

W. W. H. asks: Is it strictly proper to speak of dew as falling? One party contends that dew never forms in the atmosphere and falls to the ground, but is only produced by the moist warm atmosphere coming in contact with the surface of cooler bodies, when the condensed moisture is deposited in the shape of drops of water. Is he philosophically correct? And if so, can you inform me why dew forms on the upper surface of objects only? Answer: It is not philosophically correct to speak of the dew falling, as one would speak of rain. Dew is the condensed moisture of the atmosphere which collects gradually on terrestrial objects when they become cooler than the surrounding air, and it forms most readily and abundantly on those objects which soonest and most perfectly radiate their heat. On this account, a rough surface is more favorable for the deposition of dew than a bright or polished one, and the rough moist blades of grass in the morning are more abundantly covered with dew than dry, dead stalks or a wooden fence. Dew collects on the upper surface of objects because they are more favorably situated for radiating their contained heat to the upper air, and its formation retarded in objects more or less covered by the heat which they radiate being reflected and again radiated back upon them. A cloudy night is unfavorable to the formation of dew, for the same reason.

E. J. asks: How can I detect lead in water by the use of hydrosulphuric acid? Answer: Reduce by boiling about 5 gallons of the suspected water to a gill or less, and pour into the concentrated liquid a strong clear solution of hydrosulphuric acid, or pass a stream of hydrosulphuric acid gas through the water. If lead be present, the solution will turn dark from the formation of sulphide of lead. It may be necessary to filter the concentrated water, as it must be perfectly clear, and the solution of acid as well, otherwise any discoloration may escape notice.

J. M. H. asks: 1. What keeps a hoop or wheel in an upright position while in motion? 2. Is space a created thing or a necessary nonentity? 3. At what temperature does water boil in a vacuum? 4. Is steam condensed at 210° or 211° Fahr. as effectually as when a lower temperature is used? Answers: 1. Its own motion, which it tends to preserve in the same plane in which it was imparted. 2. We would refer you to a good work on metaphysics. 3. In a good well maintained vacuum, water could be made to boil until almost the freezing temperature, 32° Fahr. was reached. 4. No, because the tension of water vapor at 210° Fahr. is nearly as great as that of steam at 212° Fahr. The lower the temperature of the condensing water, the more quickly and effectually is the steam condensed.

S. B. B.—All papers sent through the mails must be paid. Much obliged for the copy sent.

J. B. says, in reply to G., who asked how to get red ants out of sugar: Get some gum camphor in lumps and secure the separate lumps in small cotton sacks, and attach them to the top of the bins, very near the sugar. If the bins are large, fix a piece of board on the surface of the sugar and place the camphor on it. Use the camphor plentifully. My experience has been that, in a few days, the ants would leave and not return while the aroma of the camphor lasted.

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

G. W. K.—A kind of clay resembling fuller's earth. G. W. C.—The enclosed mineral strongly resembles antimony; and if found in sufficient quantity, is well worth a chemical analysis.

J. G. S.—Nos. 1, 2 and 3 are iron pyrites. No. 4 is zinc blende. No. 5 is iron ore. No. 6, is galena in calcite. No. 7 is rhomb spar (calcite).

W. A.—The stone sent is carbonate of lime. It seems hardly compact enough for lithographic stone.

B. D. J.—We tasted one bottle of the water sent, and detected iron, but could not perceive sulphur or sulphuretted hydrogen. It might be worth a chemical analysis.

G. W. B.—Nos. 1, 2 and 3 are claystones. No. 4 is conglomerate. The other is quartz geode.

COMMUNICATIONS RECEIVED.

