Oct. 20, 1959 T. O. HENRIKSON ET AL 2,909,130

LOGGING BUNKS

Filed Dec. 27, 1954 3 Sheets-Sheet 1

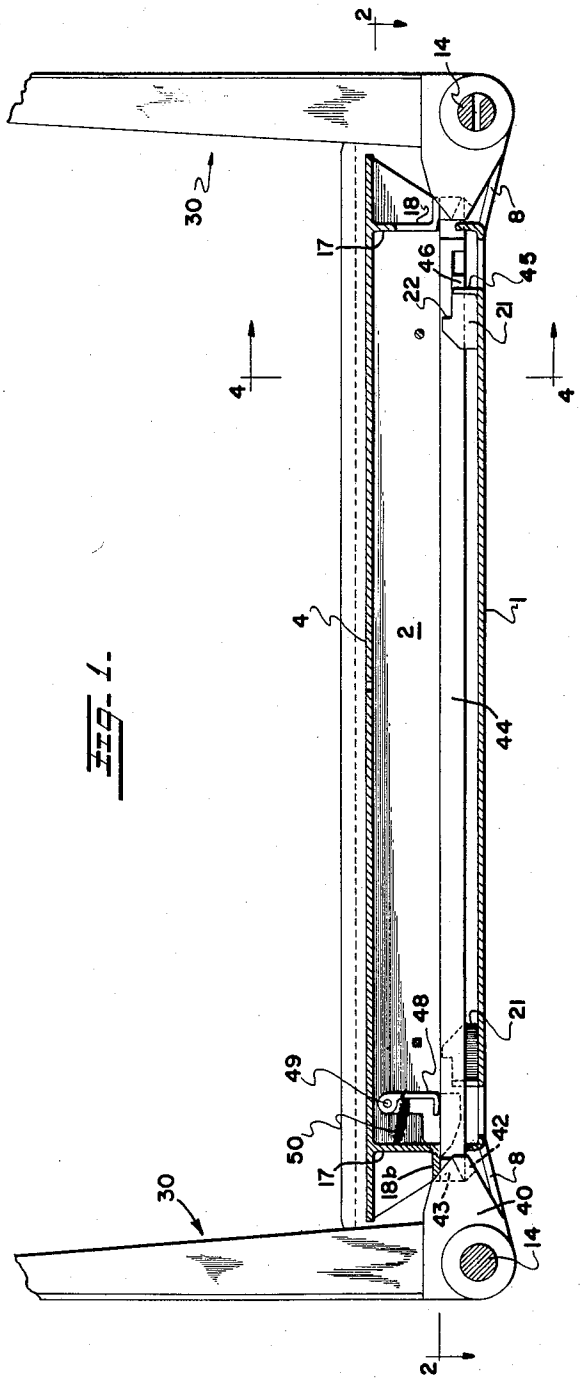


Fig. 1.

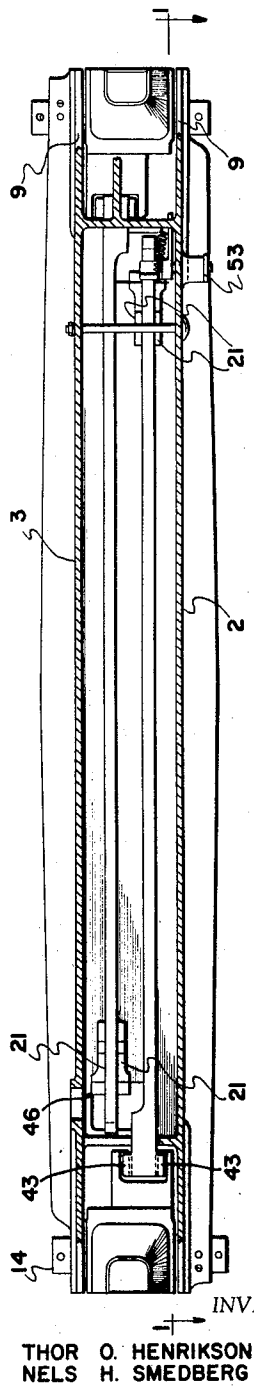


Fig. 2.

