

RECENTLY PATENTED INVENTIONS.

Engineering.

PROPULSION OF MARINE VESSELS.—Eugene Duerr, Buffalo, N. Y. This invention provides a method of propelling vessels designed to facilitate obtaining a high speed at a low cost for fuel, the invention consisting of a revolvable shaft projecting at the bow and carrying one or more spiral tubes. On the extreme front end of the shaft is a small propeller wheel to push floating objects out of the way, and at the stern of the vessel is a propeller with which the motor may be connected if desired, though the spiral tubes, screwing into the water at the front, are principally relied upon for the propulsion of the vessel.

Railway Appliances.

EXTENSION STEP FOR CARS.—Walker Y. Carlton, Centralia, Va. This step is designed to be readily put in position for service when needed and automatically folded when the train starts. It is held on a frame mounted to slide on the rear of the ordinary car step, a tripping device releasing the step from its folded position and letting it slide down by its own weight to the lower position in which it is adapted to facilitate the exit and entrance of passengers from and to the car. Connected with the step is a lifting device controlled from the car axle, and when the car starts from a station the revolutions of the axle cause the step to be folded up under the lowermost tread.

RAILWAY TIE AND CLAMP.—Peter Keshner and Henry Laux, Carlyle, Ill. The clamp provided by this improvement is interchangeable, or adapted for use on either side of a rail, and the clamp and tie are of simple, durable and inexpensive construction. The tie is preferably of thin plate steel, semi-cylindrical, and has outwardly extending base flanges at its sides, forming a solid foundation and keeping it from sinking into the roadbed, its open ends allowing it to be filled with dirt and made practically solid. The clamp has its inner surface conformed to the tie and has a jaw to engage a rail, a flange also engaging the top and edge of the tie flange. The two clamps of a pair are secured in place by bolts which pass through the body portions of the clamps and transversely through the tie.

Electrical.

TELEGRAPH SOUNDER.—David M. Dunn, Abingdon, Va. This improvement is designed to dispense with the local battery and extra sounder magnets at each station, enabling the ordinary relay with its relatively feeble power to produce a loud and distinct sound without impairing the efficiency and certain action of the relay armature. The invention comprises an attachment to be placed on a relay already in use, there being connected to the relay armature a broad, flat and thin plate held rigidly at one end and concave or buckled in the center, so that when it is deflected by the slight power of the relay armature it will emit the cry of a buckled sheet of metal, changing its plane with a click producing a sound wave of considerable volume and intensity.

SIGNALING APPARATUS.—Adolph Gaßing, Carlstadt, N. J. This is an apparatus more especially designed to prevent head collisions on trolley and other railroads, and the invention consists principally of an electro-magnet at each end of a section and a signal-carrying circuit wire leading from each magnet to the other end of the section, to connect with a ground contact point adapted to be closed by the armature of the electro-magnet at this end of the section, the current passing through the circuit wires containing the signals being controlled by a part carried by the car. The signal boxes are designed to have each a night signal in the shape of a red electric lamp and a day signal in the shape of targets having "safety" or "danger" positions.

ALARM DEVICE FOR ELECTRIC MOTORS.—Walter A. Gibbs, Pawtucket, R. I. This is an alarm for motors in which an armature rotates within field magnets, and more particularly for the motors of electric cars, where the motor is so inclosed that the armature and shafting cannot be readily inspected to ascertain whether or not the armature is rotating evenly in its bearings. The invention provides very simple and inexpensive means whereby the armature is made to serve as an automatic circuit closer, indicating when the armature itself, from any cause whatever, whether from wear or displacement of bearings or springing or buckling of shaft, touches a field piece or stationary magnet of the motor. By this improvement every bearing may be used until it is worn out, and no inspection for wear or adjustments necessary until the target indicates such need.

TRACK CIRCUIT RAIL JOINT.—George H. Williams, Fort Smith, Ark. This invention relates to a formerly patented invention of the same inventor, rendering the rail joint capable of conducting the current from one rail to the other. In the beveled upper edges of each of the fish plates is a longitudinal groove to receive a copper conducting wire, held by bending its ends downwardly on the ends of the fish plate, and made to bear firmly or jaw against the rail when the joint is screwed up, while a copper or steel spring in the form of a broken ring is fitted over two or all of the bolts between the inner face of the fish plate and the adjacent face of the rail web. The improvement is easily applied and the conductors are concealed, so that they cannot be tampered with or broken.

Mining, Etc.

SEPARATOR.—Albert Senef, Laramie, Wyoming. This is an improvement more especially designed to facilitate placer mining, for separating the fine gold from the sand and tailings and also for treating pulverized material from quartz mills. Within a shaking frame is arranged a series of opposed, partly overlapping, inclined aprons, whose upper ends are nearly at the same level, while the aprons are pivotally connected to the frame at their centers to permit of adjusting their inclination. There are stationary and shaking aprons, and the aprons receive material directly from a feed sieve, the material being discharged from one set of aprons to the other, and the meshes of the fabric in the final

aprons being designed to retain the last of the gold washed down.

