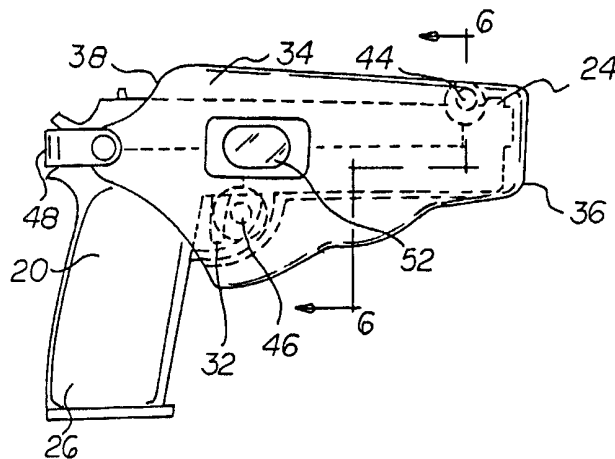




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(54) Title: FIREARM HOLSTER LOCK WITH FINGERPRINT IDENTIFICATION MEANS



(57) Abstract

Disclosed is a retaining device for lockingly receiving a firearm wherein the firearm has a barrel, barrel sight, grip, hammer and trigger guard. The retaining device comprises a holster (34), having a closed forward portion and an open rearward portion. A guide channel is positioned within the holster for accepting the barrel (22) and trigger guard of the firearm. A fingerprint identification means has a fingerprint input device (54) positioned upon the external surface of the holster at an intermediate extent. Further provided is a comparison means for comparing an inputted fingerprint with a stored fingerprint image, and a signal generating means for generating a first signal when an inputted fingerprint matches a stored fingerprint and a second signal when an inputted fingerprint fails to match a stored fingerprint. The signal generating means is in electrical communication with and controls a firearm retaining means. The firearm retaining means has a first orientation securing the firearm within the holster and a second orientation allowing the firearm to be removed. The retaining means is in electrical communication with and responsive to signals from the signal generating means.

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FIREARM HOLSTER LOCK WITH FINGERPRINT IDENTIFICATION MEANS
BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to lockable firearm
5 holsters, and more particularly to lockable firearm
holsters with fingerprint identification means.

Description of the Prior Art

The use of weapon holsters is known in the prior art.
By way of example, U.S. Patent Number 3,419,728 to Wilson
10 discloses a weapon holster which employs solenoids. U.S.
Patent Number 5,284,281 to Nichols discloses a holster
with trigger guard gripping device. U.S. Patent Number
5,322,200 to Blanchard discloses a storage holster for
locking a handgun in place and preventing access to the
15 handgun by unauthorized persons. U.S. Patent Number
5,501,380 to Wu discloses a safety holster for receiving
the barrel and receiver portion of a handgun. U.S. Patent
Number 5,518,155 to Gallagher discloses a holster lock for
simultaneously contacting the trigger guard and muzzle of
20 a handgun in a holster. U.S. Patent Number 5,611,471 to
French discloses a gun holster having a main frame formed
from two flattened C-shaped pieces. Lastly, U.S. Patent
Number 5,779,114 to Owens discloses a safety device for a
firearm having a first signal means for generating a first
25 status signal reflecting the status of the receptacle as
to whether the firearm is engaged or disengaged within the
receptacle.

In this respect, the firearm holster lock with
fingerprint identification means according to the present
30 invention substantially departs from the conventional
concepts and designs of the prior art, and in doing so
provides an apparatus primarily developed for the purpose
of insuring that only authorized individuals have access
to a firearm.

35 Therefore, it can be appreciated that there exists a
continuing need for a new and improved firearm holster
lock with fingerprint identification means which can be
used for insuring that only authorized individuals have

access to a firearm. In this regard, the present invention substantially fulfills this need.

SUMMARY OF THE INVENTION

5 In view of the foregoing disadvantages inherent in the known types of weapon holsters now present in the prior art, the present invention provides a new and improved firearm holster lock with fingerprint identification means.

10 To attain this, the present invention essentially comprises a retaining device for lockingly receiving a firearm, wherein the firearm has a barrel, barrel sight, grip, hammer and trigger guard, the retaining device includes a holster having a closed forward portion and an
15 open rearward portion, a guide channel positioned within the holster for accepting the barrel and trigger guard of the firearm; a first solenoid-activated plunger secured upon an internal surface of the holster proximate the closed forward portion, a plunger having a first engaged
20 orientation and a second disengaged orientation; a second solenoid-activated plunger secured upon the internal surface of the holster proximate to the opened rearward portion, the plunger having a first engaged orientation and a second disengaged orientation; a steel-reinforced
25 hammer strap adapted to be secured about the hammer of the firearm, the strap having a proximate end secured to the opened rearward portion of the holster and a distal end, a first lock secured to the distal end of the strap and adapted to be mechanically coupled to a second lock
30 positioned upon an external surface of the holster adjacent the opened end; a fingerprint identification means having a fingerprint input device positioned upon the external surface of the holster at an intermediate extent, a comparison means for comparing an inputted
35 fingerprint with a stored fingerprint image, and a signal generating means for generating a first signal when an inputted fingerprint matches a stored fingerprint and a second signal when an inputted fingerprint fails to match

a stored fingerprint, a signal generating means being in electrical communication with the first and second solenoid-activated plungers as well as the first and second locks.

