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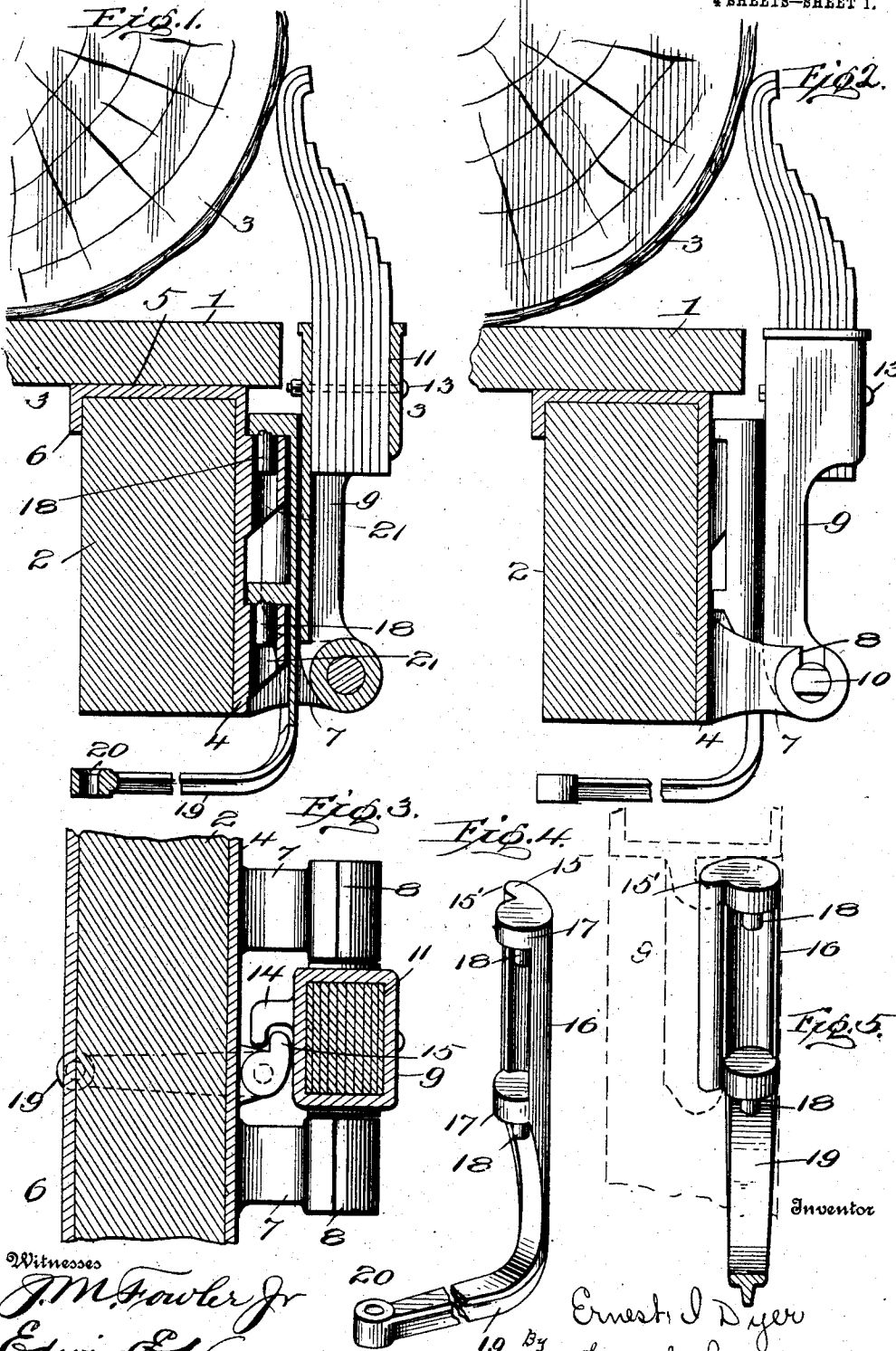
PATENTED SEPT. 17, 1907.

E. I. DYER.

MEANS FOR SUPPORTING AND RELEASING RETAINING STAKES.

APPLICATION FILED FEB. 1, 1906, RENEWED MAR. 27, 1907.

4 SHEETS—SHEET 1.



Witnesses
J. M. Fowler Jr
Edwin E. Crooman

Ernest I Dyer
By
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No. 866,344.

