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Method and Apparatus for Assorting Timber *)

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This invention relates to an improved method of and arrangement for sorting and discharging separated different kinds of timber, such as long-tailed timber, log timber, billet-wood, etc.

The simultaneous floating of different kinds of timber, presents difficulties, because each kind moves with different speed and the slow moving short wood is overtaken by the faster floating log-timber, particularly at the curves, and therefore a sorting of the timber is carried out at the outlet of the retaining basin.

The method of separating the different kinds of timber is based on the fact, that the pieces of wood of different thicknesses are submerged in the water to different depth and therefore by draining off the topmost water-layer only, at first the smaller billet-woods, floating on the surface, are set into motion, while the log-timber and long-tailed timber which float deeper in the water can float off only in case the overflow is made to a greater depth. Thus by a suitable adjustment of an overflow-door the different kinds of timber are sucked into a short channel which preferably is arranged in communication with a retaining or collecting basin. Timber, floating at a greater depth, is prevented from floating off by occasionally lifting the overflow-door, whereby a retaining action arises, which stops the start of the undesirable movement.

After the discharge from the said short channel, a further separation of the different kinds of timber is carried out by reason of the fact that the small pieces of wood float on the top and in case the overflow-door is lowered very slightly only, these small pieces are discharged into a wet-chute which lies at a proper depth opposite the floor of the channel, while after a further lowering of the overflow-door the log-timber is discharged into a higher timber-chute by reason of the greater speed of the water.

The short channel is provided with longitudinal ribs, in order to prevent a rotation or eddying of the water in this part. The outflowing water passes into a discharge-pit, which is provided with a grate for catching the billet-wood and for guiding the latter into the chute. In this manner the billet-wood and log-timber pass in a wet condition into the dry chute, whereby the sliding capacity of the wood is increased by about 8% and consequently the slope of the chutes can be decreased considerably. The dropping water may be employed for driving mechanical means as will be described hereinafter.

However, as a rule the valuable long-tailed timber cannot be conveyed on the chutes constructed for log-timber in consequence of their curvatures, and therefore it is of advantage to separate the long-tailed timber and convey it in another manner. According to the present invention this is accomplished in the following manner:

A supporting device, for instance a wire-rope or rail, which follows the direction of flow of the water, is arranged in a suitable height (about 7 feet) over the upper water-level above the

short channel. Overhead cranes provided with chains or grippers, are arranged on this supporting device. After the long-tailed timber has been sucked into the short channel similar to the log-timber, the overflow-door is raised, whereby the oncoming wood is stopped immediately and the long-tailed timber is disposed exactly underneath the supporting device. If the water rises further, the long-tailed timber is disposed exactly underneath the supporting device. If the water rises further, the long-tailed timber is also raised until it can be readily attached to the supporting device by means of chains or grippers.

If the overflow-door is again lowered the water flows off faster in consequence of the gradient thus formed, the timber hanging on the supporting device is taken along and now freely floats, also at a slight gradient, with the speed imparted by the water, until it is deposited either at the place of destination or at a place, from which it is conveyed by vehicles or a waterway, adapted for long-tailed timber.

A sorting device arranged at a retaining basin is illustrated in cross section by way of example on the accompanying drawings.

A slightly inclined channel 42 (about 0.5:1000) is in communication with the retaining basin 41 for receiving the different kinds of timber, which come down from the different sides or are supplied upon chutes. A working stand 43 is arranged alongside the channel 42. An overflow door 44, which is vertically slidable in a slot 45, serves for closing the end of the channel 42 and is raised by the buoyancy of the water, in order to close the channel 42. Also upwardly acting weights, springs and the like (not illustrated) may be provided in order to promote the buoyancy and effect an automatic closing of the door. Rollers 46 are arranged on the door or in the slot 45 in order to facilitate the movement of the door. One end of a rope 47 is secured to the bottom end of the door 44 and passes over pulleys 48 and 49. By means of a lever 50, attached to the pulley 49, the door 44 may be readily and comfortably operated from the working stand 43. The graduations I, II, and III of a dial correspond to the discharge parabolas I, II, and III. A water-discharge channel 51, located in front of the door 44 or slot 45, is sufficiently wide to allow the water to flow off even in case the door 44 is fully opened.

The chute 52 for the log-timber is connected to the channel 51 slightly below the floor of the channel 42. The chute 53 for the billet-wood lies below the chute 52, the wood passing over an inclined grating 54, which traverses the channel 51. A supporting rope 55 is arranged above the channel 42 and carries cable grippers 56, which are provided with chains 57 for securing the timber.

