RECENTLY PATENTED INVENTIONS.

Engineering.

STEAM SCRAPER.—John Austin, San Francisco, Cal. From a drum forming a part of a hoisting machine, according to this improvement, a cable extends around a sheave anchored at a suitable distance in advance of the scraper, with which it is connected by a pulling line, a cable from a second drum on the same machine passing around a sheave to the rear of the scraper, and being connected therewith by a hold-back line. The latter line is connected with a dumping line, arranged in connection with a gear shaft, pinion, and crank in a frame at the rear of the scoop, whereby the dumping line may be made slack or taut, as desired, to insure the tilting and dumping of the scoop whenever required, but always preventing the upsetting of the scoop while it is being filled.

Railway Appliances.

CAR FENDER.—Edmund West, San Francisco, Cal. This inventor has devised a spring-controlled rocking fender, with hinged and spring controlled wings at each side of the back member of the fender, there being a keeper carried by each of the wings and engaged by extensions from the bottom portions of the fender. The device provides a spring-like bed adapted to receive without injury a person caught in the path of a moving car, and wings or gates are arranged to automatically close over the fender and prevent the person from falling off.

REPLACING DERAILED CARS.—James H. Malone, New York City. To facilitate the moving back on the track of derailed trolley or horse cars, this inventor provides a sectional device which may be carried on the cars, and with which the cars may be replaced on the tracks by the power ordinarily employed to propel them. It comprises a body section having clamps adapted for attachment to a rail, a portion of the body extending beyond the side of the rail and having channels communicating with a main channel, while lateral rails or branches made in detachable sections are pivotally connected with the main section, each branch rail being capable of lateral movement and having a channel communicating with a collateral channel on the main section.

Electrical.

TROLLEY.—George L. Campbell, Shunk, Pa. To enable the trolley to more effectively retain its position with relation to the wire is the object sought by this patentee, whose invention provides that there shall be pivoted on the spindle on which the trolley wheel is mounted, in the fork at the upper end of the trolley pole, blocks carrying pivoted arms adapted to swing up at the sides of the wire, whereby the trolley will be kept continually in engagement therewith, the arms also freely swinging downward to permit the passing of obstructions, such as insulators, cross braces, etc, The trolley pole is otherwise controlled as usual.

BATTERY.—Walter S. Doe, Brooklyn, N. Y. To furnish sufficient electricity for bicycle lamps and similar uses, the compact battery described by this patent is arranged to be conveniently and easily recharged, and is made with a number of perforated carbon cylinders and perforated hard rubber tubes occupying compartments of a suitable casing, the tubes extending into an exciting fluid and being each adapted to receive a depolarizing cartridge. The latter comprises an anode consisting of a zinc cylinder split longitudinally and adapted to receive a solid chemical, preferably made of fused nitrate of soda, the cartridge being readily inserted into each tube on removing a cap, and being of a length proportioned to the time the light is to be burned. When a cartridge is entirely dissolved it may be readily replaced by a new one, the exciting fluid in the battery lasting for a number of cartridges in each tube.

Agricultural.

FEEDER FOR HAY CUTTERS.—George W. Bischof, Mallala, South Australia. To provide an automatic continuous feed, adjustable to the capacity of the cutting apparatus of chaff-cutting machines, this inventor has arranged a driving mechanism in connection with a slotted table where two series of packers have a vertical and a back and forth motion, one series alternating with the other, while stop arms are movable through the slots of the table, above which are holding arms between the packers and stops, and an endless carrier moving in a receiving trough at the front end of the table. The machine packs the loose hay into suitable condition to be delivered to the feed band, and sends it in a constant and well distributed stream to the feed rollers.

Miscellaneous.

ICE TIRE FOR BICYCLES.—Jefferson L. Atkinson and Leonard Branchaud, Potsdam, N. Y. A quickly applied or removed ice tire, for the prevention of the slipping of a bicycle wheel on ice, is made, according to this invention, of a narrow strip of leather whose outer surface is provided with a series of spurs or sharp points, riveted in place. A narrow strip of sheet metal, curved to fit the outer curve of the tire, receives the shanks of the spurs, and the spur-studded belt, which is of a length proportionate to the circumference of the wheel, is attached thereto by short leather straps, there being at the ends of the belt a locking device. The belt is preferably secured upon the tire when the latter is deflated, its inflation then firmly holding it in place. The belt is light, and may be easily carried upon the person. its attachment or removal taking but a very short time.

