(34) R. B. N. says: We cut muriatic acid with zinc, then dilute with ⅔ water, to solder tin. Are the fumes, arising from soldering with this production by the application of hot copper, injurious to health? A. Yes.

In canning lobsters, we do not use the bodies. Can they be utilized by being converted into guano or manure? A. They may be used directly as a manure.

I have replaced the copper used in soldering tin, with cast steel; can I tin the steel to stand heat permanently? A. Use a coppered iron.

(35) F. B. G. asks: What can I use as a solvent for marine glue which has become hard with age, so as not to destroy its adhesive properties? A. The proper solvent for this is ether containing little alcohol, in which it dissolves with the aid of heat and agitation. The operation should not be conducted in the vicinity of any flame.

(36) J. C. R. asks: 1. What are the analyses of oxide of zinc, red lead, litharge, and raw and boiled linseed oil? A. Oxide of zinc is composed of zinc 65 parts, oxygen 16 parts, litharge of lead 207 parts, oxygen 16 parts. Red lead consists of lead 621 parts, oxygen 64 parts. Linseed oil consists of 76 parts of carbon, 11 of hydrogen, and 13 of oxygen. The boiled is the raw oil heated with litharge. 2. Why does litharge dry so much faster than oxide of zinc, when mixed with linseed oil? A. Because drying results from the absorption of oxygen from the air, and this result is more promoted by the litharge than by the oxide of zinc. 3. What pigment is of a nice orange color, suitable for striping? A. Try chrome yellow. 4. How can linseed oil be refined and bleached? A. By successive treatment with acid, alkali, and water. 5. What is oxychloride of zinc? A. It is a combination of zinc, oxygen, and chlorine, made by union of the oxide of zinc and the chloride of zinc.

(37) L. K. Y. asks: Is the band saw patented? A. No.

What does 1 oz. of pure sheet silver cost, and 1 oz. gold? A. One oz. of pure gold will cost about $25; of silver, about $1.50.

In what kind of oil or solution should I harden my steel burnishers? A. Any fatty oil will answer.

(38) A. M. H. asks: Considering iron pyrites as $Fe S_2$, what would be the formula for the residue when as much sulphur as possible has been driven off by heat? Some of the books say $Fe_3 S_4$, others say Fe S. Which is right? A. When iron pyrites have been subjected to roasting, it has been found that it has assumed magnetic properties, and, according to Berzelius (who investigated the matter), its composition is $Fe_7 S_8$. This has been confirmed by Rammelsburg.

(39) C. L. says: For soldering and other blowpipe work, alcohol at $3 per gallon is too expensive, and we have no gas. What can I burn in place of alcohol that will burn freely, be clean, and get up heat enough to melt gold or silver on a piece of coal? A. Rape seed oil.

(40) O.U. asks: 1. Of what cloth are artificial leaves made, and how is the gloss put on them? A. Usually of the fine glossy silk stuff known as taffeta. The taffeta is dyed of the proper green in the piece before cutting out. It is then stretched out to dry, and afterwards further prepared with gum arabic on one side, to represent the glossy upper surface of the leaves, and with starch on the other, to give the velvety appearance of the under side. The latter preparation, colored to suit the exact shade of green to be given to the leaf, must be just of the proper consistence, making the leaf neither too stiff or too limp, while it gives the proper kind of under surface. Where the leaf requires a marked degree of this velvet texture, it is given by the nap of cloth, reduced to a fine powder and properly tinted. A little gum is lightly passed over the surface, and when partly dry this powder is dusted over the surface, the superfluous portion being shaken off. 2. Are the veins and coloring done by hand? A. For giving to the leaf the appearance of nature, by representing the veins and indentations which they always exhibit, various gauffering tools are made use of.

(41) J.B. H. asks: 1. Can I correct my clock by the aid of the almanac? A. Find the moment that the sun is on the meridian, by the sextant. An almanac calculated for that meridian will give you how much the sun is fast or slow for that day, which will be the correction required. 2. How is it that the almanacs differ as to the time of sunrise, etc., at any given place? A. They should not if properly calculated for the meridian of the place.

(42) T. G. B. asks: Can kalsomining be done on a papered wood ceiling, and how should it be mixed and put on? A. Yes; use a large proportion of glue.

How can I clean up an old gilt window cornice to make it look like new? A. Use a very soft sponge and tepid water.

