

The Painless Extinction of Life of Animals.

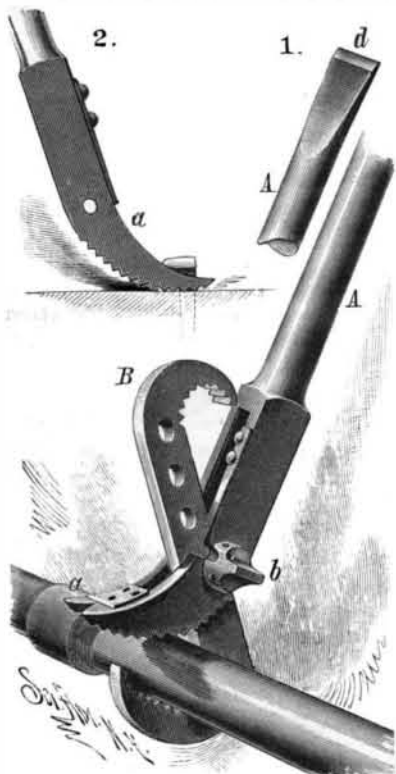
Dr. Richardson, of London, in a lecture on his process of painless killing of the lower animals, said in the closing passages of his discourse that at the Dogs' Home over 6,000 dogs have during the past seven months slept their final sleep, knowing as little of their deaths as of their births. The principal agent used for the narcotic action is carbonic oxide, passing, at summer heat, over a mixture of chloroform and carbon bisulphide into a lethal chamber, in which chamber as many as 100 dogs can at once receive euthanasia. This is on the large scale; but Dr. Richardson described also a small apparatus in which from one to six animals can be painlessly killed, and which is so portable that it can be wheeled from a central station to any house or street ready for immediate use. Thus every village and town may be provided at a small cost with a means that will give painless death to any domestic animal without offending the most sensitive individual. By an extension of the same design the author next intends to apply it to animals of the larger kind that are used for human food. It is no contemptible part of its history in this century for the profession to leave, as a bequest to the future, the means of taking the sting of death from all the lower animals whose fate is under our control.

Peroxide of Hydrogen as a Beer Preservative.

Since peroxide of hydrogen has been recommended as a good preservative for beer, the following experiments by Weingartner will be of interest to our readers, although only negative results were obtained. Some flasks of beer treated with hydrogen peroxide became clouded, while some pasteurized samples remained perfectly clear; the taste of the beer had changed to a flavor of rum, a microscopic examination showing much albumen and many living yeast cells. In another series, nine flasks of beer, to which had been added 3, 5, 6, 7, 8, 9, and 10 c. c. hydrogen peroxide, were placed on board a ship for a sea voyage lasting a month; they were daily inspected as to color and transparency; three days after commencement of the voyage two flasks which were not so treated, but kept as control, became muddy; the nine flasks treated with hydrogen peroxide remained clear and bright throughout the voyage; but on opening the flasks four days afterward, during very hot weather, it was found that the beer became clouded, although the taste and aroma remained good.

IMPROVED PIPE WRENCH.

The handle bar, A, of the wrench has a curved foot, and is slotted to receive the arm, B, which is held in place by a pivot pin, b, that is held by a spring catch which allows its ready removal. The arm has both ends made hook shaped—one being larger than the other—and is made with three or more holes for the pivot pin, so that the end in use can be set nearer to or farther



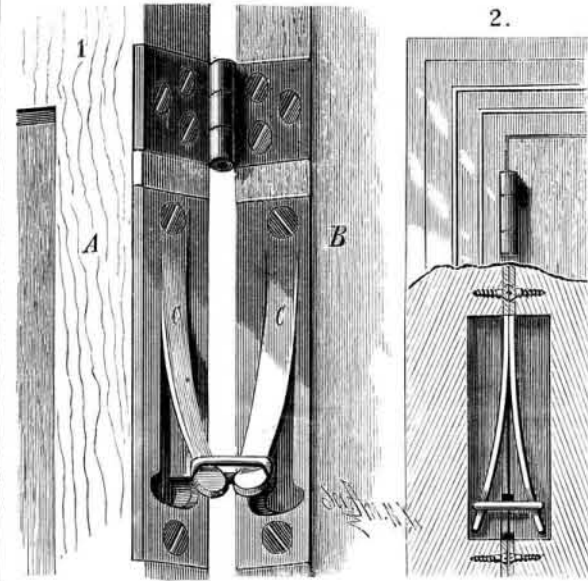
MORRISON'S IMPROVED PIPE WRENCH.

