A clamping mechanism corrects a design flaw in the NSN 1005-01-431-8324 adapter assembly without modifying it. The fine details of military regulations have encouraged the design flaw's persistence by limiting and preventing actions for correcting or modifying the NSN 1005-01-431-8324 adapter assembly. The clamping mechanism can be fielded without violating any regulations and thereby without necessitating the very expensive and time consuming acceptance procedures that would be required of other solutions. The clamping mechanism addresses the design flaw while simultaneously remaining within the regulatory regime.
Fig. 3 (prior art)

Fig. 4 (prior art)
M240 ADAPTER ASSEMBLY CLIP

TECHNICAL FIELD

[0001] Embodiments relate to the fields of machine guns, ammunition boxes, ammunition bags, and attachment systems. Embodiments also relate to the field of government purchasing regulations.

BACKGROUND

[0002] The machine guns in the M240 family are belt fed medium range machine guns currently in wide service with the United States military and its allies. The M240 family includes the M240, M240E4, M240B, M240C, M240G, M240D, M240E5, M240H, M240E6, and MAG58. For simplicity, the various M240 family members are all herein referred to as M240s. An M240 is often mounted to a vehicle or tripod but can also, because of its light weight, be hand carried and hand fired.

[0003] In general, ammunition is belt fed into the M240 from the left side. The ammunition belt can be hand held, contained in an ammunition carrier. An ammunition carrier can be an ammunition box or an ammunition bag sometimes called a bandolier. Hand held ammunition belts are usually short because a long belt is unwieldy and mishandling can lead to jams. Longer belts can be held in an ammunition carrier attached by an adapter assembly to the side of the M240. The M240 family adapter assembly is a specific item that can be purchased by United States purchasing agents as “NSN 1005-01-431-8324” or as “P/N 12976009”. NSN stands for “National Stock Number” while P/N stands for “part number”.

[0004] FIG. 1, labeled as “prior art” illustrates the NSN 1005-01-431-8324 receiver plate 100. The receiver plate has inner tangs 101 and a locking tab 102. The NSN 1005-01-431-8324 receiver plate 100 attaches to an M240 machine gun.

[0005] FIG. 2, labeled as prior art, illustrates the NSN 1005-01-431-8324 bandolier holder 200. The bandolier holder has outer tangs 201. An ammunition carrier can be attached to the NSN 1005-01-431-8324 bandolier holder 200.

[0006] FIG. 3, labeled as “prior art”, illustrates a NSN 1005-01-431-8324 adapter assembly 300. A tang connection 301 attaches the NSN 1005-01-431-8324 receiver plate 100 to the NSN 1005-01-431-8324 bandolier holder 200. Aligning the outer tangs to the inner tangs and then sliding them along an attachment vector 302 forms the tang connection 301. The locking tab is supposed to lock the tang connection. In certain scenarios, the locking tab fails to keep the tang connection 301 securely connected resulting in NSN 1005-01-431-8324 adapter assembly 300 separation and in operational failure.

[0007] FIG. 4, labeled as “prior art”, illustrates inner tangs 101 and outer tangs 201. The tangs on the left are disengaged while those on the right are engaged to form a tang connection 301. The tang connection 301 is ultimately responsible for securing an ammunition carrier to an M240. Those practiced in the arts of military armament and machine gunnery are familiar with the NSN 1005-01-431-8324 adapter assembly.

[0008] The NSN 1005-01-431-8324 adapter assembly illustrated in FIG. 3 illustrates the part received in response to a purchase order for “NSN 1005-01-431-8324”. It is strictly defined in both material and dimension. Small deviations from the strict definition are not tolerated because “NSN 1005-01-431-8324” has been carefully tested and any change, regardless of magnitude or intent, could compromise the tested function of the adapter assembly. As such, improvements in “NSN 1005-01-431-8324” are extremely hard and costly to effectuate. Systems and methods that improve the function of “NSN 1005-01-431-8324” while maintaining compliance with current military purchasing regulations and equipment regulations are needed.

BRIEF SUMMARY

[0009] The following summary is provided to facilitate an understanding of some of the innovative features unique to the embodiments and is not intended to be a full description. A full appreciation of the various aspects of the embodiments can be gained by taking the entire specification, claims, drawings, and abstract as a whole.

[0010] Systems and methods for clamping together a NSN 1005-01-431-8324 receiver plate to a NSN 1005-01-431-8324 bandolier holder while not violating military purchasing regulations nor violating military equipment regulations are needed.

[0011] It is therefore an aspect of the embodiments to provide a clamp that fixes a NSN 1005-01-431-8324 receiver plate to a NSN 1005-01-431-8324 bandolier holder. The NSN 1005-01-431-8324 receiver plate and the NSN 1005-01-431-8324 bandolier holder together are a NSN 1005-01-431-8324 adapter assembly.

