United States Patent [19]

Rysti

[11] **3,823,834**

[45] **July 16, 1974**

[54] **METHOD AND DEVICE FOR PERFORMING THE INSERTION OF PILING STRIPS IN TIMBER PACKAGES**

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[22] Filed: **Nov. 3, 1971**

[21] Appl. No.: **195,176**

[52] **U.S. Cl.** ..... **214/6 DK,** 214/6 M

[51] **Int. Cl.** **B65g 57/06**

[58] **Field of Search** ..... 214/6 P, 6 DK, 6 M, 6 F, 214/6 H; 198/20

[56] **References Cited**

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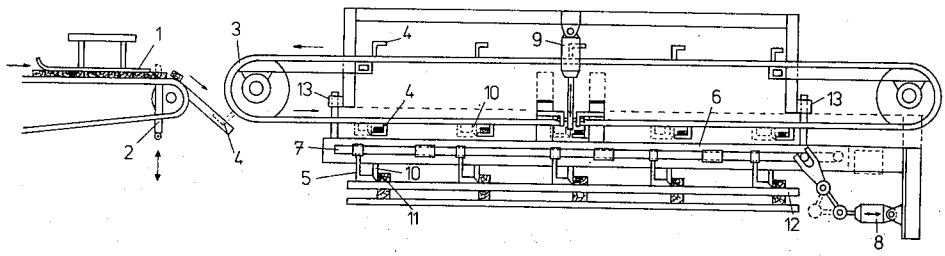
Primary Examiner—Robert J. Spar

Attorney, Agent, or Firm—Richards & Geier, V. Alexander Scher

[57] **ABSTRACT**

A device used for inserting piling strips into a timber package includes a conveyor, supporting hooks carried by the conveyor and carrying the strips, a vertically movable frame, spaced fetching hooks and means moving the fetching hooks laterally with reference to the frame, whereby the strips move upon the fetching hooks and then upon the timber package.

4 Claims, 8 Drawing Figures



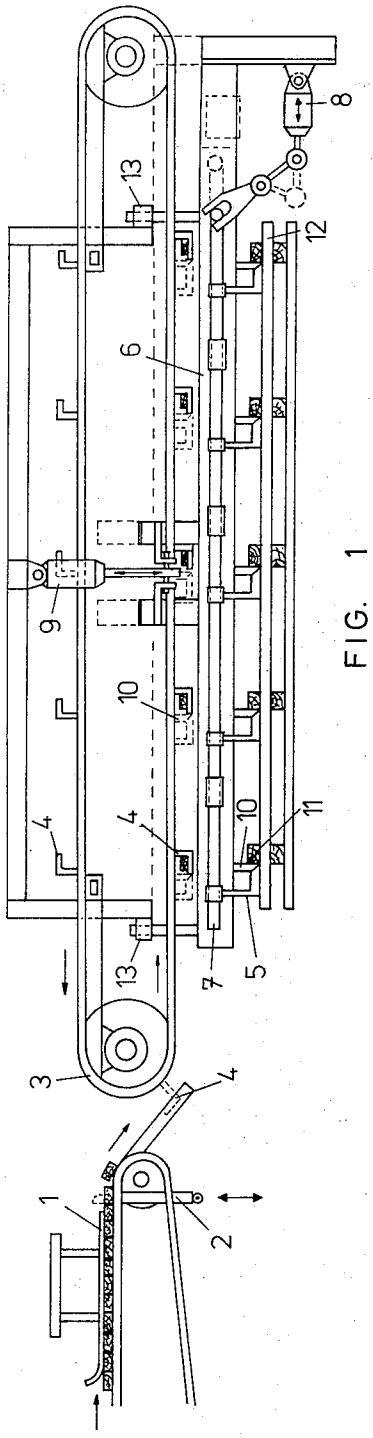

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1
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FIG. 1

