RECENTLY PATENTED INVENTIONS. Railway Appliances.

CAR SEAL.—Benjamin J. Sturtevant, St. Paul, Minn. This seal is formed of a flexible shackle to which is detachably secured a hook having a spring-pressed arm, a locket made of earthenware, cement, glass, or similar substance, having on one side a shoulder to engage the arm of the hook. The device affords an inexpensive seal, which must necessarily be broken if the door is opened, thus indicating that the car has been tampered with, while it may easily be applied and removed without the use of special tools, but cannot be opened except by breaking the shackle of the locket.

CAR COUPLING.—Francis A. Johnson, Black Rock, Ark. The drawhead of this coupler has a transverse partition in the front end of its central opening, spring-pressed plates sliding transversely in the rear of the partition, pivoted arms being connected with the plates and a cam actuating the arms to open the plates, while rods are pivotally connected with an arm on the shaft of the cam, hooks engaging the rods to lock them in place. The device is an improvement on a former patented invention of the same inventor, and the essential working parts are inclosed in the drawhead, to be fully protected from rain, snow, ice, dirt, etc., thus insuring the proper working of the device at all times.

CAR COUPLING. — Oliver M. Brimingham, Victoria, Texas. This invention provides a draw head to which is attached a guiding block in which works a vertically movable sliding frame, the pin being connected with the frame and having a guiding tongue working in the guiding block. The improvement affords means for elevating, holding and releasing the coupling pin, while the drawhead is vertically adjustable in a convenient manner either before, during, or after coupling. The device is designed to be arranged to be operated from either side of the car. [For information relative to this patent address R. Brackin, Inez. Texas.]

DRILL. — Wanton C. Barber, Villisca, Iowa. This is a portable drill of simple and durabl construction, especially adapted for use in drilling railroad rails, while capable of satisfactory use on many portions of a locomotive or upon stationary engines. The bed has guides and a shifting lever, a frame sliding on the bed holding a mandrel carrying a drill, while a driving mechanism and feed device are connected with the drill mandrel. Arms extending from the bed have hooks adapted to clamp the tread of a rail, when the web of the rail is to be drilled, and the frame is fed forward by manipulating a lever, and when the drill is in operation it is automatically fed forward while being revolved by the driving mechanism.

Mechanical Appliances.

NAIL MACHINE. - Joseph S. Blackburn and Frank G. Bartholomew, Salem, Ohio. This machine has the usual fixed anvil or die, on which operates the hammer fitted to slide in the usual manner in the frame, but combined with the movable hammer is a spring-pressed arm rivoted on the machine and extending at its free end to the hammer, the latter actuating the arm. With this improvement, after the nail is formed with a head and cut by the knives, it is readily broken off the wire and discharged.

CORE SAW. - Edwin B. Roberts, Emporia, Kansas. The body of this saw consists of a cylinder adapted to be clamped to the head of a vertical shaft, the inner faces of the teeth being flush with the interior wall of the body, and each tooth being cut away beneath its gouge-like point from its outer face inward, an inner wall being formed to prevent chips entering the interior of the body, while there are spiral ribs or bands on the outer side of the body flush with the outer sides of the teeth, the upper or working edge of the body being beveled between the teeth. The saw is designed to be driven rapidly for any desired distance into the wood without clogging, the chips passing through recesses of the teeth and head and the spiral bands carrying them to the bottom of the saw.

ORE CRUSHING MILL - William H. Coward, Bath, England. This invention provides improvements in a formerly patented mill in which an edge runner rolls within a revolving drum furnished with cups, hy which the material is repeatedly brought under the action of the edge runner, the efficiency of the mill being increased by an improved mode of mounting the drum, more effectually exposing the crushed material to the winnowing action of the air current. The draught arrangement is such that sieves may be dispensed with over the exhaust aperture. the sieves being liable to become clogged by light particles in operating on micaceous ores.

Agricultural.

