RECENTLY PATENTED INVENTIONS.

Engineering.

PROPELLER.—William M. Tucker, Nelsonpoint, Cal. According to this improvement a number of propeller wheels are arranged on a shaft extended longitudinally through a chamber along the keel of a vessel, the shaft being supported by bars having their ends removably engaged in recesses in the side walls of the chamber. The propeller wheels do not project below the bottom of the vessel, and are not liable to be raised out of the water when the vessel rides large waves, so that there is little danger of breaking the shaft. The improvement is designed to give a higher rate of speed without any increased consumption of coal.

STEAM FITTING.—Augustus Eichhorn, Orange, N. J. This invention relates to fittings with interior channels for the water of condensation along the side of the pipe, out of contact with the steam, and provides a curved fitting having two openings, the upper portion on the interior side of its outer portion having longitudinal channels running nearly to the center of the fitting, while on the interior side of the inner portion are curved transverse channels leading to the longitudinal channels. The drip water is thus led down the interior side of the outer portion of the fitting, and is led easily to the discharge or lower end of the fitting. The invention is exclusively adapted to fittings in which a single pipe is used to bring the steam to the radiator and carry off the water of condensation.

STEAM ENGINE.—James Barton, Clearwater, Montana (principal owner, Hiram S. Blanchard, Quartermaster General of Montana, Helena, Mont.) This is a duplex engine, with two cylinders side by side, whose piston rods are connected to a common crank shaft. It has no dead center, and it has rotary valves which cut off and cut in the steam so that a volume of one full port will always be exerted on a piston. The valves and cranks are so arranged that the full power of the steam is applied when the crank is on the quarter, and there is no steam pressure exerted and energy lost when a crank is on the center. The governor is connected to the steam controlling valves in such a way that the steam supply is very nicely and automatically regulated, and is entirely shut off in case anything breaks, thus stopping the engine. The reversing mechanism is very simple.

Railway Appliances.

AIR BRAKE COUPLING.—William A. and Benjamin S. H. Harris, Greenville, S. C. This is an improvement on a formerly patented invention of the same inventor, and relates especially to means for operating shifting regulating devices, and so setting them that the valve of the coupling on the end of the car nearest the engine will be held open if cars are broken from the train, so the brakes will be set on the broken off cars. According to the present invention, the shifting regulating devices are operated by air pressure, the valves being controlled by a positively operating device, which operates equally well whether the train be on a level or ascending or descending a grade, and irrespective of the speed of the train.

CAR COUPLING.—Junius L. Pledger, Pelham, Ala. This invention relates to an automatic coupling in which a pivoted link is adapted to couple with another similar coupling, the uncoupling being effected from either car or from the side of the cars. In a slot of the drawhead is a rearwardly sloped latch block, a tripping dog being pivoted in the slot, while opposite the latch block is pivoted an elongated slotted link, a spring pressing the link toward the drawhead. The device is designed to be of very simple, inexpensive construction.

ELASTIC BED PLATE FOR RAILS.—Paul Knoch, Adlershof, Germany. This invention provides a supporting plate made of felt or similar material, but prepared in a particular manner at its upper surface by impregnating with a rubber compound and vulcanizing, so that an upper layer will be hard enough to support the rail without being cut by the rail's edges. The weight of the rail is evenly distributed on the whole surface of the felt support, which is sufficiently hardened by impregnation with suitable substances.

NUT LOCK.—Stephen A Eisele, San Antonio, Fla. This device is adapted for use in securing railway rails in position and for other purposes, the invention providing a clasp plate having near its ends openings for bolts, and having slits leading from the openings and forming tongues. A locking plate is fitted at one edge to the seat of the clasp plate and has its other edge sprung into engagement with a spring portion of the clasp plate.

CATTLE GUARD.—Walter C. Halley, Halley, Ark. To prevent the passage of cattle along the railway from one field to another, this inventor has devised a guard consisting of a pivoted gate mounted at one side of the track, the gate tending to swing transversely across the track, and being moved into such position when an animal steps upon a platform at one side. The gate is thus held closed until the animal steps off the platform, and when the gate closes a cartridge is exploded to frighten the animal away.

Mechanical.

