Oct. 27, 1925. 1,558,983

F. W. HORSTKOTTE

LUMBER PILER

Filed Nov. 18, 1924 3 Sheets-Sheet 1

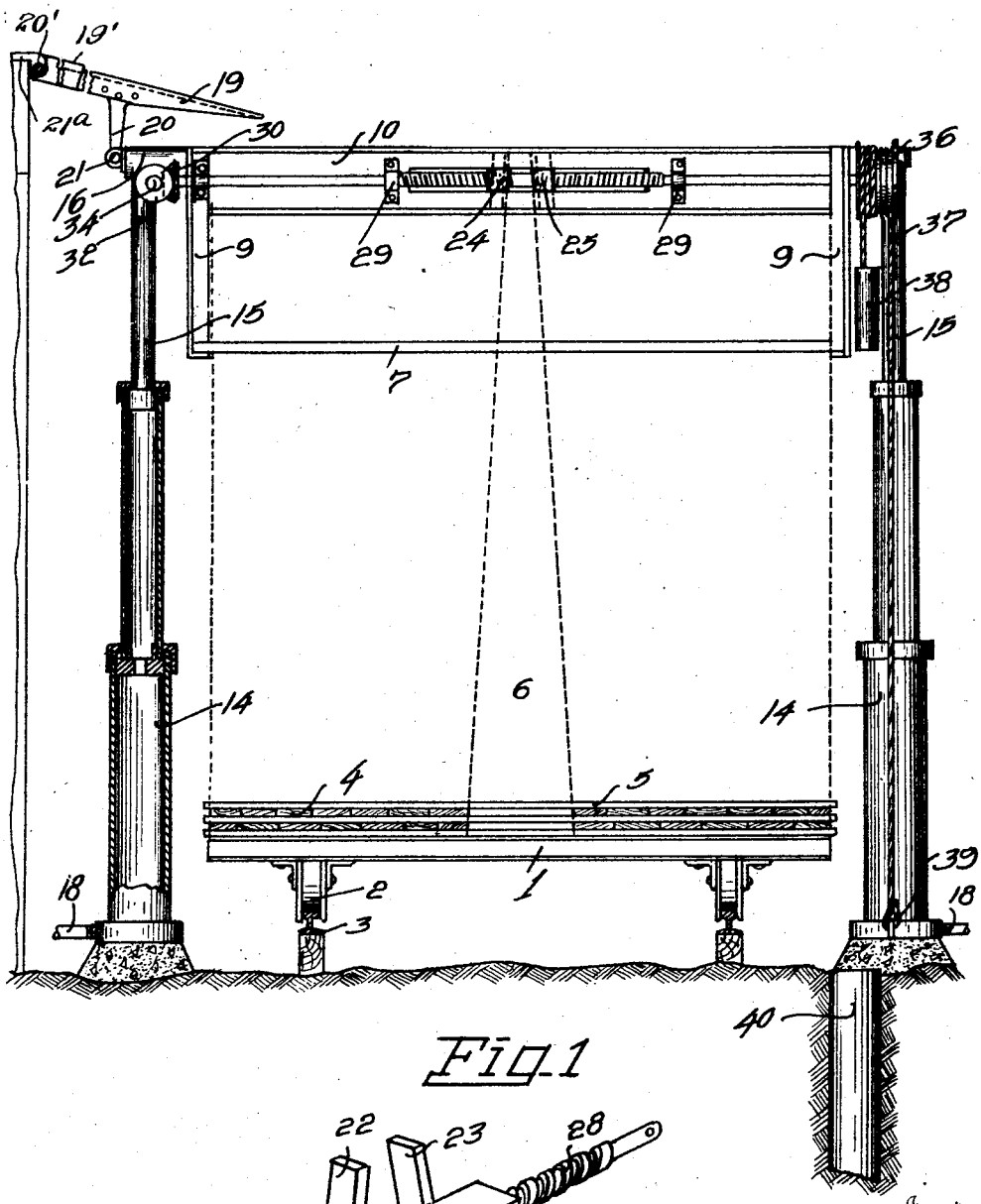


Fig. 1