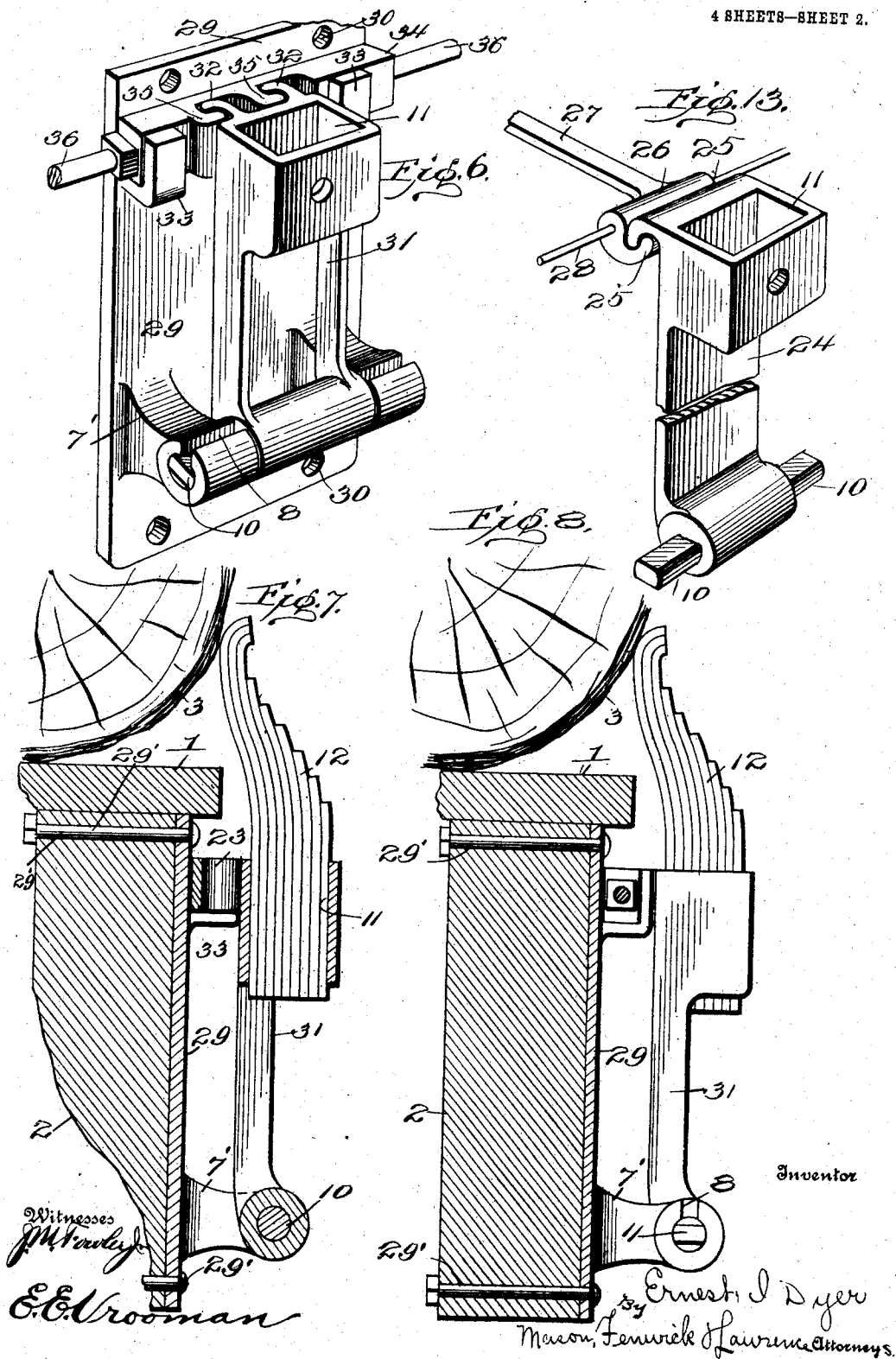
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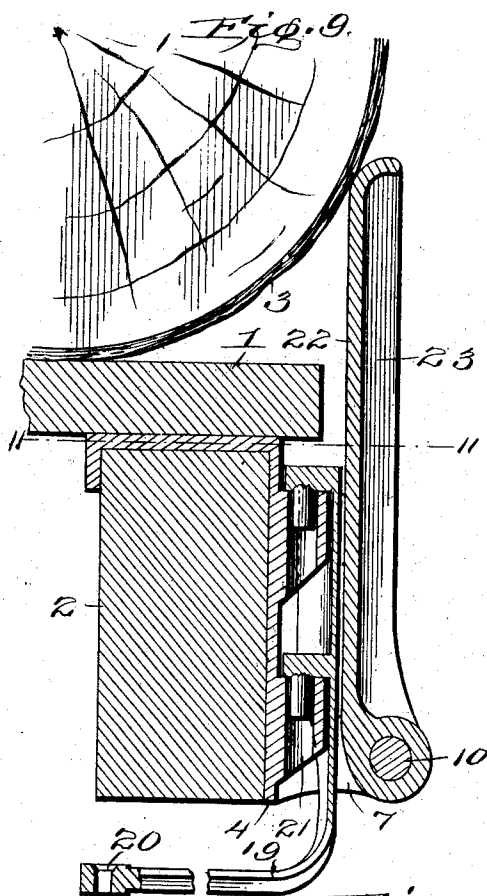
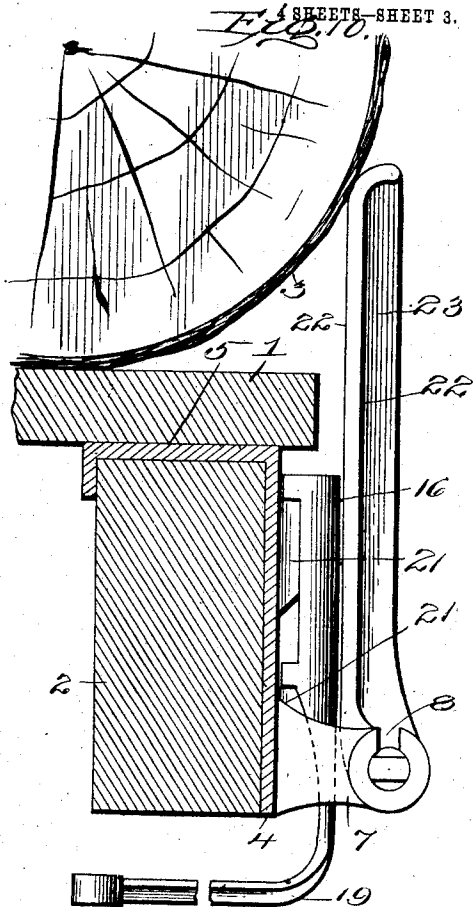