5 There has thus been outlined, rather broadly, the more important features of the invention in order that the detailed description thereof that follows may be better understood and in order that the present contribution to the art may be better appreciated. There are, of course,
10 additional features of the invention that will be described hereinafter and which will form the subject matter of the claims appended hereto.

 In this respect, before explaining at least one embodiment of the invention in detail, it is to be
15 understood that the invention is not limited in its application to the details of construction and to the arrangements of the components set forth in the following description or illustrated in the drawings. The invention is capable of other embodiments and of being practiced and
20 carried out in various ways. Also, it is to be understood that the phraseology and terminology employed herein are for the purpose of descriptions and should not be regarded as limiting.

 As such, those skilled in the art will appreciate
25 that the conception, upon which this disclosure is based, may readily be utilized as a basis for the designing of other structures, methods and systems for carrying out the several purposes of the present invention. It is important, therefore, that the claims be regarded as
30 including such equivalent constructions insofar as they do not depart from the spirit and scope of the present invention.

 It is therefore an object of the present invention to provide a system which securely retains a firearm within a
35 holster.

 It is another object of the present invention to provide a holster which can retain a firearm in an inoperable orientation.

It is a further object of the present invention to provide a holster which allows only authorized users to have working access to the firearm.

Even still another object of the present invention is
5 to create a system whereby the physical characteristics of a person desiring to use a firearm retained in the holster are verified against a stored data table to insure that only authorized users can withdraw the weapon.

Lastly, it is an object of the present invention to
10 provide a gun holster which can be used by law enforcement personnel and security guards and which can be stored upon such individuals in a completely secure manner.

These together with other objects of the invention, along with the various features of novelty which
15 characterize the invention, are pointed out with particularity in the claims annexed to and forming a part of this disclosure. For a better understanding of the invention, its operating advantages and the specific objects attained by its uses, reference should be had to
20 the accompanying drawings and descriptive matter in which there is illustrated preferred embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

25 The invention will be better understood and objects other than those set forth above will become apparent when consideration is given to the following detailed description thereof. Such description makes reference to the annexed drawings wherein:

30 Figure 1 is a perspective illustration of the preferred embodiment of the holster in use upon a user's waist.

Figure 2 is a detailed view taken from Figure 1.

Figure 3 is a elevational view of a gun partially
35 positioned within the holster.

Figure 4 is a partial sectional view of a gun positioned within the holster.

Figure 5 is a view of the firearm positioned within the holster, with the retaining means illustrated in phantom.

Figure 6 is a sectional view taken along line 4-4 of Figure 5.

Figure 7 is a schematic diagram depicting the fingerprint identification system of the primary embodiment.

Figure 8 is a schematic diagram depicting the fingerprint identification system of the secondary embodiment.

Figure 9 is an alternative embodiment of the present invention.

Figure 10 is an alternative embodiment of the present invention.

The same reference numerals refer to the same parts throughout the various Figures.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference now to the drawings, the preferred embodiment of the new and improved firearm holster lock with fingerprint identification means is described.

Generally, the device of the present invention includes a holster which is adapted to receive the forward, or barrel, portion of a hand held firearm. Additionally, the device includes locking means which function to selectively secure the firearm within the holster to prevent a user from using the firearm. Furthermore, the device includes a fingerprint identification system which is positioned upon an exterior surface of the holster. The fingerprint identification device enables a select user, or select group of users, to be able to remove the gun from the holster. The details of the present invention will be described in greater detail hereinafter.

The present invention is specifically for use in conjunction with a pistol 20, either an automatic pistol or a revolver. Any firearm employed with the device

should include, in general terms, a barrel 22, a barrel sight 24, a grip 26, a hammer 28 and a trigger guard 32. Turning now to Figures 3 and 4, the holster 34 of the present invention is depicted. Such holster 34 is defined
5 by a closed forward portion 36, an open rearward portion 38, as well as a periphery. In the preferred embodiment, this holster 34 is formed from a rigid but lightweight material. With reference now to Figure 4, the internal guide channel 42 of the holster is depicted. This guide
10 channel 42 is positioned along the interior length of the holster 34 and functions to appropriately orient a firearm upon insertion into the holster 34. Specifically, the guide channel 42 supports the barrel portion 22 of the firearm. The holster 34 is such that when the firearm is
15 completely inserted within the interior of the holster 34, both the complete length of the barrel 22 and the trigger guard 32 are enclosed. The details of the firearm retaining means will be described in greater detail hereinafter.