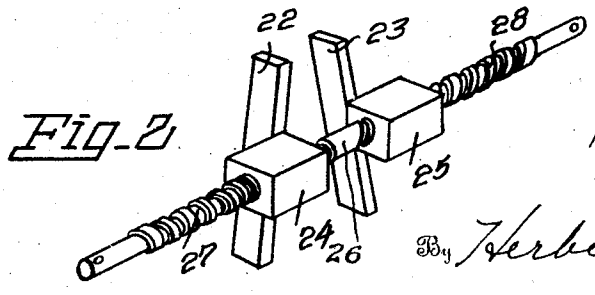


Fig. 2

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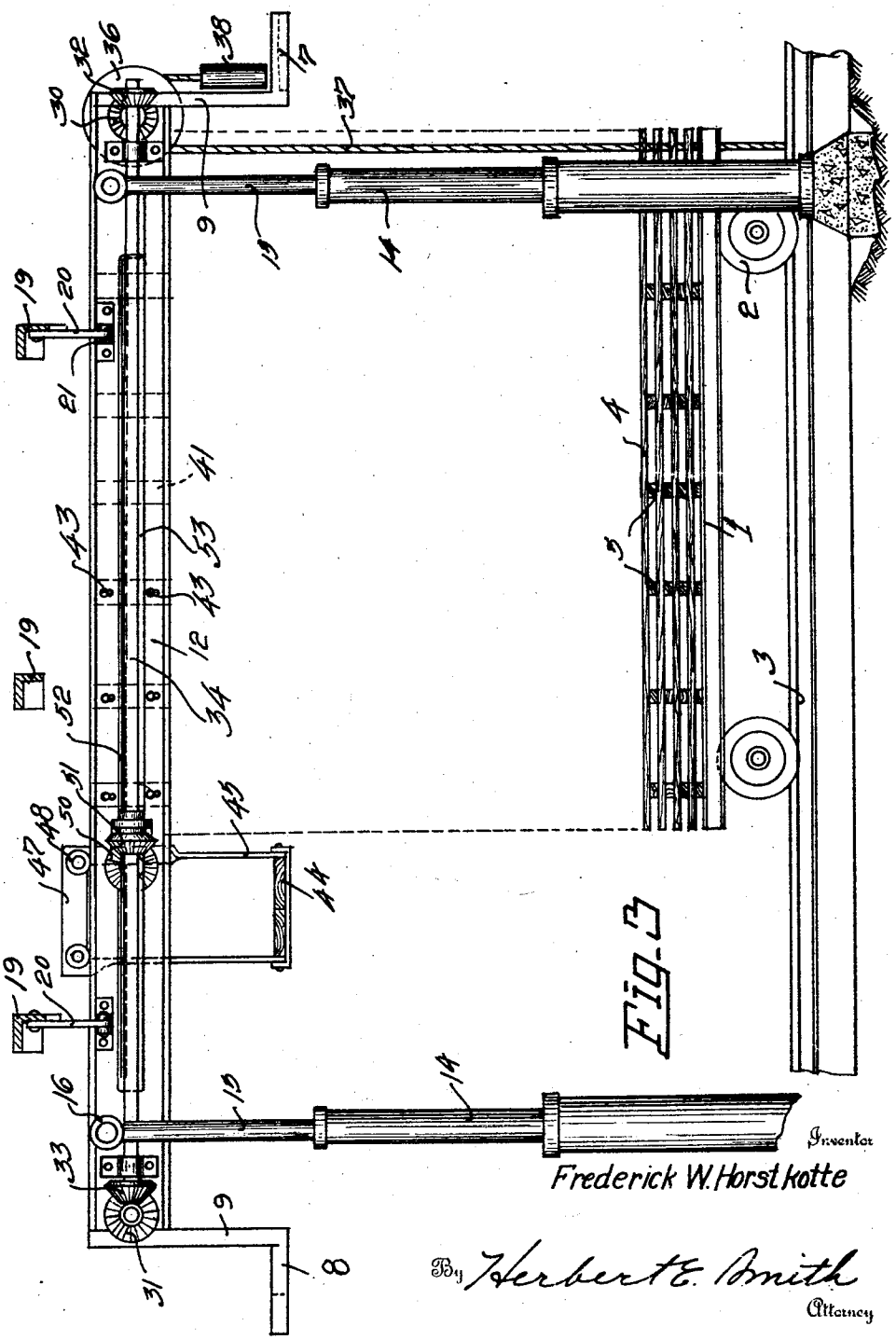


