

[54] SURVIVAL WEAPON SYSTEM

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[51] Int. Cl. **F41c 27/00, F41c 3/02, F41c 19/00**

[58] Field of Search **42/1 R, 1 Z, 1 G, 1 A, 1 J, 42/1 L, 86, 69 R, 69 A, 69 B**

[56] References Cited

UNITED STATES PATENTS

3,168,788	2/1965	Coulter	42/1 Z
1,994,295	3/1935	Williams, Jr.	42/1 G
3,319,862	5/1967	Neighorn	42/1 R
3,287,843	11/1966	Seidel et al.	42/69 B

3,443,333	5/1969	Manatos	42/1 G
1,229,721	6/1917	Cooke	42/86
2,805,507	9/1957	Buquor	42/1 R
212,244	2/1879	Lyford	42/86
2,597,212	5/1952	White et al.	42/1 A
2,852,880	9/1958	Kauffman	42/1 R

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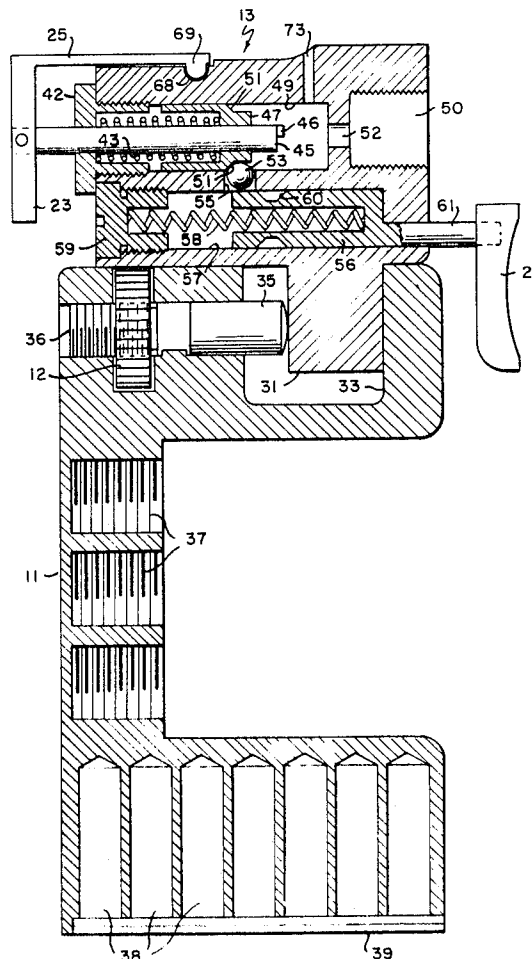
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[57] ABSTRACT

A compact, convertible weapon for use in survival environments includes a handle for selectively mounting a mechanism for firing cartridges or flares thereon as well as having storage capability. The firing mechanism utilizes a ball and detent arrangement for cocking an associated bolt and includes a firing pin arrangement selectable for either rim- or center-fire cartridges. An associated barrel is partially rifled and partially smooth-bored for improved accuracy when firing certain types of loads. Alternatively, the handle may be used in conjunction with a knife attachment.

