Jan. 5, 1954 D. M. ROSE 2,664,813

APPARATUS FOR PACKAGING LUMBER

Original Filed Oct. 17, 1950 2 Sheets-Sheet 1

Fig. 1.

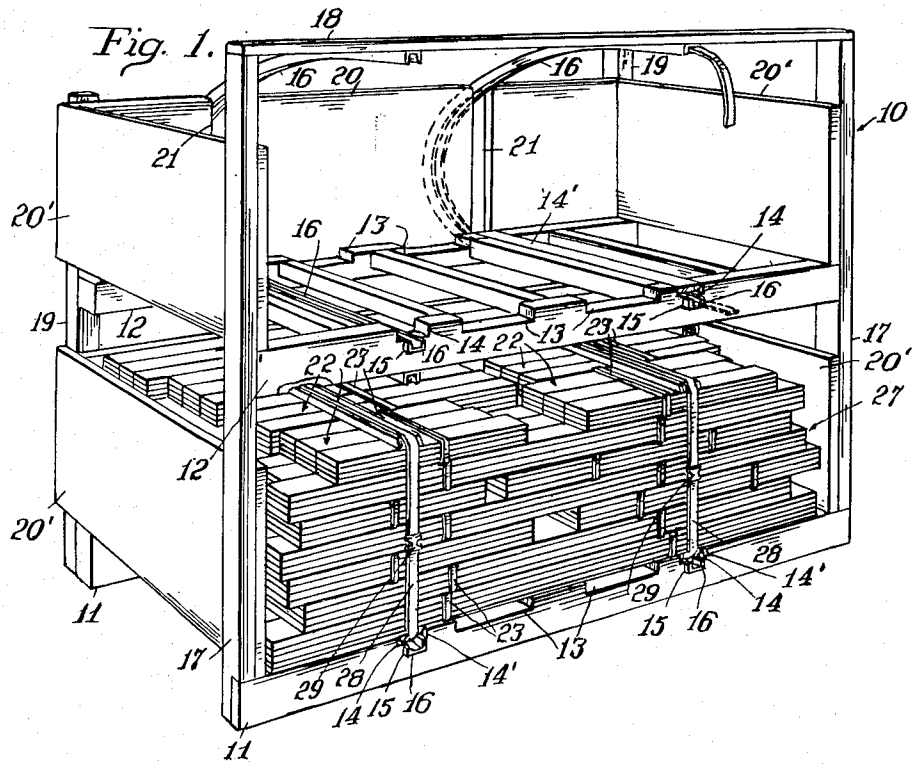

Fig. 2.

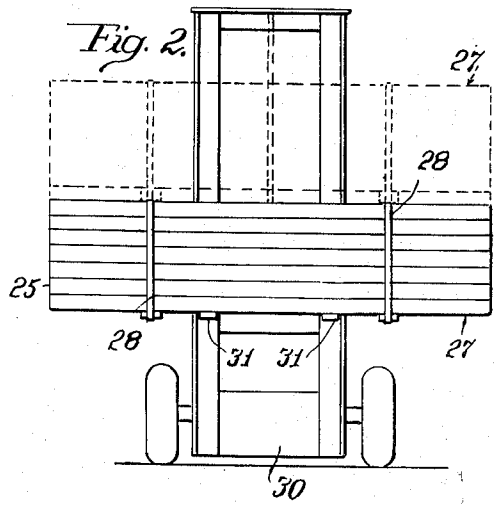

Fig. 3.

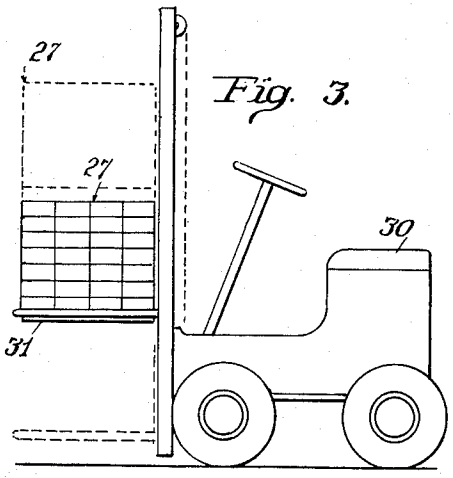

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Fig. 4.