20

The Firearm Retaining Means

An important feature of the present invention is the firearm retaining means which enables a user to secure the firearm within the interior of the holster 34, thereby
25 making it unusable. In general, the firearm retaining means has a first orientation for securing the firearm within the holster and a second orientation which allows the firearm to be removed therefrom. Furthermore, the retaining means is in electrical communication with, and
30 responsive to, a signal generating means. Such signal generating means operates to allow a user to selectively secure the firearm within the holster or allow it to be removed therefrom. In the preferred embodiment, the retaining means takes the form of a reinforced strap which
35 is mechanically secured to the holster. In the preferred embodiment, the strap is steel reinforced. The reinforcement, however, can be achieved through other materials such as KEVLAR[™].

The strap retaining means is depicted in Figure 3. This Figure depicts the hammer strap 48 which can be engaged about the hammer 28 of a firearm and secured to the holster 34. With continuing reference to Figure 3, the proximate end of the strap, which is secured to the open rearward portion 38 of the holster 34, and the distal end are depicted. The distal end of the strap includes a mechanical fastening lock 51. Additionally, the external surface of the holster includes a mechanical fastening lock 50. More specifically, the fastening lock 50 is positioned upon the external surface of the holster 34 adjacent the opened end 38. The fastening means 50 and 51 can take a variety of forms which are well known in the art. In the preferred embodiment, the lock 51 takes the form of a female slot. Additionally, the lock 50 takes the form of a retractable pin. Thus, the pin of lock 50 is dimensioned to be received within the female slot. With the pin extended through the female slot the locks 50 and 51 securely fastened to one another. In this orientation, the hammer strap 48 is securely fastened about the hammer 28 of the firearm, note Figure 5.

Furthermore, the preferred embodiment also contemplates that the locks 50 and 51 carry electromagnets which are responsive to the supply of an electric current. More specifically, when locks 50 and 51 are coupled to a supply of electrical power, repulsive magnetic fields are generated. Thus, in operation, when the retractable pin of lock 50 is retracted the hammer strap is unlocked but not uncoupled. Thereafter, electrical power supplied to each of the locks 50 and 51 causes magnetic fields of opposing polarity to be generated. These repulsive magnetic fields cause the locks to become uncoupled. In this manner, when the locks are securely fastened to one another, a loss of electrical power will not cause the locks to become uncoupled. Thus, a firearm will remain secure within the holster in the event of power loss.

The electrical power necessary to power and activate both the retractable pin of lock 50 and the electromagnets

can be supplied from a power source contained within the holster. Additionally, the fingerprint identification device 52 functions to control the operation of the retractable pin of lock 50 and the supply of electricity to the electromagnets. The manner in which the fingerprint identification device 52 achieves this will be described in greater detail hereinafter.

The specifics of the fingerprint identification device will be described in greater detail hereinafter.

10 The retractable pin is powered and controlled in a manner which will be described in greater detail hereinafter.

In an alternative embodiment, two solenoid-activated plungers 44 and 46 are added to the retaining means. More specifically, a first solenoid-activated plunger 44 is secured upon the internal surface of the holster 34 approximate to the closed forward portion 36, note Figure 5. In like fashion, a second solenoid-activated plunger 46 is secured upon the internal surface approximate the open rearward portion 38. Each of these plungers 44 and 46 has a first engaged orientation and a second disengaged orientation. Namely, with the solenoid in a first state, the plunger is expelled from the solenoid housing to extend across the entire width of the holster 34. Alternatively, when the solenoid is placed in a second state, the respective plunger is retracted into a solenoid housing to thereby create a free path through a length of a portion of the holster 34. The manner in which these various plungers engage a firearm which is positioned within the holster 34 will be described in greater detail hereinafter. The power source needed for each of the solenoids can be positioned within the holster.

The Fingerprint Identification Means

Each of the retaining means heretofore described -- the hammer strap 48, the first solenoid-activated plunger 44 and the second solenoid-activated plunger 46 -- is adapted to be controlled by a secure user interface. In the preferred embodiment, this user interface takes the

form of a fingerprint identification means 52. The fingerprint identification means 52 includes a fingerprint input device 54 which is positioned upon the external surface of the holster 34 at an intermediate extent.

5 Furthermore, the identification means 52 includes a comparison means 56 for comparing a fingerprint inputted with electrically stored fingerprint images or data. If a match is made a first signal is generated by a signal generating means 58. Alternatively, if the inputted
10 fingerprint does not match a stored value, the generating means 58 generates a second signal. The input device, comparison means, and signal generating means are all in electrical communication with one another. Details concerning the identification means 52 of both the primary
15 and secondary embodiment are outlined below.

