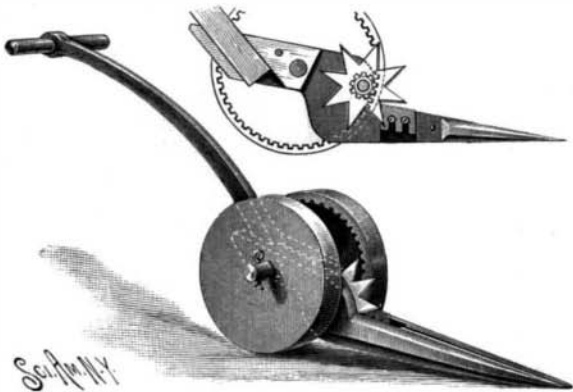


## AN IMPROVED VINE CUTTER.

The illustration represents a machine adapted to cut off parts of any creeping vine or for trimming or cutting off runners, and it may be carried close to the plant to cut off desired portions without injuring what is left, the cutters being also readily adjustable and easily accessible for sharpening or cleaning. The improvement has been patented by Hammond J. Evans, of Hampton, New Brunswick, Canada. At the forward end of the machine is a sickle bar finger adapted to travel on the ground, and the body and finger bar are made in two sections divided longitudinally, there being in the rear portion of the finger bar and forward portion of the body a longitudinal opening where the cutters are located, as shown in the sectional view. The ground wheel at the left hand side of the machine

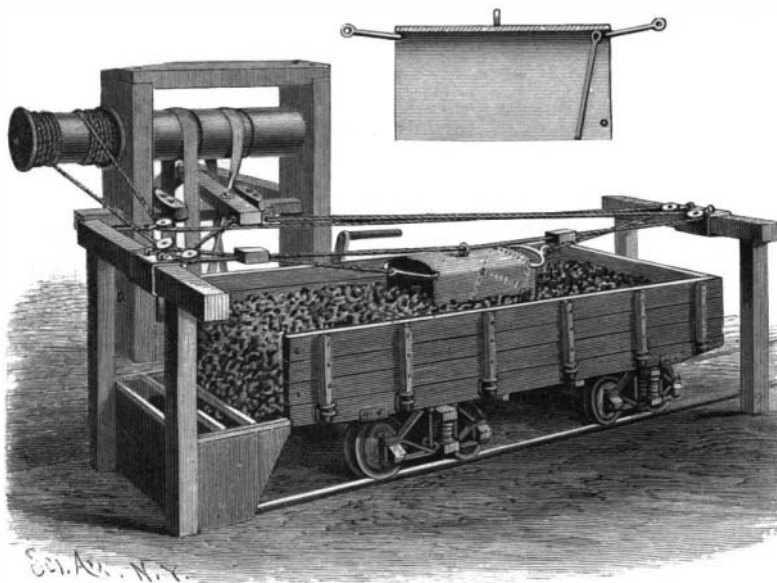


EVANS' VINE CUTTER.

has an internal gear and is fast on the axle, the opposing wheel being removable, while meshing with the internal gear is a pinion on a shaft carrying a stellated cutter wheel, whose teeth are sharpened on a bevel to meet the cutting edge of a cutter adjustably secured in the left hand wall of the longitudinal opening, the upper edge of the cutter being flush with the upper surface of the finger bar of the machine. The stationary cutter may be adjusted or removed as desired, and in case the vines might be damaged by the passage of the machine in its ordinary shape, the removable wheel may be taken off, bringing the cutters near the trunk and precluding the possibility of injuring the standing portion of the vine.

## AN APPARATUS FOR UNLOADING CARS.

The illustration represents an apparatus designed to facilitate the unloading of coal, grain or other material from cars, scraping the load into a chute whence it may be conveyed to the desired point. The improvement has been patented by George T. Dixon, of South Butte, Montana, and communications relative thereto may also be addressed to Alexander Jamieson, Butte, Montana. In standards adjacent to the track is journaled a shaft carrying three pulleys and a projecting drum, a driving shaft operated by a hand crank being journaled lower down in the standards. Uprights have pivoted horizontal arms extending over the track near by, and on each of the arms is a sliding sleeve carrying two pulleys. A shifting lever is connected with two shifting arms under the three pulleys, and a straight belt is carried down from one of the end pul-



DIXON'S SCRAPER FOR UNLOADING CARS.