14 Claims, 8 Drawing Figures



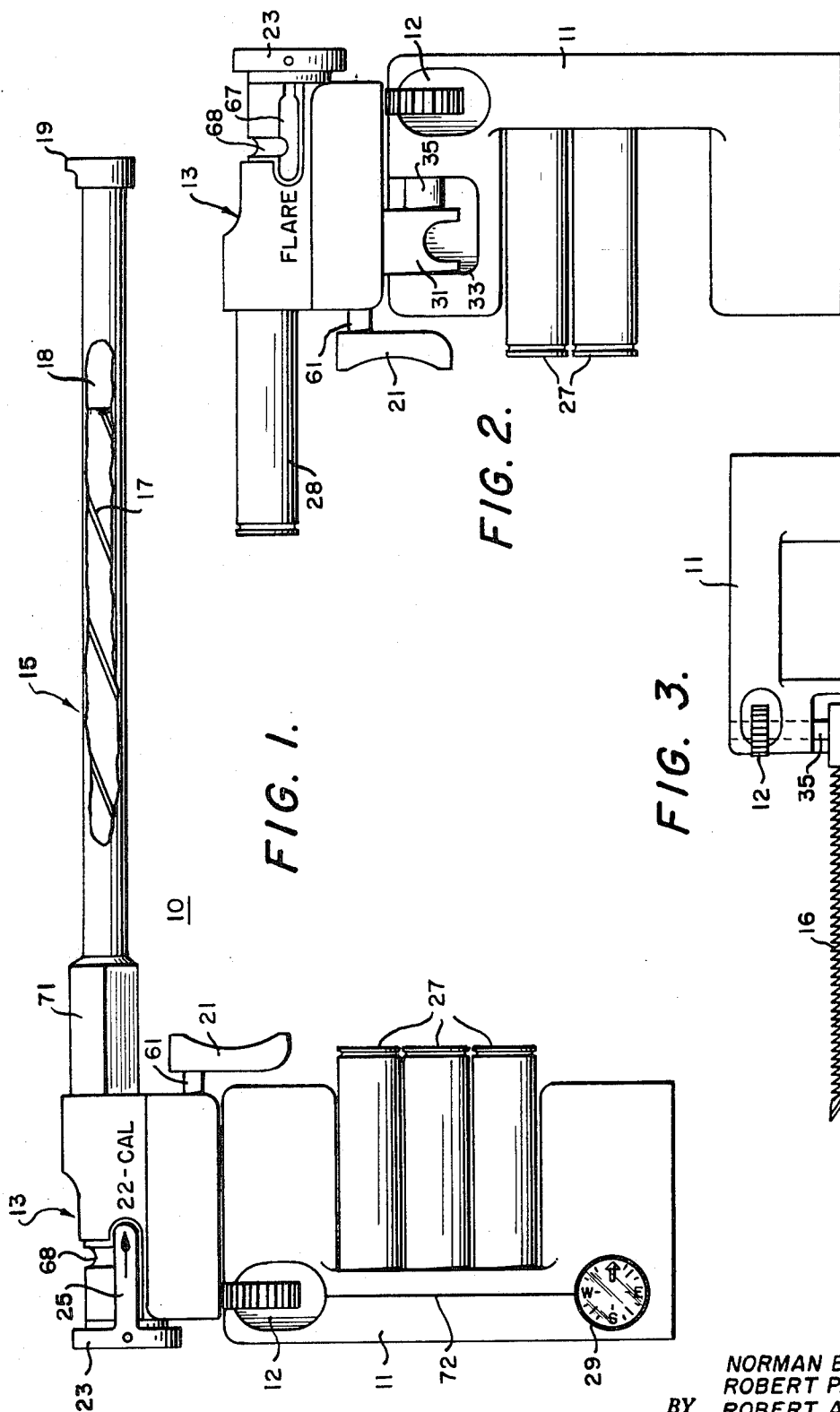


FIG. 2.

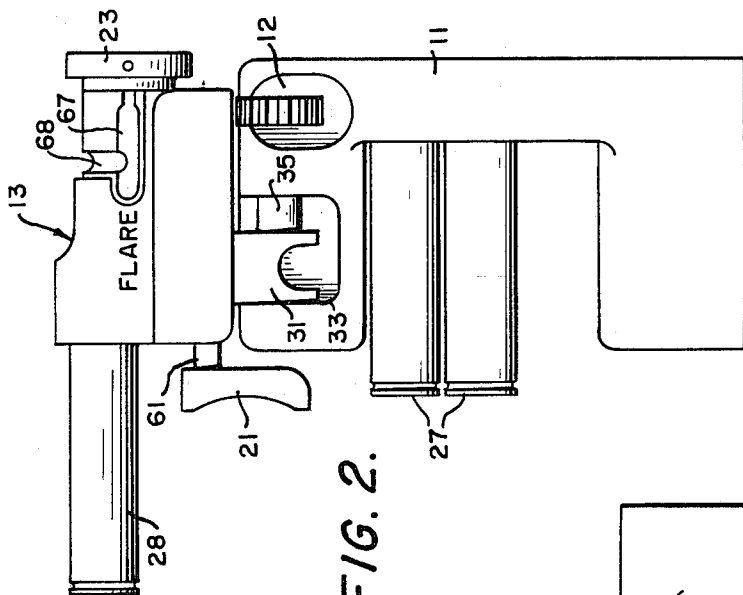
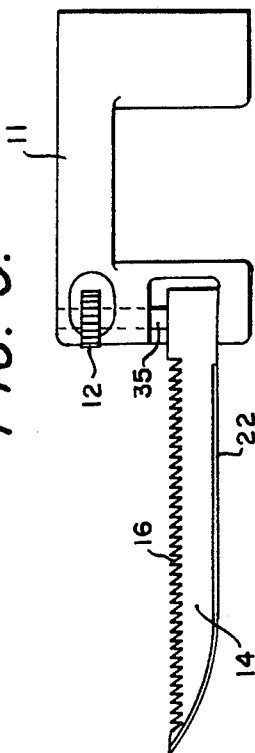


FIG. 3.



