ENGINEERING INVENTIONS.

A propelling apparatus for vessels has been patented by Mr. Alonzo Cardoso de los Rios, of New Orleans, La. This invention relates to screw propellers for vessels, the propellers being made with a comparatively long axis and spiral leaves, and being either cylindrical or conical; a special description of forefront of the vessel is also provided for.

A railway switch signal has been patented by Messrs. Joseph W. Alexander, of Frazerville, Quebec. and Marshall Wheelhouse, of Campbellton, New-Brunswick, Canada. This invention covers improved means for carrying and operating three-throw switches by one lever with interlocking devices, which automatically lock the signals in position and unlock them for shifting.

A steering gear for traction engines has been patented by Mr. Albert P. Broomell, of York, Pa. This invention consists in certain combinations of bevel gears and friction driving devices connected with the motor shaft and the reversing shaft, by which motion is transmitted to the steering devices, whereby great efficiency and smoothness of action is obtained, and the machinery is free from much or all liability to breakage.

A steam engine has been patented by Mr. William Golding, of New Orleans, La. The invention consists mainly in grouping engines into pairs, connected with progressively arranged cranks on two independent shafts geared with and rotating a main driving or combined engine shaft, so the initial and diminishing pressures of the steam, working expansively, are made to produce a uniform effect from the order in which the greater and lesser pressures follow each other in the several cylinders.

MECHANICAL INVENTIONS.

A locomotive frame forging die has been patented by Mr. Thomas Morris, of Dunkirk, N. Y. This invention relates to a holding die or bed adapted to hold the leg and brace forgings of locomotive frames while welding upon said forgings the top connecting bar.

A saw mill feed mechanism has been patented by Mr. Edwin T. Gardner, of Rocky Mount, N. C. This invention covers a peculiar construction and arrangement of parts to facilitate running the saw log carriage back and forth, and for regulating its speed at will.

AGRICULTURAL INVENTIONS.

A fertilizer pulverizer and distributer has been patented by Mr. Charles F. Dinkle, of Carlisle, Pa. It is designed to attach the pulverizer to machines used for planting seeds, the attachment to be so made that the fertilizer will pass from the pulverizer into and go with the seed discharged from the planter.

A fertilizer distributer has been patented by Mr. Benjamin F. Archer, of Marietta, Miss. This invention covers a novel construction of wheeled distributers, the axle carrying a distributing toothed roller, the hopper having two compartments, there being a hinged grating in the upper one, and there being also a spring scraper, with other novel features.

A check row corn planter has been patented by Messrs. Valentine Weber and John Friedman, of Princeville, Ill. The wheels and axle and the seed dropping slide are connected by a trip wheel with arms and rollers operating a vibrating double cam, with other special details, to facilitate planting in accurate check row.

MISCELLANEOUS INVENTIONS.

An improved gate has been patented by Mr. Adelbert D. Mack, of Franklin, O. The invention covers a novel construction of sliding and swinging gate, in which the weight of the gate can be taken from the swinging crane when the gate is open or closed.

An improved saw has been patented by Mr. Harvey W. Peace, of Brooklyn, N. Y. The invention provides for such a form of making saws that the blade can be readily detached from the handle, thus facilitating the interchange of blades.

A holder for ornamental and fly paper has been patented by Mr. Vurlin G. Tansey, of Lonisville, Neb. The invention consists in a frame, with a series of spring frames, and with a series of cords extending from the outer rod of the frame to the inner plate, from which cords the paper is suspended.

A collar button has been patented by Mr. George Krementz, of Newark, N. J. The invention provides for making a collar button with a hollow head and stem, and formed and shaped out of a continuous plate of sheet metal, being simple in construction, strong, and durable.

A soda water apparatus has been patented by Mr. Achille Bertelli, of San Francisco, Cal. The invention consists in an apparatus for generating carbonic acid gas adapted to be placed directly on a fountain, or that can be coupled with a series of fountains for charging them.

A miter box has been patented by Mr. Joseph Cashin, of Washington, D. C. This miter box is so constructed that with a hand saw, without the addition of an extra back, it may be used for cutting any depth desired, and the device may be adjusted to any thickness of saw.

An adjustable keel block has been patented by Messrs. Frederick C. Lang and John F. Tietjen, of Rondout, N. Y. The invention covers a peculiar arrangement of inclines or wedges, so that vessels may be more firmly supported in dry docks, whether or not the keels of vessels are more or less out of line.

An automatic electric circuit closing device has been patented by Mr. Charles T. Ross, of New York city. The device is more especially intended for use in connection with fire alarms, and is arranged for normally breaking the circuit, but adapted to close the circuit automatically, at a given temperature.

A sash cord fastener has been patented by Mr. S. Howland Russell, of New York city. This invention covers a cord fastening with a plate perforated to receive the fastening screw, and with two or more points having inclined inner sides, so the cord may be compressed between the points and around the fastening screw.

A holder for use in carving meat has been patented by Messrs. Louis Chevalier and Leon Graillot, of Paris, France. The holder is composed of a sheath in a suitable handle, with jaws grooved on their inner faces, and blades acting as springs, so that the bone of a cutlet, or meat in other form, may be grasped and held when removing the meat therefrom.

