Business and Personal.

The Charge for Insertion under this head is One Dollar a line for each insertion. If the Notice exceeds four lines, One Dollar and a Half per line will be charged.

Notes & Queries

E. W. E. is informed if you will send some more particulars, to make your meaning plainer, we will endeavor to answer the question concerning forging crank axles.—S. L. N. F. is informed that we have already published so much on the "snake" question that we feared to bore our readers. We have received many letters on the subject, and every week adds to the number.—C. B. R., W. D. Z., W. E. D., and others.—For directions for making rubber stamps, see No. 13, vol. 25, p. 203 (26).—C. R. is informed that Mr. Rose has not yet published such a work. The information you desire can be gained by reading the Nos. of the SCIENTIFIC AMERICAN containing the articles you are interested in.—J, W. W.—Apply to a physician.—W. E. D. asks for a recipe to make eggs of Pharoah's serpents, and is referred to vol. 34, No. 14, p. 218 (2).—E. L. R. is informed that we are not very favorably impressed with the design of his engine.—R. C. of Canada is informed that he should use gearing in his machine in place of the lever.—S. E.'s inquiries have already been answered.—To inquiry of J. D. about balloons we refer him to p. 64, vol. 32.—W. L. is informed that his calculation of his hay press is correct. But he will not realize all the pressure, in practice, as some will be required to overcome friction of moving parts.—K. Bros. are informed that the question of grate bars can only be answered by themselves. Measure the water and coal used by each boiler in a given time.

(1) M. M. C. says: I wish to make a number of wheels of sheet brass about 3 inches in diameter with a flange ¼ inch wide turned over so as to be at right angles to the web of the wheel. On one edge of this flange is to be ratchet teeth about $\frac{1}{10}$ inch apart, and on the face are to be figures stamped into the brass. Can I stamp out the teeth and figures and then turn the flange over with rollers without impairing the uniformity of the teeth? A. It would be better to turn the flange and then cut the teeth with a wheel-cutting engine or some fixture adapted to that purpose. If the figures are marked before the teeth are cut, there is no danger of injuring by spreading of the metal with figuredies. 2. Can light brass articles be cast in iron chills successfully? A. Use sand for casting small articles.

(2) W. M. asks: Is there anything that will insure or give to steam-heated tar (gas tar) drying qualities? We find it necessary to return our small chain, after tarring, into a steam chest in order to make it, when cold, sufficiently dry to handle. This is objectionable in view of cost, also detrimental to the appearance of chain. A. We know of nothing. Perhaps some of our correspondents can give the desired information.

(3) J. T. asks: 1. What kind of metal is best for what is called a buzz, such as is used for cutting the twisted part of augers? What is the speed required for such a wheel? A. If you have reference to what is called the "tit" or tip of the auger, it is done on a steel wheel running at high velocity, say from two to four thousand per minute, dependent on the size of the wheel. 2. Have casehardened journal boxes ever been used for a high speed with advantage? A. Yes.

(4) C. J. M. asks: 1. Is there a rule for figuring cone pulleys? Is it necessary to know the distance from center to center? If so, why? A. C. J. M. will find his pulley question fully explained in "Wrinkles and Recipes." 2. I am building an engine, and I have two narrow rings with break joints on the piston head. Should they be turned the same size as the cylinder? A. Turn the rings rather larger than the cylinder bore and spring them in. 3. What kind of metal is best for engines and pump rings? How should the joints be made? A. For piston rings cast iron. For pump rings brass.

(5) C. Y. & Co. ask how to copper plate iron castings. A. A cheap method of covering articles of iron with a film of copper without the use of a battery is to clean them and immerse them in an acidulated solution of sulphate of copper, and clean by washing in water. The solution may consist of 3 lbs. sulphate of copper dissolved, and add 2 fluid ozs. of sulphuric acid.

(6) J. E. B. asks for a recipe for the manufacture of parchment paper? A. Dip white unsized paper for half a minute in strong sulphuric acid, and afterward in water containing a little ammonia. Another process is to plunge unsized paper for a few seconds into sulphuric acid diluted with half to a quarter its bulk of water and wash with weak ammonia.