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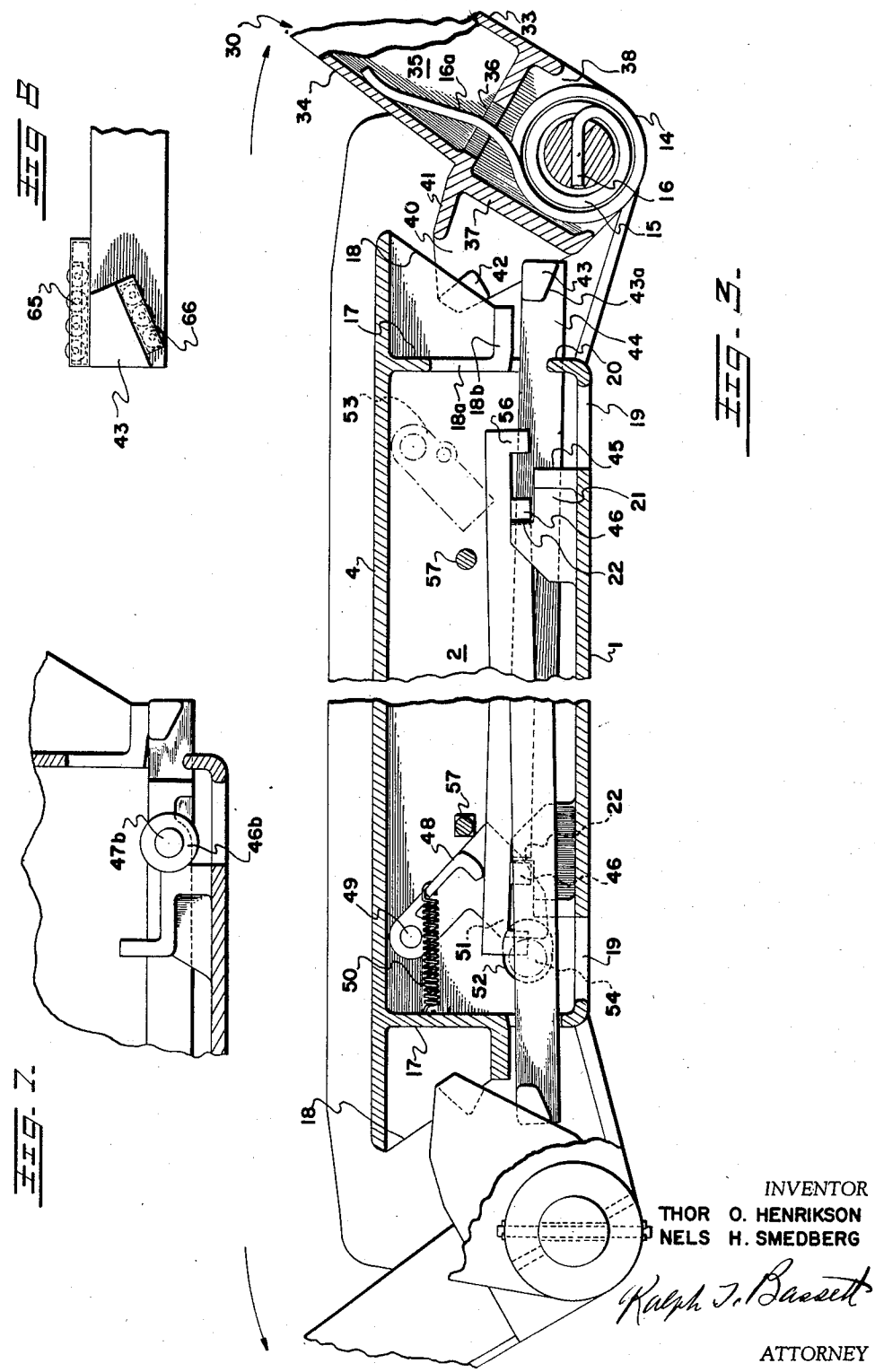


FIG. 8

FIG. 2.

FIG. 7.

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Fig. 4.

