

WHAT IS THE THEORY OF THE WATER POLISH?

This is a question of a correspondent, and although in our practice as a machinist we had, times without number, used water in taking the finishing chip for shafts, journals, etc., we had never considered the question.

One theory presented is that the friction of the iron against the edge of the tool produces heat, however slowly the work is performed, and that the edge is therefore disintegrated and roughened which prevents it from leaving a smooth or rather a polished surface.

If the only use of water in turning wrought iron is to keep the tool cool, why is soapy water, or water containing a solution of carbonate of soda used in preference to clear water?

We prefer to attribute the result of the combined action of the tool and water to lubrication. In ordinary turning the "diamond point" or "bossing tool" is used. Its action, as it is fed along while the shaft is turning, is to cut on the shaft a screw thread, differing from the ordinary screw thread only in being much finer than the thread of screws commonly used.

That water is a lubricator cannot be denied, as it is the only lubricator that ever reaches the stern bearing of a propeller shaft, and it is used to lubricate the steps of the spindles of turbine wheels.

Recent American and Foreign Patents.

Under this heading we shall publish weekly notes of some of the more prominent home and foreign patents.

LATHE.—H. L. Morse, New Bedford, Mass.—The object of this invention is to construct a lathe on which straight work may be turned as well as tapering and the latter as good as the former.

SELF-LOCKING APPARATUS FOR FERRY BOATS.—James L. Canham, Newark, N. J.—This invention has for its object to furnish an improved self-acting lock by means of which the boat may lock itself in the slip.

DUNG HOOK.—Jacob G. Good, Rapo, Pa.—This invention has for its object to furnish an improved hook by means of which the dung and bedding may be easily and expeditiously drawn out of stables.

MATTING.—John Michell, West Farms, N. Y.—This invention has for its object to furnish a cheap and serviceable matting to take the place of cotton and other mattings, and the coarser varieties of carpeting.

MACHINE FOR SAWING SHINGLES.—Rev. Enoch Conger, Lexington, Ohio.—This invention has for its object to furnish an improved machine by means of which one or more tapering shingles may be sawn from a block at one operation.

BLIND FASTENING.—Ebenezer B. Beecher, Westville, Conn., and Joseph G. Davis, Henry S. Frost and Anthony Davis, Watertown, Conn.—This invention has for its object to furnish a simple and convenient means by the use of which a blind or shutter may be securely locked in any desired position.

BUTTON FOR FASTENING CARRIAGE CURTAINS, ETC.—Solomon Bidwell, Bordentown, N. J.—The object of this invention is to construct a device whereby carriage curtains can be easily buttoned to the body of the carriage or to the bows of the wagon top, or to any other part of the carriage or vehicle, and whereby the curtain will be securely held in the desired place but can be easily unbuttoned again when desired.

SEED PLANTER.—E. E. Chesney, Abingdon, Ill. This invention has for its object to furnish an improved seed planter by means of which corn or other seeds may be planted accurately in check rows or in drills, as may be desired.

STUMP EXTRACTOR.—M. Mellen, Richland Station, N. Y.—This invention relates to a stump extractor which will do its work with the greatest efficiency and which is so constructed that power may be applied to it on either side or on both as may be required, and which will furthermore allow of an easy adjustment of all its parts and may be conveyed easily from one place to another.

CAR COUPLING.—Narcisse Reeves, DuQuoin, Ill.—This invention has for its object to furnish an improved coupling for railroad cars which shall be self coupling and at the same time simple and strong in construction and reliable in operation.

WINDOW SASH AND BLIND FASTENER AND LOCK.—Leander Pollock, Fishkill Landing, N. Y.—This invention has for its object to furnish a convenient means for fastening and locking window sashes and blinds.

BACK REST FOR LATHES.—H. C. Berry, Wauseon, Ohio.—This invention relates to an improvement in a back rest for lathes used for wood turning and consists in a movable segment placed vertically in the lathe in place of the ordinary back rest and provided with two adjustable friction rollers which bear against the piece of timber to be turned, and hold it steady.

VENTILATOR FOR RAILROAD CARS AND BUILDINGS.—Robert C. Graves, Barnesville, Ohio.—This invention relates to an improved ventilating apparatus to be applied to railroad cars, vessels, vehicles, public halls, churches, dwelling houses, etc., and consists in a metal or other pipe run-

ning through the car, vessel, or building having funnel-shaped openings on the outside for the admission of fresh air and provided also with peculiar arrangements for directing the fresh air into a car or room, in its passage through the pipe and for the discharge of foul air.