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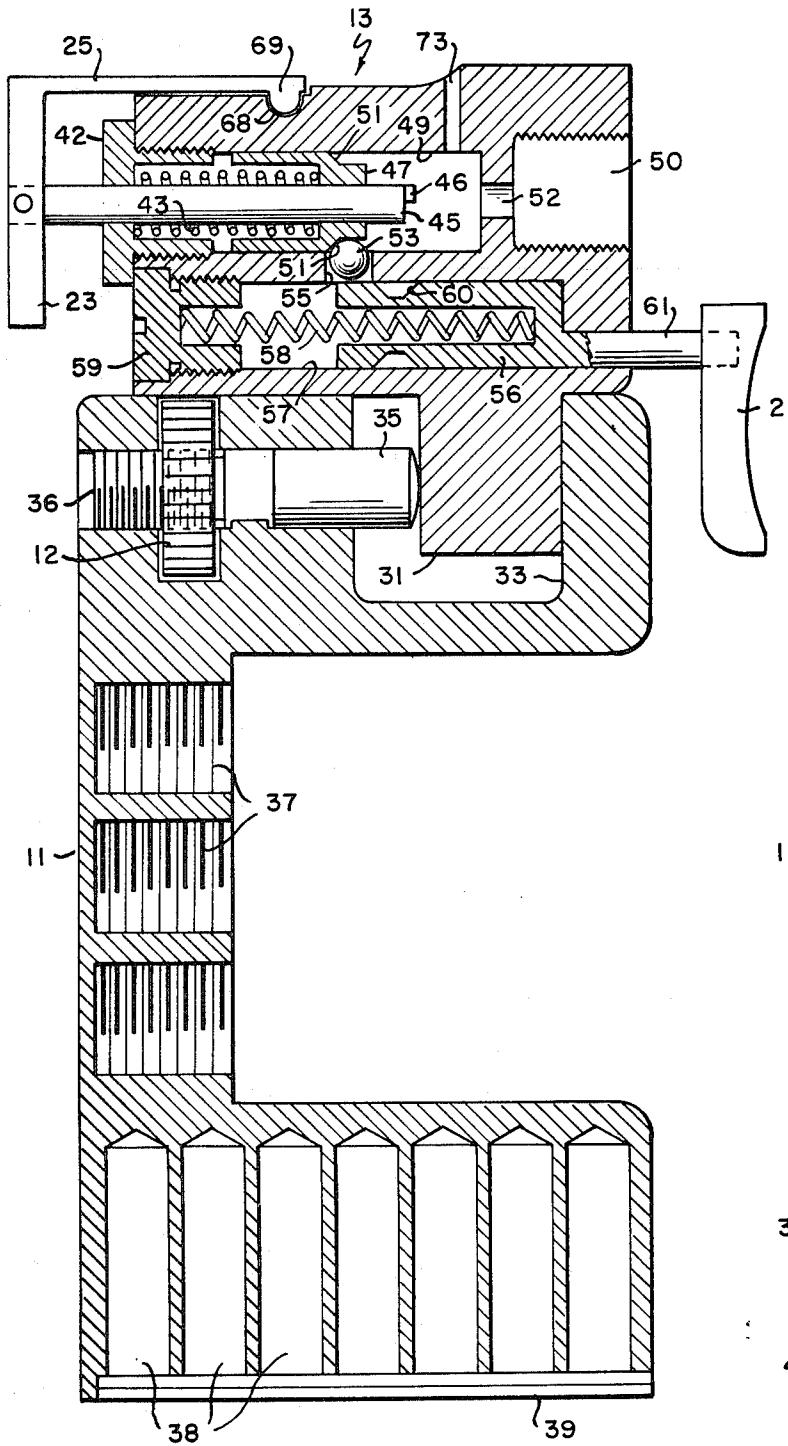
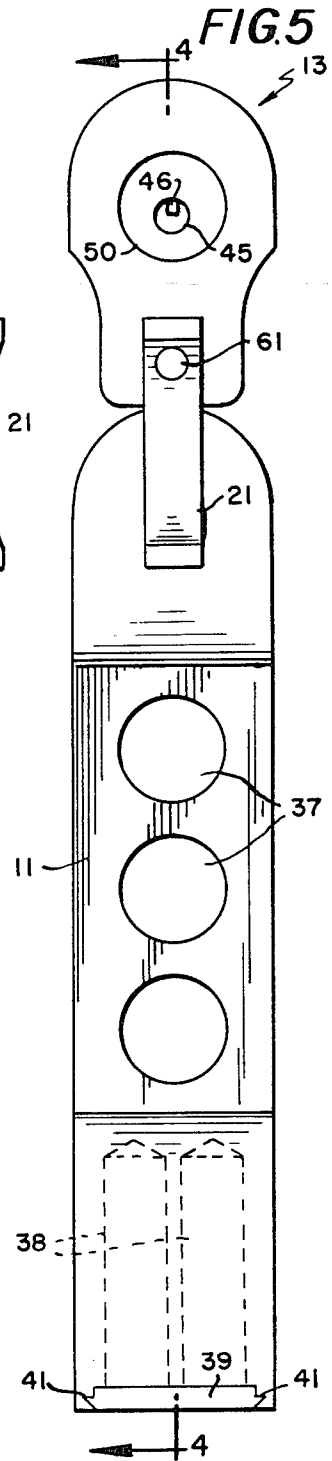


FIG. 4.



