

[54] **DOUBLE ACTION HANDGUN APPARATUS**

[72] Inventor: Clarence A. Raville, 650 Moorpark Road, Thousand Oaks, Calif. 91360

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[51] Int. Cl. F41c 5/00, F41c 19/00, F41c 19/14

[58] Field of Search 42/69 B, 70 F; 89/147

[56] **References Cited**

UNITED STATES PATENTS

929,491	7/1909	Reifgraber	89/147
939,882	11/1909	Whiting	42/69 B
2,324,125	7/1943	Van Horn	42/69 B
2,846,925	8/1958	Norman	42/69 B
3,152,418	10/1964	Charron	42/69 B

Primary Examiner—Benjamin A. Borchelt

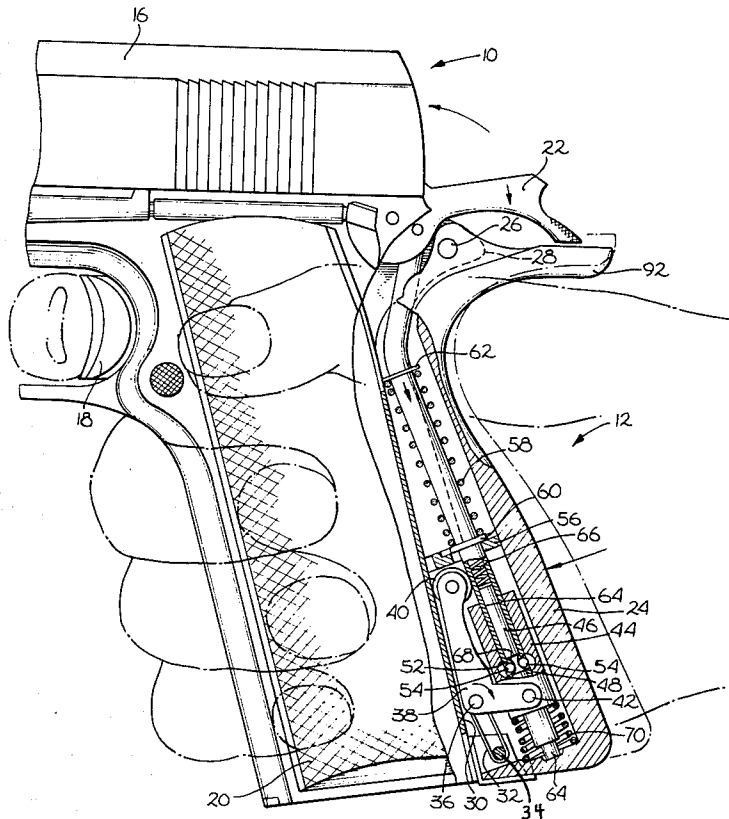
Assistant Examiner—C. T. Jordan

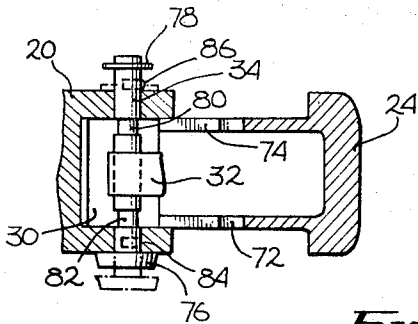
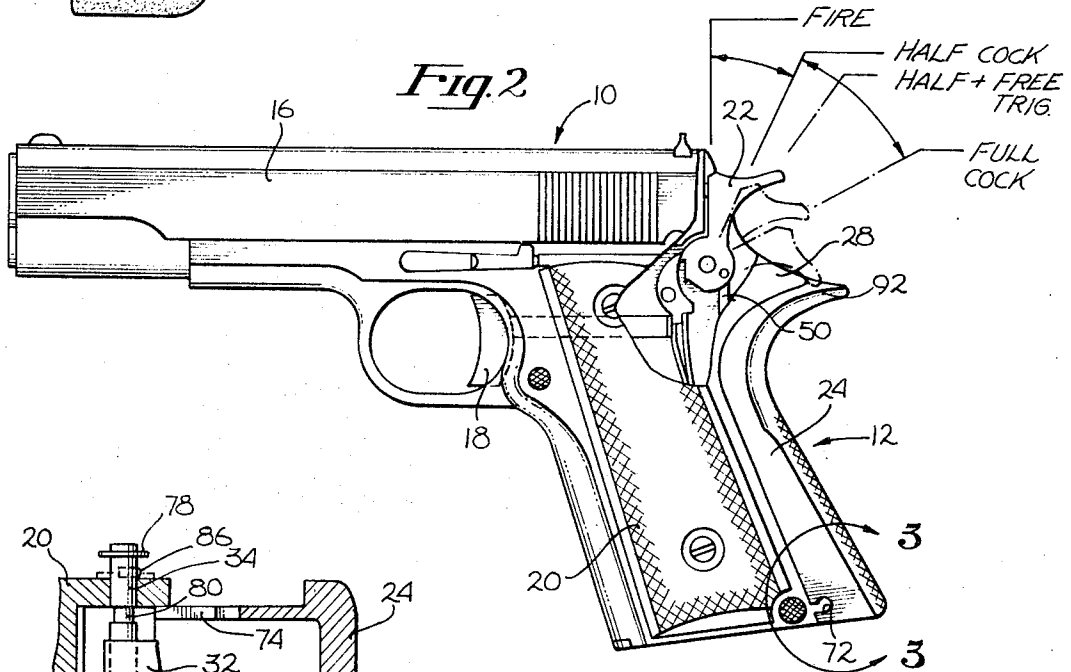
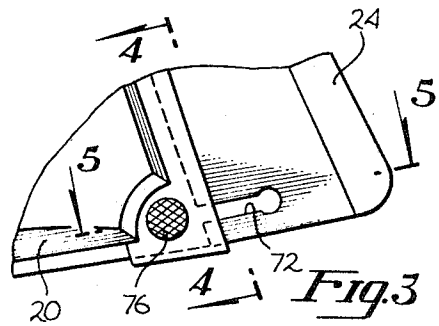
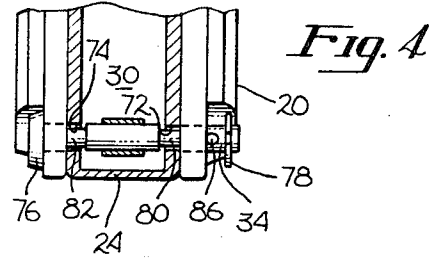
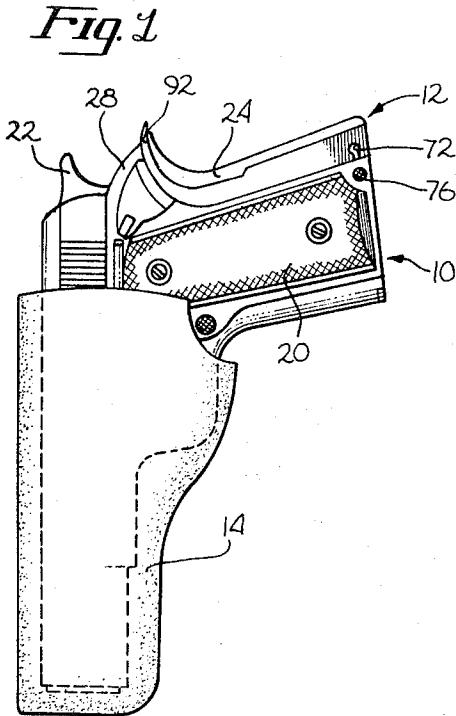
Attorney—Robert E. Geauque

[57] **ABSTRACT**

In combination with a handgun having a firing hammer actuable by a trigger, a double action apparatus associated with the grip of the handgun comprising, a draw rod connected to the hammer, the draw rod being movable when a manual squeezing force is applied to a grip housing, the draw rod is movable by the grip housing when the hammer is located in an intermediate position between the firing position and the full cock position, with the hammer located in the above intermediate position manual actuation of the grip housing causes the hammer to move toward full cock, upon the hammer arriving at full cock the draw rod becomes disengaged with the grip housing and nonactuable thereby, actuation of the trigger causes movement of the hammer to the firing position.

24 Claims, 10 Drawing Figures





CLARENCE A. RAVILLE
INVENTOR.

