

## RECENTLY PATENTED INVENTIONS.

## Mechanical.

**HYDRAULIC FORGING PRESS.**—Charles Davy, Sheffield, England. This invention relates to the feed rollers of a press for operating on large plate blooms and similar work, requiring to be reduced in thickness by successive squeezings of consecutive portions of their length, and vertically movable feed rollers are upheld by counterbalance weights or other yielding power, in connection with mechanism whereby the press head is caused to depress the feed rollers concurrently with the compression of the lugot.

**FLOOR JACK.**—James E. Bean, Ironwood, Mich. The head block of this jack has a grooved bearing face, and on the block is pivotally mounted a spirally inclined cam having a lever arm, while loosely connected to the block is a retaining block or plate having retaining claws, and arranged to be borne upon by the cam, the jack taking up but small space, and being designed to force all the flooring boards to place except the last one.

**HUB CLAMP AND WRENCH.**—John Sullivan, Grand Rapids, Mich. This is a combination tool for the simultaneous removal of a spindle nut and the wheel of a vehicle, and is a simple and compact implement by the use of which the hub may be firmly grasped and the wheel, along with the spindle nut, be expeditiously and readily removed.

**PAN MAKING MACHINE.**—Charles A. Coddington and Lloyd E. Wilbur, Dowagiac, Mich. This is a machine specially designed to form ash pans from the sheet metal blanks, and the invention covers various novel details and combinations of parts whereby the pans can be quickly shaped ready to be riveted, while the machine requires but little power to operate it.

## Miscellaneous.

**LANTERN.**—Carl Rabenstein and John Reineking, Neillville, Wis. This invention provides means whereby lanterns may be expeditiously and effectively clamped upon the thills or tongue of a vehicle and as readily detached therefrom, the invention covering a novel construction and combination of parts.

**GLOVE DONNING IMPLEMENT.**—Isaiah D. Crispell, West Stockbridge, Mass. This is a device with a handle having an arm extending from one end in a straight direction and diverging arms extending from the handle at each side of the straight arm, making a neat and efficient implement to facilitate the putting on of tight gloves.

**AIR SHIP.**—Carl G. E. Hennig, Paterson, N. J. This is an air ship in which the car, instead of being rigidly attached to the balloon, is freely suspended therefrom by ropes or like connections, the invention covering a novel construction, arrangement, and combination of parts to maintain the suspended car in its proper position relatively to the balloon.

**MILK COOLER.**—William W. Conder, Hebo, Oregon. This invention provides a series of small deep receptacles which are in free communication at their lower ends, the whole being placed within an outer tank or receptacle, whereby the cream will rise with great rapidity and the whole will remain sweet for a long time.

**RUNNING GEAR FOR VEHICLES.**—Evert Takken, Douglas, Mich. This invention relates especially to the construction of the forward axle of buggies and attachments thereto, providing a simple device for attachment to the spring and vehicle body, whereby the axle may be readily turned beneath the body and with but little friction.

**TABLET FOR PURSE FRAMES.**—Louis B. Prahar, Brooklyn, N. Y. This is an attachment for the frames of purses, chateleine bags, and similar articles, whereby one or more leaves or tablets may be made to constitute virtually a portion of the frame, and which will be convenient of access and may be concealed when not in use.

**FRUIT CAN.**—Reuben C. Munger, Channahon, Ill. This is a can or jar with the mouth of the same diameter as the body, and in which the cover may be perfectly sealed and firmly held in place, there being combined therewith a pivoted lever having a beveled end engaged by a link, a screw engaging the link and drawing it forward upon the beveled end.

**CARRIAGE CURTAINS.**—John M. Mast, Cambridge, Pa. This invention provides a button hole shield and latch for curtains, re-enforcing the button hole and making an efficient device which will not rot or otherwise damage the curtains by retaining moisture.

**RACK FOR EXHIBITING CLOAKS, ETC.**—John H. Eyles, New York City. This rack has opposite and rigid foot pieces having holding plates secured thereto, and each provided with two rigidly held uprights, in combination with a continuous cross piece having locking lugs, and other novel features, the rack being very strong and durable and adapted to be readily taken apart for shipment and easily set up for use.