WASHING, SCOURING AND DRYING GRAIN.—Milton T. Gibbs, Mayville, North Dakota. To facilitate the washing and rinsing of grain the desired number of times in such rapid succession that the kernels will not be soaked before drying, this inventor has devised a process of rapidly removing the water from the surface of the kernels by force, instead of by evaporation. The grain is first subjected while in motion to the action of jets of water, to loosen the impurities on the kernels, and is then moved upward and delivered by centrifugal force against a sieve, where it is subjected to the action of an air blast, forcing the impurities through the sieve on which the grain rolls down for further scouring. A stationary screen or sieve is inclosed in a revoluble drum in which the grain is received at one end, a scraper removing the grain from the inner surface of the drum and guiding it to the sieve.

WATER HEATER FOR BATH TUBS.—William Gunn, Indianapolis, Ind. For quickly heating water in a bath tub, a small heater is arranged at one end according to this invention, having a metal shell or casing and end chambers, there being within the casing easily cleaned water tubes, below which is a perforated shell forming a gas burner, the device affording a large heating surface by which the water passed through the tubes may be quickly heated. The connections are such that the circulation is maintained by the hot water rising in the tub, and when the water is discharged from the tub it is also drained from the water tubes, thus preventing damage by freezing.

DOOR OR WINDOW FASTENER.—John T. Nagle, Butte, Montana. This is a simple device which may be carried in the pocket and conveniently applied to fasten doors or windows, being readily removed when the door is to be opened or the window raised or lowered. It consists of a block in which slides a locking bar engaged by pawls carried by the block, there being at the outer end of the locking bar a foot with teeth which are brought into engagement with a door jamb by the closing of the door, or with one of the meeting rails of the sash in adjusting a window, the block being then moved and held in locking engagement with the bar by the pawls.

WINDOW FRAME AND SASH.—David W. Trotter, Butte, Montana. To make windows almost entirely dust and wind proof, and to dispense with inside stops and parting beads for the sash and frames, rendering the sash also more readily removable than under the present system, the sash is, according to this invention, made with grooves in its side and bottom edges. and L-shaped yokes are fitted with their longer portions in the vertical grooves and their shorter portions in the horizontal bottom grooves. there being at the upper extremity of each yoke a plate lying snugly against the upper edge of the sash, preventing the accidental downward movement of the yoke. The upper extremities of the yokes are extended above the sash, and each has a slot forming a hook adapted to carry a weight cord. With this improvement, a groove only is made in the vertical jambs of the window frame instead of the ordinary sash grooves.

CHAIR.—Harris W. Stern, Vincennes, Ind. This invention is for an improvement in chairs designed to be readily changed from a sitting to a reclining position, or for use as a rocker, theseveral changes being easily made by a person sitting in the chair. The chair has a rocker body in which slides an adjustable foot rest, the rockers being held from movement by simple devices, while an upholstered seat is designed to be swung upwardly with relation to the rockers, as desired. Pivotally connected to the rear portion of the chair is an upholstered back, with the side bars of which the arms are pivotally connected at one end, their opposite ends having pivotal connection with arm braces extending to the rockers.

AUTOMATIC WAGON BRAKE.—Joseph S. Elliott, Eddy, Texas. This is a brake which sets itself by the movement of the wagon forward on the team as the wagon descends a grade, and is furnished with devices by which the action of the brake may be suspended while backing the team. The brake setting rod or connection movable forward in setting the brake is provided with a bolt or projection, and a stop is movable into position to engage the projection and limit the forward movement of the rod, the stop being moved by means of an operating cord which extends up within convenient reach of the driver.

ATTACHMENT FOR VEHICLE BRAKES.—Joshua H. and W. W. Edwards, Stephenville, Texas. This is a device particularly applicable to brake levers placed on the bodies of vehicles to which extra side boards are attached, as for conveying cotton from the field to a gin, etc. It consists of two connected members, each terminating in a socket, one socket receiving the back lever and the other the front lever of the brake, and an extension handle is so attached that the brake levers may be operated as conveniently and as positively from a point high above the main body of the wagon as when the operator is on the wagon seat.

