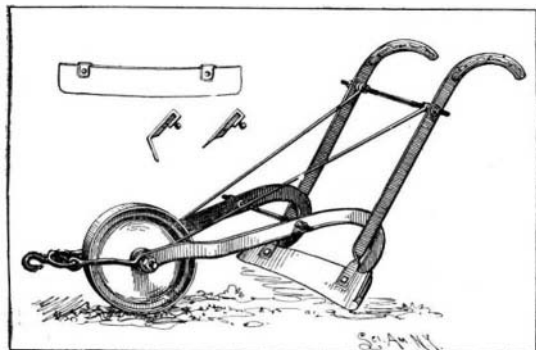




ADJUSTABLE SURFACE CULTIVATOR.

A surface cultivator which can readily be adjusted to various widths between rows, and to which cultivator teeth or small plows may be quickly attached when it is desired to cultivate the ground more deeply, forms the subject matter of an invention recently patented by Mr. W. S. Neal, of Brewton, Ala. This device is adapted to be moved by a single horse and guided by hand. With the shovel blade attachment it will be found particularly useful in removing any vegetation in its path, and will likewise destroy any crust which may have been formed on the top of the ground after a rain, for example. The shovels used in



ADJUSTABLE SURFACE CULTIVATOR.

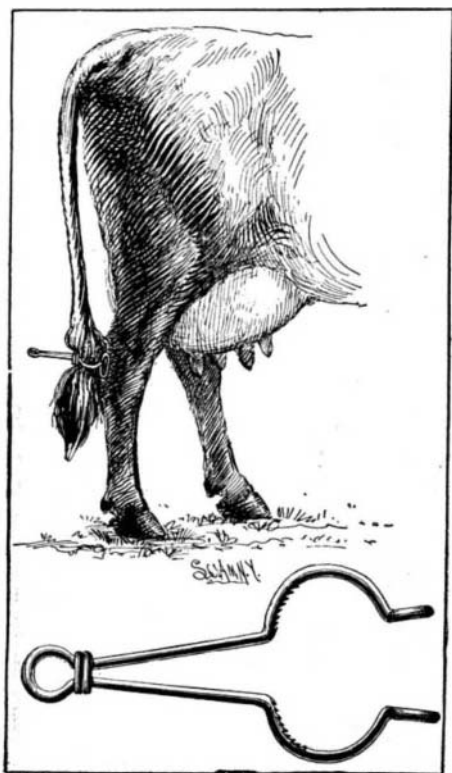
this implement are detachable, and of varying sizes suitable to the width of the space between the rows to be cultivated. The ends of the shovel blade extend backward at an angle to the body of the blade, so as to shovel the soil laterally among the plants in the drill and cover up any little vegetation that the blade cannot reach without cutting the plants. Another type of blade also is provided, which will be found useful for certain conditions. This blade, as shown in the engraving, is rounded at the lower corner of each end, so as to prevent injury to the plants.

These blades are sufficient for ordinary surface work, but when deeper cultivation is required, cultivator teeth may be attached to the shovel blades, as shown in the sectional views. These teeth are of various sizes and shapes to suit different requirements. Some of the blades employed may be turned backward, others downward, and others again may be made with turned ends. The object of turning the teeth backward is to shovel the dirt in the drills among the plants.

The implement is very effective and of a simple construction. It is also very light, and by its use plants may be readily kept under required cultivation.

DEVICE FOR PREVENTING THE SWITCHING OF COWS' TAILS.

The annoyance of having a cow's tail suddenly switching into one's face while milking, may now be



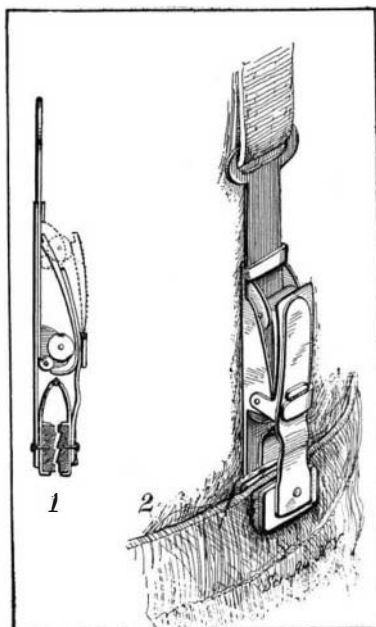
CLIP FOR COWS' TAILS.

