RECENTLY PATENTED INVENTIONS.

Engineering.

SPEED INDICATOR. — Albert R. Sherman, Pawtucket, R. I. Combined with a clock is a graduated traveling dial or scale of annular shape, which rotates around the clock dial and is actuated by the impulses from the engine, there being novel means for transmitting the impulses of revolution from the engine to the annular dial, for comparing the speed of the engine with that of the clock.

PISTON ROD GUIDE. — Daniel W. Umstead, Earlington, Ky. This invention relates to an improvement especially adapted for use with mining machinery, dispensing with the crimp and crimp plate usually employed to prevent the air from escaping around the piston rod and sleeve head, and providing a sectional bushing at the outer end of the sleeve, with other novel features.

Railway Appliances.

SANDING DEVICE. — James Ritchie, Flatbush, N. Y. This invention consists essentially of a sand-receiving box or hopper in connection with which is arranged a gate or valve, with means for throwing the gate or valve, and a delivery spout or chute, the construction providing for the delivery of the sand, whether it be wet or dry, at the will of the operator.

AUTOMATIC SAFETY SWITCH. — John H. Wait, Junction City, Oregon. Combined with a main rail laterally movable and a parallel switch rail attached thereto and movable with it, is a stationary outwardly curved main rail, an inner fixed guard rail, and a rail point intervening between the guard and fixed main rail at one end, the construction being such as to prevent derailment at the switch irrespective of the position of the switch.

Electrical.

GENERATING ELECTRICITY.—Timothy Gleeson, Brooklyn, N. Y. This invention provides an apparatus for generating electricity suitable for telephonic currents or for operating bell signals, providing means of vibrating a permanent magnet by clockwork or other motor to generate the current.

CARBON FILAMENTS. — Theophilus V. Hughes, of Holywell, North Wales, and Charles R. Chambers, of South Kensington, Middlesex County, England. This invention covers a method of manufacture of the filaments by the destructive distillation of a gaseous carbon compound capable of yielding carbon when decomposed by heat, the object being to produce filaments of greater density and homogeneity than those made by the ordinary methods.

Mechanical.

SAW DRESSING DEVICE. — Walter Kirkpatrick, Marinette, Wis. This is an implement for side-dressing saw teeth, its body having a handle at one end and a guide block or fork detachably secured to the opposite end, while a lever fulcrumed upon the inner face of the body is provided with a guide screw and a detachable file, the implement being one which can be applied to a circular or band saw while in motion.

LOOM PICKER STAFF CONNECTION.—John McGinnis, Valatie, N. Y. This is a combined metallic stirrup and strap of leather or other like flexible material as the connection between the rocker of each picker staff and its treadle, to prevent breaking of the strap and stopping of the loom, as is now common.

PAPER PULP DIGESTER.—Henry W. Stebbins, Monico, Wis. This is a novel construction of lead-lined boilers, dispensing with all hard metal rings between the sections of the body of the shell, flanges, and clamps, operating to compress and thin the lead lining at the joints and to bulge out the lead beyond the joints in the body sections, the expense of operating the digester being also reduced and leakage avoided.

SOLE SEWING MACHINE. — Johannes Albrecht, Carmstadt, Wurtemberg, Germany. This invention covers an improvement in that class of machines which produce a double lock stitch, and is designed to sew the sole on to the boot or shoe, etc., with waxed threads, by means of a hook needle and a suitable shuttle.

MIDDLINGS PURIFIERS. — William Klostermann, Young America, Minn. Two patents have been granted to this inventor on middlings purifiers, the inventions covering various novel features and combinations of parts, and being improvements on former patented inventions of the same inventor, designed to promote efficiency of their operation, and whereby the middlings are agitated over and over again in order to thoroughly purify them, always separating the worthless stuff from the middlings.

Agricultural.