PRINTING PRESS FEED.—Charles S. Sinclair, Cincinnati, O. This invention provides an attachment applicable to the feed table of any printing press, by which the sheets will be picked up from the pile and automatically placed on carriers to be delivered to a take-up mechanism. The invention also provides means whereby sheets to be printed, bags or other articles are placed one on the other, and the uppermost sheets are automatically carried to the position to be engaged by the picker member of the feed. The grippers are operated automatically from a suction pump controlled by the driving shaft of the attachment.

CONVERTING MOTION.—Van Rensselaer McCullough and Morgan McCullough, Vernonia, Oregon. This is a machine or device for converting a reciprocating into a rotary motion, and comprises a frame in which is guided a piston having upper and lower spring pawls and opposing rack surfaces, a power shaft carrying a wheel with a toothed segment on which are opposite spurs alternately engaging the pawls to reverse the power shaft. The machine is designed to be very simple and durable, and permits the direction of the rotary motion to be changed at pleasure.

BRICK MACHINE.—Henry B. Whitehead, Memphis, Tenn. This invention relates to machines employing a rotary table and operated by hydraulic pressure, and simplifies the working parts and operation in such manner that the machine may be operated by an unskilled person. The die compresses the clay in the mould until the pressure rises high enough for the extractor to start the finished brick out of its mould, high pressure only being forced into both the pressure cylinder and extractor cylinder, causing an intermittent action of the dies. A high pressure pump operates the brick pressing mechanism and a low pressure pump operates the rotary table and other parts of the machine.

Miscellaneous.

UPRIGHT PIANO.—Justus Diehl, New York City. This invention provides a lower bridge engaging the front faces of the strings above the hammers and an upper bridge secured to the wrest plank and engaging the rear faces of the strings, the upper bridge being in advance of the lower bridge, so that the strings pass obliquely upward from the lower to the upper bridge, while a sounding board extends upwardly beyond the bridges, the upper end of the sounding board extending behind the wrest plank and being secured independently of it. The improvement is designed to greatly increase the resonant qualities of the instrument, especially when the upper or treble strings are sounded by the hammers.

PROTRACTOR.—Walter W. Pennington, Butte, Montana. This is an improved instrument for use on maps, drawings, etc., and is arranged for the usual adjustment in proper position on the drawing or map relative to the meridian. A blade is pivoted in the center of the body of the protractor, and a pivoted vernier arm is adjustably held on the blade.

UMBRELLA.—Henry Plack, Jr., and Charles H. Pimlott, Johnstown, Pa. This umbrella has auxiliary braces, designed to render it stormproof, and the runners in the tubular stock, connected with the regular and auxiliary braces, are spring-pressed, to make the umbrella self-opening when the lower runner is released from the catch which ordinarily holds the umbrella closed. The springs in the tubular handle are made of one piece and separated by the crossbar of the auxiliary runner.

BROILER.—Alfred Herz, New York City. This device, which may also be used as a toaster, is of simple and durable construction, and adapted to be readily placed in position over the burning fuel in a kitchen stove, carrying off all fumes caused by the broiling, and without danger of deadening the fire. It is made with a casing which extends into the firebox, and is supported from the top of the stove by horizontal flanges, the burning fuel having free access to the bottom and sides of the casing, in which is a reversible grate, while the stove hole is completely closed, so that the draught of the stove is not interfered with. With this improvement meat may be broiled on both sides without the operator removing the casing or having to turn over the meat with a fork.

DOSE-MEASURING BOTTLE.—Alfred A. Law, New York City. This bottle has an inner downwardly extending bend in its neck and an outer bend extending up to the mouth, the bends being at right angles to each other and forming a pocket for the retention of liquid when the bottle is held upright. With this bottle a portion or dose may be divided off from the main contents of the bottle, the dose being delivered from the pocket in the neck by tipping the bottle only slightly.

PUZZLE.—William F. Moore, Plainfield, N. J. This puzzle represents a Norman castle surrounded by a moat over which is a stone bridge, and marbles or other rolling objects represent knights who are to storm the castle, the marbles or balls being shot up inclined planes to cause them to strike a wall and enter the castle, which is considered captured when all the balls are lodged in it.

Designs.

