Feb. 8, 1966 F. WALTHER 3,233,601

COMPRESSED AIR WEAPON

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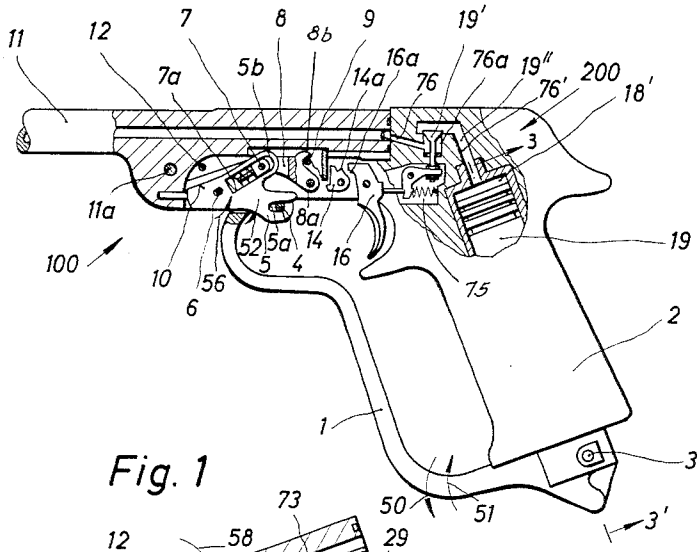


Fig. 1

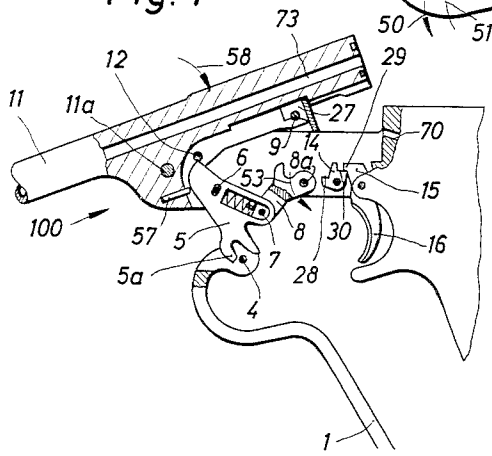


Fig. 2

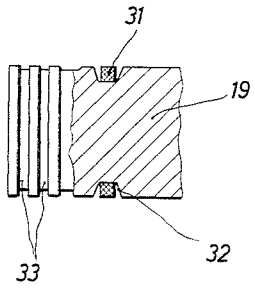


Fig. 5

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COMPRESSED AIR WEAPON

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Fig. 3

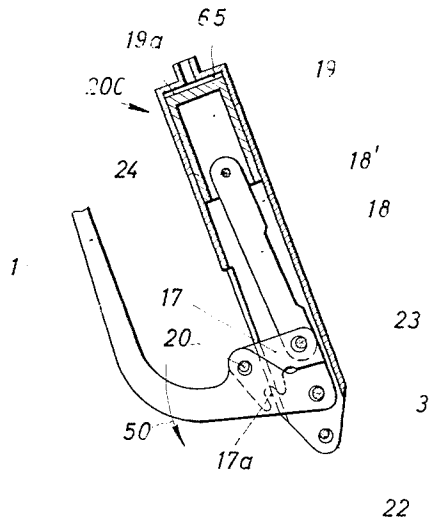


Fig. 4

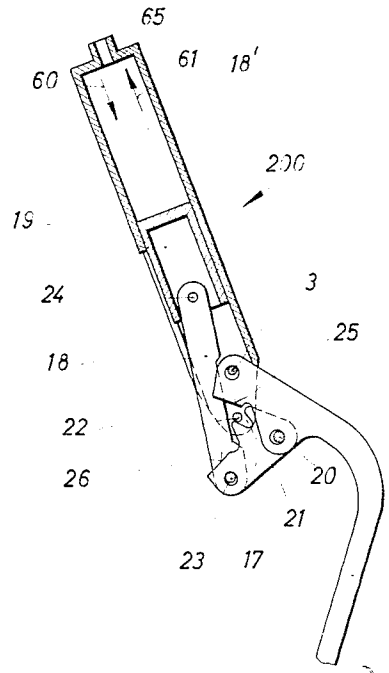
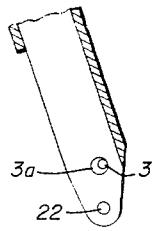


Fig. 6



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3,233,601

COMPRESSED AIR WEAPON

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Filed June 25, 1962, Ser. No. 205,134
8 Claims. (Cl. 124—13)

This invention relates to firearms and more particularly to hand weapons operative by compressed air principles and having an air compression cylinder operable by means of a unique lever system which operates to interlock the triggering operation with the air compression cycle.