leys to the driving shaft, while the other end pulley is connected with the driving shaft by a crossed belt, in such way that the shifting lever will take either of these belts to an engagement with the center pulley, which is fixed on the shaft, the end pulleys rotating loosely thereon. The shaft may thus be driven in opposite directions by the shifting of the belts. A cable from the front end of the shifting lever is passed over one of the pulleys on one of the horizontal arms over the track, thence over the track and around a pulley on the horizontal arm at the other end of the car, and back to engagement with the shifting lever, there being two blocks

or checks on the straight stretch of the cable over the track. Another cable is wound around the drum, extending thence over a pulley on one of the uprights and around a pulley on one of the horizontal arms over the track, from which it extends to a connection with one end of the scraper, while attached to the other end of the scraper is another cable extending to and being wound around the drum in an opposite direction, the latter cable passing around a pulley on the opposite horizontal arm. The scraper is of metal, nearly U shaped in cross section, and at its rear end is pivoted a gate limited in its rearward movement by a pin as shown in the small view. The car to be unloaded having been placed in proper position beneath the scraper, and the power shaft set in motion, the scraper is alternately carried forward and rearward, through and over the material to be unloaded, the checks or blocks on the straight stretch of cable automatically moving the shifting lever to cause the drum to be rotated in one direction or the other to move the scraper backward and forward, and the scraper filling itself and drawing the material toward the open end of the car in each forward movement.

## A Railway Through the Sea.

It is stated that Mr. Magnus Volk hopes to open his railway from Brighton to Rottingdean next Easter. The length is about four miles, and the lines are laid on the sea beach near to low water mark, so that they are submerged for the greater part of the twenty-four hours. There are four lines of rails, laid in two pairs, the width of gage between the outer rails being 18 feet. Each pair of rails is supported by concrete blocks mortised to the rock below, the steepest gradient being 1 in 300, and the sharpest curve half a mile radius. The car, which was designed by Mr. St. George Moore, of 17 Victoria Street, Westminster, who acts as engineer for the company jointly with Mr. Volk, is being built by the Gloucester Wagon Company. Each of the four main supports is a 12 inch steel tube, mounted on a four-wheel bogie. The leading bogies will be driven by vertical shafts inside the steel tubes. The deck of the car is 23 feet above the rails, and well out of reach of the waves. The deck will measure 46 feet by 22 feet, and will carry a saloon 25 feet by 13 feet. It was at first intended to drive by current obtained from accumulators, but the plan has since been altered to the trolley system. It is desired to erect poles on the shore to carry an overhead wire. The Crown has given its consent to their erection, and an application for a similar concession has been made to the Brighton Corporation, who own a short length of foreshore. The estimated cost was \$125,000, and will not be much exceeded.

## AN AUTOMATIC LETTER COPIER.

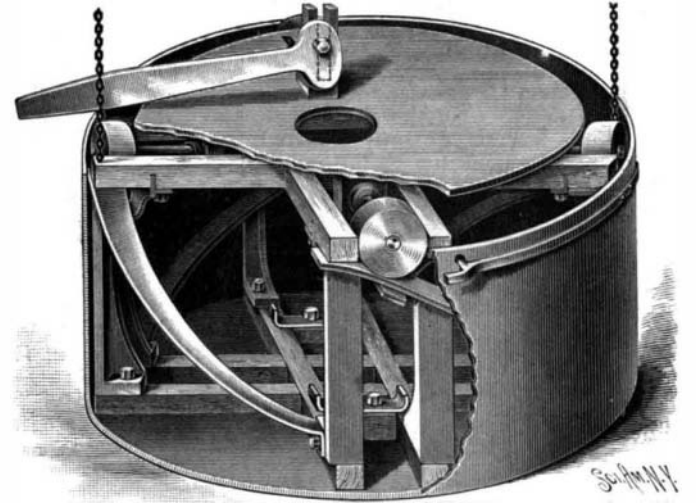
To copy letters on single sheets, enabling a copy to be attached to and filed away with the letter answered, the compact and simple machine shown in the illustration is brought out by the Anderson Copying Machine Company, of No. 41 Leonard Street, New York. The copying paper is carried on a roll, from which it is