SEED PLANTER AND FERTILIZER DISTRIBUTER.—Whitmon A. Holt, Harrison, Me. The frame has a central plow, with side plows held parallel thereto, chutes opening on the rear end of the plows and supported by a plate from the main frame, while a disk is also held to oscillate on this plate, the disk having openings registering with openings in the plate, and a fertilizer and seed hopper are held on the disk, the machine being arranged for changing the distances between the several hills or drills.

Miscellaneous.

ALBUM CLASP. — Ernst P. Hinkel, Offenbach-on-the-Main, Germany. This is a clasp designed to automatically adjust itself to the different thicknesses of the book as the number of photographs inserted therein increase, and is formed with a combination of two telescopic sections with a spring secured in one section and adjustably connected to the other section.

PIANO LAMP BRACKET.—William A. Smith, Butte City, Montana Ter. This bracket consists of a four-armed base plate with a horizontal arm on which is a sleeve pivoted to one of the arms, while a vertically adjustable arm is secured in the sleeve, and has a horizontally projecting member carrying a lamp stand.

MOTOR.—Charles J. B. Gaume, Brooklyn, N. Y. This invention covers a clockwork escapement mechanism of novel construction for operating swinging cradles, couches, hospital cots, etc., whereby power is economized and noise avoided, and heavy bodies may be kept in swinging motion for a long period.

CHURN.—William M. Shira, Butler, Pa. This is a churn adapted to be worked while the operator is either standing or sitting, and is simple and cheap in construction, while designed to make butter quickly, and admit of the ready cleaning of its parts.

COVER FOR BUTTER TUBS.—Henry C. Carter, New York City. This is an expanding and contracting cover composed of independent side sections, with a sliding wedge-shaped section between them secured by slotted attachments, pins or studs controlling the movement of the wedge section and side sections relatively to each other, and dispensing with nails, clasps, and other like fastenings.

TANK HEATER. — Hanford Reynolds, Gifford, Ill. This is a device for heating or warming large quantities of water to prevent freezing, and the heater has a side chamber through which the fire may be raked and the ashes removed without taking the heater from the tank and without extinguishing the fire, the device being especially applicable to tanks for warming water for stock and similar purposes.

SUSPENDED RAILWAY. — John Thomson, Kansas City, Mo. This invention covers an improvement in a class of excavating apparatus, including a series of carriages traveling on an elevated track and a series of buckets suspended from the carriages, to be raised and lowered by suspending ropes or chains, one such rope or chain only being employed by the series of buckets, and all the buckets being raised successively, one at a time, by the rope.

FLUID SEPARATOR.—Thomas J. Newsome, Wilmington, N. C. This device consists of a vessel or tank with a horizontal diaphragm making two chambers, with a central tube, and a discharge pipe connected with the lower chamber, and one connected with the lower portion of the upper chamber, the invention affording a simple means for separating turpentine, oil, or other light fluids from water.

SCIENTIFIC AMERICAN BUILDING EDITION.

JULY NUMBER.—(No. 45.)

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1. Elegant plate in colors, showing elevation in perspective and floor plans for a residence costing three thousand eight hundred dollars. Page of details, etc.
2. Plate in colors showing perspective and floor plans for a dwelling to cost about four thousand dollars. Sheet of details.
3. Engraving of the Washington arch, of New York, designed by Stanford White, architect.
4. Perspective elevations and floor plans of three frame houses, costing two thousand three hundred and fifty dollars each, recently erected in Jersey City, N. J.
5. Illustration showing a block of economical frame houses recently erected in New Jersey. Floor plans.
6. Perspective view and floor plans of a handsome residence in New Jersey.
7. A Connecticut residence, with floor plans.
8. Plans and perspective of a compact and tasteful house recently erected at Brattleboro, Vt., C. Howard Walker, architect, Boston. Cost about four thousand dollars.
9. A half brick and frame cottage. Perspective and floor plans.
10. A residence in Bedford Park, New York. Plans and perspective.
11. A residence at Bridgeport, Conn. Perspective and floor plans. Cost complete eight thousand dollars.
12. A dwelling in Jersey City, N. J. Plans and perspective elevation.
13. A "Queen Anne" for six thousand five hundred dollars. Perspective elevation and floor plans.
14. Dining room fireplace, Gladswood, Wimbledon common. F. J. May, architect.
15. View of an Aztec house.
16. Miscellaneous Contents: How we rid our vines of the mealy bug.—A light and effective lathe, illustrated.—A new planer and matcher, illustrated. — Electric tramways in factories. — Improved hot water heater, illustrated.—Sinclair's chairs, rockers, and settees, illustrated. — The Keystone portable steam driller, illustrated.—Heating buildings by warm air circulation.—Metallic ceilings, illustrated.

