

ENGINEERING INVENTIONS.

A cable grip has been patented by Mr. Lewis B. White, of New York city. The gripping jaws are on the lower ends of levers operated by a piston working in a cylinder, the piston making the grip take hold on the admission of compressed air to the cylinder, and allowing the hold to be released when the compressed air is permitted to escape.

An apparatus for making steel has been patented by Mr. Alfred Davy, of Sheffield, England. It is arranged for enabling the operation of Bessemer steel making to be carried on in a converter which is portable in the sense of being suspended from a crane or other overhead movable support, and which will answer the double purpose of a foundry ladle and converter.

AGRICULTURAL INVENTIONS.

A stack binder has been patented by Mr. Adolphus J. Laundray, of Clyde, Kan. It is made with a rod having a foot at its lower end, and with arms and a nut and washer, whereby the stack can be compressed by forcing the arms down upon the top, while the ends of the binding arms have sockets to receive poles to hang down along the sides of the stack.

A cultivator has been patented by Mr. Lucian C. Chamberlin, of Lathrop, Mo. It has hinged runners, with rods and levers for adjusting them, a cross bar connecting the beams, having a lever for raising the cutters from the ground, and a rear cross bar having a roller to crush lumps and clods, with other novel features, for cultivating corn and other crops planted in rows or drills, and destroying weeds etc.

A cultivator and harrow recently patented by Mr. Dalton Walls was noticed in the SCIENTIFIC AMERICAN of Dec. 19, but our notice should have stated that the address of the inventor was Appleton City, St. Clair County, Mo.

MISCELLANEOUS INVENTIONS.

An auger has been patented by Mr. George F. Stearns, of Chester, Conn. The blade and shank are made of separate parts joined together, the auger having a steel blade, a wrought steel or iron shank extending to the blade, and a cast worm.

A vehicle wheel has been patented by Mr. James Fishwick, of Mason, O. It has a metal tire, with steel wire spokes, the alternate ones being expanded away from each other at the hub to form two series, which are thrust apart and kept in tension somewhat after the manner of the bicycle wheel.

A cuff adjuster has been patented by Mr. Lucien A. Stillwagon, of Greencastle, Ind. A flat metallic bar forms the body of the adjuster, having at one end a button adapted to enter the button holes of the cuff, and at the opposite end a pivoted spring-acted clamp for receiving the edge of the shirt sleeve.

A butter worker has been patented by Mr. Edward Krueger, of Youngsville, N. Y. The bottom is arranged with the grain of the wood at right angles with the length of the frame, and there are other novel features, whereby the operating mechanism of the machine will not be affected by the swelling and shrinking to the bottom of the tray.

A portable fence has been patented by Mr. Henry W. Butterfield, of Griggsville, Ill. Combined with overlapped ends of the panels and recessed sills supporting them are binding brace wires, so devised as to make a strong and inexpensive fence, which can be readily and quickly set up and taken down and moved from place to place.

A pocket knife has been patented by Mr. Robert G. Hunter, of Palatka, Fla. It has a shoulder formed at the juncture of the back of the blade with the heel, and an open slot leading from the back edge of the heel inward and rearward to the usual pivotal point, so that the blade will be held steadily and firmly, however it may be placed.

A counterboring attachment for bits has been patented by Mr. Edwin F. Lindsey, of Bristol, R. I. The device is calculated to hold adjustably a counterboring or countersinking tool, so that a hole may be bored or drilled and countersunk or counterbored at the same time without removing the bit or drill from the hole.

A lock and latch combined has been patented by Mr. George E. Bower, of Auburn, N. Y. This invention covers a novel construction and combination of parts in a mechanism which may quickly be adjusted to serve either as a lock or latch, providing for varying keys, so that each latch, when adjusted as a lock, can be opened from the outside only by its own key.

A medical compound has been patented by Mr. Charles J. Ulrich, of Havana, Cuba. It consists of pitch deprived of the lighter distillates, such as wood spirit, the acetones, aldehydes, creosote, etc., and combined with glycerine and alcohol, after a certain manner and in special proportions, the compound to be applied externally for sores and skin diseases.