from the serrated end of the foot. The arm is to be reversed end for end, according to the size of pipe, and, with its endwise adjustment, adapts the wrench for a large range of work. Pipe fitters usually have to carry separate chisel bars and nail drawers, and in order to save this extra weight and expense the outer end, a, of the bar is tapered, so as to serve as a chisel bar or screw driver, and the curved end of the foot, a, is made with a notch, so that the bar can be used for drawing spikes and nails, as indicated in Fig. 2.

This invention has been patented by Mr. W. S. Morrison, and further particulars may be obtained by addressing Mr. James Lond, of 1101 Main Street, Fort Worth, Texas.

DOOR SPRING.

Let into and fastened to the edge of the door and the side of the jamb-rabbit are the like plates, C, which have spring tongues formed by slitting or pressing the plates by suitable dies. The free ends of the tongues are formed with notches which connect with a link. Normally, the free ends of the tongues lie back of the plane of the plates, the door and jamb being recessed to permit their entrance, as shown in the sectional elevation, Fig. 2. By this construction the tongues have a drawing or pulling action on each other, when the door is shut, to hold it firmly closed. It is evident that when the door is opened the tongues will be drawn outward



CLARK'S DOOR SPRING.

by the link and put in greater tension, so that on releasing the door they will act instantly to close it. The link, by its rounded ends, adjusts itself in the notches as they change their positions relatively to each other as the door is opened. The spring is wholly concealed from view, is positive and efficient, and can be cheaply made from suitable spring metal plates.

This invention has been patented by Mr. Enoch H. Clark, of Greenland, N. H.

Limited Use of Lumber in Mexico.

United States Consul Winslow, of Guerrero, writes that the amount of timber useful for manufacturing purposes in Northern and Central Mexico is very limited. The mesquite, the principal native product, although it is a very hard wood, and capable of taking a fine polish, is not suitable for general manufacturing purposes, as the trunk and branches are very crooked, and a straight piece of over two yards long seldom occurs. It is used, however, for making doors, door frames, for railroad ties, and for the heavy beams placed over the doors to support the stone walls, and for a number of other articles for which long lumber is not required. Its hardness, color, susceptibility of taking a fine polish, recommend it as useful for veneering, for making clocks, sewing machines, tool handles, and some articles of furniture.

There is, and will be, a demand for lumber, especially pine lumber, at those points reached by the Mexican Central, National, and International railroads, as new towns are being built along these roads; and, besides, large quantities of lumber are used in the mines and in the construction of bridges. All this lumber must come from the United States, but then the demand is not so great as may be supposed, as the manner in which Mexican houses are built must be taken into consideration. The houses, with but few exceptions, are of one story, some twenty feet high, and from twelve to fifteen wide, with flat roofs; built of blocks of stone, with walls two feet thick. The floors are made of a concrete, consisting of lime, sand, small stones, and water mixed together. The ground having been leveled where the floor is to be made, this composition is spread evenly over the surface, is allowed to dry somewhat, and is then beaten down by heavy wooden pestles, and afterward when nearly dry is smoothed down and polished by rubbing it over with round blue limestone. This requires considerable time and patience. The floor when thus made is smooth and glossy and hard, and will last twenty years. Wood floors are not suitable for this country, as they are liable to be eaten by insects, and afford a hiding place for vermin. The walls are plastered inside and outside, and whitewashed. The roof is made by extending joists from one wall to another, so that the joists show inside, and on the principal joist is painted date of building and some religious or political motto. Over the joists is nailed a flooring of boards, so that the flooring of a Mexican house is really on the roof. Over the roof is spread a composition, similar to that of the floor, which is also beaten down, so that the house becomes perfectly watertight and fireproof, and will easily last a hundred years. For example, the house in which the Consul lives was built in 1778. The roofing is of sabine and the doors of mesquite, and they are still sound. The houses consist

generally of one room, some ten or twelve yards long, with sometimes another attached, as a kitchen; but the kitchen is most frequently made of adobe, and thatched with straw, and is in the back yard, retired from the house. The houses of the poorer class are made of adobe, or of sticks stuck in the ground and plastered with mud.