BOTTLE STOPPER.—Robert Robinson, Brooklyn, N. Y.—This invention has for its object to furnish an improved stopper that will close the bottle securely against the escape of gas therefrom, and which shall be so constructed that the greater the pressure the closer and firmer the stopper will be secured in its place.

MACHINE FOR MIXING COMPOSITIONS.—Alburtis Eagle, Trenton, N. J.—The object of this invention is to construct a machine, in which two or more ingredients can be united promiscuously into a compound. It is chiefly intended for mixing powdered slate with tar, for a roofing composition, but may be used with equal advantage for other compositions.

STALK CUTTER.—William Dexter, Augusta, Ill.—This invention relates to a machine for cutting up standing corn stalks on the field, so that they may be plowed under the soil and rendered available as a manure or fertilizer, thereby avoiding the labor and expense of cutting them by hand and transporting them from the field, or piling them up and burning them.

CLAMP FOR HOLDING ARTICLES WHILE BEING PLANED OR MILLED.—S. A. Morse, New Bedford, Mass.—This invention relates to a clamp for securing articles firmly in position while being planed or milled. The object of the invention is to obtain a device for the purpose specified which will admit of the articles being, not only clamped with facility, or very expeditiously but also in proper position relatively with the cutting tool in every instance.

ALARM LOCK FOR TILLS.—D. K. Miller, Bernville, Pa.—The object of this invention is to obtain a simple and efficient alarm lock for tills, one which may be economically manufactured and applied and be capable of having a number of changes or different combinations effected in the arrangement of certain working parts so as to require different manipulations thereof in order to admit of the till being opened.

ATTACHMENT FOR VEHICLES.—Edward Nason, William Nason and Oliver K. Nason, Orneville, Me.—This invention relates to a draft attachment for vehicles and has for its object the ready attachment of a horse to a vehicle and ready detachment therefrom, and a strong and durable construction and arrangement of parts.

AUGUR.—Charles Boernicke, Philadelphia, Pa.—The object of this invention is to arrange an auger so that the hole bored may be gradually enlarged at the bottom, for the purpose of more securely joining two pieces of wood.

CULTIVATOR AND CORN PLANTER.—Isaac H. Chappell, Lawrence, Kansas.—This invention consists in so constructing and combining a cultivator with a corn planter that the ground may be cultivated, and at the same time corn may be planted in the most perfect manner.

MATCH SAFE.—John Roebuck, Brooklyn, N. Y.—This invention relates to a match safe of simple construction, which is arranged with a design to cheapness and simplicity, while it answers all the purposes for which it is intended. The invention consists in the arrangement and construction of a match safe, the lower part of which forms a match box and is closed by a falling lid, which is hinged in a peculiar manner. The upper part of the device is so shaped that it is capable of receiving and holding waste matches.

CATTLE PUMP.—Miles D. Wilder, Laporte, Ind.—This invention relates to a class of pumps designed for supplying cattle and horses with water, and by which they are made to pump the water which they drink from wells or reservoirs in fields or yards.

COOKING KETTLE.—Benjamin W. Dunning, Brooklyn, N. Y.—This invention relates to a simple and valuable combination of the ordinary and indispensable culinary kettles, pans, and pots used by every family, whereby all the heat is made available, the different parts being so arranged that each one may be used for itself or in combination with the rest, as may be desired.

ATTACHMENT TO SLEDS, ETC.—Phillip Bourne, Williamsbridge, N. Y.—This invention relates to a novel attachment to children's sleds, by which they can be readily propelled or moved over the surface of the ground.

STOVE.—Obadiah G. Kennel, Ezra Smith, and Gardner L. Morrison, New York City.—This invention relates to stoves, in which gas, coal, and other oils, etc., are employed and burned.

BRIDLE.—James Harris, Kansas, Ill.—This invention consists in the combination with the bridle bit of tubes through which the cheek-straps pass. To these cheeks a pair of reins are buckled, which reins are in addition to the ordinary driving reins hung to the bit-rings.

TOOL.—Phillip Weck, Brooklyn, N. Y.—This invention relates to a tool for securing the covers to cams by compressing such covers about the sides of the cams.

CAR BELL.—A. Borronman, New York City.—This invention consists in pivoting the hammer of the bell and in connecting the end or rope directly thereto.

BOOT JACK.—H. D. Boss, Williamsburgh, N. Y.—This invention consists in the use of india-rubber within and around the jaws of a boot jack, for the purpose of obviating any slip of the boot, when being pulled off the foot.

ATTACHMENT FOR STOVE PIPE.—Ira S. Bullard, Geneva, N. Y.—This invention relates to a regulator for stove pipes, whereby the draft of the stove, etc., can be more perfectly regulated or adjusted.

