DEVICE FOR NDING RAILROAD CAR WHEELS ON OR OFF THE TRACK.—George T. Lape and Jephthah Leathe, New York City.—This invention relates to a device to be used for guiding railroad cars on or off the track, the form being modified to adapt it to the rail either of a street horse-car railroad, or of a railroad for steam cars.

WASHING MACHINE.—Charles Daniel, Lamonte, Mo.—This invention consists principally in a slotted cylinder, adjustably pivoted to the sides of the tub or box, in combination with a slotted adjustable concave frame, pivoted to the sides of the box or tub, by means of which the clothes are held forward to be washed by the revolution of said cylinder.

FILTERING TUBULAR WELLS.—Charles C. Cole, Northfield, Vt.—This invention relates to the construction of lower sections of tubing, to be used for obtaining water cheaply and readily in clay or sandy regions without the expense and trouble of digging wells.

TETHER.—Daniel Kidder, Franklin, N. H.—The object sought to be attained by this invention is to provide a tether by the use of which it will be impossible for the rope or chain employed, and by which the animal is harnessed or connected with the tether, to become entangled with or about the limbs of such animal.

CANE STRIPPER.—Amos Bean, Canaanville, Ohio.—This invention has for its object to furnish an improved instrument by means of which cane may be stripped quickly and cleanly.

STEAMBOAT SIGNAL BELL.—Patrick Kenny, New York City.—This invention has for its object to furnish an improved apparatus, by means of which the pilot from the pilot house may readily and unmistakably communicate his directions to the engineer.

WINDOW BLIND FASTENER.—L. C. Wing, Concord, Mass., and A. R. Bradeen, Waterborough, Me.—This invention has for its object to furnish an improved means by which window blinds may be held and locked both when closed and when opened to any desired angle.

SCAFFOLD.—L. B. Carpenter, Milwaukee, Wis.—This invention has for its object to furnish an improved scaffold for masons' and bricklayers' use, by means of which they can raise themselves as their work advances to any desired height, without its being necessary for them to unload the scaffold and build it higher.

PUMP.—John Ross, Greenville, Mich.—This invention has for its object to furnish an improved pump, by means of which water can be raised from deep wells quicker and easier than with the pumps now in use.

OPENING AND CLEANING COTTON, ETC.—Samuel Fay, Lowell, Mass.—This invention is designed to furnish an improved machine for opening and cleaning cotton and other fibrous substances in a thorough manner, without injuring the fiber or rolling or curling it, as is the case when opened by ordinary means.

COTTON CHOPPER AND THINNER.—David P. Lewis, Huntsville, Ala.—This invention relates more particularly to the cultivation of cotton, but is adapted to other crops, and it consists in operating a double-bladed hoe by machinery.

COVERING COT OR ROLLS.—Edward Livingston Perry, New York City.—This invention consists in forming a cot or covering for the rolls of spinning and other machines, of three or more separate layers or thicknesses of material, secured or united together, by means of cement, glue, or other suitable adhesive material, or in any other proper manner, either independent of the roll on which the cot is to be used, or directly upon the same.

CUTTING FILES.—Charles Vogel, New York City.—This invention consists in an improved arrangement of mechanism for feeding the file bloks to the cutter, whereby the speed of the file may be varied according to the size of tooth required. Also, in an inproved file-bed, so constructed that files of varying sizes can be secured to it; and also, in a novel manner of hanging the cutting-tool, whereby it can be adjusted to suit the desired direction or angle of inclination of tooth with reference to the length of the file block.

BROOM.—Hy. E. Newton, Manchester, N. H.—This invention consists in attaching one or more springs to the broom head, and securing their upper ends to the handle, in such a manner that they form the connection between the handle and the broom head.

PLOW.—Israel Long, Terre Haute, Ind.—In this implement, which is a wheel or sulky plowing machine, a plow is attached to either end of the axle outside of the wheels by means of adjustable arms or beams, one plow being raised out of contact with the ground while the other is in operation. The working plow stands in close proximity to the wheel on that side of the machine, and prevents clogging by uprooting and deflecting the weeds, stones, etc.

