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(54) **MARKSMAN TRAINING TOOL AND TRAINING METHODS EMPLOYING THE TOOL**

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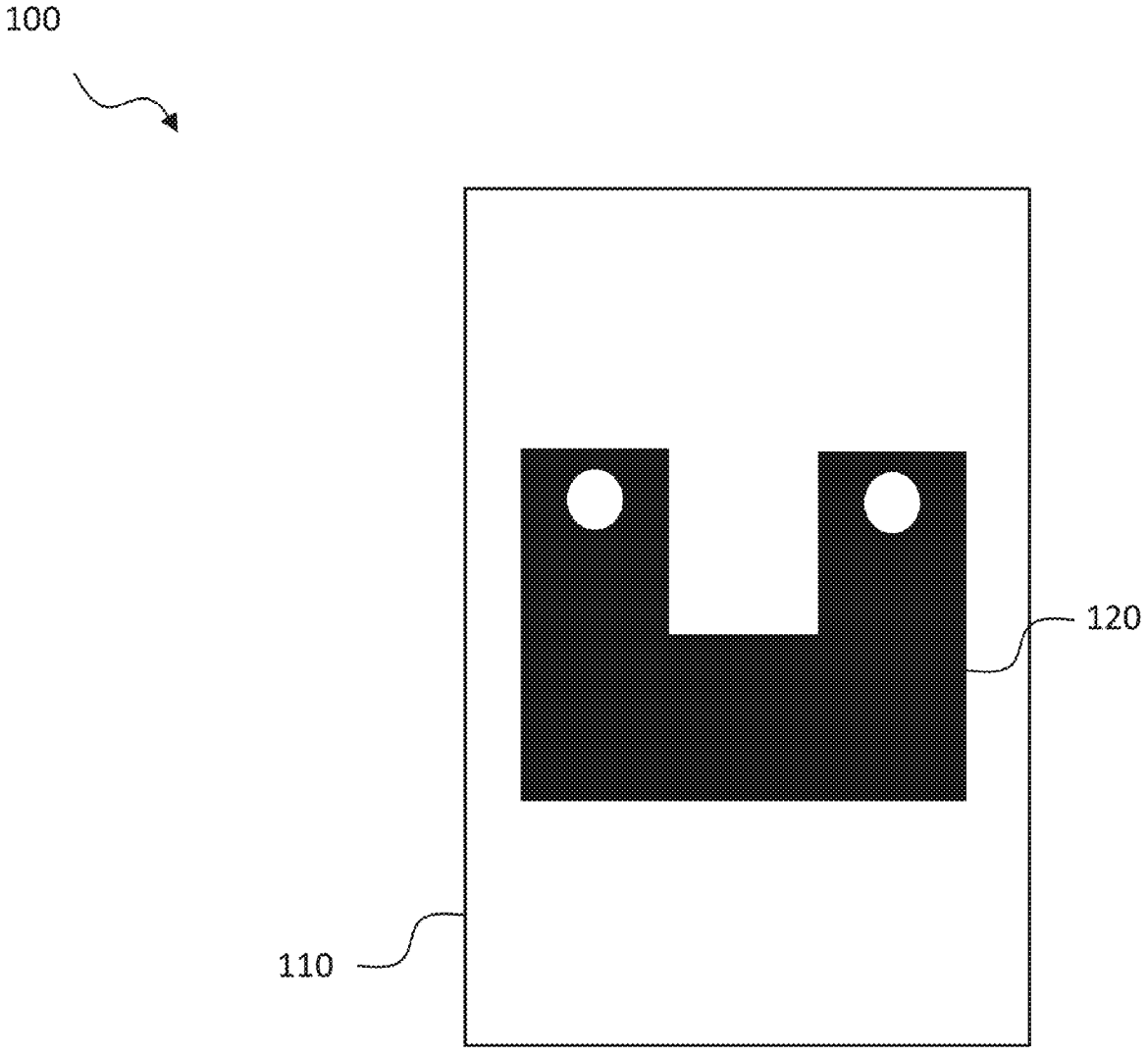
(52) **U.S. Cl.**

CPC ..... ***F41G 3/26*** (2013.01); ***F41G 11/00*** (2013.01)

(57) **ABSTRACT**

The disclosure provides a marksman training tool, a method of teaching marksmanship, and a system for instructing marksmanship. The marksman training tool provides an all-weather, visual training aid for teaching marksmanship. In one example, the marksman training tool includes: (1) a base constructed of a non-opaque material, and (3) a weapon sight representation permanently applied to the base. In one example, the method includes: (1) obtaining a marksman training tool, wherein the marksman training tool includes a non-opaque base with a weapon sight representation permanently applied thereto, and (2) demonstrating to at least one student, employing the marksman training tool, a representation of a view of a weapon system sight with respect to a target, wherein the weapon sight representation corresponds to the weapon system sight.