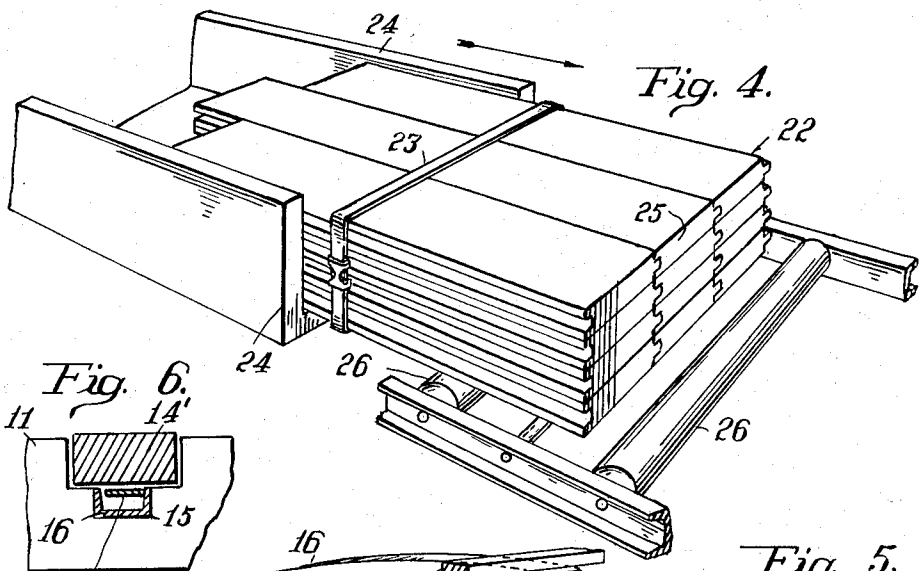
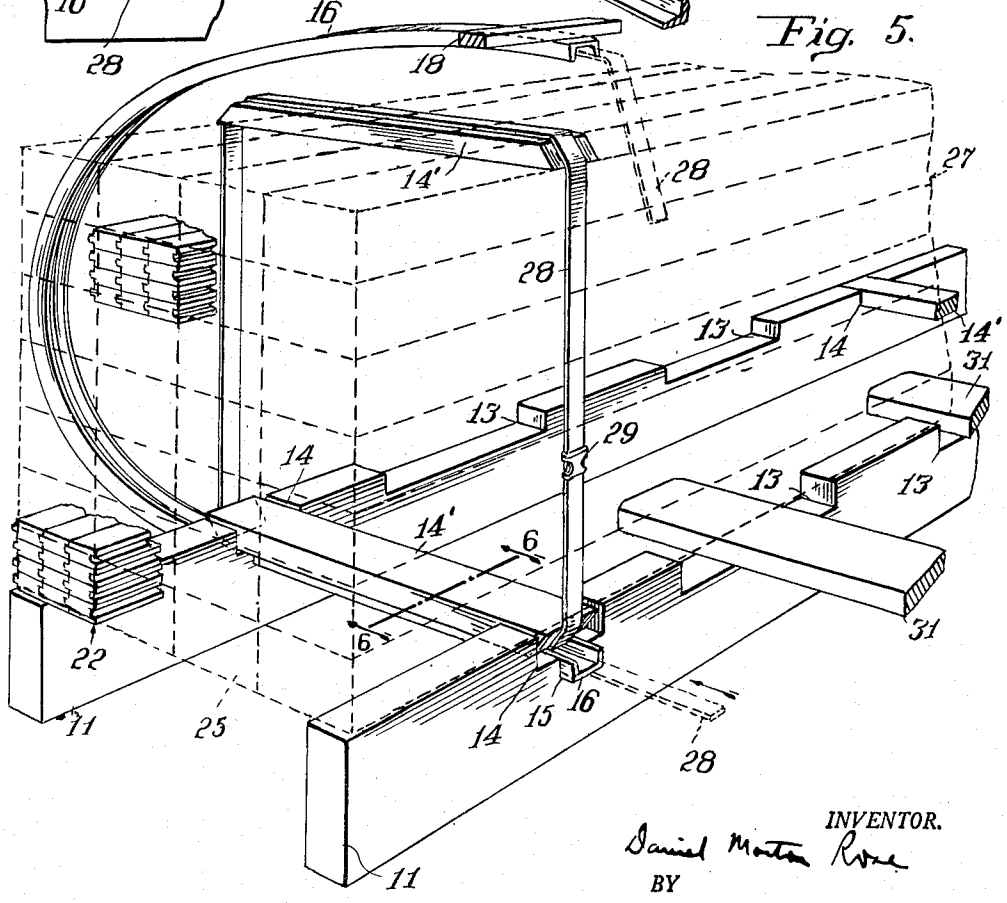


Fig. 6.

