United States Patent [19]

Aro

[11] **3,749,326**

[45] **July 31, 1973**

[54] **DEVICE FOR DISTRIBUTING WOOD TO THE FEED CHUTES OF SHREDDERS**

[75] Inventor: **Erkki Aro,** Hyvinkaa, Helsinki, Finland

[73] Assignee: **Kone Osakeyhtio,** Hyvinkaa, Finland

[22] Filed: **Dec. 8, 1971**

[21] Appl. No.: **206,105**

[52] **U.S. Cl.** **241/136,** 198/83, 241/281

[51] **Int. Cl.** **B02c 21/00,** B02c 23/02

[58] **Field of Search** 241/135–151, 277, 280, 281, 241/301; 144/162, 180; 198/66, 67, 68, 83, 43, 45, 50

[56] **References Cited**

UNITED STATES PATENTS

3,690,574	9/1972	Ivanto	241/281
1,785,490	12/1930	Merrill	241/136 X

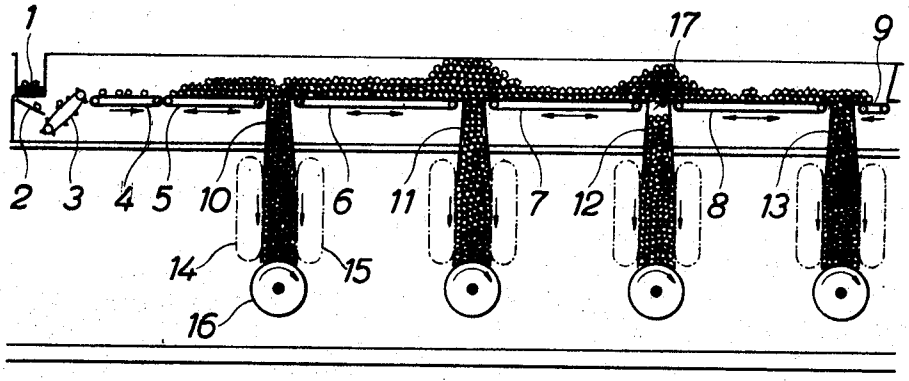
Primary Examiner—Donald G. Kelly

Attorney—Eric H. Waters, John G. Schwartz et al.

[57] **ABSTRACT**

A device for distributing pieces of wood to the feed chutes of a plurality of consecutively placed wood shredders from a hauling track composed of a plurality of consecutively arranged belt, chain or rope conveyors, upon which the pieces of wood have been arranged, in transverse position, to be transferred from one conveyor to another for distribution to the feed chutes through intervals of the conveyors, which are continuously open and filled with wood. According to the invention the conveyors have, moreover, been arranged to start automatically at predetermined intervals in a direction opposite to the wood feeding direction for a period which is shorter than the running time in the feeding direction.

8 Claims, 2 Drawing Figures



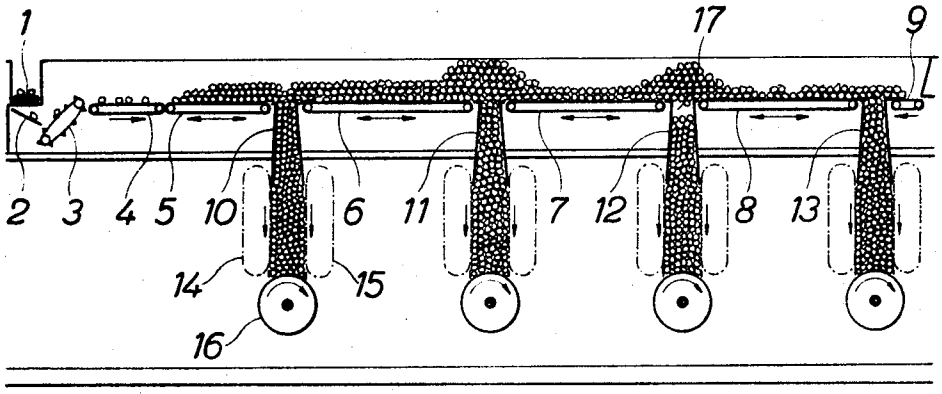


Fig. 1

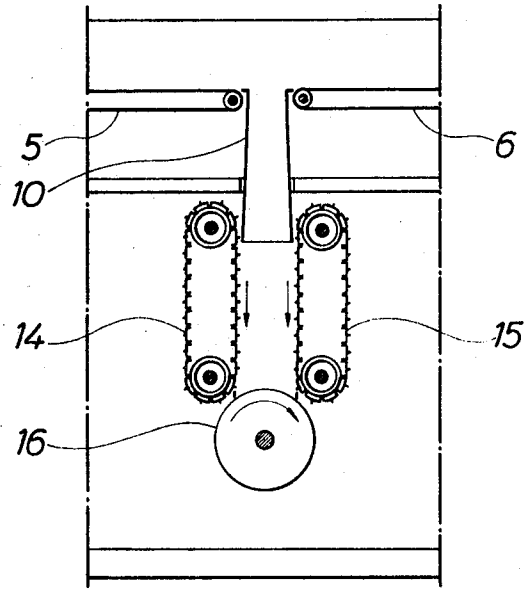


Fig. 2

DEVICE FOR DISTRIBUTING WOOD TO THE FEED CHUTES OF SHREDDERS

In known devices, depending on the rate at which pieces of timber descend in the feed chute, new pieces of wood are supplied to replace them. When the chute is filled with wood, the pieces of wood which are supplied pass over these pieces of wood onto the next conveyor.