Mechanical.

LATHE ATTACHMENT.—Walter H. Gripman, Sioux Falls, South Dakota. To facilitate cutting gears, grooving taps and reamers, splining shafts, cutting T slots in chucks, and various other work done on a milling machine, this inventor has devised an attachment consisting principally of a base plate adapted to be secured to the tool block, and carrying a casing mounted to turn, a shaft frame sliding in the casing having bearings for the milling tool shaft. On the casing and on the base plate are graduations, to aid in setting the casing, and the entire attachment is adjustable on the lathe in a transverse direction, and moves with the feed carriage in the usual manner.

FOURDRINER MACHINE.—Thomas H. Savery, Wilmington, Del. This invention provides improvements whereby any particles of pulp or other matter carried by the return run of the deckle strap are removed and carried off beyond the machine. The strap passes in the usual manner around two flanged wheels, one near the breast roll and the other near the suction boxes of a Fourdriner machine, and passes through a wash box in which are curved and segmental supports and lateral springs, the strap in its passage being not only washed and cleansed of all foreign material, but being guided, wiped and dried.

SCREW POINT SWAGING.—Simon Zolot, New York City. In a mechanism for making gimlet points on screws, this inventor provides improved cutters and means for moving the cutters from each other while producing the point. The cutters are carried on supporting slides moving transversely of the direction of the feed, and are operatively connected with a longitudinally moving slide which has diverging guides engaging the cutter supporting slides to move them in opposite directions.

MACHINE TO POINT BUTCHERS' SKEWERS.—Frederick Harrison, Owen Sound, Canada. This machine automatically feeds blank pins in double lengths to the cutters by a rolling motion, by means of belts which press the pins against a rounded surface, where they are rolled and at the same time acted on by rotary cutters. By the novel arrangement of the cutters around the convex surface of the rolling beads the pins are tapered by one set of knives and the points sharpened by another set on the same head, the belts then dropping the pins into carriers by which they are conveyed to boxes convenient for handling.

MACHINE FOR MAKING HOOPS, HANDLES AND CARRIAGE MATERIAL.—James Fowley, Cobden, Ill. This machine cuts articles direct from the logs or saplings, and is a combination construction by means of which the logs may be fitted or cut up longitudinally by a saw and planer after having first moved the first two planer heads and gang saws back out of operative position. The machine not only cuts and shapes the hoops, but planes them by planer teeth or bits carried by the gang and main saws. The kerfing saws may be spaced apart as desired and the shaping cutters made in patterns to suit the adjustment of the knives, thus working out hoops or pieces of any desired widths.

Agricultural.

PLANTER.—Henry S. Blood, Park Rapids, Minn. This invention provides a regulating device to be used upon any character of seed planter, and controllable by the driver to gradually increase the distance between rows, if distance has been lost, or gradually decrease the distance, if distance has been gained, during the operation of planting. Means are also provided for driving the marking shaft or stopping its revolution, as well as for adjusting the markers. The attachment is very simple and inexpensive, and the driver has full control of the machine without leaving his seat.

INCUBATOR.—Archibald Kerr, Carmichaels, Pa. This invention relates especially to the construction and combination of the heating and moisture tanks of incubators, providing simple and inexpensive devices to promote an efficient circulation of both the heat and moisture, and also providing a regulating device, automatically operated, to control the heat in the incubator chamber. The thermostat, which is located in the incubating chamber, is preferably made of two elliptical strips of brass and an intervening strip of iron, the ends of the strips being secured together and the lower elliptical strip attached to the bottom of the incubator.

Miscellaneous.

BICYCLE SADDLE.—George L. Pierce and Joseph E. Parks, Brooklyn, N. Y. This is a ventilating saddle designed to automatically accommodate itself to the necessary movements of the rider. The cantle consists of an arched plate or bar whose extremities are connected by a semielliptical spring, bowed downwardly, and so connected with the cantle ends that each may have end movement on the other. The pommel also consists of two tubular horns into which extend members of the main supporting spring of the saddle body, this spring being preferably made of spring wire. It is designed that the portions of the body brought into contact with the saddle will be subjected to a minimum of strain, and will be in a great measure rested during continued riding, preventing any prejudicial effects.

SEWING MACHINE.—Richard M. Melhuish, London, England. This invention is for improvements in machines sewing straight buttonholes before cutting them, and more particularly insuring such smoothness and certainty of action and absence of vibration at high speed as to enable the machine to stitch the hole after cutting as well as before cutting. The vibratory work plate of the machine has an opening into which extends a rectangular clamping jaw of a work clamp section of spring metal, the jaw being slit in a longitudinal and vertical plane, while a spring moves the clamp upward and a cam presses it down upon the work.

