(57) Abrégé/Abstract:
The invention relates to a modular housing of a weapon which comprises the following elements: a weapon housing (1) which preferably is produced from plastic and which is not sufficiently rigid due to its dimensions and/or wall thickness, and an inner housing (21) which is firmly supported inside the weapon housing (1). Said inner housing represents the magazine chamber and at the same time reinforces the weapon housing (1). The inner housing (21) preferably extends to the front and/or the back (29, 31) of the housing so as to form support elements at the weapon body (1) and/or a housing for the trigger system. It may also substantially consist of plastic material.
The invention relates to a modular housing of a weapon which comprises the following elements: a weapon housing (1) which preferably is produced from plastic and which is not sufficiently rigid due to its dimensions and/or wall thickness, and an inner housing (21) which is firmly supported inside the weapon housing (1). Said inner housing represents the magazine chamber and at the same time reinforces the weapon housing (1). The inner housing (21) preferably extends to the front and/or the back (29, 31) of the housing so as to form support elements at the weapon body (1) and/or a housing for the trigger system. It may also substantially consist of plastic material.
WEAPON HOUSING SYSTEM FOR
AN AUTOMATIC LOADING RIFLE
OR A MACHINE PISTOL

DESCRIPTION

The invention concerns a weapon housing system for an automatic
loading rifle or a machine pistol.

In this present documentation, expressions denoting position, such as
"forward", "behind", "above", "vertical" or the like, arise from a weapon of
normal design i.e. weapons in held positions wherein the bore axis (the
centerline axis of the barrel) runs horizontally and the direction of shooting is
"forward".

For a long time, self-loading rifles possessed a component which
received a movable breeching, which was either forged or machined out of a
solid block. The machining required a great expenditure of craftsmanship and
formed a primary structural part. On the outside of these breeching sections
were affixed many functional elements of the weapon. Only at the end of the
thirties, the practice started of stamping weapon housings out of sheet metal.
These sheet metal housings could be fabricated much more quickly and less
expensively than before, and yet surrounded most of the functional elements
like a shell skeleton. The functional elements were also placed in the interior
of the housing, and on this account were protected from damage and
contamination. Sheet metal housings have, unfortunately, often an undesirably
heavy weight, particularly with weapons of large dimensions. This weight
problem is exacerbated when a particular zone must be reinforced, which
usually was carried out by welding on reinforcing members.

In recent times, and on account of the above, weapon housings are made
of plastic. In the zones exposed to the principle stresses, however, on a regular
basis, metal sheathing put in its appearance, which, once again, drastically increased the weight.

For utility weapons, such as are employed for military or police teams, the design effort was always toward weapons of the least possible weight.

One of the main loading factors for the weapon housing, is the abutment support of the closure spring of the breeching. Fortunately, the spring forces of the breeching closure act in the longitudinal direction of the housing, and so were well transmitted to housing walls within the neighbored the said breeching spring. More dangerous for the structural strength of the housing, is a possible deformation, which may be caused by the magazine. The magazine forms a long, lever arm, extending out of the housing from the magazine chamber. This chamber is constructed in the housing and, in the most simple case, is principally an opening, which corresponds to the cross-section of the magazine.

This cross-section must, of course, fit the lengths of the provided cartridges. That is, the longer the cartridge, just so much longer must the cross-section be, and just so much more easily is the housing subject to twist, since the opening of the magazine chamber breaks the structural advantage of the closed box cross-section of the housing. In order to provide the area of this opening with greater structural strength, the opening is encased with a wall structure, which then borders the said opening.

This stiffening measure, however, has not always been sufficient. This is particularly the case, when the magazine protrudes out of the housing, and when this protrusion is of a substantial length. In such a case, a more or less transverse loading on the free end of the magazine can lead to the imparting of very high forces to the magazine chamber. This can occur, for instance, if the weapon falls from the bed of a truck to the ground, and then, unfortunately, the
magazine separates. An unreinforced, especially thin walled housing can then be bent or even develop fissures.