CULTIVATOR. - Adam F. Rinehart. near Uniopolis, Auglaize County, Ohio. Pivotally connected at its rear end with the main frame of this cultivator is a swinging frame, with which is connected a lever imparting a lateral movement to the front portion of the frame, while a blade or tooth beam also has a pivotal connection with the swinging frame. Various other novel features are embodied in the invention, forming an implement of simple, strong and inexpensive construction, and of light draught, which can be managed to plow to a uniform depth. The cultivator teeth or blades are under the complete control of the driver, and may be adjusted both vertically and laterally as occasion may demand.

CULTIVATOR.—Dillyard Hicks, Waldo, Fla. This implement is adapted to have attached thereto plows of any make, such as scooters, shovels, sweeps etc., and is designed to be economically manufactured. Two parallel cross beams extend diagonally across and are secured to the draught beam. one of them carrying cultivator blades, while from the rear one curved braces project forwardly and downwardly, engaging at their lower ends the supports of the cultivator blades. Vertical brace bars are provided whereby the cross beams are sustained against lateral

strain and the main connections between the cross beams are preserved against undue tension

HAY LOADER. - Henry Briscoe, Morrisonville, Ill. This machine, besides the carriage and framing, has an elevator with a rake frame held in inclined position, so that as the machine moves forward the teeth rake up the hav, which is delivered into an upper trough, from which it is discharged by means of a transverse carrier into a wagon moving alongside of the machine. The rake teeth may be conveniently raised or lowered, and the carrier has a hinged outer section which can be readily adjusted as desired.

Miscellaneous.

GALVANIC BATTERY.—Fernaud Gendron, Bordeaux, France. This is an improved primary battery, so formed that the output of the battery is regulated automatically according to the work demanded of it, to the greatest amount of work the battery will do. It consists of a series of cells containing exciting and depolarizing liquids in combination with an electric motor actuated by a portion of the battery elements pumps driven by the motor producing a circulation through the cells, while there is an automatic regulator of the number of cells in use. The battery is preferably formed in three tiers, comprising six tanks for liquids and twenty-four elements, the nature of the elements having no bearing on the invention provided the exciting liquid and the depolarizing liquid be separated from one another in the cells.

Cash Recorder. — Milo L. Morgan, New York City. This is a device for use in connection with a cash drawer and the top of a table or desk, a tape from a roll of paper having a section exposed for writing upon each time the drawer is opened, so that an entry may be made thereon each time a sale is effected. The paper is held at all times stretched smooth in position for use, there being a rigid connection between a trip lever actuated by the drawer and the feed wheel, the device affording the means of readily making up accounts at the end of a business day.

SPECTACLE CASE FASTENING. -Fredric W. Steadley, Carthage, Mo. This device is formed with a plate having a central aperture in which is swiveled an eye with elongated bearings in which turns and slides the rigid member of a safety pin, for fastening the device to the clothing. The fastening is designed to readily adjust itself to the body of the wearer when bending over, stooping, etc., the securing pin having a free movement relative to the case.

CAN COVER. - Orson D. Phillips and George H. Littlewood, Lisle, N. Y. This improvement provides a locking device, especially adapted for use with milk cans, etc., and adapted as a fixture to the can body, which may be engaged with the lid to quickly and conveniently clamp the body of the lid to the body of the can, and hold them locked together. The device is preferably made of spring wire, bent in essentially circular shape, but with a cail, eyes, and loops, with which is connected a link, on which a lock may be placed if desired, the link serving as a lever to draw the ends of the device together and as a bolt to maintain the ends in such position.

LOAD BINDER. — Harry M. Bradley, Canon City, Col. This device consists of a bar having teeth on its upper and lower edges and provided at one end with means for attaching a cord or wire thereto, a slotted lever receiving the ratchet bar being provided with a bolt extending through the slot to engage one set of teeth of the bar and a pawl engaging the other set of teeth, while a hook is provided to receive a cord, wire, or cable. The device is designed to afford a simple, cheap, and efficient means by which a load of any kind may be tightly bound, while it is also well adapted for use as a wire tightener, post puller, lifting jack or wagon jack, etc.

VEHICLE SPRING.—Thomas S. King, Cincinnati, Ohio. This spring is made from a single strip of metal, bent to the desired shape, and joined at its ends in the flat portion of the spring by riveting or other suitable fastening. The upper and lower sections are integral, but elongated bends at the end portions form rounded ends, the drawn-in portions of which come together when the spring is much compres whereby the spring is shortened and stiffened, although when a light load is on, the entire length of the sections and the end portions are in full play.

