May 12, 1959 J. B. WEIDNER 2,886,372

MILITARY PRACTICE TARGET-SUPPORTING VEHICLE

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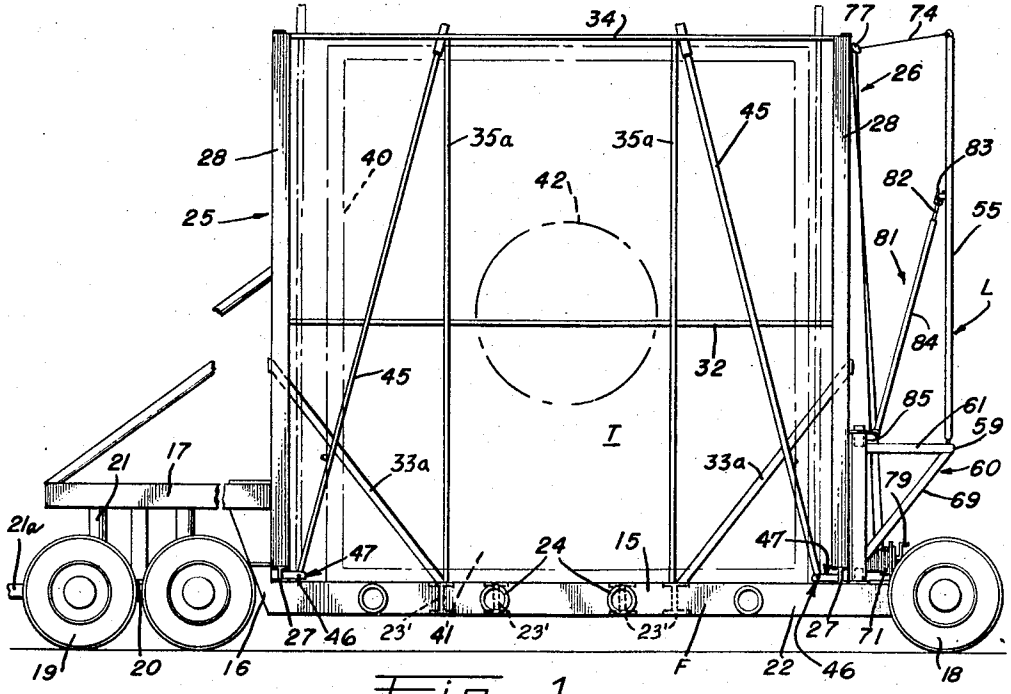


Fig. 1.

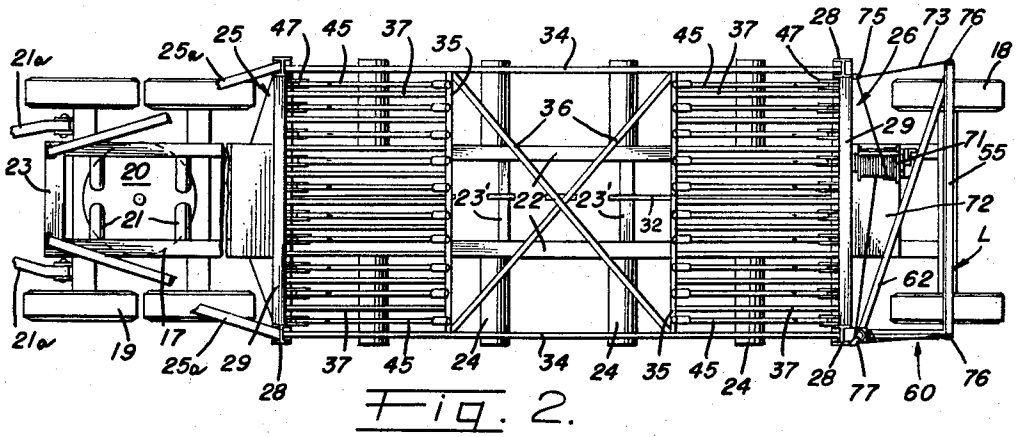


Fig. 2.

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Fig. 3.