APPARATUS FOR EVAPORATING LIQUIDS.—Leon F. Hauptman, New Orleans, La. Two patents have been granted this inventor, in one comparatively inexpensive apparatus a heated current of air being passed over a flowing sheet or film of liquid, to evaporate the water and finally discharge the solution in concentrated form. Steam is passed through several pipes in chambers of the heater and a liquor tank, and while the liquor is flowing in one direction air is drawn through the apparatus by a suction fan, and becoming heated by the pipes, passes over the surface of the flowing liquor, taking up or absorbing the moisture. The degree of heat imparted by the steam is designed to maintain the liquor substantially at the boiling point. In another apparatus the liquid is condensed as it passes in a thin film or sheet through long lengths of tubing, a series of pipes being arranged vertically in a drum and communicating at their upper ends with a receiver and at their lower ends with an absorbing chamber, air being forced through the heater and into the absorbing chamber, and a perforated plate distributing the air in the latter chamber. The apparatus is designed to condense the liquors treated to any desired degree.

MANUFACTURE OF THERMOMETER TUBING.—Francis S. Tomey, Birmingham, Eng. This invention covers a method of making enameled tubings which are to have the scale etched through the enamel, producing a flat film of perfectly uniform thickness. The back of a piece having a bore is flattened, and the flattened surface is dipped into very hot molten enamel in a special form of furnace, the superfluous enamel being scraped off as the piece is removed to leave a uniform film, the enamel coated piece being finally drawn into tubing.

GAS GENERATING MACHINE.—Ulysses A. Garred, Lexington, Ky. This is a machine for the manufacture of heating and illuminating gas by forcing air through gasoline or other light hydrocarbon liquid, varying the carbon in the gas at will to suit any purpose, and without condensation in the pipes, making it practicable to run them in any direction and give no attention to traps or other places where similar gases would fill with sediment. The machine is constructed of material to be found in any plumbing or tinning shop, and it works automatically, being started by merely lighting any jet on the system of burners, when the drawing of gas from the reservoir causes water to flow into a motor which works according to the demand for gas.

GRAIN BINDING MACHINE TENSION DEVICE.—Philip R. Martin, Buffalo, North Dakota. In the binding mechanism for selfbinding harvesters, this invention provides a simple and inexpensive tension device by which the same tension may be applied to fine or coarse, rough or smooth twine, and be quickly and conveniently regulated. The device is hung under the binder, and has a post carrying a grooved wheel, a pivotally mounted plate carried on the post bearing against the side of the grooved wheel, the support also carrying a shoe, adjacent to which is a pivotally mounted arm carrying a roller, and the roller being spring-pressed against the shoe. The cord passes through the tubular end of the shoe, beneath a friction roller, once around a friction wheel, and through an eye to the binder.

DRAUGHT DEVICE FOR AIRTIGHT HEATING STOVES.—Thomas B. Gilmour, Dayton, Wash. This device is so made that at one movement of a damper or sleeve the air may be supplied to the bottom of the stove and cut off from the top, and vice versa, the air being then applied over the fuel to retard combustion. The flue conducting the air is airtight and is provided in an airtight manner, and while the draught device is attached to the stove the ashes and other sediment may be readily cleaned out.

HOT AIR AND STEAM BATH APPARATUS.—Salli Maschke, Berlin, Germany. This is an apparatus which may be used either as a hot air or steam bath, or a combination of both, and comprises an oven made of a number of detachable sections having at their adjacent ends registering apertures, the apertures being brought into registry by turning the sections, while an aperture cover receives a water beater. A casing incloses the oven, the shell being in two sections, and the upper section being removed when a steam bath is desired. The temperature within the casing is readily regulated.

CURTAIN POLE EXTENSION BRACKET.—Henry Reubel, New York City. This is a supporting bracket whose central member has a number of elongated holes, each having an enlarged portion, a pole carrying arm being guided in the supporting bracket. A button turning on the arm has a head which passes through one of the holes when in alignment with it, the head turning laterally while its shank engages the enlarged portion of the hole. The device is simple, inexpensive and readily adjustable.

SHUTTER WORKER.—James S. Patten, Baltimore, Md. This invention is for an improvement in devices for opening and closing shutters from the inside of the window, automatically locking them in open or closed or in intermediate position. The invention includes a geared shutter lever and worm, with a housing having a vertical pendent pin on which the lever is journaled, the housing having a lateral flange which, when bent into horizontal position, works in contact with the geared lever and supports it. The device is readily attached to or detached from the window casing.