(7) W. H. asks: What is the best fertilizer for celery? A. Apply to some gardener in your vicinity. By what process could I extract gelatin from buffalo hide or cow's hide? A. See "gelatin" in Appleton's "Cyclopædia."

(8) W. T. W. & Co. ask for information about polishing axes? A. The polishing of axes differs immaterially from other kinds of work that is finished on emery wheels. After the axes are ground, a piece of wood is inserted in the eye to conveniently hold it, and then it is held upon a common emery wheel (made of wood covered with leather and coated with glue and emery). A similar wheel covered with a finer grade of emery is used, and the finishing done on a still finer wheel covered with flour of emery being used. Some axe makers use but one grade of wheel, and varnish the work to prevent rust.

(9) R. S. R. says: I wish a recipe for making bird lime? A. The middle bark of the holly is gathered in June and July and boiled for 6 or 8 hours in water until it becomes soft. It is then put in a heap underground for 2 or 3 weeks, being watered if necessary, and left to ferment until it assumes a mucilaginous state. It is then pounded and kneaded until all refuse matter is worked out. To preserve it, it is kept in an earthen vessel and covered with water.

(10) J. G. asks: What is the Banting system of reducing flesh? A. Mr. Banting reduced his weight by leaving off eating plain bread, potatoes, fat meats, pastry, sweets, salmon, pork, and veal, and restricting his diet to fish, corn beef and mutton, toasted bread or crackers, and fruit. He drank nothing with milk or sugar in it, no wine but claret, and no beer. Will the cistern water from houses on which pigeons light, after being passed through sand and charcoal, retain any disagreeable odor, or be injured in any way? A. No.

(11) P. B. asks: Will the water rise in a tube or vacuum 4 or 6 inches in diameter as well as 2 inches? A. Yes.

(12) F. L. asks: Who is Mr. Joseph Saxton whose name appears as one of "Our Men of Progress?" A. Joseph Saxton was born at Huntington, Pa., March 22, 1779, died in Washington, D. C., October 26, 1873. In his youth he constructed a printing press and issued a small newspaper. At the age of 18 he went to Philadelphia, where he found employment with a watchmaker and afterwards with an engraver. His first invention was a machine for cutting the teeth of chronometer wheels. Afterward he constructed the astronomical clock, with compensating pendulum, now in the State House. He constructed many other machines and appliances, but these mentioned were considered sufficient to give his name a place among "Men of Progress."

(13) I. L. B. asks: Can you tell me how to clean postage stamps for a collection? A. We must decline to publish recipes for cleaning—removing postmarks, etc.—postage stamps, as it will be obvious that information of this would be taken advantage of by unprincipled persons to defraud the Government. The gum may be removed by soaking in a large quantity of water, and pressing between pieces of filter paper—this will also remove most of the grease and other stains and tend to brighten the colors.

(14) D. F. H. asks: 1. What kind of steel is used for making shoe knives? A. Good cast steel. 2. What oil is used for hardening? A. Any animal oil. Lard oil is generally used. 3. How is the temper drawn, and how low? A. Till the bright surface assumes a red or copper color.

(15) E. H. asks: What ought to be the size of a blower fastened on a 4 inches axle making 85 revolutions a minute, to produce 40 lbs. of pressure, the diameter not exceeding 18"? A. We think it will be necessary to use a positive blower, and the size will depend on the quantity of air you wish to use.

(16) D. B. K. asks if the bearing surface of two hardened globes of 25 feet diameter is greater than two globes of 1 inch diameter? A. If the globes are perfectly hard they will only have a point in contact, whatever their size. In practice, however, if one globe was resting on the other, we think the bearing surface would be greatest for the large globe,

(17) J. P. L. says: How can I compute the thickness of iron or brass in a hollow sphere necessary to stand a given pressure per square inch, the pressure to be applied within? A. Multiply the tenacity of the material in lbs. per square inch, and divide the product by the diameter of the sphere in inches.