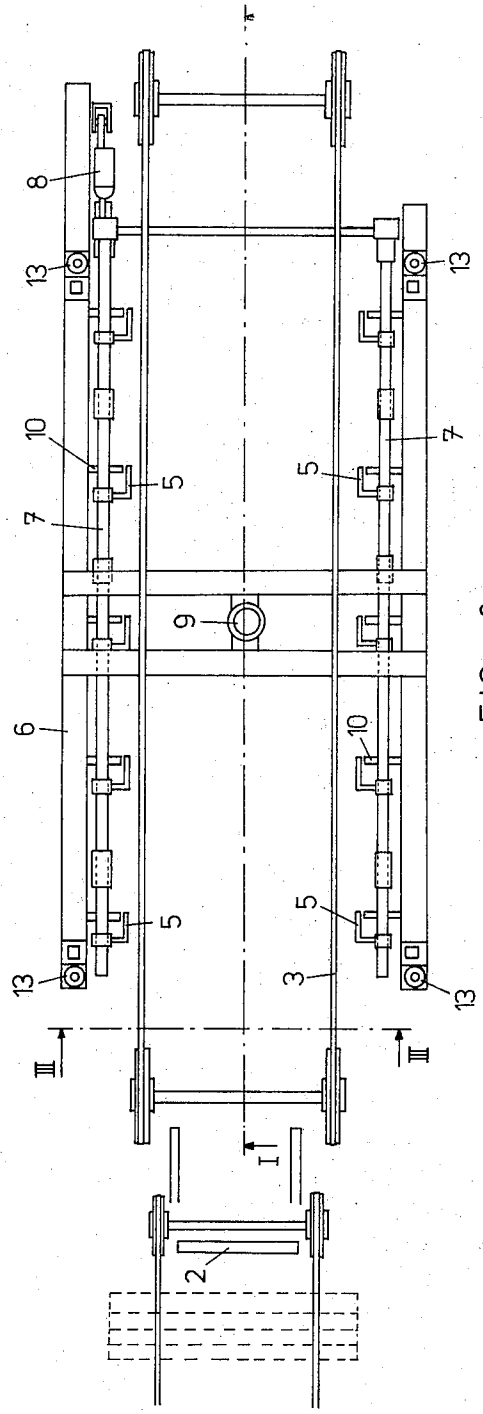

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III
III
I
2

FIG. 2

FIG. 4 I

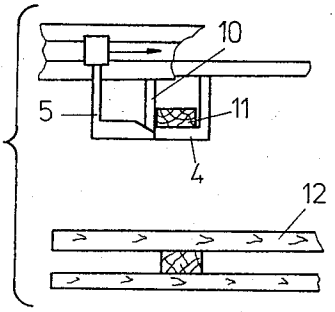


FIG. 4 II

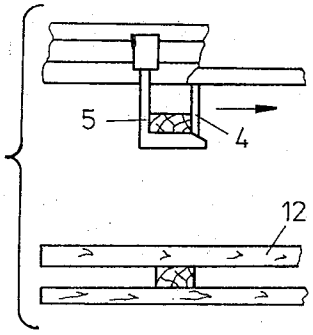


FIG. 4 III

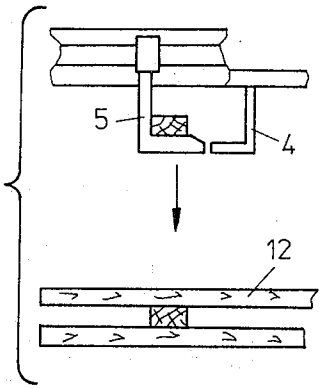


FIG. 4 IV

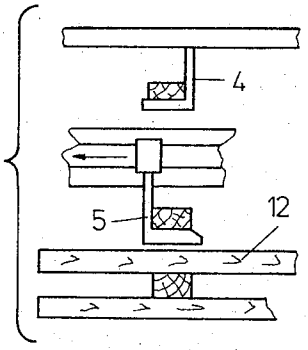
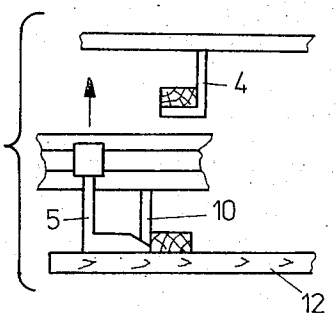