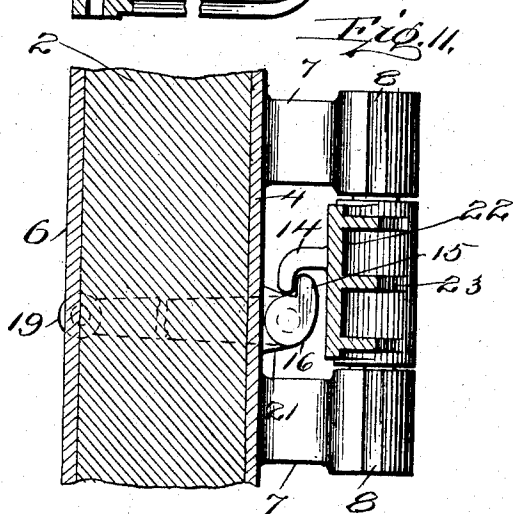
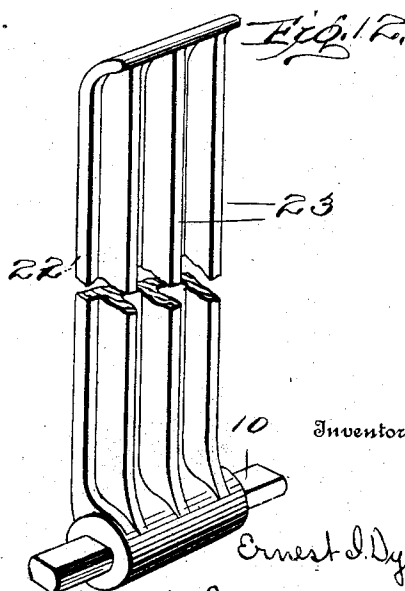
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SHEETS-SHEET 3.