In prior art weapons of the compressed air type the usual arrangement found therein consists of a cylinder mounted for reciprocal movement from a bottom dead center position by means of a spring lever system wherein a powerful spring is compressed which, upon release of the piston by means of triggering the shot, causes the compressed spring to urge the now free to move piston to its top dead center position, thus compressing the air in front of the piston which compressed air, in turn, urges the cartridge from the cartridge chamber of the barrel to be propelled out of the barrel and against a target.

The great majority of compressed air guns which are of such design have the disadvantage of the cartridge or bullet not leaving the barrel with sufficient precision to produce firing results which are even remotely satisfactory. The inaccuracy of the firing is due to a variety of reasons, the essential one being that upon the start of the air compression phase of the firing cycle, the cartridge is already being moved forward in the barrel of the weapon, thus severely altering the magnitude of the pressure exerted against the cartridge during the firing thereof.

Another disadvantage is that prior to the bullet leaving the barrel the piston and the compressed spring are rapidly accelerated and decelerated during this period. Since the piston and compressed spring have substantial masses, significant motion is imparted to the weapon during the time that the bullet is leaving the barrel, causing the weapon to undergo a significant change in its position from its original position (i.e. from the position in which it was deemed to be directly on target).

Other compressed air weapons of the prior art are constructed in such a way as to avoid the movement of members having substantial mass at the moment that a shot is being triggered. In such weapons, an air storage chamber is provided into which air is fed by means of a piston pump placing air into the compression chamber under substantial pressure. The air is then withdrawn from the compression chamber by means of a valve, whereby only the amount of compressed air sufficient for each shot may be withdrawn. A compressed air gun of such design, however, is extremely complicated and expensive in construction, which factors lend to the complexity and lack of trouble-free operation of such weapons. Furthermore, the uniform performance and firing characteristics of all firings from such weapon is not attainable since the propelling energy available for each subsequent shot lacks the identical performance characteristics of the preceding shot.

Another compressed air gun of the prior art is provided with a multi-step air compression pump which becomes operative upon activation of a cocking lever system, thus compressing air and feeding it into a storage chamber. The air under compression in the storage chamber is operated so as to be expelled with each shot fired. The purpose of such a weapon is to eject the bullet from the barrel by means of compressed air with a velocity sufficient to attain a firing performance characteristic approaching that of small calibre rifles. However, in the compressed air storage chamber of such a

weapon, there is a spring operated piston which undergoes movement upon firing. Due to the construction of this type of compressed air gun, the compressed air available in the storage chamber for each shot cannot always have the same compression, since the efficiency losses occur due to the plurality of pump cylinders through which the air is being fed into the storage chamber, and further, since joints or connections between such cylinders are not so air-tight that they completely prevent the escape of compressed air therefrom.

The instant invention provides a significant contribution over prior art weapons of the air compression type by providing a construction which enables the firing of shots by producing sufficient energy to satisfy high precision requirements and to further provide uniform firing characteristics among all shots fired from the weapon. The device of the instant invention further provides a compressed air gun constructed to deliver precision shots at any predetermined distances wherein such shots have an extremely small dispersion factor. The performance quality of the weapon of the instant invention is equal to the performance of arms using cartridge ammunition in which the slug thereof is ejected out of the barrel by means of a powder charge which is suitably exploded.

The above characteristics are achieved by the device of the instant invention which is comprised of a compressed air gun having a reciprocally mounted piston cooperatively linked with a cocking lever system in a suitable manner and positioned for movement in an air compression cylinder or chamber. The piston undergoes movement from a top dead center position by means of said connecting lever motion causing air from the surrounding atmosphere to be drawn into the compression chamber until the piston is moved to its bottom dead center position. The second cocking lever movement provided for urges the piston from the bottom dead center position to the top dead center position causing air trapped in the compression chamber to undergo substantial compression. The cocking lever system is adapted so as to maintain the air under constant compression and to further cock the weapon trigger for firing thereof. The trigger means is arranged to open a compression chamber outlet valve in order to cause the firing of the cartridge positioned in the weapon chamber by the compressed air released into the chamber.

