ENGINEERING INVENTIONS.

A car coupling has been patented by Mr. Michael Spelman, of Shreveport, La. It is automatic, the drawhead having a device for guiding the link into the cavity to enable it to engage with the coupling pin, and there being a novel link guide and supporter to hold it in the desired positions.

A car coupling has been patented by Mr. Lorenzo D. Hoover, of Rock Island, Ill. The drawhead is formed with a chamber, bridge, and aperture, in combination with a coupling pin having a shoulder and a pivoted leg, the shoulder being adjusted to hold the connecting link upon the bridge, the device being automatic.

An automatic block signal for railways has been patented by Mr. Lewis B. White, of New York city. From standards at the side of the track a novel connection is provided with the rail, so that when the latter is struck by a passing locomotive a crank is operated which sets a signal that will remain set for a given time and then swing back to its normal position.

A boiler furnace has been patented by Mr. John Mailer, of San Francisco, Cal. It has a fuel magazine above and opening into its firebox, with passages leading from the fuel magazine and firebox into a rear combustion chamber, tube lined and apertured doors being provided to admit air to the fuel as it feeds, and the whole construction to facilitate the regular supply and economical consumption of fuel.

MECHANICAL INVENTIONS.

A planer chuck has been patented by Mr. Thomas H. Paul, of Frostburg, Md. A bed piece, with a transversely sliding chuck body, is pivoted to oscillate on the planer platen, and there are other novel features, whereby a gib and gibway may be planed to fit exactly together, or a groove planed in the arc of a circle, or the plane face of a circular segment planed with cuts in arcs of circles.

AGRICULTURAL INVENTIONS.

A fertilizer distributer has been patented by Mr. Joseph Kittle, of East Bend, N. C. It is to facilitate dropping by hand a certain amount of fertilizer, and has devices for measuring and gauging the supply from the hopper, and for sustaining the distributer and adapting it to persons of different heights.

A cultivator for listed corn has been patented by Messrs. John C. McCandless and Orson King, of Randolph, Kan. This invention covers a novel construction and combination of parts in a machine for loosening the soil and destroying the weeds and grass upon the tops and sides of the ridges and between the ridges.

A mowing machine has been patented by Mr. Warren Hill, of Towanda, Pa. It has sleeves on the ends of the axle with downwardly projecting arms connected with the draught pole, and other arms on which a cross bar rests, to help support the frame with the gearing and shafting, to improve center cut mowing machines and prevent undue pressure on the cutter bar, while simplifying the construction.

A cultivator has been patented by Messrs. Lorenzo D. Monroe and George W. Wiggins, of Morgan, Ga. The construction is such that the arms which carry the cultivator blades are made adjustable upon any part of the cultivator beams, and at any angle, while combined with a central cultivator beam are side beams, also carrying adjustable arms and an adjustable draught bar.

A combined cotton seed planter and fertilizer distributer has also been patented by the above named gentlemen. The invention covers a novel construction and arrangement of parts in a machine for doing the furrowing, planting, fertilizing, and covering of the seed at one operation, and doing this expeditiously and with a minimum expenditure of labor.

MISCELLANEOUS INVENTIONS.

A bolt fastener has been patented by Mr. Edward G. Holden, of Oak Ridge, Mo. The bolt has a reduced threaded portion, forming a shoulder and a square offset, in combination with end pieces and toggle levers, to securely hold the bolt in a smooth recess.

An improvement in scissors has been patented by Mr. Theodore Bayrhoffer, of Shelby, Neb. The scissors are made with a pivot plate adapted to a recess in one arm of the scissors, and there is also a spacing plate, so that scissors can always be readily tightened up as desired, and a close joint preserved.

A bodice belt has been patented by Mr. Samuel Bretzfield, of New York city. Combined with a belt having a fastening adjustable for the desired length are two bodice pieces adjustable on the belt, having a loop or pocket for the passage of the belt and a double parallel row of perforations to receive lacings.

A photographic plate box has been patented by Mr. Vincent M. Wilcox, of New York city. It has adjustable and removable corrugated or notched spring partitions to receive the ends or edges of plates and hold them separately, making a case adapted to hold photographic plates of different sizes.

A combined blacking brush and scraper has been patented by Mr. Charles E. Hatch, of Vallejo, Cal. The handle is detachable, and has a scraper or blade for use in cleaning mud or dirt from boots or shoes before blacking, but the handle can be quickly and easily adjusted to the brush again by turning a set screw.

A corset fastening has been patented by Mr. Morris Hertz, of New York city. Its construction is such that the corset is to be hooked about the person in the ordinary way, but when it is to be removed it is only necessary to press downward upon a finger piece, which will operate a plate and hook-shaped keepers to open the corset.