THILL COUPLING.—Bertus J. Yeager, Montague, Mich. For buggies and light vehicles, this inventor has devised a coupling by which the shaft may be readily attached or detached, and which obviates all rattling. In a suitable frame a clip supports in one side a bolt for the eye of the shaft, the free end of the bolt being adapted for engagement by a pivoted arm forming part of the frame and locked in place by a locking plate pivoted on the clip frame, this plate having a spring engaging the eye of the shaft.

NEGATIVE EXAMINER AND CAMERA OBSCURA.—William A. Eddy, Bayonne, N. J. This is a device for the use of photographers in the examination of negatives or lantern slides, and which may be readily changed to a camera obscura, the invention providing means whereby the negative, whether wet or dry, may be minutely examined and a reflected light thrown on it or the slide to highly illuminate it. A reflector box is made with an apertured rear wall and inclined apertured support at its front end, a mirror at the bottom throwing the light entering through the rear aperture on an article placed on the support. A stationary closed section, on which slides an outwardly movable sight section, extends up in front of the inclined support. The article on the support may be illuminated in two ways, either directly or by reflection by the mirror, the light falling on the article being regulated as desired in either case.

BOBBIN THREAD TWISTER.—Edward C. Gerstenberger, Brooklyn, N. Y. A twister adapted to rapidly and conveniently twist threads while filling a bobbin for sewing machines has been devised by this inventor, the invention consisting principally of a revolving arm adapted to carry the spools, the threads from which are gathered by a fixed eye, a driving mechanism for the arm being engaged and driven by the twisted thread wound up by the bobbin. The operator may thus quickly twist a number of threads to form a stronger twisted thread for filling the bobbin of the shuttle, and the device is very simple and inexpensive.

SAFETY GUARD FOR SPRING LOCKS.—Max B. Guenther, New York City. This guard consists of a plate adapted for attachment to a door jamb and having a flange to engage the stop bead of the jamb, the guard being adjustable on a keeper having a face plate whereby the device may be readily adapted to doors of different thicknesses. It will effectually prevent a knife, needle or similar implement being introduced between the door jamb and stop bead to open the latch. It may also be conveniently used in connection with the keeper for spring latches, preventing the opening of the latch by a knife or other instrument, even when an auger or similar tool is used to produce openings leading in the direction of the latch.

SAFETY RAZOR.—Albert L. Silberstein, New York City. This device comprises a basket frame made of a single piece of sheet metal formed into a curved bottom and having at its front edge a bent-over flange to form a guard for the cutting edge of the blade. Secured to the back and extending forwardly and downwardly in the frame are flat springs, at the forward free ends of which are L shaped clips adapted to engage and press on the top of the blade, the clips yielding to bring their sides in firm contact with the ends of the blade. The razor blade may be conveniently inserted and securely held without danger of its cutting edge projecting too far beyond the guard.

SHEARS OR SCISSORS SHARPENER.—Olof L. Stadig. Connors Station, Canada. On a small board or other suitable base, according to this invention, is held a flat grindstone, over which is an inclined guideway made of bent wires, and the placing of the knife or scissors blade in the guideway insures the presentation of the cutting edge to the stone at the proper angle. A spring presses on the back of the blade to hold it down to the stone, upon which the operator moves the blade back and forth. The stone is preferably reversible, and has an oil face and an emery face, the latter for use when the shears are very dull.

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.

MACHINE SHOP ARITHMETIC. A pocket book containing some of the problems of every day shop life and the way in which they are solved. By Fred. H. Colvin and Walter Lee Cheney. First edition. East Orange, N. J.: The Practical Publishing Company. 1896. Pp. 88. Price 50 cents.

This excellent little work covers a ground which, in its limitations, is somewhat new. It gives just enough of arithmetic to cover the cases arising in machine shop practice, such as calculating the gear of a lathe for cutting screws, squaring, cubing, extraction of roots and the like. The print, though small, is very clear. The little volume will form a most useful companion to the professional machinist, who wants to do more than merely guide the tools which he operates. We warmly recommend it also to the amateur machinist.

AN AMERICAN IDYL. By the Countess Di Brazza (Cora Slocum). Boston: The Arena Publishing Company. Price $1.50.