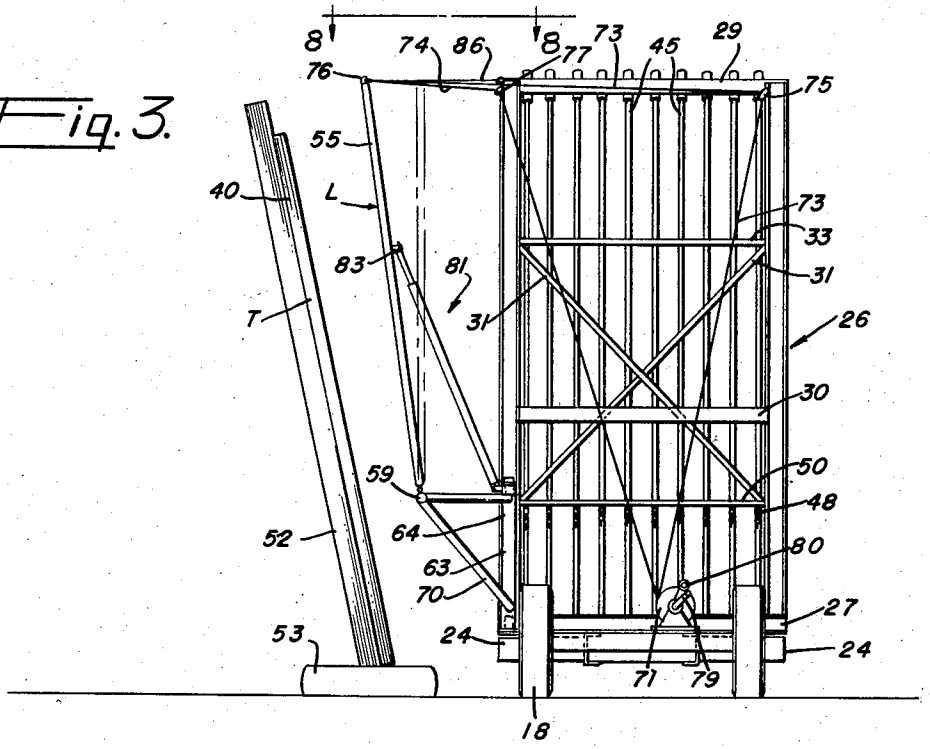


Fig. 4.

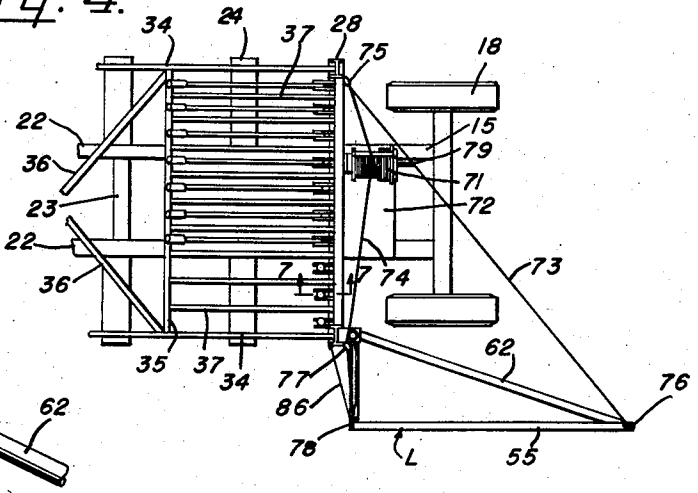
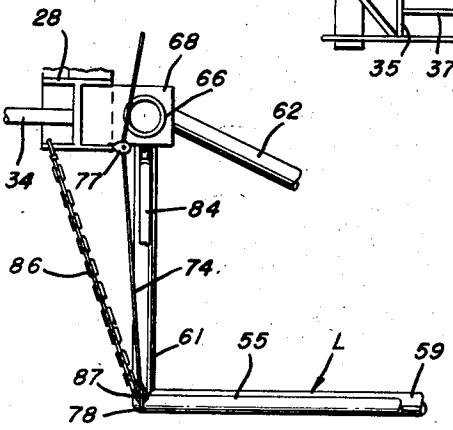


Fig. 8.