A dumping car and scow has been patented by Mr. William Fallon, of Newburg, N. Y. This invention covers improvements on a former patented invention of the same inventor for the construction of scows and cars in such manner that they can be dumped easily and rapidly, and afterward readily brought back to the normal position.

A sugar cane top and leaf cutter has been patented by Mr. Emilio Lobeck, of Havana, Cuba. The machine has a feed table, along which the cane tops and leaves are passed to feed rollers, which carry them to rapidly working knives, the feed rolls and knives being operated by gearing from an axle of the truck on which they are mounted.

A convertible skate has been patented by Mr. John Lapp, of Honeoye Falls, N. Y. It is intended for both roller and ice skating, and has removable front and rear runners with opposite blades connected to each other, with various novel features, so the advantages of the automatic side curving movements of roller skates may be availed of in ice skates.

A pipe coupling has been patented by Mr. Lucien Lerede, of Paris, France. This invention consists in the employment of metal tubes, each of which has at its ends a ball and socket or other universal joint, with means for rendering it perfectly tight, the device being especially designed for compressed air and vacuum brake apparatus.

A shoe blacking box has been patented by Mr. Francis M. Osborn, of Port Chester, N. Y. This invention relates to blacking boxes in which the blacking to be used is forced through apertures in a plate fitted in the blacking box, and the construction is such that only the quantity of blacking required at a time will be exposed to the brush.

A dissolving key for oxyhydrogen lights has been patented by Mr. Henry J. Brower, of Brooklyn, N. Y. Combined with a key body having separate channels for the oxygen and hydrogen are valve plugs in each channel connected to operate together, the key to be used in turning gas from one jet to one or more other jets, to produce dissolving effects or for other uses.

A flood gate has been patented by Mr. James A. Galloway, of Spring Hill, S. C. Its construction is simple, but it is so designed that the gate may be held open and stopped from revolving, its several parts being held out of the way of timber and other floating objects likely to damage it, and a clear way provided for the water, the invention being an improvement on a former patented invention of the same inventor.

A hand nailing implement has been patented by Messrs. Edward L. Taft, of Gardner, and Henry M. Rich, of Athol, Mass. This invention covers a pair of nail or pin driving pliers, with an automatic nail feeding device, operated by the opening and closing of the pliers, one of the jaws serving to drive the nail and the other as a rest for the rod or article through which the nail or pin is to be driven.

A platform rocker has been patented by Mr. James S. Piper, of Gardner, Mass. The seat back and arm rests are formed of bent wood, the back rest bars extending down below the seat and having their lower ends secured on a curved runner, which has its front bent up to the under side of the seat, then extends along the under side and is bent down to the runner at the rear end of the seat, all on a platform with bent ends forming feet.

An apparatus for dyeing has been patented by Mr. Ludwig Pfaff, of San Francisco, Cal. The fabric to be dyed is wound around a perforated tube, a perforated cylinder surrounding the fabric, and top and bottom pieces covering the ends of the cylinder of fabric, the whole to be placed in a vat, and dyeing liquid forced up through the bottom of the tube, passing through the fabric, and dropping from the apertures of the outer cylinder into the vat.

A water elevator has been patented by Mr. Thomas A. Porter, of Cameron, Texas. Combined with endless chains having novel links and staples are buckets with apertured side flanges through which the staples pass, fastenings passing through the staple in front of the apertured side flanges to hold the buckets in place, and so their open ends, in passing over the drum, will not tip forward until the spouts are carried just above the inner wall of the receiver.

A combined umbrella and cane has been patented by Mr. George Leland, of Jacksonville, Fla. Combined with a hollow cane is a nut adapted to be held on its end, ribs pivoted thereto, with braces and a chain ring holding the lower ends of the braces, the several parts to be held in the hollow of the cane when the umbrella is not in use, the diameter of the cane seven-eighths inch at the smaller end and one and a quarter inches at the thicker end.

A bridle bit has been patented by Mr. Emry Q. Darr, of Shelbyville, Ind. It consists of two rigid bars of different lengths, one above the other, pivoted together centrally, the upper bar suspended by the usual cheek straps, and to remain in a fixed position across the horse's mouth, while the swiveled lower bar turns on its pivot to guide the horse by lines in the usual manner, so that the pull on the rein is not largely expended in drawing on the bridle, but it is transmitted directly to the animal's mouth.

NEW BOOKS AND PUBLICATIONS.

LEHRBUCH DER VERARBEITUNG DER NAPHTHA ODER DES ERDOLES AUF LEUCHT- UND SCHMIEROLE (Handbook of the Manufacture of Illuminating and Lubricating Oils from Naphtha or Petroleum.) By F. A. Rossmassler. Chemist. Vienna, Pesth, Leipzig: A. Hartleben, 1886.