Fig. 3

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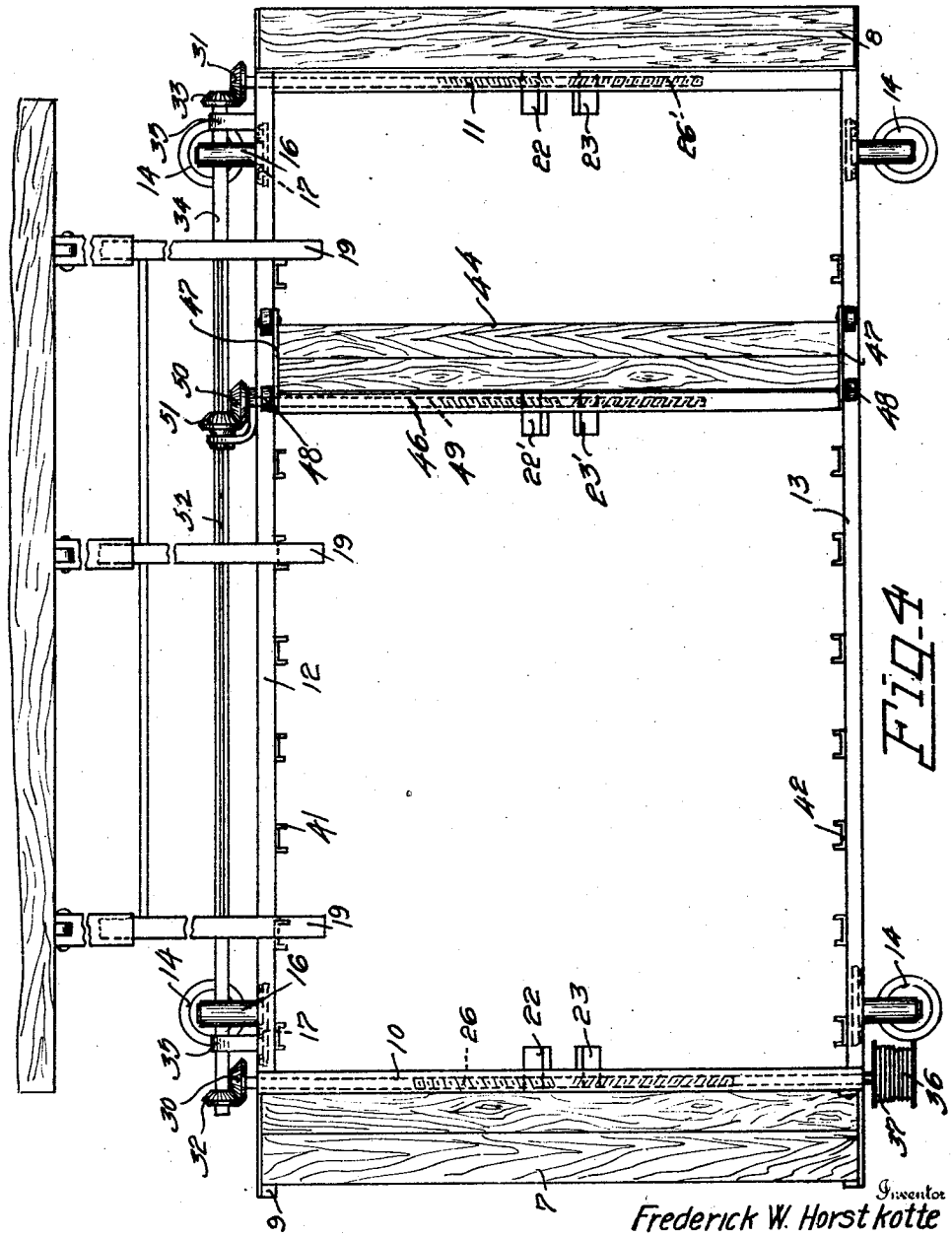


Fig. 4

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UNITED STATES PATENT OFFICE.

FREDERICK W. HORSTKOTTE, OF SPOKANE, WASHINGTON.

LUMBER PILER.

Application filed November 18, 1924. Serial No. 750,691.

To all whom it may concern:

Be it known that I, FREDERICK W. HORSTKOTTE, a citizen of the United States, residing at Spokane, in Spokane County and State of Washington, have invented certain new and useful Improvements in Lumber Pilers, of which the following is a specification.

The present invention relates to improvements in lumber stackers adapted especially for use by workmen in the process of stacking boards or planks upon a car or carrier, as a kiln truck. In the performance of this operation, it is necessary in the interests of efficiency and convenience that a flue be created in the stack of lumber as it is being erected, for the purpose of insuring a wide and uniform distribution of the air currents used for drying the lumber in the stack when the latter is placed in the drying kiln. In carrying out my invention I utilize a stack frame which is vertically movable with relation to the kiln truck upon which the stack is being erected by manual power. The stacking frame is provided with stacking guides which are automatically adjusted by the vertical movement of the stacking frame, whereby the workmen are guided in the erection of the stack for the purpose of creating a flue within the stack having a wide base and its side walls on converging lines toward the top of the stack. Spacing sticks are also used in the erection of the stack to separate successive layers of boards or planks as the stack rises and stick-guides are provided on the stacking frame for guiding the workmen in laying these tiers of sticks to form a compact and workmanlike pile or stack of lumber.