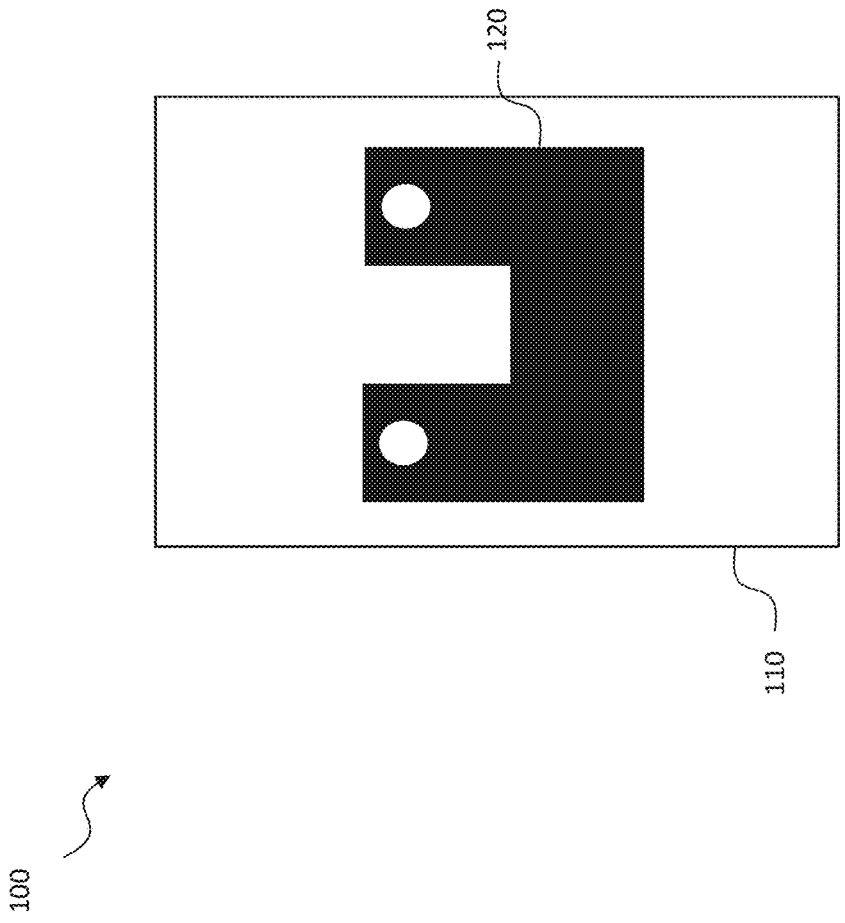



FIG. 1

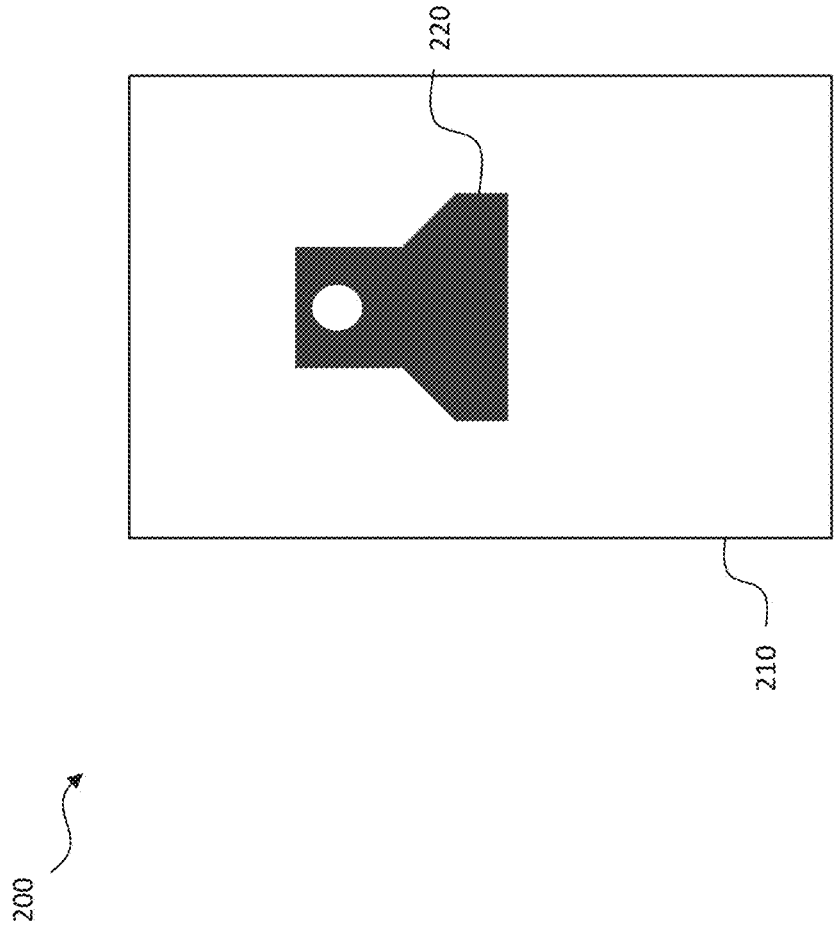



FIG. 2

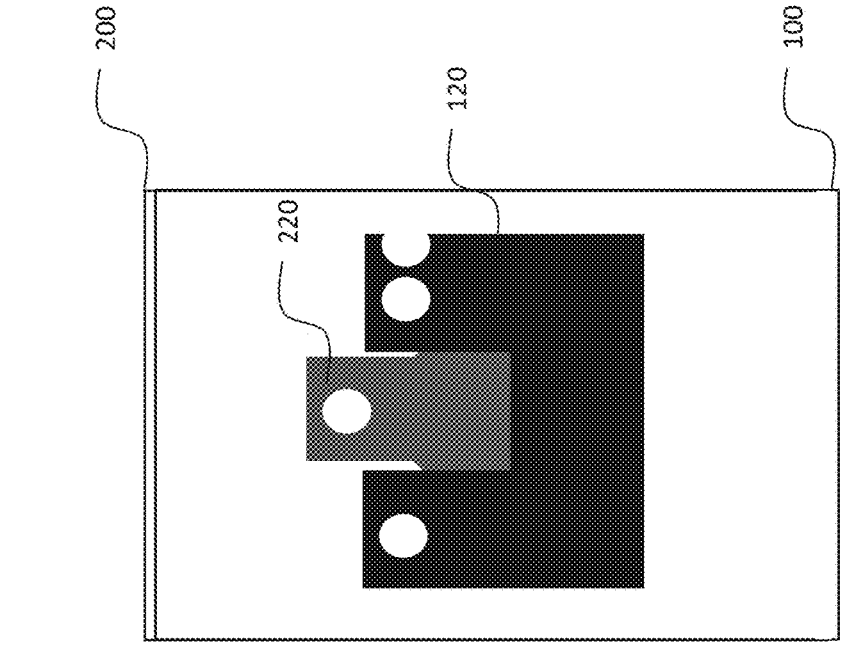



FIG. 3

300

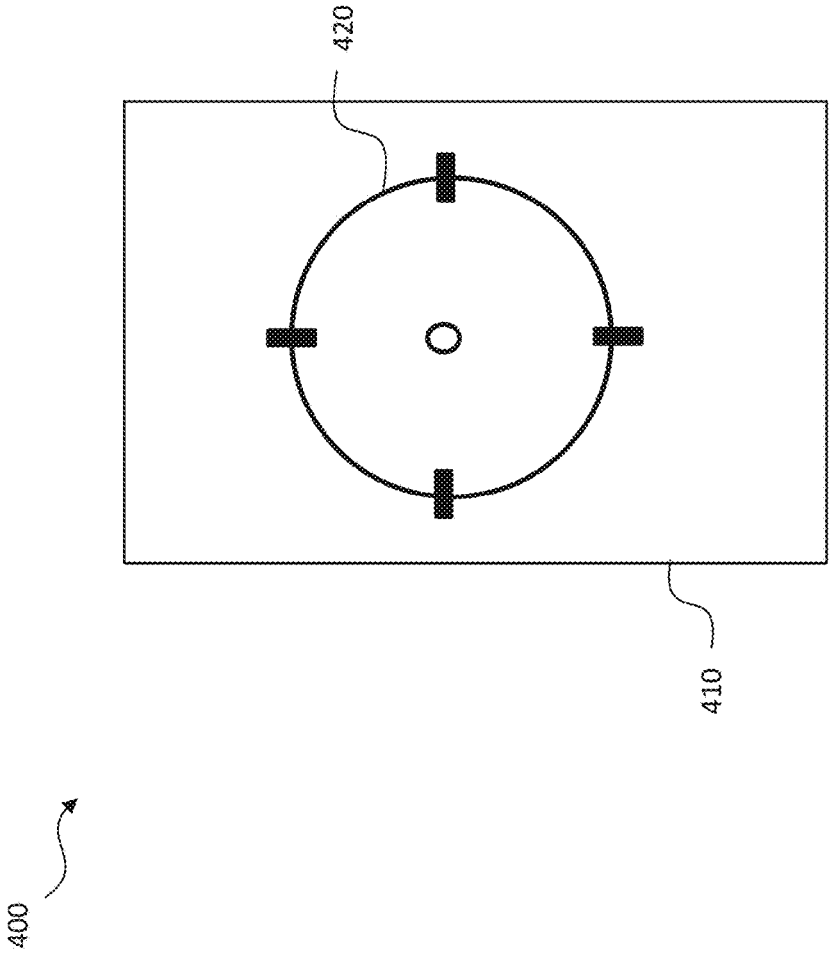



FIG. 4

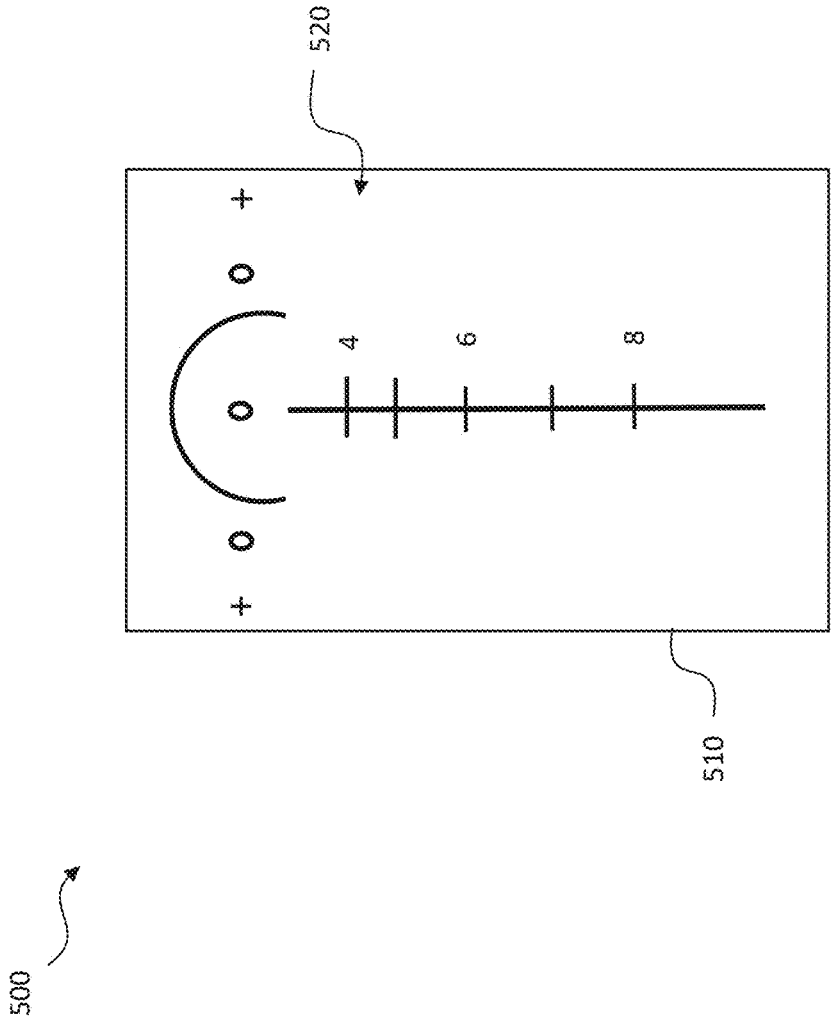



FIG. 5A

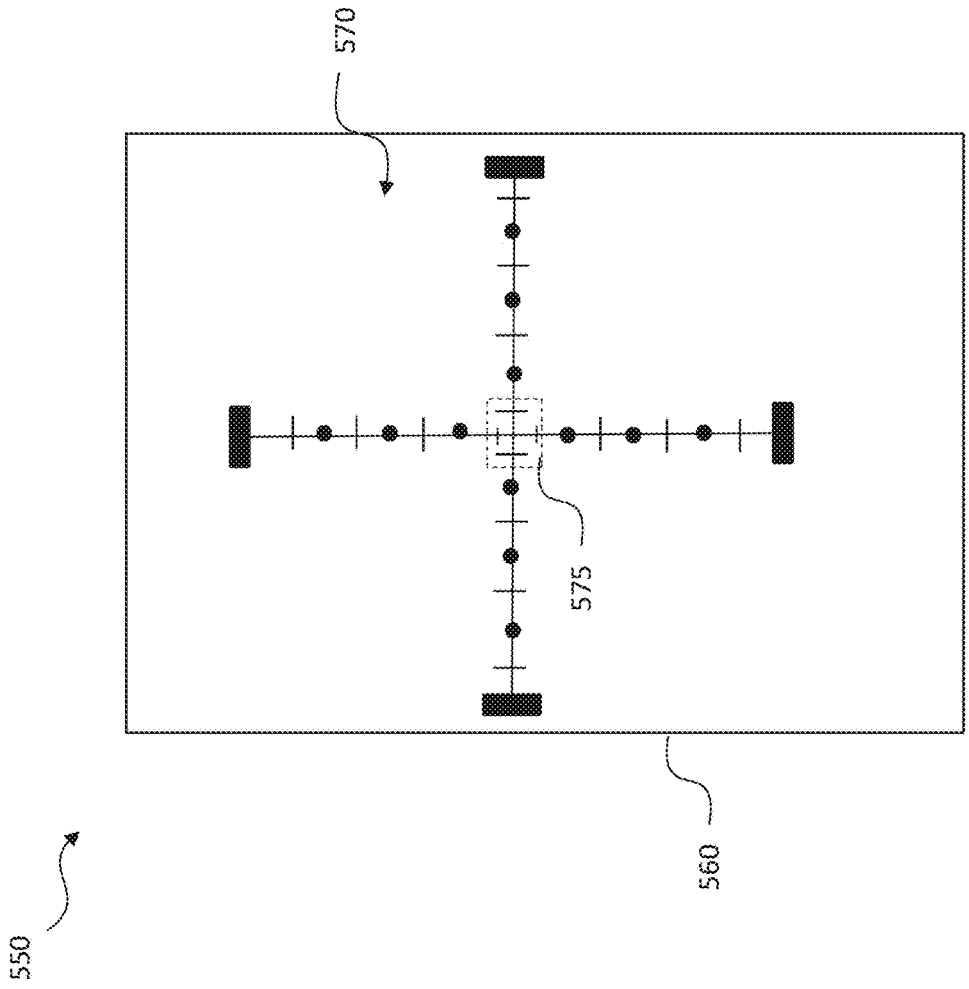



FIG. 5B

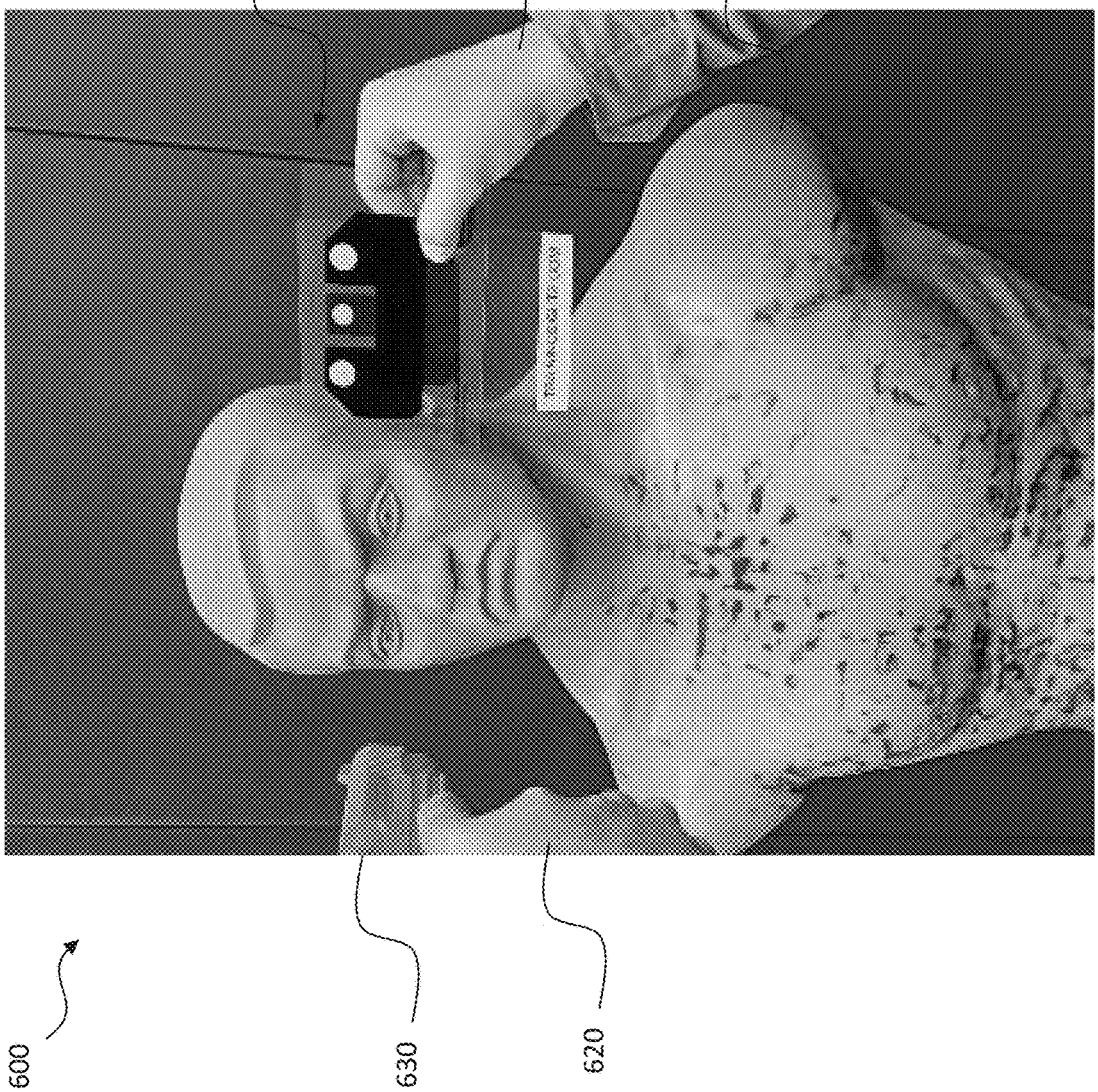



FIG. 6

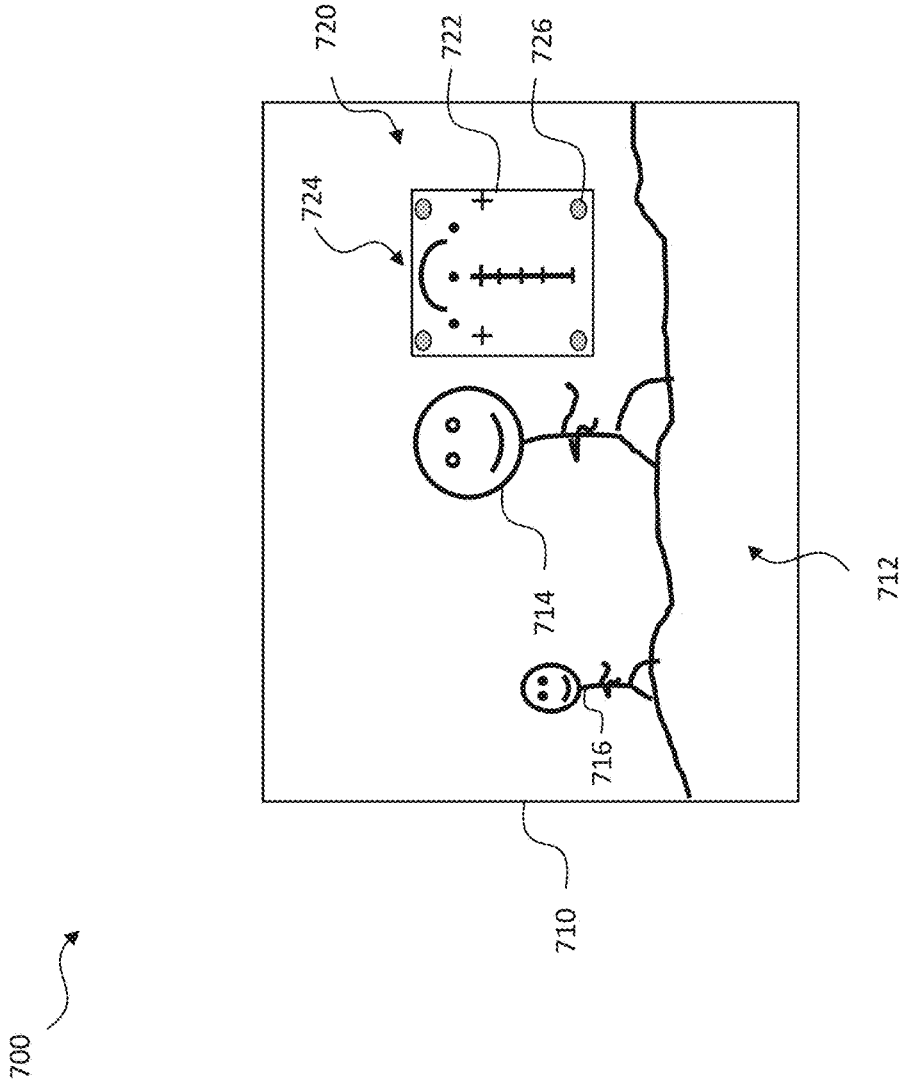