BY *R. E. Deaigue*
ATTORNEY

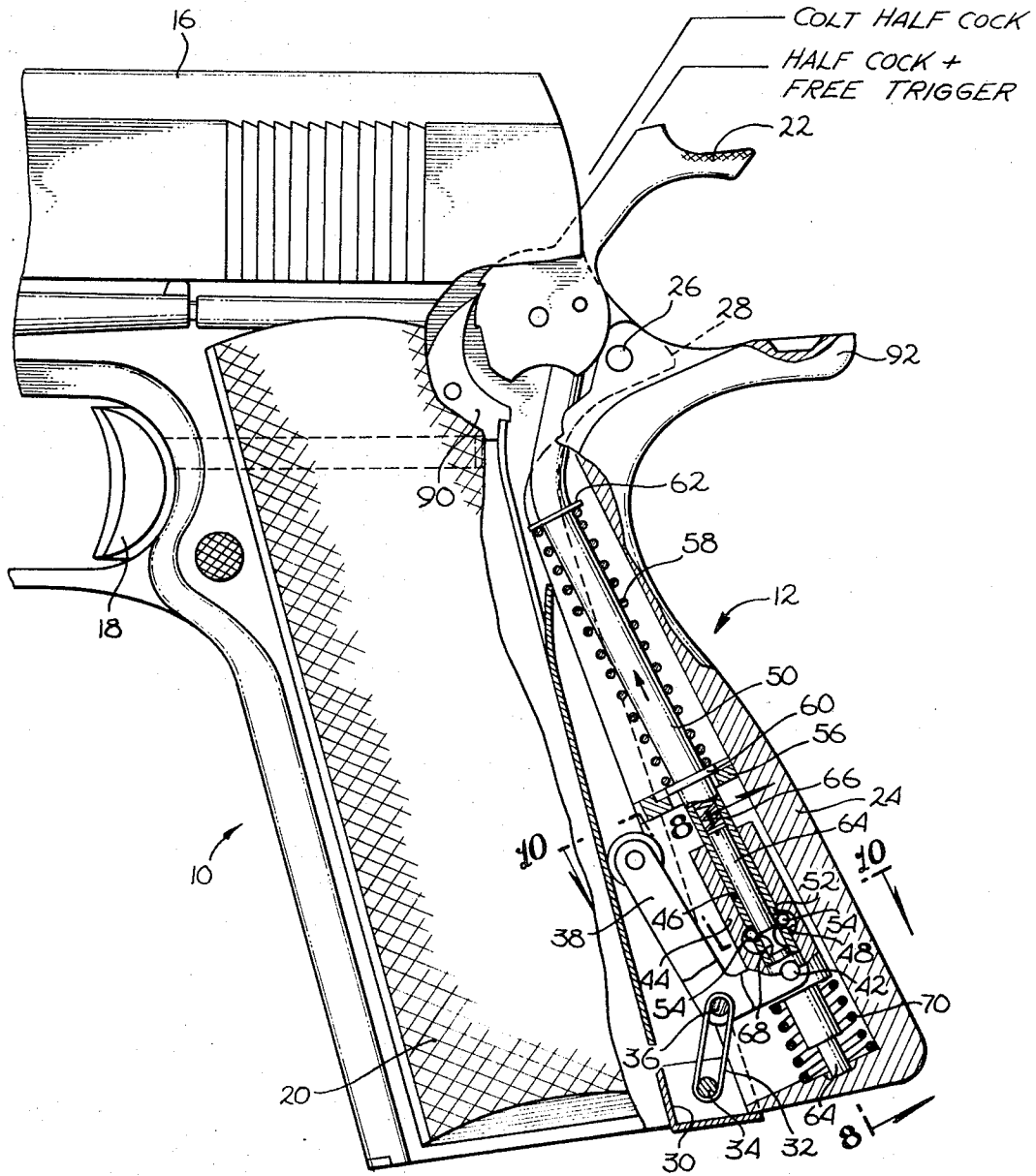


Fig. 6

CLARENCE A. RAVILLE
INVENTOR.