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Fig. 5.

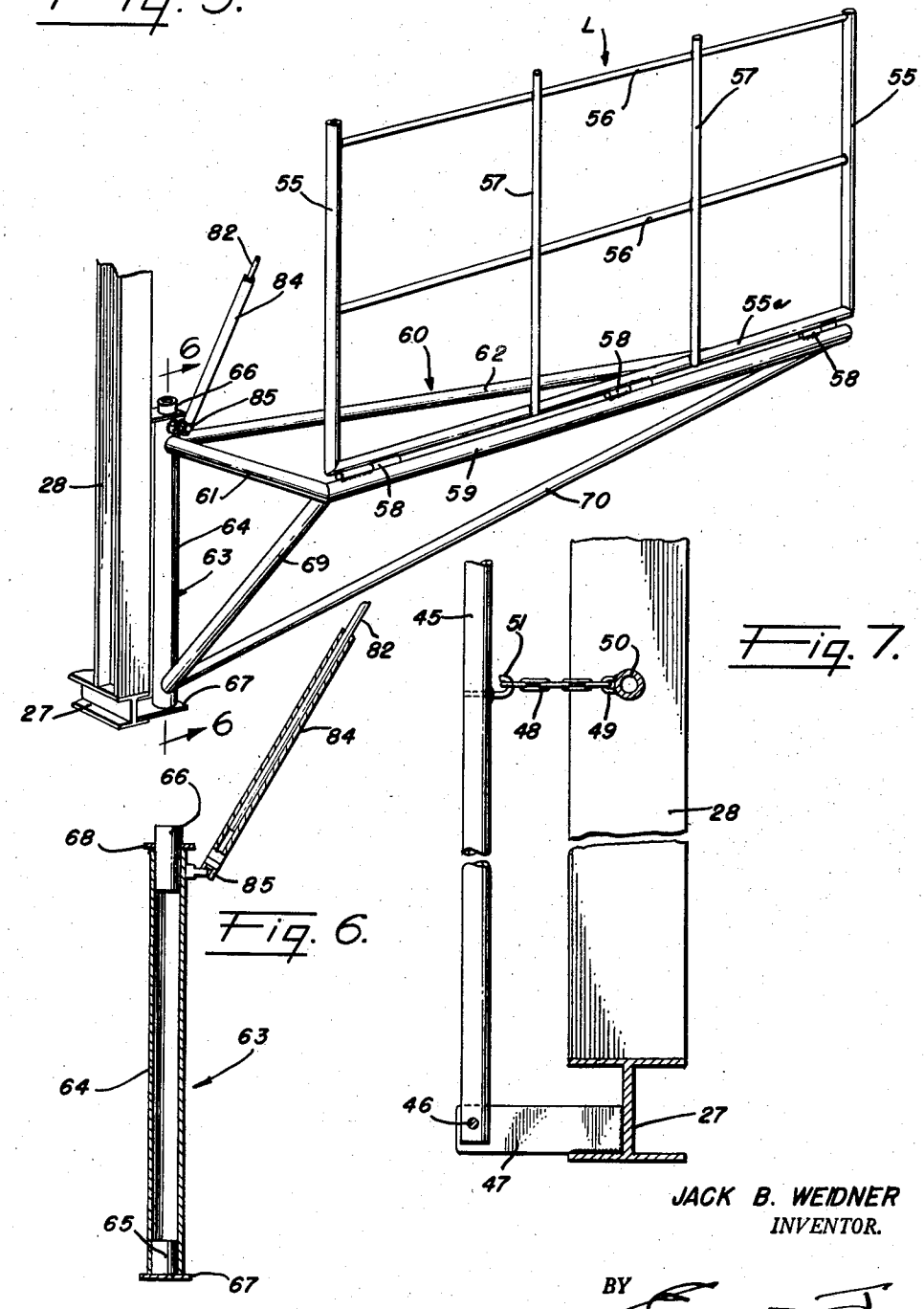


Fig. 6.

Fig. 7.