(18) H. S. M. says: 1. The steam launch Arrow has wagon top boiler with large flat surfaces, which are stayed with ⅜ inch iron bolts 3 inches between centers; they are riveted into the shell in the usual manner. What is a safe load to use on stay bolts thus placed and fastened, and what pressure is safe on such a boiler? A. The data sent are rather incomplete, but we think the pressure should not exceed 60 lbs. 2. It has a screw 24 inches in diameter and 38 inches pitch. It makes 200 turns per minute. The hull is 28 feet long, with a beam of six feet She has a moderately "fine run." What is her probable speed? A. From 5 to 6 miles an hour.

(19) C. P. F. says: A. claims that by using foot valves, 1st 28 feet, 2d 14 feet, 3d 7 feet, 4th 3½ feet, 5th 1¾ feet from pump, that water can be pumped by suction atmospheric pressure 54¼ feet, while B. claims 33 feet is the theoretical, 32 feet the practical limit of pumping water by suction. A. We think B. has about the right idea.

(20) A. D. H. says: I am running an engine of an English make, the bore is 10 inches, stroke 27 inches. What is the horse power? A. You do not give sufficient data.

(21) J. S. B. & Co. ask: Is there any way that air could be purified after being once inhaled, or could oxygen be confined and admitted into a small cell at will, so as to sustain life? A. We think the difficulties to be overcome in realizing your plan, as we understand it, would be very great.

(22) P. J. K. asks for a formula to make rubber adhere to iron or steel? A. There are a number of good cements for this purpose in the market, and we think it will be more satisfactory for you to try some of them.

(23) S. G. F. says, for the best way to construct a penstock and the most suitable size for furnishing water to a 20 inch turbine wheel, the head being 36 feet. A. We think this may answer very well; but as we know nothing of the situation, we advise you to consult an engineer.

(24) To B. E. T. we say that every connection between motor and machine requires some power to drive it. The amount of loss in your case will depend upon the fitting up of the gears, and any guess we could make from the data sent would be of little value.

(25) H. E. E. says: We are using an engine 9 x 20 that has been running from one to three days in the week since 1861, with no repairs on the piston till last March, when the piston rings were so much worn that we had new ones put in. When first put in the saving of steam was one half, but lately we find the exhaust showing considerable leakage, so in taking out the piston I find the rings worn out again. A. We could not answer definitely without knowing more particulars. It was probable that the cylinder needs reboring. Allowing it to rust is very bad practice, and assists the wear of the rings. You should use sufficient oil to prevent this action, moving the piston slightly if the engine is not used for several days.

(26) H. E. H. asks: Will you inform me of a correct rule for finding the proper sizes of boilers for different sizes of steam engines? A. You will find some notes relating to the subject on p. 225, vol. 32.

(27) J. R. P. says: In a work entitled the "Electrical Theory of the Universe," I find the following: Immerse the prime conductor of a galvanic battery in a pint of water, and it will be converted into two thousand pints of its constituent gases, oxygen and hydrogen; now insert the same conductor into these gases, and it will be contracted back to one pint of water. Now if this change could be done quick enough, and not cost too much, would it not be a good motor for locomotives and other machines? A. Certainly, if.

(28) W. H. M. asks: 1. What is the longest span of suspension bridge in the world? A. We believe the largest suspension bridge that is completed has a clear span of 1,057 feet. 2. How much is the estimated cost of Brooklyn bridge? A. Between ten and twelve million dollars. 3. What is considered the greatest engineering work (as completed) at the present day? A. It would probably be impossible to name any single work which could be called the greatest in the opinion of everybody. 4. Is cold water pressure harder on a boiler than an equal steam pressure? If so, why? A. Cold water pressure is often more injurious than steam pressure, because with the former the boiler is not in the condition which occurs in actual practice, so that, when it is heated, it may be better able to resist the strain.

(29) I. T. W. says: I am making a steam engine cylinder 1$\frac{1}{16}$ inch bore and 2½ inches stroke. What size boiler will it require? A. See pp. 33 and 225, vol. 33.

(30) W. F. says: Will you inform me of the mode of casting iron on to steel so as to form a solid weld? A. Perhaps some of our readers who have experience can aid the correspondent.

