A. H. IRVING & D. R. TANNER.

DRYING KILN TRUCK TAKE-UP.

APPLICATION FILED JAN. 19, 1915.

1,154,315.

Patented Sept. 21, 1915.

2 SHEETS—SHEET 1.

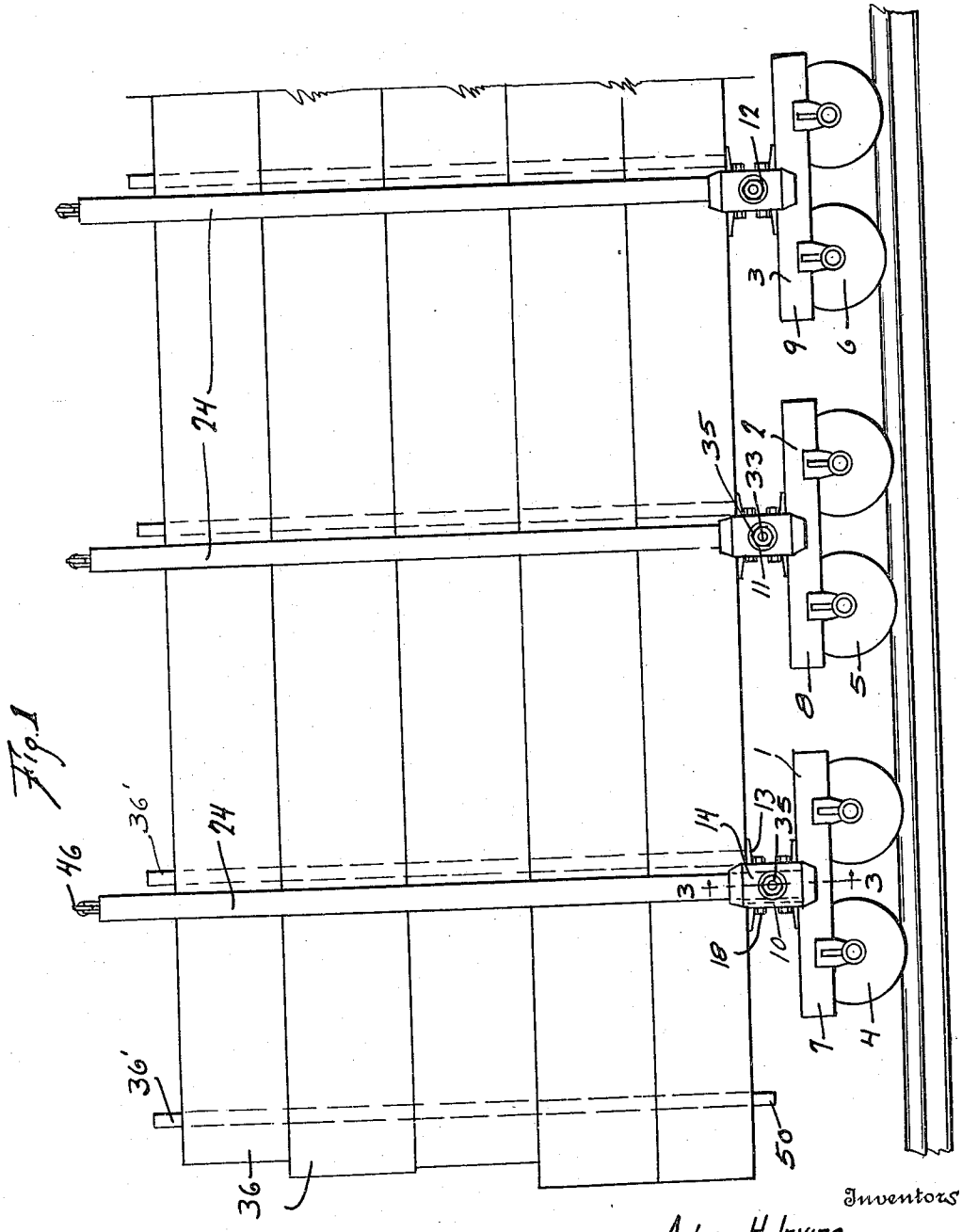


Fig. 1

Witnesses

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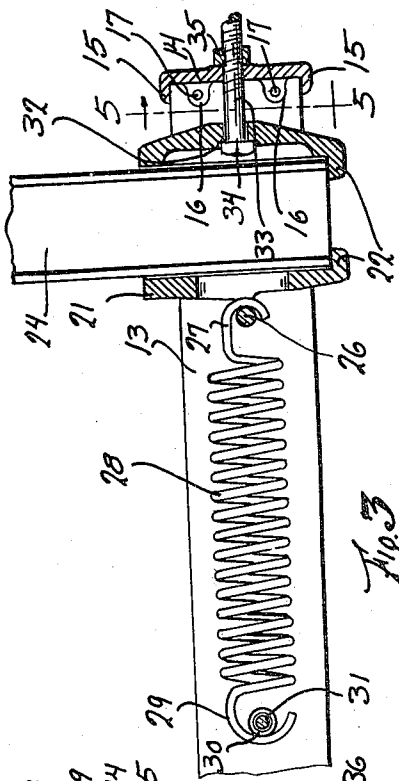


