Nov. 2, 1971 G. E. HENDRICKS 3,616,561

MULTIPLE BORE GUN HAVING A ROTATABLE BARREL

Filed March 3, 1969 3 Sheets-Sheet 1

Fig. 1

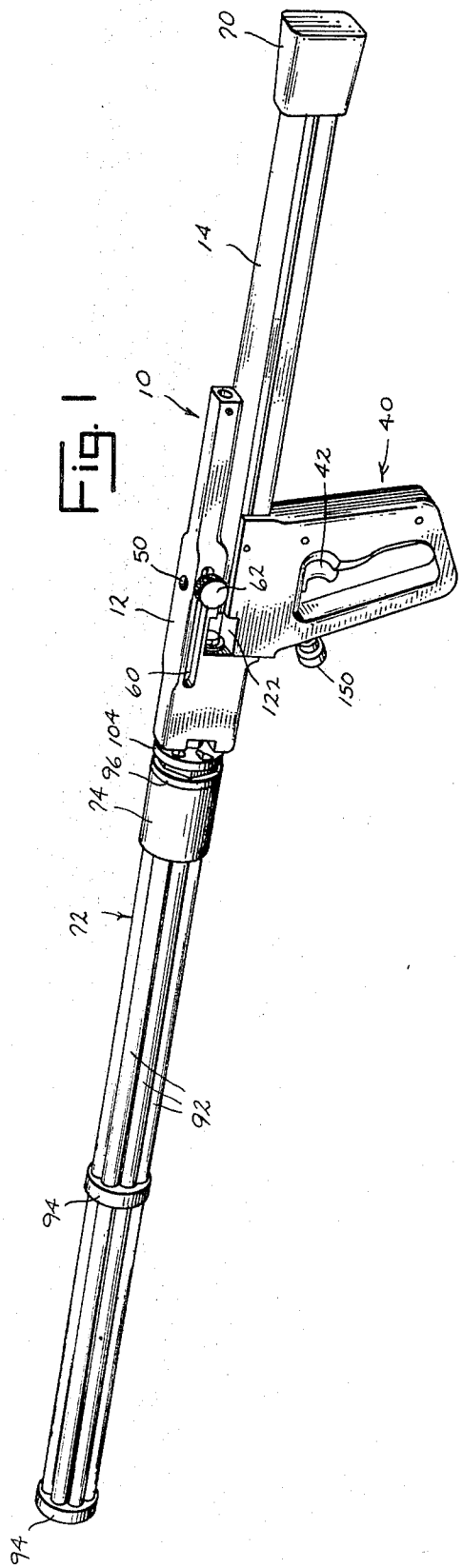
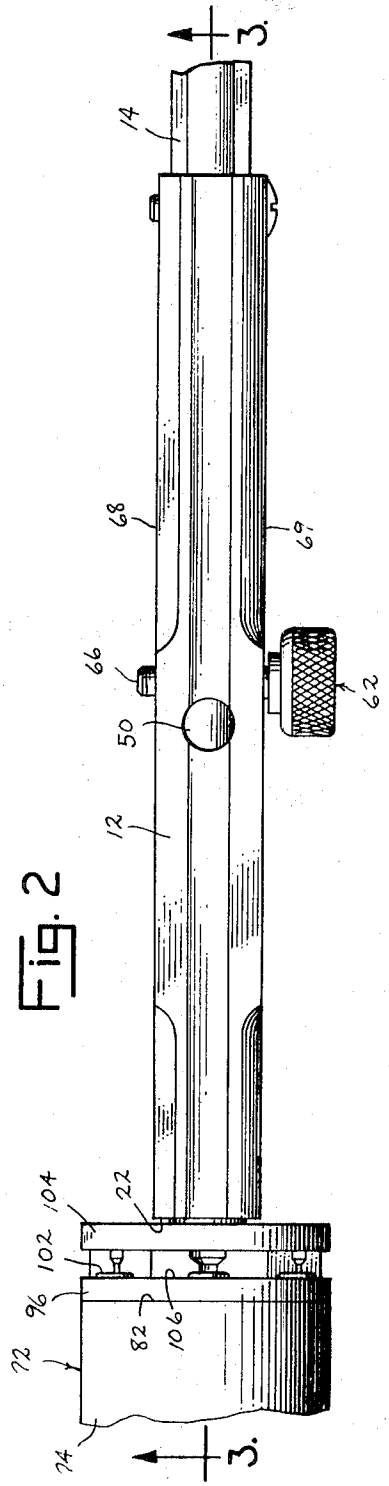



