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French Society of Acclimation.

This Society offers prizes for the introduction into France of new species or useful varieties of animals or vegetables; improvements of the breeds of animals, and the bettering of agriculture generally. They report that a new kind of silkworm has been introduced into Switzerland, and that in Cevennes a hectare of mulberry trees yields a revenue of from 25,000 to 30,000 francs a-year. The *sorgho sucre* is flourishing in the south of France and Algiers, and fully answers expectation by its produce of sugar, alcohol, and forage. They have also a new yam from New Zealand. We notice with satisfaction that the Society head with 500 francs the subscription list for the widow and children of Joseph Remy, the poor fisherman who introduced the pisiculture which has since been so successfully carried out in France.

Canadian Railroads.

Canada is rapidly progressing in solid prosperity, judging from her railways. Five years ago, there were about 100 miles constructed, now there are nearly 2000 miles. There is one Grand Trunk Line—670 miles—completed; and two weeks ago there was a grand celebration at Montreal of this important event. A *system* of railroads is laid out for Canada, with the Grand Trunk Line for a heart, and we think this is good policy.

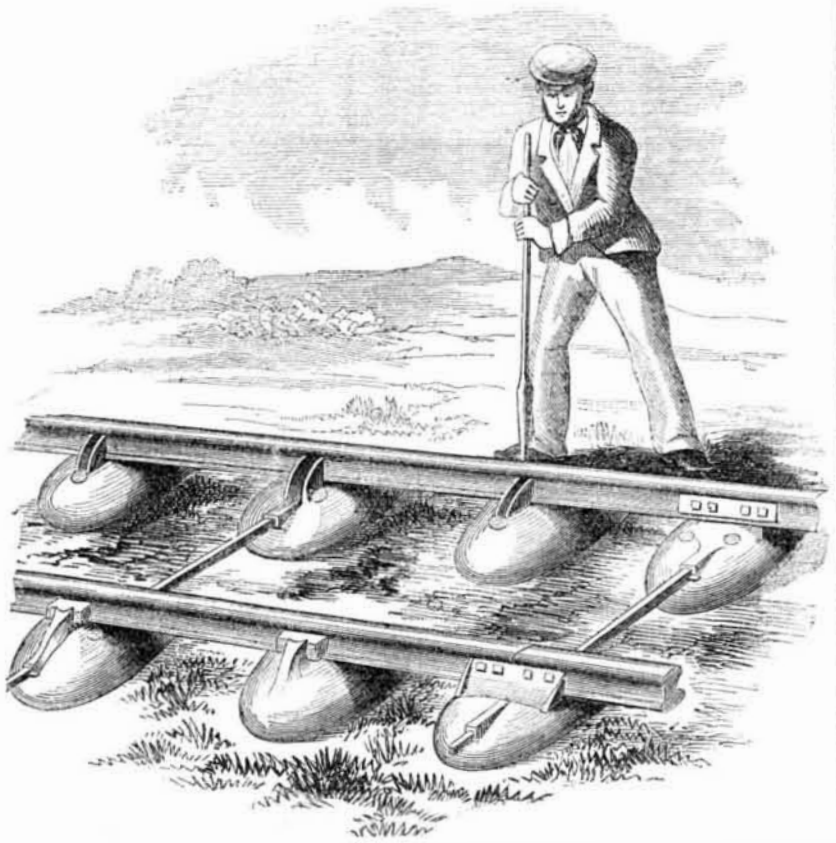
Cast-Iron Sleepers for Railroads.

The annexed figure represents the cast-iron sleepers for railroads, invented by H. Greaves, of England. About 400 miles of it have been laid down on various roads in France, Belgium, and England, and the inventor states they have been perfectly successful.

A permanent way of cast-iron has been attempted a number of times, and by various persons, always resulting in failure; one, therefore, said to be successful, must be of interest to every railroad company in the world, because the material is almost indestructible, as it does not decay like wood, and therefore does not cost such immense sums for constant repairs.

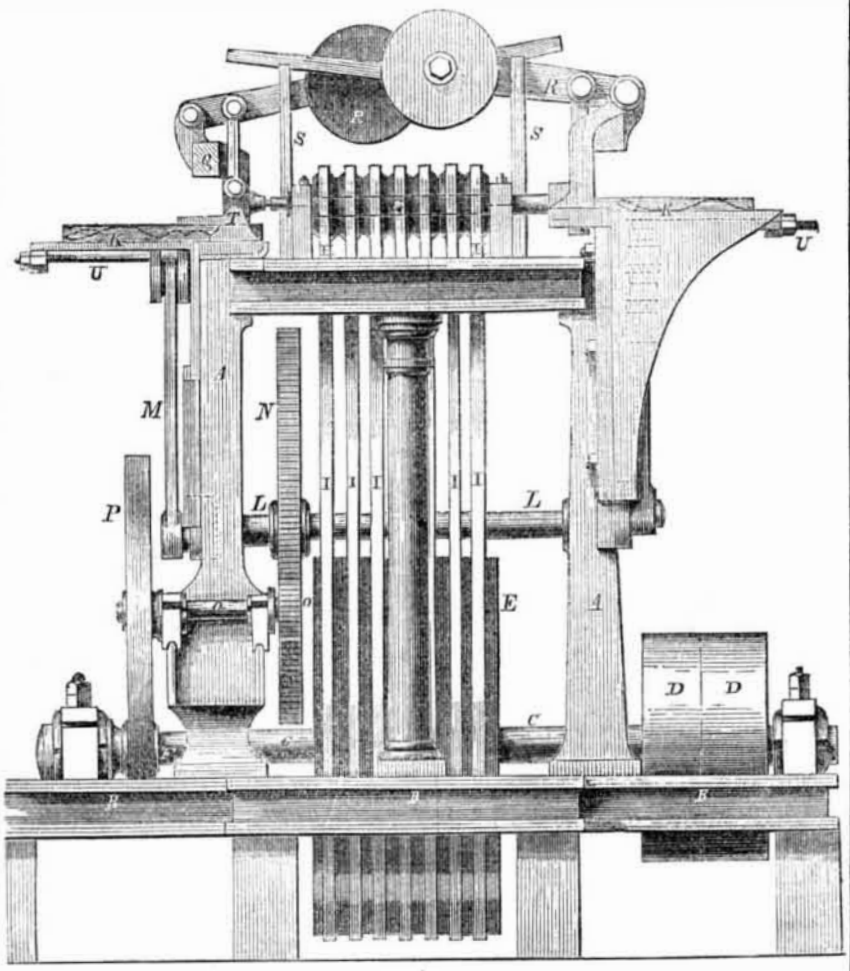
The form of the sleepers is semi-spherical, which thus admits of the smallest amount of metal for a given strength. Those intended to receive the tie-bars are cast with an opening through them, and the ties have but to be keyed to secure the rails firmly at the proper distance apart. These sleepers, by this method of tying them are suitable for any gauge, and allow of the rails being laid with remarkable facility. The chairs to receive the rails are so formed as to allow of the removal of a defective or worn out rail without disturbing the sleeper. The oscillation of rails causes the wear and tear of locomotives and cars, but these sleepers are stated to preserve the rails perfectly firm, and as not liable to spring like wooden ones. As these sleepers have a broad base, they tend to impart solidity to the whole track. The rails are fastened in the chairs with wooden keys; each sleeper weighs 100 lbs., and is buried a considerable distance in the ground, which, with its great breadth of surface tends to prevent all lateral motion

