clocks, is regulated by revolving vanes, capable of easy and instantaneous adjustment. The barrel, which is exactly on the same principle as that of a musical box, and is constructed to play seven tunes, is studded with brass pins, and in its revolution releases the detents and lets the hammer descend upon the bell; a cam-wheel of peculiar construction, continuously revolving, immediately draws the hammer back into a striking position, and forces the detents back into their proper place. When the bells are required for ringing, by a simple arrangement a bar is turned down on the keys, which prevents the machine being set in motion, so that the ringing may continue for any length of time without fear of interruption. The works of the machine are enclosed in a massive cast-iron frame bolted together with iron nuts and bolts, and 7 ft. long, 4 ft. wide, and 4 ft. high, and weighing over 1½ ton. The motive power is given by weights, weighing 14 cwt., which are suspended by a steel line (280 ft. in length) from the iron barrel which drives the main wheel, and thus sets the whole machine in motion. The four musical barrels have seven tunes on each and are 5 ft long, 12 in in diameter, and are made of mahogany, each being pricked with 1,100 brass pins, one-eighth of an inch square. There are twenty-six hammers for striking the bells, some of which weigh 2 cwt., 1½ cwt., and 70 lb. each, altogether weighing 1,202 lb. The weight of the whole machine, including hammers, cranks, lines, &c., is nearly 4 tons of metal.

The great advantages claimed for the new system of carillon machinery are, that instead of the hammers being lifted up by the pins on the musical barrel (in the way common to all chiming machines on the old system), the two actions of lifting the hammers and letting them off to strike the bells are separated, so that the moment the hammers are released by the small pins on the musical barrel, they are again instantly raised into the striking position, their actions being perfectly simultaneous

To show the facility with which the carillon machine acts upon the bells, it is stated that, notwithstanding the great weight of the hammers, an ivory key-board could be attached, the same as in a pianoforte, so that the tunes could be played upon the bells by the fingers as easily as playing a church organ, and any number of tunes could be played by having a series of musical barrels with seven tunes on each.

THE AUSTRALIAN FEVER TREE.

A question of considerable general interest was recently discussed at a meeting of the French Academy of Sciences. The subject was the remarkable sanitary influence of the *eucalyptus globulus*, when planted in marshy grounds; and the tree, in brief, it seems, has the curious and valuable power of destroying the malarious element in any atmosphere where it grows.

The species is indigenous to Tasmania, and is known among the colonists by the name of the Tasmanian blue gum tree, on account of its dark bluish tinged leaves. Growing in the valleys and on thickly wooded mountain slopes, it often attains a height of from 180 to 220 feet, with a circumference of trunk of from 32 to 64 feet. The foliage is thin and oddly twisted, surmounting, with a thin crown, the top of the pillar-like stem. The wood exhales an aromatic odor, and, after seasoning, is said to be incorruptible. For this reason, it is largely used in the building of piers, vessels, and other structures exposed to the ravages of the weather. It is largely exported, to the aggregate value, an authority states, of $4,000,000 per year.

To the peculiar camphor-like odor of the leaves and the large absorption of water by the roots is doubtless owing the fact of the beneficial influence of the tree. Where it is thickly planted in marshy tracts, the sub-soil is said to be drained, as it by extensive piping.

Miasma ceases, we are told, wherever the eucalyptus flourishes. It has been tried, for this purpose, at the Cape; and, within two or three years, completely changed the climatic condition of the unhealthy parts of that colony. Somewhat later, its plantation was undertaken, on a large scale, in various parts of Algiers, situated on the banks of a river, and noted for its extremely pestilential air; about 13,000 eucalypti were planted. In the same year, at the time when the fever season used to set in, not a single case occurred, yet the trees were not more than nine feet high Since then, complete immunity from fever has been maintained. In the neighbourhood of Constantina, it is also stated, was another noted fever spot, covered with marsh water both in winter and summer; in five years, the whole ground was dried up by 14,000 of these trees, and farmers and children enjoy excellent health. Throughout Cuba, marsh diseases are fast disappearing from all the unhealthy districts where this tree has been introduced. A station house, again, at one end of a railway viaduct in the Department of the Var, was so pestilential that the officials could not be kept there longer than a year; forty of the trees were planted, and it is now as healthy as any other place on the line.

La Nature, to which journal we are indebted for the engraving on page 278 of the peculiar leaves and flowers of the tree appears, adds that careful experiments have proved that, in a medicinal preparation, it cures the worst cases of intermittent fever, against which quinine proves powerless. It is also valuable as a disinfectant, and as a dressing for wounds while more recent investigations point to the fact that it may be rendered of great service in catarrhal affections.

DE LORIERE'S PATENT CRANE EXHIBITED AT VIENNA.

In the illustration on page 274 we illustrate a crane exhibited at Vienna last year by Messrs C. E. De Loriere & Co, Victoria street, Westminster. We cannot better describe it that in the inventor's own words. The object of the apparatus combined with the gearing is, says M. De Loriere, "to more effectually utilise the accumulated power, in a fly-wheel in motion by applying it at the point of greatest efficiency through the medium of a compound motion, thus overcoming the difficulty of the dead points and making effective power heretofore lost."

The apparatus is a combination of cranks and levers connected together, and described as follows: First, the arrangement of cranks and levers that are coupled by connecting-rods having no lost motion, the arms of the lever from the fulcrum being of the same relative length as the cranks Second, the arrangement of levers that have lost motion, which is produced by travelling bearings working in the slots shown in Figs. 1 and 2. The working of the apparatus is as follows:—The hand crank marked C1, is placed at right angles to the cranks A. The force exerted upon the crank during that portion of its revolution which is most effective is transmitted directly through the system of rigid cranks and lever A, being then at their point of greatest efficiency, the cranks and levers marked M, not transmitting any of it until the moveable bearings working in the slots of the levers marked M, have taken up the lost motion and become effective. But at this point the cranks and lever marked A, are at dead point, or nearly so, and not effective. Beyond this portion of the revolution of the hand crank C1, the power is applied through one or the other of the systems marked B, alternately at their points of greatest efficiency until they are at dead points, when the force is again transmitted through until it has nearly reached its dead point again, and so on alternately. By this combination the power accumulated in the fly-wheel is constantly being discharged upon the cranks at their most effective leverage, and the power is discharged suddenly as by concussion, thus making the momentum of the fly-wheel far more effective than in any apparatus heretofore in use.—*Engineer*.

ROLLED SCREWS.—Messrs. Charles Fairbairn and Co Tyne Patent Nut and Bolt Works, Gateshead, are now making screws of all sizes by a very curious and successful process Briefly described, the process consists in rolling bars of heated iron between two peculiarly grooved plates. The result is quite satisfactory; specimens of the work now lying before us leave nothing to be desired. By planing away one side of the screws and treating the surface with acid, it becomes evident that the fibre of the metal follows all the threads of the screws, which are therefore superior in strength to cut screws from which the metal is removed.