CORN HUSKING SHIELD.—Almon C. Robinson, Louisiana, Mo.—The object of this invention is to provide a metal shield to be worn on either thumb for protection of the hand against the rough cutting surfaces of corn husks, when they are stripped from the ear, and to expedite the work of corn husking by the more effective operation of the instrument than that of the naked hand.

GLASS CLEANER.—J. B. Dunlop, New Haven, Conn.—The object of this invention is to provide an article for cleaning glass and other substances, on the surface of which have accumulated hard stains of paint, dirt, etc. For this purpose I have a small plate of metal, such as hardened iron or steel, on the upper side of which I form a handle by which the cleaner is held. On the under surface or face of the cleaner I form flutes or V-shaped grooves, which run diagonally across its face, and form a series of knife edges thereon; between each groove is left a flat surface, in order to prevent the glass or other article from being cut or scratched. When this cleaner is brought in contact with a pane of glass on the surface, on which have accumulated stains of paint or other substance, and rubbed to and fro, a thorough cleaning thereof is accomplished.

Answers to Correspondents.

CORRESPONDENTS who expect to receive answers to their letters, must, in all cases, sign their names. We have a right to know those who seek information from us; besides, as sometimes happens, we may prefer to address the correspondent by mail.

SPECIAL NOTE.—This column is designed for the general interest and instruction of our readers, not for gratuitous replies to questions of a purely business or personal nature. We will publish such inquiries, however, when paid for as advertisements at 50 cents a line, under the head of "Business and Personal."

J. B. M., of Ind., certifies to the good effect of cold water in alleviating heart burn. He takes it in doses of about 2 oz. every 5 minutes. He has used the remedy for years and has found it infallible.

F. C., of Ind.—We have heard of castor oil for softening and preserving leather, but never tried it. We can recommend good neat-foot oil as excellent.

A. D. B., of Mass., asks: "What is the actual horse power of an engine, diam. of cylinder, 13-1/8 inches; stroke, 30 in.; revolutions per minute, 72; pressure of steam in boiler 80 lbs.; steam cut off in cylinder at halfstroke." Your question does not contain all the data necessary to a correct answer. You say you have 80 lbs. in the boiler; you do not say whether you have a governor throttle between boiler and cylinder, nor give the length and size of steam and exhaust pipes. If, however, you get your boiler pressure—80 lbs.—on your piston cutting off at halfstroke, the mean pressure would be 67 1/2 lbs. and the gross horse power would be 99.078. The indicator is the only reliable method of determining the amount of power developed by your engine.

E. B. C., of Conn., asks if the pressure on the lower part of a steam boiler is greater or less than in the upper part, the weight of water not being considered. As we understand it, the pressure of steam is the same in every direction. Why not?

C. F. S., of N. Y., asks: "What is the rule for calculating the speed of pulleys driven by belts from larger pulleys?" We reply: As the speed of the driver is to that required for the driven, so is the diameter of the driven to that of the driver. Ex. A pulley 36 in. diameter turns 150 times per minute. Speed of driven to be 450. Required, size of driven pulley. As 150 is one-fourth of 450, so the driven should be one-fourth the driver—9 inches. . . . The best oil we know of for valves and cylinders is good sperm or lard oil. Pure tallow is also good, as the heat of the engine keeps it in a liquid form.

C. R. C., of Pa.—In Wheatstone's and Siemen's experiments described in No. 14 Vol. VI complete magneto-electric machines were employed. The obscurity of the notice occurred from omitting to say that the armatures were combined with magnets in the usual way. The error was the fault of the foreign reports.

P. D., of C. W.—Three methods have been used for determining the quantity of steam used by an engine. 1st. Measuring the water which is put into the boiler. 2d. Using as data for calculation, the cubical capacity of the cylinder, number of revolutions and pressure of steam. 3d. The use of the indicator. The last method is the most accurate and least troublesome. But when great exactness is sought for, the three plans should be employed at the same time, in order to serve as checks against the errors of either.

J. D. H., of Minn.—"How many round balls an inch in diameter can be put into a cubical box one foot on a side?" This is a very good nut for the juveniles to crack. J. D. H. has been informed that a large prize has been offered for a solution of the problem, but we do not believe it.

J. W. L., of N. Y., supposes air to be condensed in a cylinder to half its volume by pushing down the piston half way, and another cylinder with piston same diameter, but half the length. Now let a quantity of compressed air equal to that in the first cylinder be let under the piston of the second cylinder, will it have as much effect as the compressed air of the first? Certainly.