STOVE PIPE DRUM. - Moses P. Farnham, Germantown, Cal. This is an end-closed stove or furnace pipe drum having upright partitions of different heights establishing flues between them, with a central through draught pipe having upper and lower draught openings and an intermediate damper, while the lower head of the drum has a soot or ash clearance hole exterior of one side of the through draught pipe. and a door is arranged to form a clearance outlet for two adjacent flues. The invention is an improvement on a former patented invention of the same inventor. the drum being adapted to facilitate various heating

GAME BOARD.—Jacob M. Henriquez. Coro, Venezuela. This is a board adapted for playing a variety of games. The base of the board is divided into compartments, and there is in it a tilting table which actuates a rocking slide board, there being a vertical tubular conduit on the base, with branch receiving pipes at its upper end and branch delivery pipes at its lower end, and a central vertical diaphragm in the conduit at the junction of the delivery pipes. Balls dropped through the upper branch pipes are designed to tip the tilting table and dislodge a counter from the slide board.

Toy Puzzle. — Hans I. F. Schulze, New York City. This toy is designed to exemplify the problem of standing an egg on end, and consists of an egg-like hollow body formed in two sections, its chamber divided into two compartments by a horizontal partition, there being another apertured horizonal partition in the lower chamber, and the body containing a movable weight. By properly manipulating the toy the weight or ball may be made to travel down inside to

the pointed lower end, when the egg-like body will be balanced upon this end.

Note .- Copies of any of the above patents be will furnished by Munn & Co., for 25 cents each. Please send name of the patentee, title of invention and date

NEW BOOKS AND PUBLICATIONS.

THE LUMBERMAN'S HANDBOOK OF IN-SPECTION AND GRADING. By W. R. Judson. Chicago: The Lumberman. 1891. Pp. 263.

This excellent work covers the ground of quality and inspection of lumber in different parts of the United States, with many useful notes on dimensions, cutting up of lumber, and other allied topics. The book repre sents the fourth edition. It will be very acceptable to all those concerned with wood and lumber.

THE PHOSPHATES OF AMERICA. By Francis Wyatt, Ph.D. Second Edition. New York: The Scientific Publishing Co. 1891. Pp. 187. Illustrated. Price \$4.

Much interest has been created in the subject of phosphates by the recent discoveries of the phosphate beds of Florida. Dr. Wyatt, in this very elegantly made volume, treats of phosphates from the mine to the farm Their extraction, chemical treatment, analysis and the allied industries receive due consideration. The illus trations, many by process from original photographs, are exceedingly attractive and add greatly to the value of the book. Curiously enough, although it is the second edition, it is destitute of a table of contents. It has however, an excellent index.

Modern American Rifles. By A. C. Gould ("Ralph Greenwood"). Illustrated. Boston: Bradlee Whidden. 1892. Pp. xii, 338. Price \$2.

This excellent book goes over the whole range of rifle practice, hunting and target practice, both civilian match and military shooting. The different forms of rifle sights, the general construction of the piece, the rifling, projectiles, cartridges, and ammunition, are all elaborately treated with many illustrations. Even to those who use the arm but little, the practical discussion of its many points possesses much interest, and we believe that this work will be widely appreciated.

SCIENTIFIC AMERICAN

BUILDING EDITION.

FEBRUARY NUMBER.-(No. 76.)