BACK FOR BRUSHES.—Charles D. Graff, New York City. The leading feature of this design is a raised garland of flowers, surrounded by a rococo border in relief, with plain raised surfaces between the border and garland, and the rococo border being extended along the handle portion, while at its lower end is a roselike figure.

SASH WEIGHT.—Robert R. Bren, 18 Cliff Street, New York City. This is a self-adjusting, plumb sash weight, in which the eye at one side is a flared groove ending in a flared recess, while in the opposite side a deep flared recess receives the knot, the two recesses forming a smooth eye. With this eye the weight adjusts itself perfectly plumb as soon as it reaches its place, the smoothness of the eye and the flared groove preventing all possibility of the cord being cut by either the eye or the pulley.

NOTE.—Copies of any of the above patents will be furnished by Munn & Co. for 10 cents each. Please send name of the patentee, title of invention, and date of this paper.

NEW BOOKS AND PUBLICATIONS.

ANIMAL SYMBOLISM IN ECCLESIASTICAL ARCHITECTURE. By E. P. Evans. New York: Henry Holt & Company. 1896 Pp. 375. 12mo. Price $2 net.

This is an interesting book, bringing to light a vast amount of curious, out of the way information and will prove a genuine mine for the antiquary. The author's aim has been to explain the meaning of real and fabulous animals which have been put to decorative use in ecclesiastical architecture and to, as far as possible, account for their admittance to sacred edifices. The author has accomplished his task with rare success, and it is a pity that such a book, which is evidently a labor of love, must necessarily have a limited audience. The mechanical excellence of the book is on a par with the text. It is beautifully printed on deckle-edged paper and is bound in buckram. There is a bibliography and seventy-eight illustrations and an excellent topical index.

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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.

Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.

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.

(7032) D. R. M. says: Will you kindly give me a formula for making a good developer for plates and films, which after using can be put in a bottle and used over and over until exhausted; also a formula for making a solution to soak films in before developing, so they will not curl up. A. Soak films in water containing a small percentage of glycerine. Combined Hydrokinone and Eikonogen Developer:

Sulphite of soda	300 gr.
Carbonate of soda	200 "
Hydrate of soda	30 "
Bromide of soda	5 "
Hydrokinone	20 "
Eikonogen	30 "
Water	10 oz.

This developer possesses the rapid action of the eikonogen combined with the sustaining energy of the hydrokinone, and keeps indefinitely.

(7033) F. C. W. says: Can you give me a receipt for a preparation that will actually kill a corn on my foot? I mean something that is not injurious to me, only to the corn. By answering the above through your Notes and Queries you will not only relieve me, but many others.

A. Salicylic acid	30 grn.
Cannabis Indica (Indian hemp)	5 "
Castor oil	½ drm.
Collodion	½ oz.

The result is a clear light green solution. There should be no difficulty in its preparation. To prevent it from evaporating, keep the solution in a stoppered bottle. Be sure and use the Indian hemp, and not the American article; the latter is not easily soluble. Mix. Apply morning and evening for four days. Then soak the feet in warm water.

(7034) D. W. P. asks an explanation of the differences between a foot square, a square foot and a cubic foot or cube foot. A. A foot square is a surface only of one foot in length on each of its four sides. A square foot is also a measure of surface only, and may be of any figure, provided it contains the amount of surface equal to one square foot or 144 square inches. When the surface is an extended one, the term square foot is used. A cubic foot, cube foot and cubic feet are the terms used for the volume of a body, and signify depth as well as surface; 1728 cubic inches equal 1 cubic foot.

(7035) W. F. C. asks: In making the induction coil described in "Experimental Science," could not single cotton covered wire be used in place of the naked? Would the coil be powerful enough to operate a Tesla disruptive coil? Are better X ray effects obtained by the use of a Tesla disruptive coil? Where can I obtain the works of Tesla? A. For a description, with dimensions and full illustrations, of a Tesla-Houston coil, especially adapted for X ray work, see our SUPPLEMENT, No. 1087. Covered wire can be used in an induction coil in place of uncovered. The Tesla coil is considered especially adapted for X ray experiments. We can supply "The Inventions, Researches and Writings of Nikola Tesla." Edited by Martin. 8vo, cloth; price $4 by mail. Also, Tesla's "Experiments with Alternate Currents of High Potential and High Frequency." Price $1 by mail.