Fig. 5.



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Patented Jan. 5, 1954 2,664,813

UNITED STATES PATENT OFFICE

2,664,813

APPARATUS FOR PACKAGING LUMBER

Daniel M. Rose, Knoxville, Tenn.

Original application, October 17, 1950, Serial No. 190,625. Divided and this application January 3, 1952, Serial No. 264,807

4 Claims. (Cl. 100—25)

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This application is a division of my application Serial No. 190,625, filed October 17, 1950.

This invention relates to improvements in apparatus for packaging lumber, particularly random lengths of flooring.

Heretofore it has required 60 to 70 man hours to load a railway car with bundles of lumber, such as random length flooring, and wherein the individual bundles were placed lengthwise of the car. To unload at the destination required about the same number of man hours.

It has been found that this same operation requires but approximately 3½ man hours to load and the same time to unload when my new and improved package of lumber of random lengths is used.

A further object of this invention is to provide a new and improved apparatus for packaging individual bundles of lumber of random lengths into a compact package, which simplifies the banding of the package and the removal from the apparatus and which also provides a plurality of bins within the smallest possible floor space.

A further object of this invention is to provide a new and improved apparatus for packaging individual bundles of lumber that facilitates the loading and tying from the floor level with a minimum of reaching for the average man.

A further object of this invention is to provide a new and improved apparatus for packaging individual bundles that comprises a multiplicity of bins to provide for the separation of various grades and different species of lumber.

To accomplish the above objects I provide an apparatus for packaging lumber, particularly random length flooring, which consists of a bin provided with means for guiding the tie band around the package preparatory to tying the same, and which is provided with means that enables the picking up of the package by a fork truck.

Other objects and advantages of this invention will become apparent as the discussion proceeds and when taken in connection with the accompanying drawings, in which:

Fig. 1 is a perspective view of a double-deck packaging bin embodying my invention, showing the upper deck empty and the lower deck with a completed package ready to be removed therefrom;

Figs. 2 and 3 are front and side elevational views, respectively, of a completed package embodying my invention, loaded on a conventional fork truck;

Fig. 4 is a perspective view of an individual

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bundle of random length flooring of substantially the same length as it emerges from a packaging machine, prior to being inserted in the packaging bin;

Fig. 5 is an enlarged perspective view showing the details of a pair of sills in the packaging bin embodying my invention, together with the strap guide means; and

Fig. 6 is a cross section taken along the line 6—6 in Fig. 5.

Turning now to a detailed description of the drawings, the numeral 10 designates, generally, a double-deck packaging bin, which preferably is of a length a little less than the width of a box car. The bin 10 consists of a pair of lower front and back base members or sills 11, and the numeral 12 designates a pair of front and back headers which also form sills for the upper receptacle and are located approximately midway of the height of the bin 10. Each of the sills 11 and 12 is provided with a pair of elongated notches 13 located approximately midway between the ends of the sills, for the purpose of receiving a fork 31 on a conventional lift truck 30 (Figs. 2 and 3).

Also located in each of the sills 11 and 12 is a second pair of notches, somewhat T-shaped designated generally by the numeral 14. Each of the notches 14 is located, as best shown in Figs. 1 and 5, near, but preferably spaced inwardly from, the ends of the sills 11 and 12. The notches 14 are adapted to receive spacer strips of wood 14', or the like, which may be of any size desired, but which should be of a length equal to the width of the package when completed, and which support the package on a floor, with the material of the package in spaced relation to the floor. The ends of the strips of wood 14' are beveled off at approximately a 45° angle, as shown in Fig. 5. This beveling reduces friction and enables the band to slip and be pulled tight around the package and also prevents injury to the edges of the flooring strips of the bundle by pressure of the band against said edges. In addition, the beveling also reduces friction as well as forms a skid to facilitate the sliding of the package over floor surfaces.

In addition to the strip 14', located on the underneath side of the package, a second strip 14', also with the ends beveled at approximately a 45° angle, is located on the top of the bundle underneath each band or strap 23 for the purpose of further reducing friction thereof as the strap is pulled tight around the package.