BY *R.E. Beaupre*
ATTORNEY

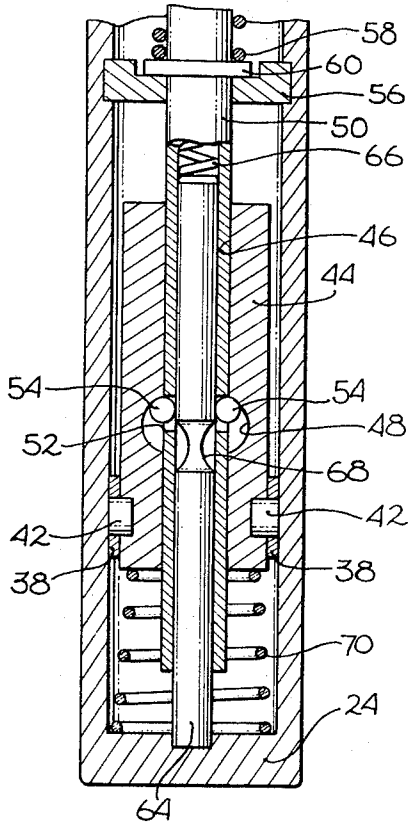


Fig. 8

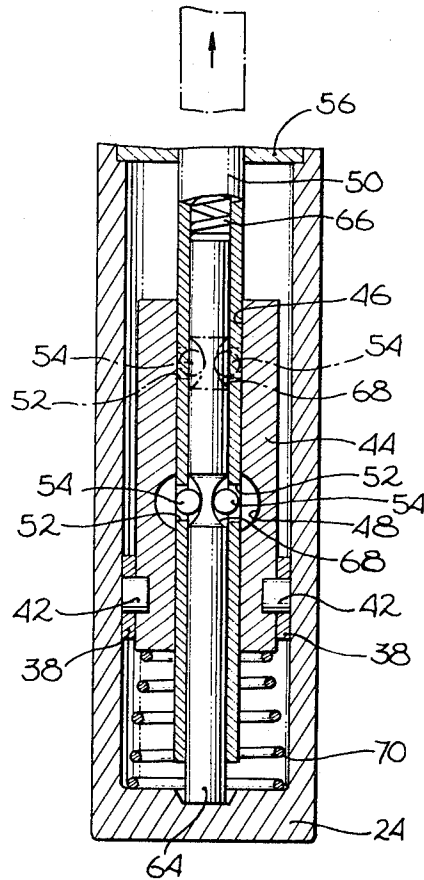


Fig. 9

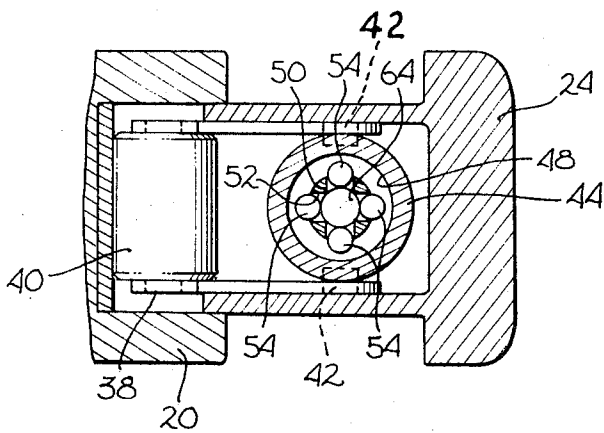


Fig. 10

CLARENCE A. RAVILLE
INVENTOR.

BY R. E. Beaune
ATTORNEY

DOUBLE ACTION HANDGUN APPARATUS

BACKGROUND OF THE INVENTION

The field of this invention relates to firearms and specifically to the handgun type of firearm.

The use of a double action device for a handgun is quite common, specifically common to the revolving cylinder type of handgun. A double action device causes the handgun to be fired in two ways; first, by manual movement of the firing hammer of the handgun to the fully cocked position and then actuation of the trigger, and second, by direct actuation of the trigger with the hammer in a position other than full cock, thereby causing the hammer to move almost to full cock with additional actuation of the trigger resulting in firing of the handgun. Although heretofore most double action devices operate through the trigger, such is not a requirement, the only requirement being to effect movement of the hammer to the full cocked position by means of structure separate from the direct manual movement. The advantages of a double action device are: (1) substantial decrease of the time required to discharge the first cartridge as well as subsequent cartridges, and (2) provides an element of safety against accidental discharge while still having the firearm in a position to fire quickly.