A pulp grinder has been patented by Mr. William Wilkeson, of Youngstown, N. Y. It has a conical running stone rigidly mounted on a vertical shaft, surrounded by an outer running stone with a casting, the ends of which rest on chilled iron balls contained in circular pockets, with other novel features to reduce friction and facilitate the grinding of wood pulp.

A glass tube cutter has been patented by Mr. Samuel G. Lawson, of Portland, Oregon. It consists of two rods pivoted together, with suitable handle, a cutting disk or point being attached to the end of one rod and a gauge plate to the other rod, making a simple device for squaring the ends of glass tubes or cutting rings from long tubes.

An extension table has been patented by Mr. George Schmitt, of New York city. It is so constructed that the table can be extended or contracted without disturbing the people sitting around the middle part or anything that may be thereon, with other novel features to promote simplicity of construction and render such tables less liable to get out of order.

A hop box shade has been patented by Mr. Alfred Engle, of West Amboy, N. Y. It has a fold-

ing shade supporting frame carried by a central standard, instead of end standards, being designed to protect the gathered hops and the pickers while at their work, and also to support the hop poles and facilitate the work of picking.

A moulding clamp has been patented by Messrs. Charles A. Phelps and William W. Sterns, of Humboldt, Iowa. It is a novel form of vise for holding the mitered corners of picture frames and other mouldings while being nailed, and keeping them rigidly in a convenient position as desired, leaving the hands of the operator free to more readily do his work.

A hitching device has been patented by Mr. Lewis Lewis, of Ironton, O. It consists of a stock through which passes a sliding rod connected at one end with spring arms and having at the other end an eye, springs being so arranged as to draw the jaws of the arms firmly together, and the device being quickly attached to or detached from the bit ring.

A check rein holder has been patented by Mr. William D. Taber, of Rockville, R. I. Instead of the usual hook a rectangular metallic frame is secured to the saddle carrying a cam-faced clamping tongue loosely mounted, and arranged to closely approach the lower interior surface of the frame, making a device by which the check rein can be quickly adjusted to a proper length.

A fastener for sap bucket covers has been patented by Mr. Burt F. Couch, of Garrettsville, O. It is detachable, and composed of two main parts, a clasp piece and a loop piece, of spring wire or other suitable material, making a hinge designed to project above the edge of the bucket, making a fastening with which the wind will not disturb the cover, and so the stream of sap will not be choked or caused to sputter.

A marine drag has been patented by Mr. William H. Hart, of New York city. It is made with a pyramidal body having a spar attached to one side of its mouth and jointed metal rods to the other sides, ropes or chains from the corners of the mouth of the drag being connected with a hawser from the vessel, and the apex of the drag having a trip line extending along the hawser to facilitate the taking in of the drag.

A window hanging has been patented by Mr. Caleb Dellenbeck, of Portland, Oregon. Combined with a sash is a lug projecting therefrom having projections on its under side, a screw rod passing through an aperture in the lug, a nut with grooves in its top screwed on the rod, and a sash cord connected with the rod, the device facilitating the adjustment of the length of sash cords.

A hinge has been patented by Mr. James W. Whitmore, of Richmond, Va. Its leaves have sockets, one of which is fitted to turn and slide up and down the other, in combination with a screw fitted by a nut in the interior of one socket, and a coupling applied to the other socket, so that the door or gate on which the hinge is used may be made self-closing or not as desired.

A pipe for floorings, ceilings, and other building purposes has been patented by Mr. Ferdinand Ephraim, of San Francisco, Cal. The invention consists of a special construction of iron or other pipes, with a longitudinal tongue on one side and a longitudinal groove or socket on the other side, whereby any number of pipes may be laid parallel and matched or interlocked so as to be self-supporting.

A stop and waste cock has been patented by Mr. Douglas Westervelt, of Chicago, Ill. Its construction is such that the supply and waste ports cannot be opened at the same time, and the latter being below all other pipes, the service pipe and its mechanism may be entirely cleared of water to prevent freezing, the device being especially intended to prevent any possible escape of sewer gas.