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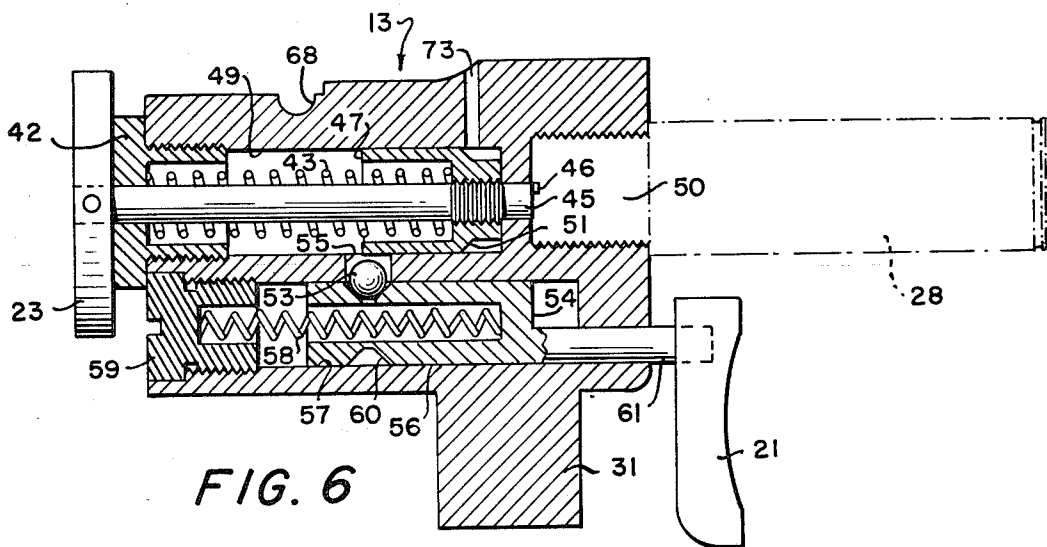


FIG. 6

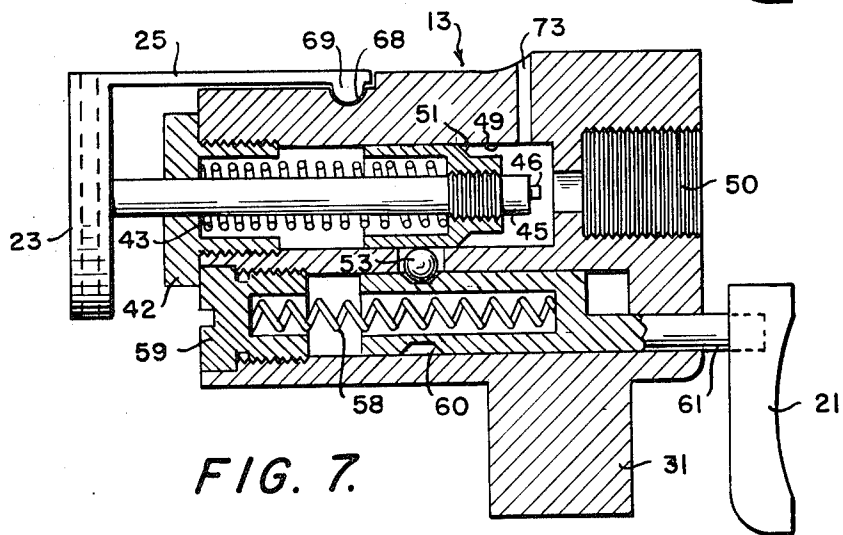


FIG. 7

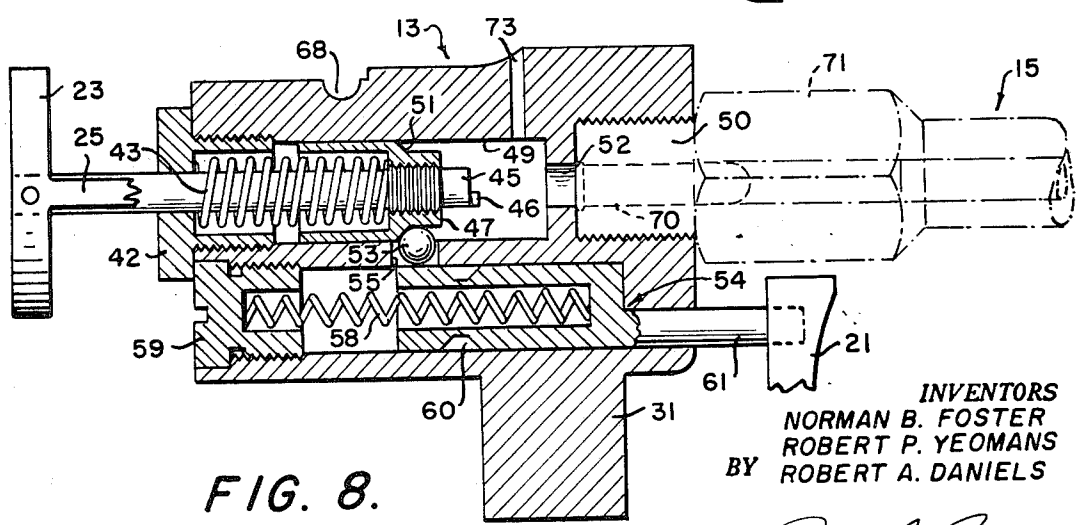


FIG. 8.

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SURVIVAL WEAPON SYSTEM

BACKGROUND OF INVENTION

The need for equipment for use in survival situations has become extremely important in recent years. The basic factor behind this requirement is the ever increasing mobility of man, bringing him in closer contact with hostile environments.

For instance, modern commercial air routes (such as polar routes) often traverse vast areas of land which may be hundreds of miles from any outposts of civilization. In the event of a forced landing, any survivors would, of necessity, be compelled to live off the land for many days or, possibly, weeks until rescued. The ability to rely on effective survival gear in such situations would significantly enhance the probability of survival.