Fig. 3

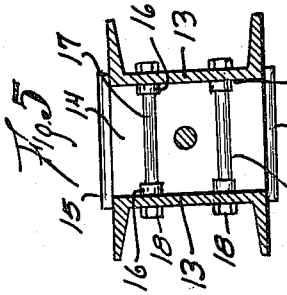


Fig. 5

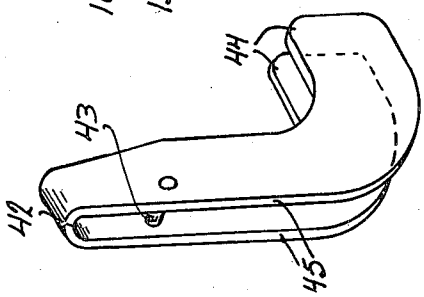


Fig. 4

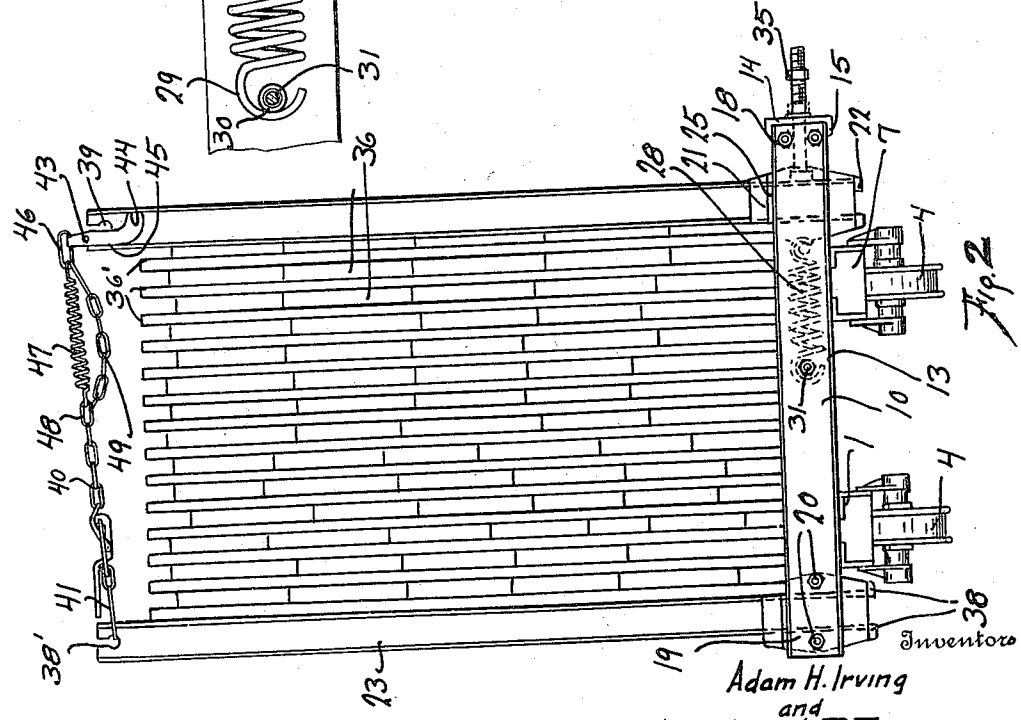


Fig. 2

Witnesses

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DRYING-KILN-TRUCK TAKE-UP.

Specification of Letters Patent. Patented Sept. 21, 1915.

1,154,315.

Application filed January 19, 1915. Serial No. 3,073.

To all whom it may concern:

Be it known that we, ADAM H. IRVING and DANIEL R. TANNER, citizens of the United States, residing at Spokane and La Grande, respectively, in the counties of Spokane and Union and States of Washington and Oregon, have invented certain new and useful Improvements in Drying-Kiln-Truck Take-Ups, of which the following is a specification.

The primary object of this invention is to maintain or exert a substantially constant pressure on material that is being kilned or dried so as to prevent deformation as a result of shrinkage.

The device of this invention is particularly designed for use in connection with dry kiln trucks for lumber and, as well known, the latter is arranged in stacks and wheeled in on the trucks to be kilned. Heretofore, in the absence of means for tightly holding a stack of boards or other form of lumber, the shrinkage resulting from the kiln process, and by reason of the contraction in bulk, would cause the boards to warp and thereby greatly reduce their immediate market value.

Considered more specifically, it is the object of this invention to equip the trucks of the dry kiln type with a set of fixed or stationary stakes, to support the stack of lumber on one side thereof, a plurality of take-up stakes engaging the stack of lumber on the opposite side in a manner to move up and tightly grip the stack of lumber, or in other words, hold the stack between the stakes in such a manner as to prevent warpage.

A further novel and very important feature of the invention consists in providing a plurality of take-up stakes each of which is independently under take-up stress, with respect to each other, so that irrespective of any lack of uniformity in shrinkage, the stack of lumber will be tightly gripped between the fixed and take-up stakes.

The device of this invention has other features of novelty which will be more fully described in connection with the accompanying drawings and which will be more particularly pointed out in and by the appended claims.