Fig. 2




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MULTIPLE BORE GUN HAVING A ROTATABLE BARREL

Filed March 3, 1969 3 Sheets-Sheet 2

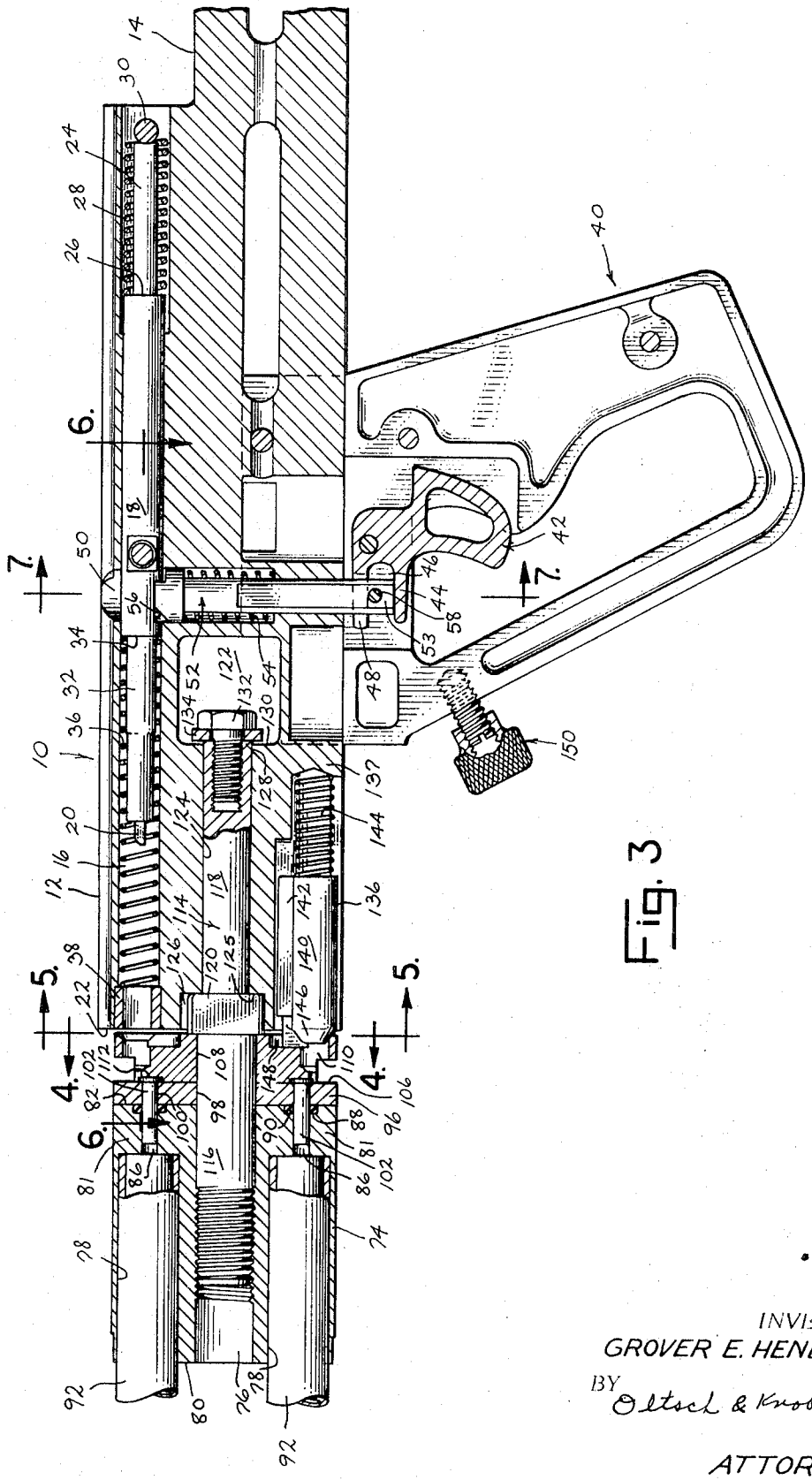



Fig. 3

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# MULTIPLE BORE GUN HAVING A ROTATABLE BARREL

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Fig. 4

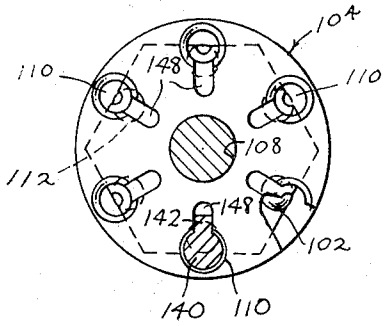
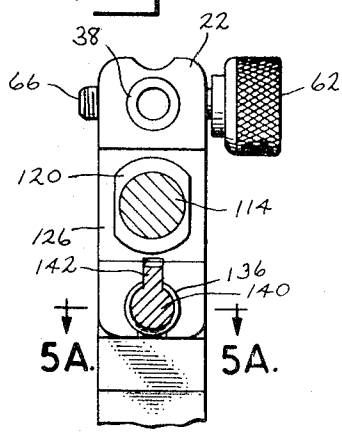



Fig. 5



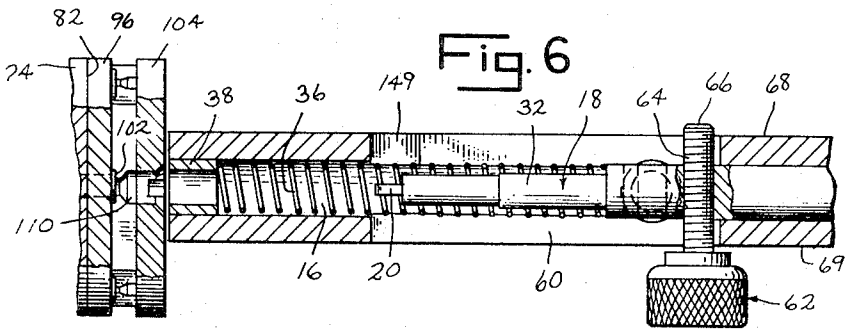




Fig. 6

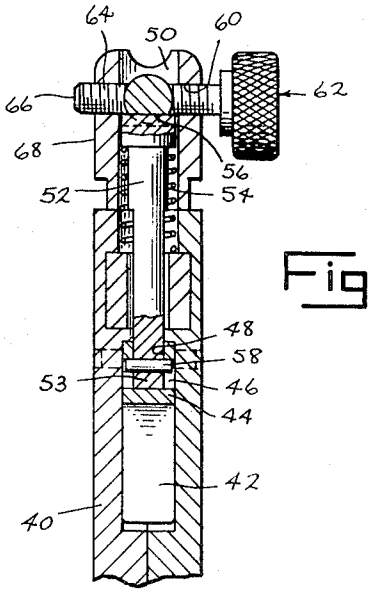
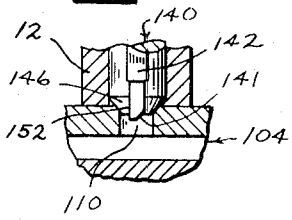



Fig. 7

Fig. 5A




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3,616,561

# MULTIPLE BORE GUN HAVING A ROTATABLE BARREL

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Int. Cl. F41c 1/00
U.S. Cl. 42—1 L 3 Claims


## ABSTRACT OF THE DISCLOSURE

A multiple bore gun having a rotatable barrel member mounted to a gun stock. The barrel member includes a plurality of bores therethrough each equally spaced from the axis of rotation of said bore and having an ammunition cartridge receiving end part which is positionable adjacent to and alignable with a longitudinal bore in the stock upon rotation of the barrel member. A detonating pin is slidably positioned within the stock bore and is shiftable therein between a cocked position and a firing position in which the pin is adapted to engage and detonate an ammunition cartridge seated within an aligned receiving end part.


## SUMMARY OF THE INVENTION

This invention relates to a multiplebore gun having a rotatable barrel member.