RAILROAD CAST-IRON SLEEPERS.



The above figure is copied from the London *Engineer*; it was accompanied with a communication from the inventor, Mr. Greaves, who, naturally, extols his invention highly. Railroads form a great institution in our country, and we have reason to know that we have presented from time to time much valuable information, which has been acted upon by those who manage them, and which has tended to great improvements, both in their permanent-way, rolling stock and management. The information presented on another page respecting the preserving of railway timbers, and the information here given regarding cast-iron sleepers, will be appreciated by those interested as engineers and managers on all our railroads.

MACHINE FOR CUTTING DOVETAILS AND TENONS.



Cutting Dovetails and Tenons.

This invention relates to a new arrangement of machinery designed to facilitate the cutting of dovetails and tenons, and specially applicable to the manufacture of packing cases, and other boxes.

The accompanying figure is a side elevation; the machine consists of a series of spindles, fitted at their opposite ends with chisel-edged cutters, and mounted horizontally in a fixed frame. These spindles are each provided with a pulley, which receives a driving band from a common drum, the rotation of which gives a rapid rotary motion to the cutters. The wood to be dovetailed or tenoned is fed up to the two rows of cutters by means of ascending tables, fitted one at each side of the machine, and self-acting nipping apparatus is provided for retaining the wood in position on the tables while the cutting is proceeding. A A is the main framing, and B the bed plate to which it is bolted. This bed plate is fitted with bearings which carry the main driving shaft C. D D are the fast and loose pulleys on the shaft C, and keyed to the same shaft is a large drum, E, and a small pulley, F. The cutter spindles are shown at G G, arranged all in the same plane, and lying parallel with each other in bearings provided for them in the upper part of the framing A. For cutting dovetails, these spindles are provided at their opposite ends with cutters of different forms, which forms bear a certain ralation to each other, in order that the dovetails made by the one set of cutters may exactly correspond with the dovetail recesses made by the other set to receive the dovetails. The cutter is formed and operated so as to make a cut corresponding to the segment of a cylinder, the wood not being permitted to pass or come up to the axial line of this cutter. To form a dovetail which shall correspond in figure with this cut, a hollow or concave-faced cutter is employed, and it is operated so that its largest diameter shall act upon and pass through the wood; counterpart recesses are by this means formed in the edges of the wood under operation, so that when put together a firm dovetail joint is produced. The cutters are tapped into the ends of the spindles, G, and they therefore admit of being readily removed to be sharpened or replaced by others of different dimensions as required. As the cutters are attached to opposite ends of the spindle, it will be necessary to tap one set with a right and the other with a left-handed screw, to insure the cutters retaining their places in the spindle ends. Keyed to each spindle, G, is a pulley, H, which receives motion from a strap or band, I, proceeding from the large drum, E. The wood to be dovetailed is placed on the tables, K, at either side of the machine, where it is held fast by an arrangement of nipping apparatus, and presented to the cutters. These tables slide up and down in vertical guides made for them in the main framing. Their vertical motion is obtained by the rotation of a crank shaft, L, which has its bearings in the main framing, A, and is connected to the tables by crank rods, M M, Keyed to the crank shaft is a large spur wheel, N, which gears nto a pinion on a stud axle, O, supported in bracket bearings. This stud axle carries a pulley, P, which receives a band or cord from the pulley, F, on the main driving shaft, C. As the shaft, C, revolves, a slow reciprocating motion will be given to the tables the amount of which will be determined by the throw of their respective cranks. Affixed to the upper part of each table is a cross-head, Q, to the middle of which a weighted lever, R, is jointed. This lever rests upon an adjustable plate, S, standing up from the main framing, A, and this lever serves to carry, by means of links, a sliding presser plate, T, which, when in action, holds down the wood firmly on the table, and is capable of moving up and down in guides in the sides of the cross head, Q. The hight of each plate, S, (which serves as a fulcrum for the rocking lever,) is so adjusted that, as the table rises to bring the wood up to the cutter, the weighted end of the lever, R, will be depressed, and will carry with it the presser plate, T, and keep it in close con-