The invention consists in certain novel features of construction and combinations and arrangements of parts for carrying out the purposes of my invention as will hereinafter be more fully set forth and claimed.

In the accompanying drawings I have illustrated one complete example of the physical embodiment of my invention wherein the parts are combined and arranged in accordance with the best mode I have thus far devised for the practical application of the principles of my invention.

Figure 1 is an end view of a lumber stacking machine embodying my invention, one of the hydraulic jacks used for elevating the stacking frame being shown in section for convenience of illustration.

Figure 2 is a perspective view of one of the stacking guides.

Figure 3 is a side view of the stacking machine.

Figure 4 is a top plan view of the machine.

In order that the general arrangement and relation of parts may readily be understood, I have shown in Figures 1 and 3 a kiln truck 1 of usual type having wheels 2 and adapted to roll on tracks 3 on its way to the kiln. A stack of lumber is indicated in Figures 1 and 3 on the kiln truck, which stack is erected thereon in layers of boards or planks 4 with spacing sticks 5 between the layers. The planks are laid longitudinally of the truck and the sticks are laid transversely of the planks and the latter extend from side to side of the truck as shown. The planks and sticks are laid by the workmen, the planks being arranged in two sections and the sticks, as seen in Figure 3 being spaced at regular intervals between layers of the planks or boards to form spaces therebetween.

A flue 6, which extends longitudinally of the kiln truck and indicated by dotted lines in Figure 1, is created by the workmen in the erection of the stack, and the walls of this flue as seen in Figure 1 converge from a wide base at the bottom toward the top of the stack. After the stack is completed the top opening of the stack is closed or covered by a single plank or board, and when the truck and stack have been conveyed to the kiln and placed therein, the air currents for drying the material pass up through the stack and through the lateral spaces in the stack thus insuring a wide and uniform distribution of the drying agent throughout the stack.

The stack is erected by two men who stand upon two platforms 7 and 8 that are suspended by hangers 9 from the opposite ends of the stacking frame. This stacking frame which is rectangular in shape and horizontally disposed comprises a pair of end bars or beams 10 and 11 and a pair of side bars or beams 12 and 13 all rigidly joined together to insure a rigid structure.

The stacking frame and its platforms are movable vertically for elevating the workmen on the platforms as they erect the stack,

and the stacking frame is elevated gradually as the stack rises. For this purpose I utilize four telescopic, hydraulic jacks as 14 one of which is located at each corner of the frame and supported on a suitable base. The upper section or piston rod 15 of each jack is provided with a head 16 which is attached by a plate 17 (dotted lines in Figure 4) to the stacking frame, and it will be apparent that as the motive fluid is admitted under pressure through pipe 18 at the lower end of each hydraulic jack, the gradual extension of the jacks will elevate the stacking frame the platforms, and the men standing thereon, one at each end of the frame. By withdrawing pressure from the hydraulic jacks they are permitted to telescope and lower the stacking frame from uppermost position in Figures 1 and 3 to the lowermost position with the frame just above the top of the empty kiln truck.

The planks or boards are first deposited by suitable means on skids 19 which are spaced at proper intervals along the length of the stacking frame and supported therefrom by arms 20 attached or connected at 21 to the frame. These skid members 19 which are carried by the stacking frame are made of angle-irons and each member co-acts with a complementary overlapping skid member 19′ which is hinged at 20′ to a support 21ª as seen in Figure 1. The pivoted skid members carried by the stacking frame and the hinged skid members supported from the support 21ª thus maintain a proper alinement as the stacking frame is moved vertically. The two men standing on the spaced platforms take the lumber from the skids and place it upon the kiln truck as previously described to form the stack.

For facility and accuracy in the formation of the flue in the stack I provide stacking guides carried by the stacking frame, one at each end of the frame to be used as guide devices by the respective workmen in placing the planks or boards.