In addition, a large segment of the population now has access to remote areas by means of private light aircraft, power boat's, all-terrain vehicles (ATV's), snowmobiles and the like. Often such vehicles will suffer equipment failure in inaccessible locations or the operators might become injured or lost. Again, in such situations, proper survival equipment will enable survivors to hunt food, ward off dangerous predators, determine bearings, and signal for assistance.

The need for survival equipment can arise even in relatively well-populated regions. It is frequently difficult to locate lost persons and survivors of wrecks due to weather conditions, terrain features, dense foliage and other environmental factors. Having the capability to signal the location of such persons to potential rescue parties could be of crucial importance in such situations.

Finally, survival gear is of paramount importance to the military. Recent combat situations have been centered heavily on guerrilla-type warfare where a small number of personnel are dispatched on missions to remote areas. Obviously the degree of contact with supply lines and headquarters is at a minimum under such conditions. Personnel, therefore, must be able to make themselves self-sufficient for days or even weeks. Conventional military weapons are nearly useless under such circumstances since they are bulky, inflexible and heavy. Furthermore, survival may often depend upon catching fish and small game which would tend to be obliterated by military anti-personnel type ammunition.

Although survival weapons have been developed in the past to attempt to satisfy the requirements set forth above, until the present invention, there has been no device which has been entirely successful. For the most part, prior art devices have been expensive, bulky, heavy and intended for use only in certain limited applications.

SUMMARY OF INVENTION

The present invention provides a small, compactly arranged survival weapon which is capable of use in several modes to perform a variety of functions.

A handle is provided to enabling convenient use of the weapon in a number of modes. In one such mode of firing mechanism housing is detachably connected to the handle. The firing mechanism housing contains a chamber for small bore cartridges, firing pin and trigger. The housing is adapted for use with a screw-in barrel for directing the fired cartridge.

The firing pin is capable of being oriented in two modes to permit the proper igniting of both center-and rim-fire cartridges.

For use with cartridge-type ammunition, the barrel is unscrewed from the firing mechanism housing and a cartridge is placed into the chamber. The barrel is then screwed into position in the housing. Cocking is achieved by pulling back the firing pin mounted in the rear of the housing against the mainspring and orienting it for rim- or center-fire cartridges. At the same time a sear ball is cammed from a first detent position to a second position where it locks the firing pin in the cocked position by abutting against an associated bolt and places the trigger in its forward firing position.

In an alternative mode of use, the barrel is removed from the firing mechanism housing and a signal flare inserted into the chamber within the firing mechanism housing. The action is cocked in the same manner as before and the firing pin oriented in the correct position for firing the flare.

The handle is provided with a plurality of apertures for storing a supply of both cartridges and flares for convenient access and use thereof. In addition, compass means are mounted within the handle assembly for obvious utility in a survival situation.

The firing mechanism or action housing is readily engaged with the handle, the housing being provided with a tongue member which is inserted into a groove associated with the handle. A locknut and threaded bolt arrangement firmly secures the respective parts to each other.

The handle may also be attached by means of the locknut and threaded bolt to a knife blade for convenient use thereof. The knife blade has one edge honed in the conventional manner while the other edge is furnished with a sawtooth edge for sawing wood, metal and the like.

The barrel is provided with a bore which is rifled in the portion closest to the breech end and smooth-bored at the muzzle end so that both bullet and shot-type cartridges may be accommodated with nearly equal accuracy.

Further objects and advantages of the present invention will become apparent from the following specification and claims.

DRAWINGS

FIG. 1 is an elevational view of a survival weapon embodying various of the features of the present invention.

FIG. 2 is an elevational view of the weapon arranged for the firing of signal flares in accordance with the invention.

FIG. 3 is an elevational view of the weapon arranged for use with a knife blade.

FIG. 4 is a sectional view of the handle and attached action housing taken substantially in the plane of line 4-4 in FIG. 5.

FIG. 5 is an elevational end view of the handle and attached action housing.

FIG. 6 is a sectional view of the action housing with a signal flare inserted in the chamber.

FIG. 7 is a partial sectional view of the action housing in the safe position.

FIG. 8 is a partial sectional view of the action housing in the cocked position with the barrel and cartridge inserted therein.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIG. 1, the invention comprises in one embodiment a handle portion 11 which is secured by means of a locking nut 12 and threaded bolt arrangement to the action housing 13. A barrel member 15 is inserted into the action housing 13 and is firmly secured by threaded engagement.

Barrel 15 is provided with two types of bores. The portion of the bore closest to the chamber in housing 13 is furnished with grooves or rifling 17 over a substantial portion of its length. The remaining portion 18 adjacent to the muzzle end of the barrel is of smooth bore. This arrangement of bores enables both bullet-type cartridges as well as shot-type cartridges to be fired with nearly equal accuracy. The muzzle end of barrel 15 is provided with a front sight 19 for improvement in sighting and accuracy.