FIG. 7

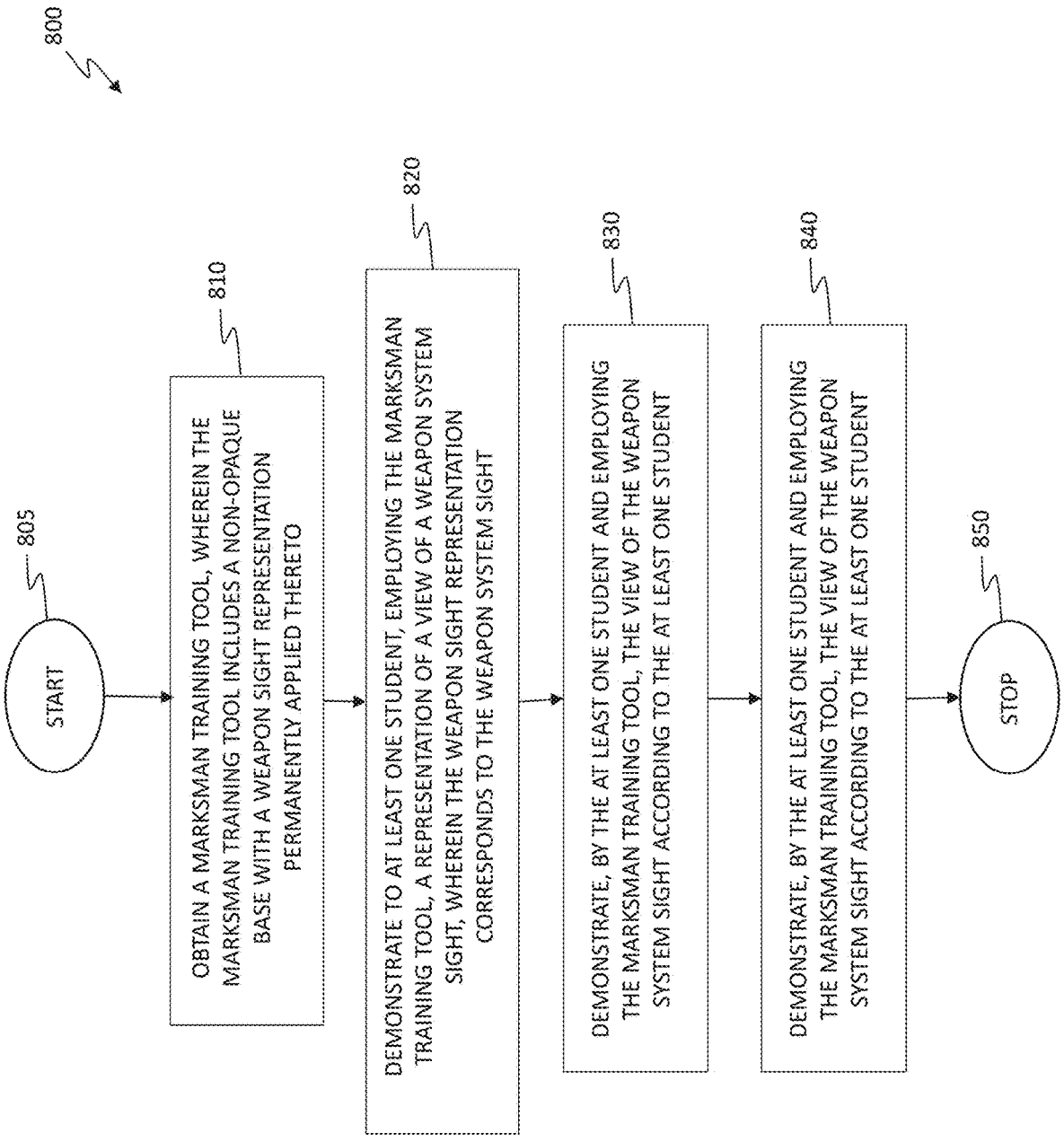

800
805
START
810
OBTAIN A MARKSMAN TRAINING TOOL, WHEREIN THE MARKSMAN TRAINING TOOL INCLUDES A NON-OPAQUE BASE WITH A WEAPON SIGHT REPRESENTATION PERMANENTLY APPLIED THERETO
820
DEMONSTRATE TO AT LEAST ONE STUDENT, EMPLOYING THE MARKSMAN TRAINING TOOL, A REPRESENTATION OF A VIEW OF A WEAPON SYSTEM SIGHT, WHEREIN THE WEAPON SIGHT REPRESENTATION CORRESPONDS TO THE WEAPON SYSTEM SIGHT
830
DEMONSTRATE, BY THE AT LEAST ONE STUDENT AND EMPLOYING THE MARKSMAN TRAINING TOOL, THE VIEW OF THE WEAPON SYSTEM SIGHT ACCORDING TO THE AT LEAST ONE STUDENT
840
DEMONSTRATE, BY THE AT LEAST ONE STUDENT AND EMPLOYING THE MARKSMAN TRAINING TOOL, THE VIEW OF THE WEAPON SYSTEM SIGHT ACCORDING TO THE AT LEAST ONE STUDENT
850
STOP

FIG. 8

# MARKSMAN TRAINING TOOL AND TRAINING METHODS EMPLOYING THE TOOL

## CROSS-REFERENCE TO RELATED APPLICATION

**[0001]** This application claims the benefit of U.S. Provisional Application Ser. No. 62/870,656, filed by Robert Frank Lyons on Jul. 3, 2019, entitled "MARKSMAN TRAINING TOOL AND TRAINING METHODS EMPLOYING THE TOOL," commonly assigned with this application and incorporated herein by reference in its entirety.