In the case of a large caliber, self-loading firearm, designed for firing shell type munitions with a caliber of some 20 mm – because of the large cartridges which are employed – first, all parts are inordinately large, hence heavy; second, a given allowable weight for a user must not be overstepped. The difficulties arising from this body of problems are brought to a focus, when the large caliber rifle carries attached equipment, such as a rapid-fire system.

The plastic housing of such a large caliber firearm, on this account must be as thin-walled as possible and can only contain the least possible number of metal accessories.

Consideration could be given, to increase the wall thickness in the area of the magazine chamber and, in that place, refrain from any further metal additions. However, such a measure would be problematic from the standpoint of the casting process. In addition, an area of transition between a larger wall thickness to a lesser wall thickness can form a zone subject to especially great stress, which can lead to a specific location of failure.

In practice, an effort is made to lengthen the walls of the magazine chamber toward the free magazine end, in order, on the one hand, to diminish the lever advantage of the magazine, and on the other hand to stiffen up the housing opening of the magazine entry. In the case of modern rapid-fire weapons, in their conventional construction, (magazine in front of the grip piece) or in the "bull pup" fashion, (magazine behind the grip piece) the housing opening for the trigger mechanism is in immediate proximity to the magazine chamber. Additionally, this opening weakens the magazine section,
so that the lengthening of the magazine chamber by itself, is not enough to correct the above outlined problem in structural strength.

The invention, in regard to these problems, has the purpose of creating a housing for weapons, which resists the stresses introduced by the magazine, while avoiding any significant increase in weight.

This purpose is achieved by the object of Claim 1, that is, by a weapon housing system for a self-loading or machine pistol with a housing of metal and/or plastic, which exhibits at least a wall structure about a magazine chamber, and possesses an inner housing, at least partially within the said wall structure within which at least a part of the magazine chamber is contained.

In accord with this, the invented weapon housing system is comprised essentially of at least two housings, with one encased within the other in a special way, thus establishing first, a weapon housing and second, an insertable inner housing therewithin.

The weapon housing, is, of itself, is well known. It is constructed of metal and/or plastic and includes at least a wall structure surrounding the magazine chamber.

The inner housing has a box structure, open at top and bottom, the inside of which forms the magazine chamber, or a part of the same. This box is within the weapon housing and primarily accepts all stresses or, at least, the greater part thereof. With this construction, it becomes possible to affix this inner housing box to such points of the weapon housing, which are already otherwise reinforced or provided with strengthening. The usual requirement to provide for the magazine chamber its own reinforcement and structural support may be omitted.

Preferably, this box-like structure, that is, the inner housing, can be removed from the weapon housing. Should too great a loading be brought
onto the magazine, and conducted into the box structure, then this so-called box structure takes all the damage, and the weapon housing none at all. The box can then easily and inexpensively be exchanged.

The invented solution also eases the molding of a weapon housing from plastic, since this permits a uniform housing wall thickness throughout.

There are indeed self loading rifles known, (US 4,654,993) for which outer shell construction has been provided, so that many parts, for instance the trigger mechanism, exhibit a double housing. This rifle, however, possesses no magazine chamber, but rather shows complementary rails on the back of the magazine, for instance on a retaining yoke made of steel. The specific problems, to which the present invention is directed, do not apply to this known weapon.

Knowledge gained from the manufacture of traditional repeating or single load rifles, (US 4,385,464) with a wooden stock, cannot be brought into the realm of the invention, since in such cases, no housing, in the concept of the invention is present.

It is possible, that the inner housing could cling close to the wall of the weapon housing in the manner of a reinforcement layer.

In preference to that, however, a separating space between the lateral walls of the weapon housing and those of the inner housing has been established, which space is only compromised at the fastening points between the inner housing and the outer housing (see Claim 2).

The wall of the inner housing, which borders the magazine chamber, and the proximal, but specifically distanced, lateral wall of the weapon housing form in common, the equivalent of a box-like structural member. In spite of light weight, this is of substantially greater structural strength, than would be case if the inner housing wall and the weapon housing laid directly
against one another. This arrangement will be free from deterioration, if the
components which surround the inner housing are corrosion resistant, that is,
when made of plastic.