The action housing 13 contains the trigger 21 which is used for firing. The rear or breech portion of the action housing 13 contains the cocking piece 23 which functions to cock the action by pulling the same back and also carries a tongue-like member 25 which is used to select the proper orientation of the firing pin for use with either cartridge-type ammunition as well as signal flares. The handle 11 contains provision for the storage of a plurality of signal flares 27 which are fastened by means of threading into recesses provided therein. In addition, the handle 11 has provided therein a compass 29 and engraved sighting line 72 for use in determining bearings in a survival situation.

FIG. 2 shows the weapon being placed in a mode adapted for the firing of a signal flare 28. Flare 28 is engaged into the front portion of the action housing 13 by means of a threaded arrangement as will be hereinafter more fully described. The cocking piece 23 is pulled back slightly and then rotated to the designation marked "flare" on the body of housing 13 and finally drawn back fully thereby cocking the action.

Housing 13 is attached to the handle 11 by means of a tongue piece 31 which is inserted into a recess member 33 provided on the handle. A threaded bolt 35 is clamped down against the tongue 31 by means of locking nut 12. Bolt 35 is provided with a longitudinal channel (not shown) into which is inserted a pin or the like to prevent the bolt from turning as nut 12 is turned.

FIG. 3 shows the weapon adapted for use as a knife. A knife blade 14 is secured to handle 11 by means of locking nut 12 and threaded bolt 35 which is clamped against the rear portion of the blade. Blade 14 is provided with a sharpened edge 22 for use in conventional cutting and a saw-tooth edge 16 for use in cutting wood, metal and the like. Handle 11 permits the use of the knife 14 in any convenient manner. For blade 14 may be oriented with either edge 16 or 22 facing down for better control by the user in sawing or cutting.

Referring now to FIG. 4 showing a cross sectional view of handle 11 and attached action housing 13, the housing is fastened to the handle by means of a tongue 31 which is inserted into a recessed portion 33 provided on handle 11. A bolt 35 having a threaded portion 36 at one end thereof is clamped against tongue 31 by means of lock nut 12 having internal threads matching the threads 36 of bolt 35.

Handle 11 has a plurality of recesses formed therein which may be advantageously used for the storage of

flares as well as cartridges for ready accessibility. As is readily seen, handle 11 is formed in a U-shaped configuration. The base portion of the "U" is furnished with a number of threaded recesses 37 into which may be secured a number of flares. One end of the flare is provided with an external thread around the cylindrical body thereof; consequently, the threads of the flares may be readily inserted and secured into the threading provided in apertures 37 and the flares held in a secured position until needed.

The lower portion of handle 11 is also provided with a plurality of recesses, each of which is slightly larger in size than the type of cartridge ammunition selected for use. In the preferred embodiment, it is desired to use 22-caliber type ammunition. Any number of apertures may be provided in the lower portion of handle 11. A single cartridge is intended to be inserted into each one of apertures 38. In order to prevent the inserted cartridges from falling out when the weapon is in use, a snap-on or slide-on cover 39 is placed in position and is securely held by friction. As is shown in FIG. 5, cover 39 is provided with lips 41 which dovetail into corresponding recesses provided in handle 11.

Referring again to FIG. 4, the action mechanism includes a firing pin 45 which is secured to the cocking piece 23. Firing pin 45 is generally rod-shaped in nature and is adapted to operatively slide in a longitudinal direction.

The portion of firing pin 45 closest to the chamber 50 is fastened to the bolt 47 either by welding or soldering or, in the preferred embodiment, by screw threading as is shown in FIG. 6. The bolt 47 is of cup-shaped configuration having its opening facing away from the chamber 50. The outer walls of the bolt slide within the breech housing walls 49.

The rear portion of the breech housing is provided with a breech plug 42 which screws into mating threads formed in walls 49. The center portion of the breech plug is apertured to permit the rear portion of firing pin 45 to exit the breech for connection with the cocking piece 23.

A helical spring 43 is inserted within the breech between plug 42 and the base of bolt 47. The firing pin 45 is inserted through spring 43. When cocking piece 23 is drawn back to cock the action, the firing pin and bolt 47 are also moved in the same direction; the inner cup-shaped portion of the bolt serving to contain and compress the firing spring 43 within the breech. The compressed spring, when released, serves as the driving force to impel the firing pin 45 forward through orifice 52 into the chamber 50 and strike a cartridge or flare disposed therein.

The portion of bolt 47 adjacent the chamber 50 is fashioned with a beveled or chamfered outer edge 51. The beveled edge 51 engages the sear 53 in the manner more fully described hereinafter.

The trigger mechanism 54 comprises a generally cylindrical rod 56 capable of sliding in a longitudinal direction within the trigger mechanism housing 57. A portion of the rod 56 is hollowed to form a cup-shaped receptacle for receiving and containing one end of the trigger spring 58.

The trigger housing 57 is closed off at the breech end by means of a plug 59 which is threaded into firm engagement by means of matching threads formed in

housing 57. Plug 59 also is provided with a cup-shaped portion to accommodate the rear portion of trigger spring 58 and keep the same from sliding out of position.

The front portion of the trigger mechanism 54 is connected by means of a shaft 61 to the trigger handle 21 through an aperture formed in the front portion of the firing mechanism housing 57. As is readily seen the entire trigger mechanism is adapted to operatively slide in a substantially longitudinal direction.