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NEW BOOKS AND PUBLICATIONS.

THE INTERNATIONAL ANNUAL OF ANTHONY'S PHOTOGRAPHIC BULLETIN. Vol. II., 1889. By W. Jerome Harrison, F.G.S., Birmingham, England; A. H. Elliott, Ph.D., F.C.S., New York. E. & H. T. Anthony & Co., publishers, New York. Pp. 479. Price $1.

The second issue of this new annual is fully equal in interest and quality to the initial work published in 1888. It contains eight illustrations by different processes. The frontispiece (a portrait study) is an example of the beautiful gloss and delicacy of detail to be obtained on Aristotype paper, while the two views in the Tyrolese Alps, by Professor D. L. Elmendorf, in the center of the book, are fine specimens of photo grain cuts produced directly from the photographs. An excellent photogravure termed "photophane," representing a portrait of Miss Lillian Seccombe, an actress, also adorns the book. In addition to these attractive illustrations there are many interesting and useful articles on subjects of special value to amateur and professional photographers. "Blue printing," with formulas and illustrations of apparatus for carrying it on, on an extended scale, is very comprehensively treated by C. B. Talbot. There are several articles on the new hydroquinone developer and how to use it, the making of window transparencies and lantern slides, some conveniences for the amateur, orthochromatic photography, photographic emulsions and machinery for making them, the uses and development of gelatino-bromide paper, hints in photo-micrography, and many useful tables and formulæ. It is a mirror of the latest experiences and progress of the science of photography, and should be in the hands of every progressive photographer.

PHOTOGRAPHIC MOSAICS, 1889. Edward L. Wilson, editor and publisher, New York. Pp. 144. Price 75 cents.

Now in its twenty-fifth year, this book, containing a number of useful articles by well known writers, is a valuable acquisition to any library. Over forty pages re devoted to a review of a year's progress of photography. An article on "A Potash Developer," by Charles Ehrmann, and others on "Suggestions for Vignetting," by Karl Klauser, "Suggestions for Beginners," by Wallace Goold Levison, "Swelled Gelatine Process of Making Photo-Relief Plates," by W. T. Wilkinson, and a valuable table, "Of Space Traversed, of Time Occupied, of Velocity Acquired, by a Falling Body," by J. J. Higgins, A.M., M.D., convey an idea of the practical and scientific nature of the book. It is well printed, and contains five phototype illustrations.

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

(968) A. H. H. asks: Would an armature constructed same as the one in the 8 light dynamo (SUPPLEMENT, No. 600) work well in the simple motor (SUPPLEMENT, No. 641)? A. Yes.

(969) E. S. asks how to change the voltage of the dynamo described in SUPPLEMENT No. 600, so as to be able to run 70, also 110 volt lamps, instead of 50 volt (which are hard to get). In what SUPPLEMENT will I be able to find how to make storage batteries, how to charge them, and all necessary information in order to make and run them? A. You can change the voltage of the dynamo by increasing the power of the field magnet, or by increasing the speed of the armature within certain limits. You can readily obtain 50 volt lamps from the manufacturers. We shall publish at an early date information on the construction of storage batteries. See SUPPLEMENT, Nos. 322, 323, 610, and many others.