If a body in motion strikes another body of equal weight at rest, which receives the greatest shock? A. The shock will be mutual and equal.

How is dry steam made? A. By superheating.

(43) W. T. G. asks: Please give me a recipe for making a gold ink. A. The ordinary gold writing ink is made by simply mixing gold powder with some mucilaginous liquid, in which the very finely divided powder is held in suspension.

(44) D. W. S. says: I have made a mixture of equal parts of strong lye and water, saturated with sulphate of copper, and obtained a green mass of the consistence of cream. What is it? A. The addition of an alkali to a solution of sulphate of copper is always accompanied with a precipitate of hydrated oxide of copper, which is insoluble. This body is of a green color, and has simply rendered the solution turbid.

How is verdigris made? A. Verdigris is a subacetate of copper, and is formed by placing plates of the metal in contact with the fermenting mass of the grape, or with cloth dipped in vinegar.

What is glass etching, and how is it done? A. It is the art of producing designs, etc., on glass by the corrosion of its surface by means of hydrofluoric acid. The glass is first coated with a thin film of wax, through which, to the surface of the glass, the lines of the drawing are cut with fine steel instruments. On submitting the plate so prepared to the action of the acid, the surface of the glass only, immediately under the lines cut through the wax, is reached and acted upon by the acid.

How can I make a small hand stamp? A. There are several methods that accomplish this; one of the best is that known as the Woodbury process, which consists in first photographing the object on a plate prepared with a solution of bichromate of gelatin, the action of light on which is to render the bichromate insoluble. Upon immersion in water, the parts of the plate not affected by the light dissolve out, leaving the picture standing in relief, which, on drying, becomes very hard. It is next placed upon a smooth, even block of zinc, and submitted to great pressure in a hydraulic press. The zinc die thus produced is used for printing.

How can I transfer engravings on to plate glass? A. Fix the engraving to the glass with ordinary paste. Etch with hydrofluoric acid, specific gravity 1·14. At the end of a few minutes, wash off the paper, and the design will be found reproduced upon the glass, the printer's ink having protected it.

(45) A. Z. asks: What will neutralize tartaric acid in sugar or candies? A. Freshly precipitated chalk will answer, or carbonate of soda; but it will be necessary for you to experiment with small quantities of the sugar until the proper proportion is determined. Care should be taken that the acid should always be slightly in excess of the alkaline substance used.

(46) H. S. asks: To what degree must water be heated to become steam? If there is a certain degree, why does not water in a vessel (as it necessarily is all of the same temperature) all go off into steam at once? A. The specific heat of water is found to be the highest of any known substance, and is taken as unity. If we take an ounce of water at 170° Fah., and an ounce of ice at 32°, and put them together, we shall have, when the ice is melted two ounces of water at 32°. The ounce of water has therefore parted with 142° of its heat in melting, the ice, which heat is said to have become latent. Water, at the normal atmospheric pressure, boils at 212° Fah., which is its maximum of temperature. Here again this apparent anomalous phenomenon occurs. As the temperature of the water reaches 212°, it becomes stationary; any further addition of heat is absorbed in converting the water into steam, which has the exact temperature of the water that produced it. Here also heat has been rendered latent, with an accompanying change in form of the water. As from ice to water, so from water to steam; or, from solid to liquid, so from liquid to gaseous. On condensation of the steam, and recongelation of the water, the exact amount of heat absorbed by the body is given out. A certain weight of steam condensed, at 212°, gives out 950° of latent heat. In its descent from 212° to 32° it gives out 180° of sensible heat, and again in its recongelation it restores 142° of latent heat, amounting together to 1,272°. Pressure influences the boiling point of water, and for that reason water may be heated (with the application of an adequate pressure) so as to melt lead. Likewise as the pressure decreases, the boiling point is lowered. At the hospital of San Bernard, in the Swiss Alps, which is 8,400 feet above the sea, water boils at 184° Fah

(47) G. A. F. asks: How can I tell if a piece of quartz polished on one side is artificially colored? A. By seeing whether rubbing with benzine affects the color, also whether, on careful heating as near redness as can be done safely, the color changes or blackens.

(48) A. H. W. G. asks: I intend making small quantities of nitrate of silver. What kind of furnace would you advise, to burn coal or wood? A. A stove of suitable form will answer the purpose.

In making a swimming belt, what weight of cork is necessary for supporting a man of 170 lbs. weight, and what kind of cloth should be used for covering? A. About 10 to 12 lbs. cork. Use canvas, a light duck.

