Dangers to Railroad Brakemen.

Before the February meeting of the Car Builders' Association, Mr. D. A. Hopkins, one of the veteran railroad men of the country, related his experience as a freight train brakeman during his younger days, and described the perils to which this class of railway employes are exposed, especially in winter. They must run upon wet and icy running boards, and jump from one car to another in the darkness—a distance of from three to four feet. A single slip or a false step sends him to a horrible death. Statistics gathered as long ago as in 1852 showed that the proportion of men killed in this vocation on certain roads was greater than that of soldiers killed in ordinary warfare; and if railroad officers would give as much care to the protection of these men as they do the safety of passengers and freight, two thirds of the accidents that now occur might be avoided. As one means of prevention, the cars should be brought closer together. Another was by providing an iron upright guard around which a man might throw his arm while applying the brake, so that in case of the breaking of the chain, or slipping of the wheel, he could have something to hold on to.

According to the *National Car Builder*, Mr. Hopkins strongly urged the importance of well constructed cars. To secure this it was necessary that railroad companies should pay better prices for cars, so that builders could afford to use better material and workmanship. Contract cars, he contends, are apt to contain poor iron, cross grained wood, knotty sills, and other imperfections, which enhance the risks and dangers of train men; and in the matter of cost was poor economy after all.

A Victory for the Millers.

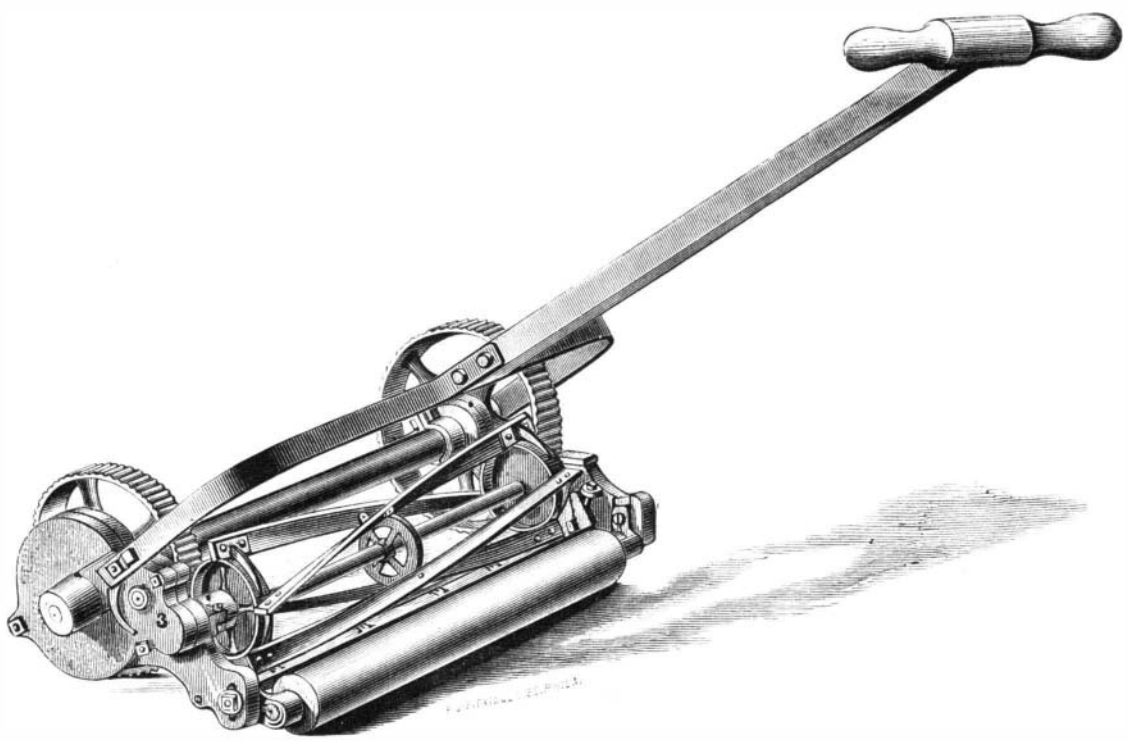
The United States Circuit Court decided the cases of the American Middlings Purifier Company against the millers of St. Louis, March 12, in favor of the defendants, on the ground that the reissued patent does not conform to the original, and is therefore invalid. The Minnesota cases follow the St. Louis cases. The plaintiffs will probably appeal to the United States Supreme Court.