Witnesses
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384

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No. 866,344.

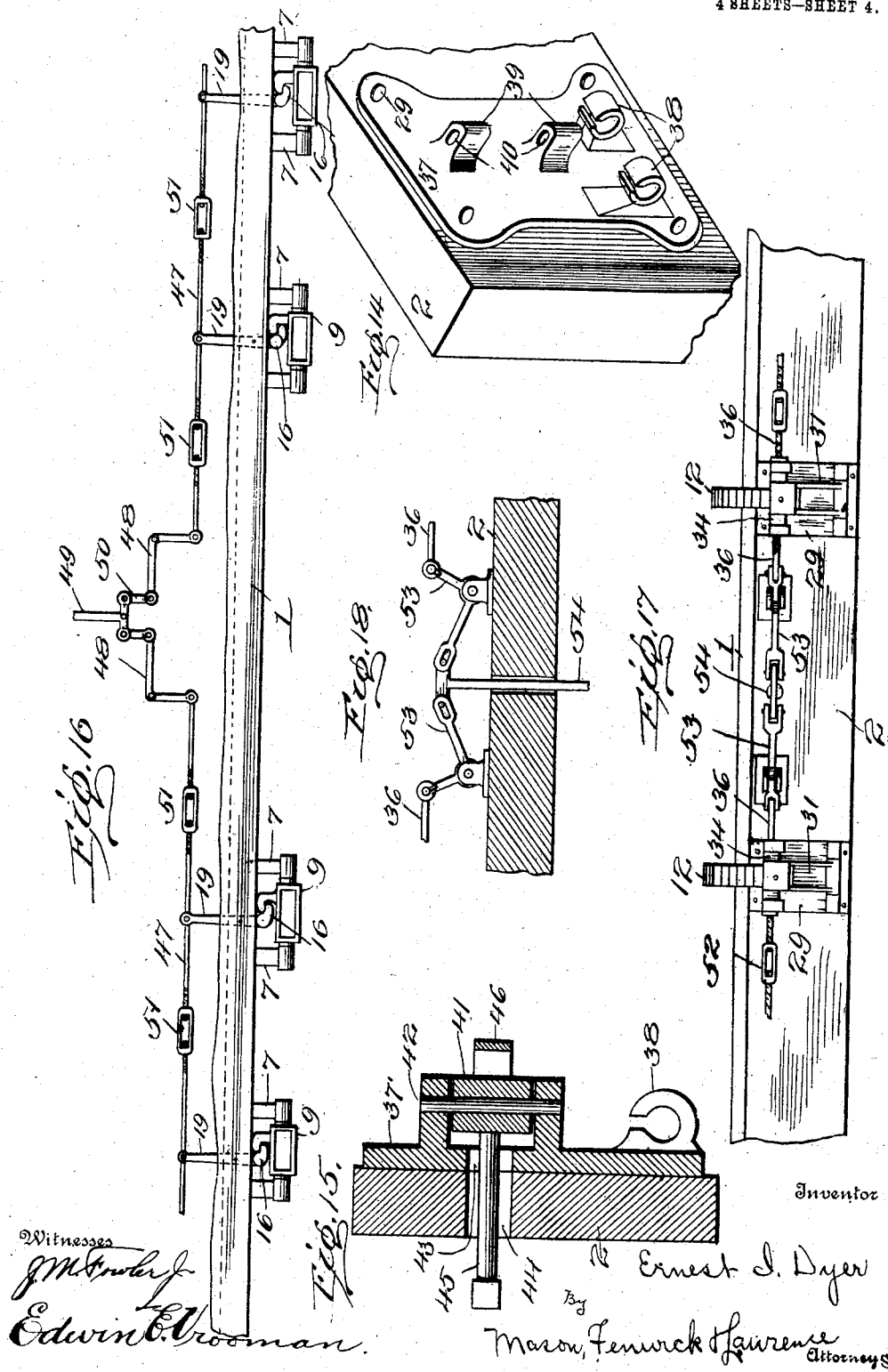
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4 SHEETS—SHEET 4.



UNITED STATES PATENT OFFICE.

ERNEST I. DYER, OF SEATTLE, WASHINGTON.

MEANS FOR SUPPORTING AND RELEASING RETAINING-STAKES.

No. 866,344.

Specification of Letters Patent.

Patented Sept. 17, 1907.

Application filed February 1, 1906, Serial No. 299,046. Renewed March 27, 1907. Serial No. 364,867.