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- 1. Elegant plate in colors of a cottege at Short Hills, N. J. Estimated cost, \$5,000. Perspective elevation, floor plans, etc.
- 2. Colored plate illustrating a cottage 'at Great Diamond Island, Me., erected at a cost of \$900, complete. Floor plans, elevations, etc.
- A residence at Portland, Me. Cost, \$11,000 complete in every respect. Floor plans, perspective eleva-
- The very attractive residence of E. T. Burrows, Esq. at Portland, Me. Cost, \$9,500 complete. Perspective elevation, floor plans, etc.
- dwelling at Augusta, Me., erected at a cost of \$3,200 complete. Floor plans and perspective elevation.
- A handsome dwelling at Carthage, Ill., designed in the style of modern Romanesque. Cost, \$8,000. Perspective and floor plans.
- 7. A residence colonial in treatment and recently erected at Belle Haven, Greenwich, Conn., for Mr. Chas. A. Moore, at a cost of \$14,000 complete. Two perspective elevations, floor plans, etc.
- colonial residence recently erected at Brookline Mass., at a cost of \$18,000 complete. Wm. T. Sears, architect, Boston, Mass. Perspective elevation and floor plans.
- 9. An architect's home, with sketches showing the hall, drawing room, terrace, entrance front, dining room, together with ground plan. A thoroughly cozy, comfortable, and complete
- 10. Sketch for a suburban chapel. Submitted by O. M. Hokanson in the St. Paul Architectural Sketch
- Club competition. 11. View of the Washington' Street tunnel at Chicago.
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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 endeavorto reply to all either by letter or in this department, each must take his turn.

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Minerals sent for examination should be distinctly marked or labeled.

(3987) C. W. L. writes: In your issue of December 26 you give a translation of a method of cutting a five-pointed star, taken from L'Illustration. There is an error in the method as indicated which will result in a star deficient in a portion of one point. The cutting line should not run to point E, as there given, but to point, B, falling on line C E. The greatest economy of paper will result when the paper has the proportion of about one to two, and the point, B, is made to be on the upper edge, A, the other conditions remaining as before.

(3988) L. A. J. asks: Two bullets of same weight, fired with the same charge of powder out of the same rifle, and under the same conditions; one from, and in the direction of, a train moving at the rate of 40 miles an hour; the other from the rifle when stationary: 1. Will either bullet be carried further than the other? A. Yes. 2. If so, which one? A. The one from moving car.

(3989) H. M. C. asks: 1. Which one of the following batteries is the best for running small motors-the Edison-Lalande, the Fuller, or the bichromate plunge? Is there any one better than these? A. Where compactness and portability are required, the bichromate battery is probably the best. 2. How many cells would be required to run a six volt one-sixth horse power motor to its full capacity? A. Four to six good sized cells. 3. About how fast would such a motor drive a sixteen foot boat, rather lightly built? What would be the proper size propeller? A. Probably three vo four miles per hour. 4. Is there any action in the Fuller battery when the circuit is open? A. Practically

(3990) C. A. Z. says: 1. I have noticed that different coins have not the same initials inscribed on them. Some have the letter O. others the letters C C, and again the letters S S are found on others. Could you tell me to what cities these letters refer? A. The coinage of the Philadelphia mint has no designating letter. O is New Orleans mint; C C, Carson City mint; S, San Francisco; C and D on old coinage is Charlotte and Dahloneg mint, now discontinued. 2. Could you tell me the value of a cent of 1802 and of a dollar of 1804? Also, how many dollars were coined inder 20 or 30 lb. pressure. This will harden the teeth cider vinegar, and heat to a boil. Then rinse them

(3991) G. M. W. says: 1. I want a metal that I can heat mercury or quicksilver in, to about 500° or 600° F., that the mercury will not injure or that will not injure the mercury. Will steel do? Or is there any way of preparing steel so it will do? A. Steel or wrought iron tubing is the best to hold mercury, requiring no preparation. There is no reaction by either metal on the other. 2. How much pressure would a fine about three-eighths inch inside and five-eighths inch outside stand before it would collapse? The flue to be made of steel or whatever other metal you advise using. I want one that will standthe greatest possible pressure. A. Three-eighths inch gas pipe if properly welded, is good for pressures up to 3,000 pounds to the square inch, and three-eighths inch extra strong is good for 6,000 lb. per square inch. 3. How thick would I require the metal of a cylinder 6 inches diameter inside to be, to stand same pressure? A. Six inch wrought iron pipe should be equal to a work ing pressure of 1,500 lb., and extra strong 6 inch equal to 3,000 lb. For these working pressures, the pipe should be tested to 50 per cent higher pressure. Please tell me how much mercury expands with heat. Say 100 cubic inches at 0° F. How much would there be at 300° F., also at 600° F.? A. One volume of