The compressed air weapon of the instant invention differs from those of the prior art due primarily to its novel construction of the piston assembly which is adapted to draw air into the compression chamber or cylinder, compressing the air contained therein until a shot is fired, both such functions being performed without necessity for storing compressed air in a separate chamber.

The uniformity of firing characteristics is insured by the above construction due to the fact that the cylinder in which the piston is positioned in close proximity to the cocking lever assembly so that the lever assembly is directly connected to the piston member, and further is in close proximity to the cartridge chamber enabling the compressed air to come into direct contact with the cartridge positioned in the chamber upon release of the check valve under control of the weapon trigger means. This design insures the fact that the same quantity of air under the same compression ratio is always present in the compression chamber, thereby affording the requirement of uniform precision firing characteristics.

In order to provide uniformity of firing characteristics over extended periods of use of the subject weapon, adjustable means are provided for controlling the pressure of the compressed air which is above the piston in the cylinder. This is provided for by the provision of an eccentric adjustable pivot means enabling, when adjusted, the alteration of the top dead center position of the piston

member. This is achieved simply by adjusting the eccentric bushing or pivot by a suitable amount.

The compressed air gun of the subject application further provides an intermediate lever assembly which may be coupled either directly or indirectly, for example, between the weapon barrel assembly and the cocking lever assembly so as to control the position of the pivotally mounted barrel for the weapon. The intermediate lever assembly is so constructed as to move the pivotally mounted barrel to an open or titlted position during the compression phase of the weapon operating cycle to enable air to be drawn into the air compression cylinder, and further adapted to cause the barrel to return to its normal or fully closed position upon completion of the compression stroke of the weapon operating cycle, or by placing the weapon in readiness for firing thereof.

In order to insure that the compression chamber check valve in the channel connecting the compression chamber with the cartridge chamber be prevented from accidental operation thereof, an automatic safety feature is provided which arrests or prevents any trigger movement during the portion of the weapon operating cycle when the pivotally mounted barrel is tilted open and the cocking lever assembly is moved away from ist rest or fully closed position. This safety feature preferably consists of a stop means positioned on the pivotally mounted barrel wherein this stop means acts under the control of a tilting lever when the barrel is in the closed position. The tilting lever retracts under control of a stop lug on the trigger. By means of a bias means acting upon the tilting lever, the tilting lever, when the broken barrel is moved to its open position, is thereby pivoted automatically by the bias means to a position so as to arrest the trigger member preventing the trigger from being activated either purposely or accidentally.

In order to further insure uniform quantities of air to be introduced into the compression chamber, which air is exposed to the possibility of escaping from the confined compression area, the instant invention provides piston ring means having a characteristic enabling it to retain an oily substance therein so as to provide the dual functions of producing an airtight seal between the piston and the piston chamber and to further provide the film of the oily substance along the walls of the compression chamber for lubrication thereof, wherby this oil film is replenished during each operating cycle of the weapon.

It is, therefore, one object of this invention to provide a compressed air gun having a novel air compression assembly which assures uniform performance of the weapon propulsion means throughout the operating life of the weapon and which further prevents the movement of elements of the weapon from substantial mass during the actual firing operation, thereby preventing the jerking of the weapon out of alignment with the target being fired upon.

Another object of this invention is to provide a compressed air weapon having a novel compression assembly which provides a uniform compression characteristic throughout the operating life of the weapon.

Another object of this invention is to provide a compressed air weapon having novel air compression means for providing uniform air compression throughout the operating life of the weapon, and further providing novel adjusting means for maintaining such pressure uniform.

Still another object of this invention is to provide a compressed air weapon having a novel compression assembly in which the compression chamber is located so as to be in direct operating relationship with the weapon cartridge chamber and with the compression chamber actuating lever assembly.

Another object of this invention is to provide a compressed air weapon having novel air compression means which further includes a lever operated assembly for controlling the air intake and air compression functions of said weapon and for synchronizing these functions together with the trigger locking and trigger cocking operations.

Still a further object of this invention is to provide a compressed air weapon having a novel compression means operated by a lever assembly wherein the trigger is locked during the air intake and compression cycles to prevent firing of the weapon prior to completion of the compression function.

