

RECENTLY PATENTED INVENTIONS.

Mechanical.

HOISTING DEVICE.—Mr. William P. Campbell, of Rome, Ala., has patented a hoisting machine in which a weighted sweep pole is used. In this machine the multiplying power of a rope and pulleys is employed to give the bucket a greatly multiplied motion. This improvement is designed for raising water from wells, hoisting brick and other materials for building purposes, and for analogous uses.

WICK TRIMMER.—A practical device for trimming circular lamp wicks has been patented by Mr. William R. Cole, of Pottsville, Pa. In this machine a frame or stock is provided with a lateral trimming knife, the stock being arranged to be rotated on or within the burner so as to carry the knife in uniform contact with the charred end of the wick. By means of this instrument a circular wick may be uniformly trimmed.

CIRCULAR SAW.—Mr. William A. Miller, of Wapinitia, Oregon, has patented a saw which will cut freely in different qualities of wood, when used either as a cross-cut or rip saw. This improved saw has a series of radial teeth sections, each composed of a thick leading main tooth and an integral thinner auxiliary tooth, the auxiliary teeth being formed by notching the peripheral edges of the tooth sections.

SPLIT PULLEY.—An inexpensive and efficient power-transmitting pulley, which may be easily applied to or removed from the driving shaft, has been patented by Mr. Henry C. Lewis, of Saginaw, Mich. This pulley is made of wood, and furnished with a fastening which prevents it from turning on the shaft under heavy strains, and will cause it to remain true on the shaft.

ATTACHMENT FOR PRINTING PRESSES.—An improved attachment for cylinder printing presses, designed for printing additional colors at one operation in the reading matter or advertising columns of newspapers, or on job work, has been patented by Mr. William E. Freer, of Norwalk, Ohio. This improvement consists of an auxiliary type cylinder arranged to be turned in unison with the other parts of the printing press, and carrying type charged with ink of the required color, the type being arranged so as to print in the blank spaces left in the printing regularly done by the press.

TRANSOM LIFTER.—Mr. Emil Herz, of New York City, has patented a device for opening, closing, and locking doors and pivoted or hinged windows. In this device a vertically arranged shaft on the door or window casing is provided at its lower end with a handle by which it may be turned, and at its upper end with a lever connected by a link with another lever on the door or transom, these levers being relatively arranged so that the movement of the door or transom corresponds to the movement of the shaft. In the support of the upper end of the shaft are formed notches, and the upper lever is provided with a lug adapted to enter either of these notches and lock the lever, and consequently the window or transom in any desired position. The device is unlocked by lifting the shaft.

Engineering.

RAILWAY GATE.—A railway gate of the class used on the elevated railways has been patented by Mr. John B. Carey, of Brooklyn, N. Y. This gate effectually prevents passengers from being crowded from the platform. It also prevents passengers from being pushed into contact with a moving train. The invention consists of a continuous barrier extending the whole length of the platform, and suspended from levers, the levers being so arranged that the entire barrier may be raised or lowered at one operation.

Electrical.

UNDERGROUND ELECTRIC CONDUIT.—This invention, which has been patented by Mr. Charles E. Loth, of Troy, N. Y., provides for laying the wires in such a way that insulating covering may be dispensed with. It also provides for the gathering and removal of water which might otherwise accumulate in the conduit. It is also furnished with means for protecting linemen from injurious shocks. The inventor has also devised means for ventilating the conduit so as to prevent the accumulation of gas.

COUPLING FOR ELECTRIC WIRES.—Mr. James J. Hinphay, of Boundbrook, N. J., has patented a coupling for electrical conductors such as are used on railway cars, for signaling from different parts of the train. This improved coupling is constructed so that in case of the separation of the cars, the circuit will be closed automatically as the electric couplings are detached, thus maintaining the circuit. This invention also provides means for signaling the engineer in case of the accidental separation of the couplings.

RHEOSTAT.—Dr. J. H. Gunning, of New York City, has patented a rheostat for controlling primary or secondary currents and for introducing resistance into the electric circuit wherever it is required. This invention consists in the combination with a tapering resistance piece formed of a conductor or semi-conductor of a roller adapted to roll upon the tapering piece, from the narrower to the wider end of the resistance piece, or in the reverse direction. The device is provided with means for graduating the pressure of the roller upon the resistance piece. This invention is designed more particularly for use in connection with medical batteries, but it may be employed in connection with electro-plating machines and in electric lighting.