(31) J. N. asks: How many feet of pipe heating surface will an upright boiler of the following dimensions furnish economically with an average of 5 lbs. steam? Boiler 5 feet diameter, 151 2¾ flues 7 feet long, 3 feet 4 inches diameter of grate surface. Good draught. A. Such a boiler should evaporate 9 or 10 cubic feet of water an hour. The arrangement of flues mentioned is sometimes advantageous, but not always. You could only determine the question, in your case, by experiment. There is no standard for rating the power of boilers that is generally accepted by engineers.

(32) J. L. K. asks: 1. Is the Thomas steam wheel applicable to marine propulsion, and is it cheaper in construction than an ordinary engine? A. We do not discuss the merits of special manufactures in these columns. 2. What power can I expect from a windmill whose sails (4) are 5 feet x 2 feet in what is generally described as a stiff breeze? I cannot give you the pitch of sails, but presume that part is all right; it was made in London, England, and purchased from a ship wrecked on this coast. A. See p. 241, vol. 32.

(33) J. L. says: Will you give me the process for making rubber stamps? A. The rubber used for stamps may be either the pure gum (caoutchouc) or the sheet rubber, containing about 3 per cent of uncombined sulphur (not vulcanized rubber). In preparing the stamp the form is first set up in clean type well oiled, a retaining rim is set up about the face of the form, and a little thin cream of fine plaster of Paris worked in with a fine camel's hair brush. When all air bubbles have thus been excluded, the thicker plaster is run in to the depth of about three quarters of an inch, and the mould allowed a sufficient length of time in which to harden. The use of strong alum water in place of the clean water used in mixing the plaster will give a much harder mould, but the plaster then is longer in hardening. After thoroughly drying and baking, the mould is placed in a frame of suitable size, the sheet of rubber (about ⅛ inch thick) adjusted on its face, and the whole put in a small screw clamp and heated slowly until the rubber becomes sufficiently softened to admit of being easily forced into the mould by tightening the screw. The subsequent vulcanization of the rubber may be effected by immersing it for a short time in a mixture of 30 parts bisulphide of carbon and 1 chloride of sulphur, and then exposing in a room heated to 70° Fah. until all the sulphide of carbon has volatilized. Immersion in a boiling solution of 9 ounces of caustic potassa in a gallon of water for a few minutes, and subsequent washing in clean water completes the process, and the form is then ready for mounting. If the rubber is sufficiently softened, a very little pressure will cause it to copy the mould perfectly without breaking it. This also answers several other correspondents.

(34) H. C. asks for a recipe for making sealing wax. A. For red wax take shellac 4 ozs., melt and add 1¼ ozs. Venice turpentine. Mix and add 3 ozs. vermilion. It can be poured into moulds while melted, or rolled into sticks after it has cooled a little.

(35) N. A. B. says: 1. In the description of a magneto-electric engine on p. 8, vol. 33, I read: "By a suitable commutator, the currents circulating through the coils on the stationary magnet can be sent through those on the armature." Is reference had to the battery current, or the induced ones? A. The battery current. 2. Please tell me how to use the tangent galvanometer? A. The tangent galvanometer of most recent construction is composed of a compass dial five or six inches in diameter, having a fine steel point in the center. Underneath the dial are placed coils, of insulated copper wire of several capacities, designed to measure various currents, from those of great intensity with but little quantity, to those of great quantity with but little intensity. The magnetic needle which is supported on the fine steel point alluded to is composed of a number of thin, oblong steel plates, riveted upon a flat ring of aluminum and so trimmed as to form a perfectly circular disk. The average weight of the needle does not exceed 20 grains. The coils are placed so that the current runs parallel with the meridian of the needle. They are half an inch or more wider than the diameter of the disk. The intensity of currents, as measured by the tangent galvanometer, is proportional to the tangents of the angles of deflection—thus: let an electric current be sent through the galvanometer coil, whose directive force is precisely equal to that manifested by the terrestrial magnetism, and the needle, before at rest upon the meridian, will be deflected 45°; double the current passing through the coil and the needle will cut 63° 30'; with threefold the intensity of current the deflection will be 71° 34'; with fourfold, 76°, etc., according to the law of natural tangents. For measuring resistance, etc., of lines, a set of resistance coils is used in connection with the instrument. 3. As the Camacho electro-magnet develops so much power with a comparatively weak current, will it not produce proportionally powerful induced currents? A. Yes, under some circumstances. 4. I purpose making the positive pole for sesquioxide of iron battery in the form of a carbon cell, made as described on p. 129 SCIENCE RECORD for 1875, containing a quantity of the sesquioxide; or in the form of a cylinder composed of coarsely pulverized coke and sesquioxide made similarly to the coke-manganese pole

