RECENTLY PATENTED INVENTIONS.

Mechanical.

FOURDRINIER MACHINE SHAKE FRAME.—Thomas H. Savery, Wilmington, Del. This frame is arranged to swing at all times so that the upper and lower surfaces of the shake rails or side bars are held in level positions, which is also the case with the table roll journal bearings and all the other fixtures attached to the shake rails. The shake frame is also adapted to support the breast roll so that it can be readily put in place or removed without disturbing any of the other parts.

DREDGER.—Philippe Bunau-Varilla, Paris, France. Wells in which are vertically movable shafts or rods extend through the bottom of this dredge, the rods being lowered into contact with the ground to form temporary fulcrums for the dredge, while the axis of the propellers is arranged transversely to swing about its fulcrum. The movement of the dredge from side to side, and its forward and backward movement, may thus be effected without the use of chains and anchors, such control, and that of the several working parts of the dredge, being effected by an electric current from an exterior source. One of these dredges has been built in Holland for a Spanish railway company, and has had a successful trial on the Leck, a branch of the Rhine. It is illustrated in the SCIENTIFIC AMERICAN SUPPLEMENT of October 3, No. 1083.

CIGARETTE MACHINE.—Domingo Perez y Bufiol, Havana, Cuba. This is an improvement on a formerly patented invention of the same inventor for a machine which separates the reqnired quantity of tobacco and delivers it to a receiver section, where it is compressed by a plunger, another mechanism carrying it forward to a wrapping device, where it is met by a wrapper which has been cut off and gummed and placed in position by other mechanisms, the wrapping device then putting on the wrapper, and a finishing device tucking the wrapper ends inward. The improvements covered by his patent relate especially to the tobacco conveying and compressing devices, the gumming device, the mechanism for carrying the receiver sections from one position to another, the wrapping device, and the finishing device or tucker.

MACHINE FOR HULLING COFFEE BERRIES.—Antonio S. Perez, New York City. In this machine the main parts are readily accessible, and are exposed to view when the machine is in operation. The berries are fed down an inclosed passage onto a cylinder with roughened surface, which carries them toward two blades, one of which opens the berries without crushing the grains, while the other blade aids in their separation, the hulls adhering to the cylinder and finally dropping into one box, while the berries are conveyed to another box. An arrangement of sprinkling tubes is also provided to discharge water for cleaning parts of the machine and assist in the separation of the grains from the broken hulls.

Agricultural.

PLANTER.—Ole O. Ovre, Godahl, Minn. This an improvement in corn planters, and is adapted for use in connection with a check row wire, the planter being readily and conveniently attached to the siding frame of an ordinary corn plow. On the frame are seed boxes having connected drop slides, and seed conducting chutes, while a lever having adjustable connection with the drop slide is arranged to be operated by a check row wire. The lower end of each seed-conducting chute enters a shoe of trough shape, behind which follows a covering wheel, the whole construction being very simple, and providing for the regular and effective dropping of the seed.

MOULD BOARD.—Samuel A. Smith, McKinney, Texas. This improvenent is adapted to any plow made of a series of spring loops, some movable at the top and others at the bottom of the board, the movable ones being kept in motion by the earth passing over the board. This mould board consists of a rigid frame and a body made of spring wire or rods bent to loop form, some of the loops being free from the frame at the top and others being movably connected with the frame at the bottom. The parts of the frame adapted for attachment to the plow beam and handles serve as braces for the body portion of the board, which is thus given a vibratory motion, rendering it impossible for earth to cling to it.

Miscellaneous.

CLOCK STRIKING MECHANISM.—Charles R. Sing, Branford, Conn. This invention provides a striking attachment applicable to an ordinary clock mechanism, the pieces being so arranged as not to burden the driving mechanism of the clock to any appreciable extent, and the entire device being simple, durable and inexpensive. The mechanism has a spring-controlled striking segment operating in conjunction with a winding segment operated from the hour post. the striking segment being regulated in its striking movement by the rotation of the seconds wheel of the clock mechanism, while a stroke regulating device is operated by the movements of the striking and the winding segments.

CARTRIDGE CARRIER.—Robert F. Walker, Limerick, Ireland. This carrier comprises sling bags adapted to be swung over the shoulder and having at their ends pivotally connected outlet tubes, and a push bar, by the operation of which one or two cartridges may be extracted from the carrier, in proper position to be inserted in the breech of the gun. With this convenience a great number of cartridges may be carried with the least possible fatigue, and the cartridges will be kept dry and prevented from swelling, whether the carrier be worn under or over the coat.