(3992) B. E. W., Antonio, Kans., writes: I want to make for my own use a four or five inch astronomical telescope, with eyepiece for terrestrial use. Have had over four years' experience as a mechanic on fine and close bench work; have good eyesight and very delicate sense of touch. If you think it possible for me to grind and polish the lens, would ask as follows: 1. Where can I get the roughly ground glass castings for same, and at what price (for achromatic lens)? 2. Where can I get the material and gauges for grinding and polishing, and at what price? 3. Would it be better to buy eyepieces (celestial and terrestrial) turpentine may be used. 2. How are face powders per already mounted in cell, or could I get separate ready fumed? A. Use a few drops of some essential oil, as ground lens and make them? 4. What standard work on the subject could I get that would aid me? A. There are large possibilities for amateurs with patience and perseverance. You can obtain the optical crown and flint glass from W. T. Gregg, optician, 122 Fulton Street, New York, cost about \$2.50 per pound. You must make your own gauges and laps. You can buy eveniecescheaper than to make them. You will find full instructions for grinding and polishing lenses, with the curves and kind of glass for telescope object glasses, illustrated in Scientific American Supplement, Nos. 581, 582, 583. Also illustrations and construction of various eyepieces, in SCIENTIFIC AMERICAN SUPPLE-MENT, No. 399, 10 cents each mailed. Byrne's "Hand Book for the Mechanic and Artisan" contains much information on grinding and polishing lenses. mail, \$5.

(3993) S. E. asks: 1. Can you inform me what the capacity is of the largest air pumps, not fans, in actual operation, and where, and about the size of their cylinders? A. The largest air pumps are the blowing engines of blast furnaces, with cylinders 6 to 8 feet diameter and 10 feet stroke, used in Pennsylvania. 2. Also have we any examples of suspension bridges whose suspending cables pass over more than two any), or has this plan never been agitated? A. The susare other suspension bridges of more than two suspending piers. We do not recall their names. There two piers, if proper trussing is used to prevent undula-

time for the wood to be thoroughly seasoned and set in the bend, would it be inclined to lose the shape or curve if exposed to damp? If so, do you know of any process of rendering the wood damp-proof? A. Bent wood tends to resume its original shape when exposed to damp or becomes wet. The only way to prevent it is to finish and oil or varnish the bent wood, so as to prevent changes in its hygrometric condition.

(3995) J. H. G. asks what to use to wash brass or copper to give it a silver coating. I used to use a wash composed of quicksilver, sulphuric acid and rain water, but have forgotten the proportions. A. The process is to dissolve a small quantity of mercury in a solution of one part nitric acid to four parts water until it is saturated. Pour off the saturated colution, and to an ounce of the solution add a few drops of hydrochloric acid diluted with four parts water until a bright piece of copper is whitened by being dipped. Then dip any article, or rub the solution on it and wash.

(3996) D. R. C. says: I wish to paint the brick walls of a composing room, used for setting type, and also the rough hemlock joists under the roof with some white substance that will not scale off and fall into the type. Please state in the SCIENTIFIC AMBRICAN what composition would be best for this purpose. Would like something not very expensive. A. We can recommend a whitewash made in the pro portion of one-half a bushel of best lime slaked in hot water, eight quests salt dissolved in hot water, 21/2 lb. rice meal boiled to a passe, to which add one-half a pound, white glue previously dissolved and one-half a pound clear whiting. Add the salt brine to the slaked lime and ther the other ingredients. Keep it hot while using. Use a whitewash brush. Woodwork should be thoroughly cleaned from dust before applying this whitewash. It makes a bright surface like paint.

(3997) W. P. asks: How can I harden the tips or points of og wheels, say to a depth of not more than one sixteenth of an inch? Said wheels are about 4 inches in diameter by half inch wide (or thick). The material is crucible cast steel. A. We suggest/placing the gear on a revolving spindle at the proper heat, and to quickly bring a jet of water to bear upon the teeth. Speed should be about 600 revolutions perminate. Have the jethalf an inch diameter, and

in the year 1844? A. Address Superintendent of the Mint, Philadelphia, in regard to value and coinage.

only. Steel should be as low in carbon as is com-thoroughly in clear cold water, and wipe dry with Mint, Philadelphia, in regard to value and coinage. teeth.