In the drawings:—Figure 1 is a view in side elevation of a dry kiln truck embodying the most preferred form of the invention. Fig. 2 is an end view thereof. Fig. 3 is a sectional view on line 3—3 of Fig. 1. Fig. 4 is a perspective view of a tie line holder. Fig. 5 is a sectional view on line 5—5 of Fig. 3.

Like characters of reference designate similar parts throughout the different figures of the drawings.

When the device of this invention is incorporated in the form of a truck, the same may consist of a plurality of sets of trucks indicated at 1, 2 and 3. Each truck consists of wheels 4, 5 and 6 and a truck frame mounted thereon, as indicated at 7, 8 and 9.

Extending transversely, and mounted upon each set of trucks, are bolsters 10, 11 and 12 all of which are similar in construction and only one of which need be described in detail. Each bolster is shown formed of two lengths of channel iron 13, the lower flanges of which may be secured to the truck frames, rigidly, in any desired manner. The channels 13 are connected to form a rigid bolster by means which may consist of an end cap indicated at 14. Said cap is provided with upper and lower flanges 15 which are proportioned to overlap the channels 13 so as to rigidly hold the latter against relative vertical displacement. The cap 14 is provided with inwardly projecting lugs 16 which engage the inner faces of the webs of the channels 13 so as to hold the latter in predetermined spaced relation. The spacing lugs 16 are apertured for passage therethrough of bolts 17 which also extend through the webs of the channels and are secured by nuts 18. By means of the foregoing construction, one end of the bolster is made absolutely rigid. The other end of the bolster is made rigid by means which includes a fixed stake socket, indicated as a whole at 19, and disposed between the channels 13 so as to hold the latter in proper spaced relation. Bolts 20 rigidly connect the fixed stake socket with the channels 13 in a manner which will be clear by reference to Fig. 2. The fixed stake socket is in all respects similar to the movable stake socket, which will now be described, except in the omission of a few slight details.