Miscellaneous.

CIGAR CUTTER.—Wilhelm Scholer, Eiland, Solinger, Germany. This is a device of the class known as "piercers," and is designed to tip the cigar without tearing or disturbing the wrapper, the cutter being of suitable size to cut a small hole in the tip of a cigar to give free draught, while the device may be conveniently carried on a chain or in the pocket.

BOX SCREW AND CLAMP.—Phillip N. Bailey, Winston, N. C. This is a device particularly

adapted for use in packing tobacco in boxes and lining the top of the box while held down upon the tobacco device being simple and durable and dispensing with the cumbersome and expensive ones now in use.

TRUSS.—Alonzo D. Smith, New Woodstock, N. Y. Combined with a curved spring is an adjustable spring-pressed pad, to produce an inward and upward pressure, while there is a curved slide for adjusting the pressure of the spring, another pad being added to adapt the truss to a double hernia.

URINAL.—Joshua R. Gibson, Cincinnati, Ohio. This invention consists of a combined spreading and spraying nozzle arranged adjacent to the rear slab of the stall, and at an angle thereto, whereby the water is spread in a thin sheet upon the slab and all splashing is avoided.

SASH FASTENER.—Mr. Francis E. Drake, of Columbus, O., has recently patented a device for fastening together the ends of two parts of an overlapping sash or belt. This device consists of a stud furnished with suitable fastening plates attached to one end of the belt or scarf, and a socket secured to the opposite end, the socket being provided with a spring catch for engaging or holding the stud.

WHIP.—Mr. J. W. Middleton, of Kingston, Jamaica, West Indies, has patented a whip having a hollow tapering stock provided with a removable cover at its butt end, a thong fitting loosely in the small end of the stock, and a wedge in the butt of the thong, to prevent its removal from the stock.

PAPER FILE.—Mr. John M. Willis, of New York City, has patented a paper file which may be expanded more or less so as to inclose a large or small bundle of papers. This file is provided with a rigid front and back section, consisting of a plate or board having a transverse opening therein extending through from side to side. To the back board are attached bands or aprons, one of which is permanently attached to the front board, while the other is provided with an end strip, which is inserted in the slot of the front board when the file is closed.

METHOD OF TREATING COTTON SEED HULLS.—Mr. Emil Bohn, of Galveston, Texas, has recently patented a process of producing paper stock from cotton seed hulls. The object of this invention is to utilize a product that has heretofore been wasted. By means of suitable machinery, the hulls are reduced to fine particles, which are capable of "felting." The material thus produced forms a superior article of paper stock.

KNIFE.—Mr. Wm. P. Bailey, of Stowe, Vt., has patented an improved guard, which is particularly adapted for use upon knives of various kinds, but which may be also applied to fishing rods, hammer handles, and other tools. The guard is furnished with a thumb rest and ring, which enable the user of the implement to which it is applied to obtain a firm hold of the handle.

SCIENTIFIC AMERICAN BUILDING EDITION.

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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. Books referred to promptly supplied on receipt of price. Minerals sent for examination should be distinctly marked or labeled.

(2440) H. W. S. asks: Will you kindly inform me how I can obtain the skeletons of small animals, such as mice, rats, etc.? I wish to make a collection of some. A. Place the carcass near some ant hills. The ants will in time strip the skeleton.

(2441) E. S. wishes to know how to refine photographic wastes and obtain the amount of nitrate of silver they contain. Also give me a process for making nitrate of silver and of pure silver metal, and the same for chloride of gold in a dry state, the same as put up in 15 gr. bottles. A. See SCIENTIFIC AMERICAN SUPPLEMENT, No. 377, page 6013, as to recovering residues. To make nitrate of silver out of pure silver, place the silver in a beaker and pour into it three quarters of a fluid ounce of strong nitric acid sp. gr. 1.4 for every ounce of metal. The beaker is heated till the whole of the silver dissolves, the solution is then poured into an evaporating basin, and the excess of acid driven off by boiling. The operations should be conducted in the open air. The salts left may be recrystallized by dissolving in the smallest possible quantity of boiling water, and allowing it to cool. The crystals of pure nitrate of silver will gradually form. The salt remaining in the mother liquor can be recovered by evaporation. To prepare chloride of gold the copper in the coin must first be eliminated. The gold coin is put into a beaker, and a mixture of three parts of hydrochloric acid and one of nitric acid is poured into it and heat applied until the metal is dissolved. The excess of acid is then expelled by evaporation. The impure gold chloride, when free from acid, is dissolved in boiling water, and a cold saturated solution of protosulphate of iron added, till a dark precipitate of pure gold is no longer produced. The precipitate of gold must be poured on a filter, and washed by pouring boiling water constantly over it, till the wash water no longer produces a precipitate with a solution of barium chloride, proving that the