Have photographs ever been taken with the natural colors of objects? A. No.

What is a good work on founding and casting, etc., and on beet root sugar? A. Ure's Dictionary is an excellent authority on all the subjects you mention.

(49) F. C. asks: How can I detect adulterations in claret wine? A. Such tests are too complicated for description here, and require a considerable knowledge of chemistry to be at all satisfactory.

(50) S. G. asks: Can you tell me of an easy way of separating water into its parts, and burning the gas? A. Water is decomposed when it is made part of a galvanic circuit of an adequate electromotive force, the oxygen being freed from the positive pole, while the hydrogen is found at the negative. The gases may without difficulty be collected separately, and burned in a compound blowpipe; but the experiment is a costly one.

(51) J. A H. asks: What is burnt lead? A. When metallic lead is exposed at a high temperature (above 612° Fah.) to the action of the air, it is rapidly converted into the oxide, which has the appearance of small beautifully colored yellow flakes or leaves. This is readily soluble in weak acids.

(52) W. S. asks: What tests are used to detect acids in oils? A. You do not state what kinds of oils. If free acids be present, the addition of a little concentrated solution of carbonate of soda to a sample of the oil will immediately cause an effervescence to take place.

(53) F. H. Jr. says: I have drawn some portraits in pencil on common drawing paper, and a few of them became soiled by handling. I want to go over them again with India ink. In what can I dissolve the ink so that it will not blur when I clean them? A. Good India ink, rubbed up with water, will not rub off when dry.

Is not the earth about as heavy now as it was at its creation? A. Probably heavier, on account of the constant falling of meteoric masses from the depths of space upon the earth's surface.

What are the two specimens enclosed? A. Iron pyrites.

(54) J. B. B. asks: What is decarbonized steel? A. It is a fancy name given to the material of which cheap gun barrels are made.

(55) T. S. S. says: We wish to run a millstone by a belt. There is not room enough between the timbers to use a 12 inch belt. I say that we can use two 6 or 7 inch belts, one on top of the other, on the same pulley, and get the same power that would be given by one 12 or 14 inch. My partner says we cannot. Which is right? A. The driving power of a belt depends upon the friction between it and the pulley; and this, in turn, depends upon the pressure or tension of the belt. Two belts being twice as strong as one, the tension can safely be doubled. Hence you may do the work of a 12 inch belt with two 6 inch belts, one above the other. There are some practical difficulties in the way, however, and you can readily put in an angular belt, which will do the work and take up less room.

(56) S. says: 1. I am building a small engine of 4 inches stroke and 2½ inches diameter. How large should I have the ports? A. Make the port area from $\frac{1}{10}$ to $\frac{1}{15}$ the area of the piston. 2. Which would be the best packing for the piston? A. Thin rings without springs will answer for piston packing.

(57) W. B. M. says: In reply to the question: What power (as usually rated on steam engines) is required to drive a 15 inch circular saw in 6 inch soft wood? You answer: "From 12 to 15 horse." I differ with you on this point, as I know of a 9 horse power engine which drives a 48 inch circular saw. A. By reading our reply again, you will see that the power was given for driving the saw up to its full capacity, that is, at the greatest speed and with the largest feed that could be safely maintained.

(58) H. L. K. says: A friend says that the pressure of steam has nothing to do with calculating the power of a steam engine, provided the engine has a governor on it; he contends that an engine working at 20 lbs. pressure will do as much work as it would working at 90 lbs. pressure. I claim that the power is calculated by the pressure of steam, length of stroke, and diameter of piston. Which is right? A. You are.

If a heavy weight were let fall into the deeper parts of the ocean, would it reach a point where it would remain stationary before it comes to the bottom? A. Yes, if the water is deep enough.

It is said that a ship on the ocean draws less water as it recedes from the shore, and that in fresh water a boat will gradually rise as it removes from the shore. Will the saltness of the water in the former case, and the warmth in the latter, account for these facts, provided they are true? A. Yes.

How do you account for this apparent inconsistency: A meat diet shortens life, yet life may be prolonged by food which supplies the waste of the system? A. Who is responsible for the statement that a meat diet shortens life?

(59) J. R. E. asks: I would like to know the best way of transmitting power from a water wheel on nearly level land to a distance of 1,000 feet? A. The most economical system under ordinary circumstances will be by means of a wire rope.