A method of transferring patterns for embroidery has been patented by Mr. Heinrich E. Kramer, of Leipsic, Germany. The invention consists in a strip or sheet of paper provided with a layer of starch, upon which the design is printed in one or more colors, the printed matter having a covering of dammar or other gum or varnish, so that the pattern with all its colors can be easily transferred.

A chromatic printing machine has been patented by Mr. Joseph B. Underwood, of Fayetteville, N. C. This invention provides a novel construction whereby, at the same impression, different colored inks may be used on the sheet as desired in different places on the form, and the rollers carrying the different colored inks may be easily adjusted to ink only the places desired.

A breast strap iron has been patented by Mr. Harry Merrymon, of Carbondale, Ill. Its design is such that with it a much shorter breast strap may be used than with common irons with the strap applied in the common way, thus effecting economy in leather, and the iron is given freedom to slide upon the central portion of the strap, so equalizing its wear as to increase its durability.

An ore separator and concentrator has been patented by Mr. Ira F. Monell, of Sugar Loaf, Col. This invention embodies in one machine concentrators which operate in part by concussion, and employ swinging tables and those in which traveling belts are used to facilitate the separation and escape of the tailings, a leading object of the invention being to get rid of the tailings as fast as they collect.

A spring bed has been patented by Messrs. Luther J. Van Delinder and Amasa W. Nash, of Garfield, Iowa. It has a head rest frame in which the longitudinal bars are in line with and have a bearing on the corresponding bars of the main frame, so that less strain is thrown on the side braces, ratchets, and pawl, the rest being easily manipulated by a single attendant, and automatically taking a level position.

An egg timer has been patented by Mr. William H. Silver, of New York city. It consists of a sand glass, with such a support that it may be hung upon the wall of a room, or otherwise conveniently placed, the glass being reversible, and on both ends being marked by a graduated scale indicating minutes and half minutes, and also with letters indicating "hard," "soft," "medium," etc.

A hair clipping machine has been patented by Mr. George F. Sack, of New York city. It is more particularly designed for horse clipping, and has a swiveling connection of the stationary cutting plate and certain connection with its gearing of the reciprocating plate, giving increased facility for operating the machine, and adapting the cutters to work over different parts and in different directions as regards the cut.

A shaving case has been patented by Mr. James H. Flagg, of New York city. It has a main compartment for the razor strop and separate compartments for razor and soap and brush box, arranged upon either or both sides of the main compartment, with flaps for closing the several divisions, so that the whole may be carried conveniently in a traveling bag or in the pocket.

A weather strip has been patented by Mr. William Harrison, of Kingston, Ontario, Canada. It is pivoted, and has a bar projecting upward, with a spring for pressing the strip and bar downward and holding them, a catch on the door frame and a lug on the bar, etc., whereby the weather strip is automatically raised and locked in place when the door is opened and automatically forced down when the door is closed.

A dip net has been patented by Mr. William A. Obenchain, of Bowling Green, Ky. It is formed of four rods united at the ends by joints, netting being secured to the rods, and there being also suspension rods with link joints and netting at the lower ends of these rods, so that the net will adjust itself automatically when resting on the bottom or being raised, and can be compactly folded.

A coffee pot stand has been patented by Mr. Joseph Linders, of Winfield, W. Va. It is so made that the coffee pot will be supported thereby above a drip pan or trough, the pot being placed upon a tilting frame to avoid the trouble and inconvenience of lifting the pot when the coffee is being poured, and there being provision for keeping the coffee hot by the use of a small lamp.

A nut lock has been patented by Mr. John Bare, of Mount Union, Pa. It is for use in connecting sections of railroad rails, and has a T-shaped spring bar, with the cross portion designed to bear beneath two nuts of the fish plate, the stem portion having a bend or set, with a perforation, the bend allowing the stem, when forced down and spiked to the cross tie, to exert an elastic tension against the lower sides of the nuts.