**MOULD FOR CASTING SAD IRONS.**—Jacob M. Davies, New Castle, Pa. This is a separable metal mould for casting sad irons in pairs, to dispense with the use of sand moulding, whereby the work is designed to be speedily performed by unskilled labor at a great reduction of expense.

**WASH BOILER.**—Henry J. F. Rose, High Bluff, Manitoba, Canada. This is an improved washing and steaming machine with an outside boiler or tank having a corrugated bottom, and a smaller inner casing surrounded by a waterspace, there being a novel arrangement of tubes to promote the rapid circulation of hot, soapy water, whereby the clothes will be quickly and thoroughly washed.

**GAS MANUFACTURE.**—John A. McCollum and Benjamin F. Burt, Riverside, Cal. This invention relates to an apparatus for the manufacture of water gas from superheated steam and oil, the furnace having a lower coal compartment and an upper lime compartment, oil pipes discharging into the coal compartment, and a steam pipe and air blast entering below the grate, while the outlet pipe leads to a fixing chamber.

**SPECULUM.**—Richard P. and Charles H. McCully, Brooklyn, N. Y. This is an instrument so made as to be capable of quick dismemberment for cleaning purposes, the parts being likewise adapted to be readily put together for use.

**INSECTICIDE.**—James M. A. Miller and Peter McMaster, San Mateo, Fla. This is a compound of sulphur, caustic soda, chloride of sodium, nitrate of potassa and water, the invention including the process by which the sulphur is reduced from a solid to a fluid condition.

**TOY PISTOL.**—Edward Dennis, Jr., and George E. Williams, Sing Sing, N. Y. This is a device so constructed as to form practically a revolver, providing means whereby a number of paper caps may be loaded at one time in order for successive firing, thereby avoiding the delay of loading a single cap at each firing.

**ORTHOPEDIC MARCHING MACHINE.**—Joseph L. Naish, New York City. This is a stationary machine in which a person is placed with shoulders held back firmly to a back board, while the feet are fastened upon small cars which move in tracks limited to the extent of the prescribed pace, motion thereto being given by the feet as in ordinary walking, the hips being held in a guide, and the invention covering various other novel features, in order to facilitate the teaching of correct marching to soldiers and others.

**FOLDING T-SQUARE.**—Henry W. Oliver, New York City. This invention consists of a head comprising two arms pivoted to the blade and adapted to be folded thereon or extended in line with each other and at angles to the blade, the implement being adapted to be conveniently folded up for transportation and easily extended and unfolded for use.

**SUGAR CANE CUTTER AND CRUSHER.**—Jose R. Mesa, Yuga Santa Catalina, Cuba. This is a combined machine comprising a hopper communicating with a cylinder having radial perforations and having a grinding shell at its lower end, in which is supported a rotary centrally apertured knife-carrying tube or sleeve, a grinding cone being secured on the shaft within the shell, and the invention covering various other novel features and combinations of parts.

**STENOGRAPHER'S STAND.**—George C. Logan, New Orleans, La. This is a stand with rollers arranged beneath to receive the ends of a web, a spring arranged in connection with one of the rollers, and a tripping attachment, to facilitate the turning over or removal of sheets on which the stenographer's notes have been taken.

**SCOURING AND WASHING APPARATUS.**—Frank E. Anderson, East Orange, N. J. This is an apparatus more particularly intended for the cleansing and washing of wool, in which a succession of fiber-submerging tubes are employed, with pressure or squeeze rolls interposed between the tubes and at the terminus of the series, whereby the wool or fiber is more effectually cleaned.

**ORNAMENTING HOLLOW WARE.**—Frederick H. Webster, Brooklyn, N. Y. This invention relates to ornamenting in relief or intaglio, or both, of metal hollow ware, by mechanical means, by a process of expanding the body of the hollow blank into an embossing die by means of a block of soft India rubber to which pressure is applied, and designed to make a finish equal to repousse work, and hand chasing and engraving.