The author gives a systematic account of the crude material, the products derived therefrom, and the gradual progress made in the art of refining. He describes the properties of lubricating and illuminating oils, the different operations of distilling, condensing, purifying, mixing, bleaching, and deodorizing. He sets forth the use of the more volatile products, and describes in detail the methods of manufacturing and purifying lubricating oils, and finally he gives a very full description of the plants for factories and the devices for filling kerosene barrels.

Notes & Queries

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters, or no attention will be paid thereto. This is for our information, and not for publication.

References to former articles or answers should give date of paper and page or number of question.

Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all, either by letter or in this department, each must take his turn.

Special Informa ion requests on matters of personal rather than general interest, and requests for **Prompt Answers by Letter,** should be accompanied with remittance of $1 to $5, according to the subject, as we cannot be expected to perform such service without remuneration.

Scientific American Supplements referred to may be had at the office. Price 10 cents each.

Minerals sent for examination should be distinctly marked or labeled.

(1) D. D.—The recovery of tin from tin scrap is practiced by several chemical manufactories in and around New York, but not in the metallic state. The tin may be burned and thoroughly oxidized by fire with a free circulation of air. Then treat the oxides with sulphuric acid, which unites with the iron, forming sulphate of iron, which may be decanted and crystallized and converted into rouge, or the red oxide of iron, while the remaiuing tin sediment may be further oxidized and made into polishing powder, or, as by some chemists, made into sulphomuriate of tin, as used by dyers. It requires some chemical knowledge to carry on the recovery of tin scrap to profit, as well as an abundance of scrap.

(2) W. P. M.—Galvanized iron chain pumps do not affect the water perceptibly for drinking or cooking purposes. They are largely used in wells and cisterns.

(3) J. I. V. D. asks the formula and apparatus necessary for etching pocket cutlery. A. Write with a chloride of gold solution. 2. A brown ink for writing on polished steel. A. We would suggest the following as giving you a colored ink: sulphate of copper 1 ounce, sal ammoniac ½ ounce, pulverize separately, adding a little vermilion to color it, and mix with 1½ ounces vinegar. Rub the steel with soft soap, and write with a clean hard pen without a slit, dipping in the mixture. To produce a bronze color, it would be necessary to first use a black ink, and subsequently coat with bronze powder.

(4) B. P. T. asks: 1. What material is used to bleach skeletons? A. See "Preparation of Skeletons for Museum Purposes" in SCIENTIFIC AMERICAN SUPPLEMENT, No. 106. 2. What are the "green soaps" made of which are used in skin diseases, and who manufacture them? A. Green soaps are prepared from potassa and fixed oils. They are officinal, and therefore can be procured from any druggist. 3. What is the mucilage used on the back of postage stamps made of? A. Gum dextrine 2 parts, acetic acid 1 part, water 5 parts. Dissolve in a water bath, and add alcohol 1 part.

(5) C. P. asks what is the commercial hydrocarbon gas black, and how is it made? A. The preparation of gas black is probably similar to that of lamp black, and is therefore produced by burning ordinary illuminating gas in a supply of air which will be insufficient to completely oxidize it. The black fumes arising from this combustion deposit the carbon on cloths or, in some instances, on metallic plates suspended in order to receive it. Gas carbon, which is possibly what you refer to, may be obtained by passing olefiant gas through a red hot porcelain tube.

(6) H. R. H. asks (1) for a practical recipe for the generation of oxygen gas, for the purpose of inhalation. A. See "How to Make Oxygen," in SCIENTIFIC AMERICAN SUPPLEMENT, No. 313. 2. What effect would the inhalation of sulphur fumes have on the system? A. The inhalation of sulphur has been recommended for the curing of contagious throat diseases, such as diphtheria, etc. The fumes are suffocating, and care must be taken in their inhalation.

(7) E. H. F.—Tonics or washes to make the hair grow can always be employed with greater or less success so long as there is any vitality left in the hair roots. If, however, these are destroyed or entirely dead, there is no possibility of producing a new growth of hair. The following is a well known tonic: Scald black tea 2 ounces with 1 gallon of boiling water, strain, and add 3 ounces glycerine, tincture cantharides ½ ounce, bay rum 1 quart. Mix well, and perfume.

(8) J. W. E. A. asks whether an analysis has ever been made of any of the petrifying lakes or wells in Europe or elsewhere, with a view to iscover the petrifying properties of the water, and, if so, what was the result? A. Calcium carbonate, which is insoluble in pure water, but soluble in water containing carbonic acid, is frequently found in springs of carbonated waters which pass through limestone. Objects placed in such waters are coated with a deposition of the carbonate of lime. Travertine is the name given to such formations. Silica is likewise dissolved by certain mineral waters, and the deposits obtained by the evaporation of such waters are known as *silicious sinter*. Works on geology fully describe the process. 2. What chemical or combination of chemicals, apart from those ordinarily nsed in refrigeration, will freeze liquids? A. For this information, see table given in answer to query 4, in SCIENTIFIC AMERICAN for June 21, 1884.

