substantially the entire outer surface of the bore reducer 10 in contact with the inner surface of the shell chamber or breech end of the bore 14 so as to substantially preclude undue vibration, distortion, etc. of the bore reducer 10 during utilization thereof. Moreover, as seen best in FIGURE 1 the bore reducer 10 is preferably sized so as to be slightly longer than the shotgun shell 22 to be utilized therein so as to provide a slight "choke" effect on the pellets passing therethrough.

From the foregoing description of the bore reducer 10 it will be apparent that inasmuch as its outer dimensions are substantially that of a shell which would normally be utilized in the gun the bore reducer 10 may be also utilized in automatic or bolt action guns inasmuch as the bore reducer 10 may be fed from the magazine, detonated and extracted from the gun in a manner analogous to the extension of spent shells of a normal size therefrom.

Referring now specifically to the exemplary embodiment of the present invention illustrated in FIGURES 3-6 it will be noted that the bore reducer indicated generally at 50 comprises an elongated tubular body or interchangeable barrel member indicated at 52 of somewhat greater length than the over-all length of the shotgun barrel within which it is to be utilized for reasons which will become apparent. As seen best in FIGURE 3 the tubular body 52 of the elongated bore reducer 50 has a relatively large diameter portion 54 adapted to be positioned within the bore of a shotgun indicated generally at 56 which is substantially analogous to the shotgun 16, for example. As will become apparent as the discussion proceeds the embodiment 50 of the present invention is not necessarily adapted to be utilized in conjunction with automatic or bolt-action shotguns but is primarily intended to be utilized in conjunction with break-action breech-loading shotguns. It will be appreciated of course that in the event it is utilized with a shotgun of other than single barrel construction a reducer 50 would be utilized in conjunction with each of the barrels of the shotgun.

Referring again to FIGURES 3, 4 and 5 it will be seen that the elongated or interchangeable barrel 52 includes a portion 58 of relatively lesser diameter than the breech portion 54. The muzzle end 60 of the reducer 52 and particularly that portion which extends outwardly from the barrel 68 is externally threaded such as at 62 in order to facilitate removably securing the reducer 50 within the barrel of a shotgun by means of a locking collar 64 threadably received upon the muzzle end 60 of the body 52 and abutting such as at 66 against the muzzle end of the barrel 68 of the shotgun 56. Accordingly, the muzzle portion 54 of the body 52 and its associated annular rim 55 are drawn into and against the annular recess indicated generally at 70 within the barrel 68 normally provided for the reception of the rim of a conventional shotgun shell so as to removably secure the reducer 50 in the shotgun.

It will be noted that while not illustrated the portion 58 of the barrel 52 could be smaller than the interior of the gun barrel 68 in order that the reducer 50 may be put in and taken out of the gun barrel 68 easily while also allowing for expansion of the barrel 52 caused by the generated by the firing of the gun. Furthermore, for very small gauges such as 410 gauge, for example, the barrel portion 58 could be of a reduced outer diameter,

i.e. substantially smaller than the bore of the barrel 68 from a point slightly in front of the shell receiving portion 54 and continuing to the muzzle end 60. It is generally possible to reduce the diameter of the barrel portion 58 to smaller shotgun gauges without danger of undue vibration or the like of the reducer 50. Thus, it can be seen that it is not necessary that the interchangeable barrel 52 fit in surface to surface contact along the entire length of the gun barrel 68. The collar 64 may be provided with an axially extending annular shoulder, not shown, in order to center relatively small diameter interchangeable barrel within a gun barrel.

As best seen in FIGURES 3, 4 and 5 the embodiment of the shotgun bore reducer 50 is preferably provided with a spent shell casing extractor means indicated generally at 72 disposed within the breech end of the interchangeable barrel 52 so as to be adapted to be operated by the shell extractor (not shown) of the shotgun 56. As seen best in FIGURES 3 and 5 the extractor slide 74 is slidably received in a milled slot provided in the body portion 54 whereby the longitudinal travel of the member 74 is limited by a pair of ears 76 projecting therefrom slidably received in a circumferentially enlarged portion 78 of the slot 75. Although not specifically shown, it will be understood that the conventional mechanism of the shotgun 56 will be positioned so as to coact with the rim of the extractor slide member 74.

As seen best in FIGURE 3 the embodiment 50 of the bore reducer of the present invention may further be provided with generally spiral rifling or the like as indicated generally at 80 so as to provide a means for imparting rotational motion to a slug-type shotgun projectile.