The gun of this invention includes a barrel member which is rotatably mounted to a gun stock and which includes a plurality of bores therethrough. Each of the bores in the barrel member is equally spaced from the axis of rotation of the barrel member and has an ammunition cartridge receiving end part which is positionable adjacent to and alignable with a longitudinal bore in the gun stock upon rotation of the barrel member. A detonating pin is slidably disposed within the longitudinal bore of the gun stock and is shiftable therein between a cocked position and a firing position in which the pin is adapted to engage and detonate an ammunition cartridge seated within an aligned receiving end part of a barrel member bore. A catch means is carried by the stock for releasably interlocking with the detonating pin when the pin is in its cocked position.

This multiple bore gun finds specific, although not exclusive, use as a spear or projectile lanucher having a multi-shot, rapid fire capacity which can be used to kill game and predatory fish.

Accordingly, it is an object of this invention to provide a multiple bore gun having a rotatable barrel member.

It is another object of this invention to provide a multiple bore gun which is adaptable for use as an underwater spear gun and which has the capacity of launching a plurality of spears toward an underwater target in rapid succession.

Another object of this invention is to provide a multiple bore weapon which has a rotatable barrel member and which is of economical construction.

Other objects of this invention will become apparent upon a reading of the invention's description.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the preferred embodiment of the multiple bore gun of my invention.

FIG. 2 is a fragmentary top plan view of the gun illustrated in FIG. 1.

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

FIG. 4 is a sectional view along line 4—4 of FIG. 3 showing parts of the gun broken away.



FIG. 5 is a fragmentary sectional view taken along line 5—5 of FIG. 3.

FIG. 5A is a fragmentary sectional view taken along line 5A—5A of FIG. 5.

FIG. 6 is a fragmentary sectional view taken along line 6—6 of FIG. 3.

FIG. 7 is a sectional view taken along line 7—7 of FIG. 3.

## DESCRIPTION OF THE PREFERRED EMBODIMENT

The preferred embodiment illustrated is not intended to be exhaustive or to limit the invention to the precise form disclosed. It is chosen and described in order to best explain the principles of the invention and its application and practical use to thereby enable others skilled in the art to best utilize the invention.

The embodiment of the gun of this invention illustrated in the drawings includes a stock **10** having a fore end part **12** and an aft end part **14**. Fore end part **12** of the stock has an upper longitudinal bore **16** therein. A detonating pin **18** is slidably received within longitudinal bore **16** and is shiftable therein between a cocked position at the rear of bore **16**, as shown in FIGS. 3 and 6, and a fire position at the front of bore **16** in which tip **20** of the detonating pin protrudes outwardly of the forward end face **22** of stock **10**. Detonating pin **18** has a reduced rear end portion **24** separated from the remainder of the pin by an annular shoulder **26**. A helical spring **28** surrounds reduced pin end portion **24** and has one end abutting annular shoulder **26** and its opposite end abutting a stop or obstruction **30** within bore **16** as shown in FIG. 3. Detonating pin **18** also perferably includes a reduced forward end portion **32** which is separated from the remainder of the pin by an annular shoulder **34**. A helical spring **36** preferably surrounds pin end portion **32** and has one end part abutting annular shoulder **34** and an opposite end part preferably abutting a tubular plug **38** which is pressed into the forward end of longitudinal bore **16**. Plug **38** has a central bore therethrough which is adapted to receive tip **20** and at least a part of portion **32** of the detonating pin with clearance.

A hand grip **40** is attached, such as by screws, to the fore end part **12** of stock **10** and depends downwardly therefrom. A catch means is carried by stock **10** and is releasably interlockable with the detonating pin **18** when in its cocked position. The catch means may include a trigger **42** which is pivotally connected to hand grip **40** and a catch part **52** housed within stock **10**. Trigger **42** includes a projecting part **44** carried forwardly of its pivot connection with the hand grip. Projecting part **44** has a longitudinal slot **46** therein which divides it into upper and lower portions. The upper portion of projecting part **44** has a slot **48** therein. Fore end part **12** of stock **10** has a lateral bore **50** therethrough which intersects longitudinal bore **16** and which is positioned above slot **48** in trigger **42**. Catch part **52** is slidably received within bore **50** and is normally biased upwardly therein by means of a spring **54**, as shown in FIG. 3, so as to be lockingly received within a notch **56** in detonating pin **18** when the pin is positioned in its cocked position in bore **16**. The lower end **53** of catch part **52** projects through slot **48** with clearance and into slot **46** in trigger part **44**. A pin **58** extends transversely through end **53** of catch part **52** and includes end parts which project outwardly therefrom within slot **46** to engage the upper portion of trigger part **44** as best shown in FIG. 7.