(9) T. F. W. asks what to put with pure white paraffine wax to make it pliable long enough when dipped in water to make imitation of roses. A. Use pure beeswax (white), and mix with paraffin.

(10) W. A. W. writes: Suppose two boilers 200 feet apart are connected by a 2 inch pipe, fire beneath one only, and gauge shows 150 pounds pressure. Would a gauge on the other boiler indicate same or less pressure, and if less, about what per cent? And would size of pipe or distance of boiler cut any figure? A witness in court testified pressure would be materially less in the distant boiler, owing to condensation, but I would prefer to have you say whether he is correct before I can believe so. A. The gauge on the farther boiler would indicate at first considerably less pressure, until the boiler and pipe had become heated by the condensing steam, when the gauges would indicate less difference, but the pressures would never be quite equal. A great deal depends upon the amount of surface exposed in pipe and boiler, and the outside temperature, in determining the per cent difference The witness was correct.

(11) G. F. F. asks how to mix South Carolina rock (finely ground) with sulphuric acid so as to analyze 14 to 15½ per cent of available phosphoric acid; what quantity of each to use. A. Take 1,000 tons or parts of the rock and 1,000 tons of sulphuric acid. 2. What grade of sulphuric acid? A. Sulphuric acid of 50° Baume. 3. Is there any artificial way of drying the mixture? A. It is not necessary to dry it. 4. Is South Carolina rock phos. as high in phosphoric acid when just mixed as it will be after lying a month, or does age improve it? A. The phosphoric acid reverts if allowed to rest for any length of time.

(12) L. H. M.—For information on lubricants, see SCIENTIFIC AMERICAN SUPPLEMENT, No. 316. For axle grease: Dissolve ½ pound common soda in 1 gallon water, add 3 pounds tallow and 6 pounds palm oil (or 10 pounds palm only). Heat them together to 200° or 210° Fah., mix, and keep the mixture constantly stirred till the composition is cooled down to 60° or 70°.

(13) D. D. L. desires a formula for making a good applicant (resin or rosin) for the bow of a double bass, something with lots of "hold fast" in it. The objection to most which is kept for sale in music houses is its tendency to prevent vibration rather than increase it. A. If the resin is too sticky, as we infer from your communication, the best thing to do is to reboil it, when it will be found more satisfactory. If too hard, keep it in a warm room for several days.

(14) L. L. asks for formulas for making ordinary blue prints. A. See SCIENTIFIC AMERICAN of October 31, 1885, Photographic Notes, page 276.

(15) S. desires a recipe for cleaning micas in stoves. A. It is not possible to perfectly restore the micas after they have once been burned. Rubbing with a little alcohol and water may improve them slightly.

(16) J. G. H. asks the best means of precipitating lead in solution in strong water of ammonia without injuring the water of ammonia. A. Metallic zinc has the property of reducing lead to its metallic state when in solution. This method does not always give satisfaction. For the complete separation of the lead, it is best to treat the solution with the gas of hydrogen sulphide. See Fresenius' Qualitative Analysis.

(17) Machinist asks for a recipe to renew an old rubber coat or gossamer. A. Brush over with a solution of ½ ounce of pure rubber dissolved in 1 pint of carbon disulphide. By proper treatment and a series of coats a deposition of rubber on the fabric will be obtained. See "Rubber Waterproof Goods," in SCIENTIFIC AMERICAN SUPPLEMENT, No 251.

(18) W. W. K.—Alcohol contains 91 per cent ethyl alcohol by weight, and has a specific gravity of 0·820 at 60° Fah. Proof spirit contains 49·24 per cent alcohol and 50·76 per cent water, and it has a gravity of 0·919 at 60° Fah. In other words, it is 50 per cent alcohol. Salep is the name given to dried timbers of numerous species of the genus *Orchis*, and in India of the genus *Eulophia*. Leading druggists can obtain it for you.

MINERALS, ETC.—Specimens have been received from the following correspondents, and examined with the results stated.

A. C. V.—The specimen is a white clay or kaolinite. It is valuable in the manufacture of pottery. It is found in various sections of the country. We would advise you to send it to some maker of pottery in your vicinity, in order that its burning qualities may be tested.—J. M.—The reddish specimen is a variety of clay, and from a superficial examination we think it has the properties of a fire clay. It would be necessary to test its burning qualities in order to positively determine this fact. The powder sent is likewise a clay containing iron and probablymanganese. It does not seem to be of any value. C. H. C.—The specimen sent is a bit of manufactured wire, and is probably a piece of the drill which in some way has been broken off at the end.—W. A.—The powder is simply a clay ighly colored with metallic oxides, probably iron.

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November 10, 1885,

AND EACH BEARING THAT DATE.

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