(970) W. H. T. asks: 1. Can the simple electric motor described in SUPPLEMENT, No. 641, be used as a hand dynamo? A. Yes; provided you use a cast iron field magnet and wind the armature with finer wire, say No. 20. 2. If so, is it necessary to use wire of a different size from that given in the article referred to? A. See above answer. 3. Would such a dynamo be as efficient as the one described in SUPPLEMENT, No. 161? A. We think not.

(971) R. S. G. asks for a receipt for glue that will stick two pieces of glass together. I wish something that will resist the action of pyrogallic acid, or, in other words, some glue that I can fasten pieces on inside of a developing tray. Page's glue will hold it only for a day or so. A. Make some thin solution of ordinary glue, weighing it before putting it in the water. Then in a darkened room add one-tenth the weight of the dry glue of bichromate of potash, glue in the dark and expose to light while drying. Add a little glycerine to the glue also.

(972) Quaker City asks (1) how to make a tooth powder that will whiten the teeth instantly. A. We can recommend no such powder, as it would be highly injurious to the teeth. Precipitated calcic carbonate, often called precipitated or dropped chalk, is an approved dentifrice. It may be perfumed with a little orris root, and a little dried castile soap may be rubbed up with it. The teeth should be put into good condition by a dentist and maintained in order by the use of the simple dentifrice recommended. 2. Also how fire eating is done as performed in the museum? A. Soak a piece of thick cotton cord in a solution of nitrate of potash and dry it. When exhibiting, a lot of tow is held in one hand with the piece of cord, which has been lighted, concealed in it. Some tow is taken into the mouth within which the slow match or lighted end is embedded. If now the breath is expelled through the tow it becomes ignited and smokes and glows, which can be extinguished by closing the mouth. The cord, however, continues burning, so that the same effect can be several times produced. Another method raisins can be dipped in alcohol and lighted and then can be dextrously eaten without burning the mouth. The point in this case is to close the mouth quickly.

(973) F. W. F. asks: 1. Will you or any of your readers kindly furnish a description of the mechanism used in organs where electricity is the medium for transmitting motion from the keys to the pallets? What kind of battery is used, and how many, if more than one? I have been unable by personal inquiry to gain any information respecting organs in which electricity is used, for, so far as I can learn, there are no such organs in Canada, at least in Ontario. Are there any serious disadvantages in these organs, and if so, what are they? A. See SCIENTIFIC AMERICAN, vol. 55, page 83, for description of such mechanism and other particulars asked for. It works perfectly in practice and is being more extensively used every year. 2. Is there any chemical that is bleached by a current of electricity passing through it, or one that is given a decided color, the two poles being placed the thickness of paper apart, or wider. If there is such a substance, what is it? A. A solution of iodide of potassium, or a dilute solution of the same with starch, or a solution of ferrocyanide of potassium and nitrate of ammonia can be used to saturate paper. These will produce colored traces under the influence of an electric current.

(974) E. A. D. asks: 1. Is there any chance for a young man in the profession of electrical engineering? A. Not very good without some influence. 2. Where can one take a course? A. Cornell University, Ithaca, N. Y. 3. What length? A. Three or four years.

(975) J. C. G. asks a recipe for a fire kindler that will start an anthracite coal fire. A. We would suggest charcoal dried and soaked in solution of nitrate of potash and again dried. Or one part chloride of lime may be mixed with three or four parts of charcoal dust to a thick paste, with a little glue or other cementing material and formed into lumps.

(976) F. E. P. writes: I wish to inflate a small balloon of about 500 cubic feet capacity. Will you give formula for making gas from sulphuric acid

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and iron turnings? A. Place the turnings in a large demijohn and pour acid on them. For five hundred feet you will need 129 pounds of oil of vitriol and about 70 pounds of iron. The evolution flask must be arranged with doubly perforated cork, etc., so that acid can be introduced without interfering with the progress of the work.