The inner housing could be secured within the weapon housing by
adhesive means or it could be welded. Preferentially, there has been placed on
the inner surface of the weapon housing (on the lateral walls thereof) and on
the outside surface of the inner housing, bar-like strips and complementary
grooves. These strips and grooves run in a longitudinal direction, so that the
inner housing can, preferentially, be slidingly pushed into the main opening of
the weapon housing from the rear and be removed in the reverse manner (see
Claim 3).

The strips and grooves, which run in the said longitudinal manner,
extend themselves preferable over the entire length of the complete housing
assembly. These members transmit the lateral bending forces, which arise at
the free end of the magazine, over the entire length of the strip/groove
connection on the weapon housing. Preferably, the protruding members are
continuous rail strips and/or the grooves are designed into forward springing
rails themselves. These strips strengthen the inner housing as well as the
weapon housing. For the transmission of tension forces, the strip/groove
combinations are so interlocked, that they transmit the transverse force in both
directions.

The stressing of the weapon housing is thus not carried out in an
undefined manner over a large surface, but strongly defined at the said
longitudinal strip/groove connections, which are best suited for the acceptance
of such a loading.

Insofar as the already discussed spacing is present between the walls of
the weapon housing and the inner housing, then the strip/groove connections
form the narrow dimensions of the so-constructed box-like structural member within the weapon housing system. The simple sliding of the inner housing into the internal strips of the weapon housing wall, first enables the easy exchange of the inner housing. If precautionary concerns dictate that the inner housing, for the removal of the breeching, necessarily must be removed, then there arises a further safety aspect, for instance, when a field disassembly of the weapon is necessary. In the case of a conventional rifle, the marksman is, occasionally so misled as to put his loaded magazine into the disassembled weapon, so that it is not dirtied or lost. In this case, the danger arises of an involuntary loading of the weapon. With the invented system, this danger is excluded, because, in a disassembled rifle, the magazine cannot be securely locked into the weapon housing. The inner housing now forms the magazine chamber as well as securing the retention of the magazine in the weapon.

A preferred construction is the lengthening of the forward side walls (where weapons of bull pup design are concerned) or the rear side walls (where weapons of conventional design are concerned) of the inner housing. Such lengthening forms among other advantages, a housing for the trigger mechanism (Claim 4).

In order to lessen the danger of dirt in the trigger mechanism, it is customary not to allow the bearings of the individual axles or pins of the said trigger mechanism to be set in the outer housing, but rather in an individual trigger mechanism housing, which in turn is inset in the gripping stock.

In accord with the present invention, since the inner housing has been lengthened, then the projecting side walls of this inner housing can take over the task of a separate trigger mechanism housing. The trigger mechanism is installed between said sidewalls and, at the same time, forms additional structural strength for said inner housing. Further, the assembly of the trigger
mechanism is made very much easier, since this is done externally from the weapon housing. The said axles, then, need not be additionally secured, because this is a part of the service of the housing wall.

If the inner housing can be pushed into, as well as be pulled out of, the weapon housing from the back, then the trigger mechanism can likewise be installed and removed along with it, as long as this mechanism is not based on a trigger which projects from the bottom. This latter would be contained in a component to be installed in the gripping piece, or, if necessary, in an additional apparatus yet to be added.

If the trigger mechanism possesses a transversely running safety shaft, which is provided with an accessible outer knob, then this shaft or its knob can be placed in position later, following the insertion of the inner housing when the openings in the inner housing wall and the corresponding openings in the outer weapon housing wall are in alignment. The safety shaft, or pin, thus contributes to forming a reliable seating for the inner housing, since it penetrates both the inner and outer housings.

In addition, a forward detent can be provided, against which the inner housing abuts and the inertial forces (in the case of a weapon falling upon the muzzle) are then absorbed by the said inner housing.

In order to provide for a similar detent to the rear, at least the side walls of the inner housing are lengthened in that direction. Here, at the rear, the inner housing wall abuts the end cap of the weapon housing system (in the case of the bull pup design) or impinges against the rear stock in conventional weapons (Claim 5).