gold is free from the excess of sulphate of iron. The gold is again dissolved in nitro-hydrochloric acid, the solution evaporated to dryness, the latter part of the operation being carried on slowly to prevent spurtling. The yellow crystalline chloride of gold thus prepared should be preserved in a well stoppered bottle or a sealed tube, as the salt is very deliquescent.

(2442) H. B. asks for blue print paper that will keep well. A. The following:

- Chem. pure ferricyanide potassium.....256 grs.
- Water..... 4 ozs.

Keppbottle covered with black paper and well corked; 1 drachm equals 8 grains. This solution will keep indefinitely. No. 2, which should be mixed fresh each time:

- Citrate of iron and ammonia.....50 grs.
- Water..... 1/4 oz.

Mix equal parts of above different solutions before coating the paper, and add also to each ounce of solution 1 grain of bromide of potassium. The bromide tends to make the paperwork slower, but keeps it fresh.

(2443) G. B. D. asks how to color sand blue and black for painters' use. A. We presume you refer to blue and black smalt. These are composed of pulverized glasses of the desired color.

(2444) O. J. H. asks: 1. In case of an electrical storm is it best to close up the house tight, or else leave it wide open, and why? A. It is best to close the house, as the warm air currents from the open windows and doors form good paths for the lightning discharge. 2. If a person is above the clouds, can an electrical storm or any other do him harm? A. If above the clouds and still upon the earth, there would be danger. 3. How can I harden paper so as to make it as hard as wood or canvas? A. It is generally hardened by treatment with dilute sulphuric acid. It is also hardened by compression and by treatment with size. 4. Which propels a vessel the fastest, a screw or paddle wheels, and are there any other kinds of propellers? A. In the matter of speed there is not much difference. There are many other propellers, among which are the turbine, the water jet, reciprocating paddles, etc. 5. What is air composed of? A. Oxygen 20.96, nitrogen 79, carbonic acid 0.04.

(2445) F. W. L. asks (1) how to make a photograph on a ten cent silver piece. I tried it in different ways, but without success. A. Make a reduced negative from the picture to be imprinted. From the negative print a positive by development on Eastman's transferotype paper. Coat the coin with weak solution of gelatine and transfer the picture from the paper to the coin as per directions accompanying paper. 2. Where are the five currents taken from in an electro-medical coil? A. One current is taken from the primary, another from the secondary; the others are obtained by fractionating or combining these.

(2446) A. T. F. asks: 1. Is fuel gas (for fuel purposes only) actually manufactured upon a large scale? And if so, at what price is it supplied to consumers? A. It is not manufactured to any extent except for particular metallurgical or other works. If the supply of natural gas diminishes, then it may become a most important manufacture. 2. What is the equivalent (say in pounds of good anthracite coal) of 1,000 feet of water gas, not enriched with carbon? A. It consists of equal volumes of carbonic oxide and hydrogen. One thousand cubic feet contain 36.97 pounds carbonic oxide and 264 pounds hydrogen, equal in heating power to 2242 pounds pure carbon, or to about nine-tenths of this amount of anthracite coal. 3. Can gas made by passing superheated steam through incandescent coal or coke, and not enriched with carbon, be sent for long distances through pipes? Or will it condense in transit, or otherwise lose its value? A. Yes; but it will be apt to lose hydrogen, especially through leakage.

(2447) W. E. V. writes: I have a valuable old opera glass incased in an ivory shell. Same has turned quite yellow with age, and would ask you if there is not some way that I could change the color to black. A. Soak the ivory alone in dilute solution of nitrate of silver and expose to the sun under glass. Repeat until black. Absolutely none of the metal parts must be immersed or they will be ruined. You might try bleaching it by exposing to the sun in a vessel of spirits of turpentine.