A double-deck bin is illustrated and described because it has been found advantageous to have

such a bin to provide for packages of different length boards, whereby one bin can be loaded while the other is being tied and the package being removed. This arrangement provides two or more bins within the smallest possible floor space and also facilitates the loading and tying from the floor level without too much reaching for the average man. However, it is to be understood that any number of decks can be incorporated in one bin.

Located in the bottom of each of the notches 14 is a further notch 15, which is for the purpose of receiving a guide member 16 which is channel-shaped in cross section and is also bent back upon itself in U-shape. The specific purpose of the guide member 16 will be discussed in detail later. The members 16 may be permanently secured to the sills 11 and 12 or may be slid into the notches 15 before or after the bundles are arranged in the bin 10.

On either side of the front sills 11 and 12, and connected together thereby, are upstanding side posts 17 which are connected together at their top ends by means of a transverse cross member or header 18. Also supporting the rear sills 11 and 12 and connected together thereby is a pair of upstanding side posts 19. These parts 11, 12, 18 and 19 form an open framework. Surrounding the two sides and the back of the bin 10 are panels 20. The panels 20 forming the back wall are spaced apart, being provided with slots 21 therebetween. The side wall panels 20 serve to maintain the front and back sills 11 and 12 in spaced relation. Additional spacing supports (not shown) may be added, if desired, to give added strength to the bin 10.

As will be seen from a study of Figs. 1 and 5, the guide members 16 are fitted into the slots 15 of both the front and back sills 11, as well as the front and back sills 12. The top side of the lower guide member 16 may be fastened to the underside of the front and back sills 12. The top side of the upper guide member 16 may be affixed to the underside of the transverse cross member or header 18.

A small bundle or package 22, made up of pieces of flooring of an approximately uniform length to make up an average length bundle of six inches over and under bundle length, is then banded by a strap 23 in a conventional bundling rack, a portion of which is designated generally by the numeral 24. (Fig. 4). The bundle is tied without removing the same from the bundling rack 24. It will be observed from a study of Fig. 4 that one end 25 of the bundle 22 is arranged so that the ends of the pieces of flooring are matched or even. Obviously, it being impractical to sort random lengths of flooring economically into exactly uniform lengths, the other end of the bundle will not be even. The boards in the bundle 22 are tongue and grooved together, as shown in Fig. 4, for the purpose of adding compactness and strength to the strapped bundle. As the bundle 22 emerges from the bundling rack 24, it is supported by a conventional roller conveyor 26, on which it is transported to a position to be removed therefrom and placed in the double-deck bin 10. Preferably, bundles of a longer length are placed first in the bottom of the bin. The even ends 25 of the bundles 22, preferably, are placed facing the ends of the completed package 27.

After all of the individual bundles 22 are properly placed in the bin 10, in either the lower or upper deck, a strap 28 is inserted into each guide member 16. It will be seen from a study of Figs. 1 and 5, that by virtue of the shape of the guide member 16, the strap 28 may be inserted in either the top end or bottom end of the guide 16, and, as it is pushed through the length of the channel, will be caused to bend back and around the package 27 in the bin and finally extend out from the opposite end of the guide from whence it can be readily grasped. The two ends of the strap 28 are then put into a joining apparatus of conventional design and a tie 29 is made in the strap. As the strap 28 is tied about the bundle 27, it will be pulled out of the guide member through the slots 21 and the open side of the guide member, and down tightly around all four sides of the completed package 27. While only two straps have been shown about each package 27, any number of straps desired may be provided, but for each strap desired there is provided a guide member 16.

After the completed package 27 has been strapped and tied, and is still in the bin 10, a lift truck 30 having a fork 31 is moved up to the bin 10 and the fork is slid through the notches 13 under the package 27, which now can be considered as a pallet unit. The fork 31 then is raised until it supports the package 27, on which it can be readily removed from the bin 10 and transported to a box car, truck or the like, or may be moved directly to a warehouse for storage. The wooden spacer strips 14' being held on the bottom of the package 27 by the straps 28, afford an elevated support for the bundle and make it possible to slide the fork 31 of the lift truck thereunder when the package 27 is placed upon a floor.

When the completed package 27 is placed in a box car for shipment, it is laid down therein preferably crosswise or transverse of the length of the box car, and with the individual boards also extending crosswise of the box car. As the bands 23 and 28 extend around the bundles and package crosswise, this will put these bands 23 and 28 lengthwise of the box car. Regardless of how many individual packages are then loaded in the box car and whether they are stacked one on top of the other, there will be practically no loosening effect on the packages, bundles, bands or individual boards during transit. Longitudinal shifting of the boards and packages in the car is reduced to a minimum by this arrangement because the jolting due to starting and stopping of the train is sidewise of the package rather than lengthwise. Furthermore, there will be no tendency for the ties 23 and 28 to catch on each other and be sheared off, as would occur if stacked lengthwise of the car.

