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# United States Patent [19]

**Knight**

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[54] **RIFLE WITH INTERCHANGEABLE BARREL**

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[51] **Int. Cl.**[6] ..... **B05D 91/08**

[52] **U.S. Cl.** ..... **42/75.02**; 42/77; 42/51; 42/101; 89/29

[58] **Field of Search** ..... 42/75.02, 77, 51, 42/101; 89/29

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[57] **ABSTRACT**

A rifle has a conventional gun stock, a receiver mounted thereon immediately rearwardly of an elongated barrel. The receiver has a forward end and a hollow forward end portion to detachably receive the rearward end of the barrel. The barrel has a rearward end portion that is tapered and which is complementary in shape to the tapered interior wall of the hollow forward end portion of the receiver. The receiver and the barrel have matching indicia marks to permit them to be properly aligned when assembled. The rearward end portion of the barrel has a pair of concave shaped wells which are substantially aligned, but partially offset, from threaded apertures in the receiver. Screws having rounded inner ends are mounted within the threaded apertures and penetrate into the wells and forcibly draw the barrel and the receiver into tight engagement with each other.

**3 Claims, 2 Drawing Sheets**

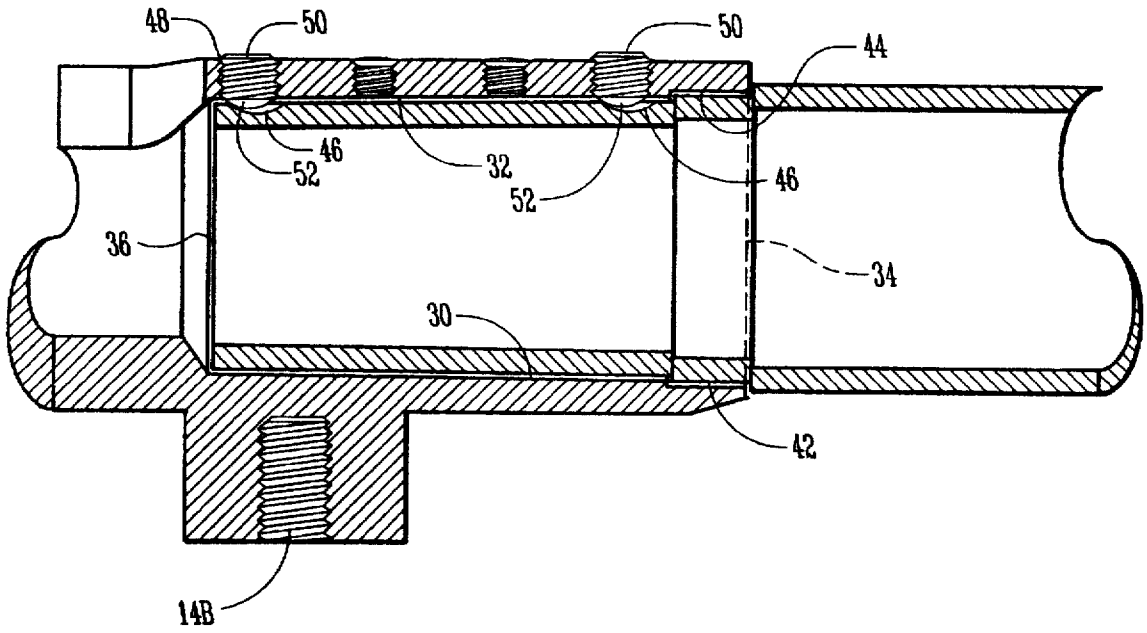


Fig. 1

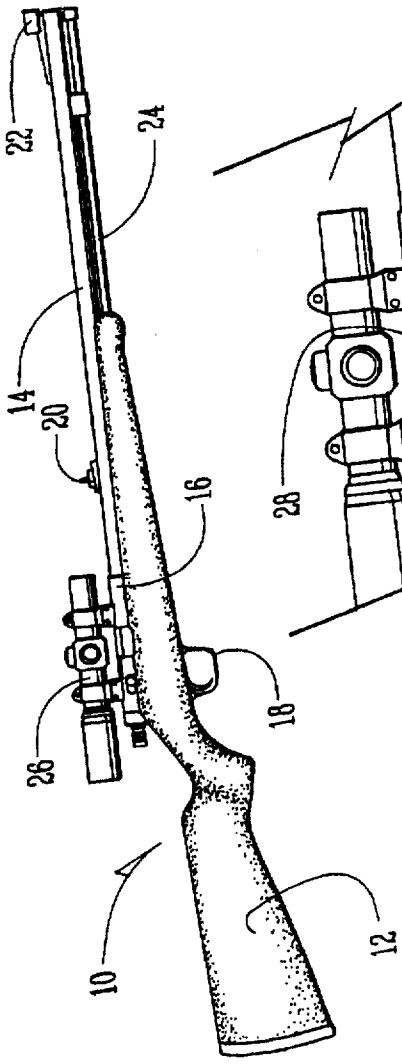



Fig. 2

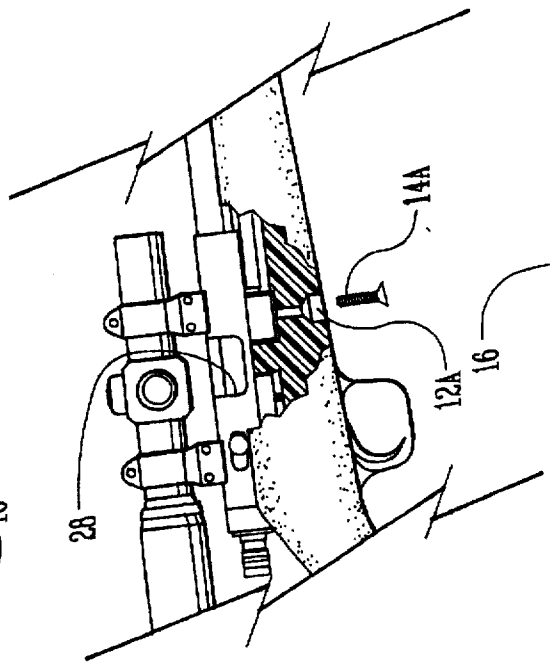
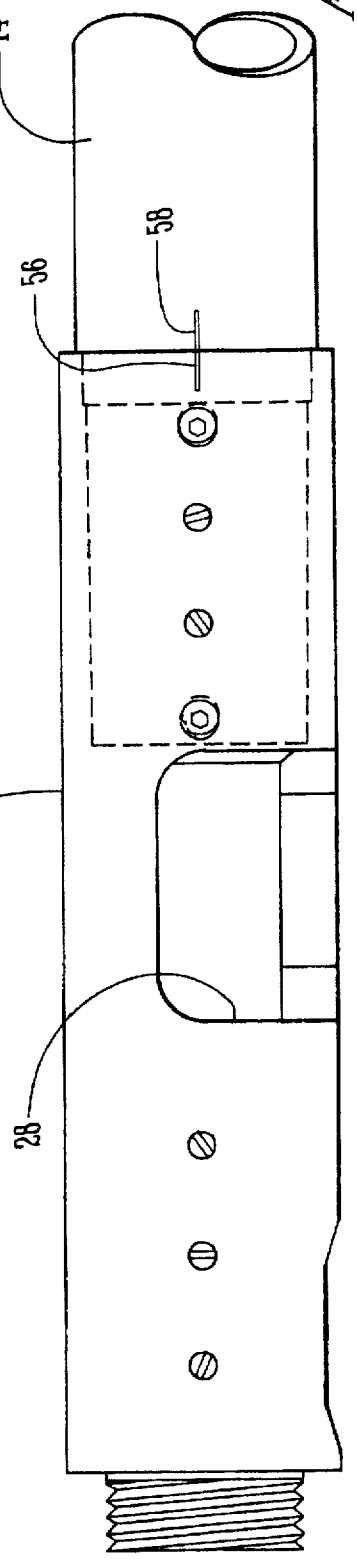
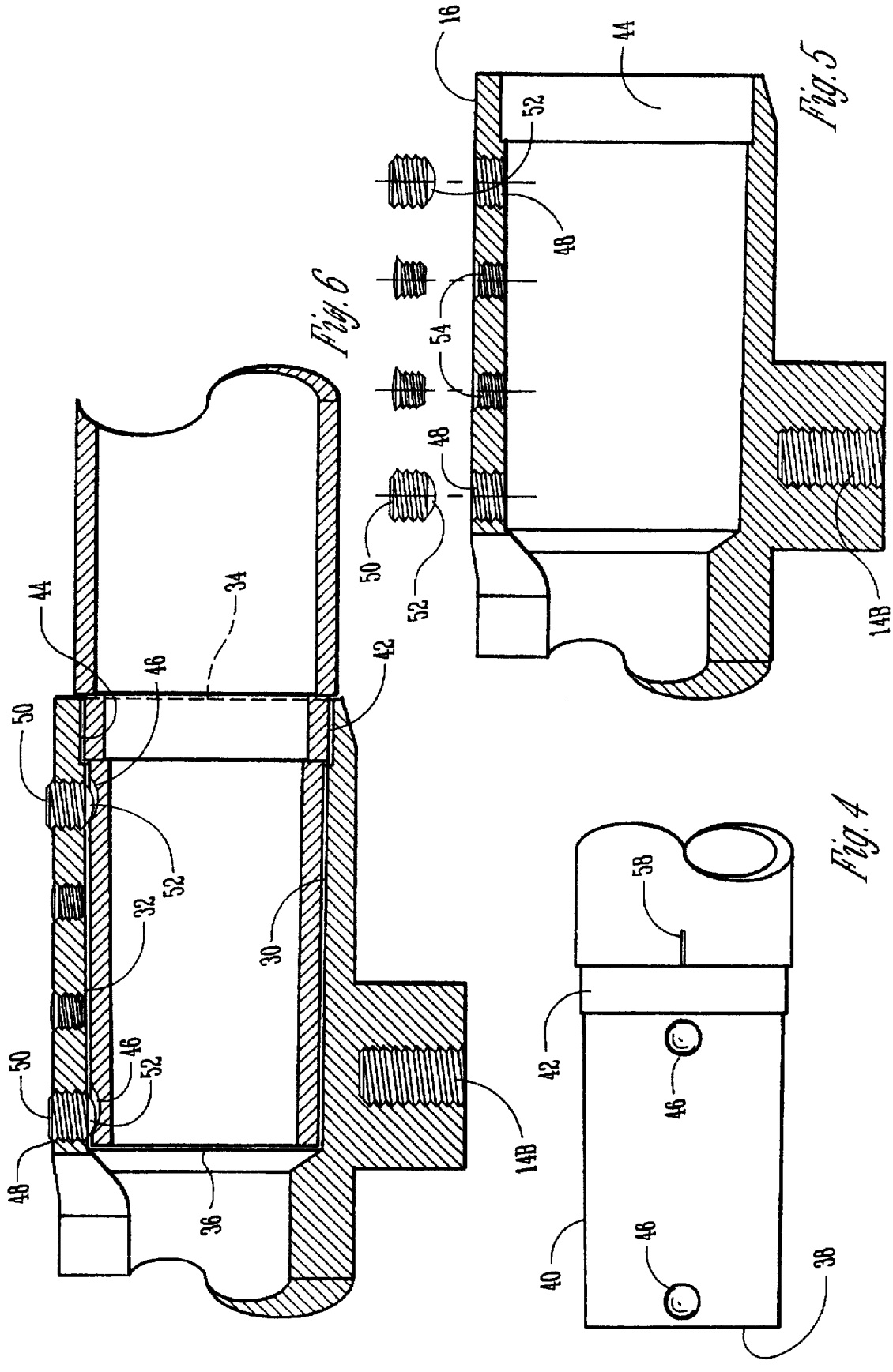