**EXHIBITION TRAY.**—Henry K. Dyer, Brooklyn, N. Y. This tray has a narrow border covered with plush or other fabric, combined with a removable center piece held within and by the border, a cover for the center piece being held between its outer edge and the edge of the border, the tray being designed more particularly for jewelers' use, and the covering for the central portion being readily changed.

**FENCE POST.**—Ebenezer Butterick, Brooklyn, N. Y. This is a light post designed to be secured in place without excavating, having a vertical strip attached to a wooden section, with a socket in its lower end to which is secured a rod with an inverted box-shaped anchor, having tapering sides and sharp edges, and an oval top with an aperture, the anchor abutting against the lower edge of the post, with the rod projecting through it.

## NEW BOOKS AND PUBLICATIONS.

**A NEW MEDICAL DICTIONARY.** Including all the words and phrases used in medicine, with their proper pronunciation and definitions. By George M. Gould. Philadelphia: P. Blakiston, Son & Co. 1890. Pp. 519. Price \$3.25.

An alphabetical list, with definitions of medical terms, makes up the body of this work. To this are added lists of abbreviations used in the different branches of medicine and appendices containing tables, with analyses of the waters of the mineral springs of the United States, duration of life, death rates of the different countries and States, and a large amount of other very valuable material. Its compact form and reasonable price render the book more than desirable.

**PAVEMENTS AND ROADS: THEIR CONSTRUCTION AND MAINTENANCE.** Compiled by E. G. Love. 1890. *The Engineering and Building Record.* New York. Pp. 410. Price \$5.

*The Engineering and Building Record* has published recently a number of articles on the maintenance of roads and pavements. The present work includes a compilation of these papers. At the present day a great interest in road making is being developed, and the States are passing road bills for the encouragement of building country roads. The State of New Jersey, under some of these enactments, is doing a most extensive work in laying county thoroughfares on the Telford system, and any contribution to the science of engineering and road making is peculiarly timely. It is satisfactory to notice that other places complain of their pavements besides the cities of the United States, and that we are not alone in having poor streets.

**HISTORY OF THE AMERICAN PIANO-FORTE, ITS TECHNICAL DEVELOPMENT, AND THE TRADE.** By Daniel Spillane. New York: D. Spillane Publisher. 1890. Pp. 369.

It is to be presumed that there is an American piano-forte. Accepting this as the case, its development and present status is well given in Mr. Spillane's new book. The portraits of representative makers of this country add largely to the interest of the work. Numerous illustrations of the mechanisms used are given.

**LOCOMOTIVE ENGINE RUNNING AND MANAGEMENT.** By Angus Sinclair. New York: John Wiley & Sons. 1890. Pp. xx, 416. Price \$2.

The running of a locomotive has a fascination for many who are little interested in other divisions of mechanics. The whole history of the engine runner's work, followed by a treatise on the management of the different parts, including the shifting link, valve setting, link motion, Westinghouse air brakes, etc., with numerous illustrations and a short specimen examination paper, are embodied in the book. It will be found of rather general interest from the careful way in which it is written, and from the picture it draws of the responsibilities annexed to the position of engine driver.

**A SHORT COURSE OF EXPERIMENTS IN PHYSICAL MEASUREMENT.** By Harold Whiting. In four parts. Part I. Cambridge: John Wilson & Son. 1890. Pp. xii, 278.

Physics has ceased to be merely a science of demonstration, but has developed largely into one of measurements. Such works are designed for students, to make them do work in the laboratory of the same character as that required in advanced physical studies. As far as the ground goes, in this first part, it is very thoroughly covered, and the work is kept strictly on an elementary basis. The necessary calculations are, of course, supplied.

## SCIENTIFIC AMERICAN BUILDING EDITION.

JULY NUMBER.—(No. 57.)