The outer wall of trigger rod 56 is provided with a notch or groove 60 cut therein. For ease in manufacturing the groove may be formed around the entire circumference of the rod. However, for proper operation of the device, it is necessary to provide said groove only in the topmost portion of rod 56.

As is shown in FIG. 6, in the uncocked position of the action, the trigger rod 56 is positioned so that groove 60 is in abutting relationship with aperture 55 formed between housing 49 and housing 57. Mounted within aperture 55 is the sear 53 shaped as a spherical ball. The sear 53 is in contact with the surfaces of groove 60.

Sear 53, groove 60 and aperture 55 are appropriately dimensioned, as will be apparent to those skilled in the art, so that the sear may be cammed in an upward direction by the beveled sloping walls of groove 60 with any movement of the trigger mechanism in a longitudinal direction. In the uncocked position of the action, the cup-shaped portion of the bolt 47 covers the aperture 55 and confines the sear within said aperture and in contact with groove 60.

The trigger spring 58 is continually in a state of tension in the uncocked position and thus constantly urges trigger rod 56 in a forward direction. Sear 53 prevents rod 56 from moving still further since it is lodged against the walls of aperture 55 by the camming action of the beveled groove 60 and held in position by the rear wall of bolt 47.

When the action is cocked by manually drawing back the firing pin 47 by means of cocking piece 23, bolt 47 is also moved to a rearward position. As bolt 47 moves back, its forward beveled portion eventually uncovers aperture 55. Thereafter, sear 53 is no longer confined to the area of aperture 55 and is free to move in an upward direction.

As aperture 55 is uncovered, the action of spring 58, under tension, will urge trigger rod 56 forward and the rear beveled surface of groove 60 will push sear 53 in an upward direction. Sear 53 will finally clear groove 60 completely and allow trigger rod 56 to be pushed to its forwardmost position.

At the same time, as shown in FIG. 8, sear 53 will frictionally engage the lower beveled edge 51 of bolt 47 and the forward wall of aperture 55. The firing pin spring 43 is compressed and under tension and will urge bolt 47 forward. Bevel 51 will push against sear 53 and the wall of aperture 55 and the firing pin will therefore remain in its rearward or cocked position.

Firing of the weapon is accomplished by the user pulling back trigger handle 21 usually with the forefinger in the conventional manner with handguns. This action will cause trigger rod 56 to move rearwardly bringing groove 60 in abutment with aperture 55 and thereby permitting the sear 53 to be pushed into the said groove by the force of firing pin spring 43. A vent

hole 73 is provided from the rear portion of chamber 50 to divert hot gases and relieve internal pressure in the event of a misfire of the load.

With the sear 53 dislodged from the housing 49, bolt 47 is free to travel unobstructedly in a forward direction. Firing pin 45 will therefore be rapidly impelled forward by spring 43 and strike the base of the load placed within chamber 50.

Once having been fired, the case of the spent round is removed from the chamber 50 and a new round inserted. The weapon action may be once again cocked and fired in the manner just described.

Referring again to FIG. 2, the action housing 13 is formed with a passage 47 in which the tongue-shaped selector/indicator 25 slides. The end of selector 25 is formed with a bead 69, shown in FIG. 4, which slides in channel 68 provided in the outer periphery of action housing 13. Bead 69 and passage 67 are dimensioned to permit the selector 25 to be moved from one side of housing 13 to the other side only when the action is in the uncocked position and the selector is slightly drawn back by means of cocking piece 23. It is to be noted that there is a passage 67 formed on both sides of the housing so that after the selector is positioned, the cocking piece may be drawn back to cock the action in either case.

The selector 25 permits the user to orient the firing pin 45 so that either center-fire or rim-fire rounds may be utilized. In the preferred embodiment, it is intended that 22-caliber cartridges as well as signal flares both be capable of use as a load. The standard 22-caliber cartridge is manufactured for rim firing, meaning that the firing pin should strike the base of the cartridge in the vicinity of the primer which is disposed in a ring about the center of the base. Flares, however, are manufactured with the primer disposed in the area of the center of the flare base and thus are optimally intended to be center fired.

The firing pin 45 is provided with a projection 46 which is offset from the axis of the pin itself. However, the axis of firing pin 45 is displaced from the axis of the generally cylindrical firing chamber 50. Thus, the relative position of projection 46 and the axes of firing pin 45 and chamber 50 permits orientation of the said projection in one position, shown in FIGS. 5, 6 and 7, for center firing and in the alternate position, shown in FIG. 8 for rim firing.

FIG. 8 shows a cartridge 70 positioned within chamber 50 ready to be fired. The cartridge 70 is inserted into chamber 50 with its base facing the firing pin 45. The barrel 15 is then threaded into position by screwing into the front of action housing 13. If necessary selector 25 is then moved from proper orientation of the firing pin. The action is then cocked by pulling back the cocking piece 23.