Fig. 3




16
44
52
48
54
48
50
52
14B
Fig. 5
Fig. 6
44
34
46
42
50
52
32
30
50
46
52
48
36
14B
58
42
46
40
46
38
Fig. 4

# RIFLE WITH INTERCHANGEABLE BARREL

## BACKGROUND OF THE INVENTION

Most rifles do not have the capability of having interchangeable barrels. This is particularly true of muzzleloading rifles. One cannot typically interchange the barrel of a scope mounted rifle for another barrel to create a shotgun or a rifle of different caliber because of the possible movement between the receiver and the barrel. Such movement would make the scope inaccurate.

It is therefore a principal object of the invention to provide a rifle capable of having its barrel interchangeable for barrels of different sizes.

A further object of the invention is to provide a scope mounted rifle capable of having its barrel interchangeable for barrels of different sizes.

A still further object of this invention is to provide a rifle which can easily have its barrel exchanged for a barrel of different size.

A still further object of this invention is to provide a rifle that will not permit movement between the barrel and the receiver when an interchangeable barrel is used.

These and other objects will be apparent to those skilled in the art.

## SUMMARY OF THE INVENTION

The rifle of this invention has a conventional gun stock, a receiver mounted thereon immediately rearwardly of an elongated barrel. The receiver has a forward end and a hollow forward end portion to detachably receive the rearward end of the barrel. The barrel has a rearward end portion that is tapered and which is complementary in shape to the tapered interior wall of the hollow forward end portion of the receiver. The receiver and the barrel have matching indicia marks to permit them to be properly aligned when assembled. The rearward end portion of the barrel has a pair of concave shaped wells which are substantially aligned, but partially offset, from threaded apertures in the receiver. Screws having rounded inner ends are mounted within the threaded apertures and penetrate into the wells and forcibly draw the barrel and the receiver into tight engagement with each other.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevational view of the rifle of this invention;

FIG. 2 is an enlarged scale partial sectional view of the scope, receiver and trigger assembly of FIG. 1;

FIG. 3 is an enlarged scale top plan view of the assembled receiver and barrel;

FIG. 4 is an enlarged scale top plan view of the rearward end of the barrel;

FIG. 5 is a partial sectional view of the receiver taken on a vertical plane passing through the central axis of the receiver; and

FIG. 6 is a sectional view of the assembled receiver and rifle taken on the same plane as that of FIG. 5.