The pieces of wood descend down the chute at a comparatively low speed, or about 10 cm per minute. For this reason the conveyors need not operate continuously, but they are started as required.

Known devices have subsequently been improved by making the conveyors automatically starting at predetermined intervals for a few seconds at a time in order to feed wood onwards on the hauling track and to make up the deficit of wood that has arisen in the feed chutes. Automation of this kind is quite simply accomplished e.g. with the aid of timing relays. The starting intervals may be, for instance, two minutes and the operation period may be 5 seconds.

This automatically operating device belonging to prior art has the drawback that the pieces of wood sometimes build up to form a pile-up in the feed chutes. Observation of the forming of such pile-ups involves additional work, and the pile-ups are difficult to disperse, because it is first necessary to remove a large amount of wood weighing on the pile-up. Attempts have been made to prevent the formation of pile-ups by making the feed chutes such that they widen in the downward direction. With this expedient one has achieved that pile-ups only occur rarely.

The aim of the present invention is to improve the device so that no pile-ups ever occur. The invention is characterized in that the conveyors have furthermore been arranged to tart at predetermined intervals in a direction opposite to the wood feeding direction for a period shorter than that of the operation in the feeding direction.

A pile-up that may have formed in any one of the feeding chutes will positively disintegrate, at the latest, when the conveyors are running in the direction opposite to the feeding direction. The running time of the conveyors in the feeding direction has to be longer than that in the opposite direction in order that any pieces of wood at all might reach the ultimate end of the hauling track. The operation seqeunces of the conveyors in one direction and in the other are simply achieved e.g. with the aid of timing relays. It is most appropriate to arrange the operation sequence to be such that running of the conveyors in the feeding direction and running in the opposite direction occur one after the other.

The invention is described in the following with the aid of an example with reference to the attached drawing, wherein

FIG. 1 shows the hauling track in elevational view, and

FIG. 2 shows one feed chute, drawn on a larger scale.

The pieces of wood are brought to the shredding plant by means of a conveyor **1**, from the end of which they fall onto an inclined surface **2**. The log lift conveyor **3** takes them up from surface **2** and conveys them in a position transverse to the direction of travel onto the belt conveyor **4**. The pieces of wood are further transferred onto the belt conveyors **5–9**. Through the openings between the ends of these conveyors the pieces of timber fall into the feed chutes **10–13** of the

shredders, which widen in the downwardly direction. The feed chutes are confined at their lower ends by endless chains **14** and **15**, which urge the pieces of timber against the grinding stones **16**.

The belt conveyors **5–8** have been arranged to operate automatically with the aid of timing relays so that they start e.g. at two-minute intervals and transport the pieces of wood towards the ultimate end of the hauling track, or to the right in FIG. **1**. At the same time the deficiency of wood that has arisen in the feed chutes **10–13** is made up. The speed of the conveyors is, for instance, 0.1 m/s. A suitable running time is, for instance, 5 seconds. After the conveyors **5–8** have stopped, they, and also the conveyor **9**, immediately start one again, but now in such manner that they transport the pieces of timber towards the initial end of the hauling track, or to the left in FIG. **1**. At the same time those pile-ups which may have been formed in the chutes break up. One such pile-up **17** in the chute **12** has been illustrated in the figure. The running time of the conveyors in the latter direction is shorter in order that the ultimate end of the hauling track might receive wood at all. It is, furthermore, expedient to arrange the running time of the conveyors in the latter direction to be variable in such manner that it is longer the closer to the ultimate end of the hauling track the conveyor in question is located. Hereby the wood feeding time into the chutes is longer at the ultimate end of the hauling track, where the wood layer is correspondingly thinner. The running times may vary so that conveyor **5** runs for one second, conveyor **6** for two seconds, etc.

It is obvious to one skilled in the art that various embodiments of the invention may vary within the scope of the claims presented below.

I claim:

1. An arrangement for distributing pieces of wood into feed chutes of a plurality of consecutively located wood processing stations comprising, in combination,

a plurality of conveyors spaced from each other by predetermined gaps and carrying pieces of wood transferred from one conveyor to the neighboring conveyor in sequence;

feed chute means in said gaps between said conveyors for receiving pieces of wood from said conveyors;

wood processing means at the ends of said feed chute means and fed with wood from said chute means, the quantity of wood in said chute means decreasing during operation of said processing means for processing wood consumed from said chute means;

means for operating said conveyors periodically for predetermined time intervals in a forward feeding direction to replace the wood consumed from said chute means by said processing means; and

means for operating said conveyors periodically for predetermined time intervals in a reverse direction for substantially inhibiting accumulation of pile-ups of wood at said chute means feeding said processing means.

2. The arrangement as defined in claim **1** wherein said predetermined time intervals when operating said conveyors in reverse direction are substantially shorter than said time intervals when operating said conveyors in forward feeding direction.

3. The arrangement as defined in claim **1** wherein each of said time intervals when operating said convey-

ors in forward feeding direction is of the order of several seconds.

4. The arrangement as defined in claim 1 wherein said conveyors are operated in reverse direction following each operation of said conveyors in the forward feeding direction.

5. The arrangement as defined in claim 1 wherein the travel of the conveyor in said reverse direction increases toward the end conveyor.

6. The arrangement as defined in claim 1 wherein said feed chute means comprises feed chutes having cross-sectional area increasing in magnitude in direction toward said processing means.

7. The arrangement as defined in claim 1 wherein said wood processing means comprises wood grinding means.

8. The arrangment as defined in claim 1 wherein said pieces of wood comprise logs of wood arranged transverse on said conveyors.

* * * * *