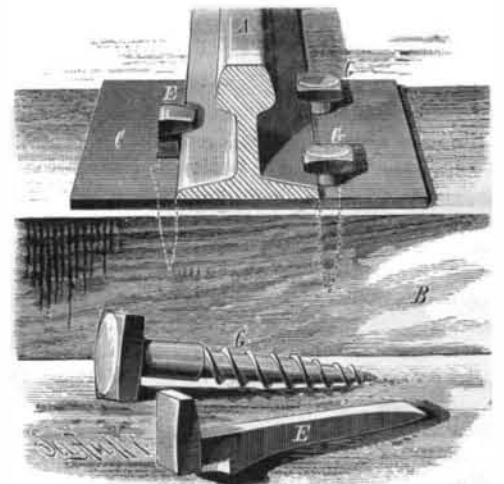
The kinds of lumber best to ship to Mexico are joists, two by twelve inches and sixteen and twenty feet long; pine and cypress boarding, one inch thick and twelve inches wide; scantling, two inches thick and four inches wide; double doors, one and three-quarters of an inch thick, six and a half feet high, one foot and a half wide; Venetian blinds for doors; shingles; oak, hickory, and ash lumber, three to four inches thick and ten to twelve feet long; materials for making carts; cart and carriage wheels, etc.

Expenses of Business.

A well informed merchant of Boston recently said to a representative of the Boston Herald that he had been looking back over his accounts, and was surprised to find that since the close of the war there had been a steady increase in the ordinary expenses of carrying on business. Mere office work cost a great deal more now than it did in 1865; more clerks were needed, and, on the whole, each of these received higher pay. Assistance was required in the receiving and delivering departments to an extent and of a character that would not have been dreamed of two decades ago. Then there were a variety of incidental expenses that now entered into the compilation. There were telephone charges, printing, the expense of solicitors, the whole making up an amount sufficiently large to eat up all that would have been considered fair profits a quarter of a century ago. It is probable that the experience in different trades varies, and yet we fancy that in most lines of business statements somewhat similar to the above might be made. The tendency, all the time going on, to lessen the hours of service, both in offices and workshops, would of itself make the cost of business proportionately higher. The cheapening process, if there is one, would seem to be in enlarging the amount of business which each concern carries on.

A NOVEL RAIL FASTENING.

For ordinary railway tracks and traffic the preferred dimensions for the wear plate, C, are 14 inches long, 6 to 7 inches wide, and about $\frac{3}{8}$ of an inch thick; but the size may vary with the hardness of the tie, one of hard wood not requiring so large or thick a plate. Next to the outside flange of the rail is punched a rectangular hole in the plate, through which the spike, E, is driven, and next to the inside flange are punched two round holes, through which the screws, G, are turned down into the tie. The spike and screws are so arranged as to take a triangular hold on the base of the rail. The spike has a projecting lip at the back, with a square shoulder formed at a distance from the under side of the head corresponding to the thickness of the flange and plate. In laying the rails they will be set on the plates, which will be placed so that the inner ends of the spike holes will lie about in line with the edge of the outside flange. The spikes will then be driven home, which will bring the shoulder just below the under surface of the wear plate, which will then be driven inward until the outer end of the slot comes



HOWE'S NOVEL RAIL FASTENING.

against the spike above the shoulder. By this means the rail is locked to the plate and tie by the spike, which is also locked by the plate. The screws are now turned down until their heads rest upon the flanges, to complete the fastening. It will be seen that a spreading of the rails is prevented, since the edge of the outside flange comes against the side of the spike below its head, and the screws have a firm downward hold on the inside flange. With this device fewer ties may be used, and those used will last longer. When considered necessary, the wear plates may extend along the tie from one side rail to the other under both rails.

This invention has been patented by Mr. John Howe, of Newhall, California.

Lake Moeris.

A very interesting lecture on the great reservoir of the Patriarch Joseph was recently given in this city by Mr. Cope Whitehouse.