Forward end part **12** of the stock has a longitudinal slot **60** formed therein which extends transversely through part **12** and intersects longitudinal bore **16**. A handle **62** having a threaded shank **64** may be provided to shift

the detonating pin into its cocked position. Threaded shank 64 is threaded through a transverse aperture in detonating pin 18 and extends with clearance through slot 60 in stock 10, as shown in FIGS. 6 and 7, with the tip 66 of the shank 64 preferably protruding just slightly beyond side face 68 of the stock. Slot 60 is of a sufficient length to permit handle 62 to freely move fore and aft therein as the detonating pin 18 shifts between its cocked and firing position. A butt member 70 is preferably received over the rear end face of stock 10.

A barrel member 72 is rotatably mounted, in a manner later described, to the forward end part 12 of stock 10. Barrel member 72 includes a cylindrical part 74 having a forward end face 80, a rear end face 82 and an axial bore 76 therethrough which has at least a portion thereof internally threaded. Cylindrical part 74 has a plurality of longitudinal bores 78 formed therein which are preferably equally spaced apart and are equally spaced from axial bore 76. Each bore 78 extends rearwardly from forward end face 80 of part 74 and terminates in an end wall 81 forming a part of rear end face 82 of part 74. Each end wall 81 has a bore 86 therethrough which is concentrical with bore 78 and which is adapted to receive an aummunition cartridge 102. An annular recess 88 is preferably formed in end face 82 about each bore 84 so as to receive an annular seal 90, such as an O-ring. An elongated cylindrical tube 92 is pressed into each bore 78 in cylindrical part 74 and preferably abuts wall 81 therein. Each tube 92 extends forwardly from cylindrical part 74 in a substantially parallel relationship with each other and is maintained in this relationship by selectively positioned spacers 94. Ammunition cartridge 102 may be of the blank type which causes a spear or similar projectile (not shown) to be propelled from tube 92 or of the "live type" which causes a slug to be propelled from the tube.

Barrel member 72 preferably includes a backing plate 96 which is faced against rear end face 82 of cylindrical part 74. Plate 96 has a central aperture 98 in registery with axial bore 76 in the cylinder part and a plurality of circularly arranged apertures 100, each aligned with a bore 86 in the cylindrical part. Each aperture 100 in backing plate 96 is adapted to receive an ammunition cartridge 102 which, as shown in FIG. 3, extends through the backing plate and into registering bore 86 where it preferably terminates within end wall 81. Each annular seal 90 surrounds a cartridge 102 in a constrictive manner where it protrudes forwardly from plate 96 and is received in compression within the recess 88 about bore 86 to form a seal between the cartridge 102 and cylindrical part 74.

An indexing plate 104 is faced against the rear face 106 of backing plate 96 and has a central aperture 108 which registers with aperture 98 of the plate. The forward face of plate 104 preferably has a plurality of circularly spaced recesses 112 formed therein which are each adapted to complementally receive the rim or base of an ammunition cartridge 102, as shown in FIG. 3, when the indexing plate contacts backing plate 96. Each recess 112 is intersected by aperture 110 formed in indexing plate 104 so as to expose the primer or primer containing portion of the ammunition cartridge 102. Each aperture 110 is equally spaced from central aperture 108 in the plate and from each other.