(2448) W. B. writes: I would like to experiment with condensed magnesia on electric lighting. It has been used with the sun lamp, but I have so far been unable to procure it. A. The substance is simply magnesia which has been pressed by hydraulic pressure. You could have this done for experimental purposes in any machine shop possessing a powerful press. Even a machine punch used for boiler plates might do the work. The sun lamp has not come into general use as yet.

(2449) S. H. G. writes: I want to generate hydrogen gas in a cast iron retort that is of 1 gallon capacity, and convey it direct by iron tubing 1/2 inch, opening into a medium sized iron cylinder. Cannot get over 9 pounds pressure (by accurate gauge) in the cylinder. What is wrong? A. Your cylinder may be so large that the retort will not generate from one charge enough gas to develop more than the pressure stated. Possibly there is a leak. Your cast iron retort will not stand the action of acids very long, as even if zinc is used, some corrosion is inevitable.

(2450) T. L. J. asks: 1. Is a current supposed to be induced in a coil in one direction by approaching and in reverse by receding from the pole of a magnet, or simply by cutting lines of force emanating from pole? A. By both. In general terms, any change in relation of coil to fixed pole, whether of position or of intensity, produces a current. It can almost always be represented by cutting lines of force. 2. In the formation of water from hydrogen and oxygen gas do the gases expand, or is the explosion caused by the sudden contraction of the gases? A. The expansion of the vapor of water produced in the combustion causes the explosion.

(2451) F. V. B. writes: Can you tell me how I can get silica of impalpable fineness with least trouble and expense? A. Buy silicate of soda solution

from a dealer in chemicals, dilute with five parts of hot water, mix thoroughly, and add excess of sulphuric acid. Filter off the silica, which will be precipitated, and wash with hot water.

(2452) S. J. R. asks how to harden talow in order that it may be used in lumps to rub on lumber and skids. Summary: We get tallow of a very inferior quality sometimes, which is soft and falls to pieces almost as if rotten. We wish to know how to cheaply restore it to the consistency of first-class tallow? A. Try melting it and mixing it with paraffine wax. This is the simplest method we can suggest, if not too expensive.

(2453) E. K. writes: I want to make a blackboard by covering heavy cardboard with some kind of slate preparation. Can you, through your paper, give me a good recipe for blackboard slating? A. Use a strong solution of shellac mixed with dry ivory black and ground pumice stone, and ultramarine blue. 1 gallon 95° alcohol, 1 pound shellac, 8 ounces black, 4 ounces blue, and 5 ounces ground pumice or fine emery is a good formula.

(2454) I. H. asks (1) for the formula for the preparation known as silicate for blackboards or a similar preparation. A. See preceding query. 2. Can you inform me as to what method I could adopt to prevent a safe lock being affected by the damp? Our lock becomes coated with verdigris, caused by dampness of safe door. A. We can only suggest having parts lacquered, or if they are exposed to friction in working, try vaseline as a lubricant. Even used as a coating it will keep off verdigris.

(2455) A. L. asks how to soften hard water without chemical. A. Some hard water is softened by boiling. If a sediment forms, decant the clear fluid.

(2456) F. W. S. asks at what degree Fah. the following metals fuse: Gold 1000 fine, aluminum, silver, and brass. A. Gold, 2016° Fah. Silver, 1873° Fah. Aluminum, uncertain, and varying greatly with purity of metal, 1290° to 1560° Fah. Brass varies so in composition that no melting point can be given. It will vary from 800° to 2008° Fah.