[0012] It is also an aspect of the embodiments that the NSN 1005-01-431-8324 adapter assembly is not modified to receive the clamp and that the clamp does not modify the NSN 1005-01-431-8324 adapter assembly. As such, the NSN 1005-01-431-8324 adapter assembly always remains unmodified and in accord with military regulations. Any modification to the NSN 1005-01-431-8324 adapter assembly can be a violation of military regulations.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] The accompanying figures, in which like reference numerals refer to identical or functionally similar elements throughout the separate views and which are incorporated in and form a part of the specification, further illustrate the present invention and, together with the background of the invention, brief summary of the invention, and detailed description of the invention, serve to explain the principles of the present invention.

[0014] FIG. 1, labeled as “prior art” illustrates the NSN 1005-01-431-8324 receiver plate;

[0015] FIG. 2, labeled as prior art, illustrates the NSN 1005-01-431-8324 bandolier holder;

[0016] FIG. 3, labeled as “prior art”, illustrates a NSN 1005-01-431-8324 adapter assembly;

[0017] FIG. 4, labeled as “prior art”, illustrates inner tangs and outer tangs;

[0018] FIG. 5 illustrates a clamp with a first plate and a second plate in accordance with aspects of the embodiments;

[0019] FIG. 6 illustrates a clamp with bolts and a first plate in accordance with aspects of the embodiments; and

[0020] FIG. 7 illustrates a clamp with bolts and nuts in accordance with aspects of the embodiments.
FIG. 8 illustrates a clamp with a first hexagonal rod and a second hexagonal rod in accordance with aspects of the embodiments.

DETAILED DESCRIPTION

The particular values and configurations discussed in these non-limiting examples can be varied and are cited merely to illustrate at least one embodiment and are not intended to limit the scope thereof. In general, the figures are not to scale.

As previously discussed, the NSN 1005-01-431-8324 adapter assembly has a design flaw leading to a tendency to separate under certain conditions and uses. The design flaw is difficult to correct because of military purchasing regulations and military equipment regulations. The NSN 1005-01-431-8324 adapter assembly has been tested and approved by military organizations all over the world. Any modification to the NSN 1005-01-431-8324 adapter assembly necessarily leads to new rounds of testing and approvals as the various interested military organizations examine what, by regulation, a new piece of equipment. The United States military as well as allied military forces use the M240 and are thereby interested military organizations. Every military organization has its own regulations and test regimes.

Systems and methods that address the design flaw while not modifying the approved part can be introduced without necessarily leading to the very expensive and time-consuming testing processes that would otherwise be required in accordance with military regulations. The fine details of military regulations cause great complications to what would otherwise be a simple task. For example, gluing the NSN 1005-01-431-8324 adapter assembly together is an obvious solution that is easy to implement. However, the act of gluing the parts together is irreversible under field conditions and thereby against regulations. A suitable solution must meet both technical and regulatory requirements.

FIG. 5 illustrates a clamp 500 with a first plate 502 and a second plate 503 in accordance with aspects of the embodiments. Bolts 501 can pass through the first plate 502 and thread into the second plate 503. Tightening the bolts 501 prevents the tang connection 301 from disengaging. The bolts can be removed to return the NSN 1005-01-431-8324 adapter assembly to its original configuration. The first plate 502 and second plate 503 keep the bolts 501 separated and on either side of the tang connection 301. The second plate 503 need not be threaded if the bolts 501 are threaded into nuts positioned under the second plate 503.

FIG. 6 illustrates a clamp 600 with bolts 601 and a second plate 503 in accordance with aspects of the embodiments. No first plate is required because the heads of the bolts 601 are too large to slip into through the tang connection 301. The bolts are threaded though the second plate 503. Tightening nuts 602 onto the bolts 601 can bind the bolts 601 inside the second plate 503 such that they don’t inadvertently back out of the second plate 503. As such, the nuts 602 can act as thread lockers and more specifically as thread lockers. A non-threaded second plate 502, however, requires nuts 602 for the basic clamping action to be effective.

FIG. 7 illustrates a clamp 700 with bolts 701 and nuts 702 in accordance with aspects of the embodiments. The second plates of other embodiments have been replaced with nuts 701 that are too large to pass through the tang connection 301. As can be discerned from FIGS. 1-3, the bolt heads and nuts 701 have both a minimum and maximum size constraint. They must be large enough that they do not pass through the tang assembly 301. They must also be small enough to fit into the NSN 1005-01-431-8324 adapter assembly. Furthermore, the bolt shafts must be small enough to pass through tang assembly. Set screws 702 can be employed as a threaded lock that locks the bolts 601 and nuts 701 together.