The deployment of non-revolving cylinder handguns such as a clip fed handgun is quite common; normally such clip fed firearms do not have a double action feature. A common type of such handgun is the .45 caliber semi-automatic firearm which has been employed for a great many years by the armed services as well as many law enforcement agencies. Heretofore, it has been known that a double action device could be designed for this .45 caliber firearm however, such a revision would cause substantial modification of the firearm and be extremely costly.

The main advantage to a .45 caliber firearm is that due to the large mass of the .45 caliber bullet and the relatively low propelling velocity, if the bullet strikes a human being, even in a limb, the person would more than likely be knocked off balance and down. Clearly the use of such a firearm is of particular advantage in war and also law enforcement. The lower caliber firearms that are presently being employed in the armed services and law enforcement employ the use of a substantially lower mass bullet (compared to the .45 caliber bullet) which is propelled at a substantially greater velocity (compared to the .45 caliber bullet). Frequently, when a person is struck with such a lower caliber bullet, the bullet passes quickly through the person with the momentum of the bullet not being transmitted to the person. In both the armed services and law enforcement, one of the major complaints is that the person that has been struck continues to navigate about still representing the same danger before being struck. As a result, the military individual or the law enforcement officer doing the firing finds it necessary to shoot the individual a plurality of times before the party becomes inoperative. Besides the danger to the party of several wounds, it is also dangerous to the shooter in that the struck party can continue to return the fire. It would be in the best interests of both parties for the struck party to be rendered inoperative with one shot.

Although the .45 caliber handgun due to its "knocking down" power would be especially suited for law enforcement use, even the best marksman takes several seconds to draw a holstered .45 handgun of the present type and fire the first round. In this time the criminal has time to fire several rounds from a lower caliber firearm employing a double action device. It has been found that it is unsafe to carry a holstered .45 caliber handgun with a round in the chamber. It is common for the firearm to accidentally discharge while removing it from the holster.

It would be most desirable to design a double action device for a clip fed handgun which permits the gun to be fired from the holstered position in less than a second yet precluding the possibility of accidental discharge.

SUMMARY OF THE INVENTION

The apparatus of this invention is to be employed in combination with the grip of a handgun and normally a clip fed, single action firing type of handgun. The apparatus of this invention is contained within a grip housing which is to be secured to the rearward portion of the grip of the handgun. A draw rod is pivotally secured to the hammer of the handgun and upon movement of the hammer from the fired position up to an intermediate position (approximately at half-cock), there is no restraint upon the hammer by the draw rod. Upon the hammer reaching this intermediate position, the draw rod becomes engaged with a grip squeezing structure which is actuated by manual squeezing of the grip housing. Upon squeezing of the grip housing, the hammer continues to travel in the same direction. Upon the hammer reaching full cock, the draw rod becomes disengaged with the grip squeezing structure and free travel of the hammer (caused by actuation of the trigger of the handgun) to the firing position is permitted. With the hammer in the full cock position, upon release of the grip squeezing structure, engagement of the draw rod occurs. Thereby, upon actuation of the trigger the hammer will only travel to the aforementioned intermediate position preventing movement of the hammer to the firing position. A lock safety is provided to retain the grip housing in either the squeezed position or the non-squeezed position.

Some objects of the apparatus of this invention not readily apparent from the foregoing are as follows: (1) The intermediate position to effect engagement of the grip squeezing structure is separate from the half-cock position of the handgun itself. Therefore, a dual safety factor is provided to prevent accidental discharge of the firearm. (2) When a person prepares to fire a gun, the person tenses his muscles and grasps the grip tightly. Upon accomplishing this simple act, the gun is ready to fire because the tensing of the muscles causes actuation of the grip squeezing structure and movement of the hammer to the full cock position. This can occur during withdrawal of the handgun from a holster with the only additional movement necessary to fire the gun is the normal actuation of the trigger. The gun can be grasped without tightly grasping the grip thereby not putting the gun in instant firing position, however, in a ready firing position. (3) When firing at targets where the use of applicant's apparatus is not needed, the grip housing can be locked in the depressed position negating its effect and facilitating rapid and continuous target fire. Likewise when the gun has found its way into inexperienced hands, with the grip squeezing structure locked in the non-depressed position, it would be difficult for one not experienced in guns to fire the firearm. (4) The grip housing of applicant's invention includes a rather wide sized spur grip which eliminates the recoil bite into the operator's hand which is common in the conventional .45 caliber handgun. (5) The apparatus of this invention insures full hammer travel prior to firing, thereby eliminating non-discharge of a round due to insufficient force of the hammer. (6) The apparatus of applicant's invention can be quickly installed upon the conventional design of the U.S. Government model of the .45 caliber handgun without any alterations.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a front view of a .45 caliber, clip fed handgun employing the apparatus of this invention in the holstered position;

