

THE THOMPSON WOODEN SPRING FOR VEHICLES.

We illustrate herewith a new wooden spring which may be adapted to any variety of vehicle, from children's carriages to railway cars. The advantages claimed for it are that it is light, strong, and durable; that it can be adjusted to carry with safety a greater or less weight; that frost has no effect upon it, and that its cost is about one fourth that of steel springs.

The ends of the wooden spring bars, A, are inserted in cast iron sockets, B, where they are separated by small central tongues. C is a tension rod, the extremities of which pass through the centers of the castings, B, and have nuts, D, screwed on the ends. The outer portions of the nuts are square, so that they may be readily grasped with a wrench, and their inner parts are cylindrical and fit against spiral springs, E, placed in the castings, B. Said springs assist the wooden bars, A, to recover their former position when the pressure is removed. By this construction, by simply adjusting the nuts, A, the strength of the spring may be increased or diminished as desired to suit the weight supported. The clasps, F, protect the bars, A, from wear, and all metal work is handsomely plated or bronzed.

We are informed that a pair of these springs, weighing 12 lbs., takes the place of a pair of 40-lb. steel springs, and that four such wooden springs, weighing 36 lbs., may be substituted for as many steel springs of 250 lbs. weight. The device can be applied in side bar as well as in elliptic form, and no change of fastening is required to insert it in place of a steel spring in case of the latter being broken or injured.

Patented through the Scientific American Patent Agency, December 18, 1877. For further particulars address the proprietors, Messrs. Thomas Ledwich & Co., Avoca, Iowa, or George H. Thompson, General Superintendent, Omaha, Neb.

A Deaf-Mute Telegrapher.

Considering the fact that in telegraphy, as now practiced, all messages are read from sound, and that on the quickness and good training of the ear depends, to a great extent, an operator's skill, one of the most remarkable cases (in fact, the only one) on record in this or any other country was that of the late Samuel J. Hoffman. Having lost his hearing entirely a short time after learning telegraphy, he nevertheless continued the practice and successively occupied prominent positions as long as he lived. He made use of a sounder of his own construction, and received by placing his hand over it in such a manner that he could feel distinctly every vibration of the armature. He would thus continue to receive by the hour without "breaking," and experienced no difficulty except when the wire worked hard or the circuit changed frequently; he obviated this by placing his fingers on the binding screws of the relay, distinguishing the characters by the variations of the current. He died in Florida, having gained the reputation of being a most thorough operator and electrician.

THE INDIA RUBBER TREE.

Caoutchouc, or India rubber (called by the South American Indians *cauchucu*), is the inspissated juice of a number of trees and plants found in Mexico and Central America, in Brazil, Guiana, Peru, and in the East Indies. The illustration represents a twig of the Mexican tree (*Castilloa elastica* Cerv.) in blossom. This tree is a genus of the order *Artocarpaceae*, and is very similar in appearance to its South American cousin, the *Siphonia elastica*, which is the most prominent source of supply of caoutchouc. The *Ficus elastica* of the Ganges, another congener, is described as one of the noblest of trees; while all the varieties of the India rubber tree may be classed among the most useful of Nature's products. The Mexican tree grows from 50 to 100 feet high and from 8 to 20 inches in diameter. It has male and female flowers alternating on the same branch. The male flowers have several stamens inserted into a hemispherical perianth, consisting of several united scales. The female flowers consist of numerous ovaries in a similar cup. The juice of the tree is tapped at several incisions in the trunk, and after various processes of manipulation appears in the form of the crude India rubber of commerce.

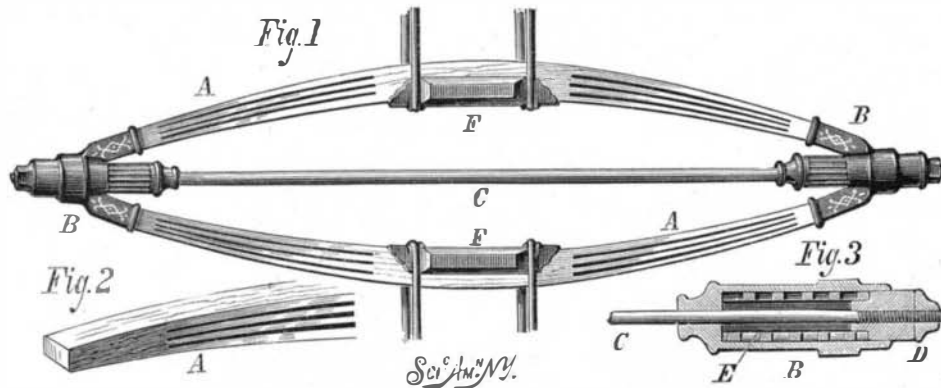
The Orograph.

At a meeting of the French Academy of Sciences, December 10, M. Schrader exhibited his orograph and a geographical map of Mont Perdu made with it. The instrument consists of a circular paper-covered plate with cen-

tral vertical axis carrying a sleeve which can turn round freely. On the top of the sleeve is a telescope, the movements of whose frame in the vertical direction are communicated to a pencil, and transformed by gearing into to and fro movements. If the telescope describes a circle round the horizon, the style describes a corresponding circle on the plate; if the

done in an hour—none appeared afterward to be the least injuriously affected by the operation. In those instances in which the cutting slightly damaged the calyx tube the wound soon healed over and became covered with a yellowish-green, cork-like substance, the latter eventually closing the tube, and thus creating an impassable barrier to the insect. As

regards the shape of the apple, this is somewhat altered by the above treatment, so as to render the variety less easily distinguishable, but the slight diminution in length, resulting from its adoption, is more than compensated for by increased thickness, total absence of grub, and, consequently, generally finer appearance. For the purposes of comparison, a considerable portion of the fruit on each of the trees selected for experiment had been left in its natural state, and the apples operated on were chosen quite at random, regardless of aspect or situation. The fallen fruit under the different trees was found to consist exclusively of such as had not been operated on.