FIG. 8 illustrates a clamp with a first hexagonal rod 801 and a second hexagonal rod 802 in accordance with aspects of the embodiments. Bolts 803 pass through the first hexagonal rod 801 and thread into the second hexagonal rod 802. Tightening the bolts 803 prevents the tang connection from disengaging. The bolts 803 can be removed to return the NSN 1005-01-431-8324 adapter assembly to its original configuration. FIG. 8 is actually a tracing produced by tracing over a photograph of an NSN 1005-01-431-8324 adapter assembly with an installed clamp. The unit underwent successful testing and did not separate while installed on an M240 used in tactical training scenarios. The first hexagonal rod 801 and second hexagonal rod 802 keep the bolts 803 separated and on either side of the tang connection. The second hexagonal rod 802 is tapped so that bolt 803 can be threaded through it. In the photographed embodiment, a bolt end 804 can be seen extending out of the second hexagonal rod 802. The second hexagonal rod 803 also presses against the locking tab 102 and thereby helps prevent the locking tab 102 from disengaging from the NSN 1005-01-431-8324 bandolier holder 200. The hexagonal rods 801, 802 are embodiments of the plates 502, 503 of FIG. 5.

It will be appreciated that variations of the above-disclosed and other features and functions, or alternatives thereof, may be desirably combined into many other different systems or applications. Also that various presently unforeseen or unanticipated alternatives, modifications, variations or improvements therein may be subsequently made by those skilled in the art which are also intended to be encompassed by the following claims.

What is claimed is:

1. A system comprising:
   a clamp that fixes a NSN 1005-01-431-8324 receiver plate to a NSN 1005-01-431-8324 bandolier holder wherein a NSN 1005-01-431-8324 adapter assembly comprises the NSN 1005-01-431-8324 receiver plate and the NSN 1005-01-431-8324 bandolier holder wherein the NSN 1005-01-431-8324 adapter assembly is not modified to receive the clamp; and wherein attaching the clamp does not modify the NSN 1005-01-431-8324 adapter assembly.

2. The system of claim 1 wherein the clamp comprises a first plate, a second plate, and a bolt.

3. The system of claim 2 further comprising a third plate wherein the bolt is threaded into and through the second plate and wherein the third plate is threaded and binds the bolt inside the second plate.

4. The system of claim 1 wherein the clamp comprises a second plate and a bolt wherein the bolt’s head can not pass through a tang assembly that is formed by assembling the NSN 1005-01-431-8324 receiver plate and the NSN 1005-01-431-8324 bandolier holder.

5. The system of claim 4 further comprising a thread locker wherein the bolt is threaded into and through the second plate and wherein the thread locker is threaded and binds the bolt inside the second plate.

6. The system of claim 1 wherein the clamp comprises a nut and a bolt wherein neither the bolt’s head nor the nut can not
pass through a tang assembly that is formed by assembling the NSN 1005-01-431-8324 receiver plate and the NSN 1005-01-431-8324 bandolier holder.

7. The system of claim 6 further comprising a thread locker wherein the bolt is threaded into and through the nut and wherein the thread locker is threaded and binds the bolt inside the nut.

8. The system of claim 1 wherein the clamp comprises a first hexagonal rod, a second hexagonal rod, and a bolt; wherein the NSN 1005-01-431-8324 receiver plate comprises a locking tab that engages the NSN 1005-01-431-8324 bandolier holder, and wherein the second hexagonal rod prevents the locking tab from disengaging from the NSN 1005-01-431-8324 bandolier holder.

9. A system comprising:

- a NSN 1005-01-431-8324 adapter assembly comprising an NSN 1005-01-431-8324 receiver plate and an NSN 1005-01-431-8324 bandolier holder;
- a clamp that fixes the NSN 1005-01-431-8324 receiver plate to the NSN 1005-01-431-8324 bandolier;
- wherein the NSN 1005-01-431-8324 adapter assembly is not modified to receive the clamp; and
- wherein attaching the clamp does not modify the NSN 1005-01-431-8324 adapter assembly.

10. The system of claim 9 wherein the clamp comprises a first plate, a second plate, and a bolt.

11. The system of claim 10 further comprising a thread locker wherein the bolt is threaded into and through the second plate and wherein the thread locker is threaded and binds the bolt inside the second plate.

12. The system of claim 9 wherein the clamp comprises a second plate and a bolt wherein the bolt’s head cannot pass through a tang assembly that is formed by assembling the NSN 1005-01-431-8324 receiver plate and the NSN 1005-01-431-8324 bandolier holder.

13. The system of claim 12 further comprising a thread locker wherein the bolt is threaded into and through the second plate and wherein the thread locker is threaded and binds the bolt inside the second plate.

14. The system of claim 9 wherein the clamp comprises a nut and a bolt wherein neither the bolt’s head nor the nut can pass through a tang assembly that is formed by assembling the NSN 1005-01-431-8324 receiver plate and the NSN 1005-01-431-8324 bandolier holder.

15. The system of claim 14 further comprising a thread locker wherein the bolt is threaded into and through the nut and wherein the thread locker is threaded and binds the bolt inside the nut.

16. The system of claim 9 wherein the clamp comprises a first hexagonal rod, a second hexagonal rod, and a bolt; wherein the NSN 1005-01-431-8324 receiver plate comprises a locking tab that engages the NSN 1005-01-431-8324 bandolier holder, and wherein the second hexagonal rod prevents the locking tab from disengaging from the NSN 1005-01-431-8324 bandolier holder.

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