(7036) P. V. B. writes: 1. I am making a Wimshurst machine described in a former SUPPLEMENT of yours. In making the condensers or Leyden jars is it advisable to place loose tinfoil inside, instead of coating with foil? A. It is as well to use both; the inside of the jar should be coated. 2. I find common green window glass responds to the test for plates? Is it advisable to use them as plates? A. The trouble with the glass mentioned is its variation in thickness and its liability to be curved or bent. Otherwise it would be as good as any.

(7037) W. F. W. asks: 1. I have a six cell, bichromate, plunge battery, common form, zinc plate between two carbons. That part of the zinc which dips in the liquid is 4¼ inches long and 2⅛ inches wide. Will this battery operate a three inch spark induction coil and give perfectly satisfactory results? A. It is quite sufficient. 2. Should there be any difference in the construction of such a coil intended to be operated by a battery and one intended to be run by a current from a 110 volt dynamo? A. Yes. Higher counter E.M.F. is needed for the 110 volt potential in order to protect the coil from injury. 3. When ordinary illuminating gas, commonly called water gas, is used as a substitute for hydrogen in producing the oxyhydrogen lime light for projection, is the light just as brilliant as when pure hydrogen is used? If not so powerful, please mention its comparative strength. A. Hydrogen is more powerful, it is said, but we have no exact records.

(7038) C. F. H. says: Please say in your next issue of SCIENTIFIC AMERICAN whether any fertilizer for plants or vegetables can be used on the head for starting hair growing. Whether it has been used or is dangerous to the skin. A. We would not advise you to use plant fertilizers on the head. We refer you to formulas for hair tonics in SCIENTIFIC AMERICAN SUPPLEMENT, No. 1071, price 10 cents by mail.

(7039) J. C. P. says: Can you refer to an article anywhere on the subject of the weather glass? I wish to know how these old-fashioned weather glasses containing a liquid that clouds or solidifies under certain atmospheric conditions work.

A. Camphor	2½ drm.
Alcohol	11 "
Water	9 "
Saltpeter	38 grn.
Sal ammoniac	38 "

Dissolve the camphor in the alcohol and the salts in the water and mix the solutions together. Pour in test tubes, cover with wax after corking and make a hole through the cork with a red hot needle, or draw out the tube until only a pin hole remains. Indications of.—1. When the camphor, etc., appears soft and powdery, and almost filling the tube, rain with south or southwest winds may be expected; when crystalline, north, northeast or northwest winds, with fine weather, may be expected; when a portion crystallizes on one side of the tube, wind may be expected from that direction. I had one for several years, and could foretell the weather for a day beforehand with considerable certainty by means of it, even apart from the barometer.—W. J. Lancaster, in English Mechanic. 2. The following indications are from another source: Fine Weather.—The substance remains entirely at bottom of tube and the liquid perfectly clear. Coming Rain.—Substance will rise gradually, liquid will be very clear, with a small star in motion. A Coming Storm or Very High Wind.—Substance partly at top of tube, and be of a leaflike form, liquid very heavy and in a fermenting state. These effects are noticeable twenty-four hours before the change sets in. In Winter.—Generally the substance lies higher in the tube. Snow or White Frost.—Substance very white and small stars in motion. Summer Weather.—The substance will lie quite low. The substance will lie closer to the tube on the opposite side to the quarter from which the storm is coming. We do not consider the instrument anything more than a scientific toy.

(7040) C. Mooney, Secretary Hong-Kong Hotel Company, Ltd., Hong-Kong, China, writes: Will you be kind enough to inform me if you know of any patent bottle stopper contrivance which, while allowing the liquor to be poured from a bottle, will prevent any from being poured into it? We want something of this sort to prevent our bar servants from watering the whisky, etc., and if you can give me any information as to where I can procure such an article, I shall be greatly obliged. A. There have been many patented improvements designed to meet this want, but we cannot undertake to say what manufacturers are putting out a bottle best designed to meet the wants of our correspondent.

