

Behind the knife is a wheel with eight prong-shaped arms, which is revolved by a simple bevel gear, the "pinion" being secured to the same shaft as the eight-pronged wheel, and the bevel "wheel" being mounted on the main axle and driven from the road wheels. A small thin wheel or disk in front of the large knife, as clearly shown, assists in dividing the ground vertically and thereby lessens the work on the knife. The prongs of the revolving wheel cut off the tops and strew the potatoes on the ground ready for collection and bagging, a screen suspended from the main framing preventing them from being thrown too far, and separating them from the loosened mould. By a lever within easy reach of the driver, the knife, disk, and the prongs can be raised clear of the ground for traveling, or adjusted to any required depth to suit the crop under operation. By a suitable clutch the bevel wheels can be thrown out of gear with the road wheels, and the prongs thereby prevented from revolving. The machine is highly ingenious, and, although it has been before the public less than two years, has already been widely applied, and has met with general approval. It is capable of digging three to four acres of tubers per diem.

Evaporation of Saline Water.

A correspondent suggests the following method of evaporating saline water: Let the water be forced upward to a great height into a highly heated apartment, through numerous pipes whose mouthpieces shall reduce it to the finest possible spray. Much of the water will in this process be immediately evaporated, and may pass upward out of the roof of the building. Let the spray fall on to an inclined plane, to flow out into a reservoir, whence it may be again ejected through nozzles with coarser openings, again to fall; and let this process be repeated until the water becomes so much filled with solid particles of salt that it can no more be sent upward to fall in the form of spray. The operation of evaporating the water in the usual way after such a course of treatment might be comparatively simple and inexpensive.

Coming Prosperity.

The work of the Custom House Investigating Committee in connection with the various industries of the country has led its chairman, the Hon. Fernando Wood, to the opinion that the United States are "on the eve of the greatest prosperity the American people have seen, from the Revolution down. It will not be fictitious, and based on the stimulant of champagne and speculation, as after the war, but on the strength of our native constitution and enforced sobriety. The reaction in 1873 gave us a terrible headache, for we had been running riot and were intoxicated. Those who survived feel to-day better and stronger than ever before. We have been taught a good lesson in enforced economy, and the precept of economy is now practiced by even our millionaires. It permeates the whole social fabric."

GATHERING THE SAP OF THE MAGUEY.

The *Agave Americana*, American aloe, is called the *maguey* in South America. It has a short cylindrical stem terminating in a circular cluster of hard, fleshy, spiny, sharp pointed, bluish green leaves, each of which lives for many years, so that but few have withered away when the plant has arrived at its maturity. It is a popular error that this only occurs at the expiration of a hundred years, when the tree flowers, and again lies dormant, so far as its efflorescence is concerned, for another century. The American aloe varies in the period of its coming to maturity, according to the region in which it grows, from 10 to 70 years. So soon as it matures, it sends forth a stem 40 feet in height, which puts out numerous branches, forming a symmetrical cone. Each branch bears a cluster of greenish yellow flowers, which continue in perfect bloom for several months.

The American aloe is applied to many uses. From its sap, drawn from incisions in its stem, is made *pulque*, a fermented liquor highly esteemed by the natives of the countries in which the plant is indigenous. Our engraving represents a native in the act of gathering the sap. A coarse sort of thread is made from the fibers of the leaves, known as pita flax. The dried flower stems constitute a thatch which is perfectly impervious to the heaviest rain. From an extract of the leaves balls are made which can be made to lather with water like soap; and from the center of the stem split longitudinally a substance is obtained for a hone or razor strop, which, owing to the particles of silica which form one of its constituents, has the property of speedily bringing steel to a fine edge.

Americans in Turkey.

In his speech at the grand dinner given to the British plenipotentiaries in the London Mansion House, on their return from Berlin, the Earl of Beaconsfield referred

to the American missionaries in Turkey as a body of men "of the highest principle, of even a sublime character—men who devoted their lives for the benefit of their fellow creatures, and sought no reward but the convictions of their own consciences." And their report with regard to the social and educational improvements that had taken place in Turkey since the Treaty of Paris was relied upon by the Earl as of more value than the dispatches of either Russian or English consuls.

THE TUFTED COQUETTE.

This rare and beautiful humming bird seems to be entirely a continental bird, not being found in any of the West Indian Islands, and its principal residence seems to be in Northern Brazil and along the banks of the Amazon as far as Peru. It may be readily known from the other species of coquettes by the colors of its head, crest, and neck plumes. The crest and top of the head are a rich ruddy chestnut,



THE TUFTED COQUETTE.

and the upper surface of the body is bronze green, excepting the wings, which are purple black, and a broad band of white which crosses the lower part of the back. From the white band to the insertion of the tail is bright chestnut. The tail is also chestnut, except the two central feathers, which are green at the latter half of their length. The forehead and throat are emerald green, and the neck plumes are snowy white tipped with resplendent metallic green.