From the foregoing discussion of the bore reducer 50 and its operative association with a shotgun to reduce the effective gauge thereof it will be appreciated that the embodiment 50 of the bore reducer, by virtue of the fact that it extends along the entire length of the shotgun barrel and is releasably secured within the bore thereof by means of a threadably secured collar 64, it substantially precludes the possibility of subjecting the normal bore of the shotgun to what may sometimes be the detrimental effects of fouling such as form an expanding or somewhat "unchoked" pellet charge. It will therefore be seen that the exemplary embodiments of the invention illustrated and discussed satisfy the several objects of this invention.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. In combination with a shotgun, a bore reducer adapted to be inserted into the barrel of the gun to reduce the effective gauge of the shotgun, said reducer comprising an elongated tubular member having a rear portion and a forward end portion, said rear portion of said tubular member being adapted so as to be received in the shell rim receiving recess in the breech of the shotgun, said forward portion of said tubular member being sized so as to be adapted to be received within the bore of said shotgun, the breech end of the bore of said tubular member being provided with an annular recess adapted to receive the rim of a shotgun shell of lesser gauge than normally utilized in said shotgun, said tubular member being of sufficient length so as to extend within and along at least the entire length of the barrel of the gun, said forward portion of said tubular member when operatively positioned within the barrel of said shotgun extending outwardly from the muzzle end thereof, said outwardly extending portion of the tubular mem-

ber being provided with a securing means adapted to removably secure the tubular member within the barrel of said shotgun, said outwardly extending portion of said bore reducer being provided with externally disposed threads and a collar adapted to be threadably received thereon so as to abut the nozzle end of said shotgun to removably secure the bore reducer within the barrel of the shotgun, a spent shell extractor means comprising an extractor member slidably carried by said tubular member adjacent the breech end thereof and adapted to be operatively positioned so as to coact with the extractor means of said shotgun, said spent shell extractor means including an open-ended slot means provided in the rear portion of the tubular member, said slot means being in communication with the peripheral and breech end surfaces of said tubular member, said slot means having a circumferentially enlarged portion at the forwardly disposed end thereof, said circumferentially enlarged portion of said slot means being provided with a pair of circumferentially opposed axially extending slots in non-communication with the peripheral surface of said tubular member, said extractor member being slidably carried in said slot means and including a pair of outwardly and circumferentially disposed ears adjacent the forwardly disposed end thereof, said ears being engaged in said circumferentially opposed slots whereby the travel of said extractor member is limited by axial end walls defining a portion of said circumferentially enlarged portion.

2. In combination with a shotgun, a non-segmented tubular bore reducer having external dimension generally identical to the dimensions of a shotgun shell of a gauge normally utilized in the shotgun, said bore reducer being adapted to receive a shotgun shell of lesser gauge than normally utilized by the shotgun thereby adapting the shotgun to operatively receive shotgun shells of a lesser gauge than normally utilized therein, said reducer comprising an elongated tubular member having a rear portion and a forward end portion, said rear portion of said tubular member being provided with means so as to be received in the shell rim receiving recess in the breech

of the shotgun, said forward portion of said tubular member being sized so as to be received within the bore of said shotgun, the rear portion of the bore of said tubular member being provided with an annular recess to receive the rim of a shotgun shell of lesser gauge, a spent shell extractor means comprising an extractor member slidably carried by said tubular member adjacent the rear breech end thereof adapted to be operatively positioned so as to coact with the extractor means of said shotgun, said spent shell extractor means including an open-ended slot means provided in the rear portion of the tubular member, said slot means being in communication with the peripheral and breech end surfaces of said tubular member, said slot means having a circumferentially enlarged portion at the forwardly disposed end thereof, said circumferentially enlarged portion of said slot means being provided with a pair of circumferentially opposed axially extending slots in non-communication with the peripheral surface of said tubular member, said extractor member being slidably carried in said slot means and including a pair of outwardly and circumferentially disposed ears adjacent the forwardly disposed end thereof, said ears being engaged in said circumferentially opposed slots whereby the travel of said extractor member is limited by axial end walls defining a portion of said circumferentially enlarged portion.

References Cited

UNITED STATES PATENTS

252,241	1/1882	Morris	42—77
282,194	7/1883	Howe	42—77
640,070	12/1899	Aeschbacher	42—77
783,561	2/1905	White	42—77 X
1,555,854	10/1925	Hill	42—77
1,759,772	5/1930	Williams	42—77
3,156,995	11/1964	Mellor et al.	42—77
3,196,569	7/1965	Thomason	42—77

40 BENJAMIN A. BORCHELT, *Primary Examiner*,