The movable stake socket comprises an open ended rectangular frame 21 having four walls within which the lower end of the stake is received and being provided

with inwardly projecting supporting flanges 22. The fixed stakes are indicated at 23 and the movable stakes at 24 and they are preferably formed of I-iron and the fixed and movable sockets are so proportioned and arranged that the webs of the I-beams or I-irons will be disposed transversely of the longitudinal axis of the truck so as to afford the greatest amount of strength to the load imposed thereon. Because of the fact that the movable stake sockets are slidable between the channels 13, they are provided with supporting flanges 25 for engagement with the tops of the channels 13 so as to support the sockets 21 therebetween and in a manner to permit of sliding movement of the movable sockets along the bolsters. As shown more particularly in Fig. 3, the movable socket 21 is provided with an eye 26 to which one end 27 of a contractile spring 28 is connected. The end 27 is hook-shaped to engage the eye 26 and the remaining end 29 is also hook-shaped to be connected with a spacing pipe sleeve 30 which is of sufficient length to engage the channels 13 with its ends. The sleeve 30 is supported upon a bolt 31 which extends through the webs of the channels 13 and is secured thereto by a nut.

The function of spring 28 is to advance the movable stakes 24 toward the material to be disposed on the truck in order to maintain the movable stakes 24 in firm contact with the material irrespective of the amount of shrinkage in volume of the latter.

Means is provided for adjusting the movable stakes so that the truck can be loaded, and to prevent the springs 28 from acting until the movable stakes are released for action by their springs.

In one wall of the socket 21, as indicated at 32, an aperture is formed for receiving the shank and head of an adjusting bolt 33, the head 34 of the bolt fitting in the recess so as to prevent rotation of the bolt with respect to the socket 21. The bolt 33 extends through a smooth bore formed in the end cap 14 and an adjusting nut 35 is turned on the threaded end of the bolt for engagement with the end cap 14.

When the truck is utilized for lumber, the latter will be stacked with the boards 36 on edge and with the boards of each upright tier suitably held in spaced relation by lengths of boards which are called "stickers," as indicated at 36'. Before the stack of material is disposed on the bolsters, the nut 35 will be turned against the end cap 14, as regards each movable stake, and the movable stakes will be independently moved outwardly in their bolsters toward the end caps 14, as indicated in Fig. 3. The movable stakes 24 will be placed in their sockets and after the stack of lumber is disposed upon the truck, then the fixed stakes 23 will be set in their sockets. After the fixed stakes 23 have been set in position, the nuts 35 will be turned outwardly or to the right of Fig. 2, so as to permit the springs 28 to draw the movable sockets 21 toward the material and thereby cause the movable stakes 24 to engage the material and clamp the same securely between the movable and fixed stakes. The springs 28 are of sufficient strength to bodily shift the stacks toward the fixed stakes 23. The fixed stakes 23 are supported in the sockets 19 by supporting flanges 38.

Means is also provided for connecting the upper ends of the movable and fixed stakes and such means will now be described in detail.