prevented by applying a small clip to the pestering member and securing it to one of the legs of the animal. This clip is the invention of Mr. David McLellan, of Bowsmont, North Dakota, and consists,

as illustrated, of a section of spring wire bent to the shape of a pair of tongs. The arms of the clip are bowed out in semicircular shape near their extremities, and the ends are formed into elliptical eyes. A ring encircles the straight portions of the arms, and may be pushed forward to squeeze the arms together. In applying this device the bushy part of the tail is slipped into the clip, which is then pressed firmly against the animal's leg with the eyes upon opposite sides. The ring is now pushed forward, forcing the spring arms together. The tail is thus tightly held between the leg and the semicircular portions of the clip, which are roughened to prevent slipping. The semicircular portions fit over the tendon of the leg near the upper shin joint, and the eye portions sink into the hollow between the tendon and the bone. The device can be very quickly applied or removed, and will effectually prevent the undesirable switching of the animal's tail, thereby saving the milker from much annoyance and securing cleanliness of the milk.

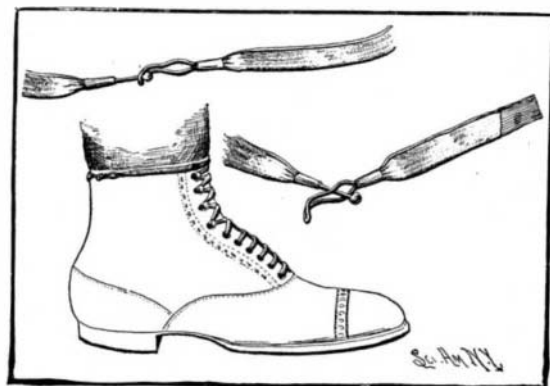
TWO SIMPLE FASTENING DEVICES.

A new method of fastening one's shoe-laces is provided by the invention which we illustrate herewith. It consists of a pair of simple fasteners secured to the ends of the shoe-laces, whereby they may be wrapped about the ankle and readily fastened together. In order that the laces may fit any ankle, they are provided at the ends with elastic strips two or three inches long. This arrangement permits yielding of the ties with the movements of the foot. The invention offers the additional advantage of facility in unfastening the laces and security as well as facility in the fastening of the same.



FASTENER FOR TROUSERS.

adapted to slide between these levers in such a manner that when drawn back it will force the forward ends of the levers together, closing the jaws on whatever fabric is placed between them. The slide is fastened to the supporter or suspender, and the arrangement is such that, obviously, the greater the weight imposed, the more firmly will the garment be grasped and held by the jaws. On account of this hinged connection between the jaws and the levers, perfect freedom is permitted in the movement of the garment; also the area of cloth grasped by the jaws



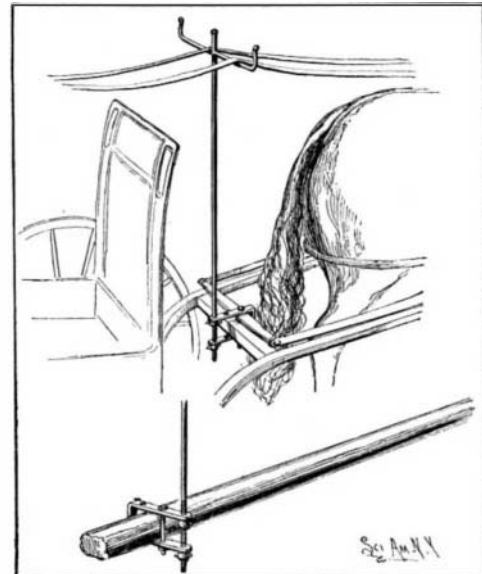
FASTENER FOR SHOE-LACES.

is so great, comparatively, that a strain which would tear off a button may be safely imposed upon them. When it is desired to release the garment from the grip of this device, the operating slide is moved forward, thus permitting the levers to swing to open position.

A powerful company has been organized, made up of moneyed men of Toledo, Ohio, and Buffalo, N. Y., for the purpose of starting a plant to make radiators of pressed steel according to a new process which has been briefly described in these columns. The location of the new plant has not yet been finally determined.

REIN SUPPORT.

