CARRIER FOR COAL, HAY, ETC.

The engravings show an improvement in carriers and track for handling hay, grain, coal, ensilage, and other materials requiring elevation and transportation. As will be seen by examining the engravings, there is a new departure in the construction in both the carriers and track, differing materially from the principle generally employed in similar devices.

The most serious objection made to the use of the ordinary carrier being that when the fork or bucket is elevated to the carrier, the motion is so suddenly arrested that it produces a shock which would scatter a large portion of its load back and tend to break or derange the carrier.

To overcome this objection, this carrier is provided with a toggle joint for a locking device, which requires little force to raise it when struck by the traveling pulley with its load. After it is raised and the retaining hook released, the motion is not arrested, the pulley and load can continue to rise for a short distance higher, while the carrier and its load is started, moving along the track. When the momentum is overcome by gravity, the pulley with its load settles into the balanced hook under the carriage, where it is securely held till the carrier is returned to the fixed catch (bolted to track), which, by pressing the upper portion of the hook forward, draws the lower or hooked end out from the eye on the traveling pulley, and allows the toggle to drop down and securely brace the hook, the upper portion of which is engaged by the notch in the fixed catch. The shock is so slight that the driver of the horse used in elevating and conveying cannot tell when the carrier has unlocked and started along the track with its load. Another important feature in these conveyers is a sliding catch, which is used where it is necessary to change the points of elevation; as, for instance, in taking ensilage from silos, only one section of a silo is uncovered at a time, beginning at one end and removing a section of four feet in width, and when this is taken out another section of cover and weight is removed. When it is necessary to change the point in the track where the carrier shall be locked fast, the sliding catch obviates the necessity of climbing up to the track each time it is necessary to make the change. An illustration of this device is seen with the carrier on curved track in Fig. 3. It can be used with either carrier; one is a lever, to the upper end of which is attached a cord, which, passing through a pulley at front end of track, is brought down and made fast at some convenient point below.

To change the catch, all that is necessary is to loosen the cord below, then by taking hold of the draught rope near the traveling pulley, draw carrier and catch to the point where wanted, when the cord is again made fast, and the catch is securely clamped at that point to the rails of track.

Two styles of these carriers are manufactured, one for straight (Figs. 1 and 2), the other for curved tracks (Fig. 3). In the curved track carriers, the axles are pivoted at their centers, and are free to move on the bolts which secure them to the frame of the carrier, with which they are connected by a reach jointed at the center, at which point is attached a guide which moves between the rails of the track and controls the axles, so that they move freely along the track, be it straight or curved.

The draught rope is kept in line with the track by pulleys fastened to the inner rail along the curves. It is claimed that this carrier will run freely along a track curved to a circle, or one which is partly straight, with curves at various points, and reversed with respect to each other. The track principally used with these carriers is put up with iron hangers, which are fastened by wrought loops passing through the hole at top of the hangers, and spiked to rafters or beams, the rails resting on a shoulder cast at the bottom of the hanger, and bolted to keep them in place. The track is narrow gauge, there being only three inches space between the rails. The carriers will run as free, or nearly so, as on a rod, and can be supported as often as deemed necessary. The track cannot be strained out of shape, as it will swing and allow the carrier to keep in line with the point from which the load is being elevated. The buckets for handling grain, coal, and ensilage are shown closed in Fig. 3 and open in Fig. 1.

The supporting bar, 1, is attached to the halves of the bucket by chains at such points that the bucket, when empty, will keep closed by its own gravity; but when loaded, the sides and bottom inclining tend to force it open; and when unlocked, by raising the lever, 2, by pulling on the trip rope, 3, the bucket being so nearly balanced, it is forced open to the extreme point of the levers, when it is held by the notch at the end of the levers engaging in the lug attached to the bucket. When empty, by again pulling on the trip rope, the bucket will close from its own gravity.

It is simple in construction, no shock when being unloaded, and it does not scatter its load. For further particulars the inventor, Mr. J. A. Cross, of Fultonville, N. Y., may be addressed.

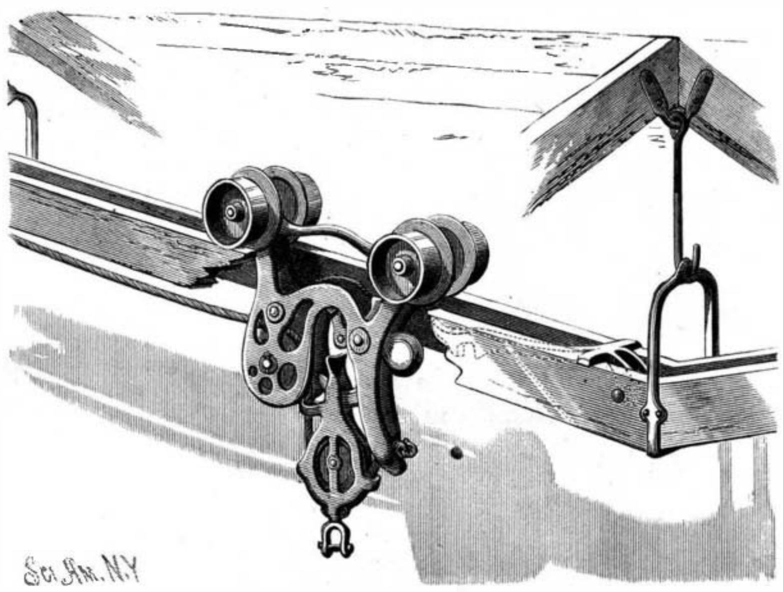

Fig. 2.—CARRIER WITH FIXED HOOK.

Fig. 1.—CROSS' CARRIER, WITH STRAIGHT TRACK.