To all whom it may concern:

Be it known that I, ERNEST I. DYER, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented certain
5 new and useful Improvements in Means for Supporting and Releasing Retaining-Stakes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the
10 same.

This invention relates to improvements in means for supporting and releasing retaining stakes.

The object of the invention is the provision of means for facilitating the retaining of an object, as for instance,
15 a log, upon a vehicle, and the automatic releasing of said object for permitting the same to be removed from said vehicle.

With this and other objects in view, the invention consists of certain other novel constructions, combinations, and arrangements of parts, as will be hereinafter fully described, illustrated in the accompanying drawings, and more particularly pointed out in the claims hereto appended.

In the drawings: Figure 1 is a transverse, sectional
25 view of a stake-supporting device constructed in accordance with the present invention, and showing the same secured to a support, preferably a flat car, while Fig. 2 is a similar view showing the pivotally mounted locking-member, stake-supporting member,
30 and stake in side elevation. Fig. 3 is a horizontal, sectional view taken on line 3, 3, Fig. 1. Fig. 4 is a perspective view of the swinging bolt or locking-member, while Fig. 5 is a perspective front view of said locking member, showing the stake-supporting member
35 in dotted lines in a cooperating position therewith. Fig. 6 is a perspective view of another embodiment of the present invention. Fig. 7 is a transverse, vertical, sectional view of the structure depicted in Fig. 6, and
40 Fig. 8 is a similar view of Fig. 7, showing the stake-supporting, vertically swinging member in side elevation. Fig. 9 is a transverse, vertical, sectional view of another embodiment of the present invention, showing
45 a vertically movable, hinged girder instead of the stake-supporting member. Fig. 10 is a similar view of Fig. 9, except the locking member and the girder are shown in side elevation. Fig. 11 is a horizontal,
50 section view taken on line 11—11, Fig. 9. Fig. 12 is a perspective view of the vertically swinging girder. Fig. 13 is a perspective view of another embodiment of the stake-supporting member and locking means
therefor. Fig. 14 is a perspective view of another embodiment of the supporting plate, constructed somewhat similarly to the plate depicted in Fig. 6. Fig. 15
55 is a transverse, vertical sectional view of a supporting-plate constructed similarly to the plate depicted in Fig. 14, and showing another embodiment of the lock-

ing means for securing the vertically swinging means, constituting the stake-supporting member or girder in its normal position. Fig. 16 is a plan view of the actuating rods and levers for controlling movement of the pivotally mounted locking members or bolts depicted in Figs. 1 to 5 and 9 to 11. Fig. 17 is a fragmentary view in side elevation of the rods and levers for actuating the reciprocating locking means, which
60 secure the stake-supporting members in their normal position, Fig. 6. Fig. 18 is a fragmentary, plan view of the bell-crank levers and the means for operating the same from the opposite side of the car.

This invention relates to improvements in supporting-stake devices, for instance, the girder devices shown
70 in Figs. 9 to 12, or stake-supporting devices, Figs. 1 to 5, so constructed as to afford simultaneous release of the members constituting the stakes, and at the same time afford a means for equalizing the load throughout the whole number of stakes.

This invention is designed primarily to be used in connection with logging cars or trucks, and is intended to take the place of the ordinary form of pockets used for supporting the stakes which prevent logs with which
80 the car is loaded from working off. Their use is intended to protect from injury the workman whose duty it has been heretofore to cut away the stakes above mentioned and further to reduce the time consumed in unloading such cars and the number of hands employed.

Although, as pointed out, primarily intended as an
85 appliance for use in connection with logging cars, the application of the invention can be extended to the support and synchronous release (with or without equalization of a load) of load-supporting stakes on all kinds of vehicles as well, or piles of logs or other material on the ground, on platforms, or anywhere.

In each of the embodiments, there is a support carrying reciprocating-actuated locking means, which locking means is employed for securing a vertically swinging member in position for preventing the load from
90 being removed from off a support, as for instance, a car. The stake supporting member or girder is hinged to a support and is adapted to swing in a vertical plane about pivots, by means of trunnions secured to its lower end. As will be hereinafter pointed out, this hinged
95 member can be of different forms, as for instance, a girder, or a member provided with a pocket for the reception of a stake, a rail, a spring, or any suitable appliance.

Referring to the drawings by numerals, 1 designates
105 the bottom of a car constituting a support, which is provided preferably with longitudinally extending side beams 2.