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1. Elegant colored photographic plate of the residence of Henry R. Towne, at Stamford, Conn. H. H. Holly, of New York, architect. Perspective elevation, floor plans, sheet of details, etc. Cost \$20,000.
2. Plate in colors of a dwelling at Tremont, N. Y. Floor plans, perspective elevation, sheet of details, etc. Cost \$6,000.
3. Perspective elevation and floor plans of a residence at Monclair, N. J. J. C. Cady, of New York, architect. Cost complete \$10,000.
4. Photographic view and floor plans of a residence at West Brooklyn, N. Y. Cost \$4,500.
5. A cottage at Dunwoodie, N. Y. Floor plans and perspective elevations. Cost \$5,000 complete.
6. A dwelling at Holyoke, Mass. Perspective and floor plans. Cost complete \$5,500.
7. Sketch of a residence at Surbiton.
8. Design for a one story house to cost about \$1,000.
9. Engravings representing the exterior and plan of a large pigery.
10. A dwelling erected for Mr. C. D. Danforth, Yonkers, N. Y. Floor plans and perspective. Cost \$9,000 complete.
11. Photographic perspective view and floor plans of a neat and desirable cottage recently erected at Griswold, Iowa, from plans and perspective published in the SCIENTIFIC AMERICAN. Cost \$1,075.
12. A handsome residence at Springfield, Mass., erected for Mr. E. W. Shattuck. Perspective and floor plans. Cost \$15,000.
13. Floor plans and photographic perspective of several cottages erected for the late Hon. Chas. Cray, at Chester Hill, Mount Vernon, N. Y. Cost \$4,000 each complete. Mr. J. C. Brown, of Mount Vernon, architect.
14. Sketch of a chapel and village hall. Estimated cost \$20,000.
15. Page engraving of the Ripon Cathedral, Yorkshire, England.
16. Miscellaneous contents: Steam and hot water heating.—The garden.—European health resorts.—Fireproof paint.—Testing well water for sewage.—The carpenter.—Fire clay in Montana.—The Spence hot water heater, illustrated.—Improved sliding blinds, illustrated.—Prepared building paper.—An improved separator and trap for steam boilers, illustrated.—Lyle's storm and screen door, illustrated.—A sheet copper statue thirty-five feet high, illustrated.—A boiler for greenhouses, dwellings, etc., illustrated.—An efficient ventilating fan, illustrated.—An improved door hanger, illustrated.—Taste in selecting paint.

The Scientific American Architects and Builders Edition is issued monthly. \$2.50 a year. Single copies, 25 cents. Forty large quarto pages, equal to about two hundred ordinary book pages; forming, practically, a large and splendid MAGAZINE OF ARCHITECTURE, richly adorned with elegant plates in colors and with fine engravings, illustrating the most interesting examples of Modern Architectural Construction and allied subjects.

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## 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.

For Sale—New and second hand iron-working machinery. Prompt delivery. W. P. Davis, Rochester, N. Y. Acme engine, 1 to 5 H. P. See adv. next issue.

Turk water motors at 12 Cortlandt St., New York. Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J. Friction Clutch Pulleys. The D. Frisbie Co., N. Y. city.

Best Ice and Refrigerating Machines made by David Boyle, Chicago, Ill. 155 machines in satisfactory use.

The Improved Hydraulic Jacks, Punches, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

Screw machines, milling machines, and drill presses. The Garvin Mach. Co., Laight and Canal Sts., New York.

C. E. Billings' Patent Surface Gauge. Drop Forgings. Bronze Forgings. Billings & Spencer Co., Hartford, Conn.

Veneer machines, with latest improvements. Farrel Fdry. and Mach. Co., Ansonia, Conn. Send for circular.

Tight and Slack Barrel Machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus. adv., p. 13.

For Sale—The whole or part of patent for stone polishing machine, illustrated on page 19. For particulars address the inventor.

Guild & Garrison, Brooklyn, N. Y., manufacture steam pumps, vacuum pumps, vacuum apparatus, air pumps, acid blowers, filter press pumps, etc.

Manhattan packing is self-lubricating. It keeps the piston rods bright and smooth. Send for sample and price list to Greene, Tweed & Co., 83 Chambers St., N. Y.

The Holly Manufacturing Co., of Lockport, N. Y., will send their pamphlet, describing water works machinery, and containing reports of tests, on application.