FIG. 4 V



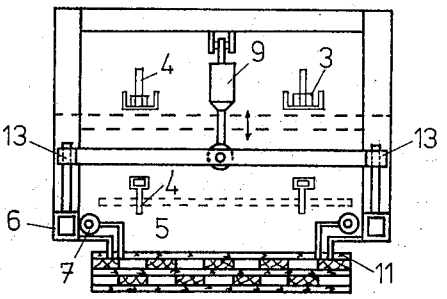


FIG. 3

METHOD AND DEVICE FOR PERFORMING THE INSERTION OF PILING STRIPS IN TIMBER PACKAGES

The present invention concerns a device for performing the insertion of piling strips in a timber package, for instance for the purpose of promoting the drying of the timber, wherein between the layers of the timber package a gap is produced by the aid of piling strips inserted at a given spacing with reference to each other, which are most appropriately placed crosswise with reference to the timber. This insertion of piling strips is employed both in artificial drying kilns and in timber yards in connection with package drying.

Prior art includes several methods and devices for performing the insertion of piling strips in timber packages, but in all these methods and devices drawbacks have been observed, which above all are associated with the feeding of piling strips, whereby the operation of feeding piling strips has become the main factor restricting the capacity of piling strip insertion machines. In devices belonging to prior art, the feeding of piling strips is most commonly accomplished as follows: most commonly used is the method in which the piling strips are stacked in magazines, of which as many have been provided side by side as is the number of piling strips needed between the timber courses in each instance. When one timber course has been completed, the piling strips are caused to fall down on the course either by pushing them from the side, by pushing them from the end or by releasing them at the ends. Prior art also includes a method and devices wherein the piling strips are conveyed into positions above the timber course by means of an endless conveyor, from which the piling strips are caused to fall down or released to be deposited upon the completed course. Furthermore, a method is previously known wherein the piling strips are brought into position under the completed course and the course together with the piling strips is deposited upon the package that has to be provided with piling strips.

All of the above-described methods and devices imply that the piling strips have to be straight and that they should have faultless sides. This results in rather high costs caused by the provision of piling strips, which moreover increase owing to the frequent damage to piling strips. A drawback encountered in those devices in which the piling strips are caused to fall down on the timber course is the bouncing of the strips, whereby they fail to be deposited in their correct positions. Disturbance of the intended piling strip distribution, again, may cause twisting and warping of the timber, and non-uniform drying. In those methods and devices in which the piling strips are pushed into position transversely along the surface of the timber course, it is a frequent occurrence that the piling strips are jammed e.g. by being pushed against the ends of crooked timbers. If the piling strips are introduced from below under the course of timber, then it is not possible to control the arrival of the strips and their correct positioning.

The object of the present invention is to avoid the abovementioned drawbacks so that the piling strips can be assuredly deposited at the correct points and in correct position. This enables also piling strips of poorer quality to be used than in devices belonging to prior art. A method according to the invention is mainly characterized in that the piling strips are conveyed with the aid of a distributing organ, in transversal position, into position above the topmost course of the timber package to be provided with piling strips and with each piling strip positioned vertically over that point where it is going to be deposited, and that the piling strips positioned in this manner are lowered upon the timber package with the aid of fetching elements rising up from below and which after having risen to their upper position take along with them the piling strips supported by the distributing organs and then descend upon the topmost course of the timber package and leave the piling strips on this course.

The invention is described in greater detail with reference to the figures in the attached drawing, wherein:

FIG. **1** presents an apparatus intended for carrying out a method according to the invention, in elevational view, sectioned along the line I—I in FIG. **2**,

FIG. **2** shows the same as FIG. **1**, viewed from above,

FIG. **3** is a sectional view, along line III—III in FIG. **2**, and

FIG. **4** is a schematic diagram showing the different phases I – V in the operation of the distributing and fetching appliances.

In the embodiment example shown in the figures, to which the invention is by no means confined, the piling strips **11** are brought from their place of storage by means of a conveyor **1**, at the end of which a distributing device **2** has been provided, which regulates the feeding of piling strips onwards from here. Over the timber package a distributing conveyor **3** has been arranged, which for instance has two parallel belts, to which distributing conveyor there have been attached at distances from each other which are determined by the strip spacing of the piling strip laying that one intends to carry out, supporting hooks **4**. The distributing conveyor **3** operates in synchronism with the device **2** so that when the distributing conveyor **3** is in motion the device **2** releases one piling strip to be lodged in each pair of supporting hooks **4**. When the piling strips consistent with the number of strips in the piling strip arrangement to be achieved have been transported by the distributing conveyor **3** into positions above the topmost course **12** of the timber package and vertically over those points where the piling strips shall be deposited, the distributing conveyor **3** stops under effect of governing elements which in themselves belong to prior art.