(2457) G. H. B. asks: 1. What chemical or other solutions are there that have fireproofing qualities? (For instance, to saturate cloth or paper.) A. Tungstate of soda and phosphate of soda are excellent, especially the first. Even common salt has some power. 2. What wash or paint, that adheres well when exposed to weather, has fireproof properties? A. For rough work a wash made of cement and water might be recommended. For a roof paint consult our advertising columns. 3. What ingredients added to common white wash would greatly increase its adhering property? Iron oxide paint partly answers this, but I want a paint of stain for roof, preferably in green, that will hold, and I do not think the stains, now much used, are satisfactorily permanent, except in red. A friend showed me a number of barns built of rough hemlock boards. He made a thin glue sizing and gave them a wash of it, following immediately (when dry) with a coat of mineral (iron) paint. It gave the buildings a smooth finish, and paint lasted for years, and for that matter still lasts. I was surprised at its lasting quality and mentioned it to a house painter, he said it was a good and satisfactory way to treat such buildings. A. The government receipt for whitewash, already given in these columns, may be repeated: Slake 1/2 bushel of lime with boiling water, keeping it covered during the process, strain, and add 1 peck of salt dissolved in warm water, and 3 pounds rice flour boiled in water to a thin paste, 1/2 pound Spanish whiting, and 1 pound clear glue dissolved in warm water. Let it stand several days and apply hot. 4. Crude petroleum applied to wood has preservative qualities. Would green or other pigment added (for roof) give a permanent color? A. No pigment should be added to crude petroleum. 5. Could any ingredient be added to overcome the combustible nature of the petroleum? A. No.

(2458) G. M. C. asks: 1. Suppose dynamo and motor are seven miles apart. What per cent should the motor develop if 100 horse power is put into the dynamo? A. From 60 to 70 per cent. 2. What size of wire should be used to carry the current to the motor? A. It depends upon the current used. 3. Should the wire be insulated from the atmosphere? A. Preferably, but not necessarily. 4. Is it necessary that there be a return wire from the motor to the dynamo? Why not use the earth? A. A return wire is necessary on account of danger of grounding along the line through workmen or others. 5. About what is the resistance in ohms of motor described in SUPPLEMENT, No. 641? A. About 4 ohms. 6. About how many volts are necessary to run it successfully? A. An E. M. F. of 6 to 8 volts. 7. Would it make any difference if the field magnet of this motor was forged from soft iron? A. You can use either wrought or cast iron. 8. Why is it necessary that the resistance of the motor should be increased if a high resistance battery is used to drive it? A. The greatest amount of work can be realized when the resistance of the battery and external circuit are equal. 9. Should the battery cells be arranged in parallel or tandem? A. They should be connected in such a way as to secure the above E. M. F. and as large a current as necessary.

(2459) Jack asks: 1. The easiest and cheapest way to melt wrought or cast iron in small quantities, say up to 10 or 12 pounds, also lead. I have a small portable forge. A. Use a plumbago crucible, with a little borax as a flux. You will probably not succeed in melting such large quantities, and certainly not the wrought iron. 2. The cheapest way for me to take impressions or copies of letters that I write, and wish to keep a copy or duplicate of on file for reference? A. Use copying ink and a copying book and press. Simple hand copying appliances are sold by stationers to take the place of presses. 3. In splitting logs or other large timber for fence posts, wood, etc., can I not use powder or dynamite, instead of wedges and mauls? If powder, will common gunpowder do? A. Yes. Bore holes and use gunpowder, not dynamite. Tamp the powder with fine sand or brick dust. Bore inch holes and insert from two to four inches of pow-

der. 4. Are there steamboats in use that use naphtha for making steam? If so, please inform me about them. How it answers, what it costs, etc. A. For naphtha (crude petroleum) firing of boilers, see our SUPPLEMENT, No. 769. Light naphtha is generally to be considered unsafe.

(2460) C. C. asks: 1. What can I use to protect woods from dampness, and prevent warping in models made with it? A. Use only perfectly seasoned woods. Otherwise nothing will preserve the models. Shellac them with good orange shellac dissolved in alcohol. 2. What cement can I use to fasten together strips of cloth or leather on cloth, so as to stand washing in hot and cold water? A. Soak clear glue for ten hours in water enough to cover it, dissolve by heating, and add tannic acid until it is thick and rosy, apply at once with pressure. 3. Explain how electricity may kill when a heavily charged wire breaks and comes in contact with the human body. A. By grounding through the system. This implies, of course, the existence of a second ground or it may be of a series of minute grounds or leakages whose aggregate is enough to cause a strong current to pass through the body. In alternating or pulsating current systems there is also an inductive action like charging and discharging a Leyden jar which will shock without the formation of a second ground. Death by such a shock is very improbable. A second ground of some kind may generally be assumed.