described on p. 221, SCIENCE RECORD for 1876. Will both arrangements work, and which will be the better? A. The latter will have the least internal resistance, but will not be a very constant form. 5. Is there any alloy that expands when cooled, and contracts when heated? A. No; but a few of the metals or alloys, as those of antimony and bismuth, have the property of expanding considerably at the moment of solidification from fusion, owing to their tendency to crystalize.

(36) W. A., of Montreal, asks for the recipe for starch polish, or "concentrated starch," so-called? A. We do not know its exact composition, bnt think it is simply starch with a little grape sugar and paraffin.

(37) L. W. H. says: I want some method of preserving belts. I was told by an engineer to paint them with printer's black ink. Please let me know if this will damage belts that are in motion daily? A. A very little pure lard oil or neat's foot oil will preserve belts and prevent them from cracking. Castor oil is also used, but too much is worse than none. Daubing with printing ink is not recommended.

(38) R. B. G. says: I have a 12 x 24 inch engine, nearly new, runs 80 revolutions per minute, with which I wish to drive 2 pair 42 inch and 1 pair 30 inch burrs. My boiler is 42 inch x 26 feet, with two 16 inch flues. Is this boiler capacity sufficient? Give me the best plan to construct the furnace to give good draught and to economize fuel How much of the boiler shell should be exposed to the flames? What should be the size of an iron chimney, and how high? A. The boiler will be large enough in all probability. As to mode of setting, see p. 339, vol. 33.

(39) C. M. asks how to make a bichromate of potash battery? A. The carbon battery usually consists of a glass jar having within it a cup of porous, unglazed porcelain. The annular space between the sides of the vessels is filled with water slightly acidulated with oil of vitriol, and contains a sheet of zinc shaped so as to conform to the curve of the inner cup, which it nearly surrounds. A stick or prism of gas carbon is placed in the porous cup, and surrounded with a fluid made by adding strong sulphuric acid to a saturated solution of potassium dichromate until the red chromic acid just begins to separate in flakes, and then just enough water to redissolve the precipitate. The proportions of the several ingredients in this mixture should be about as follows: To 10 ozs. of potassium dichromate in a gallon of water, add 1 pint of strong oil of vitriol.

Please give me a recipe for polishing shells? A. See answer to H. C., p. 43, vol. 37.

(40) W. M. asks how to magnetize iron? A. Soft iron will not retain magnetism so as to become permanently magnetic. When a box of iron is surrounded by a coil of insulated wire (wrapped tight about it) through which a battery current is passing, the iron becomes a strong magnet. As soon, however, as the electric current is interrupted, the iron loses its magnetism and resumes its passive condition. You should consult some elementary treatise on electricity and magnetism or natural philosophy (physics). The best of these works may be consulted at the Astor Library.