> (3998) Reader asks: 1. In what Supple MENTS are the directions for making dynamos, motors, and telephones? A. We refer you to SUPPLEMENT. Nos. 161, 600, 720, 793, for dynamos; to Nos. 641, 759, 767, 783, for motors; and to Nos. 142, 163, 250, for tele phones. 2. What are the formulas (chemical) for cutting copper and zinc? A. Use nitric acid for copper. Sulphuric, hydrochloric or nitric acid will dissolve zinc. 3. Is there any way I can get a catalogue from electrical firms without asking each one directly? A. You might make known your wants by advertising. 4. In wrapping an induction coil 31/2 inch the primary layers are to the secondary as 3: 10. is the ratio for coils increasing an inch each time using wire 18 and 32? A. The E.M.F. of the secondary is to that of the primary as the number of turns in the secondary is to the number of turns in the The advertisement of this book is printed in another primary, while the amperage in the secondary is in inverse proportion to the E.M.F. For an answer to your medical query we advise you to consult a physician.

(3999) J. M. M. asks: How much does a bar of railroad track expand and contract in length, and how much space ought to be between the ends or mercury at zero becomes 10256 at 300° F. and 10313 at | joints? A. Rails vary in length by the extreme temperatures in the United States, about one-quarter of an inch in 20 feet, and for 30 feet rails about 7-16 of an inch, so that rails laid at time of mean temperature in the Northern States should have half the above spaces between the ends; in the Southern States, one-quarter. Rail laid in summer in the Southern States may have an allowance of 1-16 inch in 20 feet rails, and 3-16 inch

> (4000) M. C. A. C. asks: 1. How to keep linoleum bright. A. Wash with equal quantities of milk and water. Once in several months a little , linseed oil or a weak solution of beeswax in spirits of fumed? A. Use a few drops of some essential oil, as bergamot. Keep the powder in an air-tight jar.

> (4001) F. E. W. asks: 1. Of what material are graphite bearings made, so that they require no oil? A. Graphite freed from grit. 2. Which kind of a wind engine (or mill) is the most serviceable-with or without cog gearing? A. Consult our advertising columns for a reply to this query.

> (4002) M. R. asks: Will you please tell me if a common battery of blue vitriol and water, with a copper and zinc, will light a two, three, or four incandescent lamp, and how many cells would it take, and where could I get the lamps, or what kind of a battery does it take? A. A gravity battery is of no use in electric lighting. It is sometimes employed for charging secondary batteries, and the latter are used for operating lamps. The secondary battery is the best for lighting purposes

(4003) F. V. C. asks: 1. Is there any cheapsubstitute for the porous cups that come in batteries? A. Nothing very efficient. Try flower pots with the holes corked up. 2. What kind of batteryis best for a motor? What for a storage battery? A. Storage battery for motors, and gravity batteries for charging the storage batteries. 3. Tell how piers; if not, what is the first most serious objection (if to make the principal parts of a storage battery, and its dimensions, when used for lighting. A. For this inpension aqueduct at Pittsburg has seven spans. There | formation see Scientific American, vol. lxi., page 22. 4. Describe a small compressed air motor run by a power of 30 lb. per square inch from a small water pipe. is no objection where it is necessary to have more than A. A small compressed air motor is substantially the same as a steam engine. 5. What acid is used to reduce soft wood to pulp? Can it then be brought back (3994) A. M. says: Assuming that the to a hard substance? A. Nitric and sulphuric. By wood is steamed and bent when green, and allowed proper treatment the wood is converted into cellulose, which is explosive. It can be dissolved in a mixture of alcohol and ether, and will solidify on drying.

(4004) W. T. says: Can you inform me about what per cent of heat contained in anthracite coal, burned in a stove made for heating only, can be liberated into a room, or can you tell me whether there is necessarily a loss of 50 per cent or over, under the most favorable conditions? A. The loss of heat in common stoves may be as great as 50 per cent, but with the best stoves, provided with large absorbing and radiating surface, the loss should not be greater than 25 per cent, and much of this might, he saved by extending the stovepipe, so as to utilize all the heat, save enough to create draught. Much of the heat is also lost by opening stove doors for ventilation.