A device which adds greatly to the comfort and safety of driving has recently been invented by Mr. W. S. Neal, of Brewton, Ala. It consists of a simple support which can be readily attached to a vehicle to prevent the reins from getting beneath the tail of the horse. The device also does away with the necessity of constantly holding the reins up, since the weight of the reins passing over the support will keep them taut. The driver is thus at liberty to rest his hands on his lap. The support comprises a rod, provided with a cross-piece at its upper end on



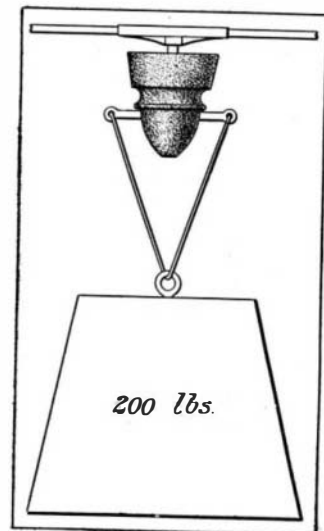
REIN SUPPORT.

which the reins are supported, and at its lower end it is threaded into a clamp which secures it to the vehicle. This threaded connection permits the device to be adjusted to any convenient height, where it is secured by lock nuts. When applied to a one-horse vehicle, the rod takes the place of the bolt which ordinarily holds the cross-bar and single-tree together. When applied to a two-horse vehicle, the clamp is slipped around the tongue, or it may be attached to the single and double trees of the vehicle in the same manner as applied to the cross-bar and single-tree of a one-horse vehicle.

A NEW INSULATING MATERIAL.

The gradually decreasing supply of gutta percha, and the expense of vulcanite, porcelain, and glass insulating materials, have prompted many inventors to devise compositions which will fulfill the rigorous requirements imposed by the transmission of electrical energy at high voltages. Of the many new insulating materials which have been introduced of late is one which bears the name "Electrose," the invention of Louis Steinberger, of the Electrose Manufacturing Company, 127 North Tenth Street, Brooklyn, N. Y. Very careful and exhaustive tests of electrose made by experts in electrical engineering, would seem to show that the substance is a most admirable insulating material. The compound has been especially prepared to meet the requirements of electric railway, light, and power insulation. It is very hard, dense, tough, and strong, of a brownish hue, resembling somewhat that of certain varieties of oak. The compound is cast in the various forms which are required, so that the drilling and working necessary for some of the materials formerly used for electrical work are no longer necessary.

Elaborate tests which have been carried out by the engineer of the Niagara Falls Power Company and by Prof. Sheldon, of the Brooklyn Polytechnic Institute, give some idea of the resistant qualities of this new material. The Niagara Falls engineer found that a cap with



TEST OF AN ELECTROSE INSULATOR.

an embedded bolt arced across at 30,000 volts; a round-top, straight line hanger arced across at 11,000 volts; a square foot of the material one-quarter of an inch in thickness arced around at 80,000 volts; an 8-inch round column arced around at 100,000 volts; as did also an 8-inch hexagonal column. None of these specimens was punctured, with the exception of a ball insulator, which was punctured

at 14,000 volts, the puncture being probably due to some mechanical defect.

In order to show that the round-top hangers of electrose fully meet the requirements of trolley line construction, Prof. Sheldon carried out the test, which is illustrated in the accompanying diagram. A round-top hanger was suspended, free from draft, in an inverted position by means of a bronze ear, weighing 8 ounces, and measuring $5\frac{1}{2}$ inches in length, the ear clamping the metal on a round rod of soft iron, one-quarter of an inch in diameter and 20 inches long. From the hanger top was suspended a weight of 200 pounds. A current of 200 amperes was passed continuously through the rod for one hour. The rod was thereby maintained at a red heat. This supply of heat, which is practically the same as would be given by a red-hot trolley wire of the same size in the same time, did not affect the electrose insulation to such an extent as to allow the 200 pounds weight to tear asunder the metal parts of the hangers. Prof. Sheldon tested a feeder insulator under a voltage of 70,000, but the insulation did not break down. Similar satisfactory results were obtained with cap and cone hangers, feeder insulators, globe strain insulators, solid bolts, terminal strain insulators and sheets.

The resistance of the substance to atmospheric influences and general wear renders it of great service for outside work. The substance is molded into many forms, and can be used as a general substitute for rubber, not only in electrical work, but in photographic and other work as well.

Amendment of the Patent Law of Great Britain.

Two very important amendments have been made in the patent law of Great Britain, one of which provides for the examination of patent applications to ascertain whether the inventions for which protection is desired are novel, and the other relates to the manufacture of patented articles in Great Britain, and the grant of compulsory licenses.