MILL GOVERNOR.—William Bahme, New Media, Pa.—This device is intended to close the water gate and stop the water wheel when a certain speed is attained. When the grain ceases to feed between the mill stones the rapid revolution of the runner frequently fires the woodwork. To avoid this a revolving governor ball is pivoted by an arm to the mill shaft, so as by the rise due to a high rate of speed to strike a plate and release the water gate which controls the admission of water to the wheel.

GANG PLOW.—J. H. Doutbit, Albany, Oregon.—This invention relates to a gang plow, and consists in a novel construction and arrangement of parts, whereby the operator has full or perfect control over the plows.

CAMP COFFEE POT AND BOILER.—Luke Plumb, Biddeford, Maine.—This invention relates to the combination of a camp tea or coffee pot and boiler, or pitcher, whereby an ordinary coal-oil lamp may be rendered serviceable as a heater for cooking in a small way; such, for instance, as the making of coffee and tea, warming water, and keeping a meal warm during the delay or temporary absence of a person from the table.

SEED PLANTING MACHINE.—D. S. Holman, Conneautville, Pa.—This invention relates to a machine for planting seed, and it consists in a novel seed dropping device, with means for regulating the discharge of the seed, and also in an improved means for opening the furrows and covering the seed after being dropped therein.

HOOP-SKIRT HOLDER.—Emile Loiseau, New York City.—This invention consists in arranging a device whereby the lower or any one hoop of the skirt is secured to the petticoat, thereby making actually one garment out of the two.

COMBUSTIBLE AND INEXTINGUISHABLE COMPOUND.—J. Sharp and R. Smith, Blackford, Perthshire.—This invention relates to the combination or mixture of certain materials for the production of a combustible compound which, when once ignited, becomes inextinguishable by any agent at present known, as it burns without atmospheric air, and will burn in water, m carbonic acid gas, nitrogen, and all other gases which do not support combustion. Under one modification the compound may be formed by mixing nitre, charcoal, and sulphur, all in a powdered state, and then adding and thoroughly commingling therewith a quantity of unground or unpowdered gunpowder. The proportions are four parts nitre, two parts charcoal, and one part sulphur, with the addition of two parts gunpowder.

PULLING FLAX.—John Harrington, Minomonie, Wis.—This invention relates to a machine for pulling standing flax for the purpose of harvesting the same, and it consists in the employment or use of a reel provided with clamps and arranged in such a manner that it will rotate as the machine is drawn along and grasp the flax, draw it out of the earth and deposit it upon the platform.

CAR TRUCK.—J. W. Reynolds, Hyde Park, Pa.—This invention relates to a mode of attaching or applying the pivot or king-bolt to the truck, whereby said bolt may be readily applied to and detached from the truck and a new one applied at any time, when necessary, with the greatest facility. This invention also relates to a novel manner of applying the springs to the truck, and in an improved arrangement of the boxes.

APPARATUS FOR HEATING HOUSES AND APARTMENTS.—G. Davies, London.—The object of this invention is to utilize all the heat eliminated from the flame of gas, or that of any of the oils or fluids possessing illuminating properties, by causing such flame to pass over or come in contact with a system of heat-radiating materials, so arranged as to absorb, conduct, and radiate the heat imparted to the said radiating material from the burning gases or fluids. The smoke or vitiated air from the burning gases or fluids are conducted off in a separate pipe to the chimney or other place of exit, and pure heated air is conducted into the apartment when a heating apparatus is used, or radiated within the various compartments of a cooking stove or range when the latter used.

DRAWING OR PROPELLING BOATS, BARGES, RAFTS, AND OTHER SIMILAR STRUCTURES, ON CANALS, RIVERS, ETC.—C. E. Brooman, London.—This invention consists in constructing a continuous rail or bar, or its equivalent, along the side of the canal or navigable water, which rail or bar is grasped by traction or friction wheels operated by steam or other power in the boat to be removed. It is attached by any convenient means to upright posts firmly fixed and ranging along the direction of the canal.