(977) G. H. B. asks for the government receipt for mixing whitewash so it won't wash off. A. Slake ½ bushel lime with boiling water, keeping it covered during the proeess, strain and add 1 peck salt dissolved in warm water and 3 pounds rice flour boiled in water to a thin paste, ½ pound Spanish whiting, and 1 pound clear glue dissolved in warm water. Allow it to stand several days and apply hot.

(978) L. F. asks how to make combustible paper. A. Soak the paper in a saturated solution of nitrate of potash. This makes touch paper. To make paper that will burn and disappear with the explosion, it must be treated with strong nitric and sulphuric acids, and washed thus, converting it into nitrocellulose or gun cotton. The process of making the latter is fully described in the SCIENTIFIC AMERICAN of February 23, 1889.

(979) F. C. G. writes: I have knitted some small shoes out of druggists' cotton cord, in delicate shades and bright colors, for the market. Can you tell me through your valuable paper, or otherwise, how to preserve their delicate coloring? I have been saturating them in hot borax water preparatory to puting on the gum arabic: they fade. There is something that is used with the borax that will preserve the color, but I am unable to tell what that is. A. We would suggest the use of alum, or chloride of tin as a mordant, but we fear that the cotton will still fade.

(980) O. A. B. asks: 1. How cement used for cementing the rubber tires to the fellies of bicycles is made. A. Dissolve 1 part gutta percha in bisulphide of carbon q. s. Mix with 20 parts asphalt or shellac and warm over water bath, until it is melted to a thick paste. 2. How to make liquid cement for cementing rubber. A. Unvulcanized India rubber is masticated by powerful rolling and grinding machinery, until disintegrated, and then is dissolved in coal tar naphtha. After it has been used as a cement, the cemented place may be treated with a solution of chloride of sulphur in bisulphide of carbon. In our SUPPLEMENT, No. 249, an excellent description of India rubber manipulation is given.

(981) J. R. writes: We have an artesian well in our city park on the bluff, 165 or 170 ft. above, but adjacent to the river What effect, as regards flow of water, would a pipe have, attached direct to mouth of the well, *perfectly air-tight,* and leading down over the hill 80 or 100 ft.? Would flow of water be greater than to let it flow free into reservoir on a level with the mouth of well, or equal to a well bored on a level with discharge of pipe 100 ft. below mouth of well? A. It would be between the two. The "head" independent of friction would be equal to tbat of the lower level well, but friction would impede the full flow due to such head or pressure.

(982) C. R. R. writes: When shellac is melted over fire not hot enough to burn, it becomes thick and soapy, and will not pour into a mould. What plan could you suggest that we pursue with it, to form it into sticks about 5 in. long and ¾ in. in diameter, and get them solid and without a flaw? Is tbere any way of melting shellac, without burning, so as to get it thin as water or molasses? We have been "stuck" on this problem for several months. A. You cannot melt shellac as specified; it can, by an admixture of some ingredients, such as Venice turpentine, be made more fluid, but pure shellac is never perfectly liquefied by heat alone. Try rolhng it into shape under hot water.

(983) D. W. W. Co.—For a cheap lining for your packages, we know of nothing better thau bichromatized glue. Makea glue sizing of suitable consistency and add about 5 per cent of bichromate of potash to render it insoluble in water. Coat your packages with this size and allow them to dry in a light place. After they are dry, expose them to the direct rays of the sun for an hour or so. This coating would not answer for packages for containing articles of food. A small percentage of glycerine added to the size would increase its flexibility. If you desire to add a pigment to give it more color, you can use whiting, chrome yellow, or any of the iron oxide paints.

(984) J. A. McC. asks how to bronze steam pipes, used for steam heating. A. The pipes are painted with ordinary chrome yellow, and when nearly dry gold bronze powder is rubbed upon the surface with a piece of fur. When thoroughly dry, the surface is varnished with a very thin copal or mastic varnish.

(985) P. G. O'G. asks: 1. A reliable formula for a liquid stove polish, odorless as nearly as possible. A. Mix two parts copperas, one of bone black, one of pulverized graphite, with sufficient water to form a creamy paste. 2. In what oil or acid graphite is soluble to greatest extent? A. There is no solvent for plumbago.