A combined scarf ring, band, and collar stud has been patented by Mr. Henry W. Aberlin, of Bayswater, Middlesex Co., Eng. The clasp is made in two parts hinged together, with a pin or stem affixed to its rear side having lateral lugs, with a collar stud having a pillar of flattened section, with other novel features, whereby the correct position of the band, ring, or clasp, and the necktie, is insured, and there will be no danger of loss of either.

A machine for mending stereotype plates has been patented by Mr. Jacob North, of Lincoln, Neb. This invention covers a novel construction and arrangement of parts whereby the plate will be firmly held while the necessary holes, slots, etc., can be conveniently made for the proper connections, so that the type will fit snugly, and the projecting parts be readily cut off and the plate bushed at each side of the inserted type.

A voltaic battery has been patented by Messrs. Desmond G. Fitz-Gerald, of Brixton, Surrey Co., Eng., and Thomas J. Jones, of Princes St., Hanover Sq., Middlesex Co., Eng. In the negative element, combined with the conductive support and the depolarizing agent, is a waterproof layer containing peroxide of lead interposed between the conductive support and the depolarizing agent, and being in contact on one hand with the support and on the other hand with the depolarizing agent.

NEW BOOKS AND PUBLICATIONS.
LABRADOR: A SKETCH OF ITS PEOPLES, ITS INDUSTRIES, AND ITS NATURAL HISTORY. By W. A. Stearns. Boston: Lee and Shepard, 1884.

Labrador is to most people an undiscovered country. Such vague impressions as one gains from occasional magazine articles are not calculated to induce a desire for further information if it must be gained by personal contact. Yet the journey, when made in a comfortable armchair at home, by means of Mr. Stearns' book, will afford considerable pleasure to those who have a love for traveling and like to know what their neighbors are doing. The unfavorable impression will scarcely be removed, for the bleak headlands and frozen isolation are shown to exist in reality. But the people and their industries will be found to be sufficiently characteristic to attract interest. To students of natural history, the addition to the area of explored nature will prove attractive.

A TEXT-BOOK OF TANNING. By Henry R. Procter. New York and London: E. & F. N. Spon.

The writer of this book has had several years' practical experience in an English sole leather tannery. He has devoted himself more to a consideration of the chemical questions involved in tanning than any other writer upon the subject, except possibly Professor Dussance, whose book, written some twenty years ago, is now out of print; but Mr. Procter has endeavored to state his views and the results of his experience in such terms as may be readily understood by the average tanner. This is no easy task, considering the difficult nature of the questions involved. The exact differences between tannins obtained from a variety of vegetable substances has never yet been determined, and competent chemists often make quite different figures as the result of analyses for the quantity of tannin in two specimens of the same material.

Then, too, the amount of tannin in oak and hemlock bark, in sumac, and in most other tannin producers, varies widely, according to the climate and soil, the age of the plant, and the after curing before the tannin is extracted. These are all questions directly affecting the value of the tanning material, but, this once determined, there are yet more important considerations involved concerning the reactions which take place in the handling of the tan liquor in connection with the hide and skin in the manufacture of leather, and about which the best tanners, as well as the chemists who have studied the question, by no means agree. German and Austrian chemists have given a great deal of attention to the subject for the past ten years, and there are now several technical schools there for the education of young tanners in the chemistry of their business. There is also an effort on foot among the tanners here to employ a chemist to devote himself exclusively to such experiments as the trade may call upon him for, a circumstance which renders this volume especially well timed. In addition to the chemical features, however, the book gives a practical description of the leather manufacture, more particularly as it is carried on in England, and presents many points well worth the attention of American tanners.

ELECTROLYSIS. By Hippolyte Fontaine. Translated by J. A. Berly. New York and London: E. & F. N. Spon.