## TECHNICAL FIELD

**[0002]** This disclosure generally relates to a visual training aid for both a field setting and a classroom environment and, more specifically, a visual training aid employable when providing instruction on, for example, marksmanship, weapons tactics, or shooting diagnostics.

## BACKGROUND

**[0003]** Professional instructors in marksmanship throughout the shooting industry have identified short falls in their ability to effectively and professionally relay crucial knowledge in marksmanship to their students. Instructors, for example, would often use their fingers, draw on the ground, or cut out chunks of cardboard to create visual examples in an attempt to deliver valuable information regarding marksmanship to their students. Unfortunately, many of the existing methods are hindered by limited access to professional classroom facilities, inclement weather, and language barriers when training foreign students.

## SUMMARY

**[0004]** In one aspect, the disclosure provides a marksman training tool. In one example, the marksman training tool includes: (1) a base constructed of a non-opaque material, and (3) a weapon sight representation permanently applied to the base.

**[0005]** In yet another aspect, the disclosure provides a method of teaching marksmanship. In one example, the method includes: (1) obtaining a marksman training tool, wherein the marksman training tool includes a non-opaque base with a weapon sight representation permanently applied thereto, and (2) demonstrating to at least one student, employing the marksman training tool, a representation of a view of a weapon system sight with respect to a target, wherein the weapon sight representation corresponds to the weapon system sight.

**[0006]** In yet another aspect, the disclosure provides a system for instructing marksmanship. In one example, the system includes: (1) a target and (2) a marksman training tool that includes a base constructed of a non-opaque material and a weapon sight representation permanently applied to the base.

## BRIEF DESCRIPTION OF THE DRAWINGS

**[0007]** The disclosure may be understood by reference to the following detailed description taken in conjunction with the drawings briefly described below.

**[0008]** FIGS. **1** to **2** illustrate examples of marksman training tools constructed according to the principles of the disclosure;

**[0009]** FIG. **3** illustrates a diagram of an example of using the marksman training tools of FIG. **1** and FIG. **2** together according to the principles of the disclosure;

**[0010]** FIGS. **4** to **5**B illustrate other examples of marksman training tools constructed according to the principles of the disclosure;

**[0011]** FIG. **6** illustrates a diagram of an example of using a combination of marksman training tools for instructing a student with a target according to the principles of the disclosure;

**[0012]** FIG. **7** illustrates a diagram of an example of teaching marksmanship employing a marksman training tool according to the principles of the disclosure; and

**[0013]** FIG. **8** illustrates a flow diagram of an example of a method **800** of teaching marksmanship carried out according to the principles of the disclosure.

## DETAILED DESCRIPTION

**[0014]** The disclosure provides a training aid for teaching marksmanship that is an all-weather, day or night, durable tool that allows engaging students with visual, audio and kinesthetic learning tendencies without depending on the use of a classroom. The disclosed product, a marksman training tool, provides a more accurate representation of actual sights that students are using compared to teaching tools that are presently being used; especially those used in the field. The accurate representations can increase the effectiveness of training when teaching students with a primary language different to that of the instructor. Furthermore, the marksman training tool can aid in student diagnostics by allowing students to demonstrate to his/her instructor marksmanship issues as they see them through their own sights. Various versions of the marksman training tool can be manufactured in different sizes and can be typically carried in wallets, pockets or cases, such as brief cases.

**[0015]** The marksman training tool is a visual teaching aid that has a representation of a sight of a weapon system on a medium or base that is non-opaque. The non-opaque base can be a transparent or translucent base. The type of material, thickness and dimensions of the base can vary based on the needs of the instructor and the environment in which the instructors are teaching. The base can be constructed of, for example, a thermoplastic, such as acrylic (also known as plexiglass), or a polycarbonate, such as Lexan. The base can be constructed of other transparent or translucent materials, also. The type of material used for the base can vary depending on the size of marksman training tool and the desired flexibility. The representation of the sight, referred to herein as a weapon sight representation, can be permanently added, applied, and/or affixed to the base via one of multiple processes, such as by superimposing, printing, cutting, etching or burning. The weapon sight representation can be permanently applied by being laminated to the base, wherein the weapon sight representation is between the base and another non-opaque sheet.

**[0016]** The weapon sight representation can be designed to represent multiple types of similar sights of weapon systems, i.e., a generic sight, or can be specifically designed to represent a single sight of a particular weapon system. The weapon sight representation can correspond to a simple sight or an optical sight. As such, the weapon sight representation

can be the image of an iron sight, of a reticle, or a combination of both. The weapon sight representation can be employed as a single sight or reticle as seen by a student in their organic sight or optic. The weapon sight representation can be employed as a two piece system that represents a front and rear sight, such as seen by a student for a specific weapon system. FIG. **3** and FIG. **6** illustrate examples of employing two marksman training tools together, wherein the bases can be of the same size and shape (FIG. **3**) or can have a different size or shape (FIG. **6**). Accordingly, a marksman training tool can be configured, i.e., designed or constructed, to be used with another marksman training tool.

**[0017]** A weapon system as used herein is a type of weapon that expels a projectile by the action of an explosive. For example, a weapon system can be a firearm, such as a rifle, a pistol, or another type of portable gun. A weapon system can also be large caliber guns, such as artillery. The marksman training tool can be employed as a single sight or reticle as seen by a student in their organic sight or optic of a weapon system. The marksman training tool can also be employed as a two piece system that represents a front and rear sight, such as seen by a student for a specific weapon system.

**[0018]** Advantageously, an instructor can use the marksman training tool without needing electricity, batteries or any mechanical assistance to function. Instead, the marksman training tool can be used through the physical manipulation of the student or instructor depending on the period of instruction, i.e., the student is explaining what they are see using the marksman training tool or the instructor is teaching what the student should see using the marksman training tool. As such, the marksman training tool can be easily used for training in multiple environments, such as an indoor environment and an outdoor environment. An indoor environment can be a classroom and an outdoor environment can be in the field. Training in the field, or field training, is training that occurs in an outdoor environment that is exposed to the elements of nature.