SAFETY RECORD PAPER.—L. M. Crane, Ballston, N. Y.—This invention relates to a safety record paper for bills, deeds, currency bonds and other instruments or documents which are liable to be forged or fraudulently altered. This invention consists in inserting in the paper pulp and incorporating with it, during the process of manufacturing the paper, one or more threads or strips of gutta percha or other material which will soften under the heat of the drying cylinders of the paper-making machine, and become inseparably united with the paper so as to be incapable of being removed or detached without destroying the latter.

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."

R. L. B., of Mass.—The alloys of magnesium reported on at the present time are all brittle, and are generally more easily oxydized than magnesium alone. But we hope you will continue your experiments, and let us hear from you when you shall have produced a useful alloy.

J. C. M. & Co., of Pa.—The oxygen of the air can readily be removed by phosphorus. But in that way you dispose of only one-fifth of the whole. There is no substance that will take up the nitrogen. We think therefore you will not be able to secure a good vacuum on the absorption plan.

H. S. C., of Pa.—The coloring matter of clay is generally iron or organic matter. On baking clay, the organic matter is burned up, and if the clay contained no iron or other metal, the ware will be white. The iron may be removed by soaking the clay in hydrochloric acid. The ordinary blue clay gets most of its color from organic matter. The red color of bricks is due to an oxide of iron.

W. E. B., of Pa.—You will find in the text books on chemistry reliable tables of the expansion of metals by heat. Of the metals you name, zinc expands the most.

J. C., of Tenn., quotes from Hooper's Medical Dictionary, article Caloric, some contradictory statements regarding the density of melted and solid iron. When the doctors seem so disinclined to agree on matters touching their own art, it is not surprising that they should be inconsistent on outside matters.

C. A. G., of N. Y.—The tarnish on silver ware is most often due to sulphur. A gentleman, who wears a silver watch finds that it is tarnished from the sulphur fumes of the rubber ring which holds together his ferry tickets. Sulphur fumes enough get into the air to account for all ordinary cases of tarnishing. The sulphide of silver is black.

G D. C., of Conn.—Wheels of lead, or rather a mixture of lead and tin, will carry flour of emery or crocus and will not deface the corners of an object and will give a perfect polish.

J H. P., of Mass.—There is necessarily nothing in the matter on postage or other Government stamps, or on envelopes, to induce sores on the lips. When they occur, as in the case of preparing replies to numerous correspondents, the soreness is to be attributed to the friction on tongue and lips which is much increased by the adhering quality of the dextrine.

T. H. K., of N. Y.—You say that attached to your water wheel is a four-feet bevel gear, driving a sixteen-inch bevel gear, on a shaft carrying a thirty-six inch driving pulley with fifteen-inch belt, and ask whether more power can be obtained by the use of larger gears. Judging from the size of the belt used to transmit your power we think your gears are full small. Really no more power is developed by large than by small gears, but as bevel gears are at best but mechanical makeshifts, absorbing power, we think the nearer the two wheels approach in size the better they work. Better use bevel gears of equal size and speed upon your pulleys. This statement is a reply to both your questions.

H. B. L., of Ind.—A boiler begins to make steam as soon as the water begins to heat, and makes steam as long as the heat is applied, under all circumstances. The steam pressure in a boiler to the square inch is as great in the water space as in the steam space with the addition of the weight of water. Water does not, in our belief, present a barrier or wall to the pressure of steam. You are mistaken in saying that steam will not go down through water. Steam exists in water, and if you will carefully study "Heat and Steam by Charles Wye Williams," H. C. Baird, Publisher, 406 Walnut street, Philadelphia, you will probably modify your present opinions.

H. N. G., of Pa.—Turning tools for iron will cut better if ground on the side of the stone running toward you Never grind a tool the temper and edge of which you wish to preserve, on a dry stone. It is a certain and effectual method of drawing the temper of hardened steel.

R. O. N., of Mich.—A large part of the saltpeter (nitrate of potash) now used is an artificial product. Gun powder makers at first had a prejudice against saltpeter made from nitrate of soda, but there is no way of distinguishing the artificial from the natural product.

S. N. M., of Va.—Magnesia is an essential element in hydraulic cements. Any magnesian limestone, will give on burning, hydraulic lime.

R. D., of N. H.—Coal is found in several localities in New England, and has been mined in Rhode Island. But there is not enough coal in New England to affect the fuel question.