This book gives a great deal of valuable information relative to the treatment of metals by electricity, including the fullest details yet published of the best French practice in nickelizing, coppering, gilding, silvering, and the refining of metals and treatment of ores. The department of electroplating is presented with great thoroughness, with illustrations of representative establishments and descriptions in detail of the appliances. In mentioning the fact that, in silver plating, the Messrs. Elkington, of England, and Christofle, of France, have long had a kind of monopoly of the business, the author says that "there are not more than ten factories in Paris where the silver plating business is conducted on a really industrial footing; the small installations do not succeed." It is stated that the Messrs. Christofle annually deposit more than 6,000 kilogrammes of silver (equal to 13,227 pounds avoirdupois) the average thickness of the deposit equaling 300 grammes (10% ounces avoirdupois) per square meter. The description of the electrical refining of copper and lead includes explanations of the work done at establishments at Hamburg, Frankfort, Marseilles, Birmingham, England, and other places where the work has been done on a large scale.

Business and Personal.

The charge for insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.

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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 Written Information on matters of personal rather than general interest, cannot be expected 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) E. D. M. writes: I have two telegraph instruments on same line, one 20 ohms resistance the other 6; why won't they work? Which is the best kind of battery to use on a short indoors line? In electrotyping with plaster of Paris, is any preparation put on the type or on the plaster, and is the common (commercial) plaster used? To what consistency should the plaster be mixed before pouring upon the type? Is crude or vulcanized rubber used in making rubber stamps? A. You can make your telegraphic instruments work by using sufficient battery power; but you would secure better results, with less battery, by making the resistance of your two instruments alike.—The gravity battery is undoubtedly the best for your purpose.—For moulds for electrotyping you should use the finest plaster of Paris; it is generally mixed up to about the consistency of cream. The mould requires no preparation other than drying.—The best rubber stamps are made by pressing vulcanizable rubber in moulds, and vulcanizing the rubber while in the mould.

(2) H. G. S.—It is entirely impossible to furnish an estimate of the value of a patent. It often happens that a patent which seemingly has no value whatever brings a large price; and, on the other hand, a patent which appears to have great value proves to be worthless. It is almost entirely a question of management.

(3) O. H. H.—Bath tubs are made of tinned copper, and cannot be retinned. Electroplating is not practicable, and would last but a very short time if done. The New York practice is to reline the tub with tinned copper or buy a new tub. We consider the latter the cheaper.

(4) E. F. M. asks what black lead is mixed with to make crucibles. A. Fine clay in quantity as small as will allow the black lead to be worked on well. Clay and black lead should be ground together.

(5) W. K. asks: What substance could be used to render wax (for artificial flowers, etc.) pliable in a cold temperature without altering its whiteness? A. Mix with a small quantity of the oil of sweet almonds.

(6) H. C. P. asks how to make the enamel that is used on brass signs to fill up the letters that are cut in. A. Mix asphaltum, brown japan, and lampblack into a putty-like mass, and then fill in the spaces, and finally clean the edges with turpentine.

(7) J. W.—Most of the alum now sold in this country is made artificially. If a good supply of proper quality could be obtained, it would be marketable. Alum is worth about 2 cents per pound.

(8) H. S. G. asks: How do seedsmen extract seed from tomatoes, and whether any expensive or complicated machinery is required? A. The tomatoes are mashed or broken in a tub or other receptacle, and allowed to stand for a day or two until a slight fermentation has taken place. When this occurs, the seeds can readily be washed out. They may also be saved, when the flesh of the tomatoes is used for canning, by being shaken out after the tomatoes are cut open. The seeds are then scoured by being passed between two large circular brushes running in opposite directions.

(9) K. C. writes: We have here a mountain of plaster and a good many acres of alkali soil. Can this plaster be ground and applied in its raw state to this soil with any benefit, or must it be first burnt and ground before applying? A. It depends upon the character of the soil and also upon the variety of crops that it is desired to raise. Burn and grind before using. 2. Is the ordinary farm plaster advertised at the East burnt and ground? A. It is.