The female has no crest nor neck plumes, and the band of white across the back is very narrow. The total length of the bird is about 2½ inches.

We take our engraving from Wood's "Natural History."

New Mechanical Inventions.

Mr. William J. Henderson, of Valdosta, Ga., has patented an improved Machine for Transmitting Motion from a Driving-power to Mortars and other implements.

An improved Automatic Wagon Brake has been patented by Mr. Stephen S. Miller, of Claverack, N. Y. The object of this invention is to furnish an improved brake for attach-

ment to wagons, which shall be so constructed as to be applied to the wheels by the forward movement of the wagon against the horses in going down an incline.

An improvement in Work Supports for Metal Turning Lathes has been patented by Mr. Hans Reiss, of Jersey City, N. J. The object of this invention is to furnish an improved bushing for screw and pin machines, for holding the stock against the pressure of the tool. It is so constructed as to hold stock of different sizes, and is simple, convenient, and effective.

Mr. Patrick H. Childress, of Waynesboro, Va., has patented an improvement in Millstone Drivers which consists in arranging about the spindle, and between the spindle and the forks of the jointed driver, a ring or collar, which affords a bearing for the inner ends or forks of the driver sections, and, by allowing said inner ends to swivel about it, secures an equal and more direct movement between the sections of the driver, obviates lost motion, and yet does not require the forks to touch the spindle.

Mr. Lowry B. Rowland, of Monmouth, Oregon, has devised an improved Horse-power Equalizer for applying the draught to the machine in such a way that the draught may be equalized among the teams. It will enable a weaker team to be favored, and will enable a team to have a solid pull when necessary. It will also hold the master wheel in a perfect level.

An improvement in Chain Links for Horse Powers has been patented by Edward A. Smith, of St. Albans, Vt. This invention consists in a novel construction and form of a cast metal rack or bar provided with gear teeth, and a steel trap provided with bearings for pivots or bolts; and also in a novel mode or process of attaching and combining said bar and strap to form a link, whereby simplicity and economy of construction are obtained, and a strong, durable, and reliable link is produced.

An improved Sewing Machine has been patented by Mr. Daniel Williamson, of Sunbury, Pa. This invention has reference to such improvements in sewing machines that a new and improved motion for the shuttle driver, and also a simple cam motion for operating the presser foot, feed bar, and needle bar, are obtained.

Mr. John S. Gifford, of Fairfield, Me., has patented an improved Axle Nut Wrench, which may be used to take off the nut from a wagon or carriage axle, to allow of the removal of the wheel, and to screw the nut on again, without any necessity of handling the nut, thereby avoiding the danger of getting sand in the bearing of the wheel or grease upon the hands of the person using the wrench.

Mr. David H. Hatlee, of Clifton Park, N. Y., has patented an improved Machine for Making Horseshoes. This machine has a horizontal bed, of which a portion is movable and carries dies, around which the shoe is formed (from a bar of suitable length) by means of devices attached to the fixed portion of the bed or frame of the machine, all of said devices being connected with and operated by the movable part of the bed.

Mr. William F. Lane, of Elgin, Ill., has devised an improved Treadle Movement, whereby the power is applied continuously and evenly in one direction only, without springs and the loss of motion and power necessary to pass dead centers, and by which the operator can control the machine by his feet alone, thus having his hands free to hold or adjust the work.

Messrs. Charles H. Holdredge, of West-erly, R. I., and Charles H. Cowan, of Stonington, Conn., have patented an improved Thill Coupling for connecting the shaft iron of a carriage with the axletree clips, so that they will be firmly connected and wear may be compensated for. It has screw sockets in the clips or ears, forming supports or bearings for a pivot pin connected with the shaft iron. The screw sockets may be adjusted to compensate for wear, and are kept from getting loose by jam nuts. The pivot pin is connected to the shaft iron by a set screw, so that the pin and the shaft iron shall move together.

Mr. John Thorpe, of Fort Miller, N. Y., is the inventor of an improved Rotary Boiler for boiling and steaming paper stock, which consists in a boiler mounted on axles in suitable bearings, and having a steam supply pipe passing through the center of one or both of the axles and into the end of the boiler. Two distributing steam pipes pass from the end of the supply steam pipe and extend lengthwise of the boiler, near its sides, so that as the boiler turns the distributing pipes turn with it, and one or the other of them is in the material at all times.

Messrs. William F. Rosser and Julius L. Briggs, of Marshfield, Mo., have devised a cheap and simple Attachment to Hand Printing Presses for guiding, catching, and holding the frisket when the latter is being raised from the tympan for adjusting the paper, or for any other purpose.



GATHERING THE SAP OF THE MAGUEY.