A shaft 114 is utilized to secure backing plate 96 and indexing plate 104 to cylindrical part 74 of barrel member 72. Shaft 114 includes an enlarged central part 120 and fore and aft reduced coaxial end parts 116 and 118 respectively. Fore end part 116 of shaft 114 projects with slight clearance through central apertures 98 and 108 of backing plate 96 and indexing plate 104 respectively and is threaded into axial bore 76 of cylindrical part 74 causing enlarged part 120 of the shaft to be drawn tightly against indexing plate 104 as shown in FIG. 3. Fore end part 12 of stock 10 preferably has a bore 122 which extends from side face 68 to side face 69 of stock 10 and which is positioned adjacently forwardly of lateral bore 50 therein. A longitudinal bore 124 extends from forward end face 22 of stock 10 to transverse bore 122 and includes an enlarged forward end part 126. Aft end part 118 of shaft 114 is journaled within longitudinal bore 124 with enlarged central part 120 thereof being received with clearance within enlarged end part 126 of the bore. Aft end part 118 of shaft 114 is so sized that with enlarged central part 120 of the shaft abutting shoulder 125 separating enlarged end part 126 from the remainder of bore 124, the rear end 128 of the shaft protrudes slightly rearwardly from front surface 130 of transverse bore 122. A bolt 132 is threaded into end 128 of shaft 114 and serves to clamp a washer 134 having an outer diameter larger than the diameter of longitudinal bore 124 to shaft end 128.

The center of each aperture 110 in indexing plate 104 and the axis of longitudinal bore 16 in stock 10 are spaced an equal distance from the axis of shaft 114 so that upon rotation of barrel member 72 each aperture 110 is brought into alignment with detonating pin 18. The size of each aperture 110 and thickness of plate 104 are such that tip 20 of detonating pin 18 can protrude into the aperture 110 aligned therewith and detonate the ammunition cartridge exposed by the aperture when pin 18 is shifted into its firing position.

Forward end part 12 of stock 10 has a longitudinal bore 136 formed therein which extends rearwardly from stock end face 22 and terminates in an end wall 137. Bore 136 preferably is positioned below stock bore 124 with its axis lying in substantially the same plane as the axis of stock bores 16 and 124 and spaced the same distance from bore 124 as bore 16 is spaced therefrom. An indexing pin 140 is slidably received within bore 138 and is preferably prevented from rotative movement therein by an integral key part 142. A helical spring 144 is positioned within bore 136 to the rear of indexing pin 140 and has one end part engaging the rear end face of the indexing pin and its opposite end part engaging end wall 137 of the bore. The forward end part 146 of indexing pin 140 is preferably conically shaped and is urged by spring 144 into the aperture 110 of indexing plate 104 which is diametrically positioned from the aperture 110 in alignment with detonating pin 18. Key 142 extends to and preferably slightly beyond the forward end of pin 140 and is beveled at 141. Each aperture 110 has a slotted portion 148 which is formed in the rear face of plate 104 and which receives with slight clearance the forward beveled tip of key 142 as shown in FIGS. 3 and 4.

To prevent accidental firing of the weapon, that portion of slot 60 defined in part by stock side face 68 from which tip 66 of cocking handle 62 protrudes may be enlarged, preferably at 149, to complementally receive a knob 150, shown removably attached to hand grip 40, which is adapted for threading onto tip 66 and into the slot enlargement at 149 to prevent movement of the detonating pin relative to the stock.

To load barrel member 72, bolt 132 is removed from shaft 114 and the shaft withdrawn from bore 124 of the stock. Shaft 114 is then unscrewed and separated from cylindrical part 74 to permit the separation of the indexing and back up plates from the cylindrical part. An ammunition cartridge 102 is inserted through each aperture 100 in backing plate 96 and an annular seal 90 received about the ammunition cartridge. The backing plate is faced against cylindrical part 74 with the forward end part of each ammunition cartridge being received within a bore 86 in cylindrical part 74. The indexing plate 104 is then faced against the backing plate 96 with the base of each ammunition cartridge 102 being received within a recess 112 therein. Fore end part 116 of shaft 114 is then reinserted through the backing and indexing plates and threaded into bore 76 of the cylindrical part, thus causing the backing plate and indexing plate to be firmly secured in position. The aft end part 118 of shaft

114 is then reinserted into bore 124 in stock 10 and secured therein by means of washer 134 and bolt 132.

To cock detonating pin 18, handle 62 is pulled rearwardly with respect to stock 10 comprising spring 28 at the rear of the pin until catch part 52 of the catch means interlocks with notch 56 in the pin. To fire the gun, trigger 42 need only be pulled causing disengagement of the catch part from the notch, thus freeing the pin to permit spring 28 to urge the pin forceably forward into the aligned aperture 110 in the indexing plate to engage the primer of an ammunition cartridge 102 and cause its detonation. Spring 36 at the front of the detonating pin is weaker than spring 28 and as such is compressed as the detonating pin is forced forwardly by spring 28 without a significant reduction in the striking force of the pin. After tip 20 of the detonating pin strikes cartridge 102 and the energy imparted to the detonating pin by spring 28 is expended, spring 36 causes a rebound in the detonating pin and serves to assure that tip 20 is withdrawn from aperture 110 in the indexing plate so as to permit rotation of the barrel member 72.