The rear portion 71 of barrel 15 is enlarged for two reasons. One is to give added structural strength to withstand the shock of explosion when the cartridge 70 is fired and also to provide the user with a more convenient grip to facilitate tightening and loosening of the barrel. Base 71 may be of any convenient shape such as hexagonal or may also be knurled.

After a cartridge has been fired, barrel 15 is removed and the spent cartridge case discarded. If necessary a new cartridge may be inserted and the barrel once again placed in position.

In the case of signal flares, a flare 28 is inserted into chamber 50 by threading the base of the flare into the mating threads provided in housing 13. Selector 25 is moved for proper orientation of the firing pin and the action is cocked by pulling back cocking piece 23. It is to be noted that the screw threads on action housing 13 are compatible with the threads on flares as well as those on barrel 15.

FIG. 7 shows the action placed in the safe position thus preventing the weapon from being inadvertently fired. The action is placed in the safe position by slightly pulling back cocking piece 23 and rotating the indicator 25 to the top of housing 13. In this position, the action is not cocked since the bolt 47 is not pulled back sufficiently to allow the sear 53 to leave the area of aperture 55 and groove 60.

Having thus described the invention, it will be appreciated that many modifications and advantages will become apparent and that the true scope of the invention is to be measured from the following claims.

What is claimed is:

1. A firearm survival aid comprising:
housing means having a first and second chambers and a firing chamber included therein;
said first and second chambers being interconnected by an aperture and having a sear means of substantially spherical configuration disposed within the vicinity of said aperture;
firing pin means disposed within said first chamber;
bolt means also disposed within said first chamber and connected to said firing pin means, said bolt means having a first camming surface for effecting movement of said sear from said first chamber to said second chamber through said aperture;
trigger means comprising a member slidable within said second chamber including positioning means comprising a second camming surface for effecting movement of said sear in response to sliding motion of said member and further including a portion adjacent said positioning means for substantially closing off said aperture when said sear is projecting into said first chamber;
spring means disposed in each of said first and second chambers, each of said spring means offering resistance to movement of said firing pin means and trigger means, respectively, in one direction of motion;
cocking means connected to said firing pin means for moving said bolt against its associated spring means;
said firing pin means being in a first position when said sear is in contact with said first camming surface and the walls of said aperture thereby locking said firing pin means in said first position with said spring means in said first chamber under compression;
said firing pin means being in a second position when said trigger means slidable member is moved to locate said second camming surface adjacent said aperture, thereby allowing said first camming surface to move said sear from said first chamber towards said second chamber and said bolt means to substantially cover said aperture;
said firing pin means further including a projection extending into said firing chamber when said firing pin means is in its second position for actuating a

- predetermined load disposed in said firing chamber;
said projection being orientable about the axis of said firing pin means for optimum impingement on the base of said load, whereby said projection may be selectively oriented for firing and rim-fire or center-fire loads.
2. A survival aid as set forth in claim 1 wherein:
barrel means are secured to said firing chamber;
said barrel means being capable of accommodating a cartridge therein, the base of said cartridge being disposed for impingement by said firing means projection.
 3. A survival aid as set forth in claim 1 wherein:
a predetermined load is directly secured to said firing chamber.
 4. A survival aid as set forth in claim 2 wherein:
said firing chamber is provided with threaded securing means.
 5. A survival aid as set forth in claim 4 wherein:
said cocking means is connected to indicator means disposed adjacent said housing for indicating the orientation of said projection; whereby
said cocking means is utilized to orient said projection;
said cocking means being disposed adjacent said housing opposite said firing chamber.
 6. A survival aid as set forth in claim 5 wherein:
said trigger means includes a trigger handle disposed outside said housing for effecting movement of said trigger means slidable member.
 7. A survival aid as set forth in claim 6 wherein:
said housing is connectable to handle means;
said handle means containing at least one compartment for storing a predetermined type load.
 8. A survival aid as set forth in claim 7 wherein:
said handle means includes compass means mounted therein.
 9. A survival aid as set forth in claim 6 wherein:
said barrel means comprises a cylindrical hollow member having rifling grooves provided therein.
 10. A survival aid as set forth in claim 9 wherein:
said rifling grooves are provided over a portion of said barrel means, the remaining portion of said barrel means being smooth-bored.
 11. A compact weapon system convertible for use in several modes and being particularly adapted for survival situation comprising:
handle means for selectively accommodating a plurality of weapon-type devices;
said handle means including a base portion and first and second leg portions attached to said base portion;
said first leg portion including receptacle means for engaging a mating portion of one of a preselected plurality of weapon-type devices and
said base portion and said second leg portion including storage receptacles for storing ammunition for use with a preselected weapon-type device.
 12. A compact weapon system as set forth in claim 11 wherein:
one of said weapon-type devices comprises action means capable of accommodating and firing preselected types of ammunition loads.
 13. A compact weapon system as set forth in claim 11 wherein:

one of said weapon-type devices comprises a blade including first and second edges; said first edge comprising a cutting surface and said second edge comprising a sawing surface.

14. A compact weapon system as set forth in claim 5 12 wherein:

said receptacle means includes a recess for accommodating a mating tongue portion of a preselected weapon-type device; and bolt means for tightening said tongue portion against a wall of said recess.

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