(41) W. M. U., of Cork, Ireland, asks: 1. How is brown bronze on gas chandeliers and fittings done? A. Vinegar half a pint, copper sulphate 3 ozs.; hydrochloric acid 3 ozs., ammonium chloride 2 ozs., alum ½ oz. Dissolve the salts, reduced to a fine powder, in the vinegar and acids with the aid of heat, and apply to the brass warm. 2. Make a paste of 2 ozs. each of verdigris and vermilion, 5 ozs. each of alumand sal ammoniac (all in fine powder), and vinegar. Heat the paste, and spread it on the cleaned work previously warmed. The addition of a little sulphate of copper inclines the color to chestnut brown, and borax to yellowish brown. 3. Use the following bronze powder with an oil size: Copper filings 100 parts, carbonate of soda 60 parts; fuse, cool, powder, add 15 parts of copper filings, mix, heat to whiteness for 20 minutes, cool, powder, wash and dry. 2. How is black bronze done? A. Dip the work bright in nitric acid, quickly rinse with plenty of water, and place in the following mixture until it turns black: Hydrochloric acid 12 lbs., sulphate of iron 1 lb., pure white arsenic (arsenious acid) 1 lb. It is then taken out, rinsed with clean water, and dried in sawdust, and polished with black lead, and lacquered with a green lacquer made as follows: 1 gallon of wood naphtha (methylic spirit), 5 ozs. shellac, 4 ozs. gum sandarac, 1 oz. gum elimi; place in a tin flask and expose to a gentle heat for a day or two. Then strain off, add a half gallon of spirit, and treat as before. Finally dissolve in the liquor 6 ozs. of turmeric and 1 of gum gamboge. 3. Can brass before pouring be colored by placing anything on it so as to give it when turned in the lathe a rich color like straw? A. If we understand you, no. Yellow brass contains a larger proportion of zinc.

(42) I. H. P. asks: What will remove the stain of sugar of lead from lime? A. Try a little soda water (carbonic acid water). If this does not answer use oil of vitriol diluted with about 50 parts of water.

Should imitation black walnut paper wainscot be sized before being varnished? If so, what is the preparation for sizing, and what is the best varnish? A. Yes; use a thin glue water, and when perfectly dried varnish with copal.

What can be done to cleanse for domestic use iron vessels in which sulphur has been melted? The sulphur seems to have combined with the iron by incrustation. A. Boil in the vessels for some time strong aqueous solutions of caustic soda or potassa; then wash with plenty of clean water and scour with sand.

(43) S. S. T. asks how to make the lightest gas possible from coal, such as would be most suitable to inflate a balloon? A. Use a hard coal and work the charge at a high temperature and longer than usual. The gas should be well washed and purified. Peat gives a lighter gas than coal.

(44) M. M. says, in answer to C. R., if he will so arrange his flue that the smoke from his boiler will pass vertically downward into a small chamber of 3 or 4 times the sectional area of his smoke flue, and from that chamber pass into the smoke flue, very few sparks will ever rise. If he will keep the floor of this receiving chamber flooded with water, neither sparks nor dirt can possibly pass up the smokestack. I have seen this tested and know it to be a perfect cure.

(45) B. R. T. asks how to make printer's rollers, and moulds for the same. A. The roller mould may be a brass, zinc, or tin tube of the size required. Oil it on the inside before pouring the composition into it. This is to prevent sticking. For the roller composition to use in summer take good glue, prepare as for gluing wood work, and add about twice the quantity of good molasses, and boil together for a short time, say an hour or two, then pour in the mould. If too soft when it gets cold, remelt and add more glue.

(46) J. E. asks for a recipe to make black ink, and is referred to reply to T. C. (54) p. 76, No. 5, present volume.

(47) J. A. H. is informed that we know nothing of the opportunities for his business in Japan. We doubt if employment could be secured there that would pay better than here.

(48) W. J. asks: Have any detailed drawings of the Brayton gas engine been published? A. In No. 20, vol. 34, and No. 2, vol. 36 of the SCIENTIFIC AMERICAN, and in Nos. 24 and 58 of the SCIENTIFIC AMERICAN SUPPLEMENT, you will find cuts and descriptions that will give you the information.

(49) H. K. asks: What is the best solution for tempering coalpicks? What is used for tempering dies and knives, and how is it done? Which is the best method to straighten a horse's hoof? A. Vol. 31 of the SCIENTIFIC AMERICAN contains about a dozen good articles on hardening and tempering to which reference is made. No two experts in hardening and tempering use precisely the same solutions or manipulate the tools to be tempered in the same manner. Each one would probably claim their process as the best. Conditions are such, as regards quality of steel, hardening, etc., that it is impossible to give the best solutions or the best methods. In reply to the last question our correspondent had better consult a farrier.