(4005) W. L. J. asks: Would a 500 lb. ball, say, fired from a gun in a perpendicular position. with a charge of powder sufficient to throw it vertically sayfive miles, return to the earth with the same velocity with which it started? A. It would not. The friction of the air materially retards its velocity, due to gravity.

(4006) H. H. S. says: 1. I have a 2 inch pipe, 1 foot under ground, 75 yards in length, which drains a creamer: am bothered with it becoming filled with something that obstructs the flow of water. me a solution to clean it. A. If the pipe is foul from the drainage matter, use a strong solution of caustic potash, not soda, in boiling hot water. If necessary, stop the end of the pipe while the hot lye is running, fill the pipe, and let it remain over night. 2. I want to know the proper side to run a leather belt, in regard to the splices, that is, ought the end of the splice or lap butt the face of the pulley? A. The belt ends should be butted together and laced to make a smooth surface. If put together with hooks, the butts should turn out. 3. Can a cell of Burnley dry battery receive a new life from a dynamo? A. A dry battery cannot be charged by a dynamo.

Replies to Enquiries.

The following replies relate to enquiries recently published in Scientific American, and to the number therein given:

(3842) Referring to Scientific Ameri-CAN of January 9, 1892, question 3842, C. B. can clean his brass rifle or shot shells by immersing them in strong

clean and will remain so.-G. E. K.

C. A. W. asks for a corn salve.-W. H. E. asks for a stick leather to metal. 2. How to estimate horse power of an engine.-J. H. S. asks how to remove tattooing.

and Queries," to which our correspondents are referred. column. A new circular is now ready

Bradley J. R. & J.S. Carles, Mor, June 1008.

Bradley J. R. & J.S. Carles, Mor, June 1008.

Britanel G. M. Cautrion, Can, band cutter.

47,848
Britanel G. M. Cautrion, Can, band cutter.

47,848
Britanel G. M. Cautrion, Can, band cutter.

47,849
Britanel G. M. Cautrion, Can, band cutter.

47,849
Brown J. A. E. Cleveland, O., supporting pipes.

47,408
Bullard, O. B. Washington, D. C. violin.

47,508
Bullard, O. B. Washington, D. C. violin.

47,608
Bullard, D. J., Altoons, Rans, churn moto.

47,608
Campfoll, D. J., Altoons, Rans, churn moto.

47,608
Bullard, O. B. Washington, D. C. violin.

47,608
Bullard, D. J., Altoons, Rans, churn moto.

47,608
Bullard, D. J., Altoons, Rans, churn mot

clder vinegar, and heat to a boil. Then rinse them thoroughly in clear cold water, and wipe dry with woolen cloth. If the vinegar is good, the shells will be clean and will remain so.—G. E. K.

M. T. D. asks how to pickle beef, tongues, etc.—A. P. S. asks how to make invisible or sympathetic ink.—C. A. W. asks for a corn salve.—W. H. E. asks for a harness grease.—E. S. S. asks how to make a hektograph or copying pad.—E. R. T. asks how to thin iron.—J. A. B. dasks (1) for a receipt for making a cement which will stick leather to metal. 2. How to estimate horse power of an engine.—J. H. S. asks how to remove tattooing.—H. F. C. asks how to make birdlime.—Y. M. C. A. asks (1) how to etch glass, (2) names of all known elements and metals.

Answers to all of the above queries will be found in the "Scientific American Cyclopedia of Receipts, Notes and Queries," to which our correspondents are referred. The advertisement of this book is printed in another column. A new circular is now ready.

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Lovell, M. N., & B. A. Walker, Erie, Pa., range doors.

Lumis, T. J., Hartford, Ct., type setting mach.

Lundstrom, C. J., Little Falls, N. Y., drawing inst.

Lungen, Adam, New York, push button.

Markey, John, New York, street sweeping mach.

Maguire, P. J., Salem, Mass., carb, gas generator.

Mailloux, C. O., New York, batteries.

Mailloux, C. O., New York, batteries.