## DESCRIPTION OF THE PREFERRED EMBODIMENT

The muzzleloading rifle **10** has a gun stock **12** with a bottom vertical bore **12A**. Bore **12A** serves to permit barrel **14** to be secured to the gun stock by means of screw **14A**



(FIG. 2) which extends through bore **14B** (FIG. 5) to secure the barrel to the gun stock. The numeral **16** designates the receiver. Conventional trigger assembly **18**, rear site **20**, front site **22**, ramrod **24**, and shooting scope **26** form a part of rifle **10** and are conventional in their function. Receiver **16**, as described hereinafter, has special structure to facilitate connecting the receiver and the barrel together.

Receiver **16** has a conventional side opening **28** and a hollow bore **30** with taper side walls **32** adjacent its forward end **34**. The side walls **32** taper inwardly from the forward end **34** so that the diameter of the hollow bore **30** progressively decreases. The numeral **36** designates the rearward end of the bore **30**.

Barrel **14** has a rearward end **38** (FIG. 4) with a tapered rearward end portion **40**. The tapered rearward end portion **40** is complimentary in shape to the tapered side walls **32** of receiver **16**. A shoulder **42** (FIG. 4) appears immediately forward of the tapered rearward end portion **40**. Shoulder **42** is adapted to be received in the annular groove **44** within the forward end of receiver **16** (FIG. 6). The groove **44** and the shoulder **42** cooperate together to ultimately limit the penetration of the rifle into the receiver.

The tapered rearward end portion **40** of barrel **14** has two wells **46** therein which are concave in shape. Apertures **48** in receiver **16** are substantially vertically aligned with the wells **46** but are slightly offset from the centers of the wells **46** as best shown in FIG. **6**. Set screws **50** having rounded concave ends **52** are adapted to be screwed into apertures **48** and penetrate into the wells **46**. The slight disalignment of the apertures **48** with respect to the wells **46** permit the set screws **50** to bind against the side edge of the wells to draw the tapered rearward end portion **40** of the barrel into tight engagement with the tapered side walls **32** of the bore **30** in receiver **16**.

The numerals **54** designate filler screws for scope **26** when scope **26** is not in place.

When it is desired to change barrels for rifle **10**, the screws **50** are loosened and the barrel **14** is longitudinally pulled forwardly out of the receiver **16**. A substitute barrel having the same tapered rear end portion **40** of barrel **14** is then inserted into the hollow bore **30** of receiver **16**. The indicia mark **56** on receiver **16** is placed in alignment with the indicia mark **58** on barrel **14** as shown in FIG. **3** so that the two components are in proper alignment. The screws **50** are thereupon tightened to penetrate the wells **46** in the manner described above to tightly draw the barrel into the forward end of the receiver. Typically, this will place the tapered rearward end portion **40** of the barrel in tight engagement with the tapered side walls **32** at the forward end of the receiver. Shoulder **42** on the barrel **14** will be in tight engagement with the annular groove **44** at the forward end of the receiver. This arrangement of structure will absolutely prevent any movement of the barrel with respect to the receiver. This can all be accomplished in a rifle that has a scope mounted thereon. Since there is no movement permitted between the receiver and the barrel, the scope will still be effective to perform its intended function and will not be out of adjustment.

Obviously, the substitute barrel can be either a rifle barrel of different caliber, or can be a shotgun barrel. The barrel of rifle **10** can be quickly and easily changed which adds substantial versatility to its use.

From the foregoing, it is seen that this invention will achieve at least all of its stated objectives.

What is claimed is:

1. A rifle having a replaceable barrel, comprising,

a gun stock,

a receiver on said gun stock,

a barrel on said gun stock secured to said receiver,

said receiver having an open forward end, and a hollow forward end portion detachably receiving a rearward end portion of said barrel,

said open hollow forward end portion of said receiver having an interior diameter that is tapered to have a progressively smaller diameter rearwardly of said open forward end,

the rearward end portion of said barrel being tapered and being complimentary in shape to said hollow forward end portion of said receiver, and

means detachably securing said rearward end portion of said barrel within said hollow forward end portion of said receiver, said means comprising the rearward end portion of said barrel having at least one concave shaped well, and said hollow forward end portion of said receiver having a threaded bore therein slightly offset and in partial radial disalignment with said concave shaped well, and a set screw in said threaded bore extending into said concave shaped well to forcibly draw said barrel and said receiver into tight engagement with each other.



2. The rifle of claim 1 wherein said rearward end portion of barrel and said hollow forward end portion of said receiver have abutting surfaces to limit the penetration of said barrel into said receiver.

3. The rifle of claim 1 wherein said rearward end portion of said barrel has two concave shaped wells and said hollow end portion of said receiver has two of said threaded bores.

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