The workman standing on the platform 43 controls the level of the water in the channel 42 according to the thickness of the timber passing through the latter at the time by raising or lowering the door 44 by means of the lever 50. If a log-timber enters the channel 42, the workman lowers the door 44 by means of the lever 50. If a log-timber enters the channel 42, the workman lowers the door 44 in such a way, that the log-timber is discharged onto the chute 52. In the case of billet-wood the door 44 is lowered to such an extent, that the same is discharged onto the chute 53, while the small pieces of wood are discharged through the channel 51 by operating the door in such a way, that the said wood follows the way of the discharge parabola I.

I claim:

1. In a device for separating different kinds of timber and in combination with a storage basin, a channel leading therefrom of an adjustable spill-way door for said channel and a mechanical

conveying device arranged over said channel and means on said conveying device for attachment thereof to said timbers.

2. In a device for separating different kinds of timber and in combination with a storage basin therefore, of a channel connected thereto, and an adjustable overflow door controlling the outlet of said channel.

3. In a device for separating different kinds of timber, and in combination with a storage basin therefore, of a channel connected thereto, and an adjustable door for the outlet of said channel and chutes arranged at different levels at the overflow side of said door.

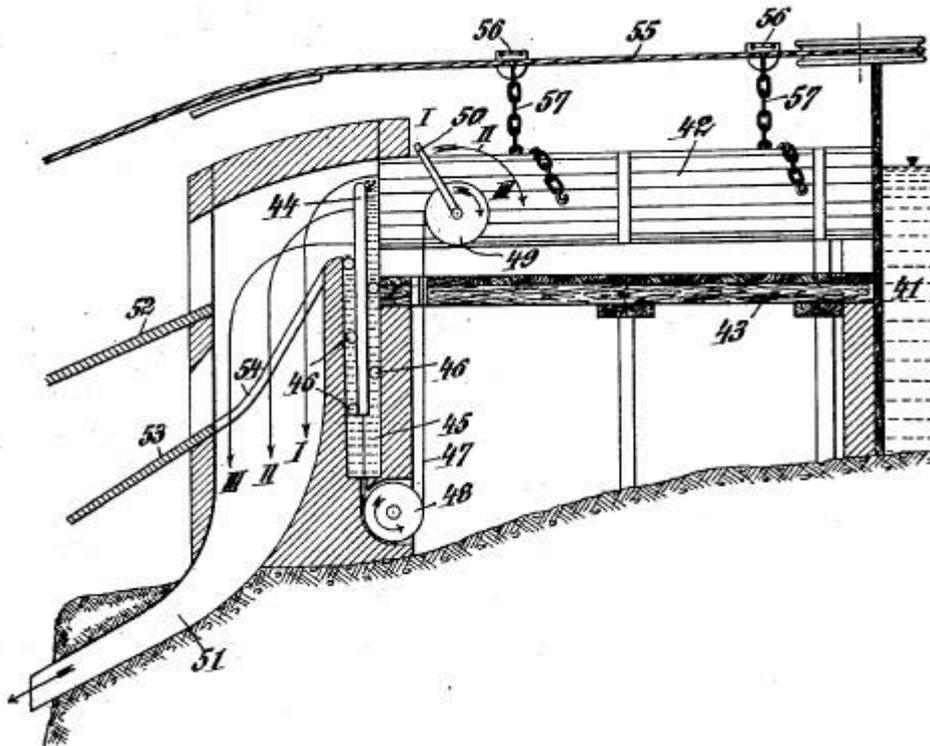
4. In a device as claimed in claim 3 and in combination therewith, a mechanical device for conveying said timbers arranged above said channel and means on the conveying device for attaching said conveying device to said timbers.

5. A method of separating timber of varying thickness, consisting in floating the timber in a liquid and inducing a flow of the upper strata of the liquid to move the timber at a rate dependent upon the extent of immersion of the timber in the liquid and to selectively discharge said timber through a discharge channel in accordance with the thickness of the timber.

6. A method in accordance with claim 5 in which the timber is discharged into separate channels in accordance with its dimensions.

In testimony whereof I affix my signature

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*) See also: Austrian Patent # 113,772

Verfahren und Vorrichtung zum Ausländern und Weiterbefördern von Langhölzern aus Schwemmanlagen. Application filed: July 23, 1928 – patented: February 15, 1929