The lecturer described the situation of the enormous reservoir in the district now called the Fayoum, some seventy miles southwest of Cairo, and told how it was filled through the Bahr Jousuf—the Canal of the Patriarch Joseph—at the season of the Nile inundation, and how the water, retained after the Nile had subsided by locks and the famous dike or causeway, assured life and fertility to those portions of old Egypt by irrigation. The lake was 450 miles in circumference and 300 feet deep in the deepest part. In it stood, on an island, two pyramids as high as the water was deep; and beside it was the marvelous labyrinth, of which the site is not yet identified with certainty. Tradition tells of the foundation of this vast and beneficent work through the jealousy of Egyptian courtiers of the Patriarch Joseph, already advanced in years. In answer to their complaints, Pharaoh asked them to suggest a task to try Joseph's ability. They concocted the idea of the future reservoir, thinking its creation an impossibility. Joseph accepted the test, and carried it to a successful issue. Doubtless the children of Israel worked upon the Bahr Jousuf, and upon the great dike against which Strabo describes the dashing of the waves. The Bahr Jousuf has long since become choked with silt; but it would not be an undertaking of stupendous difficulty to modern engineers to reopen it, and to restore to impoverished Egypt the priceless benefit of the Mother Lake.

Not the least interesting portion of the lecture was occupied with a description of former incomplete and erroneous identifications of the site of Moeris, due to distrust of ancient authorities and to insufficient exploration of the ground. Mr. Whitehouse told of his own three visits to Egypt and his repeated expeditions into the desert, several of which were made at some hazard during the troubled ascendancy of Arabi.

A part of the lecture was devoted to the display and explanation of a number of beautiful and interesting lantern slides, illustrating his last journey to the desert, beginning with the start from Cairo. The weird desolation of the arid waste, with its white sand resting upon the dark rocks close to the scenes once of luxuriant fertility, was brought thoroughly home to the spectators.

Photography in Banking.

It is said that the Bank of France has an invisible studio in a gallery behind the cashiers, so that at a signal from one of them any suspected customer will instantly have his picture taken without his own knowledge. The camera has also become very useful in the detection of frauds, a word or figure that to the eye seemed completely erased being clearly reproduced in photographs of the document that had been tampered with.

ICE PLANING AND RIDGING MACHINE.

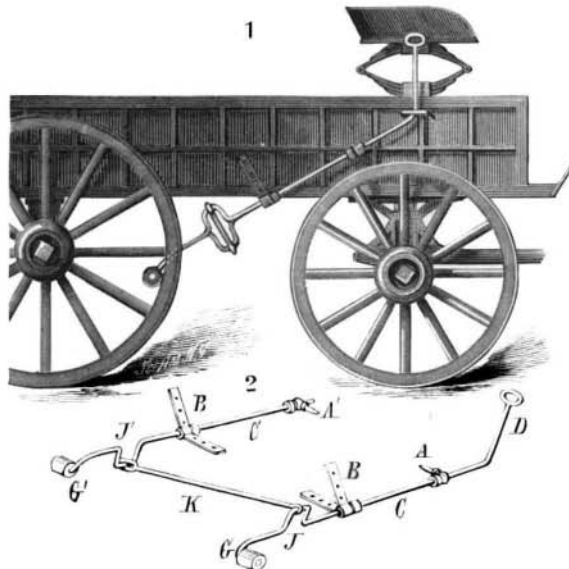
Those who have attempted to clear an ice field of frozen snow, have attempted to pack ice blocks irregular in shape and uneven in size, and those who have tried to remove cakes, of a marketable size and appearance, from the ice house packed in the old way, know the difficulties to be overcome, and can appreciate the value of an apparatus which saves time and money by doing away with these hinderances. The accompanying engraving shows a planer and ridger which can be quickly attached to the inclined plane or elevator, and the use of which does away with all scraping or shoveling on the field. As the cake of ice passes under the machine the top is cleared of snow and slush, and two half-round ridges are formed, $\frac{3}{4}$ of an inch high by 2 inches wide, 5 inches from the edge of the cake. In storing on the flat these ridges form an air space of $\frac{3}{4}$ of an inch between the top of one tier and the bottom of the tier above it; and in storing on edge, the cakes can be put up close, as the ridges will make a space, and in the summer they can be taken out as cheaply and in as perfect condition as if stowed flat.