The inner housing, however, can also simultaneously form the end cap, i.e. the rear stock abutment.
In a preferable way, the side walls, which extend to the rear, are designed to consolidate together in a trough-like manner and seat themselves, as explained above, in a force transmitting, strip/groove connection with the outer weapon housing. In this way, a substantial increase is gained in the structural strength of the weapon housing system, as well as in the rigidity of the magazine chamber opening.

All of the above described designs of the inner housing can be manufactured of sheet steel or of sheet steel reinforced plastic. It is also possible to employ fiber reinforced or prepreg reinforced plastics. The preference, however, is for non-reinforced plastic (Claim 6).

The inner housing of non-reinforced plastic is seated in a weapon housing, which, at least in the area of the magazine, is likewise of non-reinforced plastic. When the magazine is inserted, which in itself is also of non-reinforced plastic, then we have here, when the weapon is fired, practically three plastic-box structures, one inside the other, which can accept the loadings of the impact of the recoil without further support. When this happens, the plastic in certain areas, is elastically deformable, so that the surfaces subjected to force, which, unstressed, lie against one another with longitudinal corrugations, are pressed together in mutual surface engagement, so that damaging concentrations of force are avoided.

An embodiment of the invention will serve to explain the invention in greater detail with the aid of drawings. There is shown in:

Fig. 1 a longitudinal sectional view of a weapon housing system in accord with the invention, presented at an inclined viewpoint in an exploded diagram, showing a magazine, an inner housing, a rear end closure cap, and a back up plate,

Fig. 2 a view, taken from Fig. 1, showing an enlarged side view of the rear section of the housing system; and

- 9 -
Fig. 3  a cross-section taken through section lines III-III of Fig. 2.

All Figures show the same weapon housing system. The same reference numbers apply throughout for each element.

The weapon housing system 10 shown in Fig. 1 serves for a self loading rifle of the so-called bull pup design. In this bull pup method of construction, there is lacking the usually conventional back stock, which would have been at the most distant rear end of the weapon housing 1, and which could have been either integral with or attachable to the forward part of the rifle, and possibly shortened in its construction.

Lacking this back stock, in the depicted embodiment, the weapon housing terminates directly with the closure cap 39 or the backup plate 41. The magazine 45 seats itself then, as more or less a closure in front of the backup plate 41. The gripping piece of the weapon (not shown) is located in front of the magazine 45.

The weapon housing 1 exhibits one barrel sheathing 9 which extends itself forward and – in its imagined extension to the rear – on its inner wall surface is placed guide strip 5 to align the (not shown) breeching. To the side, beside the movement path of the breeching, is to be seen an ejection window 3, which can be closed off by a dust cover. As a rule, such a weapon exhibits two windows of this type. The oppositely lying ejection window is shown in Fig. 2. The ejection window 3 lies, in the normal arrangement, at the height of the cheek of the marksman. On this account safety measures must be upheld for the protection of the marksman from traumatic wounding. This encompasses an arrangement so that only the ejection window 3 remote from the marksman can be activated. The normal – or right handed marksman – supports the weapon on the right shoulder and lays his right cheek against the left sidewall of the weapon housing 1. In his case, for the reasons given, only
the right side ejection window 3 visible in Fig. 1 may be activated. The left
handed marksman, in contrast, can only activate the left side ejection window
as seen in Fig. 2.

The construction of two, oppositely deposed ejection windows, leads to a
structural weakening of the weapon housing 1, which at this location, could
already be heavily subjected to stress, because under these ejection windows 3,
namely, the magazine 45 is fastened. From this magazine 45 can arise
transverse forces of considerable size which are introduced into the weapon
housing 1, when, for instance, the weapon falls inadvertently from an elevated
position to the ground. These transverse forces can bring about damaging,
twisted deformations in the weapon housing 1, due to the zone weakened by
the ejection windows 3. The invention counters these damages.