FIG. 2 is a front, partially cut-out view of the firearm of FIG. 1 showing the different hammer positions;

FIG. 3 is an enlarged view of the safety lock of applicant's invention taken along line 3—3 of FIG. 2;

FIG. 4 is a partly-in-section view of the safety lock of this invention taken along line 4—4 of FIG. 3;

FIG. 5 is a sectional view of the safety lock of this invention taken along line 5—5 of FIG. 3;

FIG. 6 is a partly-in-section view of the apparatus of this invention showing this invention in the intermediate engaging position;

FIG. 7 is a partly-in-section view similar to FIG. 6 but showing the apparatus of this invention in the full lock, non-engaging position;

FIG. 8 is a sectional view taken along line 8—8 of FIG. 6;

FIG. 9 is a sectional view similar to FIG. 8 showing the apparatus in a second position; and

FIG. 10 is a sectional view taken along line 10—10 of FIG. 6.

DETAILED DESCRIPTION OF THE SHOWN EMBODIMENT

Referring particularly to the drawings, there is shown in FIG. 1 a handgun 10 in holster 14 embodying the apparatus 12 of applicant's invention. The particular handgun 10 depicted is the Government model of the .45 caliber, clip-fed, semi-automatic, single action firearm. Handgun 10 has a barrel 16, a trigger 18, a grip 20 and a firing hammer 22. It is important to realize that although applicant has designed his apparatus 12 to be adapted to the above specific handgun without any modifications thereof, the apparatus 10 will also be readily adaptable to a Colt 9 MM or .38 Super. Further, it is believed by applicant that with minor modifications the basic form of applicant's apparatus could be readily adaptable to many other existing handguns. Therefore, it is not applicant's intention to be wholly limited to the specific handgun shown, this model of handgun being shown for the purpose of representation only.

Apparatus 12 includes a grip housing 24 which is basically channel shaped to cooperate with the rear portion of the grip 20. The conventional grip safety of the above referred to handgun 10 has been removed with the grip housing 24 cooperating within the opening 30 left by removing the grip safety. Housing 24 is pivotally secured at its upper end by pivot pin 26 to the spur 28 of the grip 20. The lower end of the grip housing 24 is movably secured to the grip 20 by means of a flat wire band 32 cooperating with a lock pin 34 on grip 20 and a lever retaining pin 36 mounted upon roller lever 38. Roller lever 38 terminates at one end in a roller 40 which moves upon the inner surface of opening 30 and at the other end in a pivotal connection upon pivot pin 42. Pin 42 is fixedly secured to a sear cage 44 which contains a central longitudinal opening 46 therethrough. Intermediate the ends of sear cage 44 a portion of the opening 46 is annularly grooved at 48. Slidably supported within opening 46 is a draw rod 50. Adjacent groove 48 the draw rod 50 includes a plurality of apertures 52 annularly spaced about rod 50. Each of the apertures 52 are to contain a ball bearing 54.

Draw rod 50 is pivotally attached at one end to hammer 22. The draw rod 50 is supported centrally by guide 56 with rod 50 capable of longitudinal sliding movement with respect to guide 56. A main compression spring 58 is retained about draw rod 50 and confined between washer 60 and stop 62. Washer 60 is to abut guide 56.

The other end of draw rod 50 is interiorly hollow and is to retain in a sliding fit sear release pin 64. A small compression spring 66 operates between the innermost end of sear release pin 64 and the draw rod 50. Pin 64 has a concave annular groove 68 intermediate its ends and located to be adjacent ball bearings 54. Pin 64 is to be capable of abutting at its free end the grip housing 24. A return compression spring 70 is to operate between the grip housing 24 and the sear cage 44.

