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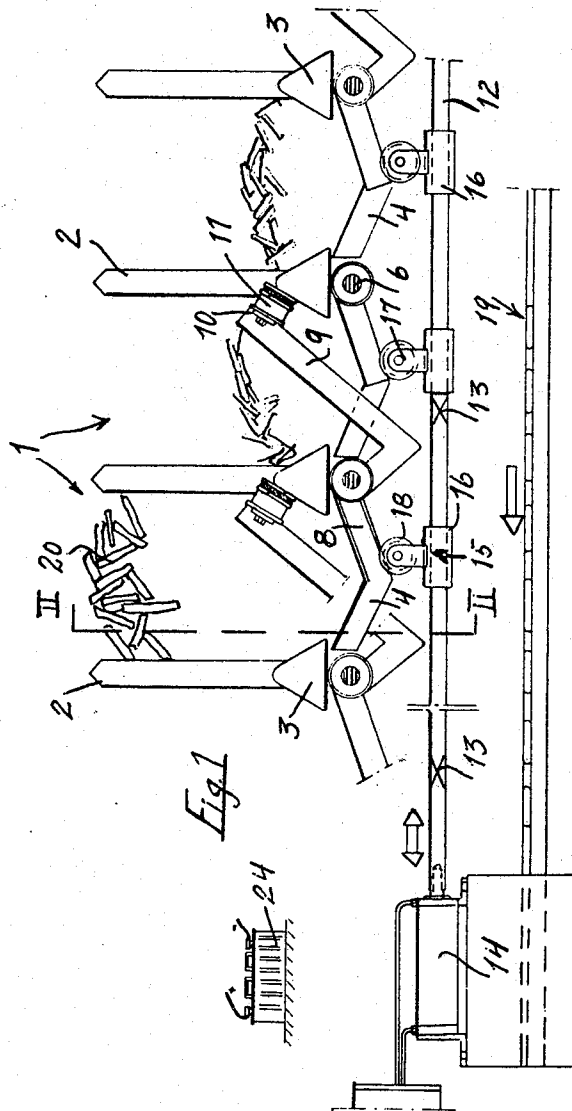
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WOOD DISPENSING CONTROL MECHANISM

Filed April 22, 1968

3 Sheets-Sheet 1



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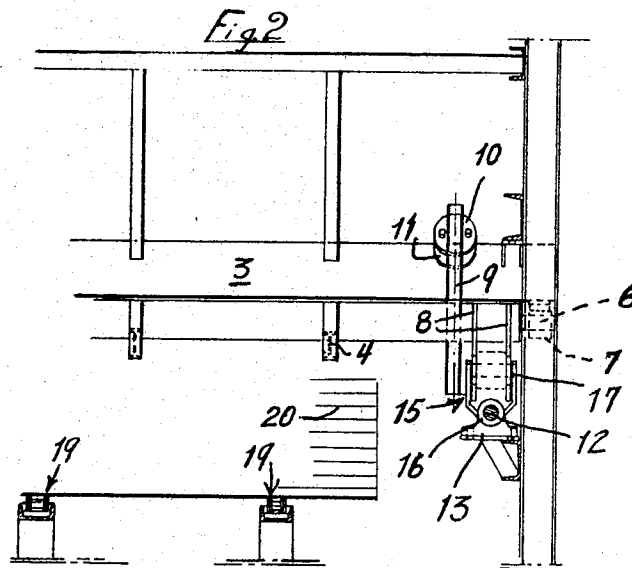
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WOOD DISPENSING CONTROL MECHANISM

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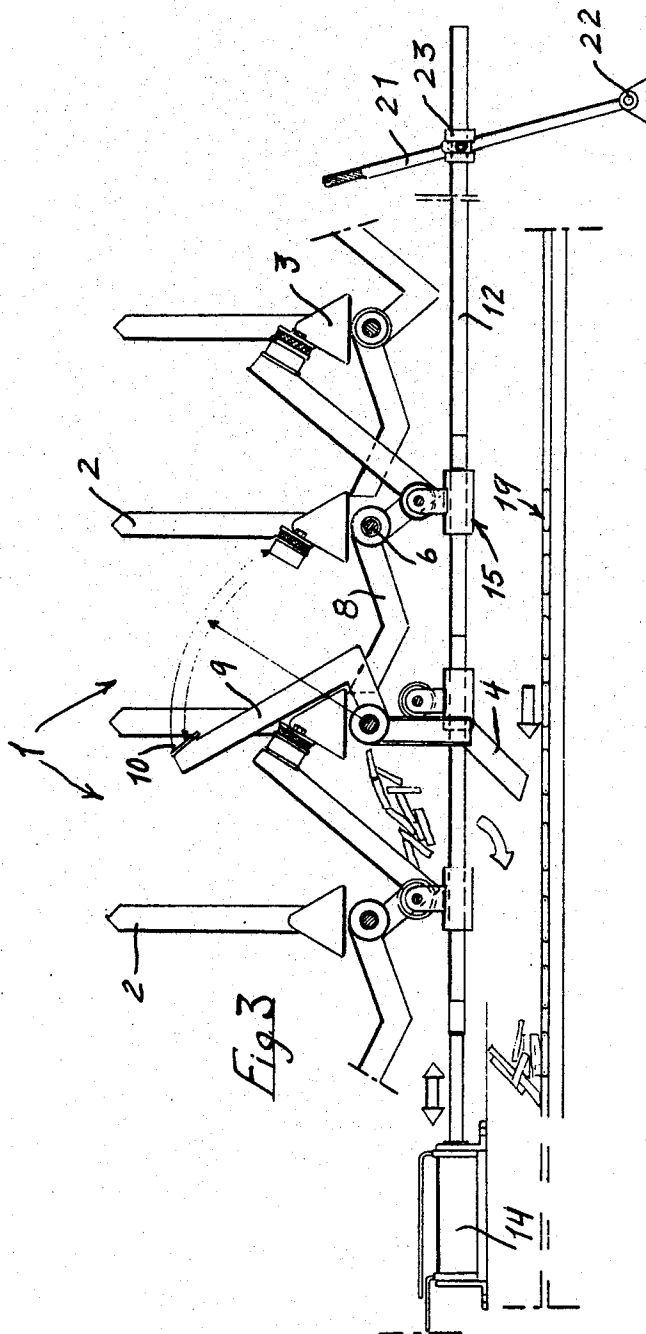
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WOOD DISPENSING CONTROL MECHANISM