The weapon housing 1 possesses further, above the barrel sheathing 9, an
opening 7, open to the front for a loading lever apparatus securely bound to the
breeching and movable therewith. The rear side of the weapon housing 1 is
open. In this opening is found the closure cap 39, which will be described in
more detail below. The backup plate 39, on its rear side, is covered from the
outside by the backup plate 41, which in turn serves as the shoulder piece and
on the rim of which, at least one, preferably two, strap clasps are attached.

The stresses introduced by the said strap clasps 43 are picked up by the
tough, but resilient closure plate 39, and by means of an appropriate fastening
are uniformly introduced through the peripheral structure of closure cap 39
into the weapon housing 1. In case of damage, only the closure cap 39 must
be exchanged, not the entire weapon housing system.*

Beneath the breeching guide strips 5 and parallel to these, on the inside
of the two side walls of the weapon housing 1, are constructed, respectively,
an upper holding strip 11 and an under holding strip 13. These strips have a
resilience to spring toward the interior, and serve for the guidance and retention of a still to be described inner housing 21. The strips also provide structural strength for the weapon housing 1.

On its underside, the box shaped weapon housing has a magazine opening, which is bordered by one vertical forward wall and two vertical sidewalls 17. The lateral bordering walls 17 are made from the side walls of the weapon housing 1. In front of, and above the forward bordering wall 17, a boring 19 penetrates respectively both side walls of the weapon housing 1. Both borings 19 align with one another and serve for the insertion of a fastening pin or a serving element, preferably a magazine securement or a bolting for a machine gun mounting.

The inner housing 21 is pushed from the back into the weapon housing 1, and each of its two sides respectively exhibits an upper counter holding strip 33 and a lower counter holding strip 35 parallel to it. The cross-sections of said counter holding strips 33, 35, are complementary to the cross sections of the above mentioned holding strips 11, 13. The holding strips 11, 13 are so constructed that they slidingly engage with the complementary counter holding strips 33, 35 in such a manner that the inner housing is securely fixed in its elevated position – see this as shown in Fig. 3.

Thus, each lateral wall of the inner housing together with the corresponding lateral walls 17 of the weapon housing 1 form a hollow box structural member, thus, an highly bend and torque resistant construction (see Fig. 3).

The characteristic magazine chamber 23 is constructed in the inner housing 21 and is bordered forward by a vertical wall 27 as well as to the rear with a vertical back wall 25. When the inner housing 1 is in place, the forward wall 27 abuts flat against the border wall 17 of the weapon housing 1. Two
borings 19a in the sidewalls of the inner housing 21 line up with the borings 19 of the weapon housing 1 and serve for the passage of a service element for the breeching block as well as for the securement of the inner housing 21 within the weapon housing 1. Further borings 47 in a side wall 17 of the weapon housing 1 and the borings 47a in the corresponding side walls of the inner housing 21 which align therewith, serve for the acceptance of pins or rivets and effect the fixation of the inner housing 21 in the weapon housing 1. The force transmission between the inner housing 21 and the weapon housing 1 is carried out forwards by the already mentioned arrangement between the front cross wall 17 and the front cross wall 27 and to the rear by the abutment of the inner housing 21 on the backup plate 41.

The side walls of the inner housing 21 are lengthened front to back by the forward and rear extension walls, respectively 29 and 31. The forward extension wall 29 (besides the discussed boring 9a) exhibits still more borings, which are intended for the connection of a trigger mechanism. A bottom plate, which binds the under edges of the two forward extension walls 29 together, reinforces the structure of the inner housing 21.

The elements of the (not shown) trigger mechanism likewise substantially reinforce the box-like structure of the forward extension walls 29, now with the said bottom plate – as well as with the forward cross wall 27 of the inner housing 21. The actuation of the trigger mechanism is done from a gripping piece or an attached device by means of a longitudinally movable rod or a finger. Such a device would be brought in under the barrel sheath 9. The trigger mechanism possesses no element which projects from the bottom, not even a downward projecting trigger.