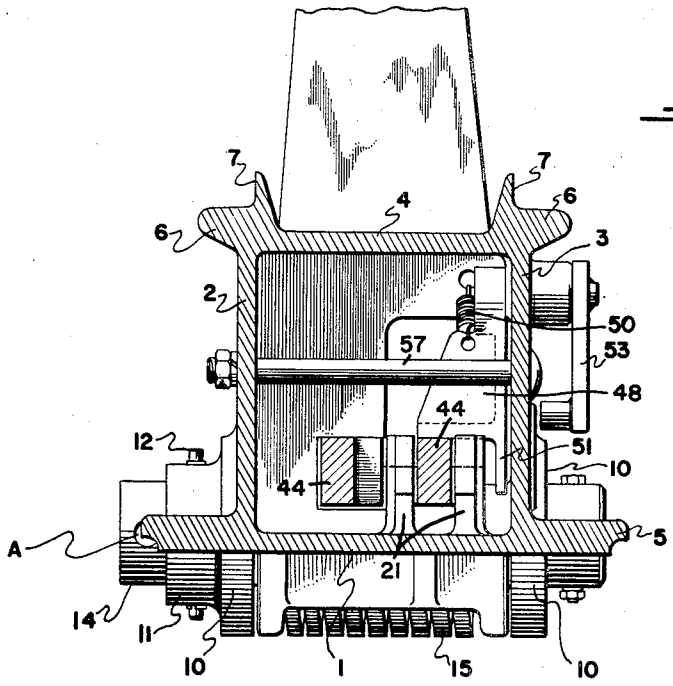


Fig. 6.

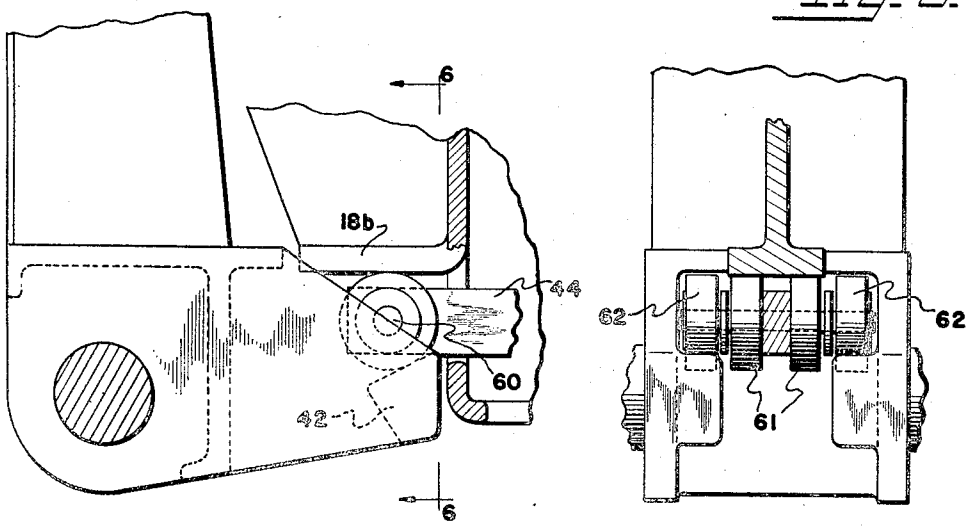


Fig. 5.

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LOGGING BUNKS

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Application December 27, 1954, Serial No. 477,786

12 Claims. (Cl. 105—282)

This invention relates to improvements in logging bunks for use in railway cars and other vehicles.

More specifically, the present invention comprehends the double coil spring stake structure shown in Henrikson Patent No. 2,688,939, issued September 14, 1954, and in addition incorporates a novel tripper bar structure for retaining the stakes in position.

In the prior art the stakes have in some instances been retained in position by either cables or chains, or a combination of cables and chains. Cables under severe usage tend to stretch and permit the stake to lean outwardly which may cause interference with the laws regulating maximum width over the load, etc. In connection with chain links, it has been found difficult in some instances to release them from their locking slots, due both to the shape of the links and the load imposed thereon. Cables and chains when in use are normally attached to the stakes some distance above the bunk body and this will normally interfere with the loading of the logs and require special consideration and attention to properly adjust certain size logs in position. This is due to the fact that a small log can be laid closer to the base of the stake than a large log and will require a different adjustment for length of cable or chain than a large log which has a greater radius requiring less cable or chain. This, of course, presuming that the stake is kept in vertical position. Not only do the chains and cables have the defects indicated above, but tripper bars when used in lieu of chains or cables are much safer in that they are not exposed to damage by the load, being enclosed in the bunk structure and protected by the walls of the bunk. Obviously a tripper bar is not subject to having its strands cut as in the case of a cable and in the event a cable strand is cut the cable becomes unsafe for use because of accidents resulting in the failure of cables or of the chains when the bunks are so equipped. Generally speaking and in addition to the facts set forth above, a bunk equipped with tripper bars requires less maintenance and fewer inspections and has less failures and, therefore, less damage occurs when the tripper bar is in use.

It is therefore the main object of this invention to provide a log bunk structure having double coil spring returns for the stakes and incorporating in such a bunk structure tripper bars of novel form.