AN IMPROVED LAWN MOWER.

The lawn mower, like many other machines, has passed through successive stages of improvement until it is now quite complete, besides being made at a reasonable price.

The accompanying engraving represents one of the improved machines made by Messrs. Lloyd, Supplee & Walton, of 625 Market street, Philadelphia, Pa. The points of difference between this and other machines of its class may be seen at a glance, and as it embodies some radical changes we will refer briefly to such as are considered improvements. Two independent driving wheels of large diameter are used, having as narrow faces as is consistent with the requisite power for operating the cutters. Each revolves independently of the other, on the same shaft, which also carries the driving gears. The wheels are connected with the shaft by means of a ratchet, so that the speed of the cutters is always governed by that of the wheel making the greater number of revolutions, which occurs in turning from the straight course, either in the return cut, or in avoiding obstacles. The machine is capable of cutting close to stumps or shrubbery without danger of damaging the cutters.

As will be seen by reference to the engraving, the cutting cylinder being of skeleton form is very light. The three wheels, having the necessary lugs for holding the cutters are made of malleable iron, the cutters being all steel, and bent and tempered in dies under hydraulic pressure, which gives them a uniform curve. A very simple adjusting device is applied to the cylinder, by means of which each end may be set separately to the cutter bar, and when once adjusted, is firmly secured in position. The cutters, as in other machines, are self-sharpening. A roller of small diameter follows the cutters, and receives sufficient pressure from the propelling power applied, to smooth the turf after the cut. The machine seems to be durable throughout. The independent wheels and the lightness of the moving parts render necessary but a very moderate expenditure of force in operating, and it is claimed by the makers to be the lightest mowing machine in use. Seven sizes are made, giving width of cut ranging from ten to eighteen inches.



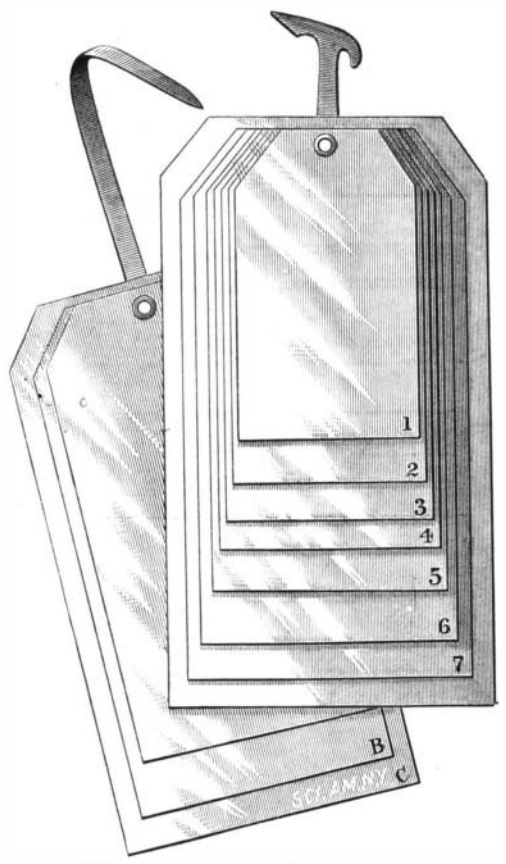
PENNSYLVANIA LAWN MOWER.

A Large Ocean Steamship.

The new Guion steamship, the Arizona, which was launched at Glasgow March 10, is the largest merchant vessel in the world with the exception of the Great Eastern. Her length is not equal to that of the Inman steamship City of Berlin, but her carrying capacity is greater. She carries four masts, rigged like those of the Germanic and Britannic of the White Star Line, and two smoke funnels; has first and second cabins, each capable of accommodating 125 passengers, and registers between 5,000 and 6,000 tons.

A NEW SHIPPING TAG.