S. N., of Wis.—Copper is smelted on a tolerably large scale in this vicinity. The largest copper smelting works however, are located in Baltimore.

P. B., of O.—The reason that pickles, apple sauce etc. made in an iron kettle look dirty and black, is that some of the iron is dissolved by the acid, and this with a little tannin contained in the fruit, produces a black substance which is the same as ordinary ink. Acid fruits should be cooked in a porcelain lined kettle.

B. B. R., of Mo.—Lithographic stone is worth about 50 cents per lb. If you send your sample to any practical lithographer he can give you a reliable opinion of its value. But be prepared to find out that you have been mistaken, and that your article is not the genuine thing.

N. S. of Cal.—The best solvent of gold is aqua regia (nitric acid 1 part, hydrochloric acid 3 parts). There are also many other solvents.

S. L., of N. Y.—The expansion by heat is generally understood by gas and steam fitters. You should observe that steam pipes for warming buildings are arranged so that no harm can come from the expansion.

M. B., of Del.—Leather is chemically a compound of gelatine and tannin. Your article, which you say contains no gelatine, is not leather, We trust, however, you have something better than leather..... You say that whenever you hear a fiddle you think of poor pussy cat. But you are misplacing your sympathy. Sheep and calves furnish us with catgut.

B. R., of Pa.—The fact that stretched rubber on contracting becomes cold is not new. You will find it mentioned in Grove's Correlation of the Physical Forces.

R. V., of Ind.—Sorgho sugar cannot be distinguished from ordinary sugar when thoroughly purified.

B. F. C., of Pa.—The question asked is this: If a cylindrical boiler of 3 feet diameter and 18 feet long has an extension attached, the inside dimensions of which are 18 inches long, 6 wide, and 1-64 high will the pressure to the square inch of surface to this contracted appendage equal that to the square inch on the boiler? We answer: The pressure will be the same, whatever the form and dimensions of the vessel, the only difficulty being to preserve the same temperature in the thin projection from the boiler as in the boiler itself. A thin film of steam at any noted pressure will exert the same force as a thicker stratum of one or more inches in depth.

G. W. J., of R. I.—There is no necessity of cutting large holes through your floors, or of cutting holes at random to lead belts from a shaft on one floor to one on another. The mechanic who resorts to such means is a bungler. The whole plan can be laid out full size on an unoccupied floor, or by a scale on a sheet of paper or a board. As an instance, if you wish to lead a belt through two floors, measure the distance of the center of the shaft carrying the driver from the first floor, taking the diameter of the pulley. Draw a line on the floor, sheet, or board representing the floor, and giving its thickness, with the diameter and position of the pulley. Then measure from the upper surface of the first floor to the ceiling of the next, making another line; then from the next floor or top of the ceiling—allowing for thickness between them—to center of driven shaft, giving the diameter of driven pulley. Draw lines from periphery of driver to driven, and where these intersect the floor lines, are the passages to be cut.

J. R. M., of Ohio.—You need have no fears on the point you suggest. We shall publish all that we think will afford interest and instruction to our readers. The society to which you referred, needed a strong hint. It will do the members no harm.

Sundry Answers:—E. K. C.—Mercury and oil are good examples.—J. B. C.—The royalty paid to the owner of a patent is always a subject of negotiation. The patentee has the right to fix the price so high that it amounts to a prohibition if he chooses. But we never heard of one who was such a fool as to do that. It is a matter of interest as well as of pride with a patentee, to have his invention used as extensively as possible. —C. H. M.—The best way is to advertise for an agent.—E. N.—In the back pages of the SCIENTIFIC AMERICAN, you will find information about dummy engines.—J. M. C.—Your perpetual motion will prove to be a perpetual stand-still.—C. A. S.—The screw jack simply enables a man to apply his strength to good advantage, but it does not increase his strength It is impossible for you to obtain any more power from your screw arrangement than you apply. Your perpetual motion is also a no-go.—R. H. S.—You would get a partial vacuum in the way you describe, but it is a roundabout way to do it. The part by which you obtain the vacuum namely, the air piston and cylinder, are shown in all natural philosophies.—C. R. S.—Cannot find the address without search.