For the purpose of illustrating the application of this invention, I have shown in some of the figures a log 3,
110 resting upon the bottom 1 of the car or support. A vertical plate 4 is secured upon the outer face of the beam

2, by means of an integral, horizontal portion 5, which terminates in a comparatively short, vertical, inner extension 6. The portions 5 and 6 of plate 4 constitute a hook for retaining said plate upon the beam 2. Formed upon the lower portion of the plate are bearing lugs 7, 7, Fig. 3. Each bearing lug is provided with a longitudinally extending opening 8, which will permit stake-supporting member 9 to be removed from an assembled position with the plate 4 by reason of the fact that the trunnions 10, formed upon opposite sides of said stake-supporting member 9, are flattened, Fig. 2, thereby producing portions upon the trunnions of less width than the openings 8. If it is desired to remove the stake-supporting member 9, it will be necessary to swing the same to a position at right-angles to the plate 4 and then said member 9 can be easily removed from upon the bearing lugs 7.

The stake-supporting member 9 comprises preferably a body, which is provided with oppositely extending trunnions 10, at its lower end. The body 9 terminates in a pocket 11, within which pocket 11 a leaf-spring stake 12 is removably secured. The means whereby this yielding stake is secured within the pocket 11 is preferably a bolt 13, which extends transversely through the stake and the pocket of the hinged supporting member 9. Upon the back of the stake-supporting member 9 is a hook 14 which is adapted to be engaged by a hook 15 formed upon the body of the swinging or pivotally mounted locking member or bolt 16.

The locking member 16 is preferably provided with a hollow body and with annular portions 17, 17 formed in the ends of said body. Upon each of the annular portions 17 and depending therefrom, is a pin 18, constituting a lug. Integral with the lower end of the body is a curved, horizontal lever-arm 19, which arm 19 is provided with an aperture 20 formed near its outer end. Horizontal brackets 21 are formed integral upon the plate 4 preferably in vertical alinement. The pins 18 of the locking member 16 are positioned within the hollow brackets 21, when the parts of the device are assembled. By swinging the lever-arm 19, the locking member will be moved upon the supporting brackets 21 of plate 4 for causing the hook 15 to engage or disengage hook 14 of the supporting-member 9, when said member is in its normal, vertical position, Fig. 1. In each of the embodiments, the trunnions constitute a pin for supporting the hinged or vertically swinging member upon the bearing lugs or brackets.

Referring to the embodiment depicted in Figs. 9 to 12, a hinged girder 22 is carried by the bearing lugs or brackets 7 in a similar manner to the stake-supporting member 9. The girder, constituting a hinged, vertically swinging member, is provided at its lower end with the oppositely extending trunnions 10, which trunnions are provided with the flattened sides for permitting the removal of the girder from upon the bearing lug or brackets, if desired. This girder 22 is provided with strengthening webs 23. The girder 22, constituting a load-engaging and retaining element, is provided with a hook 14 formed upon its rear wall, which hook 14 is adapted to be engaged by the hook 15 of a pivotally mounted locking member 16.

Referring to Fig. 4, the locking surface 15' of the hook 15 of the locking member 16 is slightly curved, so that the load, which presses against the stake or verti-

cally swinging member tends to cause the same to swing down and release the load and also tends to cause the same to unlock to such an extent as to overcome the static friction wholly or in part of the entire unlocking mechanism, thus rendering it easy for one man to operate all of the devices at one side of a car. The surface 15' is also arranged so that the unlocking tendency will not be so great as to throw extensive strain on the rods and levers which connect the locking members of the various devices.

By referring to Fig. 5, it will be noted that the more nearly the locking surface approaches the position shown, the less the tendency is for the lock to open under the stress due to the load. It will be observed that a position can be easily determined where one man can operate by hand any number of these devices when subject to great load, simultaneously, with very slight effort, or even to have it so arranged that the load will operate the locking means itself, the operator merely releasing the rods connecting the lever arms 19 from restraint.

In Fig. 13, the stake-supporting member 24 is provided with a longitudinally extending hook 25 upon its upper, inner edge. The supporting-member is provided with a pocket 11 within which the load-engaging means, as for instance, spring-stake 12, is positioned. A horizontally positioned, pivotally mounted locking member 26 is supported in any suitable manner and co-operates with the hook 25 for securing the stake-supporting member 24 in its normal, vertical position. The locking member 26 is provided with a hook 25, which is adapted to interlock with the hook 25, and said member 26 is also provided with a lever-arm 27. The locking member 26 is provided with a rod 28, constituting trunnions, whereby said member 26 is pivotally carried by any suitable support.