As many of our readers are aware, patents have been granted in Great Britain under the old patent law, without any inquiry to learn whether the inventions were patentably new, according to the law and practice of that country. Without any examination and no aid from the Patent Office, it was almost impossible to so draw the claims that while covering all to which the inventor was entitled, they would not include more. Few inventors understand the difficulty in so preparing British patent application papers and drawing the claims that the patent will be valid without the necessity of incurring considerable expense for amendment after it is granted; for the British law looks at the patent deed as an entire instrument, and, should the patentee claim anything to which he is not entitled, the patent is invalid until amended, even as to such portions as would be valid were they not included in the grant with that which the court holds not to be patentably new. It will therefore be seen that it is necessary to have every claim in a British patent valid in order that the granted rights may be enforced. American inventors seldom file their British patent applications until their United States applications for patents on the same inventions have been acted on by the examiners in our Patent Office; and, as the official examination in this country covers not only United States, but British and other foreign patents, the failure of the Patent Office in Great Britain to make an examination as to novelty was not nearly so burdensome to our citizens as it was to British subjects and citizens of other countries. Nevertheless, much trouble was occasioned by reason of different rules of construction, under which claims prepared to avoid references in the United States would very often be held to be anticipated by the same reference in Great Britain.

The amendment which provides for an examination to cover all British patents issued within fifty years of the filing of an application under the new law will do much to inform inventors and other interested persons of the state of the art to which the invention relates, but it is not understood why the examination should be limited to British patents, as other publications might be cited by infringers to invalidate the patent grant. The fact that the examination will not extend to patents granted more than fifty years before the filing of the application is not so important, as it is provided that such patents in themselves shall not be deemed to anticipate applications filed under the new law.

Power is not granted to the examiner or Comptroller to reject patent applications on references, but where the applicant will not amend the papers to avoid the cited British patents, the Comptroller is authorized to make reference to the cited patents in the applicant's specification when it is printed. The question of novelty will therefore in all cases be decided by the courts of Great Britain under the new law, as has been the practice in the past. While the amendment has received the King's assent, it still remains for the Board of Trade to direct when the new provisions

will come into operation, as the staff of the British Patent Office will have to be increased, and other changes will have to be made before the additional work which the examinations will involve can properly be cared for.

Under the second amendment, which applies to patents granted before, as well as after, the new law went into force, any interested person, who alleges that the reasonable requirements of the public with reference to the patented invention have not been satisfied, may petition the Board of Trade for the grant of a compulsory license, or, in the alternative, for the revocation of the patent. Unless the parties come to some arrangement between themselves, the Board of Trade, if satisfied that a *prima facie* case has been made out, will refer the petition to the Judicial Committee of the Privy Council. Should it be proved to the satisfaction of the Judicial Committee that the reasonable requirements of the public with reference to the patented invention have not been satisfied, the patentee may be directed by an Order in Council to grant licenses on such terms as the said committee may direct, or if the Judicial Committee are of the opinion that the reasonable requirements of the public will not be satisfied by the grant of licenses, the patent may be revoked by an Order in Council. The reasonable requirements of the public will not be deemed to have been satisfied if, by reason of the default of the patentee to work his patent or to manufacture the patented article in Great Britain to an adequate extent, or to grant licenses on reasonable terms, (a) any existing industry or the establishment of any new industry is unfairly prejudiced, or (b) the demand for the patented article is not reasonably met. It is, however, provided that no order of revocation shall be made before the expiration of three years from the date of the patent, or in cases where the patentee gives satisfactory reasons for his default. This provision has in view the manufacture of patented inventions in Great Britain, and the protection of that country's industries. Much will depend on the view of the Judicial Committee on the question of compulsory licenses, and the revocation of patents, but it is thought that the rights of deserving patentees will receive every consideration, and that the committee will not revoke a patent except in such rare cases when the demands of the British public will not be fully satisfied by a compulsory license granted to a manufacturer in Great Britain.

Origin of the Sliding Pole.

The recent death of Stephen Paine, a retired colored member of the Chicago department, has renewed the old story that he invented the sliding pole which was first used in the station of Engine Company 21 at Twelfth Street and Third Avenue, the only colored company in that department, of which he was a member and driver.

The idea of a sliding pole originated in 1878 with Captain David B. Kenyon (white) of that company, a brother of Joseph L. Kenyon, now chief of the Twelfth Battalion. At that time Matthias Benner was chief of department, and M. W. Shay, chief of the First Battalion, in which 21 Engine Company was located.

Captain Kenyon, who was a most intelligent and progressive fireman, and a most competent commander, wanted something better than the slide on side of stairs in his station, which was also used in other stations. He conceived the idea of the sliding pole and Steve Paine procured at a nearby lumber yard a 4x4 piece of timber which members of the company, under Captain Kenyon's direction, rounded down into a pole three inches in diameter, which was sandpapered and rubbed down smooth with paraffin.

It was erected as an experiment from the hay loft window at the rear of the station and its trial proved a most satisfactory success. Obtaining permission from Chief Benner to cut a hole in the floor and run the pole from bunk to engine room on condition that he make good the damage done if it was not a success, the pole was placed there April 12, 1878, and was the first sliding pole ever used in a fire station. George Reed, a member of the company, now a member of the police force, was the first man to slide down the pole.

