



on which to put a counter balance, to round up the motion to make it run as steadily as if it were not a crank motion?

19.—THE SEA WAVES.—Can any one oblige me by answering the following questions? What is the average height of the waves of the ocean, in a heavy sea, and also in an ordinary sea?

20.—PLUMBERS' SOLDER.—Will some one please tell me how much time is necessary to thoroughly eat all the impure metals out of plumbers' solder, and the quantity of water to put to the sulphuric acid?

21.—PURITY OF WATER.—In the SCIENTIFIC AMERICAN for Feb. 17th is reprinted an article by Professor Chas. F. Chandler on the "Effect of Animal Excreta in Water."

Answers to Correspondents.

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.

INDICATOR OF METALS.—W. H. L. is informed that there is no known substance that will attract gold, silver, or lead.

J. L. J., of R. I.—A. L. D., of Canada.—For the mechanical books you mention, Bourne's "Catechism of the Steam Engine," and Dussauce on "Perfumery," address H. C. Baird, Philadelphia.

CEMENT FOR ALABASTER.—In answer to query No. 7, page 90, Vol. XXVI., I would say that I have had success in cementing different kinds of stone together, and also stone to wood.

COPPER DIP FOR IRON CASTINGS.—Query 2, February 10, 1872. Dissolve two pounds sulphate of copper in three gallons of water, and add two fluid ounces sulphuric acid.—K., of Conn.

RUBBER BOOTS.—J. R. M. can patch his rubber boots as follows: Rub the patch and boot thoroughly with sharp sand paper. Smear both with liquid rubber five times, every time letting them dry.

WATERPROOFING BOOTS.—In answer to query 2, page 42 of current volume, I will say: Let C. B. take one pint neatfoot oil, one pound old rubber boots, and one ounce rosin.

TENSILE STRENGTH OF SWEDISH IRON.—O. W. is in error in quoting our statement, as to the above, as from 120,000 pounds to 160,000 pounds. Our figures (see page 107) are from 70,000 pounds to 112,000.

HYDRAULIC CEMENT.—J. A. T., on page 106, can take lime which contains from twenty to thirty per cent of clay or finely divided silica and make it into mortar with water.

VOLUME OF HYDROGEN.—W. W., page 90, current volume, will find 22,429.97-107 cubic inches in one ounce of hydrogen, being .0214 of a grain to one cubic inch.—R. T., of Ill.

SLIDE VALVE QUESTIONS.—Query 17, page 90, current vol. I more than agree with C. G. concerning the engine he has been repairing. I think there must have been some heavy rotary motion, either in the shape of fly wheel or mill stone, to carry the engine over the centers.

POUNDING OF PISTON.—Query 12, page 90, current volume. To W. M. T. I think the pounding in your engine arises from the connection of the piston rod and the cross head; if this is the case, there will be some difference in sound; for, as the engine starts on the front stroke, it forces the piston rod into the beveled socket in the cross head;

D. S., of Pa.—The insurance companies have good reason to charge higher rates for woolen mills heated by steam pipes, in which buildings woolen waste, wood, and other rubbish about the mill are allowed to come in contact with the pipes.

W. C. A., of Mass.—The reason that low steam will not dry yarn as readily as high steam is that the yarn holds its moisture by adhesive attraction with such force as to require greater heat than the ordinary boiling point to expel it.

LIGHT ENGINES FOR SAW MILLS.—In the SCIENTIFIC AMERICAN of January 20, query 16, inquiry is made how can an engine of light power be made to run a saw and cut lumber in proportion to the power used.

G. L., of Vt.—In the long run you will find it better to carry the water to drive your proposed factory through a canal sixty rods than to attempt to transmit the power through that distance by compressed air and the aid of an engine.

POUNDING OF PISTON.—Query 12, February 3, 1872. To W. M. T. Your engine may be out of line, so that tightening any of the bearings may be only temporary relief.

E. S. E., of N. J.—I contend that it is impossible for a player of ball, in throwing or pitching the ball, by any particular "twist" or "screw" of the wrist, or by any possible device, to cause the ball to describe a curve in the air, that is, to turn to the right or left in the track of a curve after leaving his hand.

D. W. H., of Mo.—The friction of the earth upon the ordinary plow is greater upon the mold board than upon the land side and bottom together.

R. G., of Nova Scotia.—We advise you to use steam pipes for your lumber drying room.

FACING OIL STONES.—The most convenient way to face oil stone that I have yet tried is to use No. 3 sand paper. I have used it for about six years, and have always found it effectual; and it is generally so convenient that it can be done at short intervals, and the stone at all times kept in a good condition.

Recent American and Foreign Patents.

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

CAR COUPLING.—John A. J. Chapman, Kansas city, Mo.—When two cars are uncoupled a dart headed link is held by one or the other, the free end of said link being held by springs in such a position as to freely enter the jaws of the opposite draw head.

UPRIGHT PIANO FRAME.—Justin Whitney, Boston, Mass.—The frame stands upright, and forms the back, which supports the strings of the instrument, the strings being drawn across it over the bridge and sounding board.