A bottling machine has been patented by Mr. John C. Blair, of Louisville, Miss. The invention covers special peculiarities of construction, by means of which a very simple and efficient machine is obtained, the precise amount of liquid for each bottle being easily gauged, and the filled bottles removed with great facility.

An eraser case has been patented by Mr. Louis Krob, of Zanesville, O. The case has two slides, on one of which is an eraser, and the other has an abrading surface for cleaning the eraser; when used the slide is withdrawn from the casing, and is reversed and passed back, so the casing serves as a handle for the eraser.

A screen frame has been patented by Mr. George Phillips, of Tilford, Ill. The end bars of the frame have longitudinal grooves in the side surfaces, combined with which are side bars, with hook plates or clips on the ends, the hooks passing into the grooves in the end bars, the whole making a frame which can be readily adjusted in height and width.

A deodorizing and antiseptic water closet cover has been patented by Mr. Frederick H. Hubbard, of Brooklyn, N. Y. The cover is made in box form, with a non-corrosive interior vessel having fine perforations, so the liquid contents of the interior vessel will be allowed to drip when the cover is closed, and will not drip when the cover is open.

A tile machine has been patented by Mr. Warner Lewis, of Stone Bluffs, Ind. The invention covers a special construction and arrangement of cylinders, case, die plates, and core, alike applicable for the use of plungers or pistons instead of augers for forcing out the clay, and such provision is made that the union of two streams of clay on the sides of the forming core is greatly facilitated.

A picture case for tombstones has been patented by Messrs. Harvey A. Holloman and William R. Green, of Kingston, Texas. The invention relates to the general construction of the case, and the method of securing it in the tombstone, the outer surface of the case standing flush with the outer surface of the stone, and so the case cannot be removed without breaking the stone.

An improved gate has been patented by Mr. Mark W. Foster, of Minneapolis, Minn. It is so contrived that a carriage wheel, coming in contact with the end of a horizontally swinging lever, and pushing it along the ground, is made to raise and swing the gate on a lever, or cause it to roll back along a track, the gate being suspended at the middle from the said lever or track.

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 next issue.

Notes & Queries

HINTS TO CORRESPONDENTS.

No attention will be paid to communications unless accompanied with the full name and address of the writer.

Names and addresses of correspondents will not be given to inquirers.

We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

Correspondents whose inquiries do not appear after a reasonable time should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them.

Persons desiring special information which is purely of a personal character, and not of general interest, should remit from $1 to $5, according to the subject, as we cannot be expected to spend time and labor to obtain such information without remuneration.

Any numbers of the SCIENTIFIC AMERICAN SUPPLEMENT referred to in these columns may be had at the office. Price 10 cents each.

Correspondents sending samples of minerals, etc., for examination, should be careful to distinctly mark or label their specimens so as to avoid error in their identification.

(1) R. P. C. asks if there is any process by which iron and glass plates may be firmly welded together, that is, the two flat surfaces; for example: could a glass surface or plate be placed upon a plow shovel, or laid upon any iron surface in that manner? A. Plow shares or any iron surfaces can be faced with glass or enamel by pulverizing the material and mixing with water and a little clay or borax to make it adhere. Then heat in a furnace until the glass is melted and adheres to the iron. A thin coat would stick. Plates of glass could be warped to the shape of the plow share and melted upon it. The difference in contraction between the iron and the glass upon cooling would crack the glass off from the iron and destroy its value. We cannot see any advantage of glass over hardened steel, considering its brittle nature.

(2) W. S. B.—We can add little to what you are doing, except to arrange your stuff to bend as hot as possible. A jet of steam upon the piece while bending will help, where you are taxing the bending qualities of the wood to its utmost.

(3) F. P. asks: Would it require more power to run an engine placed 400 feet from the boiler, than one within 10 feet? A. The loss by placing the engine 400 feet from the boiler, would be that of condensation in the steam pipe, which would depend upon the protection of the pipe. The power of the engine in either case would be the same if the pressure maintained at the engine is the same.

(4) C. A. P.—We suggest you exhaust into a surface condenser immersed in the water of the pump with a non-return valve. This will cause a back pressure on the steam piston, which will require a little higher pressure of steam to do the work; or if you add an air pump to take off the water of condensation, it will require a less pressure of steam.

(5) J. D. B. writes: I have a small engine and boiler. Cylinder has 2 inches bore, 3 inches stroke. Is it strong enough to drive a boat 18 feet long, about 3 feet 6 inches wide at its widest place. Has side wheels with five paddles in each; boiler pressure, 60 pounds. A. No; your engine would be useless to drive side wheels. It could be applied to a screw propeller to better advantage if you have sufficient boiler; but even then the speed of the boat would be slow.