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

- On Jumping from Railway Trains. By A. F.
On Spontaneous Generation. By J. C. W. and by D. S. G.
On the Devil Fish. By C. R. B.
On the Last Railroad Horror. By A. T.
On a Canal through Syria. By T. L. F.
On the Locomotive. By W. T. H.
On the Patent Right Question. By C. S. and by J. E. S.
On Meteors. By G. C. T.
On Bisulphide Engines. By J. A. H. E.
On Car Ventilation. By E. M. G., Jr.
On Boiler Management. By A. M. E.
On Electricity. By O. H. T.
On the Great Telescope. By F. M. B.
On Flying Machines. By T. B.
On Steam Fire Engines. By J. A. W.

Also enquiries from the following: W. M. B.—P. P.—S. H.—W. T.—C. H. J.—W. H. T.—W. A. M.—S. W. G.—M. M.—J. N. H.—N. T. P.

Correspondents who write to ask the address of certain manufacturers, or where specified articles are to be had, also those having goods for sale, or who want to find partners, should send with their communications an amount sufficient to cover the cost of publication under the head of "Business and Personal," which is specially devoted to such enquiries.

Two correspondents ask what barytes is worth, and who will buy it? Others wish to know where magnetic iron sand can be obtained? Who are makers of the New Jersey apple gatherer? Who makes heating apparatus using low pressure steam? Which is the best portable gas apparatus? Who makes electric clocks? Who make or deal in mechanical tools? How can we find out how to mix colors for pottery? Who makes hard rubber, silvered glass reflectors for lamps, and grain separators? What is used for "stuffing" calf skins? Where can a file-cutting machine be purchased? Makers of the above articles will probably promote their interests by advertising, in reply, in the SCIENTIFIC AMERICAN.

[OFFICIAL.]

Index of Inventions

FOR WHICH

Letters Patent of the United States

WERE GRANTED FOR THE WEEK ENDING

August 12, 1873,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

Table listing inventions and their patent numbers, including items like Air navigating apparatus, Auger, Axle box and sleeve, Baling hay device, Barrel heads, Bed bottom, Bee hive, Beetling woven fabrics, Bell for sleigh shafts, Boiler, Bolt blank die, Bolt die, Bolt die, Bolt die, Bolts, Boot channelling machine, Boot heels, Boot heels, Boot sole edges, Boots and shoes, Boring machine, Bottle stopper, Box, Brick machine, Brush, Buckle, Buckle, Burner, Button fastening, Buttons, Can, Cap and spoon, Car brake, Car coupling, Car coupling, Car coupling, Car brake, Car, Cars, Carriage, Carriage bolt, Carriage wheel hub, Chains, Chair, Chair, Cherry stoner, Chocolate, Churn, Churn, Clothes pla, Coal sifter, Coating canvas, Cock, Coffee roaster, Colter clasp, Column, Compass, Composition for cleaning glass, Cooler, Corn sheller, Corn shellers, Cotton, Cultivator, Cultivator, Cultivator, Cutter head, Dashboard, Dish, Door fastener, Dressing machine, Drill, Drill, Drills, Drum, Electric signalling apparatus, Engine, Engines, Equalizer, Fence, Fifth wheel head die, Fifth wheels, Fire arm, Fire extinguisher, Fruit box, Furnace, Furnace, Furnaces, Gas from petroleum, Gasaliers, Gate, Generator, Generator, Generator, Gimlet handle, Glass furnace, Glass, Glass, Grate, Grate, Hame fastener, Harness, Harness, Harvester rake, Harvester rake, Hat tipping, Hay and grain loader, Heelbreasting machinery, Hook and hasp, Horses, Horseshoer's rest, Hose coupling, Hose pipe nozzle, Hose, Ice cream freezer, Ice cream freezer, Key hole guard, Knitting holder, Knitting machine, Lamp, Lamp, Lantern, Latch, Lath, Leather, Letter box, Life preserving garment, Line loop, Locomotive ash pan cleaner, Log turner, Log turner, Loom, Loom sheathing mechanism, Loom shuttle, Magnet, Marble, Meat chopper, Mechanical movement, Mechanical power, Mill for sheet metal, Music leaf turner, Nail, Oiler, Organ free reed, Paint, Paper folding machine, Paper folding machine, Photographs, Pipe coupling, Pipe elbows, Plane, Planter, Planter, Plow, Plow, Press, Press for jelly, Printing presses, Pump, Punching metal, Rake, Reefing fore and aft sails, Refrigerator, Rein retainer, Rope clamp, Sash fastener, Sash lifter, Saw guard, Saw mill, Sawing machine, Scale, Scraper, Separator, Separators, Sewing machine, Sewing machine, Sewing machine, Sewing machine, Shade holder, Shoe uppers, Shutter, Sign, Sky lights, Spike machine, Spinning machine, Sprinkler, Steam hammer, Steel plates, Steering apparatus, Stereoscope, Stove, Stove, Stove, Stoves, Sugar, Table, Tablet, Telegraph, Telegraph, Telegraph, Telegraph, Tire upsetting machine, Trap, Tree protector, Truck for carrying safes, Valve, Valve, Valve, Valve, Valve, Valve, Vehicle doors, Vehicle wheel, Vehicle wheel, Wagon bed lifter, Wagon hub bands, Wagon jack, Watchmaker's lathe chuck, Water tanks, Water wheel, Wells, Whiffletree hook, Wick, Windmill, Window blind, Wire way, Wrench, Wrench.