The accompanying engraving represents two forms of shipping tags, patented by Mr. John M. Goodridge, of Norfolk, Va. One form is provided with a metallic barbed hook, and is designed especially for baled goods, such as cotton, bagging, hay, etc., and is said to be very popular in the South. The barbed hook is made of four cross tin, giving it ample strength to be thrust into the bale covers, and not break when doubled over the wire in the case of baled hay.



GOODRIDGE'S PATENT SHIPPING TAG.

The long hook, or Universal Tag, as its name implies, is capable of universal application; the long tongue of tin may be readily wrapped about some portion of the article to be tagged, and is also in general use for marking phosphates and other goods in bags.

A purchaser is wanted for this patent and the entire machinery used in the manufacture of these tags. For full particulars apply to Robert Baldwin, attorney at law, corner Fayette and Calvert streets, Baltimore, Md.

Rare Old Books at Auction.

The late Mr. George Brinley, of Hartford, Conn., a man of wealth and literary taste, spent many years and a large amount of money collecting rare books relating to the early history and literature of America. In some departments the collection was without an equal; and as a whole the library was the most important and valuable ever offered for sale in this country. The first third of the collection comprised 2,619 lots, sixty-seven of which sold for more than $100 each, and twenty-four for more than $200 each. The part sold brought in all $48,830, nearly one fourth of which went for the twenty-four works just mentioned. Among the more valuable of these were Captain John Smith's "Historie of Virginia, etc.," which went to the Lenox Library for $1,800; a perfect copy of the first book published in America, "The Whole Booke of Psalmes," which brought $1,200; the first edition of Eliot's IndianBible, $1,000; John Brereton's "Relation of the Discoverie of the North Part of Virginia," $800; and other copies of rare and valuable books, which brought from $700 down to $200 each. To a very large extent the more valuable works of the collection were bought for public and society libraries, where they are likely to remain permanently.

A Wisconsin Cranberry Marsh.

One of the largest cranberry farms in the world is known as Sackett's Marsh, near Berlin, Wisconsin. It comprises 750 acres of marsh, about one fourth of which is under cultivation. The yield has sometimes reached the enormous total of 35,000 bushels. According to a correspondent of the *Tribune*, this marsh is admirably fitted by nature for its present use, and its advantages of location could not have been improved upon by the experienced cranberry culturist. It is necessary to flood the entire surface during the winter, and this is rendered easy by the fact that the marsh is a basin lying in a wooded tableland, with an outlet at the lower end, across which has been constructed a dam 225 yards long and 4½ feet high, with double flood gates for regulating the height of the overflow. As soon as the crop is gathered the gates are dropped, and the marsh gradually becomes submerged by the autumn rains, the melting snows, and the drainage from the higher ground until it becomes a lake. This often freezes to a considerable thickness, furnishing a skating rink that puts to blush the contracted affairs of that name found in cities. In this manner the soil receives its only cultivation, and the tender plants are protected from the rigors of a Wisconsin winter. It is not uncommon for the marsh to be flooded eight or nine months in the year, the water not being drawn off until June.

The picking begins in October, when the inhabitants of the surrounding country turn out in a body for the work, not less than 3,000 pickers being employed at a time. The marsh is so wet and yielding as to preclude the possibility of driving teams across except on a corduroy road leading to the buildings in the center, where the gathered berries are cleaned and packed for market, and where the pickers from a distance are lodged and fed.

A movable wooden railroad track runs from the warehouse to the center of operations, and a car is loaded with the boxes of berries, each person picking into a pan, which is then emptied into his box of a bushel capacity. The pickers receive a ticket for every bushel loaded on the car, and on reporting to the superintendent at the close of the day, receive credit for the whole. The price paid is 75 cents a bushel, and the average day's work is not more than two or three bushels, although it is not uncommon to pick five bushels, and a few experts have been known to pick seven bushels in a single day. The picking being often hurried on account of threatened approach of frost, a second picking is sometimes necessary, for which about a dollar a bushel is paid. The car, on being loaded with the filled boxes, is drawn by a team of horses to the warehouse, where the berries are hoisted on an elevator to the upper stories, and disposed of in such manner as to secure the best ventilation. The floors are covered with tier upon tier of boxes of berries, there being sometimes 20,000 bushels under the roof at one time. On the ground floor, large fanning mills are in motion, into which the berries are running from hoppers in the upper stories, and all leaves and other impurities are blown out, after which they are put in barrels and hauled to Berlin, and from there shipped to the Milwaukee and Chicago markets. A coopering establishment on the property manufactures the many thousand barrels which are annually required.