The fixed stakes 23 are notched as indicated at 38', and in practice, we also likewise notch the movable stakes 24, as indicated at 39, because of the fact that the stakes are interchangeably used in either the fixed or movable sockets. A tie line which may be in the form of a link chain 40 is provided with a loop end 41 adapted for insertion in the notch 38' of the fixed stake 23. A line fastener is shown in detail in Fig. 4, which comprises a strip of steel or like rigid material bent upon itself as indicated at 42 and having its sides or bent ends tied by means such as a rivet 43. The lower ends, or rather the terminals 44 thereof project laterally of the body of the fastener a sufficient distance so that when the fastener is disposed astride of the web of the movable stake 24, as indicated in Fig. 2, the terminal bent ends 44 will engage the outer I-beam flanges whereas the opposite margins 45 of the forked or bifurcated portions will rest against the inner flanges of the I-beam constituting the movable stake 24. The stop 43 will limit movement of the forked fastener by engaging the end of the web of the stake 24. The remaining end of the chain 40 is provided with a link 46 which is secured in the bight or point of bend 42, permanently. Thus in putting the chain or tie line in place, the end 40 will be fixed to the stake 23 and the fastener will be mounted on the stake 24. In order to take up slack due to shrinkage, at the upper ends of the stakes, there is a spring 47 employed, having one end secured to terminal link 46 and having its other end secured to a selected intermediate link 48, of the chain. A slack portion of the chain, as indicated at 49, will be formed adjacent the points of connection of the spring so that if the latter should break the stakes would still be connected in such a manner as to prevent the stack of lumber from falling as a result of such breakage.

A point of advantage in this invention is that the "stickers" 36' may, if desired, be placed in line with the fixed and movable

stakes so that the pressure of the stakes laterally of the stack will never have a tendency to bend the boards as a result of pressure, the pressure on the boards in this invention, being against an uninterrupted thickness of material. Furthermore, by reason of the tension on the boards of the stack, it is possible to place "stickers" near the free ends of the boards, as indicated at 50 so as to prevent the free ends of the boards from warping and twisting, an expedient which is not possible in cases where a constant take-up pressure is not provided.

It will be seen that the tiers of boards comprising independent bodies arranged in a stack, are acted upon by independent devices in the form of the movable stakes and their appurtenant parts, such independent devices serving to take up slack due to shrinkage and hold the boards closely together irrespective of lack of uniformity of shrinkage, thereby very greatly enhancing the value of the product treated by the kiln.

It is believed that the advantages and utility of this invention will be fully understood from the foregoing description, and while we have herein shown and described one specific form of our invention, we do not wish to be limited thereto except for such limitations as the claims may import.

We claim—

1. In a drying kiln shrinkage take-up means, mechanism for supporting the material to be kilned, and automatically acting means exerting a substantially constant follow up pressure at different points along the material during shrinkage and irrespective of the extent or variation of reduction of volume thereof, substantially as described.

2. In a drying kiln shrinkage take-up means, mechanism for supporting the material to be kilned, and a plurality of independently acting devices exerting a follow up pressure on the material during shrinkage reduction of volume thereof, substantially as described.

3. In a drying kiln shrinkage take-up means, mechanism for supporting a stack of bodies to be kilned, means supporting the stack on one side thereof, and a plurality of independently and automatically acting devices engaging the stack on the opposite side to maintain a substantially constant pressure on the stack during shrinkage and irrespective of the extent or variation of reduction of volume thereof, substantially as described.

4. In a drying kiln shrinkage take-up device, a dry kiln truck for supporting the material to be kilned and provided with fixed stakes, and movable stake devices for maintaining the material between said stakes under substantially constant pressure during shrinkage and irrespective of the extent or variation of reduction of volume of the material, substantially as described.

5. In a drying kiln shrinkage take-up device, a dry kiln truck for supporting a stack of material to be kilned and provided with fixed stakes for engaging the stack on one side thereof, and spring actuated movable stake devices engaging the stack on the opposite side thereof to maintain the interposed stack under substantially constant pressure during shrinkage and irrespective of the extent or variation of reduction of volume thereof, substantially as described.