(10) E. V. B. asks: 1. Can a polyopticon be constructed by which a cabinet photo or other like opaque object can be enlarged (with coal oil light) to life size, and a clear-cut image produced, to trace with crayon? A. We think the light of an oil lamp will be insufficient for enlarging pictures in the manner proposed. Better take a negative of the photograph, and enlarge it by means of an oxyhydrogen lantern. 2. Would the same lenses be suitable for a draughtsman's camera? A. Probably the lenses of a polyopticon will answer for a draughtsman's camera. 3. What would be the proper dimensions, etc., and best method of constructing the polyopticon, and where can the proper lenses be procured at reasonable figures? A. See SUPPLEMENT catalogue, which we send you, for mention of articles on the subject. Any of the opticians who advertise in our columns could furnish you with lenses, etc.

(11) B. D.—The floating specks before the eyes, of which you speak, give in some cases indications of serious trouble; but in by far the greater number they are not of special moment. Nothing but an actual and careful examination by a skilled physician can tell to which class your case belongs. To follow directions given by any one else would be, not foolishness, but madness. Never trifle with the eyes. One general remark may be safely made—if the eyesight be unimpaired, the probability is that the specks are produced by nervous derangement only, and may be disregarded.

(12) N. S. McC.—General Winfield Scott died at West Point, N.Y., May 29, 1866.

(13) E. P. A.—To solder cast iron, galvanize the pieces and then flush tin into the joint. Hydrochloric acid, zinc, and sal ammoniac is the proper soldering acid; put water with it to make it less offensive. It will bear diluting for most purposes.

(14) L. L.—Surveys are made by all reputable surveyors in reference to the true meridian. Maps for record have the variation of the compass for the date of the survey marked upon them, and deeds, if properly written, should accord with the map, or the angles should refer to the true meridian. Every resurvey by compass should have the variation of the magnetic needle for its date corrected by the vernier upon the compass. If there is no vernier, then each compass run must be corrected arithmetically from the record of the field book.

(15) P. F. C.—There is no way known to us for removing the spots from a brass chandelier but refinishing. They may be scraped bright and lacquered, but there will still be spots when compared with the regular finish.

(16) G. G. P. asks: What is the best method of stenography in existence? A. Most stenographers think the system they have studied the best. The Graham, Munson, and Pitman systems are all largely used, and the Burnz system, a sort of phonetic simplifying of one of the other more elaborate systems, is also now much used; but to acquire the facility necessary to report a fast speaker requires close application and constant practice for years.

(17) T. H. De S. asks: Will it injure a tin roof or sheet iron to coat it with tar made from pitch pine?—Please explain what becomes of the quantity of water with which cement (hydraulic) is mixed when it sets rapidly. State the chemical change. A. Tar from pine and coal tar from gas works are both in universal use for painting ironwork. In SCIENTIFIC AMERICAN SUPPLEMENT, No. 386, you will find an interesting paper on the manufacture and composition of Portland cement. The setting of the cement is due to the formation of a hydrate of lime, alumina, and silica, a definite chemical compound, which, when formed, resists further action of water.

(18) A. C. D.—There are a great many receipts afloat for tempering baths, but the best results are from a thorough knowledge of the heat required by the steel, and proper method of dipping to get the best effect. Plain water is used in most of the shops. A little salt, acid, and a variety of chemicals have been suggested by experimenters to give the water a better hold on metallic surface in hardening. Such additions may allow of hardening at a trifling lower temperature, or at a given heat make the article a trifle harder. Still, our best workmen confine themselves to pure water, salt water, and good oil, for hardening the various kinds of steel articles and tools. Borax heated to evaporate its water and pulverized, with one-tenth sal ammoniac, is the best we know of for welding steel. Your pulley should be 50 inches in diameter.

(19) C. D. asks a recipe for some material to put in the seams of a boat which are almost too large for oakum. Also a good paint to paint the hull and bottom? A. We know of nothing better than strips of wood fitted and driven into the seams, with hot pitch. Paint with linseed oil and plumbeous or lampblack for priming, and a second coat of any desired color.

(20) F. M. F. asks the best way to get the gold out of rags used in a bindery? A. Burn the rags, collect the ashes, and treat them for gold by the usual method of assayers, i.e., fusing with lead, and cupeling lead button.