Mute Cattle.

M. Paul Bert, in a recent lecture at the Sorbonne, on the late Claude Bernard, narrated a singular stratagem which was invented by the latter during the last Franco-German war, and which might be utilized without difficulty under the same or even under different, circumstances. It was

proposed to revictual Paris, which was strictly blockaded by the German forces. A large number of cattle had been collected, waiting for an opportunity to cross the German lines. But a difficulty was to silence these animals, as their cries would attract the attention of the enemy. Claude Bernard proposed to practice upon them the section of the nerve which enables them to emit their usual cries. The operation is so easy that it could be executed in a few seconds by an ordinary butcher. None of the animals appeared to suffer in any way by the mutilation which made them mute. Unfortunately, however, the military movement proved a failure, and for other causes the revictualing could not take place.

It would be greatly to the relief of the public if this same method could be applied to cats, which make night hideous with their caterwaulings.

SOME RECENT AMERICAN PATENTS.

An improved cranberry picker, invented by L. & Z. Hall and W. Crowell, of Dennis, Mass., is shown in Fig. 1. It consists of a hinged back, provided with closingsprings and handles for operating it, and having on the side opposite the handles a series of inclined wire fingers for pulling the berries from the vines. The picker is operated by opening the jaws and inserting them under and over the vines, and drawing the implement from the vines, which escape, while the berries are retained by the fingers.

A new grafting implement is shown in perspective in Fig. 2; in detail in Fig. 3; and Figs. 4, 5, and 6, show three different forms of grafting that may be done with the implement. To one of the jaws are fitted angular knives, as shown in Fig. 3. The opposite jaw is simply a flat bearing surface which supports the stock or scion while it is cut. This tool is the invention of Mr. William H. Gray, of Lama City, Iowa.

The novel picket pin, shown in Fig. 7, is the invention of Mr. P. J. Tweed, of Blair, Neb. It has a spiral corkscrew-like shank and a hollow head, containing a washer for receiving the end of the tedder rope. With a pin of this kind the tedder rope cannot become twisted nor will it wind around the pin.

An improved induction apparatus, for lighting by electricity, invented by the late J. B. Fuller, of Brooklyn, N. Y., is shown in perspective in Fig. 8, and in section in Fig. 17. The inventor's aim in the construction of this apparatus is to operate along the main electric circuit a large number of small lights, each being placed in a local circuit, whose currents are induced by the currents of the main circuit. Two magnet cores are arranged parallel with each other, and connected magnetically at the ends, as shown in Fig. 17. Around the center of each of these cores is a soft iron head, and at a short distance from each side of this is a head of insulating material. The outer ends of the cores are coiled with insulated copper wire, and so connected together and to the electric generator as to produce, when in action, two consequent opposite magnetic poles, at N and S. A, B, C, D, and E, represent the connections of these coils. Between the iron heads and these coils are wound smaller coils of insulated wire, the fineness of which depends upon the tension of the current required.

There is an iron arm hinged to one of the iron heads, so as to swing over upon the seat connecting magnetically the poles, N and S, as shown in Fig. 8. Now, if electric currents be sent through the main circuit, flowing around the large coils, and rapidly changing, in alternately opposite directions, the magnet cores will as rapidly change polarity, and these changes will induce in the small coils electric currents of greater or less tension, according to the fineness of the wire composing the small coils.