The accomplished author, who so gracefully bears the title and does honor to the station of a countess, has in this little prose poem interwoven a fabric of sentiment with vari-colored threads of science. The hero is a scientist visiting northern Mexico in the pursuit of studies authropological, zoological, geological, etc., and his assistant, the heroine, is a young Indian maiden. As together they try to collect data which may be of assistance in solving some of nature's mysteries, their mutual interest in each other becomes of far greater moment to both of them than the work itself. It is the old, old, but ever new story, narrated with a felicity of expression, an amplitude of illustration, and a psychological insight into character, similar perhaps, though in such a widely different field, to that shown by Corinne in her conversations with Nevil, in the great work of Madame De Stael. The book also presents, in text and illustrations, a good deal of new and valuable information about the Pima Indians of Northern Mexico.

THE DOG. By "Stonehenge." Revised by George Armatage, M.R.C.V.S. London and New York: Frederick Warne & Company. Illustrated. Pp. 267. Price $1.

The work of "Stonehenge," which has long formed a standard, is here enlarged, and much additional matter presented therewith, in compact form, and well adapted for use by all who would best serve their canine friends by good management when in health or their proper treatment in disease. To one who justly appreciates the high intelligence, the affection, the faithfulness, the companionability of a good dog, this book affords a most serviceable manual to assist in discovering and developing his natural capabilities, increasing his sphere of usefulness and enlarging his intrinsic worth. The engravings are of the best, and some of them are faithful portraits of celebrities.

JAHRBUCH DER DEUTSCHEN LANDWIRTHSCHAFTS-GESELLSCHAFT. Herausgegeben vom Directorium. Band 10. 1895. Berlin. Pp. xvii, 523.

To agriculturists familiar with the German language this work will present a wonderful picture of the intellectual activity of the German farmer. In it are treated, with numerous illustrations, the many topics of industry that arise in German farm practice in the way of machinery, fertilizers, and all methods and adjuncts of the agriculturist's art. The book is closely printed, there being no waste space, its upward of 700 pages containing a vast amount of text on all subjects relating to farming.

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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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.

(7106) W. S. E. asks: 1. What are the ingredients used in the porous cups in Leclanche batteries? A. Good graphite with the dust sifted out and manganese dioxide, both of good quality, in about equal parts, or 4 parts graphite to 5 parts manganese. 2. Would the carbon pencils used in arc lights broken in small pieces do for filling, provided the copper is scraped off? A. Not satisfactorily.

(7107) E. C. H. asks: In the simple electric motor described by G. M. Hopkins in SCIENTIFIC AMERICAN SUPPLEMENT, No. 641, would not castings be as good, or better, than the iron wire and Russia iron, for the fields and armature? A. Castings would answer for the field core, but not for the armature core. The latter should be laminated, and the more thoroughly, the better.

(7108) H. J. B. writes: I have been contemplating the making of a Tesla-Thomson high frequency coil as described in SCIENTIFIC AMERICAN SUPPLEMENT, No. 1087, but cannot get part to come out as described. The figures will not check. Will you help me out? 1. A 2 inch iron pipe has an outside diameter of 2⅜ inches, which, when insulated and wound with primary, give 3 inches. You will notice the difference in description in paper. A. By 2 inch pipe the author means a pipe of 2 inches external diameter—not what the gas and steam fitting trade term a 2 inch pipe. 2. There are 10 coils each 1⅛ inch with ⅛ inch insulation, but this lacks 3⅜ inch of covering primary coil. What is to be done with the rest of primary coil? Would you put in enough secondary coils to cover primary? A. By reading the article, you will see that each 1⅛ inch coil is taped. This taping so increases its length that ten such coils with the cardboard insulation and a little allowance for lost space will fill the 16 inches pretty fully. 3. The secondary coil of transformer has an outside diameter of 6 inches, while inside diameter of secondary coil of high frequency coil is 8 inches. What is to be placed between coils? Should not all coils be placed as close together as insulation (proper) will permit? A. Air fills the space—it is an air gap, designed to prevent perforation or jumping across of sparks. 4. Description does not state how thick last coil above is to be wound. Should it be to inside diameter of next coil? A. One layer of wire is prescribed. 5. Should primary high frequency coil be wound with 4 coils of 14 layers each No. 8 wire? This would make a 28 inch coil with proper insulation. Could not smaller wire be used on primary with fewer coils? Would it not be better to have an odd number of layers, that wires might end on opposite ends of coil? How is an oil insulation used? A. There are 14×4=56 turns of No. 8 wire in primary coil of H. F. transformer. This wire is laid in one layer, four leads in parallel. No. 8 wire is 0·128 inch thick; therefore, the wire alone represents 0·128×56 or 7 inches. The two turns of cord (p. 17378), the insulation and the looseness of winding make up the difference, An oil insulation may be used by immersing the coil in a tank of resin oil. We do not advise a departure from the proportions of the coil shown, unless an entirely new one is designed. 6. How large should this coil be when completed? A. The drawings and text answer this question; a little over 12×18 inches.