(7041) E. H. S. says: 1. Will you kindly give me a formula for a good ink-erasing solution? A. Ink Eraser.—1. Mix equal parts of oxalic and tartaric acids in powder. When to be used, dissolve a little in water. It is poisonous. 2. Oxalic acid mixed with citric acid may be used. 3. Equal parts of cream of tartar and citric acid in solution with water. 2. Also the receipt for yellow and blue lacquer, such as used on fine optical instruments. A. Lacquer.—Ground turmeric as sold, 1 ounce; saffron and Spanish annatto, each 2 drachms; highly rectified alcohol, 1 pint. Place them in a moderate heat, shaking occasionally for several days; then add 3 ounces good seed lac, roughly powdered; shake occasionally until the lac is dissolved. If a deep orange lacquer is required, increase the quantity of annatto; if a bright yellow, decrease it. Lay it on with a brush (warm) as you would pain One or more coats, if necessary. Avoid using too much seed lac, as it has a tendency to prevent the lacquer lying evenly. For a blue lac-

quer add Prussian blue or aniline blue to a thin white shellac varnish.

(7042) E. S. asks for a receipt for cement or paste which will be invisible, for transferring lithographs on to glass without showing any blemish. A. First coat the glass with dammar varnish or else with Canada balsam mixed with an equal volume of oil of turpentine, and let it dry until it is very sticky, which takes half a day or more. The printed paper to be transferred should be well soaked in soft water and carefully laid upon the prepared glass, after removing surplus water with blotting paper, and pressed upon it so that no air bubbles or drops of water are seen underneath. This should dry a whole day before it is touched; then with wetted fingers begin to rub off the paper at the back. If this be skillfully done, almost the whole of the paper can be removed, leaving simply the ink upon the varnish. When the paper has been removed, another coat of varnish will serve to make the whole more transparent.

(7043) W. C. P. says: 1. Will you please advise me as to the best and safest way of removing the top of a carboy? I was thinking of taking a narrow and thin piece of wood just long enough to go around the carboy and fasten it by means of a wire at the proper height as a guide for my glass cutter, then cut it around with the cutter, then use a hot iron or a cord soaked in alcohol. If there is a better way of doing it, please advise me. A. A method consists in the use of what in German is called sprengkohle—cracking coal. The sprengkohle is made of finely ground limewood charcoal. The coal powder is made by means of sufficient gum tragacanth and water into a dough or paste, out of which small cylinders of the size of a pencil are made by rolling between two small pieces of board. Such a cylinder of sprengkohle, ignited at one end, glows slowly. Such sprengkohle may be bought at stores for chemical and physical supplies. It is used as follows: Put a drop of water on the spot where the crack is to begin. Make a short incision with a three-edged file. Wipe the water away. Touch the incision with the glowing sprengkohle, blowing on it if required. After a few seconds the glass will crack for a length of ¼ to 1 inch. If now you move slowly the sprengkohle, the crack follows it. 2. Is there any place I could get a glass vessel about the size of a carboy and the same shape after the top is removed? A. We do not know where you can get such a vessel as you describe.

(7044) M. J. S. says: Will you please explain the formula for making gelatin or glass cards in your Notes and Queries? A. Swell gelatin in cold water for several hours, pouring off the excess. Pour it hot on a plate of glass (previously warmed with steam and slightly greased) fitted in a metallic frame whose edges are just as high as the wafer should be thick. Lay on the surface a second glass plate, also hot and greased, so as to touch every point of the gelatin while resting on the edges of the frame. By its pressure the thin cake is rendered uniform. When the glass plates have cooled, the gelatin will be solid and may be removed. It can then be cut into disks by punches, etc. It can, of course, be colored by adding suitable coloring material, aniline colors for instance.

(7045) W. H. M. asks: 1. Will the Edison-Lalande battery type Q run a two or three candle power lamp? A A three candle power lamp needs 5·5 to 7 volts E.M.F. For this E.M.F. about ten cells in series would be needed. The resistance of the Q battery is 0·070 ohm. As the lamp has 3·6 to 4·5 ohms resistance and needs a current of 1 to 1·5 amperes, twelve cells in series should answer for the work. 2. About what voltage are the different types of Edison-Lalande battery? A. Mean working E.M.F. 0·667 per couple. As type X includes two couples its E.M.F. is put at 1·333. 3. Would 4 cells dry battery giving 1·5 volts each run the same lamp? A. No; the battery would become polarized too quickly.

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November 17, 1896,

AND EACH BEARING THAT DATE.

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