A NEW ADHESIVE.—Peter Murphy, Jersey City, N. J. This inventor has patented a process for making an adhesive to stand between starch and dextrin in point of solubility, the method being simple and inexpensive, and the adhesive being produced in a form adapted for immediate and convenient use. By this method starch is submitted to the action of dilute sulphuric acid and heat, in a special manner, and the product is styled a "subdextrin," well adapted for use as a paste or a glue, and much less expensive than mucilage or paste formed from dextrin.

HOOK AND EYE.—William Walton, Closter, N. J. This is a fastening for ladies' garments which may be quickly applied without sewing, and the entire length of the body portion of the hook or eye be held closely against the cloth, the ends of the fastening portions serving as an abutment to prevent the separation of the hook and eye by direct or parallel movement of the parts. The hook and eye are each made of a single piece of wire, which may be round or flattened. These hooks and eyes are neat in appearance, as they do not bulge or protrude from the material to any appreciable extent, and in unfastening it is necessary to turn the hook at an angle to the eye.

COTTON WOOL MATTRESS.—Ursula S. S. Dahlerup, Copenhagen, Denmark. This mattress is designed to afford increased elasticity, as compared with one made in the ordinary way, promote healthfulness and obviate the necessity for a mattress covering, being therefore more economical. It is made of six to twelve strips of cotton wool fastened together in a bunch or group and formed into a woven fabric, the ends of the warp threads forming the border. Where it is desired to give additional elasticity, a special stuffing is employed, consisting of a woven or plaited cylindrical structure of hard steel wire.

TAILOR'S SQUARE.—Raffaele Moccia, New York City. This square may also be termed a chart, being made of stiff, pliable material, in triangular shape, and there being on it scales to facilitate the accurate cutting of garments for men and women, without necessitating a knowledge of geometry on the part of the cutter. There are special scales for measurements for the half breast of a coat or vest, for obtaining the upper point of the shoulder of the coat and vest, and also for ladies' wraps and garments, for obtainmg the upper collar seam of the back of men's garments and the side bodies of ladies' garments, for obtaining the hollow of the back and the width of the armhole, and various other details.

SAFETY RAZOR.—Albert L. Silberstein, New York City. This new razor is simply and strongly made and readily adjustable to bring the blade in proper relation to the guard. The bed plate which receives and supports the blade has at its front end prongs which form a guard, and clips fitted to slide in the side edges of the bed plate engage the top surface of the blade at its sides, a spring engaging the back of the blade and the clips being adjnstably held on arms extending downwardly from the bed plate.

CARPET FASTENER.—John J. Moore, Lima, Montana. According to this improvement, a base board is provided with a hinged lower half, which opens out and up to permit the edge of the carpet to be laid close up under the board, there being on the bottom of the hinged portion spurs which engage and hold the carpet when the hinged portion is again closed down. Metal-lined sockets extend in line through the upper and lower portions of the board, and pins passed into these sockets hold the lower portion of the board with its pronged edges in engagement with the edge of the carpet.

DOOR BELL AND MAIL RECEIVER.—Joseph H. Key, Horace Brevard and William R. Purifroy, Rockdale, Texas. According to this improvement, the door bell is combined with a tray or card receiver in the door, the tray being adapted to be pulled out to receive a card, letter or package, which, when the tray is released, is carried inside, the bell being at the same time antomatically sounded by the engagement of a bell hammer by a toothed edge on the tray. The bell is sounded by both the outward and inward movement of the tray, its outward movement compressing a spring which draws the tray back when the handle is released.

SKYLIGHT FASTENER AND RAISER.—George M. Parsons, Carson City, Nev. A lever fulcrumed on the skylight casing, according to this invention, is pivotally connected with a second lever which is pivotally connected with the skylight, there being arranged in and sliding on this second lever a locking device connected with a rope or cord extending downward as far as desired. By pulling on this cord the fastener is unlocked, and then, by a further pull, the skylight may be raised and locked in partly or wholly open position, or it may be unlocked and closed and locked in closed position.

BALL CASTER.—Edward Fackner, Brooklyn, N. Y. This caster is more especially designed for use on heavy articles, such as safes, pianos, etc., and has a tubular casing which engages the ball slightly below its middle, there being in the upper part of the casing a screw-threaded flange on which rests a flat apertured disk and a concave spring disk, through which extends a pin with a conical head which engages the ball, the shank of the pin extending through the disk apertures. The device is very strong and simple, and the ball turns readily in any direction in which the article is to be pushed.