Referring to the embodiment depicted in Figs. 6 to 8, the vertical supporting-plate 29 is provided with apertures 30, within which suitable fastening means, as for instance, bolts 29', are positioned for securing said plate 29 to the beam 2 of the car, constituting a movable support. The plate 29 is provided with bearing lugs or brackets 7', each lug or bracket 7' being similarly constructed to lugs or brackets 7. A hinged, vertically swinging member 31 is provided with trunnions 10, which trunnions are journaled in bearing lugs or brackets 7'. Within the pocket 11 of this laterally movable supporting member 31, is secured the spring or yielding stake 12. A pair of hooks 32 is formed integral upon the rear of said supporting-member 31 preferably near the upper end thereof. Brackets 33 are formed upon the plate 29 and said brackets 33 support a sliding bolt 34, which bolt is provided with hooks 35. These hooks 35 are adapted to engage hooks 32 for securing the hinged supporting-member 31 in its normal, vertical position, Fig. 6. By sliding bolt 34 upon the brackets 33, the hooks 35 can be disengaged from hooks 32 and thereby permit member 31 to pivot upon its brackets 7' and swing outwardly from plate 29 when desired. Rods 36 are employed for connecting a train of sliding bolts that are secured upon the side of a vehicle, as for instance, a logging car. By reciprocating the sliding bolt, the same can be moved from a locked position with respect to the supporting-member to an unlocked position, and subsequently, to

a locked position. In this embodiment, it is to be noted that the engaging surfaces of the hooks 32 and 35 are not formed parallel to the supporting-plate 29, but at an angle thereto, whereby, as heretofore stated, the load pressing outwardly upon the supporting-member 31 will tend to facilitate the unlocking of member 31 although, when the member 31 is in its normal, vertical position, Figs. 6 to 8, there will be comparatively no strain upon the locking members. The member against which the pressure of the load is exerted in all the embodiments, whether it be the stake-supporting, hinged members shown in Figs. 1 to 3, 6 to 8, and 13, or the load-engaging, hinged member shown in Figs. 9 to 12, slants slightly inwardly towards the support or car at an angle to a vertical plane through the axis of the pivot of said member, thereby permitting all of the vertically swinging members when moved to their normal, upright position to be simultaneously locked in said position for preventing lateral displacement of a load off of the support, as for instance, the car. This is preferably accomplished by having the bearing lugs or brackets 7' of sufficient length to permit the vertically swinging member to lean inward when in its locked position. After the vehicle is unloaded, one person can quickly move all of said members to their upright position, and then lock the members in said position by causing longitudinal movement of the actuating means which control the locking-members or means.

Referring to Fig. 14, the vertical supporting-plate 37 is secured to the beam 2 by bolts 29', as is plate 29. The plate 37 is provided with bearing lugs or brackets 38, which are similarly constructed to lugs or brackets 7 and 7'. Vertically aligned supporting-members or brackets 39 are formed upon the plate 37, each bracket 39 being provided with an aperture 40. By reason of the fact that the apertures 40 register, a member 16 may be supported upon these brackets, or if desired, locking member 41, Fig. 15, may be supported upon said brackets by positioning a pin 42 within the apertured portions thereof. This pin performs the same function as the pins or depending lugs 18 of the locking member 16.

In Fig. 15, the plate 37' is provided with an elongated aperture 43, which registers with a similarly constructed aperture 44 formed in beam 2. The locking member 41 is provided with a rearwardly extending, straight lever 45, which lever 45 is positioned within apertures 43 and 44. It will be obvious that this lever or arm 45 extends through the beam 2, and may be operated in a similar manner to the sliding bolt 34, constituting a locking member, or the pivotally mounted locking member 16. The locking member 41 is provided with a hook 46, which is adapted to cooperate with the hook of a hinged, vertically swinging member, and may be assembled with the plate in the same manner, as vertically swinging members 9, 22, and 31 are secured upon their respective plates or supports.