PROPELLING BOATS.—Charles Dancker, Hoboken, N. J.—In the stern portion of a canal boat is hung a transverse crank shaft, to which oscillating motion is imparted by means of steam or other power.

is drawn into a pocket formed in the stern of the boat, the projecting frames being dispensed with. In this case two rudders are preferably used near the sides of the boat.

CLOTH PLAINTING MACHINE.—Joseph A. Sawyer, Worcester, Mass.—This very ingenious invention relates to a new machine for plaiting fabrics to be used in the manufacture of shirt bosoms, and for other purposes.

WASHING MACHINE.—Henry S. See, Evansburg, Pa.—The clothes to be washed are placed upon the bed, and a reciprocating motion is given to a rubbing frame, which carries a rubber over the clothes.

WALL GUARDS FOR FURNITURE.—James L. Brander, Boston, Mass.—The object of this invention is to provide a cheap, safe, and convenient means for preventing the defacement of the walls of parlors and other apartments by the backs of sofas, lounges, or other similar articles of furniture.

WASHING MACHINE.—Martin Wayand Frank Way, of Springfield, Ohio.—This invention relates to a new washing machine of extremely simple construction. A frame supports the wash tub, which has a cover, the cover having a hinged lid over a central aperture.

TIME LOCK FOR BURGLAR PROOF SAFES.—John Burge, of Circleville, Ohio.—This lock is placed upon the inside doors of vaults or safes, and moved and operated by clock work, so that no keyhole or other aperture through the door is necessary.

BEER FORCING APPARATUS.—William H. Otto and Peter Korper, of Tremont, Pa.—This invention has for its object to furnish an improved apparatus for forcing beer out of the keg. It consists in the construction and combination of an apparatus by which, on opening a stop cock and the faucet of the beer keg, the beer will be forced out violently from the keg.

BIN FOR STORING AND DRYING GRAIN.—Jarvis Royal, of White Rock, Ill.—This invention is an improvement in the construction of bins, boxes, ships, boats, etc., in which grain or other substances are placed for storage or transportation, so that the substances placed in them—whether grain, fruits, flesh or fish, salt or sugar—may be dried and thus preserved from injury from dampness; and it consists in lining the inside of the bins with porous bricks or tiles.

CARRIAGE WHEELS.—Charles H. Appel, of Allentown, Pa.—This invention pertains to an improvement in the devices for securing the spokes of carriage wheels in the sockets of their wooden hubs; the invention consists of a detachable metallic ring or collar, provided with dovetailed lugs, in combination with the spokes and wooden hub.

FISHING APPARATUS.—Orange M. Fuller, of Catawaqua, Pa.—This invention consists of a float from which the line is suspended by a trip lever and spring in such a manner that when a fish takes hold of the hook and pulls on the line, the spring will be tripped by the lever and the fish will be hooked; also a weighted arm, held in a horizontal position by the spring, will be let fall to raise a flag as a signal that a fish is taken, and the hook will be pulled in by the spring, so as to fasten the fish, the said float being connected by a long line to a reel in the hands of the operator, to be pulled in by him to secure the fish.

ORE AND STONE CRUSHER.—Robert Learmouth, of Buffalo, N. Y.—A method of adjusting the stationary jaw, by means of detachable links formed of different lengths, constitutes this invention. In other respects the construction does not differ from other stone crushers in use.

VISE.—John Peace, of Camden, N. J.—The vise is placed on horizontal and vertical swivels, so it can be turned in suitable direction to hold the work in convenient position. The invention consists in a new general arrangement of parts, and also in a new application of the proper jaws. A flanged and flat sided screw, provided on opposite sides with jaws, when combined with and swiveled to a nut, constitute the claim on which a patent has been obtained.

CASTERS FOR FURNITURE.—William Ireland Blackman, of Columbus, Miss.—This invention relates to an improvement in casters for furniture. It consists in the mode of confining the ball and securing the caster to the leg. A shell in which the ball is confined, having a shank, a fastening ring, a thimble, and a holding pin are the several parts of the device.

STONE LIFTER AND STUMP EXTRACTOR.—Josiah Knoop, Casstown, O.—The invention consists in several improvements, upon the portable stone lifters and stump extractors heretofore known to the public, by which the inventor has produced a durable and convenient machine, peculiarly well adapted to its purpose.

CULTIVATING PLOW.—Cgaly Billups, Norfolk, Va.—The invention consists in constructing two wing mold boards so that they can be reversed on the cultivator plow and thus made to represent two different sizes and widths. The same wings will thus serve for all stages in the growth of the plant and never require to be left off the plow.

FENCE.—Alfred M. Aplin, Chetopah, Kan.—The invention consists in forming a fence of tubular clay posts placed close together in the ground and held in line by top caps at suitable intervals. This fence dispenses entirely with rails, is almost imperishable, and yet may be made at the small cost of about 30 cents a panel.