Yet another object of this invention is to provide an air compression weapon having a novel air compression means operated under control of a lever assembly wherein the lever assembly is so constructed as to move the air compression piston member between a top dead center and a bottom dead center position to insure sufficient air compression for satisfactory firing of the weapon.

These and other objects of this invention will become apparent when reading the accompanying description and drawings, in which:

FIGURE 1 shows an air compression weapon sectionalized in portions in the fully closed state wherein the weapon of FIGURE 1 embodies the principles of the instant invention.

FIGURE 2 is a plan view showing the weapon of FIGURE 1 in the open or tilted position, wherein parts thereof are sectionalized to show the elements contained therein.

FIGURE 3 shows a longitudinal view partially in cross-section of the compression chamber shown in FIGURE 1 which view is taken along the line 3'—3' of FIGURE 1 wherein FIGURE 3 shows the positioning of the elements contained therein at the termination of the weapon compression stroke, or conversely, at the initiation of the air intake stroke.

FIGURE 4 shows a longitudinal view partially in cross-section of the compression chamber of FIGURE 3 with the elements thereof shown in the position occupied at the termination of the air intake stroke, or conversely, at the initiation of the compression stroke wherein the piston is shown in the bottom dead center position.

FIGURE 5 is an enlarged view of the piston of FIGURE 1 partially in cross-section showing the gasket and top ring structure for the piston member.

FIGURE 6 is an enlarged view of the eccentric pin means employed in the device shown in FIGURES 3 and 4.

Referring now to the drawings, FIGURE 1 shows an air compression weapon **100** having a butt or handle member **2**. An actuating lever **1** is pivotally connected at pivot means 3 to the lower end of butt member **2** wherein said actuating lever **1** is adapted for rotation in either the clockwise or counterclockwise directions, as shown by arrows **50** and **51** of FIGURE 1. The upper end of lever member **1** is provided with a pin member **4** permanently secured thereto, which pin member is adapted to be engaged by the notch **5***a* provided in knee lever member **5**. Knee lever **5** is mounted for pivotal movement about pivot point **6** which is secured to the barrel portion **11** of weapon **100**. Knee lever **5** is provided with an elongated slot **5***b* for receiving reciprocally mounted pin member **7** and cooperating spring means **7***a*. Pin **7** is likewise pivotally secured to a lever member **8** pivoted to rotate about a pivot pin **8***a*. Lever **8** is provided with a curved notched portion **8***b* adapted to firmly engage a locking pin **9** secured to the barrel **11** of weapon **100** when lever **8** is in the position shown in FIGURE 1, as will be more fully described.

Barrel **11** is pivoted to rotate about the main portion, or butt portion **2**, of the weapon **100** being pivoted for rotation about pivot pin **11***a*. A second pin **12** is provided on pivotally mounted barrel **11** for slidably engaging the surface **10** of knee lever **5**. Upon slidable engagement therewith, barrel **11** is pivoted to the tilted position, as shown in FIGURE 2, in a manner to be more fully described.

Weapon 100 is further provided with a trigger means 16 which is linked by any suitable arrangement to the air compression assembly to be further described for firing of the weapon. A pivotally mounted safety-catch member 14 is provided, wherein said safety-catch 14 includes bias means (not shown) for urging said safety-catch 14 in the clockwise direction. With the weapon in the position shown in FIGURE 1, a flange 27 provided on the barrel 11 is positioned so as to urge safety-catch 14 against clockwise rotation causing safety-catch member 14 to be retained in the position as shown in FIGURE 1. In this position there is no engagement between safety-catch 14 and trigger member 16, as can clearly be seen in FIGURE 1, permitting the weapon to be fired.

The piston or compression assembly 200 is comprised of a compression cylinder 18' and a reciprocally mounted piston 19 contained therein.

Referring more specifically to FIGURES 3 and 4, piston 19 is coupled to piston rod 18 by means of pivot pin 24 which serves to suitably connect these two members. The lower end of connecting rod or piston rod 18 is connected by pivot pin 23 to a point on operating lever 1, only a portion of which is shown in FIGURES 3 and 4 for the purpose of preserving clarity. A second point on lever 1 is connected by means of pivot pin 20 to a substantially L-shaped intermediate lever member 17, the opposite end of which is connected to the lower end of connecting rod 18 at pivot pin 23. Intermediate lever 17 is provided with a notched portion 17*a* which cooperates with a stationary pivot pin 22 secured at the lowermost end of the butt 2 of weapon 100, as can best be seen in FIGURE 1, and serves to guide the movement of the connecting rod 18, intermediate lever 17 and actuating lever 1 respectively during both the air compression and air intake phases of the weapon operating cycle.