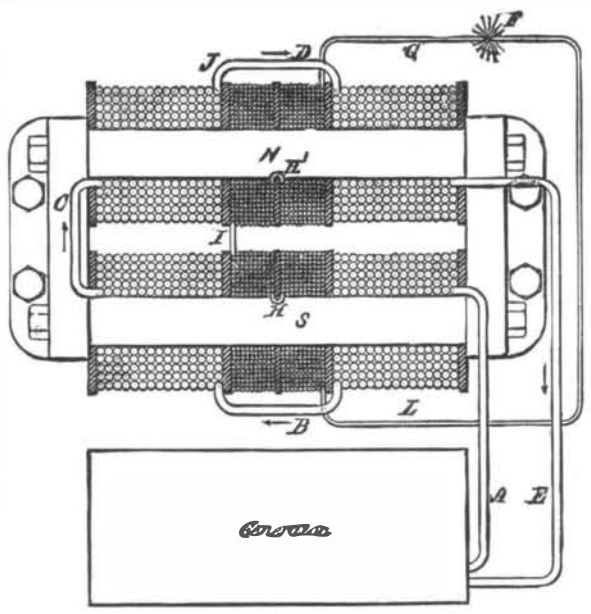


Fig. 17.—PLAN OF THE FULLER ELECTRIC LIGHT.

In the circuit of each of the small coils may be placed a lamp, F, of minimum illuminating capacity. Two small coils may be connected together, parallel or in series, for producing a light of medium capacity; or four small coils may be connected, for producing one light of maximum capacity, as shown in Fig. 17.

These connections for producing any changes in the circuits are made by means of ordinary switches, plugs, or keys. The arm which extends across the face of the coil in Fig. 8, acts as a governor of the light, by strengthening or weakening the magnetic poles, and thereby varying the strength of the current.

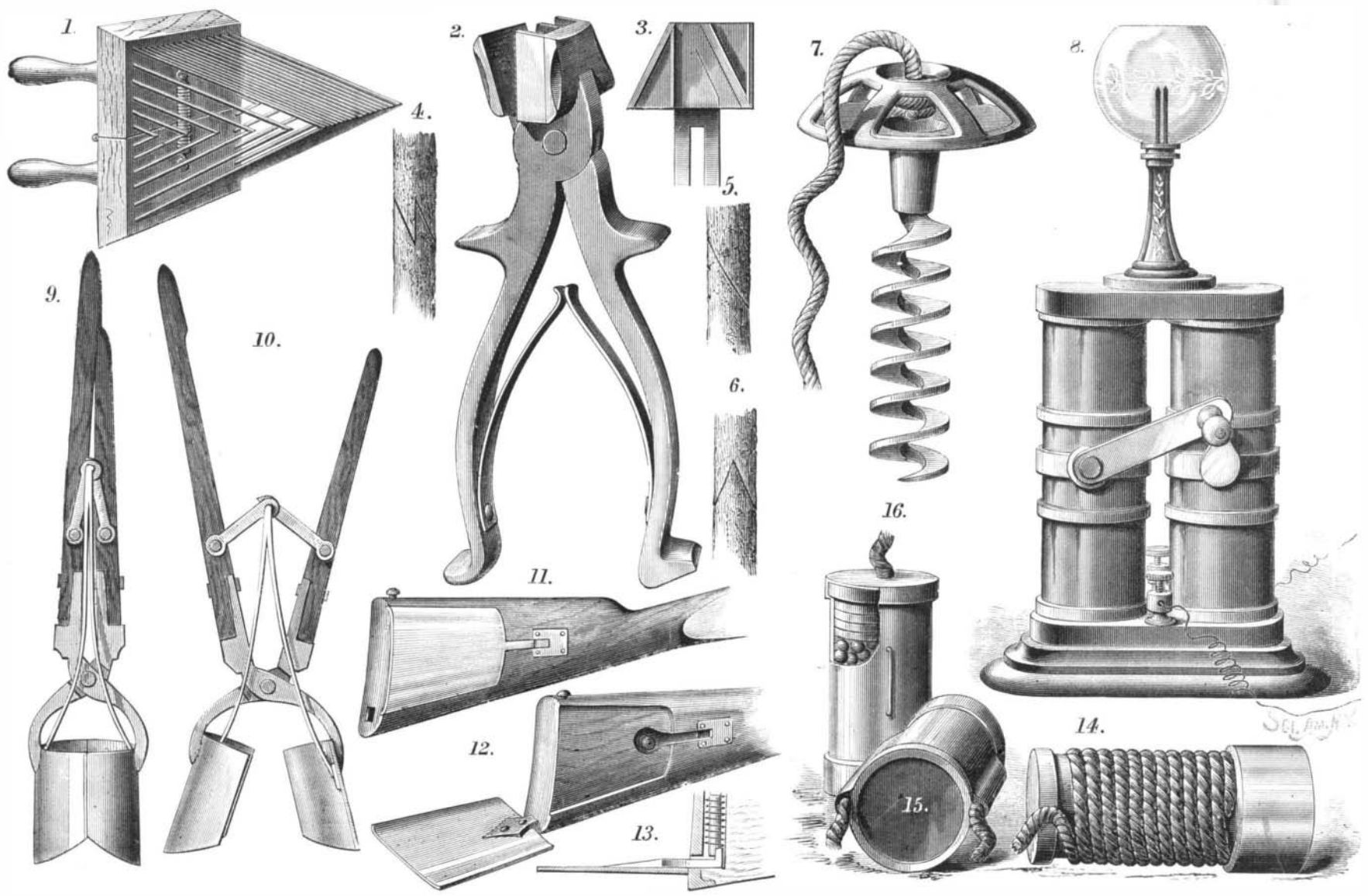
Any number of such apparatus which the electro-motive force of the generator will supply may be arranged along the line of a conductor, the large coils being included in the circuit, and, by means of a switch in the local circuits, each or any lamp may be lighted or extinguished independently from the others.