The best book for electricians and beginners in electricity is "Experimental Science," by Geo. M. Hopkins. By mail, \$4; Munn & Co., publishers, 361 Broadway, N. Y.

Gas and Petroleum Engines. A practical treatise on the Internal Combustion Engine. By W. Robinson. 596 pages. Fully illustrated. \$5.50. E. & F. N. Spon, 12 Cortlandt St., New York.

A business man who has visited nearly every town in the United States desires an agency for manufacturers or others having goods or machinery for sale. References. Address W. Y., box 132, Cheshire, Conn.

Practical Electric Bell Fitting. Full description for the fitting up and maintenance of electric bells for all purposes. By F. C. Allsop. 150 illustrations. Large plates. \$1.25. E. & F. N. Spon, 12 Cortlandt St., New York.

Send for new and complete catalogue of Scientific and other Books for sale by Munn & Co., 361 Broadway, New York. Free on application.

## Notes &amp; 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.

(2303) E. A. P. asks for receipt for sticky fly paper. A. Mix by heat  $\frac{3}{4}$  ounces raw linseed oil, 1 pound resin, and add  $\frac{3}{4}$  ounces molasses. Apply to paper while warm.

(2304) S. S. asks: If four balls each  $2\frac{3}{4}$  inches in diameter were placed on level surface,  $\frac{1}{4}$  inch apart, so as to form a square so that a ball 4 inches in diameter would rest upon all the balls, what would be the elevation of the large ball above the level surface? A. The problem is easily solved by the rule of the square of the hypotenuse. The top of the large ball will be 5945 inches above the level surface.

(2305) H. B. asks for a cement or pasto that is transparent and will stick glass together. I want it for a phantolense which has become un cemented. A. Use Canada balsam.

(2306) W. S. S. asks for a good recipe for renovating carpets, to restore the colors and remove stains. A. First beat the carpets thoroughly. Then, after they are tacked down, wash them with warm solution of 1 part ox gall to 25 parts water by measure. Mix and use a little of the solution at a time, so as to have it always warm and clean.

(2307) F. G. B. writes: I have an Indian knife in my possession which I think is meteoric iron. Is there any way in which it could be proved? A. It would be difficult or impossible to prove it. The presence of nickel would tend to prove that it was made from meteoric iron.

(2308) A. H. T. asks: 1. What is the name and price of American microscopic journal? A. The Microscope, Trenton, N. J. \$1 per year. American Monthly Microscopic Journal, Washington, D. C. \$1 per year. 2. What chemical reaction, if any, takes place when a strong solution of niter cake is added to chloride of lime? A. If by niter cake you mean crude acid sulphate of soda, then some chlorine would be set free, with interchange of sulphuric and hypochlorous acids of the lime and soda salts respectively.

(2309) W. G. S. writes: 1. Which is the right side to use tracing cloth with ink—the smooth or the dull side? A. Use the smooth side. 2. What remedy is there to prevent the ink from running? A. The ink should be thick, and the pen should be pressed lightly on the cloth.

(2310) A. T. S. writes: 1. Please inform me what day of the week the 10th of September, 1853, 1854, 1855, 1856, and 1886 fell on? A. 1853 Saturday, 1854 Sunday, 1855 Monday, 1856 Wednesday, 1886 Friday. 2. What preparation do the skin doctors use to eradicate small scars from face and hands? A. Any number of cosmetics are recommended, but none can be given as a universal panacea. 3. Has the starch solution to be boiled for the iodine ink? How long will it take to fade? A. It should be boiled, and allowed to cool before adding the iodine. It is not very satisfactory, and its period of fading cannot be predicted.

(2311) T. E. P. asks what to add to crude gutta percha while dissolved, to make it stick to glass. I have had a great deal of trouble with it. A. To make gutta percha adhere to glass, apply heat after the solvent has completely evaporated. 2. Can I get zinc plates for a battery all ready amalgamated, from any electrical supply house? A. Amalgamated zincs may be had on special order, but they are very brittle and liable to break in transportation. You can amalgamate them without trouble by rubbing with mercury moistened with dilute acid. A piece of galvanized iron makes the best rubber for applying the mercury.