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**WOOD DISPENSING CONTROL MECHANISM**  
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4 Claims

## ABSTRACT OF THE DISCLOSURE

Apparatus for the intermediate storage of sawn wood in a plurality of adjacent pockets and for emptying at least one of the pockets onto a conveyor in which a selectively operable control arrangement is associated with a pivotable bottom of each pocket. The bottom, when released, is adapted to swing into an open position via gravity. A reciprocable locking member is arranged substantially perpendicular to the transverse direction of the pocket and has control means cooperable with a control portion on each bottom whereby in a first position any bottom not arrested by the control arrangement swings to an open position via gravity and in a second position the opening of any bottom is prevented regardless of the control arrangement's condition.

The present invention relates to apparatus for handling sawn wood and more particularly to an installation such as a saw mill wherein sawn wood is processed and transported between different machines or intermediate storage places.

Sawn wood of different grades or dimensions is frequently sorted into one pocket or compartment for each grade or dimension and, after a predetermined quantity has been accumulated or at a predetermined time, the entire contents of one or more pockets or compartments is then transferred to a transport means such as a conveyor or a vehicle.

More specifically, the invention relates to new and improved selectively openable bottom means for intermediate storage pockets or compartments of the type described, including selectively operable arresting and releasing means for each individual openable bottom and a common control means for all of the bottoms of the pockets or compartments in one group of such pockets or compartments.

Devices of the type initially described are known in which the bottom closure of each pocket may be selectively opened either manually or by power means such as a motor. Hydraulic and pneumatic assemblages have also been used for accomplishing this purpose. To date the usual practice has been to employ a separate operating means for each of the pockets or compartments but this technique has proven to be expensive as well as unreliable.

In the event that a single operating member is used it is only possible to operate one pocket or compartment at a time which, for some applications is not acceptable.

The object of this invention is, therefore, to provide an apparatus of the type described in which one or more of the pockets or compartments may be emptied selectively and simultaneously employing but one source of motive power common to all of the pockets or compartments.

According to the invention, each of the pockets or compartments is provided with a door like pivotable bottom component and an electromagnetic arresting and releasing member co-operable with the bottom component, the bottom components being arranged to swing or pivot into an open position due to the effect of gravity acting upon

the bottom component per se or on the sawn wood accumulated in the respective pockets or compartments, and a reciprocable locking member common to all of the pockets or compartments and which extends substantially perpendicular to the transverse direction of the pockets or compartments and is provided with control means co-operable with the bottom component of each pocket so that when the reciprocable locking member occupies a first position, any bottom component which is not arrested by the electromagnetic member will be free to swing into an open position under the influence of gravity, and a second position in which any opening of the bottom components is prevented, regardless of the condition of the electromagnetic members.

Further objects and advantages of the invention will become more readily apparent from the following detailed description of a preferred embodiment of the invention and annexed drawings, in which drawings:

FIGURE 1 is a side elevational view with certain parts being shown in section of an apparatus embodying the present invention,

FIGURE 2 is a view taken along the line II—II, and

FIGURE 3 is a view generally similar to FIGURE 1 illustrating the apparatus during an unloading operation.

The present apparatus includes a plurality of adjacent substantially parallel pockets or compartments 1 of approximately rectangular cross section. The pockets are divided or separated from one another by vertical partition means constituted by vertically disposed bars 2 the lower ends of which are affixed to transverse horizontal members 3 of triangular cross section. The bottom of each pocket 1 is defined by a plurality of bars 4 which are secured at one end to a shaft 5 having a reduced portion 6 at either end with the reduced portion 6 being journaled in bearings 7 as illustrated in FIGURE 2. In proximity to the ends of the shaft 5 are located control means 8 and arms 9 and it will be noted that the arms 9 incline upwardly from the shaft and are provided with metal plates 10 at their upper free ends. The plates 10 function as armatures for electromagnets 11 which are secured to the transverse horizontal members 3.