(986) J. G. — For fire proofing wood make a solution of 27 parts sulphate of zinc, 11 parts potash, 22 of alum, 11 parts manganic oxide in warm water, to which add 11 parts of sulphuric acid, gradually. Soak the wood for three hours in the warm solution and dry in the air.

(987) B. W. I.—Carry the water line, 4 in. in a 3 ft. boiler, 5 in. in a 4 ft. boiler, 6 in. in a 5 ft. boiler, and 7 in. in a 6 ft. boiler, above the top of the tubes at the front. Back end of boiler should pitch down from ¼ to 2 inches,

(988) E. F. C.—Pure water or rain water dissolves iron in boilers faster than waters containing lime or magnesia, the carbonates being the best preservatives. Rain water sometimes contains acids in a very slight degree, derived from smoke and soot upon roofs of buildings or from the smoke of chimneys.

(989) R. L.—Uranus passed its perihelion in 1883. Its next will occur in 1966. Distance from the sun at perihelion about 1,681,864,000 miles. Neptune passed its perihelion in 1884. Its next perihelion will occur in 2048. Distance from the sun at perihelion about 2,755,207,000 miles. The specimen sent is gneiss, containing quartz, hornblende, and pyrites, of no value.

(990) M. L. asks (1) how to erase a stain out of a wall, which was caused by blisters having been sent forth at that spot only, which were filled with dirty water. I have touched it up, but after ten days the blisters were reproduced, then I used shellac, but without any effect. A. From your description it would appear that there is a permanent source of trouble in or back of the wall. If so, the blistering cannot well be prevented except by removing the original trouble. It may be due to lumps of unslaked lime in the mortar used in plastering the wall. These may have to be cut out and the holes replastered. 2. Which is the best oil and how much of it should I use to oil a brownstone front 20 feet wide by 4 stories high, and how many coats should I give it? A. Give two coats of boiled oil. The quantity used will depend entirely on the stone. Try a small portion of it to determine the amount absorbed. 3. How to make gold fluid so that the bronze will not turn green in the bottles? A. Copal varnish is the proper vehicle. It is best not to mix it with the bronze powder until you are ready to apply it.

(991) M. H. S. asks for a preparation which will render paper—ordinary straw—impervious to water, when mixed either with the pulp in its manufacture or coated with it after its manufacture. A. Mix the pulp with glue containing bichromate of potash equal to ten per cent of the weight of dry glue used. Conduct operations as much in the dark or in an obscure place as possible, and afterward expose the paper to the light. This will to some extent effect your purpose. Or dry the paper as thoroughly as possible and dip it in hot paraffin. According to the texture of the paper, these methods of treatment will affect a greater or less depth of its material.

(992) P. N. writes: Will you advise us whether limestone that will produce a fine quality of white lime can be used for making a cement that would be of any commercial value? A. Probably it is not specially adapted to the purpose. By proper admixture with clay or ground slag a species of Portland cement might be made from it. 2. Our boiler is fed from a well 50 feet deep in solid rock. On the boiler being cleaned, if the sediment taken from it is allowed to stand a few minutes exposed to the air, it becomes quite firm and hard. Do you think these rocks would make a cement? A. It is impossible to say. The mere hardening in the air tells nothing in your case. 3. How is hydraulic cement made? A. By burning the proper limestone in kilns, crushing, and grinding.

(993) W. A. B. writes: I have a fruit drier revolving within a chamber, which necessarily becomes very hot and causes the journals to heat, thereby causing much loss of time. Will you please to answer through the columns of your paper, if you know of any lubricant which might be used and which would not evaporate in the chamber, the temperature being about 260°? A. Use heavy cylinder oil, or tallow, arranged to feed in by a gravity sight feed lubricator. Or use best quality of graphite mixed with tallow.

TO INVENTORS.

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June 18, 1889,

AND EACH BEARING THAT DATE.

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