The knives make three separate cuts on the top of the cake, the cutting strain being one horse power when the machine is cutting to its full capacity of $3\frac{1}{2}$ inches. By means of a lever the gauge of the cut may be instantly changed anywhere from $\frac{1}{2}$ to $3\frac{1}{2}$ inches, and when the ice is running the same thickness the knives may be set to cut the requisite depth, when the machine will need no further attention. Ice from $7\frac{1}{2}$ to 30 inches can be planed. All the parts are numbered, so that, should any one piece break, another could be ordered by telegraph.

Additional particulars regarding this machine, which was awarded first premium at the St. Louis Fair, held in October last year, may be obtained by addressing the inventor and manufacturer, Mr. Stephen L. Smith, No. 817 N. 7th Street, St. Louis, Mo.

VEHICLE BRAKE.

Fig. 1 is a side view of a wagon provided with this brake, which is shown detached in Fig. 2. The brake bar, C, is held at one side of the vehicle body in the eye of the bolt, A, and the eye of the strap iron, B, the upper end of the bar being bent to form a handle. Endwise movement of the bar is prevented by two collars placed between the eyes. The lower end of the bar is curved downward, and is then bent outward to form an arm, G, on which is placed a rubber cushion to prevent damage to the spokes as the arm is swung in between two of them, to lock the wheel when the wagon is on a down grade. When the handle is pulled toward the wagon, the arm will be turned out to enter be-



SCOTT'S VEHICLE BRAKE.

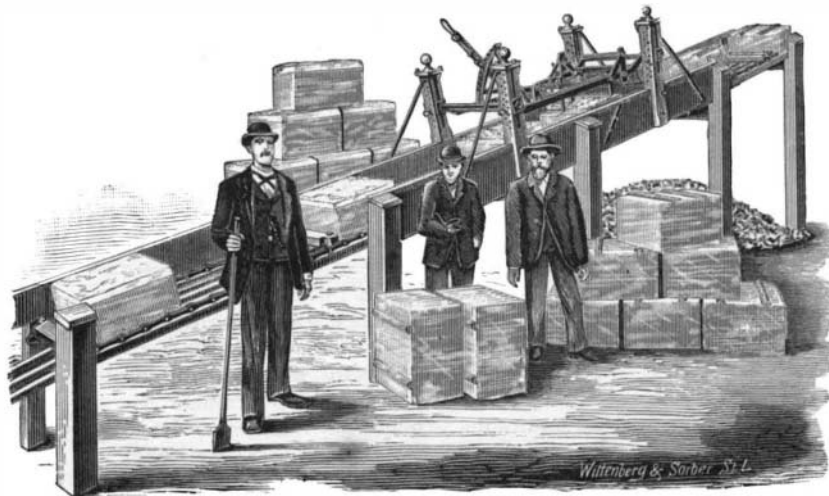
tween the spokes; and when the handle is released or pushed outward, the arm will fall clear of the wheel. The handle is prevented from falling out of reach by a keeper secured to the body. The strap, B, is made with angle plates that are fastened to the side and bottom of the box, so as better to resist the strain brought on the brake bar.

In some classes of heavy vehicles it may be desirable to have a brake rod at each side of the box to lock opposite wheels. The construction of such a brake is clearly shown in Fig. 2. In order that both arms may be operated by the same handle, reverse cranks, J J', are formed in the brake bars. These cranks are connected by a tie rod, K, so that when the handle is moved toward the seat the arms, G G', will be turned outward between two spokes of opposite wheels, thus locking them both at once. This brake device is simple, strong, easy to operate, and effective to lock the wheels at the point of junction of a spoke with the felly of the wheel.

Particulars regarding this invention, which has been patented by Mr. T. J. Scott, may be had by addressing Mr. W. A. McDonald, P. O. Box 12, Ashland, Miss.

Snake Dance of the Moquis.

In the month of August every year the Moquis, who live in caves in the hillsides of northeastern Arizona, celebrate a snake dance. Eight days before the dance



SMITH'S ICE PLANING AND RIDGING MACHINE.

the young men go north one day, west one day, south one day, east one day, and the other four days they roam all over the country, if necessary, to catch the snakes, using all kinds.