Figure 7 is a schematic illustrating the fingerprint identification means 52 as used in conjunction with the primary embodiment. This embodiment includes a fingerprint input device 54, a comparison means 56, a
20 signal generating means 58, and locks 50/51 and an alarm 53. A user accesses the identification means by placing his or her finger upon the input device 54, note Figure 2. Thereafter, the input device 54 scans the user's fingerprint. Finally, this image is converted into
25 digital format and passed to the comparison means 56 wherein the fingerprint data is compared with a table of stored fingerprint data. As many fingerprints as desired can be stored in this data table. The fingerprint identification means also includes a signal generating
30 means 58 which is in electrical communication with, and controls, the locks 50, 51 and alarm 53, as well as their power supplies. As noted previously, when the inputted fingerprint data matches one of the images stored, a first signal is generated. Conversely, when the inputted
35 fingerprint data fails to correspond with any of the data stored within the comparison means, a second signal is generated. When an inputted fingerprint causes the generation of a first signal, the retractable pin of lock

50 is extended into the female slot of lock 51. In this configuration, the locks are securely fastened to one another and cannot be unlocked until an authorized fingerprint is inputted. Namely, with the locks 50 and 51
5 securely fastened to one another, inputting an authorized fingerprint again causes the generation of the first signal. When the first signal is generated for the second time the pin of lock 50 is retracted and electrical power is supplied to each of the locks to generate opposing and
10 repulsive magnetic fields. These fields causes the locks 50 and 51 to become uncoupled in a manner described more fully hereinabove.

When the second signal is generated an alarm 53 is activated. The alarm can take the form of light or sound
15 generating means. The alarm preferably stays activated until deactivated by inputting an authorized user's fingerprint. Through the use of the second signal and the alarm 53 an authorized user can readily determine if an unauthorized user has attempted to access the firearm.

20 Turning now to Figure 8, the fingerprint identification means 52 is illustrated in conjunction with the secondary embodiment. In this embodiment, the signal generating means 58 is in electrical communication with the first and second solenoid-activated plungers 44 and
25 46, the first and second locks 50 and 51, the alarm 53, as well as the power supplies for these devices. The signal generating means 58 functions such that when a second signal is inputted the alarm is activated and remains activated until an authorized fingerprint is inputted.
30 Furthermore, when the first signal is generated, the first and second solenoid-activated plungers are retracted to their second disengaged orientations and the first and second locks are uncoupled. In this orientation, the firearm can be removed from the holster 34.
35 Alternatively, when the first signal is again generated, the first and second solenoid-activated plungers 44 and 46 are extended to their first engaged orientations and the

first and second magnetic locks 50 and 51 are activated to allow for coupling in a manner described hereinabove.

In this manner, any firearm placed within the holster can be locked therein. Such an orientation is more
5 clearly illustrated with reference to Figure 6. Figure 6 illustrates that when a firearm is placed within the interior of the holster, the first solenoid-activated plunger 44 is positioned to selectively engage the barrel sight 24 and the second plunger 46 is adapted to engage
10 the trigger guard 32. Thus, with a firearm so positioned, and the second signal generated by the signal generating means 58, the plungers 44 and 46 are extended across the width of the holster and are effectively locked in place.

Although the present invention has been described in
15 conjunction with a holster, the general principles can be employed with other devices. Specifically, Figure 9 illustrates a woman's purse 62 with a fingerprint identification means 64 similar to the one described. Thus, a woman carrying a purse who wishes to gain entry
20 into the interior compartment would place her finger upon the input device. If a match were obtained, electrical power would be supplied to the coupling means 66 to cause their separation. Thereafter, the purse 62 could be opened. Furthermore, the present invention could also be
25 employed with a push button type device 68. Such a push button type device 68 is depicted in Figure 8. In this embodiment, the fingerprint identification means is replaced by a three-button combination lock. A user wishing to gain access to the firearm would input a
30 predetermined three-digit code. Thereafter the three-digit code would be electrically compared to the three-digit code stored in memory. A match would generate a signal such that plungers would be placed into their second disengaged orientation and the locks would be
35 permitted to be uncoupled.

As to the manner of usage and operation of the present invention, the same should be apparent from the above description. Accordingly, no further discussion

relating to the manner of usage and operation will be provided.

With respect to the above description then, it is to be realized that the optimum dimensional relationships for the parts of the invention, to include variations in size, materials, shape, form, function and manner of operation, assembly and use, are deemed readily apparent and obvious to one skilled in the art, and all equivalent relationships to those illustrated in the drawings and described in the specification are intended to be encompassed by the present invention.

Therefore, the foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.