The two rear extension walls 31 of the inner housing brace themselves on the back-up plate 41. As may be inferred from Fig. 1, the groove/strip
connections, which are created by the complementary strip pairs 11, 33, and 13, 35, are considerably longer than the magazine 45 – as seen in the longitudinal direction of the weapon. This measure leads to an effective structural strengthening of the side walls 17 over the entire rear section of the weapon housing 1.

In the case of the introduction of transverse forces from magazine 45 into the inner housing 21 and from this point on into the weapon housing 1, no critical loading are reached.

The backup plate 41 is pushed into the back end of the weapon housing 1, until it finds seating on the rear exposed ends of the guide 5 and the strips 11 and 13. On this backup plate 41, a massive longitudinal bridging 51 is installed, (likewise from the rear), which bridging 51, designed in the manner of a connecting rail can be slidingly fitted into the upper edge structure 37 of the rear extension walls 31. The forward exposed end of the said bridging 51, in the assembled weapon, overrides the rear cross wall 25 of the inner housing 21 and lies from the back against the magazine lips. By this means, the longitudinal bridging 51 can pick up the forces, which the magazine 45 projects to the rear.

The upper side of the bridging 51 is designed as a guide for the cartridge slider. The upper edges of the sidewalls of the magazine chamber 23 are somewhat extended upward and rolled to the outside, so that they additionally support the corresponding side walls of the weapon housing 1.

The co-action between the weapon housing 1 and the inner housing 21 forms, thus, an especially strong and resistant magazine chamber. Some cross forces are primarily conducted into the inner housing 21, which, incidentally forms the actual magazine chamber 23, and from this the said forces are carefully distributed to the outer weapon housing 1. Thus, the strips provided
for the introduction of force, reinforce at the same time the weapon housing and form additionally the cross pieces of the box structure, to which the sidewalls are extended.

Practically every element of the invented weapon housing system takes over several functions, so that with few, thin-walled, largely or totally unreinforced plastic construction components, a surprisingly substantial, but yet light housing has been created.

The depicted housing system can be constructed not only of plastic, but, with small modifications, also of sheet metal. As a result of its low weight and its high structural strength, this housing can be used for a rifle which fires high capacity cartridges, something like a sharp shooting rifle for cartridges .50 Browning at extended shooting distances.
CLAIMS:

1. For use with a self-loading weapon, a housing system comprising:
   a weapon housing having at least one wall at least partially
   encompassing a magazine chamber; and
   an inner housing located at least partially within the at least one wall, the
   inner housing at least partially encompassing at least a portion of the magazine
   chamber, wherein the inner housing is offset a spaced distance from the at
   least one wall of the weapon housing.

2. A housing system as defined in claim 1, wherein the weapon housing
   and the inner housing contain complementary guide strips and guide grooves
   which locate the inner housing within the weapon housing.

3. A housing system as defined in claim 2 wherein the complementary
   guide strips and guide grooves are adapted to transfer forces from the weapon
   housing to the inner housing.

4. A housing system as defined in claim 1, wherein the inner housing
   includes side walls and the side walls of the inner housing extend forward to
   define a housing for a trigger mechanism.

5. A housing system as defined in claim 1, wherein the inner housing
   includes side walls, and the side walls of the inner housing extend rearward to
   engage the weapon housing.

6. A housing system as defined in claim 1, wherein the inner housing is
   plastic.

7. For use with a self-loading firearm having a magazine, a housing system
   comprising:
   an inner housing defining a magazine chamber; and
   an outer housing surrounding the inner housing such that forces
originating at the magazine are transferred from the inner housing to the outer housing, wherein the inner housing is offset a spaced distance from the at least one wall of the outer housing.

8. A housing system as defined in claim 7 wherein the inner housing is suspended within the outer housing.

9. A housing system as defined in claim 7, wherein the outer housing and the inner housing contain complementary guide strips and guide grooves which locate the inner housing within the outer housing.

10. A housing system as defined in claim 7, wherein the inner housing includes side walls and the side walls of the inner housing extend forward to define a housing for a trigger mechanism.

11. A housing system as defined in claim 7, wherein the inner housing includes side walls, and the side walls of the inner housing extend rearward to engage the outer housing.