Referring now to FIGURES 1 through 4, the operation of the air compression weapon 100 is as follows:

It will be assumed for the purposes of describing the operation of the air compression weapon that the position occupied by the compression means shown in FIGURE 1 is the position immediately after a firing operation and prior to the initiation of a new weapon operating cycle.

In order to initiate a new operating cycle, the actuating lever 1 is moved from the rest position, as shown in FIGURE 1, in the counterclockwise direction, as shown by arrow 50 of FIGURE 1, about pivot point 3 causing the lever to move toward the position shown in FIGURE 2. The pin 4 at the upper end of lever 1 which is disposed in the notch 5*a* of knee lever 5, upon movement of lever 1, causes knee lever 5 to rotate in the clockwise position, as shown by arrow 52. The pin 7 mounted for reciprocating movement within the elongated slot 5*b* in knee lever 5 causes lever 8 to rotate in the counterclockwise direction, as shown by arrow 53 in figure, thereby causing the pin 7 to move substantially from the right towards the left, causing spring means 7*a* to undergo compression. Spring means 7*a* continues to undergo compression under knee lever 5 and lever 8 are substantially in alignment with one another.

Simultaneous with this movement, the surface 10 of knee lever 5 due to the clockwise rotation of knee lever 5 slidably engages pin 12 of pivotal barrel 11. As the knee lever 5 and lever 8 move out of alignment and break towards the position shown in FIGURE 2, spring means 7*a* which has undergone compression may now release its energy causing both knee lever 5 and lever 8 to move rapidly in the clockwise and counterclockwise positions respectively. These rapid movements cause the notched portion 8*b* of lever 8 to be released from the pin 9, positioned on barrel 11, and simultaneously therewith, causes the surface 10 of knee lever 5 to bear against pin 12. This operation thereby releases the barrel 11 from the locked position and causes the barrel to be tilted open, as shown by the position occupied in FIGURE 2 in order to permit the entrance of air into the weapon compression chamber in a manner to be more fully described.

With the barrel means 11 pivoted to the position shown in FIGURE 2, flange 27 no longer bears against the notched portion 28 of safety-catch 14, thereby enabling the bias means (not shown) coupling safety-catch 14 to the main body of weapon 100 to move catch 14 in the clockwise direction. This causes the projection 14*a* on the safety-catch 14 to lockingly engage a notch 16*a* provided in trigger 16, thereby preventing the movement or actuation of trigger 16 when the weapon is in the position portrayed in FIGURE 2. When the weapon is in the position as shown in FIGURE 2, the pin 4 is released from the notch 5*a* of knee lever 5, thereby making actuating lever 1 free to move in order to complete the air intake and the air compression phases of the weapon operating cycle, in a manner to be more fully described.

Upon completion of the air intake and air compression cycles, operating lever 1 is returned to the position shown in FIGURE 2, and upon clockwise rotation thereof as shown by arrow 52, pin 4 again becomes seated in notch 5*a* of knee lever 5, causing the knee lever to undergo counterclockwise rotation, as shown by arrow 56 in FIGURE 1. In a like manner to that previously described, knee lever 5 and lever 8 move to a position whereby they are substantially in vertical alignment causing pin 7 to move from the right towards the left, thereby causing spring means 7*a* to become compressed. Simultaneously with this movement, the left-hand most edge of knee lever 5 bears against a projection 57 on barrel 11 causing barrel 11 to rotate clockwise about its pivot pin 11*a*, as shown by arrow 58 in FIGURE 2 so as to return to the position of FIGURE 1. When the knee lever 5 and lever 8 move out of vertical alignment so that the knee is above an imaginary line drawn between their pivot points 6 and 8*a*, spring means 7*a* is thereby enabled to discharge its stored energy causing knee lever 5 and lever 8 at this time to move rapidly in the counterclockwise and clockwise directions respectively. This causes a firm locking engagement between the notch 8*b* provided in locking lever 8 and the locking pin 9 provided in the barrel 11 so as to maintain the weapon in the position shown in FIGURE 1. Simultaneously with this movement, flange 27 returns to the position shown in FIGURE 1 causing safety-catch 14 to move against the bias means (not shown) in the counterclockwise direction so as to return to the position shown in FIGURE 1. This, as can clearly be seen, releases the trigger 16 thereby placing the weapon is readiness for a firing operation.