(60) H. H. C. asks: Is there anything less expensive than alcohol that will be as safe and clean for making steam in a small boiler fitted in a boat 31½ feet long? My lamp uses about a pint of alcohol in two hours. I have tried kerosene and found it too smoky. A. There are lamps for burning kerosene that do not smoke and are quite effective. We doubt, however, whether you can find anything that gives so little trouble, and is so generally satisfactory, as alcohol.

(61) M. G. asks: In a steam boiler, with the steam up, is the pressure more or less below the water level? A. The pressure is least at the top of the boiler, and increases towards the bottom, by the weight of the steam and water above.

(62) J. W. M. asks: Having occasion to open the steam chest and cylinder of my engine, neither of which had been examined for more than a year, I found the flanges under the rubber packing eaten into hollows about half way across. When cleaning I found the metal in these places would cut like, and had all the appearance of, plumbago. The joints thus affected were all below the tallow cup. The cylinder (on the upper side principally, and close to the covers) had hollows eaten into it; from one of these hollows I scraped the enclosed sample. The interior of the piston was nearly solid; and in cleaning away I found the face of the piston with hollows nearly quarter of an inch deep. Can you tell me the cause of the corrosion? Is the enclosed simply rust and grease, or has the iron undergone some chemical change? A. It was no doubt caused by impurities in the tallow. The iron is chemically changed, being converted into an oxide, which resembles plumbago. The use of tallow is becoming less common, as engineers discover its effects. Pure tallow is an excellent lubricant for cylinders, but little of the tallow that is sold is pure.

(63) R. C. asks: How can I mend the broken glass of an aquarium? A. Fasten a strip of glass over the crack, inside the aquarium, using for a cement white shellac dissolved in ⅛ its weigh of Venice turpentine.

(64) W. E. C. asks: What is the shortest method for finding the amount of water in a plain cylinder boiler when partially filled? A. Find the area of the cross section of that part of the boiler which is filled with water, and multiply by the internal length of the boiler. You will find rules for this area in any good treatise on mensuration.

(65) A. F. H. says: In a communication about tides, it was claimed that the Hudson river was 25 feet lower at New York city than at Troy, N. Y. Is this so? A. No. The fall from Albany to New York city is only 5 feet.

If a steamboat going at 20 miles an hour has occasion to back, how is sufficient power applied at the dead centers to overcome the resistance of the water against the paddle wheels? A. The power is exerted at other parts of the stroke, and the wheel is generally counterbalanced.

Can an ordinary rifle ball (60 to the lb.) be dropped from a hight sufficient to perforate a two inch oak plank, upon striking the earth? A. We think not.

(66) E. N. B. asks: How fast should a ¼ inch twist drill run to drill common iron? A. From 150 to 175 revolutions a minute.

(67) A. S. says: I have a steam engine, of which the lid of the steam chest has a hole about ¼ inch in diameter, probably the result of bad casting. I have poured melted Babbitt metal into it, but it will not last. I cannot put a screw tap into it. How can I plug it? A. Braze a plug in.

My cold water pipe is of lead, and it is very troublesome to keep the joints tight. I always used wrap joints made of thick cloth, with a coat of white lead, and wrapped tight with string. Can you tell me of some other means of closing these joints? I cannot get at them to solder them. A. The plan you follow is the best under these circumstances, if you cannot solder the joints; but if you can get at them to wrap them, they would seem to be accessible for soldering.

Can I find the horse power of a machine when the pressure of steam in the boiler is known? A. Not without more particulars than this.

(68) J. H. P. asks: Will a coil of steam pipe heat a kiln any higher than the heat of the steam? A. No.

(69) C. W. M. asks: 1. How can I remove a lime deposit or scale that has formed on the bottom of the boiler, and how can I prevent its formation? A. Try some of the scale preventives that have been noticed in our columns. 2. Should a boiler be refilled immediately after being blown off, or allowed to cool? A. It should be allowed to cool. 3. In what manner is it best to treat a boiler that is not going to be used for a long time? A. Either dry it thoroughly and give it a coat of oil, or leave it full of fresh water.

What is the best method of grinding a spindle valve? A. There are several machines for refitting valves and seats that seem to give very satisfactory results.