The apparatus comprises fetching elements, the task of which is to fetch the piling strips **11** from the supporting hooks **4** of the distributing conveyor **3** down upon the timber package. The fetching elements consist of a frame **6**, which can be moved vertically in its guides **13** by the aid of an actuating organ **9**, and of fetching hook pairs **5** functionally connected with each other, which move in vertical direction along with the frame **6**. The pairs of fetching hooks **5** are mutually connected by a displacement rod **7**, the other end of which connects by means of a lever arm with an actuating organ **8**, which rests against the frame **6**. The actuating organ **8** is used to move the pairs of fetching hooks **5** longitudinally between two extreme positions.

In FIG. 4 the cooperation of the piling strip distributing organs and fetching organs has been illustrated in phases, I – V. At phase I the fetching elements have gone into their upper position so that the fetching hooks **5** and supporting hooks **4** are substantially in the same horizontal plane, and there is a piling strip **11** in each pair of supporting hooks **4** and the distributing conveyor **3** is stationary. At phase II the fetching hooks **5** have been longitudinally displaced under effect of the actuating organ **8** so that the piling strips **11** will be borne by the fetching hooks **5** because the fetching hooks are at a slightly higher level than the supporting hooks **4.** For this phase of operation, the ends of the fetching hooks **5** are bevelled. Phase II may also be carried out in that the distributing conveyor **3** moves backward a distance such that the piling strips **11** come to lie on the fetching hooks **5.** In that case, however, the design of the stops **10** has to be different from the design in this embodiment example. At phase III the distributing conveyor **3** has started to move and the piling strips **11** remain on the support of the fetching hooks **5.** At phase IV the frame **6** with its fetching elements has descended into its lower position, in which the fetching hooks **5** lie upon the topmost course **12** of the timber package that has to be provided with piling strips. At the last phase V of the operation cycle the fetching hooks **5** have moved backwardly and the piling strips **11** remain upon the course **12.** This has been achieved by the arrangement in that to the frame **6** there have been integrally attached, stops **10** in functional association with each fetching hook **5** so that when the fetching hooks **5** move backwardly the stationary stops **10** prevent the piling strips **11** at this phase from following along with the fetching hooks **5,** and the piling strips **11** remain at their correct positions upon the timber package. The displacement of the fetching hooks may be replaced with triggerable releasing devices which move the piling strips **11.** By this time the distributing conveyor **3** has transported new piling strips into position over the timber package and the fetching elements are ready to begin the next cycle.

I claim:

1. A device for inserting transverse piling strips between courses in a timber package, comprising a distributing conveyor, spaced supporting hooks carried by said conveyor and adapted to carry the piling strips extending in a transverse direction, said conveyor receiving the piling strips and moving the piling strips longitudinally forward to a position above the timber package, and transferring means for transferring the piling strips from the supporting hooks to the timber packages, comprising a frame, an actuating member connected with said frame for moving said frame vertically, a plurality of spaced fetching hooks adapted to receive and support the piling strips, and means connecting said fetching hooks with said frame and for moving said fetching hooks longitudinaly relatively to said frame to effect a transfer of the strips to and from the fetching hooks, the relative spacing of said fetching hooks being determined by the piling strip spacing desired in the timber package.

2. A device according to claim **1,** wherein said transferring means includes stops fixed to said frame and adapted to remove the piling strips from said fetching hooks for placement upon the timber package.

3. A device according to claim **2,** wherein said means connecting the fetching hooks with the frame comprise a displacement rod carrying the fetching hooks and an actuating member connected between said frame and one end of said displacement rod for achieving the longitudinal movement of the rod.

4. A device according to claim **1,** further including a distributing device carrying the piling strips and delivering them one by one to said supporting hooks.

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