MINERALS, ETC.—Specimens have been received from the following correspondents, and examined, with the result stated:

S. M. S.—The scale consists principally of carbonate and sulphate of lime, some carbonate of iron, and a little alumina and silica. There is nothing in it of a poisonous nature. The mineral matter forming the scale is most readily precipitated from the water by boiling. Allow the water to settle and siphon off from the sediment.—W. P. C.—It is flint.—M. C.—It is an earth or soil containing a large quantity of carbonaceous matter apparently of animal origin. Earth of a similar nature is often found in the caves of guano districts. The percentage of ammoniacal salts is very small, but it contains enough of the phosphates to be of some value as a fertilizer.—T. W.—It is not plumbago, but a shale of little value. It may pay you to look deeper.—B. F. G.—Nos. 1 and 4 are not trap rock, but a limestone containing garnets and idocrase—a compound of lime, iron, alumina, and silica. Nos. 2 and 3 contain copper.—H. W. K.—We cannot find your box of minerals.

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges, with much pleasure, the receipt of original papers and contributions upon the following subjects:

On Darwin and Others on Creation. By Dr. H. D. T.

On Determining the Proportions of Gear Teeth. By O. E. M.

On Hydraulic Cements, Stone, etc. By ——.

On Geometrical Problem and Instrument. By W. G. B.

Also inquiries and answers from the following:

D. L. H.—H. W. K.—J. S. A. B.—G. R. C.—W. C. L.—J. M.

HINTS TO CORRESPONDENTS.

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 inquries fail to appear should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them. The address of the writer should always be given.

Inquiries relating to patents, or to the patentability of inventions, assignments, etc., will not be published here. All such questions, when initials only are given, are thrown into the waste basket, as it would fill half of our paper to print them all; but we generally take pleasure in answering briefly by mail, if the writer's address is given.

Hundreds of inquiries analogous to the following are are sent: "Who publishes books on steam boilers? Who publishes a book on construction and running of steam engines?" All such personal inquiries are printed, as will be observed, in the column of "Business and Personal," which is specially set apart for that purpose, subject to the charge mentioned at the head of that column. Almost any desired information can in this way be expeditiously obtained.

OFFICIAL.

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were Granted in the Week Ending

July 3, 1877,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A complete copy of any patent in the annexed list, including both the specifications and drawings, will be furnished from this office for one dollar. In ordering, please state the number and date of the patent desired, and remit to Munn & Co., 37 Park Row, New York city.

Adhesive substance, Long & Drake 192,773
Advertising seat, etc., Lacomme, Marville, & Giron 192,770
Animal stocks, Bowman & Irving 192,672
Animal trap, F. Cowan 192,569
Aquarium, Paen & Sexton 192,595
Axle box covers, G. S. Winslow 192,667
Bag holder, M. P. Moule 192,652
Bale tie, F. M. Blake 192,730
Baling cotton press, P. C. Ingersoll. 192,762
Band machine, M, Blakey 192,615
Barrel head, M. L. Thompson 192,664
Bath apparatus, H. J. Bailey 192728
Bed bottom, S. H. Reeves 192,790
Bed, cabinet, Green & Williamson 192,621
Bedstead, C. Pabst 192,711
Bee hive, D. Thompson 192,605
Binder, W. H. Russell 192,791
Blowers, C. Hammelmann 192,623
Bobbin holder, etc., Nealon & Higgins 192,655
Boiler and superheater, S. N. Carvalho 192,678
Boiler cleaner, T. Craney 192,741
Boiler flue scraper, G. H. Noyes 192,786
Boiler, R. C. Duchesne 192,685
Book, parcel handle, G. Havell (r) 7,778
Boot, J. Miner 192,780
Boot-burnishing machine, J. W. Dodge 192,573
Boot machine, J. Kimball 192,582
Boot sole edges, A. Bolling 192,616
Boot-trimming machine, B. F. Leon 192,585
Box for collars, Green & Tifft 192,756
Brick kiln, W. T. Christy 192,634
Brick machine, T. James 192,763
Brush machine, J. L. Whiting 192802
Buggy top, J. H. & E. M. Keller 192,650
Bung extractor, W. J. Wademan 192,721
Burglar alarm, J. K. Johnston 192,698
Button, S. W. Young 192,613
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