Business and Personal.

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

NEW PUBLICATIONS.

The progress of the beautiful art of photography in this country, is indicated to some extent by the variety of books and other publications pertaining to the subject, which find a ready and extensive sale. From the publishing house of J. H. Ladd, 600 Broadway, we have lately received the following:

HUMPHREY'S JOURNAL FOR 1866. Semi-monthly, at $3 a year.

A fine volume of 400 pages, brim full of the latest and best things concerning photography that have been recorded during the past year. The journal is highly valued for the many original contributions by its experienced editor and home correspondents, and for its foreign reports.

THE SILVER SUNBEAM. 440 pages. Price $2 50.

This is a text book of photography, and has had a very extensive sale. It contains full explanations of almost every known photographic process, from the simplest to the most complicated, hot or cold, wet or dry. It has the rare merit of practical correctness in its directions, as probably all of its formulas and processes have been actually tested by the author, Professor Towler. The book presents the science of optics as applied to lenses, the history and progress of photography, complete directions as to preparation of photographic chemicals, collodions, developers, fixing agents, intensifiers, negatives, positives, ambrotypes, tintypes, silver printing, carbon printing, porcelain pictures, photographs on leather and cloth, transferring, relief printing, stereoscopes, engraving, Wothlytypes, eburneum process, how to glaze photographs, duplex pictures, irontype, etc., etc. All who desire to be fully posted in respect to photography should possess this work.

THE PHOTOGRAPHER'S GUIDE. Price $1 50. 150 pages.

This is a recent work from the pen of Prof. Towler, containing concise and brief instructions for conducting all the most approved forms of photographic operations, both in the gallery and in the field. Nothing can be more straight forward and plain than the directions here given. Solar printing, vignetting, saving of residues, opal pictures, and every branch of the photographic art, are admirably explained.

AMERICAN PHOTOGRAPHIC ALMANAC FOR 1867. Edited by Prof. Towler. 102 pages. 50 cents.

A record of the most valuable improvements, processes and formulas made during the past year. The almanacs for 1865, 1866, and 1867, are all in print.

THE MAGIC PHOTOGRAPH, 25 cents, the PORCELAIN PICTURE, with full instructions, $1 00, and DRY PLATE PHOTOGRAPHY, OR THE TANNIN PROCESS $1 00, all by Prof. Towler, are highly useful.

Inventions Patented in England by Americans.

[Condensed from the "Journal of the Commissioners of Patents."]

PROVISIONAL PROTECTION FOR SIX MONTHS.

3,203.—PROCESS AND FURNACE OR APPARATUS FOR THE MANUFACTURE OF STEEL OR METAL HAVING SOME OF THE PROPERTIES OF STEEL.—Thomas J. Chubb, Brooklyn, N. Y. Dec. 5, 1866.

3,205.—APPARATUS FOR SEPARATING SUBSTANCES OF DIFFERENT SPECIFIC GRAVITIES.—Thomas J. Chubb, Brooklyn, N. Y. Dec. 5, 1866.

3,217.—LOOMS AND SHUTTLES FOR WEAVING.—Benjamin Oldfield and Edward Oldfield, Newark, N. J. Dec. 6, 1866.

3,246.—SEWING MACHINERY.—Frank Armstrong, Waterbury, Conn. Dec. 8, 1866.

3,253.—BREECH-LOADING FIRE-ARM AND CARTRIDGES AND BULLETS FOR THE SAME.—Hiram Berden, New York City. Dec. 10, 1866.

4,256.—RAILWAY CARRIAGE AND WAGON.—Samuel Maynard, New York City. Dec. 11, 1866.

3,282.—SCRUBBING MACHINE.—Andrew Irion, Femme Osage, Mo. Dec. 13, 1866.

3,430.—NAUTICAL LOG.—Truman Hotchkiss, Stratford, Conn. Dec. 29, 1866

3,452.—METHOD OF EFFECTING THE CUTTING-OFF IN STEAM ENGINES, ALSO THE REGULATOR FOR CONTROLLING THE SPEED OF STEAM ENGINES.—Geo. H. Babcock and Stephen Wilcox, Jr., Providence, R. I. Dec. 31, 1866.