(2461) F. P. C. writes: I noticed in the July 19 issue your request to amateur electrical workers. I will relate some of my electrical experiences. I made the simple electric motor according to the directions given in SUPPLEMENT, No. 641, and met with success. It developed about one man power. I used it for running fly fans, but the large battery required proved rather expensive. Later on I made a motor to run on the Thomson-Houston incandescent current. I used cast iron fields, and wound both fields and armature with No. 28. The armature heated badly on 110 volts, so I rewound the armature with 32; then it did not heat, but developed very little power. I used an armature like the one used in the simple electric motor. I think I would have had better success if I had used the Siemens armature. Later on I made an induction coil similar to the one described in SUPPLEMENT, No. 160. Instead of bare, I used covered wire, and wound each layer the full length on the coil, insulating each layer with one thickness of paraffined paper. After mounting it with condenser and all, I connected two cells of a large plunging bichromate battery. It gave about five-eighths inch sparks. I wound only one pound on the secondary coil. Afterward, hoping to obtain a larger spark, I used more battery. It gave a longer spark at first, then afterward it would give only one-fourth inch spark. I am afraid the extra battery burnt it out. I shall rewind it. A. You will find it advantageous to rewind your coil in two sections, as described in SUPPLEMENT, No. 160.

(2462) D. E. W. asks: 1. In Notes and Queries of a back paper you say the simple electric motor can be changed to a dynamo by shifting the commutator brushes on the other side. Please explain. A. It is necessary to shift the brushes on account of the change in the direction of the rotation of the commutator cylinder. In addition to this change, the field magnet should be made of soft cast iron. 2. Will it hurt the working capacity of the motor if I paint the Russia iron of the field magnet with asphaltum varnish? A. You can paint or varnish the parts referred to without detriment. 3. Would it be dangerous to attempt to stop the motor by taking hold of the pulley? Could it be stopped in this way? A. The principal danger would be of burning your fingers by the friction of the pulley. Of course there would be danger of injury by the current if the machine were placed in a lighting circuit. 4. What would be the lighting capacity, when run as a dynamo? A. Very small; probably 4 or 6 candle power. 5. Will the motor operate a 1 gallon ice cream freezer? A. With sufficient current it would. 6. Would it do to operate the motor by Brush arc light circuit? A. The E. M. F. is unnecessarily high; the machine is not designed for a current of that kind.

(2463) P. P. K. asks: Can I make the tubular shaft and the center (solid) one in the Wilmshurst induction machine, also the washer and nut to fasten the revolving plate with, of iron? A. Use well seasoned hard wood for your hubs. 2. Can I set the revolving plate three-eighths or one-half inch apart, as it is nearly impossible to get the plate set firm enough with nut one-sixteenth inch thick? A. You cannot expect good results without setting the plates near together. 3. How large should the brush sockets be, and how many? A. The brush sockets should be one-eighth or three-sixteenths diameter. Four are required. 4. How can I get window panes straight? Nearly every pane is a little curved and unfit for revolving plate. A. You can select flat panes of glass at any large establishment dealing in the article. 5. Will the machine work better if it is made air tight? A. If made air tight and kept dry within, its working will be improved. 6. Can I make the handle of the electrode of wood? A. Yes. 7. Is 22 turns per inch of 35 wire on the secondary coil of an induction coil enough? A. Yes. 8. Is the platinum contact on the spring necessary? A. Yes. 9. Can I use a soft iron rod instead of the wire bundle? A. No. A bundle of soft iron wire is required.

(2464) W. F. G. asks (1) if there is any method of electro-plating brass and iron with platinum. A. No successful method of electro-plating with platinum is known. 2. The best way to straighten pieces of iron wire about 2 inches long. A. The wire should be straightened in long lengths by means of the machine known as the wire straightener. Short pieces are sometimes straightened by rolling them between heavy flat plates of iron. 3. In boiling carbon plates in paraffine, steam arises and covers the whole plate with a thin film. Will this not interfere with the working of the battery? And if so, how can it best be prevented? A. Carbon plates should not be boiled in paraffine. The end only of the plate should be heated and filled by dipping into melted paraffine, or by rubbing a piece of paraffine over the heated portion of the plate.