(7109) C. E. P. writes: Will you answer in your columns a few questions relative to the Thomson-Tesla coil, described in SUPPLEMENT, No. 1087? I have just completed a Ruhmkorf coil, which gives a six inch spark from four pounds No. 36 on secondary. But as I have the fifty-two volt alternating current in my house, would prefer to use it; and do not want to make

any mistake in constructing the apparatus. Have not missed a copy of the SCIENTIFIC AMERICAN or SUPPLEMENT for four years, and consider it of more benefit to the workman, in the advancement of science, than all others, treating each subject as it does in common, every-day phrases. 1. The number pounds No. 31 on secondary high tension transformer. A. About ¾ pound. 2. Is it necessary to insulate between each layer? A. There is only one layer. 3. Would there be better results if wound in twenty sections? A. As there is only one layer, it cannot be wound in sections. 4. The diameter of paper cylinder, for secondary of high frequency coil, is eight inches, and of the primary twelve inches. Is more than one layer of No. 31 required? If not, is the space between the primary and secondary an air space? Or is it filled with some insulating medium? A. See preceding query. 5. To what particular part of the machine does the statement apply "between wires of different polarity, as an extra precaution, two layers of cord are wound"? A. To the primary coil of H. F. transformer, Fig. 5. Four wires in parallel are wound in a spiral. The four lie close to each other and the two cords come in between their turns. Thus four wires come close together, hen two cords, then four wires and so on. 6. In assembling, we take first the high tension primary, over it place the ten coils or secondary; next, over that place the secondary of the high frequency coil, and over all the primary of the same, or do we keep the high tension and high frequency coils apart, as two distinct apparatus, making connection with condenser as shown in diagram? A. Mount as two distinct apparatus.

(7110) H. B. asks: Will you please answer in the correspondents column the following questions? 1. Kindly give me the receipt for the preparation used in photographing on enamel buttons. A For information on enamel photography we refer you to articles in SCIENTIFIC AMERICAN, No. 19, vol. 71, also SUPPLEMENT, Nos. 429 and 1039; price 10 cents each by mail. 2. I am making the induction coil, described in SUPPLEMENT No. 160, and want to know whether the same size spark and results can be obtained by using 2 pounds of No. 30 silk covered wire instead of No. 36. A. Not unless you use the same length of wire, or about fifteen and one-half times the weight of the No. 36 wire. 3. When will the 1897 addition to "Experimental Science" be published, or is therenone to be issued? A. The new revised and enlarged edition of "Experimental Science" contains a supplement of 120 pages and numerous illustrations published in 1895. Price $4 by mail. No new supplement to it is in immediate contemplation. 4. How many lights can I get from a dynamo with four fields each 2½ inches high wrapped with No. 12 wire and an H armature 2⅝×3 inches with No. 20 wire, or what is the best size wire to use? A. The armature capacity is 3 to 3½ amperes; the data given are insufficient for anything more than an approximation, but we do not think it would give more than two or three candle power. A laminated drum armature is preferable to the H armature.

(7111) S. R. says: Can you give me the recipe for cleaning gloves, kid and suede, in quantities? A. Damp them slightly, stretch them gently over a wooden hand of appropriate size, and clean them with a sponge dipped in benzole, recently rectified oil of turpentine, or camphine. As soon as they are dry, withdraw them gently from the stretcher, and suspend them in a current of air for a few days, or until they cease to smell of the cleaning liquid used. Heat must be avoided. The cleaning liquid should be used liberally, and the first dirty portion should be sponged off with clean liquid.

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