The yielding load-engaging means, as for instance, leaf-spring stake 12, together with the vertically swinging supporting-means therefor, constitutes a vertically swinging member whose function is substantially the same as the vertically swinging member depicted in Fig. 12. Of course, in some instances, as upon logging cars, a material advantage is obtained by employing

the yielding load-engaging means upon the vertically swinging members, for the reason that owing to the irregular outline of the logs, it is necessary to have a stake, which will press against the log, although an even surface is not presented to the stakes. The springs normally extend inward towards the center of the car a greater distance than when the log is pressing against the same, as shown in dotted lines Figs. 1 and 2, but when a great amount of pressure is brought to bear against the yielding portion of the vertically swinging members, the same will be pressed outward slightly, although some of the members may not be owing to the irregular outline of the log. By this peculiar structure, the load is evenly distributed upon all of the stakes throughout the entire length of the log or logs.

In Figs. 16 to 18, I have shown the actuating means whereby the locking means for the load-retaining members are secured against pivotal movement. In Fig. 16, the lever arms 19 of the locking members 16 are connected by means of rods 47, which rods 47 are reciprocated longitudinally of the car through the medium of bell-cranks 48, 48 and a transverse rod 49. The rod 49 is connected to the bell-cranks 48 by means of links 50. The rod 49 is operated by a person standing on the opposite side of the car to that side carrying the stake-supporting members 9. The rods 47 may be adjusted with respect to each other for tightening the same by means of turn-buckles 51. In Fig. 17, the rods 36, which are connected to the sliding bolts or member 34 may also be tightened by means of turn-buckles 52. Bell-cranks 53 are pivotally mounted upon the beam 2, and these cranks are connected by a transverse, manually operated member 54. The member 54 is preferably actuated on the opposite side of the car or vehicle carrying the vertically swinging members 31. I have provided one side of a vehicle with vertically swinging members which, by locking means, are secured in position for retaining a load upon a vehicle, and manually operated means is connected to said locking means and operated from the opposite side of the car for controlling movement of said locking means.

What I claim is:

1. In a device of the character described, the combination with a support, of vertically swinging means provided with a flexible, upper portion, carried by said support, and means for locking said swinging means in a fixed position.

2. In a device of the character described, the combination of laterally swinging, flexible load-engaging means, and locking means for securing said load-engaging means in a fixed position.

3. In a device of the character described, the combination with a support, of a vertically swinging member provided with a spring, carried by said support, and means for locking said swinging member in a vertical position.

4. In a device of the character described, the combination with a support, of bearing lugs carried by said support, each lug provided with a longitudinally extending opening, load-engaging means journaled in said lugs, and means for locking said load-engaging means in a fixed position.

5. In a device of the character described, the combination with a support, of bearing lugs carried by said support, each lug provided with a longitudinally extending opening, a vertically swinging member provided with trunnions, carried by said lugs, each trunnion provided with flat sides, the trunnions journaled in said lugs, said member being removably secured upon said lugs, and means for securing said member in a fixed position.

6. In a device of the character described, the combina-

tion with a support, of flexible load-engaging means carried by said support, and means for securing said engaging-means in a fixed position.

5 7. In a device of the character described, the combination with a support, of an outwardly movable flexible load-supporting member carried by said support, and means for securing said member in a fixed position.

8. In a device of the character described, the combination with a support, of hinged member carried by said support, pivotally mounted locking means carried by said support and cooperating with said hinged member for securing the same in a locked position, horizontally movable rods connecting said locking means, bell-cranks connected to said rods, and means for synchronously actuating said bell-cranks, and thereby imparting movement to said locking means.

9. In a device of the character described, the combination with a vehicle, of load-retaining means carried by one side of said vehicle, locking means for preventing movement of said load-retaining means, and rods connected to said locking means and a system of toggles connected to said rods and operated from the opposite side of said vehicle for controlling movement of said locking means.

10. In a device of the character described, the combination with a support, of a movable leaf-spring stake carried by said support, and means for locking said stake in a stationary position. 25

11. In a device of the character described, the combination with a support, of a plate provided with vertically aligned brackets carried by said support, pivotal load-engaging means carried by said plate, and pivotally mounted locking means carried by said brackets and cooperating with said load-engaging means for securing the same in a stationary position. 30

12. In a device of the character described, the combination with a support, of vertically aligned brackets carried by said support, vertically swinging load-engaging means carried by said support, and locking means pivotally mounted upon said brackets for securing said load-engaging means in a stationary position. 35 40

In testimony whereof I affix my signature in presence of two witnesses.

ERNEST I. DYER.

Witnesses:

G. WARD KEMP,
MARK WHELAN.