(70) W. says: 1. I want to run a 58 inch saw at 600 revolutions. It will be run from a shaft, which also runs several other, smaller saws. Engine is 15 inches diameter x 3 feet stroke, with a wheel 10 feet in diameter. Saw pulley is 2 feet in diameter. What is the best practice as to speed of engine? A. If the engine is in good order, you can run it at 75 revolutions a minute. 2. What should be the size of the pulley on shaft? A. You can drive the main line of shafting at 250 revolutions a minute. This will give you an idea in regard to the size of pulleys.

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

W. J. W.—It is a micaceous hematite. It is useful for iron ore, and for making a sparkling paint, for dusting fancy signs.—C. A. P.—It is magnesian limestone, and does not indicate the presence of a water-bearing stratum.—G. M. F.—They are lead, zinc, and antimony.—R. G. V.—It is a decomposed magnesian mica, of no value.—W. L. K.—It is plumbago, but not entirely pure.—A. M. G.—No. 1 is not iron; it is a magnesian limestone containing a small percentage of iron. No. 2 is a highly bituminous coal.—J. F. W.—It is not kaolin; it is sulphate of barytes, sometimes used to adulterate white lead paint.—P. F.—It is bronze mica. See *Science Record* for 1875.—J. D. P.—It is plumbago, but very impure. It should be experimented upon to see whether it could be used for polishing or for crucibles, etc.—E. B. K.—It is black tourmaline, a hexagonal crystal. It is a compound of boracic and silicic acids with alumina, lime, magnesia, soda, and potash.—S. D. M.—These disks are not fossils. They are marks of structure which are sometimes developed in anthracites as well as bituminous coals. The disks are frequently 1½ inches in diameter, as may be seen in some of the Pennsylvania anthracites and in Wigan coal of England. These structural markings appear to have arisen from a partial attempt at crystallization or from a tendency to develop planes at right angles to the direction of pressure, subsequent to the formation of the coal, and at a time when it was being consolidated under an increase of pressure and heat.—J. H.—It is an impure steatite or soapstone. The brown specks are coatings of oxide of iron.—J. F. W.—It is galena.—G. B. C.—Both specimens contain iron pyrites.

COMMUNICATIONS RECEIVED.

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

On the Locomotive. By J. F. J.
On the Use of Mosquitoes. By S. J. W.
On Gas Lighting. By J. D. P.
On the Trevelyan Rocker. By R. S.
On the Earth's Aerial Motion. By D. L. C.

Also enquiries and answers from the following.

E. C.—J. F.—R. J. S.—F. C. W.—N. J. K.—R. F.—N, —J. C. W.—J. G. A.—G. C.—W. T. D.—H. D.—J. S.

HINTS TO CORRESPONDENTS.

Correspondents whose inquiries 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.

Enquiries 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 enquiries analogous to the following are sent: "Who sells gas machines? Where can pure iron for chemical experiments be obtained? Whose is the best oil can? Where can box corner grooving machines be found? Whose is the best pump for mine purposes?" 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.]

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DESIGNS PATENTED.

8,315, 8,316.—CASSIMERES.—F. S. Bosworth, Providence, R. I.

8,317.—TYPE.—J. M. Conner, Greenville, N. J.

8,318 to 8,320.—EMBROIDERY.—E. Crisand, New Haven, Ct.

8,321.—MONEY BOXES.—C. Ferguson *et al.*, Derby, Conn.

8,322.—FORK SHANKS.—J. W. Gardner, Shelburne, Mass.

8,323.—WAINSCOTING.—J. Milne, Philadelphia, Pa.

8,324.—MEDAL.—J. H. Schreiner, Philadelphia, Pa.

8,325.—PEDESTAL.—W. Tweeddale, Brooklyn, N.Y.

8,326.—CASSIMERE.—W. B. Weeden, Providence, R. I.

8,327.—COFFIN HANDLE.—G. Rogers, W. Meriden, Conn.

SCHEDULE OF PATENT FEES.

On each Caveat $10
On each Trade mark $25
On filing each application for a Patent (17 years) $15
On issuing each original Patent $20
On appeal to Examiners-in-Chief $10
On appeal to Commissioner of Patents $20
On application for Reissue $30
On filing a Disclaimer $10
On an application for Design (3½ years) $10
On application for Design (7 years) $15
On application for Design (14 years) $30

CANADIAN PATENTS.

LIST OF PATENTS GRANTED IN CANADA, APRIL 29 to May 18, 1875.

4,705.—E. W. Grant, Ypsilanti, Mich., U. S. Step ladder. April 29, 1875.

4,706.—J. Doman, Owen Sound, Ont. Snow plow. April 30, 1875.