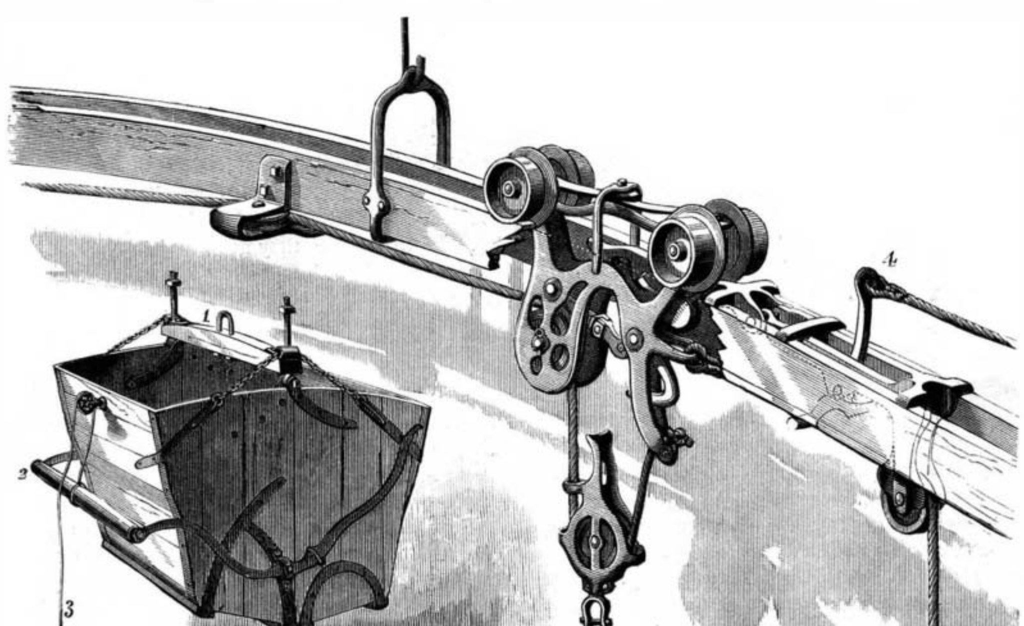

Fig. 3.—CROSS' CARRIER, WITH CURVED TRACK.

THE *Leipziger Tagblatt* shows that in the last ten years the exports of German rails have increased 300 per cent.

The Microscope in Testing Timber.

A paper was recently read before the Franklin Institute, Philadelphia, on the use of the microscope in testing timber, and it was decided that if the microscope condemns the sample, further delay in testing is not worth the while. The larger the specimens requiring to be tested, the greater will be the gain the microscope will effect in avoiding the cost of further proof or the risk of using without such proof. Samples and micro-photographs were exhibited of bridge timbers which had proved faulty, but which a preliminary examination with the microscope would have promptly thrown out. The timber from which these poor specimens were taken was a fragment from a railway bridge wrecked in 1879. The timber was so excessively poor that, on mounting a specimen on the plate of the microscope, its weak and porous nature was at once apparent. The annular rings appeared about three times as far apart as they would be in good wood of similar kind. The medullary rays were few in number and short in length, while in good wood, on the contrary, they are of considerable length and so numerous that tangential sections present the appearance of a series of tubes seen endwise, or a number of parallel chains. After once seeing and comparing samples of good and bad wood, it is easy to recognize the difference with a pocket magnifying glass. The trunks and limbs of exogenous trees, as is well known, are built up of concentric rings or layers of woody fiber, which are held together by radial plates acting like treenails in a boat's side. The rings, representing successive years' growths, are composed of tubes, the interstices of which are filled with cellulose.

The slower the growth of the tree, the thinner these yearly rings, and the denser and harder the wood—other things being equal. Not only is the closeness of texture an indication of the hardness and strength of the timber, but the size, frequency, and distribution of the radial plates which bind the annular layers together may be taken as a very close illustration or sign of the character of the wood and its ability to resist strains, especially a breaking stress. The microphotographs of good and bad timber show that in the strong kinds the concentric layers are close in texture and narrow in width, and the radial plates numerous, wide, long, and stout, while in poor stuff the opposite characteristics prevail. The practical application consists in having such enlarged photographic sections, longitudinal and transverse, of standard pieces of timber, bearing a certain known maximum or minimum strain, and rejecting any piece which the assisted eye detects to have fewer rings per inch of tree diameter, fewer fibers, or fewer radial plates per square inch of section, or to use such pieces with a greater factor of safety. The advantage of the method is that it allows every stick in a bridge or structure to be tested before use.—*Northwestern Lumberman.*

California Vineyards.

Late accounts from California notice the great increase in the size of the vineyards there. A plantation of 200 acres used to be considered a large vineyard; now vineyards of 500 and 600 acres are not uncommon, and one of 1,500 acres was recently planted near Los Angeles. It is expected that in three years or so California will possess vineyards of 5,000 or 6,000 acres in extent. The total number of acres at present devoted to vine culture is estimated at about 100,000, all of which will be bearing in about four years' time, and producing about forty or fifty million gallons annually. New wines at present fetch from 20 to 25 cents per gallon for dry wines, either red or white. Sweet wine is dearer, ranging from 55 to 75 cents per gallon. Though next year's prospects are good, last year's prices for grapes are not likely to be maintained, as the cellars of San Francisco are said to be full.

RECENT advices from Japan report that the intention of the Japanese Colonization Department is to adopt the American system of railroad building in the extension of the railroad system in the northern part of the Empire. This decision is attributed to the economical and satisfactory working of the railroad from Sapparo to the sea coast in Yesso. This road was built by Col. J. A. Crawford.