BOTTLE STOPPER.—John Flanigan, Fort William, Canada. This is a form of stopper designed to prevent a package which has once been sealed from being opened and again sealed as an original package. The cork is made with an attached seal of a harder material, preferably of glass, which may be fitted in the mouth of the bottle, the seal having an outer and an inner recess separated by a partition which is readily broken. The seal must be fractured before the cork can be drawn, bnt it cannot be again used without showing that it has been tampered with.

MANICURE IMPLEMENT.—Richard E. Hart, Pittsburg, Pa. This implement combines in one handle or support a knife of peculiar construction, especially adapted for cutting the nails, a nail cleaner and a nail file, the blades being entirely concealed within the handle or adjustably extended.

Designs.

BICYCLE SEAT.—Andrew A. Munro, Flushing, N. Y. The top and sides of this seat are of irregular oval shape, terminating in a front projection, there being a cavity in the upper face of the projection and ovoid side openings in the seating surface.

FABRIC.—Shintaro Yokozuka, New York City. This fabric is made with a surface decoration simulating lace work, and having as characteristic features web and scarf patterns.

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.

BUTTERFLIES. Vol. II. By W. F. Kirby, of the Department of Zoology, British Museum. London: W. H. Allen & Company. Pp. 322, 30 colored plates.

This is one of the volumes of Allen's Naturalist's Library, the scheme of which contemplates three volumes in all on butterflies and two on moths. The standard is high, the arrangement has been the subject of careful attention, and the work is designed to be the most complete and accurate of its kind in the language.

PRESS WORKING OF METALS. By Oberlin Smith. New York: John Wiley & Sons. Pp. 376, 433 engravings. Price $3.

The shaping of metals in dies, as necessitated by the numerous articles now made with interchangeable parts, and which has so greatly reduced the cost of nearly all metal goods, is comparatively modern practice. An almost marvelous variety of articles is now being pressed out of sheet or bar metals which but a few years ago were hand forged or cast. The design, construction, and operation of presses and dies for doing this work form the subject of this book, the author having had years of personal experience in this line.

AMERICAN HIGHWAYS. By Prof. N. S. Shaler, of the Lawrence Scientific School, Harvard. New York: The Century Company. Pp. 300. Price $1 50.

The introduction and rapid growth in popularity of the bicycle has been looked upon with no little favor by many who have never expected to ride a wheel, because of the effect that it has been supposed the general taking up of bicycle riding would have in promoting the improvement of our public roads. And there is no doubt that the general interest taken in improving our highways has been much more active during the past ten or fifteen years, during which the bicycle has had its wonderful growth in popularity, than it ever was before. There are but few matters which better demand attention, in every State of the Union, than the improvement of the public highways, and on this account Prof. Shaler's book is of especial value, as he has long been known as an authority on the subject, being a member of the Massachusetts Highway Commission and a teacher of the technology of roads and road making. The book discusses the different road making materials and their distribution, the methods of constructing and keeping roads in repair and their cost, machines used, etc. There are fourteen illustrations, showing good roads and bad, and a table of contract prices on Massachusetts roads during 1894-95.

THE MINERAL INDUSTRY. Vol. IV. By Richard P. Rothwell and Assistants. New York: The Scientific Publishing Company. Pp. xxxvi, 850. Price $5.

We are not acquainted with any other source where so much, so varied, and such valuable information is obtainable, in such convenient and readily accessible form, relative to the statistics, technology and trade of the mineral industry in the United States and other countries, as is presented in this volume and the three preceding ones which it supplements. Among its contributors are many well known experts in mining and the working of ores, not only in this country, but from all parts of the world where the business of mining is carried on to any considerable extent; and the publication of annual volumes, after the plan followed, makes it possible to present such ample data as to the opening and development of mines, the state of the ore and metal markets, and improvements in manipulation, as to render the work invaluable to investors as well as employes and the higher classes of workmen in all branches of the metal trades. The present volume carries the statistics of the business to the end of 1895, and it may be interesting to note that the grand total of the mineral productions of the United States last year, as valued at the place of production, was $678,000,734, as against $581,221,258 for 1894. In iron, our production was larger than ever before, amounting to 9,446,308 long tons of pig iron, and showing the United States to be the leading iron-producing nation of the world. Taking our output of pig iron at 100, that of Great Britain was 79, Germany 60, and France 21. In gold there was a notable gain in the production for 1895, which reached 2,265,612 ounces, of the value of $46,830,200, while in silver there was a slight decrease, the production of 1895 having been 46,331,235 ounces, valued at $30,244,296. In coal, anthracite and bituminous, the production showed an increase of 17 per cent over the output for 1894 and amonnted to 195,761,332 short tons, valued at $215,292,247. The value of the anthracite coal at the mine was $1.69 per ton. Great Britain still leads us slightly in the production of coal, but we are rapidly overtaking her in the quantity mined annually, Germany holding third place, and being far in advance of any other nation.