(6) L. P. B. asks how to get the essence of Portugal, or how to manufacture it. Also the essence of canella. A. The scarcely ripe fruit of the sweet variety of orange is made to yield an oil from the rind by means of the "sponge" process, which is the same as used in extracting the oil from lemon, and is practically nothing but expression. The varieties of apparatus used differ somewhat in various places. An essential oil erroneously called "white cinnamon" is obtained by the aqueous distillation of the bark of canella alba. These articles may be procured through any wholesale druggist. Information regarding the details of the processes may be obtained by consulting Spons' Encyclopædia of the Industrial Arts, or else either Piesse's or Christiani's works on perfumery.

(7) M. E. B. H. writes: 1 In a bale of my stove pipe iron, I find from three to five sheets nicely polished on one side while the rest of it is rough; why are they there, and is it polished on purpose? A. There are several grades of stove pipe iron, and the inference is that some of the better quality has become mixed in (possibly to make up the proper amount) with that of an inferior quality. 2. How is candy made with objects formed in the center in bright colors, such as flags or letters? A. The figure inside is first formed of suitable design and in appropriate colors, and the whole mass then covered with a transparent coating of some saccharine compound. 3. What is the process of brazing, and how is lead pipe formed? A. Brazing is synonymous with hard brazing, the alloy used generally consisting of equal parts of copper and zinc, and the flux used is borax. The manufacture of lead pipe is described in the SCIENTIFIC AMERICAN SUPPLEMENT, No. 416. 4. How is calico printed or stamped so as not to blur the different lines? A. By means of stencil plates. 5. What process do tinners use to remove finger marks from tinware and give it a bright, clean look after finishing? A. By immersion in acid.

(8) F. W. C. writes: I want a formula for making and using the composition which is used to take a mould from an undercut object say in plaster, which will be insoluble in an electrotype solution of sulphate of copper. A. We believe the following is about what you want: 12 pounds of glue are steeped for several hours in as much water as will moisten it thoroughly; this is put into a metallic vessel, which is placed in hot bath of boiling water. When the glue falls into a fluid state, 3 pounds of molasses are added, and the whole is well mixed by stirring. The article to be moulded is now placed in a cylindrical vessel sufficiently deep, so that it is an inch or so higher than the object. The inside of this vessel is then oiled, and a piece of stout paper is pasted in the bottom of the object to prevent the fluid from going inside, and if it is composed of plaster, sand is put inside to prevent it from floating. It is next completely drenched in oil and placed upright in the vessel. This done, the melted mixture of glue and molasses is poured in till the article is submerged to the depth of an inch. The whole must stand for at least twenty-four hours till it is perfectly cool throughout. The original is then removed. A mixture of wax and resin with occasionally a little suet is melted and allowed to stand till it is on the point of settling, when it is poured into the mould and left to cool. In order to prevent its dissolving in the battery mixture the copper must be dispersed very rapidly at first, and thus it becomes protected from the action of the solution.

(9) W. H. P. writes: Quite a controversy has arisen on the placing of two 60 inch return tubular boilers. They are to be placed side by side divided by a wall, thus making separate furnaces under each, etc. The blow off pipes are separate, no mud drum being used. They are connected on top from 36 inch by 36 inch domes, by 5½ inch pipe leading to a T near center, thence through one pipe to engine. Is there any danger of these boilers robbing each other of water? And if so, will you kindly give me the best and most effective remedy for the same? Will all boilers, large or small, or both, be affected in same way when similarly placed? A. In setting gang boilers the only precaution necessary to prevent unequal water level by unequal firing is to make all water connections separate for each boiler. No two boilers should be connected with one mud drum. The old style of connecting gang boilers with a common mud drum and a common steam drum was considered good practice when the steam connections were very large between the boilers and the steam drum, with the steam pipe taken from the drum, so that the pressure in each boiler was equalized. 2. Will a 3 inch pipe leading from top of shell of one boiler into top of shell of the other have any effect? And if so, what? Would they not rob as quickly through this with unequal fire, if not more so, as without it? A. A 3 inch direct connection between steam spaces of each boiler independent of the steam outlet might equalize the water level, but we do not approve of the practice that requires any such contrivance. Make the feed pipe to each boiler from the main feed pipe to contain a valve and a check valve, and use this valve to regulate the feed of the boilers. It is not always necessary to feed one at a time; you may feed half a dozen, shutting down the valves on those that are feeding too fast. Also keep the blow off for each boiler separated by a cock between the boiler and the main blow off pipe. It is good practice to put a valve upon each side of the check valve, for obvious reasons.

(10) S. C. M. writes: 1. I want a receipt for coloring wood purple and black, for small rollers. A. Pour 2 quarts boiling water over 1 ounce powdered extract of logwood. Brush the wood several times with this decoction, and when dry give a coat of pearl ash solution 1 drachm to a quart; lay it on evenly, and the result will be a purple color. For black: wash with a concentrated aqueous solution of extract of logwood several times; then with a solution of acetate of iron of 14° Baume, which is repeated until a deep black is produced. 2. I also want a process by which hard maple can be filled with something harder than itself, that will make it wear well. A. Try a filling composed of equal parts by weight of whiting, plaster of Paris, pumice stone, and litharge, to which may be added a little French yellow asphaltum, Vandyke brown, and terra di Sienna. Mix with 1 part japan, 2 of boiled oil, and 4 of turpentine. Grind fine in a mill.