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2,886,372

MILITARY PRACTICE TARGET-SUPPORTING VEHICLE

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Application June 6, 1956, Serial No. 589,670

2 Claims. (Cl. 296—3)

My invention relates to military targets as used on practice ranges by artillery and aircraft gunners, and it has for a purpose the provision of a vehicle which facilitates transporting of the targets to and from a practice range, and the setting up thereof on the range, as well as reloading of the targets on the vehicle after use.

A military target of the type referred to usually consists of a rectangular wooden frame spanned by a sheet of cloth bearing the bull's-eye. As set up on a practice range, it is supported in inclined position against a pair of wooden posts driven into the ground so as to be disposed at a suitable angle to the ground. Because the target is relatively large, it is quite unwieldy and extremely difficult to transport in quantity without damage thereto, as well as to set up on a range.

A vehicle constructed in accordance with my invention embodies a superstructure which enables a quantity of targets to be easily loaded thereon in side-by-side relation, and so transported to or from a practice range without damage thereto, and as easily removed individually from the superstructure and set up on the practice range at spaced intervals therealong as determined by the spacing of the pairs of posts on the range.

In order that accurate and individual scoring records may be kept of the various gunners using the targets, the practice is that the hits made by each gunner are marked on the targets with a paint of a particular color, and thus the scoring of any one gunner can be distinguished from the other gunners.

Accordingly, it is also a purpose of my invention to provide a vehicle having thereon a ladder which can be positioned in relation to a target while set up on a range, to permit one to climb the ladder and reach all parts of the target for marking the latter in scoring the hits made by each gunner.

A further purpose of my invention is to provide a vehicle which embodies both the target-supporting superstructure, and the aforesaid ladder, and wherein means is provided for mounting the ladder to occupy one position in which it is disposed at one side of the superstructure, and substantially parallel to a set-up target so that the ladder can be climbed to score-mark the target, or when not in such use to occupy another position in which it is disposed at the rear of and substantially parallel to the superstructure. The width of the ladder does not exceed the width of the vehicle, and thus when at the rear does not increase the overall width of the vehicle nor the superstructure which are of course designed to come within the limits provided by state highway vehicle laws.

I will describe only one form of military practice target transporting vehicle and one means facilitating score-marking of the targets, each embodying my invention and will then point out the novel features thereof in claims.

In the accompanying drawings:

Fig. 1 is a view showing in side elevation, with a forward part broken to foreshorten the view, one form of vehicle for transporting military practice targets, and one means for facilitating score-marking of the targets which is in inactive position.

Fig. 2 is a top plan view of Fig. 1.

Fig. 3 is a rear end elevational view of the vehicle, and showing the means facilitating score-marking of the target in active position at the side of the vehicle, for score-marking of a target.

Fig. 4 is a fragmentary top plan view of the vehicle with the means facilitating target score-marking in the same active position as shown in Fig. 3.

Fig. 5 is an enlarged fragmentary perspective view of the means facilitating score-marking of the targets.

Fig. 6 is an enlarged vertical sectional view taken on the line 6—6 of Fig. 5, and in addition showing the extensible arm in longitudinal section.

Fig. 7 is an enlarged vertical sectional view taken on the line 7—7 of Fig. 4, and showing the mounting of one of the latch rods, and a means for detachably securing the same in non-latching position.

Fig. 8 is an enlarged top plan view taken on the line 8—8 of Fig. 3.

Referring more particularly to the drawings, the vehicle of my invention is in the form of a trailer having a frame designated generally at F, and which frame includes a lower elongated horizontal part **15** at the forward end of which is a substantially vertical part **16**, with the upper end of the latter part fixed to a short upper horizontal part **17**. The trailer frame is supported for rolling movement at its rear end by a rear wheel assembly **18**, and at its forward end by a front wheel assembly **19** of the twin-axle type which, through a fifth wheel **20** (see Fig. 2), is rotatable with respect to members **21** fixed to and depending from the frame part **17** and to which the upper part of the fifth wheel is connected. The fifth wheel **20** is designed to allow the necessary turning movement of the front wheel assembly **19** for steering purposes, and for draft purposes, a two-part tongue **21***a* is hingedly connected to the front axle of the wheel assembly **19**.