These reptiles are placed in an estufa until wanted, kept in order by certain old men who have no other weapon except a small stick, at the end of which are two eagle feathers. The snakes are afraid of the birds of prey, and seem to have a wholesome dread even of their feathers. After the most elaborate preparation, the dancers march through the principal streets, certain of them carrying each a squirming snake in his mouth, the animal being kept in order by a companion using the eagle quill teaser.

A Subterranean River in Austria.

The river Reka, rising in the Schneeberg, in Carniola, suddenly disappears in the so-called Karst caverns. At San Giovanni di Duino, 20 miles distant from the spot where the Reka is lost, a river of corresponding magnitude is found issuing from the foot of a hill. This stream is known as the Timavo, which takes a westward course, and discharges its waters into the Bay of Monfalcone. As to the identity of the Timavo with the Reka there has hardly been any doubt, although until last year no attempt had ever been made practically to demonstrate the fact. The members of the Austro-German Alpine Club last year made three attempts to explore this subterranean river.

Starting from the first great cavern, called Rudolph's Dome, the expedition, consisting of four persons in two boats, proceeded on their eventful voyage. From the cavern just mentioned the river flows for 200ft. through a narrow channel between two perpendicular walls of rock, estimated to be upward of 100 yards in height. At the end of this channel the explorers, whose course throughout was illuminated by the magnesium light, found themselves in a vast cavern, where they were able to land. The explorers, proceeding, found seven waterfalls, the last one of which, at a distance of about a furlong from the entrance, they were unable to pass, but will renew the attempt this year with more complete apparatus.

The cavern which was discovered is of far greater dimensions than the Rudolph's Dome or any of the other caves of the district. Its height is upward of 450 ft., so that it could easily contain the cathedral of St. Peter's at Rome.

The Electrolytic Process in Connection with Colors.

At the Industrial Society of Mulhouse meeting of October 8, 1884, M. Goppelsroder sent in two memoirs on the formation of oxycellulose and on that of persulphocyanogen by the electrolytic process. In the former paper he shows that if cotton is soaked in a solution of potassium or sodium nitrate, chloride, or chlorate, whether acid, neutral, or alkaline, placed upon 8 or 16 folds of moist tissue resting on a sheet of platinum which serves as the negative electrode, while there is placed above another sheet of platinum forming the positive electrode, and the current is passed, the cloth is converted into oxycellulose in the parts touched by the positive electrode. In discharging Turkey-reds or vat blues by the electrolytic process the cloth is weakened in the discharged parts by the formation of oxycellulose. In the second memoir the author describes the formation of persulphocyanogen by the electrolysis of a boiling solution of potassium sulphocyanide. He shows that this body may be simultaneously formed and fixed electrolytically upon cloth, either white, or dyed a Turkey-red or a vat blue.

A. Scheurer described the power of the alkaline hypobromates of discharging indigo blues. Upon this coloring matter they act much more energetically than the corresponding hypochlorates. With certain other colors, e. g., that of raw cotton, this is not the case.

Prizes for Inventors.

A member of the French Legislature has proposed a prize of \$1,000 each for the best essays by inventors on several important subjects, to which a good deal of attention has already been paid in Europe as well as here. One of these prizes is to be for a practical method of producing aluminum at a low cost, a field in which many times the proposed prize has been expended, and which has been the object of special research by eminent scientists. All but one of the systems for its production now require the use of sodium, itself an expensive metal, and the Jablochkoff system for its production by electricity is also costly. Another proposed subject of one of the prizes is a simple small motive power, for the best style of which so many inventors have long been striving. We think the individual who should succeed in obtaining the results desired by this "generous" offer would hardly be liberal enough to donate it to the world for the prize offered, so long as the patent laws, in France as well as here, would render his discovery worth many hundred if not many thousand times more.

WHEN nervous wakefulness ensues at night time, when there is a desire to sleep, but, on account of a peculiar state of mind and body, rest will not come, inhalation of pure air is a safe and efficient soporific. It is observed in these conditions that a person only breathes half-way, and that the oxygen in the lungs is kept exhausted. A physician recommends a few full respirations as the best remedy for this kind of wakefulness, which is produced frequently by the condition of the atmosphere as well as state of the mind.