A lock mechanism is provided to retain the grip housing 24 in either the non-depressed position or the depressed position. Within each of the channeled edges of the housing 24 is provided aligned keyhole slots 72 and 74. Through aligned apertures within grip 20 the lock pin 34 is retained and prevented from being removed therefrom by enlarged end 76 and lock washer 78. Lock pin 34 has a first recess 80 and a second recess 82. Recess 80 is to be able to cooperate with slot 72.

With the recesses 80 and 82 not being aligned with their respective slots 74 and 72, either the grip housing 24 is in the depressed position or the non-depressed position. The lock pin 34 includes a first lock ball 84 adjacent enlarged portion 76 and a second lock ball 86 adjacent the lock washer 78. Lock balls 84 and 86 function to retain the lock pin 34 in each position within grip 20 requiring a small manual force to be applied to lock pin 34 to move it from one position to another.

The operation of the apparatus of this invention is as follows: The handgun 10 is loaded by the inserting of a loaded clip into the firearm. The handgun 10 is then cocked and a round placed in the chamber for firing. Simultaneously with the cocking of the gun, the hammer 22 is moved to the full cock position. As the hammer 22 moved to the full cock position, upon moving a short distance beyond the one-half cock position, the draw rod 50 through ball bearings 54 become engaged with sear cage 44. In specific terms the ball bearings 54 moved, because of spring pressure 66, from groove 68 into groove 48 of sear cage 44. This position is what has been termed above as the intermediate engaged position. As the gun was cocked, the hammer continued to move manually to the full cock position. However, the hammer could have been moved to the full cock position by the activation of grip housing 24. For purposes of description the procedure for moving the hammer 22 to the full cock position by the grip housing 24 is as follows: As a person squeezes grip 20, inward movement of the grip housing 24 results. Also, roller 40 moves upwardly toward the hammer 22 and lever 38 pivots about pin 36 causing sear cage 44 to move downwardly away from hammer 22. As the sear cage 44 through ball bearings 54 is connected to draw rod 50, hammer 22 moves toward the full cock position. With the grip housing 24 completely depressed as shown in FIG. 7, the groove 48 of the sear cage 44 has become aligned again with groove 68 of pin 64 and ball bearings 54 have moved into groove 68. Therefore, draw rod 50 is now free to move and hammer 22 is free to move to the firing position. However, once in the full cock position the sear 90 of the gun 10 retains the hammer 22 against movement until actuation of trigger 18. If trigger 18 is activated, the main spring 58 forces hammer 22 to contact the firing pin of the gun with more than adequate force to discharge the round in the chamber. If the hammer 22 is moved manually to the full cock position, the same procedure occurs without the depressing of the grip housing 24.

If the operator of the gun 10 releases the grip housing 24 prior to the actuation of the trigger 18, the balls 54 again engage groove 48. Thereupon, if the trigger is then actuated, the hammer 22 will only travel to the engaged intermediate position. Thereby a grip safety is provided which prevents firing of the gun 10 unless the grip housing 24 is depressed.

It is common in the previous double action devices the hammer is moved only to two-thirds of full cock prior to being moved to the firing position. Frequently, this non-complete movement will cause a misfire. It is to be noted that in applicant's apparatus the hammer is moved to the full cock position by both the manual and the double action movement, thereby insuring against misfires by a lack of firing pressure by the hammer. As a safety precaution, when loading a round in the chamber, with the grip housing 24 non-depressed, push end of lock pin 34 on which lock washer 78 is mounted. This movement of the lock pin 34 will prevent the grip housing 24 from being depressed and the gun 10 cannot be accidentally fired while loading.

It is to be noted that the portion 92 of the grip housing adjacent spur 28 is designed to be much larger, longer and wider in dimension than the spur 28. It is well known that the recoil of a 45 caliber handgun is substantial and after a few rounds the spur 28 will normally cause injury to the shooter's hand. The portion 92 prevents injury from occurring even after several rounds.