6. In a drying kiln shrinkage take-up device, a dry kiln truck for supporting a stack of bodies to be kilned and provided with fixed stakes for engaging the stack on one side thereof, a plurality of movable stakes on said truck for engaging the stack on the other side thereof, and a spring for each movable stake to force the latter against the stack and compress the stack under a substantially constant pressure during shrinkage and irrespective of the extent or variation of reduction of volume thereof, substantially as described.

7. In a drying kiln shrinkage take-up device, a dry kiln truck for supporting a stack of bodies to be kilned and provided with stakes engaging the stack on one side thereof, movable stakes engaging the stack on the opposite side thereof, and spring devices connected with the ends of the movable stakes for subjecting the stack to a substantially constant pressure between said stakes during shrinkage reduction of volume of the stack, substantially as described.

8. In a drying kiln shrinkage take-up device, a dry kiln truck for supporting a stack of bodies to be kilned and provided with stakes engaging the stack on one side thereof, movable stakes for said truck for engagement with the opposite side of said stack, spring devices connecting the ends of the first named and movable stakes to compress the interposed stack during shrinkage, and spring devices connected with the truck and with the remaining ends of the movable stakes for maintaining the latter in pressure engagement with the stack during shrinkage, substantially as described.

9. In a drying kiln shrinkage take-up device, means for supporting the material to be kilned and provided with a fixed stake and a movable I-beam stake for engaging the material on opposite sides thereof, and a tie line device connected with the fixed stake and having a forked fastener straddling the web of the I-beam stake and provided with portions for engagement with the oppositely disposed flanges of said beam to releasably hold said fastener on said beam, substantially as described.

10. In a drying kiln shrinkage take-up device, means for supporting the material to be kilned and provided with fixed stakes for engaging the material on one side and

movable spring actuated stakes for engaging the material on the other side thereof, and tension means connecting the tops of the fixed and movable stakes and comprising a link chain connected with said fixed and movable stakes, and a spring connected with intermediate links of said chain, substantially as described.

11. In a drying kiln shrinkage take-up device, a bolster for supporting the material to be kilned, a stake socket fixed to said bolster, a stationary stake insertible in said fixed socket for engaging the material on one side thereof, a socket slidable on said bolster, a stake insertible in said slidable socket for engagement with the material on the opposite side thereof, and means actuating said slidable socket to hold the stake of the latter in follow up pressure engagement with the material to maintain the latter under substantially constant pressure between said stakes, substantially as described.

12. In a drying kiln shrinkage take-up device, a bolster for supporting the material to be kilned and provided with a fixed stake for engagement with the material on one side thereof, a socket slidable in said bolster, a stake insertible in said slidable socket for engagement with the material on the opposite side thereof, and means actuating said slidable socket to hold the stake thereof in follow up pressure engagement with the material to maintain the latter under substantially constant pressure between said stakes, substantially as described.

13. In a drying kiln shrinkage take-up device, a bolster for supporting the material to be kilned and provided with a fixed stake for engagement with the material on one side thereof, a socket slidable in the bolster, a stake insertible in said slidable socket for engagement with the material on the opposite side thereof, means for holding said slidable socket and its stake away from the material, to load the latter, and means actuating the slidable socket to engage its stake with the material, substantially as described.

14. In a drying kiln shrinkage take-up device, a bolster for supporting the material to be kilned and having means engaging the material on one side thereof, said bolster being formed of parallel members, a cap rigidly connected with the ends of said members and having portions engaging said members to hold the same in spaced relation, a socket slidable between and supported on said members, a stake insertible in said socket for engagement with the material to compress the same against said means, an adjusting device associated with said socket and cap to move and hold the former away from the material, and means connected with said socket and bolster for actuating the former to hold its stake in substantially constant pressure engagement against the material, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

ADAM H. IRVING.
DANIEL R. TANNER.

Witnesses:
NELLIE HILLS,
C. H. FINN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."