A horizontal shaft 12 is arranged directly below the control means 8 at the opposite ends of the pockets or compartments 1 (FIGURE 2). The shafts 12 are parallel with the direction of movement or the transport direction of a conveyor 19 which moves below the pockets and the shafts 12 are journaled at each end in bearings 13. Each shaft 12 is reciprocable by means of a hydraulic or pneumatic assemblage 14, the piston of which is connected to the shaft 12 in any suitable and convenient manner. In the event of a power failure, the shaft 12 may be reciprocated by a manually operable handle 21 which is provided with a fixed pivot 22 at one end thereof and is slidably attached to the shaft 12 by suitable members 23 at an intermediate location as clearly illustrated in FIGURE 3. The shaft 12 carries a control member 15 for each pocket or compartment 1 and such control member is defined by a cylindrical sleeve 16 having two protruding members or ears 17 between which a contact roll 18 is arranged with the contact roll 18 being co-operable with the control means 8.

In the event it is desired to release the sawn wood held in temporary storage in a pocket such as denoted 20 in FIGURE 1 and transfer such wood to the conveyor 19, the apparatus will initially be in the condition illustrated in FIGURE 1. In this condition each electromagnet 11 is energized and holds the corresponding plate 10 thereby preventing the shaft 6 from rotating and maintaining the bars 4 in an essentially horizontal closed orientation. The magnet or magnets 11 corresponding to the pocket or pockets to be emptied are supplied with a de-

energizing pulse in a known manner from a convenient switching means. The pulse will cause the magnet or magnets to become inoperable for retaining the plate or plates 10 and consequently gravity acting upon the bars 4 and/or the sawn wood resting on the bars tends to force the bars downwardly into an open vertical position.

This, however, cannot occur so long as the shafts 12 remain in the position illustrated in FIGURE 1. If the shafts 12 are displaced or moved axially to the position illustrated in FIGURE 3, the contact rolls 18 no longer prevent the control means from moving. Consequently, the entire bottom including the arm 9 turns in a counterclockwise direction to the position disclosed in FIGURE 3 where the bottom is open and sawn wood drops or falls onto the conveyor 19.

Upon the pocket or pockets being emptied, the shafts 12 are returned to their initial position toward the left in FIGURE 3 and all magnet coils are again supplied with current so that the apparatus will assume the condition illustrated in FIGURE 1. Immediately thereafter a new operation cycle may be started if required or it may be delayed as long as necessary.

In the event of a power failure during operation, the magnets are arranged to be switched into a secondary circuit including an auxiliary source of current such as an accumulator 24 in a fashion which is of course, well known per se.

It will be appreciated from the foregoing description that the present apparatus permits a selective simultaneous discharge of the contents of one or more of all of the pockets or compartments 1 as a consequence of a de-energizing pulse being fed to one or more or all of the electromagnets and a subsequent displacement of the shaft 12.

This order of operation is preferable inasmuch as the contact rolls 18 are then able to restrain the movement of the floor and prevent any possible damage to the mechanism which could result from a sudden release of the electromagnets and then immediate and unrestrained drop of the bottom of the pocket or compartment. It is also desirable that the bars 4 be provided with a broad V-shaped vertical section as illustrated in the drawings. This results in a more rugged design and imparts a horizontal component of movement to the sawn wood in the direction of the movement of the conveyor 19.

By making the shafts 12 coaxial with the pistons of the hydraulic or pneumatic assemblies a very simple and efficient design is obtained. The triangular vertical member 3 imparts a suitable form to the bottom of the pockets or compartments and a sturdy and rugged attachment for the electromagnets.

What we claim is:

1. In an apparatus for the intermediate storage of sawn wood in a plurality of adjacent pockets and for emptying at least one of the pockets onto a transporting means located below the pockets, means defining a pivotable bottom for each pocket, a selectively operable control arrangement including an electrically operable electromagnetic arresting and releasing means associated with the bottom of each pocket, said bottom being adapted, when released to swing into an open position under the influence of gravity, at least one reciprocable locking member arranged substantially perpendicular to the transverse direction of the pockets, control means on said reciprocable locking member and a control portion on the bottom of each pocket with which said control means co-operates so that when the reciprocable locking member occupies a first position, any bottom not arrested by said electromagnetic means will be free to swing into an open position under the influence of gravity, and a second position in which the opening of any of the bottoms is prevented, regardless of the condition of the electromagnetic member.

2. The apparatus as claimed in claim 1 in which said electromagnetic arresting and releasing means comprises an armature attached to a component of the pivotable bottom and an electromagnet attached to a stationary part of the apparatus.

3. The apparatus as claimed in claim 1 in which the bottom of each pocket includes a plurality of bars secured at one end to a pivotable shaft and having their opposite free ends extending in the direction of movement of the transporting means, with each bar having a broad, V-shaped vertical longitudinal section.

4. The apparatus as claimed in claim 1 in which said reciprocable locking member comprises a shaft adapted to be reciprocated by a fluid pressure operated assemblage having a piston coaxial with the shaft.

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