TRADE MARKS REGISTERED.

- 1,401 & 1,402.—PAPER PATTERNS, ETC.—Domestic Sewing Machine Co., New York city.
1,403.—MEDICINE.—T. S. Fellows et al., Wells, Minn.
1,404.—PAINTS, ETC.—McClosky, Bro. & Co., Phila., Pa.
1,405.—ALPACAS, ETC.—Moore & Co., New York city.
1,406.—PAINT.—Prince's Metallic Paint Co., New York city.
1,407.—SHOES.—G. A. Reynolds, Utica, N. Y.
1,408.—HAMS, ETC.—W. J. Riegan & Son, Baltimore, Md.
1,409.—MEDICATED LIQUOR.—M. Vergnole, New Orleans.

SCHEDULE OF PATENT FEES:

Table listing 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 application for Extension of Patent \$50, On granting the Extension \$50, On filing a Disclaimer \$10, On an application for Design (3 1/2 years) \$10, On an application for Design (7 years) \$15, On an application for Design (14 years) \$30.

VALUE OF PATENTS, And How to Obtain Them.

Practical Hints to Inventors.

PROBABLY no investment of a small sum of money brings a greater return than the expense incurred in obtaining a patent even when the invention is but a small one. Large inventions are found to pay correspondingly well. The names of Blanchard, Morse, Bigelow, Colt, Ericsson, Howe, McCormick, Hoe and others, who have amassed immense fortunes from their inventions, are well known. And there are thousands of others who have realized large sums from their patents.

More than FIFTY THOUSAND inventors have availed themselves of the services of MUNN & Co. during the TWENTY-SIX years they have acted as solicitors and Publishers of the SCIENTIFIC AMERICAN. They stand at the head in this class of business; and their large corps of assistants, mostly selected from the ranks of the Patent Office: men capable of rendering the best service to the inventor, from the experience practically obtained while examiners in the Patent Office: enables MUNN & Co. to do everything appertaining to patents BETTER and CHEAPER than any other reliable agency.

HOW TO OBTAIN Patents

This is the closing inquiry in nearly every letter, describing some invention which comes to this office. A positive answer can only be had by presenting a complete application for a patent to the Commissioner of Patents. An application consists of a Model, Drawings, Petition, Oath, and full Specification. Various official rules and formalities must also be observed. The efforts of the inventor to do all this business himself are generally without success. After great perplexity and delay, he is usually glad to seek the aid of persons experienced in patent business, and have all the work done over again. The best plan is to solicit proper advice at the beginning. If the parties consulted are honorable men, the inventor may safely confide his ideas to them: they will advise whether the improvement is probably patentable, and will give him all the directions needful to protect his rights.