Further objects of the invention will more clearly hereinafter appear by reference to the accompanying drawings forming a part of the instant specification, wherein like characters of reference designate corresponding parts throughout the several views, in which:

Fig. 1 is a longitudinal sectional view of the bunk structure showing the stakes in vertical position;

Fig. 2 is a section on line 2—2 of Fig. 1;

Fig. 3 is an enlarged longitudinal section similar to Fig. 1 but showing the stakes disengaged from the tripper bars and showing details of the internal structure of the bunk not shown in Fig. 1;

Fig. 4 is a section on line 4—4 of Fig. 1 showing details of the internal structure of the bunk;

Fig. 5 is an enlarged fragmentary section showing the stake with an alternate type of tripper bar in locked position;

Fig. 6 is a fragmentary section on line 6—6 of Fig. 5;

Fig. 7 is a fragmentary sectional view illustrating an alternate form of tripper bar structure; and

Fig. 8 is a disclosure of another modified form of tripper bar assembly.

In the present disclosure a logging bunk is shown as including the base plate **1**, side walls **2** and **3** and top **4**. This bunk structure may be fabricated or cast and incorporates in its design the thickened base flanges **5** and the top beads **6** including diverging flanges **7**. The base of the bunk has its outer ends **8** projecting downwardly to provide relatively heavy reinforced flanges **9**. The side walls **2** and **3**, adjacent each end are formed with aligned openings reinforced by thickened wall areas **10**, one of which includes a hub-like projection **11** for receiving a transverse lock pin **12** for locking the hinge pin **14**. The stakes **30** are spring urged to the upright position by a spring, the spring being shown at **15** and having one extremity **16** fixed to the hinge pin **14** and the other end **16a** extending into the stake as fully shown and described in Patent No. 2,688,939.

The base plate **1** of the bunk structure terminates at the end closure plates **17**, the latter being spaced inwardly of the top **4** of the bunk and the ends of the side walls **2** and **3** of the bunk structure tapering downwardly and inwardly as shown in Fig. 3 at **18**. The end closure plates **17** are each slotted as at **18a** to provide laterally spaced openings for the movement of the stake projections and the tripper bars as will more fully be hereinafter described. The end closure plates **17** at each side of the slot are formed with outwardly extending projections or stops **18b** which cooperate with the end of the tripper bar in the locking operation of the stake. The base plate **1** of the bunk body is formed adjacent each end with openings **19**, and the base at the outer side of the opening **19** extending upwardly to provide lips **20** while inwardly of the opening **19** spaced projections **21** are shown, these projections being spaced in the direction of the length of the bunk and forming guideways for the tripper bars and each including outwardly facing shoulders **22** to form stops for the tripper bar in its lengthwise movement. It will be understood that the stops **18b** in the end partitions, the flanges or lips **20** and the spaced guide members and shoulders **21** and **22** are duplicated at each end and at each side of the bunk body to provide structure for association with the tripper mechanism spaced at each side of the bunk body and operating in connection with the pair of stakes at the end of the bunk body. The openings **19** provide access for the insertion of a bar to engage the head **56** to force the tripper bar into locked position.

Normally a pair of stakes are provided, i.e. one at each end of the bunk body, however, both of these stakes are identical and are each provided with the same type tripper bar. The stakes are indicated by reference character **30**, these stakes being hinged on the pins **14** at the projecting ends of the bunk body as heretofore described. Each stake is fabricated to include vertical outer wall **33**, the outwardly and upwardly tapered inner wall **34** and side walls **35**, the latter being formed with a perforation **36** for the arrangement and movement of the free spring end **16a** as best shown in Fig. 3. The base of the stake includes a housing defined by inner wall **37** and side walls **38** for receiving the double coil spring **15** which is positioned about the hinge pin **14**, as heretofore set forth. Each of the stakes **30** is formed with an inwardly projecting nose extension defined by side walls **40** and upper wall **41**, the side walls **40** each include the inwardly projecting laterally spaced wedge shaped stops **42** which cooperate with the beveled face **43a** of the lateral projection

43 of tripper bar 44, it being obvious to one skilled in the art that the spring 15 normally tends to elevate the stake and to position the stops 42 for engaging the face 43a of its associated tripper bar 44. The stake 30 is moved to upright position by the spring 15 mounted on the pin 14 and is held in upright position by the tripper bar 44, the end 43 of which goes under the projection or stop 18b which projects from the end walls 17 of the bunk body as heretofore described.