An improved post hole digger, patented by Mr. W. H. Ryan, of Moline, Ill., is represented in Figs. 9 and 10. The invention consists chiefly in a cleaning device which descends when the handles of the implement are opened. The transplanter is forced into the soil in the usual way, and when withdrawn it brings up a clod of earth between the shovels. When the handles are spread to drop the clod the toggle which connects the handles is wholly or partly straightened out, thrusting the scrapers down inside of the shovels, expelling the clod and scraping from them any adherent clay or earth.

It is very well known that by throwing up an earthwork of a very few inches in height, and especially by excavating in the earth ditches of just sufficient depth to allow the men to lie on their faces or backs, and not be above the level of the ground in which the ditches are dug, troops may remain a long time exposed to the enemy's fire without serious loss, as the shot will be thrown over them, or striking the earth in front, ricochet over them. These earthworks may be thrown up or the ditches dug in a very few minutes—in less time than will be required by the enemy to get the range of the troops—if each man has his musket or rifle provided with a spade or intrenching tool. Figs. 11, 12, and 13 illustrate a novel tool of this description, invented by Mr. James L. Buskett, of St. Louis, Mo. The spade when not in use fits a recess in the side of the gun stock, as shown in Fig. 11, but when it is required it may be quickly placed in the position shown in Figs. 12 and 13.

Figs. 14, 15, and 16 represent an improved shot cartridge for sporting purposes, invented by Mr. H. H Schleber, of Rochester, N. Y. In this cartridge the shot are confined within a separable case, which is provided, either outside or inside, with a time fuse, which operates, when ignited and consumed, to release the case, and to allow the shot to spread at a distance from the gun. The case is held together during the earlier part of the flight of the cartridge by the fuse itself, which, in this construction, is wound spirally about the case, or by a wrapper or other suitable fastening of combustible material, which is burned in two by the fuse, the combustion of the fuse in either case operating to destroy the fastenings which hold the case together, and to allow it to fall away from the shot. The rear end of the fuse cartridge is filled with wadding, to lighten it to prevent it from turning sidewise during its flight through the air. The engraving shows three forms of this cartridge.

AT a meeting of the Royal Society, Edinburgh, Professor Tait gave some account of experiments he is conducting with the view of determining the connection between the rate of speed and the electro-motive force of a Gramme magneto-electric machine. He is not yet through with this investigation, but thus far the results have appeared to him to show that the electro-motive force varies approximately in the duplicate ratio of the rate of turning.



A FEW RECENTLY PATENTED NOVELTIES.