(2465) W. J. H. says: Would you please tell me through the next number of your SCIENTIFIC

AMERICAN what is the thorough meaning of the astronomical term Milky Way and about what time this term came into use or whom it was first known to? I have been a subscriber to the SCIENTIFIC AMERICAN for nearly two years through a news dealer, and I consider it one of the finest scientific papers there are. A. The "Galaxy" or Milky Way is from γαλα a Greek word signifying milk, and was so named by the early Greek astronomers from its irregular milky whiteness, not then supposed to be stars, but of a cloudy substance. The Latins called it Via Lactea.

(2466) A. A. A. asks for a solution that felt may be dipped in, that will make it fireproof against flame and still be pliable and porous. A. Tungstate of soda is about the best fireproofing chemical. The trouble will be in adequately impregnating the felt with the solution.

(2467) J. L. D. writes: I have a drum two feet by three feet. How can I fill it with common illuminating gas, without the use of water in the drum, or without exhausting the air from the drum? A. Blow gas into and through it, the inlet pipe delivering it as near the top as possible. In a short time it will displace the air.

(2468) W. F. S. asks: 1. Can plaster of Paris be made hard by some mixture so it will not break easily and will not lose its color? A. Yes. Mix it with 3 to 10 per cent of powdered marsh mallow root. 2. Will you please tell me how to make some hard white cement? A. Use above mixture. 3. Can this be moulded in plaster of Paris moulds? A. Yes. 4. If so, what will prevent it from sticking to the moulds? A. Oil the interior surface of the mould.

(2469) W. F. B. asks (1) how to soften a rubber stamp that has grown hard. A. It cannot be done. 2. What to use to dilute hektograph ink that will not flow well. A. Use water or alcohol.

(2470) F. A. R. asks for a simple receipt for making furniture polish to clean old furniture. A. The simplest preparation is a mixture of 1 pint turpentine and 4 ounces finely scraped beeswax. A more complicated formula is: Beeswax 1/2 pound, linseed oil and spirits of turpentine each 1/2 gill. Either of these may be colored with alkanet root. For the latter, 1/4 ounce of the root should be melted up with the wax first. For the first, 1/4 ounce of the root may be added.

(2471) C. H. H. asks (1) how to destroy the musty smell which we have so frequently in brick houses. A. To destroy this odor, keep the house well ventilated, allow no trees to grow near it, in order that plenty of sunlight may fall upon the walls. 2. The best work on designs for farm barns. A. We recommend and can supply "Barn Plans and Outbuildings," \$1.50.

(2472) J. C. B. asks for a recipe for mildew-proofing awning. A. The following is the simplest. Dissolve separately 5 parts each of acetate of lead and of alum in sufficient water. Heat and mix warm. After standing pour off the clear solution, leaving the white residue of sulphate of lead, into 500 parts of water containing a little isinglass. Saturate the awning by soaking for 24 hours in this solution. Many other formulas are given.

(2473) L. J. E. asks for a formula for a finger nail polish. A. Use putty powder, true oxide of tin, perfumed with otto of lavender and colored pink with cochineal if desired.

(2474) G. L. S. asks: 1. How can the color in a meerschaum pipe be made to go to the top of the bowl? A. Use a second bowl placed on top of the regular bowl. This will color the upper edge. 2. Is there any particular method to follow in coloring a meerschaum? A. No; simply use it for smoking, and clean occasionally, as directed in query No. 2364. 3. Please give directions for making a small induction coil making spark enough to light one gas jet. A. Use a spark coil made by winding 3 or 4 pounds of insulated wire around a bundle of small iron wires, six inches long and an inch or so thick.

(2475) P. C. N. asks (1) how to treat horn so it will become soft and pliable. A. Immerse in hot water. 2. How to prevent buckskin from becoming hard by washing. A. The only treatment is to waterproof it. This may be done by working neat's foot oil and tallow into it by rubbing.

(2476) N. A. D. asks for an approved method for determining the air-dry weight of wood pulp such as is used in newspaper manufacture. A. Expose a weighed sample to the air, and weigh it until it reaches constant weight.