How Can I Best Secure My Invention?

This is an inquiry which one inventor naturally asks another, who has had some experience in obtaining patents. His answer generally is as follows, and correct: Construct a neat model, not over a foot in any dimension—smaller if possible—and send by express, prepaid, addressed to MUNN & Co., 37 Park Row, together with a description of its operation and merits. On receipt thereof, they will examine the invention carefully, and advise you as to its patentability, free of charge. Or, if you have not time, or the means at hand, to construct a model, make as good a pen and ink sketch of the improvement as possible and send by mail. An answer as to the prospect of a patent will be received, usually, by return of mail. It is sometimes best to have a search made at the Patent Office; such a measure often saves the cost of an application for a patent.

Caveats.

Persons desiring to file a caveat can have the papers prepared in the shortest time, by sending a sketch and description of the invention. The Government fee for a caveat is \$10. A pamphlet of advice regarding applications for patents and caveats is furnished gratis, on application by mail. Address MUNN & Co. 37 Park Row, New York

Reissues.

A reissue is granted to the original patentee, his heirs, or the assignees of the entire interest, when, by reason of an insufficient or defective specification, the original patent is invalid, provided the error has arisen from inadvertence, accident, or mistake, without any fraudulent or deceptive intention.

A patentee may, at his option, have in his reissue a separate patent for each distinct part of the invention comprehended in his original application by paying the required fee in each case, and complying with the other requirements of the law, as in original applications. Address MUNN & Co., 37 Park Row, New York, for full particulars.

Copies of Patents.

Persons desiring any patent issued after 1836 to November 26, 1867, can be supplied with official copies at a reasonable cost, the price depending upon the extent of drawings and length of specification.

Any patent issued since November 27, 1867, at which time the Patent Office commenced printing the drawing and specifications, may be had by remitting to this office \$1.

A copy of the claims of any patent issued since 1836 will be furnished for \$1.

APPLICATIONS FOR EXTENSIONS.

Applications have been duly filed, and are now pending for the extension of the following Letters Patent. Hearings upon the respective applications are appointed for the days hereinafter mentioned:

- 26,090.—FOLDING MACHINE.—C. Chambers, Jr. Oct. 29.
26,097.—ELECTRIC TELEGRAPH.—M. G. Farmer. Oct. 29.
26,128.—BILLIARD CUSHION.—G. D. Sharp. Oct. 29.
26,136.—ADVERTISING.—E. WIEBE. Oct. 29.
26,139.—PUMP.—W. Wright. Oct. 29.
26,147.—BUNDLING WOOD.—W. L. Williams. Oct. 29.
26,177.—RUBBER BELTING.—D. C. Gately. Nov. 5.
26,178.—RUBBER BELTING.—D. C. Gately. Nov. 5.
26,276.—MAKING RUBBER HOSE.—T. J. MAYALL. Nov. 12.
26,321.—CASTING MOLD.—J. P. Broadmeadow. Nov. 12.

EXTENSIONS GRANTED.

- 25,115.—SELF-ACTING WAGON BRAKE.—B. S. Healey.
25,148.—WEIGHING SCALES.—F. M. Strong, T. Ross.
25,149.—BLANKS FOR SHOE PEGS.—B. F. Sturtevant.
25,167.—LIGHTING GAS BY ELECTRICITY.—A. Wilson.

DESIGNS PATENTED.

- 6,798.—STAMP PAD AND RACK.—G. K. Cook, New York city.
7,999.—CAKE HOLDERS.—G. Gill, Taunton, Mass.
6,800.—CLOCK CASE.—J. F. & H. Mann, Brooklyn, N. Y.
6,801.—ADVERTISING DESK.—C. W. Armstrong, Detroit, Mich.
6,802.—TEA SERVICE.—G. Gill, Taunton, Mass.