**[0019]** The disclosed marksman training tool can be employed in different methods of teaching students. For example, instructors can employ several enhanced teaching methods with the aid of the marksman training tool. To start, the instructor can hold the marksman training tool up to the students target and show the student an extremely accurate representation of what their sights should look like when they sight in. This can greatly reduce the amount of time an instructor spends attempting to explain to a student what they should be seeing or experiencing.

**[0020]** In addition, the marksman training tool with its non-opaque base can be used in conjunction with a screen to provide unique training, including remote training. The screen can be a projection screen or that of a TV, monitor, or another type of display that visually provides a scene of pictures or videos. The marksman training tool can be held up to a screen to overlay an image of a weapon sight representation on a scene. The marksman training tool can include a non-scratching buffer, such as a felt pad, which allows freely and safely sliding the tool across the screen for instruction. In doing so, an instructor can use the marksman training tool with movies, images, prepared slides or any other media displayed on a screen as teaching resources for teaching marksmanship.

**[0021]** Furthermore, the marksman training tool can be utilized for teaching complex formulas for marksmanship calculations, which typically requires instructing students in a classroom. For example, a student can take an image of an object of a known actual size and overlay a sniper marksman training tool over the object. The student can then reference the size of the object using the measurements within the marksman training tool, e.g., the mils (milliradian or mrad) of the sight. If measured properly, a student can input this data (e.g., size in mils) into a known formula to determine the objects range. Similarly, the marksman training tool can be used to determine the size of an object or target. Some other methods employing the marksman training tool for marksmanship calculations can include, other similar Mil radian formulas, wind estimations, and bullet drop compensations. FIG. **5**B illustrates an example of a weapon sight representation having mils that can be used for marksmanship calculations. These are examples of methods that are used by advanced marksman or snipers and typically require intense instruction in a controlled environment, e.g., an indoor environment, to be taught properly. The marksman training tool greatly improves an instructor's ability to teach these skills prior to testing on a shooting range.

**[0022]** The marksman training tool has an extremely unique ability to aid in student diagnostics. For example, when a student is experiencing difficulty with any marksmanship task and cannot properly explain it to the instructor, the student can simply show the instructor what they are experiencing using the marksman training tool. These examples represent unique advantages provided by the marksman training tool as disclosed herein. These and other versions and advantages of the disclosure, as well as the details of illustrative embodiments, will be more fully understood from the following Figures.

**[0023]** FIGS. **1**-**5**B each include examples of a marksman training tool with a weapon sight representation permanently affixed to a non-opaque base. Each non-opaque base of FIGS. **1**-**5**B can be constructed of a transparent or translucent material, such as a material disclosed herein. The shape and dimensions of each base can vary depending on the application. For example, the dimensions can correspond to the size of a credit card or be 8½ inches by 11 inches. Other sizes can also be used. The shape of the base can that of a rectangle or another geometric shape. The orientation of the weapon sight representation on each base can vary, such as shown in FIG. **6**. The weapon sight representation for each of the marksman training tool examples can be of different colors to indicate certain target features, such as distances or centering. For example, the color red can be used to indicate a centered target. A dashed box in FIG. **5**B provides an example of a portion of a weapon sight representation that can be red.

**[0024]** FIG. **1** illustrates a diagram of an example of a marksman training tool **100** constructed according to the principles of the disclosure. The marksman training tool **100** includes a base **110** and a weapon sight representation **120**. The base **110** is constructed of a non-opaque material and the weapon sight representation **120** is permanently applied to the base. The weapon sight representation **120** can be designed to represent multiple types of similar sights or can be specifically designed to only represent a particular sight. The weapon sight representation **120** corresponds to a simple sight, such as an iron sight.

**[0025]** FIG. **2** illustrates a diagram of another example of a marksman training tool **200** constructed according to the principles of the disclosure. The marksman training tool **200**

includes a base **210** and a weapon sight representation **220**. The base **210** is constructed of a non-opaque material and the weapon sight representation **220** is permanently applied to the base. The weapon sight representation **220** corresponds to a simple sight, such as an iron sight.

**[0026]** FIG. **3** illustrates a diagram of an example of using the marksman training tool **100** and the marksman training tool **200** together according to the principles of the disclosure. The marksman training tool **100** can be used for a front sight and the marksman training tool **200** can be used for a back sight. Since the base **110** is non-opaque, the weapon sight representation **220** of the marksman training tool **200** can be seen and aligned with the weapon sight representation **120** of the marksman training tool **100**.

**[0027]** FIG. **4**, FIG. **5**A and FIG. **5**B illustrate diagrams of examples of marksman training tool **400**, **500**, and **550** constructed according to the principles of the disclosure. The marksman training tool **400** includes a base **410** and a weapon sight representation **420**. The marksman training tool **500** includes a base **510** and a weapon sight representation **520**. The weapon sight representation **520** provides an example of a weapon sight that can be used for bullet drop compensation, wherein the crossed lines correspond to target distances. For example, 4, 6, and 8 can indicate 400, 600, and 800 yards to a target. The marksman training tool **550** includes a base **560** and a weapon sight representation **570**. The weapon sight representation **570** includes markings that correspond to mils, which can be used for marksmanship calculations. Each solid circle can represent a mil and each dash can represent 0.5 mil. The weapon sight representations **420**, **520**, and **570** each correspond to a reticle of a weapon system. A dashed box **575** is also illustrated to show the some weapon sight representations can include more than one color. In FIG. **5**B, the part of the weapon sight representation **570** inside the dashed box **575** can be red.

**[0028]** FIG. **6** illustrates a diagram of an example of using a combination of marksman training tools **610** for instructing a student **620**. FIG. **6** also includes a pistol **630** being held by a hand of the student **620** and a three dimensional target **640**. An instructor **650** (or hand of an instructor) holding the marksman training tools **610** is also shown. The combination of marksman training tools **610** simulate what the student **620** will see as they line up their own sights of the pistol **630**. The marksman training tools **610** can be or can be similar to, for example, marksman training tool **100** and marksman training tool **200**. FIG. **6** illustrates the multiple marksman training tools having different shaped and/or sized bases can be used together.