The above described parts of the frame F are made up of two longitudinally extending and parallel spaced beams **22** which may be in sections or continuous. Those parts of the beams constituting the frame part **15** are secured in parallel spaced relation by transverse beams **23**, at intervals along their lengths. Secured to and extending outwardly from the sides of the beams **22**, and arranged at spaced intervals along the length of the beams, are rounded members **24** which may be in the form of metal pipes.

Upon the part **15** of the frame F a superstructure of skeleton form is rigidly fixed, and it comprises a front vertical frame **25** and a rear vertical frame **26**, each of which are of rectangular form and preferably made up of a lower horizontal I-beam **27** fixed transversely to the beams **22**, two vertical I-beams **28** fixed at their lower ends to the beams **27**, and an upper horizontal beam **29** fixed to the upper ends of the beams **28**.

The vertical beams **28** may be braced horizontally by an intermediate beam **30**, and also by diagonal and intersecting struts **31**. At the points of intersection of the two pairs of struts is a connecting rod **32** which serves to horizontally brace the latter and to in turn horizontally brace the frames **25** and **26**. The rear frame **26** may be provided with a horizontal strut **33** which affords an additional brace for the vertical beams **28**. The front frame **25** is braced at its forward side by struts **25***a* inclined downwardly from the beams **28** and converging to the forward transverse beam **23**. To brace the confronting sides of the frames **25** and **26** against movement toward each other with diagonal beams **33***a* are fixed at their

lower ends to the beams 23' and at their upper ends to the beams 30.

A pair of rods 34 rigidly connect the upper ends of the vertical beams 28 of one frame 25 to those of the frame 26, and these rods are connected to each other between their ends by a pair of transverse rods 35. A pair of intersecting struts 36 connect the ends of the rod 35 to each other. Two series of horizontal rods 37 connect the beams 29 to the transverse rods 35 at regular spaced intervals along the length thereof, and the spacing of one series of rods its identical to that of the other.

A pair of vertical rods 35*a* intersect and are fixed to the connecting rod 32, with their upper ends secured to the center of the transverse rods 35, and their lower ends secured to certain of the beams 23'. The rods 35*a* serve to brace the rods 35 at their centers.

The above described superstructure provides a means upon which military targets designed for artillery or aircraft gun practice, can be supported in vertical positions thereon so that they can be individually removed from opposite sides of the superstructure if desired. The military practice target referred to and indicated at T is of the conventional type illustrated in broken lines in Fig. 1, and it comprises a rectangular wooden frame 40 spanned by a sheet of cloth 41 in the center of which is a bull's-eye 42. The size of each target is such that it can be accommodated between the frames 25 and 26 and supported on the members 24, simple and effective latching devices are provided one for each of the targets. Each device comprises two rods 45 of a length extending the heighth of the superstructure, with their lower ends pivoted as at 46 on brackets 47 welded or otherwise secured to the lower frame beams 27, as best illustrated in Fig. 7.

Each pair of rods 45, when in latching position with respect to a target, occupy the inclined and converging positions shown in Fig. 1 to which they normally gravitate and in which they bridge portions of a target T so that the latter is confined in vertical position between a pair of adjacent rods 37. The rods when in this position have their upper ends resting against the transverse rods 35. In the non-latching position of the rods 45 they occupy vertical positions as shown in broken lines in Fig. 1, and in these positions they permit the target to be removed sidewise from the superstructure to be set up on the ground. The rods 45 are releasably secured in such vertical positions by short lengths of chains 48, and each chain is permanently secured at one end to an eye 49 fixed on the cross rod 50 spanning the vertical beams 28. The free end of each chain is engageable with a hook 51 fixed on the rod 45, and thus, as shown in Fig. 7, the chain holds the latch rod in vertical position.

Since there are a pair of latching devices for each target as mounted on the superstructure, it will be clear that the targets can be successively removed and set up on the ground of a military practice range by successively moving the rods 45 of each latching device to non-latching position. Such removal of the targets can be effected from either side of the vehicle, as will be understood.