(2477) F. W. P. & F. E. E. ask: 1. What is a good liquid formula for cleansing and preserving the teeth and sweetening the breath? A. Any number of formulas can be given. The following is said to be very good: Carbonate of potash 1/2 ounce, honey 4 ounces, alcohol 2 ounces, water 10 ounces, flavor to suit with oil of rose and of wintergreen. 2. What is good to apply to the face after shaving, to keep it from getting sore or festering around the roots of the hair? A. Cyanide of potassium 6 grains, glycerine 1/2 ounce, strong camphor water 2 1/2 ounces, mix. This is poisonous and should be compounded by an apothecary. Only fresh cyanide of potassium should be used.

(2478) W. D. T. writes: I would like a receipt for cleaning straw hats. A. Brush over with soap and water; after washing off the soapsuds sponge with a weak solution of oxalic acid.

TO INVENTORS.

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INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

September 23, 1890,

AND EACH BEARING THAT DATE.

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

Table listing various inventions and their patent numbers, including items like Accordion, Alarm, Aluminum, Axle box, Axle machine, Baling press, Basket, Bed, Bedstead, Bee swarmer, Bell cord attachment, Belt, Belt stretcher, Beverages, Bicycle, Bicycle lock, Block, Blow tester, Boiler, Bolt, Book backing machine, Book, Book binding receipt, Bottle filling device, Bottling apparatus, Box, Box with two compartments, Brake, Brick press, Brush, Burner, Burnisher, Butter, Button, Cable grip, Cable grip traction, Calendar and memorandum pad, Camera, Can, Can body making machine, Can cap, Can cleaning machine, Cans, machine for cleaning the tops of, Cant hook, Car construction, Car coupling, Car door, Car seat, Car sleeping, Car wheel, Card forming machinery, Carriage, Carriage carrier, Case, Chair, Chuck, car wheel, Churn motor, Cigar power, Clamp, Clock, Clock case, Clock key, Clock pendulum, Clock synchronizer, Clocks, duplex escapement for, Coal or rock drill, Coke and gas, apparatus for making, Collar, horse, Concentrator, Convertible chair, Contact device, Cooking vessel, Cores, mould for forming, Corn husker, Cotton gin, Counterweight, Coupling, Crimping machine, Crutch, Cuff holder, Cultivator, Cultivator, gang, Cultivator shovel, Cut-out, thermal, Cycle wheel, Dial spindle, Door check, Door securer, Drawings, producing line, Drill, Drinking fountain, automatic, Dryer, Eraser, castration, Elastic woven fabric, Electric conduit, underground, Electric heater, Electric light shade holder, Electric machine or motor, dynamo, Electric wire coupling, Electrical apparatus, impregnating parts of, Engine, Expensive engine, Gas engine, Hoisting engine, Rotary engine, Rotary steam engine, Steam engine, Traction engine, Engraving machines, turning point attachment, Eraser, G. F. Deuel, Eraser, blackboard, Eraser, slate, Explosive engine, Explosives, manufacture of, Eyeglass holder, Eyeglasses, Eyeglasses, Emond & Bishop, Fabric, See Elastic woven fabric, Wire fabric, Fare register, Feed water, heating, Fence, M. T. Swopes, Fence post, A. Peterson, Fence post, E. Sims, Jr., Fence posts, wire fastener for, Fence stay, wire, M. S. Tarkington, Fence, wire, E. Sims, Fiber cleaning and polishing machine, vegetable, W. F. Alcomer, File, paper, Finger guard bolt, D. Woehrlie, Fire alarm, J. H. Earles, Fire alarm, portable electric, Upton & Dibble, Fire escape, J. D. Carr, Fire escape, R. Mann, Freight apparatus for handling coal, ore, or other, R. Thew, Fuel, artificial, W. B. McClure, Fuel, manufacturing artificial, W. B. McClure, Furnace charging and discharging apparatus, M. P. Higgins, Furnace heating apparatus for repaving, G. W. Goetz, Gauge, See Ring gauge, Spectacle gauge, Game apparatus, W. C. Kantner, Game counter, S. B. Jenkins, Game counter, S. Stieglitz, Garment supplier, W. H. Dymally, Gas, apparatus for making hydrogen, J. W. Tallmadge, Gas, apparatus for the manufacture of oil, D. E. Teal, Gas burner, coal, G. Beck, Gas burner, C. W. Gibbons, Gas generators, stand pipe for ammonia, Poaching & Vogt, Gas lighter and extinguisher, automatic, N. Newman, Gas machine, J. S. Wood.