The operation of the weapon compression means 200 which can be best seen in FIGURES 3 and 4 is as follows:

Again, working under the assumption that the lever 1 is moved in the counterclockwise direction as shown by arrow 50 of FIGURE 3, this causes lever 1 to pivot in the proper direction about stationary pivot pin 3 mounted to the lowermost end of the butt 2 of weapon 100. This causes pin 20 which is pivotally connected to a point on lever 1 near pivot pin 3 by a suitable aperture to likewise move in the counterclockwise direction. Pin 20 is further pivotally linked to L-shaped member 17, causing intermediate lever (i.e. L-shaped member) 17 to undergo both rotational and translational movement which movement terminates when the intermediate lever 17 is moved to the position as shown in FIGURE 4.

The movement of intermediate lever 17 is imparted to connecting rod 18 by means of pivot pin 23 which is connected to connecting rod 18 and intermediate lever 17 by suitable apertures. The upper end of connecting rod 18 is connected by a pivot pin 24 to the lower end of piston member 19. Taking note of the assumption that the compression means 200, as shown in FIGURE 3, shows the elements of the compression means immediately after a firing cycle, the movement of the lever 1 from the position of FIGURE 3 to the position of FIGURE 4 causes the piston 19 to move in the direction

shown by arrow 60 from the top dead center position, as shown in FIGURE 3, to the bottom dead center position of FIGURE 4. This movement causes the region defined by the compression chamber 18' and the upper edge 19a of piston 19 to be increased substantially, thereby enabling the downward piston movement to be displaced by a predetermined quantity of air. A large volume of air is permitted to enter the compression chamber 65 due to the tilting of the pivotally mounted barrel to the position shown in FIGURE 2, thereby permitting the air to enter directly at the point 70 shown in FIGURE 2 which is immediately to the left of the escape valve 19' which is mounted for reciprocating movement in the cavity 75 provided in the butt 2 of weapon 100. The sudden downward movement of piston member 19 causes a rapid drop in pressure in compression chamber 65 which pressure drop is conveyed to the region immediately above the escape valve head 19'. Thus, the availability of air at a higher pressure level at the opposite side of escape valve 19' causes air at atmosphere pressure to enter opening 70 to be communicated along chamber 76, thereby having escape valve 19' vertically upward to permit air at atmospheric pressure to enter the connecting chamber 76 and the compression chamber 65 in order to equalize the pressure therein.

At the termination of movement of the operating lever 1 from the position of FIGURE 3 to the position of FIGURE 4 and immediately before the actuation of lever 1 from the position of FIGURE 4 back to the position shown in FIGURE 3, the pressure level in the compression chamber 65 and the ambient atmosphere are substantially equalized causing the escape valve 19' to return to the position shown in FIGURE 1 under control of suitable biasing means (not shown).

The actuating lever is then moved from the position shown in FIGURE 4 in the clockwise direction, as shown by arrow 51 of FIGURE 1, about its pivot point 3, thereby causing initiation of the air compression phase of the weapon operating cycle. In order to more readily overcome the high resistance which the decompressed air presents to the clockwise movement of the actuating lever 1, pin 3 and pin 20 are positioned so as to be eccentric (i.e. off center) relative to their associated apertures.

Upon pivotal movement of the lever 1 about the eccentric pin 3, intermediate lever 17 is caused to initially rotate about pin 22, due to the engagement of pin 22 by means of the notch 21 provided in substantially L-shaped member 17. Thus, intermediate lever 17 undergoes substantially circular motion causing the distance between pins 3 and 23 to be diminished until the substantially flat surfaces 25 and 26 of actuating levers 1 and intermediate lever 17 respectively come into physical contact with one another. Thus, even though the pressure exerted by the air being compressed in chamber 65 is steadily increasing, thereby offering greater opposition to the lever assembly, at the same time the leverage of the load upon the lever assembly increases, and concurrently therewith, the lever advantage of the actuating lever assembly increases so that the opposition to further movement of actuating lever 1 in the clockwise direction decreases considerably to the point where it is hardly noticeable at the time when the opposing surfaces 25 and 26 of levers 1 and 17 respectively come into physical contact with one another.