The projections 18b overlie and are spaced from the stop 42 carried by the nose of the stake 30, this arrangement providing a space in which the lateral projections 43 of the tripper bar 44 are positioned when the stake is in locked position. The tripper bar 44 is locked against longitudinal displacement and therefore against movement from between the projection 18b and the nose stop 42 by means of interengagement of the shoulder 45 of the bunk with the projections 46 spaced inwardly of the ends of the tripper bar, these projections 46, when the parts are locked, dropping behind the shoulder 45. When the tripper bar is in locked position shown in Fig. 1, safety lock 48 swings downwardly on its pivot 49 into vertical position and is held thereby the spring 50 and projecting ear 51 covers the hole 52. To release the stake in order to unload the bunk, the safety lock 48 is first lifted by the handle 53 on the outside of the bunk. A pry bar is then inserted through opening 52 and under the tripper bar 44 as indicated at 54 in Fig. 3. With the pry bar in the opening 52, the safety lock is prevented from returning to its locked position and the outside of the bar can be pressed down to a position where the projections 46 clear shoulders 45. The projections 46 extend laterally on the tripper bar. Due to the angle of the face 43a of the lateral projection 43 at the other end of the tripper bar, this bar is forced toward the stake until stopped by the ledge 22. When in this position the stake is then free to swing out due to the weight of logs on the bunk and down as the inwardly projecting stops 42 are no longer restricted by the tripper bar. To lock the stake ready for reloading it is only necessary to utilize the pry bar by inserting the same in the opening 52 and pushing the projecting portion of the pry bar forwardly bringing the tripper bar back into position. The removal of the pry bar will permit the safety lock 48 to swing down into retaining position on top of the tripper bar. The bolts 57 which extend across the bunk from side wall to side wall act as limit stops to prevent the tripper bar 44 from being raised too high when being tripped and to permit removal of the tripper bar by removal of these bolts 57 during replacement and repair.

It may be found advisable to reduce friction between the coacting parts, as for instance the end of the tripper bar may be provided with an anti-friction roller as shown in Figs. 5 and 6. In these figures the tripper bar 44 is provided with a bearing pin 60 and on this pin are arranged the inner pair of rollers 61 and the outer pair of rollers 62. The inner pair of rollers will engage the bottom face of the shoulder 18b and reduce frictional movement therebetween, while the outer rollers 62 will travel on the inclined surfaces of the inwardly projecting lugs 42 and reduce frictional resistance therebetween and in this manner facilitate the operation.

Fig. 7 shows a modified construction of the free end of the tripper bar. In this disclosure the projections 46 are replaced by rollers 46b mounted on pin 47b, the pin extending through the tripper bar and the rollers being mounted on each end of the pin at each side of the tripper bar. These rollers 46b are provided for the reduction of the frictional resistance to the tripping operation, tending to facilitate the movement of the bar from its locked position when released in the usual manner.

A further illustration is shown in Fig. 8 in which the end of the tripper bar is provided with upper and lower sets of bearings 65 and 66, respectively, adapted to be associated with and reduce the friction when engaging the shoulders 18b and 42 as in the previous development. The rollers in Fig. 8 are shown as roller bearing assemblies and the number of rollers in each assembly may be determined by their size and the structure of the tripper extremity. The utilization of rollers will tend to prevent the galling of the metal as it wears and decrease friction.

It will be noted that in the present structure the assembly embodies the spring return stake and the tripper bar, although the latter is not a fixed part of the stake assembly as is conventional in the art. Tripper bars in the present development are freely floating elements capable of movement in the direction of their length within the bunk body for the purpose of locking and unlocking the stakes and each of the tripper bars is independently operable and controls a single stake to lock or release the same as may be required by conditions. The tripper bars, while freely floating structures, are nevertheless confined between guideways and limit pins which restrict their movement to the extent that they will normally retain their proper positions for actuation. The lock mechanism for each tripper bar is at its free end, the locking end of the tripper bar being arranged for movement between the nose portion 42 of the stake and the projecting flanges 18b, the action of the tripper bar being in a manner of speaking a wedging action to prevent the swinging of the stake as long as the end of the tripper bar is interposed between the part 42 and the flanges or stops 18b. The angle of the inclined faces of the projections 42 which are directly engaged by the associated end of the tripper bar is at an angle corresponding to the coefficient of friction of the material of which the parts are made, as for instance, steel to steel.