Considerable loading advantage is also obtained by providing a package of this type. The packages, being of a length approximately equal to the width of a box car, are simply picked up by the fork 31 of a lift truck 30 and the truck run into the car. The packages are then "spotted" or placed in the car on either the floor or stacked upon each other directly by the truck, and the amount of handling of the package in the car is also reduced to a minimum.

The packages 27 are then removed from the box car and are taken to the local lumber yard or warehouse, wherein, in their compact condition, they can readily be stored in a minimum amount of space. When it is desired to remove the flooring from the package, the straps 28 are broken and removed and the individual bundles 22 are

removed separately from the stored package 27 without disturbing the balance of the package. The individual bundles 22 may be transported to the place where they are to be used while the strap 23 is still on the bundle, although this is optional.

The packages 27 may be tallied as they are placed in the bin 10 on a triplicate tally sheet, showing the small individual bundles contained in the completed package. On completion of the packaging, one tally is sent to the manufacturer's office for production record. The remaining two tallies are left attached to the package 27. In shipping, one of the remaining tallies is removed for count and billing, and the other tally goes along with the completed package for the customer's count.

It is to be understood that variations and changes may be resorted to without departing from the spirit of my invention as claimed.

I claim:

1. Apparatus for packaging bundles of lumber comprising a bin, said bin having front and rear spaced sills, an upright rear wall, a pair of spaced and oppositely disposed side walls and an upper sill at the front of the bin, said front and rear sills each having a pair of spaced U-shaped notches formed therein and a pair of substantially T-shaped notches formed therein, and a U-shaped channel guide member positioned within the stem of each of said T-shaped notches, said guide members each including a bowed section projecting laterally away from said rear wall and having an end thereof secured to said upper sill, the head of each of the T-shaped slots formed in the front and rear sills being adapted to receive a spacer strip for binding in the lumber package.

2. Apparatus for packaging bundles of lumber comprising a bin, said bin having front and rear spaced sills, an upper sill at the front of the bin, said front and rear sills each having a pair of spaced U-shaped notches formed therein and a pair of substantially T-shaped notches formed therein, and a U-shaped channel guide member positioned within the stem of each of said T-shaped notches, said guide members each having an end thereof secured to said upper sill, the head of each of the T-shaped slots formed in the front and rear sills being adapted to receive a spacer strip for binding in the lumber package.

3. A package bundle binding device comprising a bin having a side wall and end walls, an open framework supporting said side and end walls constituting a bundle support, said framework having front and rear base members provided with slots, a U-shaped channel guide member for a tie band mounted in one of the slots, and the other of the slots being adapted to receive a supporting platform member of a lift truck, said side wall comprising spaced panels, said channel guide member having a portion thereof received in the space between the panels, said open framework having a header, said channel guide member being secured to the header whereby one or more bundles to be tied are adapted to be received upon the channel guide member between the ends thereof with the channel member abutting the spaced panels of the side wall so that the tie band can be moved through the channel member in surrounding relation about the bundle or bundles to facilitate tightening and tying of the tie band, and the other of said slots being adapted to facilitate removal of the tied bundle or bundles from the bin by a lift truck.

4. A package bundle binding device comprising a pair of superposed bins each having a side wall and end walls, an open framework supporting said side and end walls of the respective superposed bins and constituting bundle supports, said framework having front and rear base members for each bin provided with a pair of slots, a pair of U-shaped channel guide members for tie bands mounted in the pair of slots, the front base member of each bin having additional slots adapted to receive supporting platform members of a lift truck, said side wall of each bin comprising spaced panels with spaces therebetween receiving respective portions of the channel guide members therethrough, the front base member for the upper bin forming a header for the lower bin, said open framework having a header for the upper bin, said channel guide members being secured to said headers respectively whereby bundles to be tied are adapted to be received upon the channel guide members in the respective bins between the ends thereof with the channel members abutting the panels of the side walls so that the tie bands can be moved through the channel members in surrounding relation about the bundles to facilitate tightening and tying of the tie bands, and the additional slots being adapted to facilitate removal of the tied bundles from the respective bins by a lift truck.

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