(2312) E. M. writes: Clay is principally discolored by oxide of iron. Would an electromagnet do much to purify same, provided the clay in a liquid state could be repassed very close to the poles of same? A. A magnet will not attract sesquioxide of iron. It might purify clay from pyrites if the latter were of the magnetic variety. In our SUPPLEMENT, Nos. 340 and 383, you will find articles on the subject of treatment of clays.

(2313) T. J. L. asks: Can you inform me what will take a rust stain out of granite? I have tried oxalic acid, but after seven or eight days the stain returns. A. Try the effect of hydrochloric acid after the oxalic acid has been applied.

(2314) W. H. S., Nebraska, says: A few weeks ago you gave an account in the SCIENTIFIC AMERICAN of a well somewhere in the East that at times gave forth a current of air. Our wells here are from two to three hundred feet deep, and at times the air comes so fast that it can be heard rods away, and at other times it sucks down. When the wind is north, the water rises five and six feet. When the wind is south, the water goes down. Our opinion is the rise and fall of the water is what causes the current. What I should like to have explained is, how can the wind affect the water that depth under the ground? We are about one thousand miles from any body of water. A. The earth is porous, and contains air down to the water line. Changes of pressure in the atmosphere, as indicated by the barometer, must naturally be felt through the porous upper stratum and down to the water line. This, however, at the utmost, would only account for a small part of the variation in level which you speak of. The cause of so great a change of level must be considered as indeterminate in many cases. Often a special investigation will reveal it.

(2315) A. H. asks: 1. Can you give me the formula for a crystal cement for cementing glass that will not dim its brilliancy? A. Use Canada balsam or dammar varnish. 2. Is it possible to make everything perfectly horizontal? What I mean, suppose you aim a gun in a horizontal manner, does not that gun barrel describe the part of a circle of the same radius as the earth? A. Practically no, theoretically yes. In practice the departure from the horizontal is quite imperceptible. In the case of the gun barrel it would not describe a circle of the earth's radius, but would simply sagor bend downward an infinitesimal amount. 3. Can you give me the formula for making artificial ivory that will not dissolve in water? A. Mix 8 parts shellac with 32 parts strong ammonia and agitate for some hours in a closed vessel. After solution mix with 40 parts zinc oxide in a paint mill. Expel ammonia by heating, dry, grind, and press into shape at a temperature of 500° to 540° Fah. We cannot answer the other queries.

(2316) W. J. P. asks (1) why a flash or stroke of lightning in the vicinity of a telegraph line will break the circuit on that line, causing the sounder to work by jerks, notwithstanding the same is held down by a strong battery of four cells. The undersigned, who is a constant reader of your paper, noticed the above phenomenon on a private line, with ground circuit, running from his house to that of a friend's a mile distant. A. When the lightning opposes the action of the batteries, it neutralizes the battery current and releases the armatures. 2. Is there any effectual means by which grass can be prevented from growing up between bricks in the pavement, or which will exterminate it after it has once grown up? A. A solution of common salt in water poured along the joints between the bricks will kill the grass. Chloride of lime is more powerful.

(2317) C. C. P. asks: 1. Can you give me a formula for modeling wax that will be a good substitute for clay? A. Mix thoroughly at as low a heat as possible 2 parts yellow beeswax, 4½ ounces Venice turpentine, 2 ounces lard and 1¾ pounds elutriated bole (a fine ferruginous clay). Pour into a vessel with water and knead several times. 2. What produces the sound when one whistles? A says that the size of the opening at the lips produces the different tones. B says that the pitch is governed by the position of the tongue, as the tongue is low in the mouth when a low tone is made, and is raised correspondingly with the tone. Also a tone of the same pitch can be formed with a large and a small aperture of the lips. Have the vocal chords anything to do with it? A. The air rushing out through the lips produces a sound which is modified in pitch by the size of the cavity of the mouth. This acts as a resonator and re-enforces the particular note to which it corresponds. The vocal chords do not play any part in whistling.