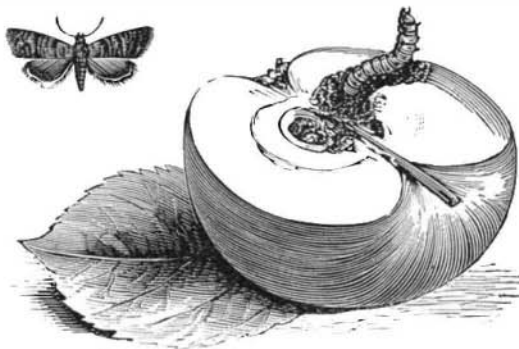


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telescope goes up or down, the trace produced is further from or nearer to the central axis. A spirit level being fixed to the telescope, the circle made when it is even gives a means of estimating the height and depressions.

THE CODLING MOTH.

The well known German pomologist, Dr. Edward Lucas, has recently called attention to a simple method of guarding against the ravages of that tiresome insect plague, the caterpillar of the apple or codling moth (*tortrix pomona*). For an illustration of the moth and grub we are indebted to *The Gard-*



GRUB OF THE CODLING MOTH (*Tortrix pomona*).

den. The plan is dependent for success on the fact that the moth most frequently deposits her eggs between the leaves of the calyx, whence the grub afterward commences its attack on the heart or pulpy portion of the apple, and finally escapes by a hole made in the circumference. Observing this, it occurred to Mr. Krausz, of Stuttgart, the discoverer of the remedy, to try the effect of cutting off the calyx, quite low down at its base, as soon as the apple should have attained the size of a hazel or walnut. The prominent situation of the calyx at that period of the fruit's growth greatly facilitates its removal, and in the case of some hundreds of apples Mr. Krausz experimented on—several hundreds can be

Cultivator Tongue, in which the advantage of the double tongue in separating the team, to prevent them from stepping upon the row of plants, is secured without the objection of cramping the team in turning. This is accomplished in an ingenious manner by combining with a single tongue a wheel, disk, reel, or other separating device, which is located upon the tongue in such manner as to secure the desired result in a simple and practical manner.

Messrs. Leonard L. and Daniel Lumbert, of Marston's Mills, Mass., have invented a new Apparatus for Gathering Cranberries, which is simple in construction and convenient in use, enabling the cranberries to be gathered much more rapidly than in the usual way. The raking apparatus may be floated upon the water or used upon dry ground, in either case gathering the berries quickly and effectively.

A practical improvement in Bale Ties for cotton bales and other purposes has been devised by Mr. Wm. M. Seaman, of Bullitt's Bayou, La., which consists in the combination of a U-shaped buckle, corrugated lengthwise on the inside, and a metallic strap or band, the ends of which are corrugated crosswise, for the purpose of being held from slipping when placed to overlap each other, and inserted to fit in the opening between the corrugated inner sides of the buckle. Lateral motion is guarded against by notches in the buckle, forming a shoulder against which the band presses.

An improved Poke, or device for preventing horned cattle from throwing fences or goring, is made of an outer plate and an inner plate formed to suit the angles of the animal's head and horns, kept apart a short distance by springs and held together and in place by flexible stays; and also having the outer plate armed with hinged points, conducted through the lower plate to come in contact with the head when any attempt is made to use the horns. This is the invention of Messrs. David S. Ludlum, of New Hampton, N. Y., and Louis W. Ludlum, of Orange, N. J.

Mr. Isaac O. Sailor, of Montgomery City, Mo., has invented a Stump Extractor, the novelty of which consists in a combination of straps with the cross bars and posts of the apparatus against the downward pressure of the lever. The latter is operated by a rope and pulleys in connection with a horse windlass.

An improved Machine for Measuring and Packing Tobacco has been invented by Mr. C. C. Clawson, of Raleigh, N. C. It has a revolving table which carries the filling apparatus, containing the empty bags in forms, under a chute, after which the bags are filled by a plunger and follower.

Mr. D. P. Ferguson, of Jamesborough, Ga., has devised a light Plow, suitable for furrowing, cultivating, etc., in which the standard is pivoted near its middle to an inclined brace, whose upper end is pivoted to the rear end of the beam. The standard may be adjusted at various inclinations to vary the depth at which the shovel or plow proper shall enter the soil, and is clamped and held in any adjustment by friction with a slotted wedge which is placed on the upper side of the beam and under a cross bar or rod passing through the forked end of the standard.

Mr. A. H. Ballagh, of Macon City, Mo., has patented an improved Harrow, which may be readily adjusted to hold the teeth in any desired position from vertical to horizontal when at work, the machine in the latter case being used as a clod crusher, thus combining two implements in one.



TWIG OF THE MEXICAN INDIA RUBBER TREE ("CASTILLOA ELASTICA") IN BLOSSOM.