After firing of the gun, the barrel member is rotated by hand to cause indexing pin 140 to be cammed out of its receiving aperture 110 in indexing plate 104 by the wiping action of the beveled portion of indexing pin key 142 against the edge of slotted portion 148 of the aperture and snapped into the next aperture 110. This action serves to index another ammunition cartridge 102 into position for contact with the detonating pin. Reverse rotation of the barrel member 72 is prevented by interfering engagement of the flat or unbeveled tip portion 152 of key 142 with the edge of slotted portion 148. Additionally, the direction of barrel member is such that shaft 114 will not be turned out of bore 76 in cylinder part 74.

What I claim is:

1. A multiple bore gun including a stock having a longitudinal bore therein, a barrel rotatably mounted to said stock and having a plurality of bores therethrough each equally spaced from the axis of rotation of said barrel and having an ammunition cartridge receiving end part positionable adjacent to and alignable with said stock bore upon rotation of said barrel, an indexing means carried by said stock and engageable with said barrel for causing alignment of a selected receiving end part with said stock bore, a detonating pin slidably positioned within said stock bore, said detonating pin being shiftable between a cocked position and a firing position in which said pin is adapted to engage and detonate an ammunition cartridge seated within the receiving end part in alignment with said stock bore, biasing means carried by said stock and engaging said detonating pin for forceably urging said pin from its cocked position into its firing position, cocking means for shifting said detonating pin into its cocked position, and catch means carried by said stock and lockable with said detonating pin when said pin is shifted into its cocked position, said catch means being disengageable from said detonating pin to permit said pin to be shifted from its cocked position into its firing position under the influence of said biasing means, the improvement wherein said barrel is an elongated member and includes a cylindrical part located at one end of said elongated member and having a rear end face, a backing plate confronting said rear end face and being rigidly secured to said cylindrical part, said cylindrical part and backing plate defining the receiving end part of each barrel bore, and sealing means placed in compression between said cylindrical part and said backing plate and adapted to encircle the ammunition cartridge seated within each receiving end part.



2. The gun of claim 1 wherein said indexing means includes a part anchored to said backing plate and rotatable with said barrel, said indexing part having portions adapted to overlie portions of each ammunition cartridge when received within a said receiving end part, said detonating pin adapted to transverse said indexing means part when shifted into its firing position.

3. A multiple bore gun including a stock having a longitudinal bore therein, a barrel rotatably mounted to said stock and having a plurality of bores therethrough each equally spaced from the axis of rotation of said barrel and having an ammunition cartridge receiving end part positionable adjacent to and alignable with said stock bore upon rotation of said barrel, an indexing means carried by said stock and engageable with said barrel for causing alignment of a selected receiving end part with said stock bore, a detonating pin slidably positioned within said stock bore, said detonating pin being shiftable between a cocked position and a firing position in which said pin is adapted to engage and detonate an ammunition cartridge seated within the receiving end part in alignment with said stock bore, first biasing means carried by said stock and engaging said detonating pin for forceably urging said pin from its cocked position into its firing position, cocking means for shifting said detonating pin into its cocked position, and catch means carried by said stock and lockable with said detonating pin when said pin is shifted into its cocked position, said catch means being disengageable from said detonating pin to permit said pin to be shifted from its cocked position into its firing position under the influence of said first biasing means, the improvement wherein said indexing means includes a part anchored to said barrel and having portions adapted to overlie a part of the ammunition cartridge received within each receiving end part, said detonating pin being adapted to traverse said indexing means part when shifted into its firing position and including fore and aft end parts, said first biasing means engaging said aft end part of said detonating pin and a second biasing means carried by said stock engaging said fore end part of the detonating pin, said second biasing means being yieldable as said detonating pin is urged by said first biasing means into its firing position and serving to urge said detonating pin from its firing position clear of said indexing means part.


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U.S. Cl. X.R.

42—59