During the last portion of the clockwise movement of actuating lever 1, barrel 11 is closed in the sequence as previously described, and is locked into the position shown in FIGURE 1 by means of locking engagement between lever 8 and locking pin 9, thereby securely arresting the barrel 11 in the position of FIGURE 1.

Simultaneously therewith, flange 27 causes counterclockwise movement of safety member 14 releasing trigger member 16 for actuation thereof, and thus, the weapon as shown in FIGURE 1 is positioned for the firing operation under control of trigger actuator 16. The trigger member 16 is connected by suitable means (not numbered) so as to cause valve member 19' to move in the vertically upward direction enabling the compressed air in compression chamber 65 to pass through chamber 76' and chamber 76 into the chamber 78 of barrel 11 which is adapted to receive the missile (i.e. the bullet) to be fired. It should be noted that the bullet, or cartridge (not shown), would be positioned immediately adjacent the opening 70 in the outlet chamber 76.

In order to compensate for unavoidable manufacturing tolerances in the fabrication of the air compression weapon 100, the compression capacity of the compression chamber 18' is made adjustable by means of enabling adjustment of the eccentric bearing pins for pivot pins 3, 6 and 20 provided in the weapon 100. This may be done in any number of ways such as, for example, making pins 3, 6 and 20 pivotable about an off-center pin provided for in the mounting between pins 3, 6 and 20 and the frame of the weapon 100. The pin means connecting pins 3, 6 and 20 to the weapon frame may be of any suitable configuration commensurate with the adjusting feature.

FIGURE 6, for example, shows pin 3a located off center relative to pin 3. Rotation of pin 3a within the opening provided in the compression chamber near the bottom end thereof, provides the adjustable feature which may be employed to overcome manufacturing tolerances as well as to maintain the compression constant over the life of the weapon.

In order to obtain even more reliable airtight construction between piston 19 and cylinder 18', the piston 19 is equipped with an annular recess 32, as can best be seen in FIGURE 5, for receipt therein of an annular packing ring 31. Packing ring 31 is so designed as to act as a reservoir for a lubricating fluid which may be continuously applied to the walls of cylinder 18' upon movement of piston 19 within the cylinder chamber 18'. A plurality of grooves 33 are provided near the top surface of piston 19 for the purpose of preventing the entrance of surplus lubricating fluid into the compression region 65 of the cylinder 18'.

It can, therefore, be seen that the device of the instant invention provides an air compression weapon which is relatively easy to operate, provides uniform firing characteristics throughout its operating life, eliminates movement of members having substantial mass during the firing phase of the weapon operating cycle, and provides an advantageous lever assembly which, although relatively easy to operate, provides sufficient compression for the provision of adequate firing characteristics thereof.

It should be noted that with the elements of the compression means 200, as shown in FIGURE 3, the air is compressed into the confined region 65 shown in FIGURE 3, and upon upward vertical movement of the reciprocating valve means 19', although compressed air is released from chamber 65, piston member 19 undergoes no movement during the firing operation of the weapon 100, thereby enabling weapon 100 to remain in the position in which it was aimed for the purpose of hitting a desired target without danger of the weapon being moved or jerked from the aimed position.

Although this invention has been described with respect to its preferred embodiments it should be understood that many variations and modifications will now be obvious to those skilled in the art, and it is preferred, therefore, that the scope of this invention be limited not by the specific disclosure herein but only by the appended claims.

I claim:

1. Propelling means for a weapon comprising:

an air compression chamber having an opening at one end;

a piston having a connecting rod pivotally mounted at one end thereof; said piston being mounted for reciprocal movement in said chamber;

a lever assembly connected to the second end of said connecting rod;

the second end of said piston being adapted to compress air at a first end of said chamber;

said lever assembly having a first manually operable lever being pivotally mounted to a stationary pin located at the second end of said chamber to move between a first and second position;

said piston and said chamber cooperating to draw air into said chamber when said first lever is moved toward said second position and to compress the air in said chamber when said first lever is moved to said first position;

said lever assembly further comprising:

an intermediate lever pivotally directly connected to said connecting rod second end and directly to said first manually operable lever at a spaced distance from said stationary pin for increasing the leverage advantage during said compression stroke to compensate for the resistive force impressed upon said piston by the air being compressed in said chamber.

2. The propelling means of claim 1 wherein said lever assembly is further comprised of:

eccentric pivotal mountings;

said pivotal mountings being rotatable upon offset pin means provided near said chamber second end.