What we claim is:

1. In a bunk structure, a bunk body including bottom, top and side walls, end walls for said body spaced inwardly at each end of the bunk body and formed with openings therein, supports projecting from the lower portion of each end of the bunk body including spaced side walls, hinge pins mounted between the spaced side walls outwardly of the end walls, stakes mounted on each of the hinge pins, springs mounted on the hinge pins and normally urging said stakes to their upright positions, said stakes including inwardly projecting nose portions, a pair of tripper bars mounted in the hollow bunk body and shiftable in the direction of their length, one end of each of said tripper bars being adaptable to project through the openings in said end walls to engage and overlie the nose of said stakes when the stakes are in upright position, and separate means engaging the tripper bars at each of their ends to prevent the vertical displacement of said tripper bars when they are engaged with the nose portions of said stakes.

2. The structure of claim 1 characterized in that the tripper bars are free floating elongated bar-like elements and guide and stop means are provided within the bunk body for retaining the same in alignment.

3. The structure of claim 1 characterized in that the ends of the tripper bars which engage the stakes are provided with anti-friction elements.

4. The structure of claim 1 characterized in that the bunk body is provided with depending elements which overlie inwardly projecting end portions of the stakes when in its vertical position to provide stop members for limiting the movement of the parts when the tripper bars are brought into engagement with the stakes.

5. In a bunk structure including a bunk body having side walls, a hinge pin supported by the side walls, a stake mounted on the hinge pin for outward swinging movement from a vertical position, said stake having an inwardly projecting nose portion at its base, said nose portion including an inwardly inclined upper face, spring means carried by the bunk structure normally urging the stake to its vertical position, a tripper bar arranged in the bunk body and supported for free longitudinal sliding movement, means for guiding said slidable tripper

bar, wedge means at one end of the tripper bar and slidable therewith for engaging the upper inclined face of the nose of said stake when the latter is in its vertical position to lock the stake against outward swinging movement on its pivot, fixed means carried by said bunk body above the inclined upper face of said nose portion when the stake is in its vertical position holding the end of the tripper bar against said upper face, and means for locking the tripper bar against longitudinal displacement when in locking engagement with said stake.

6. In a bunk structure including a bunk body having side walls, a hinge pin supported by the side walls at one end portion of the bunk body, a stake mounted on the hinge pin for outward swinging movement from a vertical position, said stake including a nose portion normally positioned between the side walls of the bunk body, said nose portion including an upper upwardly inclined face, spring means carried by said hinge pin normally urging the stake to vertical position, a tripper bar freely slidable mounted within the bunk body, means fixed to one end of the tripper bar for engaging the upper inclined face of the nose of the stake to lock the same in vertical position, fixed stop means projecting from the bunk body and engaging the tripper bar for holding the parts in engagement, and means carried between the side walls of the bunk and engaging the other end portion of the tripper bar to lock the same against movement in the direction of its length.

7. The structure of claim 6 characterized in that the stake is provided with an inwardly projecting nose portion, the ends of which are provided with a pair of spaced stops for movement of the tripper bar therebetween and the tripper bar is provided with a pair of laterally projecting cam members for engaging the spaced stops.

8. The structure of claim 6 characterized in that means are provided within the bunk for limiting the vertical displacement of the tripper bar.

9. The structure of claim 6 characterized in that the stake is provided with an inwardly projecting nose portion, the ends of which are provided with a pair of spaced stops for movement of the tripper bar therebetween.

10. In a bunk structure including a bunk body having a base, side walls, and an end wall formed with a slot

and outwardly projecting spaced shoulders, a stake pivoted between the side walls of the bunk body outwardly of said end wall, spring means carried by the bunk structure for normally moving the stake to a vertical position, said stake including a nose portion defined in part by spaced side walls, said spaced side walls having their upper end portions including upper inwardly inclined faces, laterally spaced stop members carried by said base, a tripper bar mounted in the bunk body with its outer end portion adapted to extend between the spaced side walls of said nose portion of the stake, said tripper bar being freely slidable in the direction of its length and being provided with lateral projections at its outer end, said tripper bar being slidable to position said lateral projections between said outwardly projecting spaced shoulders and said upwardly inclined faces, means for locking the tripper bar against longitudinal movement, and stop means projecting from the bunk body and engaging the tripper bar for holding the same against vertical movement when in locking engagement with said stake.

11. The structure of claim 10 characterized in that hold-down means are provided normally movable in the direction of the length of the bunk to clamp the latter against sliding movement.

12. The structure of claim 10 characterized in that stop means are provided on the base plate of the bunk in the form of a pair of spaced guide members, said guide members having shoulders projecting upwardly into the path of movement of the tripper bar to limit its movement in the direction of its length.

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