CLAIMS

What is claimed is:

1. A retaining device for lockingly receiving a firearm, wherein the firearm has a barrel, barrel sight, grip, hammer and trigger guard, the retaining device comprising, in combination:
 - a holster having a closed forward portion and an open rearward portion, a guide channel positioned within the holster for accepting the barrel and trigger guard of the firearm;
 - 10 a first solenoid-activated plunger secured upon an internal surface of the holster proximate the closed forward portion, a plunger having a first engaged orientation and a second disengaged orientation;
 - a second solenoid-activated plunger secured upon the 15 internal surface of the holster proximate to the opened rearward portion, the plunger having a first engaged orientation and a second disengaged orientation;
 - a steel-reinforced hammer strap adapted to be secured about the hammer of the firearm, the strap having a 20 proximate end secured to the opened rearward portion of the holster and a distal end, a first lock secured to the distal end of the strap and adapted to be mechanically coupled to a second lock positioned upon an external surface of the holster adjacent the opened end;
 - 25 a fingerprint identification means having a fingerprint input device positioned upon the external surface of the holster at an intermediate extent, a comparison means for comparing an inputted fingerprint with a stored fingerprint image, and a signal generating 30 means for generating a first signal when an inputted fingerprint matches a stored fingerprint and a second signal when an inputted fingerprint fails to match a stored fingerprint, a signal generating means being in electrical communication with the first and second 35 solenoid-activated plungers as well as the first and second magnetic locks;

the signal generating means functioning such that when the first signal is generated, the first and second solenoid- activated plungers are activated and the first
40 and second locks are selectively activated;

the holster functioning such that when a firearm is placed in the interior of the holster and the first and second plungers are placed in the first engaged orientation and the first and second locks are coupled the
45 firearm is secured, thereafter the firearm can only be retrieved by inputting a desired fingerprint image.

2. A retaining device for lockingly receiving a firearm, wherein the firearm has a barrel, barrel sight, grip, hammer and trigger guard, the retaining device comprising, in combination:

5 a holster having a closed forward portion and an open rearward portion, a guide channel positioned within the holster for accepting the barrel and trigger guard of the firearm;

a fingerprint identification means having a
10 fingerprint input device positioned upon the external surface of the holster at an intermediate extent, a comparison means for comparing an inputted fingerprint with a stored fingerprint image, and a signal generating means for generating a first signal when an inputted
15 fingerprint matches a stored fingerprint and a second signal when an inputted fingerprint fails to match a stored fingerprint;

a signal generating means for generating first and second signals being in electrical communication with a
20 firearm retaining means; and

an alarm which is electrical communication with the signal generating means and which is activated when the second signal is generated;

the firearm retaining means having a first
25 orientation securing the firearm within the holster and a second orientation allowing the firearm to be removed, the

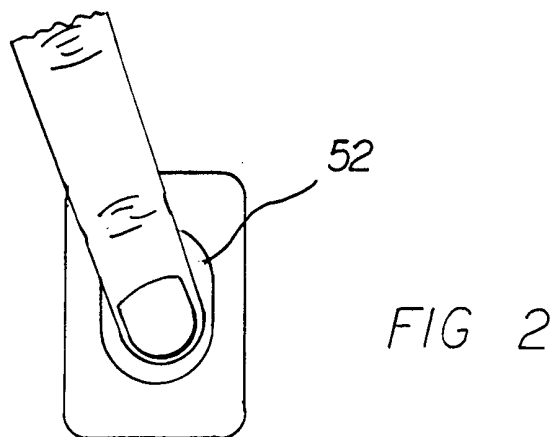
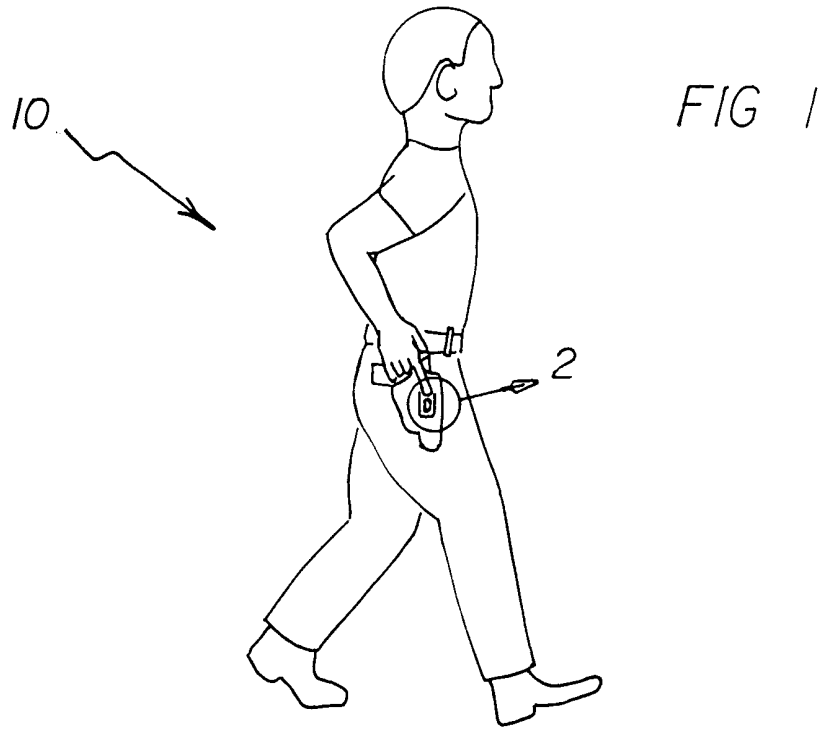
retaining means being in electrical communication with and responsive to signals from the signal generating means.