(2318) W. H. Y. asks (1) how to make a dark cherry stain of good quality for staining scroll work, etc. A stain that will soak into the wood and not rub off and will take a good finish. A. You may use a suitable aniline color (diamond dye) after working the wood in a bath of Castile soap ¾ parts in water 100 parts, or use a decoction of logwood in vinegar. 2. Also how to obtain a dark finish on oak and ash? A. Inclose in a box or closet with some saucers or plates of strong ammonia. The fumes will darken the wood.

(2319) C. A. asks: What substance could I use for a fire balloon? I have used a rag, a wick, and some sponge soaked in kerosene, turpentine, or alcohol. They all set my balloons on fire except alcohol, which is too expensive for a large balloon. A. Use paper. Soak the neck in a solution of alum. Surround the sponge with a tube or chimney of thin asbestos paper.

(2320) F. H. J. asks for a formula for gum and mode of applying to paper, as is used for gummed label paper. A. We have repeatedly published the postage stamp composition:

- Dextrine..... 2 parts.
Acetic acid..... 1 "
Water..... 5 "
Alcohol..... 1 "

Or use a solution of gum arabic in water with a little glycerine. The proportion of the latter must be varied according to weather.

(2321) J. V. F. writes: Please give a solution of the following problem: A man buys 20 pencils for 20 cents. The prices are 4 cents apiece, 2 for a cent and 4 for a cent. How many of each did he get? A. It can be done tentatively on basis of following equations:

x + y + z = 20
4x + 2y + 4z = 20

The value of x it is evident must be 1, 2, 3 or 4. On trial it is found that x=3 gives an answer, when y=15 and z=2, or 3 pencils at 4 cents, 15 pencils at 2 cents, and 2 pencils at 4 cents.

(2322) H. S. asks: Which chemical offers the most resistance to heat? A. Oxide of calcium (quicklime); of common substances, oxide of zirconium is probably as good a non-conductor as is known.

(2323) W. A. W. asks how to dissolve white shellac gum. Have tried alcohol, and while it softens the gum it will not dissolve it, but the same alcohol will dissolve orange shellac all right. A. The trouble is that the white shellac contains water. Use more and stronger alcohol.

(2324) W. J. asks (1) for alloy which will melt in hot tea. A. Tin 25 parts, lead 50, bismuth 12, cadmium 13. 2. Also the formula for Pharaoh's serpents. A. See our SUPPLEMENT, No. 259. 3. The chemicals which are put in paper torpedoes. A. Fulminating powder, such as used in percussion caps.

TO INVENTORS.

An experience of forty years, and the preparation of more than one hundred thousand applications for patents at home and abroad, enable us to understand the laws and practice on both continents, and to possess unequalled facilities for procuring patents everywhere. A synopsis of the patent laws of the United States and all foreign countries may be had on application, and persons contemplating the securing of patents, either at home or abroad, are invited to write to this office for prices, which are low, in accordance with the times and our extensive facilities for conducting the business. Address MUNN & CO. office SCIENTIFIC AMERICAN, 361 Broadway, New York.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

June 24, 1890.

AND EACH BEARING THAT DATE.

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

Addresses or labels to wrappers, envelopes, or publications, attaching, J. D. Robertson..... 430,787
Alarm. See Burglar alarm. Mill elevator alarm.
Alkaline carbonates and acetone, making, F. W. A. Frerichs..... 430,734
Anchor, C. J. Wheaton..... 430,793
Animal shears, D. F. McDonald..... 430,663
Annunciator, R. P. Garsed..... 430,735
Baige, De Young & Andrews..... 430,730
Bale tie, L. R. Lantz..... 430,864
Balling machine, siver, G. J. Torrance..... 430,900
Band cutter and feeder, W. Holliday..... 430,954
Band twister, G. H. Howe..... 430,650
Bar. See Harvester bar.
Barrel elevator, W. H. Pierson..... 431,006
Barrow wheel, J. P. Haigh..... 430,942
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Battery. See Diffusion battery. Galvanic battery.
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Bed lounge, A. Morris..... 431,002
Belt fastener, S. H. Morrall..... 430,698
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