As is the practice, each target T is set up in a position inclined to the vertical by resting it against a pair of posts 52 (Fig. 3) which are driven into the ground and have a discarded automobile tire 53 surrounding the lower ends of the post and upon which the target is adapted to rest. Thus it will be understood that a vehicle constructed in accordance with my invention not only facilitates transporting of a multiplicity of targets to a military practice range and without damage thereto, but it also facilitates the setting up of the targets at intervals along the practice range. In practice two men can remove the targets individually from the vehicle and set them up against the posts, and conversely, the targets can be as readily replaced on the vehicle after use to be transported to a remote point for recording the score made by the gunners.

To keep accurate scoring records for the gunners using the targets on a practice range, it is necessary that the hits

scored by each gunner on each target be marked thereon with paint of a distinguishing color. This score-marking is done following each use of a target by a gunner, and while the target is set up on the range.

To facilitate such score-marking of the targets, I have incorporated in the trailer, a ladder L which, as best shown in Fig. 5, comprises a rectangular frame 55 spanned by intersecting horizontal and vertical rods 56 and 57, the rods 56 forming rungs. The lower member 55*a* of the frame 55 is connected by hinges 58 to a member 59 of a supporting frame 60 so that it can swing about a horizontal axis to occupy a vertical position or various positions inclined to the vertical.

The supporting frame 60 comprises in addition to the member 59, members 61 and 62 fixed to the ends of member 59 in a triangular arrangement and to a vertically disposed hinge 63, so that the frame can swing about a vertical axis. This hinge 63 comprises a tube 64 that is rotatably supported at its ends by pins 65 and 66 fixed respectively to a lower bracket 67 welded to the rear cross beam 27, and an upper bracket 68 secured to an adjacent vertical beam 28.

The frame 60 is rigidly supported in horizontal position by brace members 69 and 70, the member 69 fixed to the tube 64 and to the meeting ends of the members 61 and 59, and the member 70 fixed to the tube 64 and to the meeting ends of the members 59 and 62. Such a supporting frame and its bracing structure are adequate to support the ladder L and the weight of the man who climbs the latter when score-marking a target.

Since the hinge 63 provides for swinging movement of the supporting frame 60 about a vertical axis, it permits the frame to be moved to occupy a position at the rear of the rear end of the superstructure as shown in Figs. 1 and 2, or to occupy a position at the side and to the rear of the superstructure as shown in Figs. 3 and 4. Since the ladder L is mounted on the frame 60 it too is movable by and with the frame to occupy a position parallel to the rear end of the superstructure, or to occupy a position to one side and to the rear of the superstructure.

When not in use the ladder L occupies the position shown in Figs. 1 and 2, and since it is of a width that does not exceed the width of the superstructure it can be so carried by the trailer when in transit without exceeding the width limits of vehicles prescribed by the laws of most states. When in use the ladder L occupies the position shown in Figs. 3 and 4 in which, as shown in Fig. 3, it is disposed in substantially spaced parallelism to a target as set up in inclined position against the posts 52.

The supporting frame 60 and the ladder L are adapted to be moved to either of the above described positions manually, but in order that the ladder be held in vertical position or at a preselected angle to the vertical best suited to facilitate easy score-marking of a target, the following mechanism is provided:

A drum 71 is mounted for rotation on a platform 72 fixed to the beams 15 at the rear of the superstructure, and this drum is of two diameters with a cable 73 wound upon the larger diameter, and a cable 74 wound upon the smaller diameter. Cable 73 is extended upwardly from the drum 71 through an eye or pulley 75 at the upper right-hand corner of the rear frame 26 as when viewed in Fig. 3, and then anchored as at 76 to one upper corner of the ladder L. Cable 74 is extended upwardly from the drum 71 through an eye or pulley 77 at the upper left-hand corner of the frame 26, and then anchored as at 78 to the other upper corner of the ladder L.

The drum 71 is provided with a hand crank 79 by which it can be turned, and a conventional releasable latch 80 for securing the drum against rotation.