3. The device as described in Claim 2 wherein the firearm retaining means takes the form of a first solenoid-activated plunger secured upon an internal surface of the holster proximate the closed forward
5 portion, the plunger having a first engaged orientation and a second disengaged orientation.

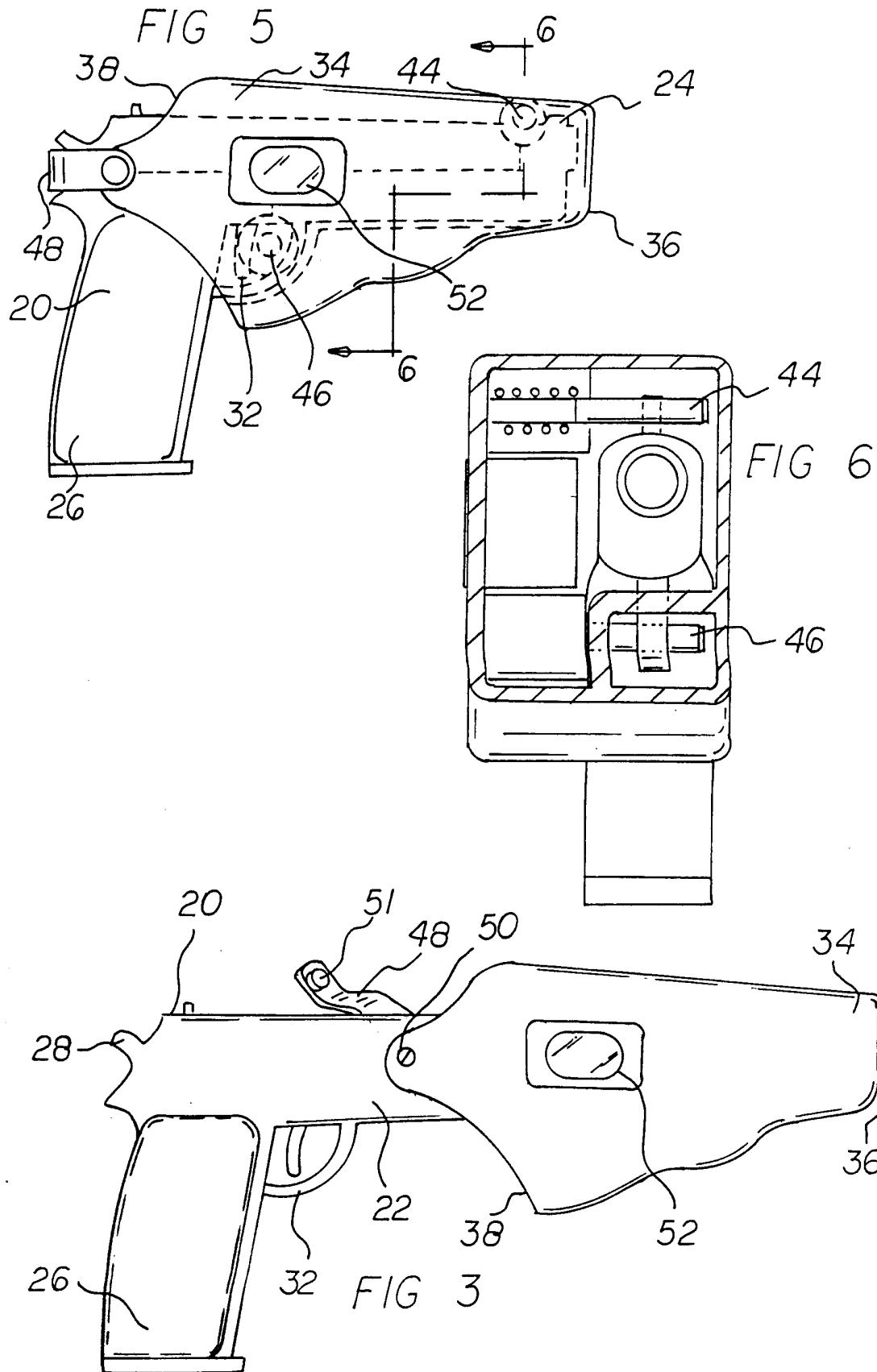
4. The device as described in Claim 3 wherein the firearm retaining means also includes a second solenoid-activated plunger secured upon the internal surface of the holster proximate to the opened rearward portion, the
5 plunger having a first engaged orientation and a second disengaged orientation.