Each of these stacking guides comprises a pair of opposed metal plates 22 and 23 (see Figure 2) and fashioned with threaded blocks or travelling nuts 24 and 25 respectively. The nuts are carried on a screw bar 26 26′ having reverse threads or threaded portions 27 and 28, and the screw bars are journaled to revolve in bearings 29 on the outer faces of the end bars or beams of the frame along which beam they extend in parallelism therewith. On the end of each of the screw bars a bevel gear as 30, 31 is carried and these gears mesh with complementary gears 32, 33 on the longitudinally extending intermediate shaft 34 disposed at right angles to the screw bars and supported in journal bearings 35 at the outer side of the side beam 12.

One of the screw bars as 26 is provided with a cable drum 36 over which the cable 37 is wound, and a weight 38 is carried at the free end of the cable. The other end of the cable is anchored at 39 at the base of one of the hydraulic jacks, and a pit 40 in Figure 1 is provided for the weight when it is at its lowermost point. The cable is arranged with relation to the drum in such manner that when the stacking frame is elevated, carrying with it the screw bar 26 and its drum, the cable is caused to wind and unwind on the drum and by frictional contact therewith revolve the drum and screw bar. The revolving screw bar with its right and left hand screw threads is thus caused to gradually close the guide plates 22 and 23 as the stacking frame rises. The same action is imparted to the screw bar 26′ and its stacking guide plates, through the connection of the gears and intermediate shaft 34. When the stacking frame is lowered, the cable is operated to actuate the screw bars and open the guide plates to their maximum distance apart as the stacking frame reaches its lowermost position. In this manner the guide plates are automatically brought together as the stacking frame reaches its highest altitude and automatically spread apart as the stacking frame reaches its lowest altitude.

Guiding devices are also provided on the stacking frame for use by the workmen in laying the sticks 5. These guiding devices comprise channel plates 41 carried in upright position at the inner sides of the side beams 12 and 13 of the stacking frame and arranged in opposed pairs on the two beams at spaced intervals. The channel plates are each provided with a pair of spaced, headed bolts 42 for co-action with pairs of keyhole slots 43 provided therefor in the side beams 12 and 13 (see Figure 3) and it will be apparent that the channel plates are interchangeable and adjustable with relation to the side plates or beams of the stacking frame.

For selective use with either of the platforms 7 or 8 I provide an auxiliary platform 44 upon which a workman may stand and co-operate with a workman on one of the other two platforms when handling short lengths of planks or boards. This platform 44 is suspended by hangers 45 from a cross beam 46 which has end plates 47 upon which rollers 48 are journaled. This structure as thus described forms a carriage intermediate the two end platforms and adapted to be moved with the rollers traveling on the top faces of the side beams of the stacking frame as tracks. The carriage is also provided with stacking guides as 22′ 23′ and a screw bar 49 having right and left hand screw threads and the stacking guides or plates 22′ 23′ may co-act with either of the guides on the end beams of the

stacking frame for use by the workmen. The screw bar 49 which is journaled in bearings in the beam 46 is provided with an end bevel gear 50 that meshes with a complementary gear 51 keyed in the keyway 52 of the intermediate shaft 34. Thus the screw bar 49 is revolved synchronously with the other two screw bars 26 and 26′ to actuate its stacking guides as heretofore described.

The screw bar 49 projects through a longitudinal slot 53 in the side beam 12 and the carrier or carriage is thus permitted to be moved laterally to adjusted position between the end platforms.

From the above description taken in connection with my drawings the construction and operation of the machine will be evident, and it will be apparent that I have provided a machine which enables the workmen to erect the stack as described with facility, convenience, and dispatch, and that such stack will be formed in the manner set forth for accomplishing the desired purposes.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is—

1. The combination with a vertically movable stacking frame, and operating means therefor, of stacking guides carried by said frame and a revolvable actuating member for said guides, a cable-drum on said actuating member, a cable on said drum having a counterweight and an anchor for said cable.

2. The combination with a vertically movable stacking frame and operating means therefor, of a right and left hand screw bar at each end of said frame, a pair of guide plates on each screw bar, an intermediate shaft and bevel gears connecting said screw bars, a cable-drum on one of said screw bars, and a counterweighted cable on said drum having an anchored end.

3. The combination with a vertically movable stacking frame and operating means therefor, of a right and left hand screw bar at each end of said frame, a pair of guide plates on each screw bar, an intermediate shaft and bevel gears connecting said screw bars, a cable-drum on one of said bars and a counterweighted cable on said drum having an anchored end, platforms at the ends of said frame, an intermediate carriage between said platforms, a screw bar and a pair of guide plates on said carriage, a gear on the last screw bar, and a slidable gear on the intermediate shaft engaging said last gear.

In testimony whereof I affix my signature.

F. W. HORSTKOTTE.