**[0029]** FIG. **7** illustrates a diagram of an example of teaching marksmanship employing a marksman training tool according to the principles of the disclosure. FIG. **7** includes a screen **710** and a marksman training tool **720**. On the screen **710** is a scene **712** that includes a target **714** and a target **716**. The marksman training tool **720** includes a base **722**, a weapon sight representation **724**, and non-scratching buffers, of which one is designated element **726**. The screen **710** can be at the same location of a student or can be remote from the student. As such, an instructor can be with the screen **710** and employ the marksman training tool **720** to provide virtual instruction to the student who is in another location from the screen **710** and the instructor.

**[0030]** The screen **710** can be a screen for receiving a projection of a video or pictures, i.e., a projection screen, or a screen of a display associated with a computing device, such as a computing pad, laptop, or desktop. The marksman training tool **720** can be slid or moved across the screen **710** to represent engaging the different targets **714** and **716** by placing the weapon sight representation **724** of the different targets **714** and **716**. This can demonstrate to a student what their weapon sight should look like when engaging the different targets **714** and **716**. The scene **712** can be stationary or moving. For example, the scene **712** can be from a photo or a video. As such, the scene **712** can be used to train on shooting a moving target. The different targets **714** and **716** can be used to simulate known distances, such as from a student and weapon system, for teaching. The weapon sight representation **724** can also be used to train students on marksmanship calculations, such as bullet drop compensation or others discussed herein. For example, the marksman training tool **720** can correspond to the marksman training tool **500** of FIG. **5**A for bullet drop calculations or a marksman training tool such as the marksman training tool **550** of FIG. **5**B for mil calculations. The different marksman training tools can be moved over or relative to the different targets **714** and **716** for the calculations.

**[0031]** The marksman training tool **720** can be moved over the different targets **714** and **716** by an instructor (not shown) sliding the marksman training tool **720** over the screen **710** using the non-scratching buffers **726**. The non-scratching buffers **726** can be permanently or removeably attached to the base **722**. A glue or epoxy can be used for attaching.

**[0032]** FIG. **8** illustrates a flow diagram of an example of a method **800** of teaching marksmanship carried out according to the principles of the disclosure. The method **800** begins in step **805**.

**[0033]** In step **810**, a marksman training tool is obtained. The marksman training tool can be of various sizes, shapes, and types. The marksman training tool can be obtained from a wallet, a pocket, a brief case, etc. Regardless the size, shape, or type, the marksman training tool includes a non-opaque base with a weapon sight representation permanently applied thereto. The weapon sight representation can be permanently be applied to the base according to various means.

**[0034]** In step **820**, a representation of a view of a weapon system sight with respect to a target is demonstrated employing the marksman training tool, wherein the weapon sight representation corresponds to the weapon system sight. The demonstration can be performed by an instructor to at least one student. The target can be a three dimensional target or a two dimensional target, such as a bullseye. The target can be within a scene on a screen and the demonstrating can include moving the marksman training tool across the scene on the screen to simulate engaging the target. More than one marksman training tool can be used for the demonstration.

**[0035]** A student can employ the marksman training tool in step **830** to demonstrate the view of the weapon system sight according to their view. This allows the instructor to understand what the student is seeing when looking through their sight. Such visual communication is extremely helpful when the instructor and student do not speak the same language.

**[0036]** In step **840**, marksmanship calculations can be evaluated employing the marksman training tool. For example, the weapon sight representation of the marksman training tool can include a reticle with mils that are used for the marksmanship calculations. The marksmanship calcula-

tions can include determining the range of an object, i.e., a target, the size of the target, wind estimations, bullet drop compensations, and other Mil radian formulas.

**[0037]** The method **800** continues to step **850** and ends. The method **800** can be repeated employing different marksman training tools, different targets, different distances, or a combination thereof.

**[0038]** The foregoing has outlined preferred and alternative features of the present invention so that those skilled in the art may better understand the detailed description of the invention that follows. Additional features of the invention will be described hereinafter that form the subject of the claims of the invention. Those skilled in the art should appreciate that they can readily use the disclosed conception and specific embodiment as a basis for designing or modifying other structures for carrying out the same purposes of the present invention. Those skilled in the art should also realize that such equivalent constructions do not depart from the spirit and scope of the invention.

What is claimed is:

**1**. A marksman training tool, comprising:

a base constructed of a non-opaque material; and

a weapon sight representation permanently applied to the base.

**2**. The marksman training tool as recited in claim **1**, wherein the weapon sight representation corresponds to a single sight viewable in an organic sight or optic of a weapon system.

**3**. The marksman training tool as recited in claim **2**, wherein the weapon system is a firearm.

**4**. The marksman training tool as recited in claim **1**, wherein the base is constructed of a transparent material.

**5**. The marksman training tool as recited in claim **1**, wherein the base is constructed of a translucent material.

**6**. The marksman training tool as recited in claim **1**, wherein the base is constructed of a thermoplastic.

**7**. The marksman training tool as recited in claim **1**, wherein the weapon sight representation is configured to correspond with a weapon sight representation of another marksman training tool.

**8**. The marksman training tool as recited in claim **1**, further comprising one or non-scratching buffer attached to the base.

**9**. The marksman training tool as recited in claim **1**, wherein the base is constructed of a transparent thermoplastic, at least two non-scratching buffers are permanently attached to the base, and the weapon sight representation corresponds to the optics of a weapon system.

**10**. A method of teaching marksmanship, comprising:

obtaining a marksman training tool, wherein the marksman training tool includes a non-opaque base with a weapon sight representation permanently applied thereto; and

demonstrating to at least one student, employing the marksman training tool, a representation of a view of a weapon system sight with respect to a target, wherein the weapon sight representation corresponds to the weapon system sight.

**11**. The method as recited in claim **10**, wherein the demonstrating is performed by an instructor.

**12**. The method as recited in claim **10**, wherein the target is within a scene on a screen.

**13**. The method as recited in claim **12**, wherein the demonstrating includes moving the marksman training tool across the scene on the screen to simulate engaging the target.

**14**. The method as recited in claim **10**, further comprising evaluating marksmanship calculations employing the marksman training tool.

**15**. The method as recited in claim **10**, further comprising demonstrating, by the at least one student and employing the marksman training tool, the view of the weapon system sight according to the at least one student.

**16**. The method as recited in claim **10**, wherein the target is a three dimensional shooting target.

**17**. The method as recited in claim **10**, wherein the demonstrating includes employing an additional marksman training tool.

**18**. A system for instructing marksmanship, comprising:

a target; and

a marksman training tool that includes a base constructed of a non-opaque material and a weapon sight representation permanently applied to the base.

**19**. The system as recited in claim **18**, wherein the target is a three dimensional or a two dimensional target.

**20**. The system as recited in claim **18**, wherein the target is part of a scene on a screen.

* * * * *