4,707.—J. W. Elliott, Toronto city, Ont. Fuel saver. April 30, 1875.

4,708.—S. Sherwood, Independence, Iowa, U. S. Water wheel. April 30, 1875.

4,709.—B. A. Higgins, New Portland, Me., U.S. Bending wood for shovel handles. April 30, 1875.

4,710.—J. B. Camyré *et al.*, Montreal, P. Q. Manufacture of cigars. May 6, 1875.

4,711.—J. Marin, St. Hyacinthe, P. Q. Planing and graving machine. May 8, 1875.

4,712.—D. Spinelli, Montreal, P. Q. Making soaps from mineral oils. May 8, 1875.

4,713.—S. Hall, Toronto, Ont. Concavo-concave-convex churn dasher and handle. May 11, 1875.

4,714.—E. G. Scovil, St. John, N. B. Charging iron into heating furnaces. May 12, 1875.

4,715.—L. Goddu, Boston, Mass., U. S. Machine nail rod. May 15, 1875.

4,716.—Wm. Brown, Easton's Corners, Ont. Swing gate hanger. May 15, 1875.

4,717.—S. M. Barré, Montreal, P. Q. Ironing board, etc. May 15, 1875.

4,718.—J. P. Bass, Bangor, Me., U. S. Photograph burnisher. May 15, 1876.

4,719.—R. B. Palmer, Chicago, Ill., U. S. Earth auger. May 15, 1875.

4,720.—J. D. Brewer, Muncy, Pa., U. S. Fishway. May 15, 1875.

4,721.—P. W. Hart, Camden, N. Y., U. S. Clothes pounder. May 15, 1875.

4,722.—J. Outerson *et al.*, Windsor Locks, Conn., U. S. Filter. May 15, 1875.

4,723.—H. A. Payne, Adams, N. Y., U. S. Wheel hub. May 15, 1875.

4,724.—W. R. Barton, Georgetown, Mass., U. S. Welt knife. May 15, 1875

4,725, 4,726.—A. L. Corey *et al.*, Ypsilanti city, Mich., U. S. Chain pump bucket. May 15, 1875.

4,727.—B. and A. Tolton, Eramosa, Ont. Pea harvester May 18, 1875.

4,728.—P. P. Mast, Springfield, O., U. S. Feeding mechanism for grain drills. May 18, 1875.

4,729.—W. R. Barton, Georgetown, Mass., U. S., *et al.* Peg cutter handle. May 18, 1875.

4,730.—D. McDonald, Hamilton, Ont. Door fastener May 18, 1875.

4,731.—S. I. Robertson, N. C., U. S. Box clamp for tobacco presses. May 18, 1875.

4,732.—J. Abell, Woodbridge, Ont. Reaper cam. May 18, 1875.

4,733.—J. B. Jones, Montreal, P. Q. Automatic railway signals. May 18, 1875.

4,734.—Wm. J. Copp, Hamilton, Ont. Cold air duct stone. May 18, 1875.

4,735.—J. H. Ashdown, Renfrew, Ont. Barrel stand and tilter. May 18, 1875.

4,736.—M. Johnson, Lockport, N. Y., U. S. Hoe. May 18, 1875.

4,737.—W. Warren, Chicago, Ill., U. S. Center piece May 18, 1875.

4,738.—D. Renshaw, Cohassett, Mass., U. S. Steam generator. May 18, 1875.

4,739.—C. W. Sulzbach, Virginia City., Nev., U. S. Boiler protector. May 18, 1875.

4,740.—J. Best, Chicago, Ill., U. S. Self-heating flat iron. May 18, 1875.

4,741.—H. Baughman, Doran Gold Mine, S. C., U. S. Saw gummer and sharpener. May 18, 1875.

4,742.—P. C. Ingersoll, Greenpoint, N. Y., U. S. Bed bottom. May 18, 1875.

4,743.—J. Ash, Montreal, P. Q. Compound for bites of insects, etc. May 18, 1875.

4,744.—R. Dudley, Erie, Pa., U. S. Wagon tongue support. May 18, 1875.

4,745.—A. W. Olds, Green Oak Station, Mich., U. S. Fence. May 18, 1875.

4,746.—D. S. Cornell, Warwick, Ont. Washing machine. May 18, 1875.

4,747.—R. Daine, Dartsmouth, N. S. Portable damper. May 18, 1875.