"The General Digest" is the title of a semi-monthly publication for the use particularly of lawyers, issued by the Lawyers' Co-operative Publishing Company, of Rochester, N. Y. Its price is $2.50 a year, and it is designed to contain all current case law of the United States, and useful English and provincial cases, with references to every publication of the opinions. The "Lawyers' Reports, Annotated," is a similar publication of the same company, as is also a semi-monthly issue of advance sheets of all opinions of the United States Supreme Court.

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.

(6969) R. E. asks: 1. Is it practicable to cut a large block of ice to pieces by using a wire heated by electricity? If so, what size and kind of wire would give the best results? A. Owing to regelation there would be difficulty in doing this unless a rather large wire were used, and this would involve the expenditure of considerable electric energy. We would suggest a No. 12 iron wire with 5 to 10 amperes of current.

(6970) P. V. B. says: I am making the Wimshurst machine described in SUPPLEMENT, No. 548, and would like to ask a few questions concerning it. Please answer in your Notes and Queries. Could not the spindle supporting the plates be extended from one standard to the other, without interruption, or would it make electrical contact between plates? If not, could not this be remedied by covering central part of the spindle with a vulcanite tube? A. The spindle is extended through as you suggest. Your plates must be very true and parallel to give good results.

(6971) C. L. B. asks: Could a telephone or telegraph be operated on a two-wire fence by insulating the wires with rubber? There are a number of square corners, roadways, etc. Would the barbs interfere with the current? A. This can be done without trouble. In a dry climate insulation may not be needed, the wood being sufficient. If barbed wire is used, then have good lightning protectors.

(6972) C. C. S. asks: What will remove the backing upon an old mirror? Also, is the preparation anything an ordinary person could mix and apply? Being applied what sort of mucilage or glue must be used to stick cloth or leather to the back of the mirror? A. Remove the silvering from the glass around the scratch so that the clear space will be about a quarter of an inch wide. Thoroughly clean the clear space with a clean cloth and alcohol. Near the edge of a broken piece of looking glass mark out a piece of silvering a little larger than the clear space on the mirror to be repaired. Now place a very minute drop of mercury on the center of the patch and allow it to remain for a few minutes, clear away the silvering around the patch, and slide the latter from the glass. Place it over the clear spot on the mirror and gently press it down with a tuft of cotton. This is a difficult operation, and we would advise a little practice before trying it on a large mirror. You can cement on cloth with white lead paint.

(6973) G. E. L. asks: What quantity of wire should I use on the secondary and primary (double silk covered) to get a spark of ½ inch? How much condenser surface is required? Is it necessary to wind a coil of this size in sections, or would it do as well to wind clear across the coil? In using double silk insulated wire, is it necessary to insulate the layers of the secondary coil with paper? What number of wire should be used?

I intend to use an exciting current of 8 volts, 1 ampere. A. In our SUPPLEMENT, No. 160, you will find described and illustrated an induction coil, but slightly larger than the one specified. The article is so full that we refer you to it for all details of induction coil making.

(6974) C. H. M. asks: What is the igniting temperature of turpentine in the presence of air? A. Turpentine boils at 321° Fah. (about). The vapor emitted would inflame at a red heat, say 1,500° Fah. upward. The oil itself would boil long before ignition, and the flames of burning turpentine may be considered as principally flames of burning vapor, not of burning liquid.

(6975) J. C. B. asks: If the two sprocket wheels of a bicycle are doubled in size (the cranks remaining the same), will it require less power to propel the wheel? A. Slightly better results may be looked for from sprockets of large diameter.