3. Propelling means for a weapon comprising:

an air compression chamber having an opening at one end;

a piston mounted for reciprocal movement in said chamber;

a lever assembly connected to a first end of said piston;

the second end of said piston being adapted to compress air at a first end of said chamber;

said lever assembly having a first lever being pivoted to move between a first and a second position;

said piston and said chamber cooperating to draw air into said chamber when said first lever is moved towards said second position and to compress the air in said chamber when said first lever is moved to said first position;

said lever assembly further comprising;

a connecting rod having a first and a second end;

said connecting rod first end being pivotally linked to said piston first end;

an intermediate member having a first and second end;

the first end of said intermediate member being pivotally linked to the second end of said connecting rod;

the second end of said intermediate member being pivotally connected to said first lever at a spaced distance from said first lever first end;

said first lever being pivotally mounted to experience only rotational movement;

a stationary pin mounted upon said chamber near the first end of said first lever;

said intermediate member having a notch engaging said stationary pin to experience only rotational movement during a first portion of the compression stroke and having a surface engaging said first lever to experience rotational and translational movement during the remaining portion of said compression stroke to compensate for the increased resistive force imposed upon said piston by the air being compressed in said chamber.

4. An air compression weapon having air compression means of the type described in claim 1 and further comprising:

a pivotally mounted barrel;

a second lover assembly connected to said first lever

for tiltiing said barrel to an open and a closed position when said first lever is moved respectively to said second and first position to permit the entrance of air into the compression chamber;

compressible spring means in said second lever assembly for assisting the first lever assembly to rapidly open and close said barrel.

5. An air compression weapon having air compression means of the type described in claim 4 comprising:

trigger means;

valve means connecting said air compression chamber with said weapon barrel and movable between an open and a closed position;

biasing means for maintaining said valve in said closed position;

said trigger means moving said valve means to said open position enabling the compressed air in said chamber to enter said weapon barrel;

said second lever assembly preventing movement of said trigger means until completion of the air compression stroke.

6. An air compression weapon having air compression means of the type described in claim 5 wherein said compression means is further comprised of means for urging said valve means to said open position against said bias means when said first lever is moved toward said second position to draw air into said compression chamber.

7. An air compression weapon having air compression means of the type described in claim 1 and further comprising:

trigger means;

a pivotally mounted barrel;

a second lever assembly connected to said first lever for tilting said barrel to an open and a closed position when said first lever is moved respectively, to said second and first positions;

said second lever assembly including a toggle assembly having a knee movable in first and second opposing directions from a dead center position;

bias means coupled to said toggle means for rapidly moving said knee in either said first or second directions when said knee moves beyond its dead center position;

said toggle assembly comprising means removably coupled with said first lever and second means removably coupled with said barrel to unlock said barrel and pivot said barrel to an open position;

means connected between said trigger means and said toggle means for locking said trigger means from movement when said knee moves in said first direction and to return said barrel to its closed position and to lock said barrel, and to release said trigger means to permit firing of said weapon.

8. Propelling means for a weapon comprising:

an air compression chamber having an opening at one end;

a piston mounted for reciprocal movement in said chamber;

a lever assembly connected to a first end of said piston;

the opposite end of said piston being adapted to compress air at said one end of said chamber;

said lever assembly having a first lever being pivoted to move between a first and a second position, said piston and said chamber cooperating to draw air into said chamber when said first lever is moved toward said second position and to compress the air in said chamber when said first lever is moved to said first position;

said lever assembly further comprising a connecting rod having a first and second end;

said first end being pivotally linked to said piston first end;

an intermediate member having a first and second end;

the first end of said intermediate lever being pivotally linked to the second end of asid connecting rod;

the second end of said intermediate member being pivotally connected to said first lever at a point removed from the first end of said first lever;

said first lever being pivotally mounted to experience only rotational movement;

pin means mounted near said chamber second end adjacent the first end of said first lever;

said intermediate member having a notch engaging said pin means for experiencing only rotational movement during the first portion of the compression stroke, and having a surface engaging said first lever to experience rotational and translational movement during the remaining portion of said compression stroke to compensate for the increased resistive force imposed upon said piston by the air being compressed in said chamber;

said piston including an oil storing gasket for lubricating said compression means during operation thereof;

said piston having at least one circular groove positioned between said gasket and said piston first end to prevent oil from entering said compression chamber.

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