FOLDING CHAIR.—Harrison Owens, Montesano, Washington. This is a chair particularly adapted for use in theaters, etc., and when folded up it may be revolved freely upon its support, facilitating the exit of the audience. The base has a vertical standard on which is vertically movable a frame capable of locking with the base, there being also a pivotally mounted back and seat, and a cam fixed to the seat engaging the standard. When the seat is dropped to a horizontal position the frame is automatically locked upon its support, it being possible to lock the chair in any desired position.

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.

Business and Personal.

The charge for insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in the following week's issue.

Marine Iron Works, Chicago. Catalogue free.

"C. S." metal polish, Indianapolis. Samples free.

Presses & Dies, Ferracute Mach. Co., Bridgeton, N. J.

Handle & Spoke Mch'y, Ober Lathe Co., Chagrin Falls, O.

Try us for manufacturing your wire or sheet metal specialties. The Enterprize Mfg. Co., Akron, O.

Screw machines, milling machines, and drill presses, The Garvin Mach. Co., Spring & Varick Sts., New York.

Contractors—Extend your business. Investigate Ransome's concrete system. 758 Monahanock Block, Chicago.

The celebrated "Hornsby-Akroyd" Patent Safety Oil Engine is built by the De La Vergne Refrigerating Machine Company. Foot of East 138th Street, New York.

The best book for electricians and beginners in electricity is "Experimental Science," by Geo. M. Hopkins. By mail, \$4. Munn & Co., publishers, 361 Broadway, N. Y.

Stay with your job, and with your wages pay installments for a profitable olive orchard. Booklet free. Whiting's Olive Colony, Byrne Building, Los Angeles, Cal.

Cripple Creek—Its History to date, Illustrated. Just out, with correct map and costly full pageviews natural as life. This great book will be sent free prepaid with our big 56 col. family paper 3 months on trial for 25c. (stamps or silver); club of 5, \$1. Latest mining news. Mention the SCIENTIFIC AMERICAN and address, Illustrated Weekly, Denver, Colo.

Send for new and complete catalogue of Scientific and other Books for sale by Munn & Co., 361 Broadway, New York. Free on application.

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.

(6379) L. W. asks for a recipe for a hair curling fluid. A. Take borax, 2 ounces; gum arabic, 1 dram; and hot water (not boiling), 1 qt.; stir, and as soon as the ingredients are dissolved add 3 tablespoonfuls of strong spirits of camphor. On retiring wet the hair with the above liquid.

(6980) H. & C. ask: What is the best proportion of ingredients to make a concrete wall for an engine house 22x34x12 feet high, 12 to 16 inches thick? A. In a concrete building the best hydraulic cement should be used. The proportions should be 1½ cement, 2 of clean sand with 3 parts broken stone. See SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 119, 285, How to Build Concrete Walls and Houses.

(6981) A. K. D. asks: Will you kindly explain which requires the most power—a water tower being 100 feet high, 8 feet diameter, with a feed pipe entering the bottom 6 inches diameter, or a 6 inch pipe 100 feet high, both considered to be full? A. It requires more power to pump through the pipe than to pump direct into the bottom of the water tower by the amount of the friction in the pipe.

(6982) Y. A. P., Jr., asks: Will a ground on one line of an alternating machine affect the machine? It is a 1,500 light Wood system. If so, why and how? A. The effect of the grounding will be practically nothing, but it introduces an element of great danger and should not be tolerated under any circumstances.

(6983) A. B. C. asks: 1. I have built motor 783 and it runs nicely. When running as a dynamo at 1,500 revolutions per minute in series with a galvanometer, it gives a deflection of 80°. If speed is further increased, the needle gradually falls toward 0, and even reaches 0 if the speed is very great. The galvanometer is wound to 1-64 ohms. What is the cause of the reduced current? Is this action common in all dynamos? A. Instances of drooping characteristic may be found in Thompson's "Dynamo Electric Machinery," pages 204, 205. They are to be anticipated when the field is weak compared to the armature. The lead of the brushes is also involved. The reducing the E. M. F. to 0 is a rather peculiar case. 2. Is the counter E. M. F. of a motor equal to its E. M. F. when run as dynamo at the same number of revolutions, if the strength of field magnets is constant? A. If the machine used as a motor rotated without resistance, then the two E. M. F.'s would balance each other. As there is always some resistance, the counter E. M. F. is less than the absorbed E. M. F. 3. If you send the secondary current from an induction coil through the primary coil of another instrument, why is there not a current in the secondary coil of the second instrument strong enough to be felt, if the first is strong enough to give a severe shock? A. The current in the secondary of an ordinary induction coil is very small; the shocking effect is due to the high potential and sudden changes of potential.

4. Knowing size and speed of a driving wheel, and size of a pulley, how can the speed of a pulley be calculated? A. Divide the diameter of driving pulley by that of driven pulley and multiply the speed of driving pul-