5. The device as set forth in Claim 4 wherein the firearm retaining means also includes a reinforced hammer strap adapted to be secured about the hammer of the firearm, the strap having a proximate end secured to the
5 opened rearward portion of the holster and a distal end, a first lock secured to the distal end of the strap and adapted to be mechanically coupled to a second lock positioned upon an external surface of the holster adjacent the opened end.

1/5



2/5



3/5

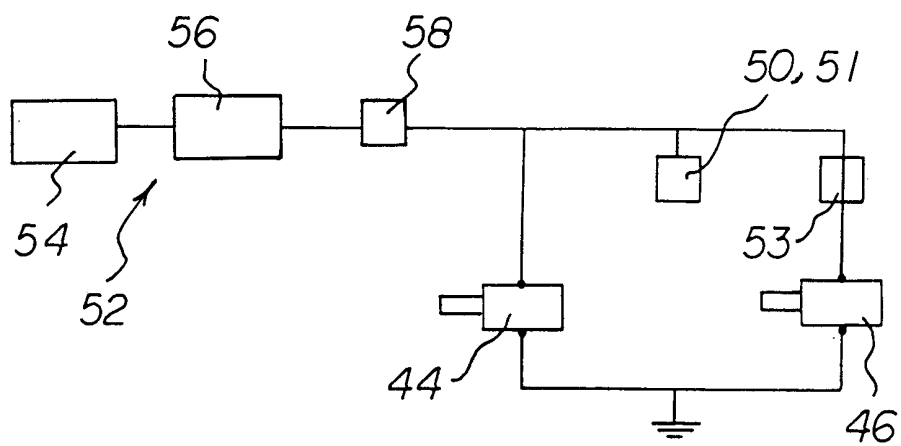
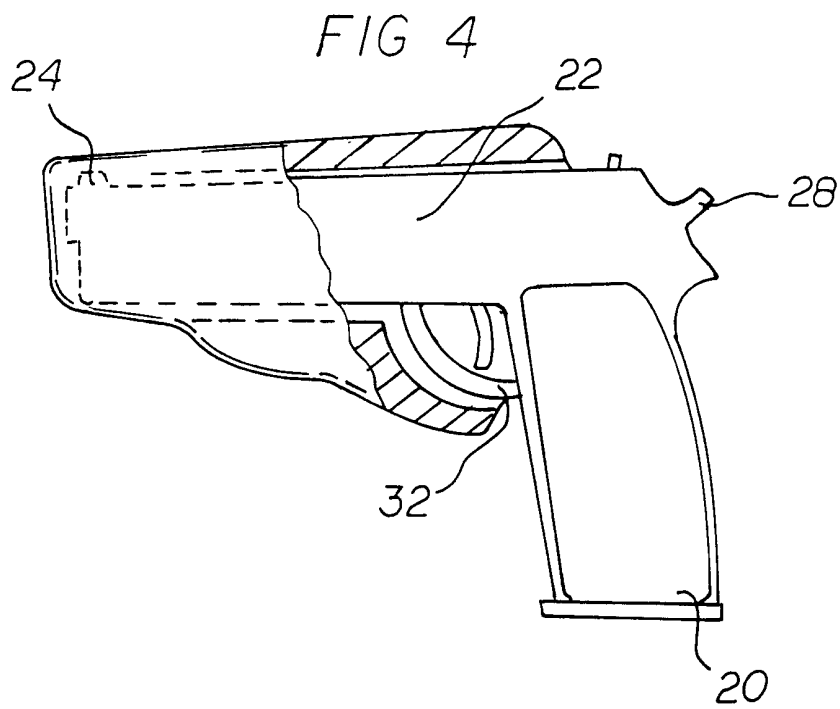