12. A housing system as defined in claim 7, wherein the inner housing is plastic.

13. A housing system as defined in claim 7 wherein the inner housing is insertable into and removable from the outer housing via a rear opening in the outer housing.

14. A method of constructing a self-loading firearm comprising the steps of: providing an inner housing defining a magazine chamber and a weapon housing having a rear end defining an opening; and positioning the inner housing within the weapon housing via the opening such that at least one force experienced by the weapon housing is transferred to the inner housing and so that damage from the at least one force occurs to the inner housing and not to the weapon housing.
15. A weapon housing comprising:
   an outer housing having a rear end defining an opening;
   an inner housing defining a magazine chamber and sized to be inserted
   into the outer housing via the opening.

16. A weapon housing comprising:
   an outer housing;
   an inner housing, wherein the inner housing is adapted to receive a
   trigger mechanism and a magazine cartridge.

17. For use with a self-loading firearm, a housing system comprising:
   a magazine;
   an inner housing defining a magazine chamber; and
   an outer housing having a first opening for receiving at least a portion of
   the magazine and a second, rearwardly oriented, opening for receiving the
   inner housing, the outer housing being dimensioned to removably receive the
   inner housing via the second opening, wherein when the inner housing is
   removed, the magazine cannot be secured in the first opening of the outer
   housing.

18. For use with a self-loading weapon, a housing system comprising:
   a weapon housing having at least one wall at least partially
   encompassing a magazine chamber; and
   an inner housing located at least partially within the at least one wall, the
   inner housing at least partially encompassing at least a portion of the magazine
   chamber, wherein the weapon housing and the inner housing contain
   complementary guide strips and guide grooves which locate the inner housing
   within the weapon housing.

19. A housing system as defined in claim 18 wherein the complementary
   guide strips and guide grooves are adapted to transfer forces from the weapon
   housing to the inner housing.
20. For use with a self-loading weapon, a housing system comprising:
   a weapon housing having at least one wall at least partially
   encompassing a magazine chamber; and
   an inner housing located at least partially within the at least one wall, the
   inner housing at least partially encompassing at least a portion of the magazine
   chamber, wherein the inner housing includes side walls and the side walls of
   the inner housing extend forward to define a housing for a trigger mechanism.

21. For use with a self-loading weapon, a housing system comprising:
   a weapon housing having at least one wall at least partially
   encompassing a magazine chamber; and
   an inner housing located at least partially within the at least one wall, the
   inner housing at least partially encompassing at least a portion of the magazine
   chamber, wherein the inner housing includes side walls, and the side walls of
   the inner housing extend rearward to engage the weapon housing.

22. For use with a self-loading firearm having a magazine, a housing system
    comprising:
    an inner housing defining a magazine chamber; and
    an outer housing surrounding the inner housing such that forces
    originating at the magazine are transferred from the inner housing to the outer
    housing, wherein the outer housing and the inner housing contain
    complementary guide strips and guide grooves which locate the inner housing
    within the outer housing.

23. For use with a self-loading firearm having a magazine, a housing system
    comprising:
    an inner housing defining a magazine chamber; and
    an outer housing surrounding the inner housing such that forces
    originating at the magazine are transferred from the inner housing to the outer
    housing, wherein the inner housing includes side walls and the side walls of the
    inner housing extend forward to define a housing for a trigger mechanism.
24. For use with a self-loading firearm having a magazine, a housing system comprising:
   an inner housing defining a magazine chamber; and
   an outer housing surrounding the inner housing such that forces originating at the magazine are transferred from the inner housing to the outer housing, wherein the inner housing includes side walls, and the side walls of the inner housing extend rearward to engage the outer housing.

25. For use with a self-loading firearm having a magazine, a housing system comprising:
   an inner housing defining a magazine chamber; and
   an outer housing surrounding the inner housing such that forces originating at the magazine are transferred from the inner housing to the outer housing, wherein the inner housing is insertable into and removable from the outer housing via a rear opening in the outer housing.

RIDOUT & MAYBEE LLP
Toronto, Canada
Patent Agents
ERSATZBLATT (REGEL 26)