(6976) F. J. M. says: 1. What does a Chinese laundryman use for his shirts, collars, and cuffs to bring forth an elegant gloss? A. Laundrying of shirts. (Chinese method.) A rather thick starch paste is prepared by first beating up a handful of raw starch, usually corn starch, and a teaspoonful of fine rice flour with about a quart of water, making a liquid of creamlike consistence. A certain quantity (determined alone by personal experience) is poured into a quantity of boiling water, while the latter is violently stirred with a short wooden spatula. With this the portions of the linen to be dressed are well smeared, the linen moist from wringing and the starch quite hot. Thus smeared the pieces are laid aside for a few minutes, then rubbed well between the hands, so that the paste is well distributed in the fabric. The linen is then usually dried by artificial heat. When ready for ironing, the starched portions are dampened by means of a cloth dipped in raw starch water to which has been added a small quantity—about ½ ounce to the quart of blood albumen—clarified serum of bullock's blood. The proportion of starch in this water is usually about as 1 to 50 of water. In ironing, the irons are first made very hot, and cooled somewhat externally just before using by momentarily plunging them into a pail of water. The irons commonly employed are what are termed polishing irons; they have the posterior edge rounded instead of angular, as in the ordinary smoothing or sadiron. Much of the fine gloss observed on shirts laundried by Chinamen is accomplished by the skillful manipulation of this "rounded edge" over the work—a manipulation very difficult to describe in words. It is most laborious work for those not accustomed to it. It not only renders the surface glossy, but imparts easy flexibility to the heavily starched fabric otherwise not attainable. Custom made shirts are usually laundried before delivery in trade at the factory, the ironing in these cases being largely performed by steam mangles, though some are hand finished. The following receipt for a laundry starch is said to produce a very fine and lasting gloss on linen without the expenditure of the amount of labor in ironing usually requisite to produce a fair appearance:

Corn starch	1 oz.
Water, boiling	1⅞ pt.
Bluing	q. s.

To this when it has cooled somewhat is added and thoroughly mixed in about half an ounce of the following preparation:

Gum arabic	8¾ parts.
Sugar, loaf	2½ "
Soap, white curd	¼ "
Waterglass ("A" sirup)	1 "
Egg albumen	4 "
Water, warm	20 "

In preparing this the first three ingredients are dissolved together in the water at boiling heat, the waterglass is then added, and when the mixture has cooled down to about 150° Fah., the egg albumen is put in and the whole well beaten together. 2. How can I remove letters or numbers from linen which are written with indelible ink? A. Indelible ink stains are difficult to remove. Try using a saturated solution of mercuric chloride. The mercury salt is poisonous. 3. Will you please give me a receipt how to make universal cleaner that will take out stains, be said stains either blood, beer, wine, or fruit or any other kind, and without regard as to the materials, be the latter either silk, linen, carpets, or kid leather or any other product? A. There is no universal cleaner.

(6977) C. A. H. says: Will you kindly publish a formula for making a liquid shampoo, such as the barbers have for the hair, one that will make plenty of foam, by rubbing, but the foam should gradually disappear again, called a dry shampoo? And must I use distilled or common water? A. Liquid shampoo:

Sesquicarbonate of ammonia	2 drm.
Carbonate of potash	2 "
Soft water	¼ pt.

Dissolve and add the solution to a mixture of—

Tincture of cantharides	1½ fl. oz.
Rectified spirit	¼ pt.
Good rum	1½ "

And agitate the whole well together, adding a little scent or not, at will. This preparation, too, has been highly recommended for removing dandruff, preventing the hair falling off, etc. In using it, the hair is wetted with it, well rubbed so as to form a lather, and then either washed with cold or lukewarm water, or rubbed dry with a towel and at once arranged with a brush and comb. A commoner kind, in which the rectified spirit and one-third of the rum is replaced by water, forms the shampoo liquid often used by the hairdressers after cutting the hair. It is not necessary to use distilled water.

(6978) I. B. A. says: I have been trying to make rubber cement with the following solvents, o wit: Chloroform (Merck's purissima), benzole (pure), and also with carbon bisulphide. With chloroform, the rubber swelled very much and then floated on top of the liquid in the shape of flocculent matter, but would not dissolve. With benzole, the rubber swelled also very much, becoming transparent, with a fine amber color, but I could not get it to dissolve. The same thing happened with the carbon bisulphide. The rubber used was the pure gum of Para. Can you tell me what was the matter and how I can succeed in making a rubber cement with either of these ingredients? With each of the solvents I tried heat, but without success. A. You will have difficulty in making a good rubber cement if you do not have the requisite facilities for digesting the pure unvulcanized rubber under pressure. We recommend you to use benzole. Allow the gum to swell, then rub in a mortar, adding more of the solvent. It will not make a true solution, but will remain a pasty mass.

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