FIG 8

4/5

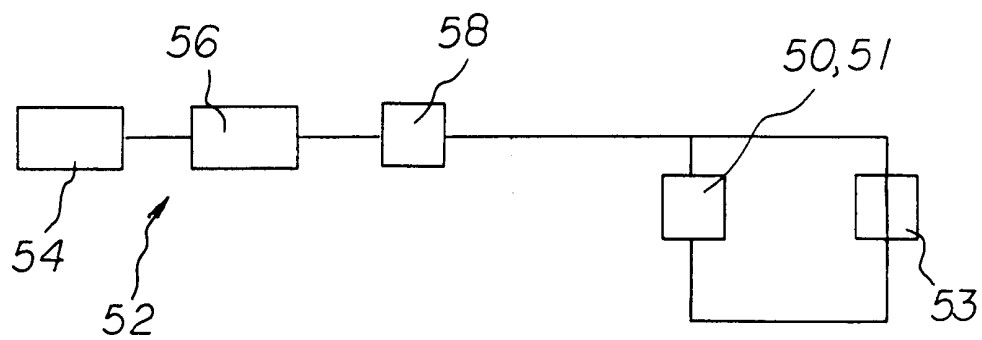


FIG 7

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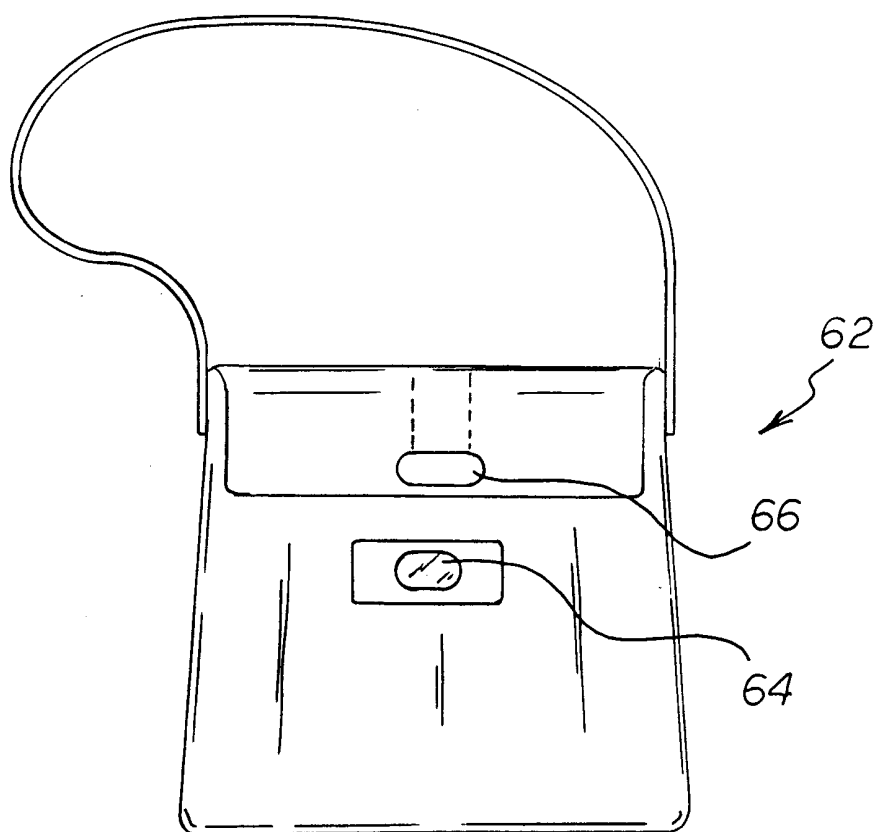
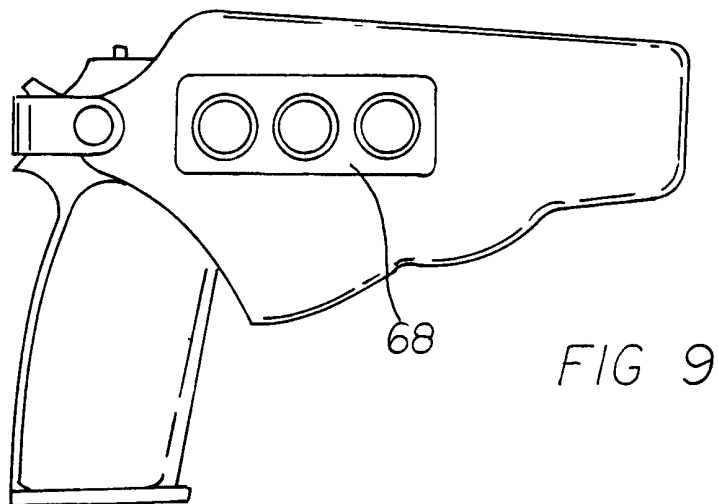


FIG 10

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/10084

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G06K 9/00

US CL : Please See Extra Sheet.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : Please See Extra Sheet.

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

BRS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,779,114 A (OWENS) 14 JULY 1998 , col. 1, lines 53 - 57. col. 7, lines 7 - 11.	1-5
Y	US 5,812, 252 A (BOWKER et al) 22 September 1998, col. 53, lines 26 - 67 . col. 54, lines 1 - 67.	1-5



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T"

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X"

document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"

document member of the same patent family

Date of the actual completion of the international search

24 JUNE 2000

Date of mailing of the international search report

31 JUL 2000

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/10084

A. CLASSIFICATION OF SUBJECT MATTER:

US CL :

224/192, 198, 244, 243, 912, 666
382/115, 116, 117, 124, 126, 127
340/ 825.34, 825.3, 825.31

B. FIELDS SEARCHED

Minimum documentation searched
Classification System: U.S.

224/192, 198, 244, 243, 912, 666
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