A. C. R., of N. Y.—"Does the axis of a vertical wheel in motion impinge on the same points of its bearing that it does when in repose?" No. The tendency of the wheel in motion, is to roll up one side of the axis.

G. B. M., of Iowa.—Your cellar seems to be damp for want of ventilation. If this theory be correct, you can no doubt easily prevent the evil, by means of some simple arrangement of partitions and inlets and outlets of fresh air. The outlet might be connected with the chimney.

R. S. T., of Mass.—1. The sphere and spheroids were once common forms of the electrical machine. They are not so convenient as cylinders. 2. Leyden jars coated with the amalgam used for mirrors would operate pretty well, but it would be very difficult to make them. 3d. Substitutes for the Leyden jar are often made by coating flat glass plates. 4. A battery may be made by arranging the jars concentrically in a nest. In this case the jars of course must be wider at top, than at the bottom.

E. V. W., of Pa.—If you boil tar the more volatile portion is expelled and the residuum is pitch. The pitch or asphaltum as it is often called, of coal tar is used for roofing and as a cement.

J. P. B., of M.—The ordinary oil paint seems to be in most common use for marking by the stencil plate. All colors of paint work well. Any water solution or mixture of color and sizing, of the proper consistency also answers the purpose.

J. H., of Minn.—Rancid butter is much improved by reworking in ice cold water. The sweetening is hastened by adding to the water a small quantity of bicarbonate of soda.

A. T. B., of Mass.—We are not aware that any distinctive name has been proposed for the solids which have an elliptical base.

C. A. G.—Only the inventor or his agent can obtain information at the Patent Office concerning a case prior to the actual issue of a patent.

W. S. M., of Ohio.—1. Emery is used in grinding lenses and rouge in polishing them. 2d. The best cast steel should be used for the springs of fire arms. 3d. Paper is made sensitive to light by brushing over it solutions of salts of silver.

J. M., of N. Y.—"Which would be the easier to drag up grade 8,000 lbs. on 4x48 inch wheels or the same weight on 4x52 inch wheels. Or which will run easier up grade large or small wheels." The effect of wheels on vehicles is simply to lessen the friction of the draft, and large wheels are more efficient than small ones. The size of wheels is determined, however, mainly by the height from the ground of the line of draft, in other words the height of horses. In going up or down grade the same principles apply. On a grade, however, the height of the load might be of practical importance, as the direction of the weight of load with reference to the axes of the wheels would be changed. The more direct answer to J. M.'s questions would involve more data than he has given, such as height and habits of his horses, etc.

L. M. C., of Iowa.—There are several new processes for making artificial stone, but we have not yet learned that any of them have proved entirely satisfactory or a commercial success. The ancient process of baking clay into brick has stood the test of all ages and climates. It is scarcely to be hoped that we shall have any successful rival to brick.

A. D., of Mass.—Starch water spread on glass makes an excellent substitute for ground glass to be used in backing up stereo-transparencies.

G. H. H., of Mich.—1. When heated from 32 deg. to 212 deg. zinc expands at the rate of 1 in 340, lead 1 in 351, silver 1 in 524, brass 1 in 596 copper 1 in 582, untempered steel 1 in 926. 2. The rate of expansion increases slightly at higher temperatures. 3d. It will be seen from the above figures that there is no definite relation between the specific gravity and expansibility. 4. Tubes and rods expand in length at the same rate. 5. The temper of metals affects their expansibility. 6. Address Henry Carey Baird, Philadelphia, for a treatise on watch making.

H. L. N., of Mass.—"Fill a wine glass so full of wine that another drop will make it overflow. Now you may drop into the wine as many needles as an empty glass of the same size can hold, and the wine will not overflow." Something like the above is constantly floating about in the newspapers, and it has been so often repeated that a great many people really believe it. The statement has little encouragement from science or experience. A needle or any other solid body, in proportion to its bulk, will displace the liquid in which it is immersed.

W. P. B., of Wis.—Naked wire was much used in the early days of electro-magnetism for making helices. With proper care in winding, electro-magnets so made are quite as good as others. The layers of the helix are well enough kept apart by common paper. Silk thread used for the same purpose would be no improvement. . . . A dozen Grove's cups will give a good light by way of heating platinum wire. Fifty or more are required to give a satisfactory light from carbon points.

Business and Personal.

The charge for insertion under this head is 50 cents a line.

R. Miller, Perth, Lanark county, C. W., wishes to communicate with manufacturers of screw and stud machinery, separately or combined.

A. Tweedy, Collinsville, Ohio, wishes to correspond with an aeronaut.