What is claimed as new in support of Letters Patent is:

1. A double action device for a handgun comprising:

a housing connected to the grip of the handgun and movable between a first position and a second position, upon movement of said housing from said first position toward said second position a firing hammer of a handgun is permitted to move from a non-full cock position toward a full cock position. 5

2. An apparatus as defined in claim 1 wherein: when said housing is in said second position said firing hammer is in said full cock position.

3. An apparatus as defined in claim 2 wherein: said hammer movable between and including a firing position and said full cock position, when said housing is in said first position said firing hammer is in an intermediate position between said firing position and said full cock position, said firing hammer is actuatable by the movement of said housing. 10 15

4. An apparatus as defined in claim 3 wherein: when said housing is in said second position and said hammer is in said full cock position said hammer is permitted to move to said firing position, with said housing in said first position and said hammer in said full cock position said hammer is movable only to said intermediate position. 20

5. In combination with a firearm, said firearm including a grip and a firing hammer and a trigger, said trigger actuating the movement of said hammer from a cocked position to a firing position, a double action device comprising: 25
means connected to said grip and including structure movable with respect thereto, upon actuating movement of said structure said hammer is moved toward said cocked position. 30

6. The combination of claim 5 wherein: said grip having a front side and a back side, said trigger located adjacent said front side, said structure located adjacent said back side. 35

7. The combination of claim 6 wherein: said hammer locatable in at least one intermediate position between said firing position and said cocked position, said double action device initially engageable with said hammer at said intermediate position. 40

8. The combination of claim 7 wherein: said hammer locatable in a first intermediate position and a second intermediate position, said first intermediate position located at the approximate mid-point of travel of said hammer from said firing position to said cocked position, said second intermediate position located between said first intermediate position and said cocked position but nearer said first intermediate position, said double action device engageable with said hammer at said second intermediate position. 45 50

9. A double action device for a firearm comprising: a housing, a rod connected to said housing and movable with respect thereto between a first position and a second position; 55
first means connected to said rod, said first means movable between a third position and a fourth position; and second means connected to both said rod and said first means, said second means to interconnect said rod and said first means to effect movement of such simultaneously during a portion of the movement of said rod from 60

said first position to said second position.

10. A device as defined within claim 9 wherein: said rod is continuously biased toward said first position.

11. A device as defined within claim 10 wherein: said rod movable through an intermediate position during movement from said first position to said second position, at said intermediate position interconnection occurs by said second means between said rod and said first means.

12. A device as defined in claim 11 wherein: said third position of said first means is established at said interconnection between said rod and said first means.

13. A device as defined in claim 9 wherein: said first means is continuously biased toward said third position.

14. A device as defined in claim 13 wherein: said bias is provided by a spring located between said first means and said housing.

15. A device as defined in claim 13 wherein: said first means includes a sear cage which surrounds said rod, said sear cage movable with respect to said rod, hiatus means formed within said sear cage adjacent the surface of said rod.

16. A device as defined in claim 15 wherein: a lever pivotally connected to both said housing and said sear cage, the free end of said lever cammed upon a fixed surface which is located exteriorly of said device.

17. A device as defined in claim 16 wherein: said lever is further capable of a limited amount of arcuate movement with respect to said housing.

18. A device as defined in claim 15 wherein: said second means includes a pin slidingly retained within said rod, said pin having groove means formed at a predetermined longitudinal location therein.

19. A device as defined in claim 18 wherein: said pin is to move sufficiently to contact said housing, said pin is continuously biased toward establishing the contractual relationship between said pin and said housing.

20. A device as defined in claim 19 including: aperture means formed within said rod at a predetermined longitudinal location, a ball bearing assembly located within said aperture means, with said ball bearing assembly cooperating with said hiatus means said sear cage and said rod are interconnected to move together, with said ball bearing assembly cooperating with said groove means of said pin said sear cage is free to move relative to said rod.

21. A device as defined in claim 20 wherein: said hiatus means comprises an annular groove.

22. A device as defined in claim 21 wherein: said rod is continuously biased toward said first position.

23. A device as defined in claim 22 wherein: said rod movable through an intermediate position during movement from said first position to said second position, at said intermediate position said interconnection occurs by said second means between said rod and said first means.

24. A device as defined in claim 23 wherein: said third position of said first is being established at said interconnection between said rod and said first means.

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