It was a success from the start, and this company were soon crowding the others hard in rapidity of hitching. May 24, a second pole was erected in this station and later a nickel-plated iron pole was erected, and about 1883 brass poles were used.—Municipal Journal and Engineer.

We note with pleasure that the House of Representatives has passed the bill No. 17,085, designed to harmonize the United States patent statutes in accordance with the International Convention. As the importance of the proposed amendment cannot be overestimated, it is to be hoped that Senator Pritchard, as chairman of the Senate Committee on Patents, will urge the measure, so that the bill may be passed by the Senate before the adjournment of Congress. We will publish a full account of the proposed amendment in a later issue.

Brief Notes Concerning Patents.

There have been 109 patents issued covering apparatus for wireless telegraphy. Of these, 71 were issued during last year.

Signor Dott Guiseppe Musso, of Genoa, Italy, arrived in New York recently to exploit a wireless telegraph system. He is about to build an apparatus and demonstrate its merits in practical operation. He says with his device it is possible to record the messages automatically, and printed in type directly from the receiving instrument without the use of any auxiliary apparatus whatever.

Consul-General Hughes at Coburg, Germany, is responsible in an official report for the statement that some of the more enterprising of the German manufacturers of cotton goods are about to make a trial of the discovery of Dr. W. H. Perkins, of Manchester, England, whereby cotton and other similarly inflammable materials are rendered permanently fireproof. The process is known as "asbestinizing," and it is said that after it has once been treated, it retains its fireproof quality even after repeated washings.

An inventor who lives in Minneapolis, Minn., has devised a means for ascertaining the speed by which an automobile or other vehicle is running. The device, which is named the Hodgson speed indicator, consists of a double dial with index hands which are moved automatically from the running gear of the machine. The double dial shows the speeds from either side. Two index hands are used. One travels forward and recedes, keeping pace with the speed of the vehicle; while the other travels forward so long as the speed continues on the increase. The index hands are moved by the centrifugal force of weighted arms.

The Cedar Rapids, Iowa, Republican in the issue of September 5 published a lengthy article dealing with the question of the identity of the inventor of the tank car for the transportation of live fish. The assertion which has been going the rounds that this type of car was the idea of an Illinois man named Bartlett is, according to the Republican, erroneous, and that paper states that the credit is due alone to B. F. Shaw, of Cedar Rapids, who was given assistance and facilities for carrying out his ideas by C. J. Ives, then the president of the B., C. R. & N. RR. This plan was in active operation in Iowa, it is said, a long time before Mr. Shaw built his car in Illinois.

Following the example of the Japanese nation, the Chinese are making a study of the methods in vogue at the United States Patent Office, and in the course of a few years the Celestial government will have a patent system, modeled largely on our own. The new Chinese minister to this country, accompanied by Lieuts. Tseng and Fang, recently paid a visit to the Patent Office, and inspected the vast building under the guidance of the Commissioner and Chief Clerk Ireland. Lieuts. Tseng and Fang belong to the Imperial army, and they have been assigned to the duty of looking up the details of the system of this country and of organizing the new department of their home government.

Radiators are now made of pressed steel and they are said to have many advantages when constructed of this metal. In the first place, because of their exceeding lightness they are much easier to handle than those of cast iron, and the saving in the matter of freight charges is considerable. When set up they are almost instantly available for heating, as the metal is so thin that the heat is transmitted at once. In the manufacture of this radiator, each section is made of two sheets of steel which are pressed, punched, and sheared into shape separately. The two halves are brazed together while being held in a clamp and this joint has, it is said, withstood a pressure of 100 pounds to the square inch. Truss rods are used to hold the parts together, and the assembling is done in a machine exerting a powerful pressure.

The magnetic T-square, an English invention, is a device designed to give the free use of both hands to the draftsman while making use of the implement. The true edge of the board is fitted with an iron strip ground true and a number of small horseshoe magnets are imbedded in the stock of the square. This affords sufficient adhesion to support the square with the board in an inclined or vertical position, leaving both hands of the draftsman free. Another innovation in the drafting room is an illuminated table which is in use in Boston with great success. A section of the table top is cut out and a piece of plate glass inserted. In the drawer of the table a cluster of incandescent lamps is placed, supplied with a porcelain shade. This can be moved about so as to bring it immediately under that part of the work which it is desired to trace. This table has been found very useful in making tracings on thick paper from drawings having weak lines, the comparison of alternative designs, and the tracing of additions directly on brown paper drawings or blue prints.