To prevent tilting of the ladder L rearwardly from any forwardly inclined position which it may occupy for score-marking of a target, an arm 81 is so constructed and associated with the ladder L and the hinge 63 as to limit movement rearwardly of the latter to the vertical position

shown in broken lines in Fig. 3. In so doing a person on the ladder is prevented from falling therefrom due to such rearward tilting.

As best shown in Figs. 5 and 6 this arm **81** is composed of a rod **82** secured at its upper end to the ladder L by a swivel **83**, and a tube **84** secured at its lower end to the hinge tube **64** by a swivel **85**. The rod **82** telescopes within the tube **84** to allow movement of the ladder forwardly to occupy any desired angular position, but it restricts rearward movement to the vertical position by the upper end of the tube **84** abutting the swivel **83**.

A safety factor additional to the one served by the arm **81**, is provided by a short length of cable or chain **86** which is permanently connected at one end to the upper left-hand corner of the rear frame **26**, and detachably connected at its other end by a hook **87** (see Fig. 8) to the adjacent upper corner of the ladder. This cable **86** is not of a length to interfere with forward angular adjustment of the ladder, but should the cable **74** break or the drum accidentally unlatch, it will prevent the ladder from falling forwardly against a target not only to damage the latter but to seriously injure any one on the ladder.

In the use of the ladder L to score-mark a target, the trailer can be manipulated by a drawing truck or other vehicle coupled to the draft tongue **22** to position the rear end of the trailer opposite a target whereupon, the frame **60** and the ladder are manually swung from the position shown in Fig. 2 to that shown in Figs. 3 and 4. In the position shown in Fig. 2, the ladder is held in vertical position by the cables **73** and **74** in cooperation with arm **81**, and, as a consequence, the frame **60** is held against movement, it being understood that the cables are held taut by previous rotation of the drum **71** and then latching the drum against rotation.

To move the ladder and its supporting frame to the position shown in Figs. 3 and 4, it is necessary to first unlatch the drum **71** whereupon, cables **73** and **74** can unwind therefrom to allow such movement, and once they reach their final positions to the side of the trailer, the drum is reversely rotated to take up all slack in the cables and then relatched. Since the ladder is hingedly mounted on the frame **60**, its outward angle of inclination can be varied through adjustment of the cables to suit the inclination of a particular target, so that one, by climbing the ladder, can reach any point on the target to score-mark the same.

Although I have herein shown and described only one form of vehicle for transporting military practice targets, and one means for facilitating score-marking of the targets, it is to be understood that various changes and modifications may be made therein without departing from the spirit of the invention and the spirit and scope of the appended claims.

What I claim is:

1. A vehicle for transporting military targets, including: a target-supporting frame having parallel longitudinally extending beams arranged in spaced relation by transverse beams; a superstructure fixed on said frame and including two pairs of top transverse members spaced from each other, and the members of each pair spaced from each other, and two sets of top longitudinal members secured to and extending between the top transverse members of each pair; pairs of upwardly extending rods carried by the frame and positioned between corresponding members of the two sets of the top longitudinal members; and means for pivoting of the lower ends of the rods on said frame so that they gravitate to inclined positions in which their upper end portions engage the innermost member of each of the pairs of top transverse members to hold the targets between said rods; and means for latching said rods in their vertical inoperative positions, whereby the targets may be removed from the target supporting frame.

2. A vehicle for transporting military targets, including: a chassis frame having parallel longitudinally extending beams arranged in spaced relation by transverse beams upon which military targets are adapted to be supported substantially vertically thereon and longitudinally thereof; front and rear frames fixed vertically on the ends of said chassis frame and extending transversely thereof; rod-like members extending longitudinally of the chassis frame and connected to the upper ends of the front and rear frames; stop members secured to and extending transversely of the rod-like members and spaced from the ends thereof; two sets of latch rods arranged to support the targets in upright position pivotally connected at their lower ends to the front and rear frames and of a length such that their upper ends extend between the rod-like members; the latch rods being movable about their pivots to occupy inclined positions to hold the targets between said rods and in which the upper end portions of the rods engage the stop members; and means for releasably securing the latch rods from their vertical inoperative position, whereby the targets may be removed from the target supporting frame.

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