(21) W. S. asks how to make a powerful spark coil, not an induction coil, to be used principally for lighting by electricity. I should prefer to have one of good strength, as I will probably use it for other purposes also. I do not exactly know the proper proportions for winding, the size of wire for the core, and also the outside wire. A. For full instructions on the construction of an induction coil, consult SUPPLEMENT, No. 160. If you do not desire it for giving sparks, you might omit the condenser.

(22) J. McV. asks how to polish common cow's horns, and gives them a fine gloss for fancy work? A. First scrape with glass to take off any roughness, then grind some pumicestone to powder, and with a piece of cloth wetted and dipped in the powder rub them until a smooth finish is obtained. Next polish with rottenstone and linseed oil, and finish with dry flour and a piece of clean linen rag. The more rubbing with the stone and oil, the better the finish.

(23) W. M. D. asks where the third man should be placed, so that three men will carry an equal weight of a bar 15 feet long, the other two being placed at the ends. A. One man in center and one man 2½ feet from each end.

(24) Fidelis asks: 1. If there is any cheap way to distill water for home use? A. Water that is first filtered and then boiled is comparatively pure. For the distillation of water a retort and worm are necessary. 2. How walnut water, for the hair can be made? A. See "Walnut Hair Dye," SCIENTIFIC AMERICAN for Oct. 24, 1885. 3. Whether hard or soft water is best for cleaning one's teeth and washing one's hair? A. Preference is generally given to soft water for the purposes mentioned.

(25) H. C. H. asks: What will take grease or oil out of a granite door step? A. Make a strong lye of pearlash and soft water, and add as much unslaked lime as will take up; stir it together and then let it settle a few minutes; bottle it and stop close; have ready some water to dilute it when used, and scour the part with it.

(26) J. B. F. asks for the best method of reducing rubber gum to a liquid state. I have used naphtha, but the result seems to be rather slow. A. Rubber is also soluble in ether, chloroform, coal tar benzol, and carbon disulphide. See "Solvents for Rubber," SCIENTIFIC AMERICAN SUPPLEMENT, No. 247.

(27) J. T. R. asks for the correct formula for making a particular "Pearline," a washing compound? A. It is considered to be an impure potassium carbonate or pearlash preparation. An exact analysis of it would cost about \$25, depending upon exactly what information is desired, i.e., the percentage of pearlash alone would cost \$10.

(28) T. M. D. writes: Please forward me pamphlets which treat about taking out patents, also your pamphlet giving information of foreign patent laws. Please send me your Supplement Catalogue, also your list of scientific books you have for sale. Will you please answer me the following questions through the correspondent's column of the SCIENTIFIC AMERICAN? What will best remove rust from steel? How can you prevent steel from rusting? What is the toughest and most elastic wood obtainable in this country? A. You may remove rust by dipping the articles in a bath of hydrochloric acid 1 part, water 4 parts. A far better process is to polish off the rust with flour emery or emery paper, and then wipe the surface with a solution of paraffine in naphtha or turpentine.—Much depends upon the nature of the articles that are required to be protected from rust. White lead paint thinned with kerosene or lard oil is much used on machinery. Machinery for transportation is painted with white lead or tallow.—Heart hickory and lancewood are the toughest and most elastic woods that we know of.

(29) F. A. T. asks: 1. What causes the current in the Straits of Gibraltar, and is there an outward current? A. The revolution of the earth is supposed to cause the flow of currents in the ocean and the great seas. The Mediterranean Sea is under the same influence, and furnishes several currents out and in through the Straits of Gibraltar. There is an inward surface current and an outward undercurrent, causing other local currents or eddies formed by the impinging of the great currents. 2. What materials and how used to polish shirt bosoms? A. Use a polishing iron, and boil a small piece of paraffine with the starch. 3. What is the title, and where can I obtain a book giving the manners and customs of the people from Adam to the present? A. You will require many books, among which may be mentioned: The Bible; Andrews, The 18th Century, Manners and Customs; John Lord's Works; Lacroix, Manners, Customs, and Dress during the Middle Ages; the histories of Rome, Greece, etc.

INDEX OF INVENTIONS

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United States were Granted

December 29, 1885.

AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

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