drawn forward beneath a spring-pressed copying cylinder by simply turning a crank, the paper, just before it reaches the copying cylinder, passing over moistened wicks on transverse rods. These wicks, as shown in the small sectional view, are formed of a piece of felt whose body portion lies in a pan of water beneath, and whose ends are lapped around the nickel plated transverse rods. A movable tension rod is used in front of the wicks, under which the paper passes, to hold the paper close to them, so it will pass evenly over the wicks and be thoroughly moistened. To copy a letter, the crank is turned until the indicator on the drum and the arm indicator are at the

same point, when the letter is laid, written side down, on the paper, and the crank is turned until the letter and copying paper is passed around the cylinder, when both letter and copy may be released and taken off by running a rotary cutter through a shallow transverse slot in the cylinder. If desired, a number of letters may thus be copied on a continuous strip before cutting off, twenty letters requiring no more cutting than one. It is said that one hundred letters may thus be copied in five minutes, and the machine always gives a good copy, whether in the hands of a beginner or an expert.

## A GALVANIZING AND TEMPERING TANK.

For dipping metal in a liquid bath, as required in setting and cooling tires, tempering steel, galvanizing articles, etc., the improvement shown in the illustration has been devised and patented by Charles A. Emanuelson, of Wilmington, Ill. It consists of a liquid-containing tank in which are inclined trackways, on which travel wheels supporting a platform carrying the articles to be immersed. In the bottom of the tank is a horizontal framework of mortised timbers, removably held in place by means of latches,



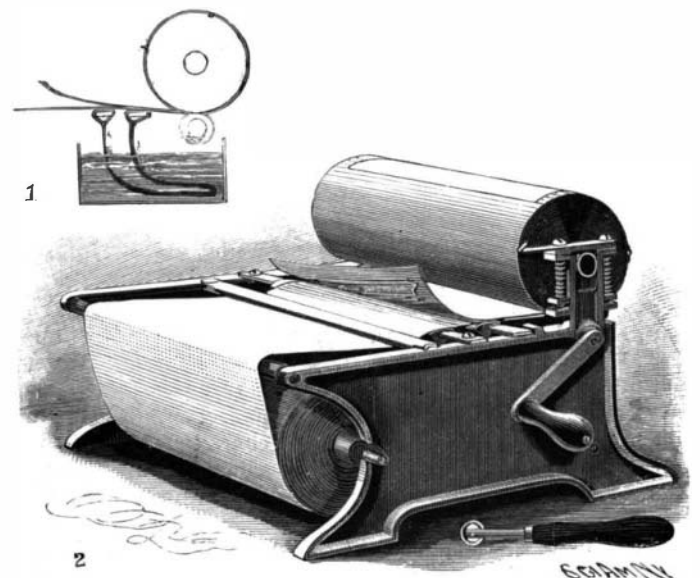
EMANUELSON'S GALVANIZING AND TEMPERING TANK.

and at the ends of the timbers are vertical brackets having at their upper ends inclined plates to which are secured the upper ends of the trackways, of which there are four, formed of sheet metal, inclined and curved downwardly in spiral form. The supporting platform for the articles to be dipped is formed of another similar horizontal framework, there being mounted adjacent to the end of each pair of timbers a shaft carrying rollers adapted to travel upon the tracks, while arms secured to the beams have bent fingers or tongues engaging the under sides of the trackways. The cover plate of the platform is of sheet metal, with a central circular opening and a slot at one side wherein is arranged an adjustable slide block and pivoted lever, to be manipulated by hand, and having a clamping surface to engage the article to be held on the platform. To hold the platform raised, there are on the outer sides of the tank springs having at their free ends fingers which extend through into engagement with the timbers of the platform frame, the withdrawal of the fingers releasing the platform to permit it to move to its lowermost position, the platform having at its opposite sides chains for raising and lowering it.

For use as a galvanizing bath, the wooden timbers may be replaced by suitable metal braces and various other minor changes may be made to adapt the improvement to different uses.

## Magnetism of Asbestos.

Faraday placed asbestos in the list of weak magnetic bodies, but recent observers have discovered that



ANDERSON'S AUTOMATIC LETTER COPIER.

certain varieties of this mineral are strongly magnetic. Swinton, in the Electrical Review, has called attention to this property of asbestos, and Bleekrode shows that a gray variety exhibits strong magnetism even in comparatively weak magnetic fields. He points out that this substance should not be used as an insulating material in magnetic instruments. —Ann. der Physik und Chemie.

WHEN water freezes it expands with a force which Trautwine estimates at not less than 30,000 lb. to the square inch.