

diameter. The whole feed pump, steam and water cylinder would easily go into a small thimble. This is a working model, as we saw it in operation, throwing a stream about the size of a pin 4 feet 6 inches. Mr. Fichtel may congratulate himself on having produced the most complete specimen of skill and patience that has been seen in a long time.

The results of the playing of the engines are given below. The time given may not accord with that of the judges (owing to the difference in watches) in relation to the start, but the mean time of playing and the results—both steam and water—are derived from official sources, and is the only authentic account published.

Steamer No. 5, *City of New York*.—Lee & Larned machine.—Signal to make ready given, at 10 o'clock 25 minutes, 50 seconds; signal to start fire given at 10 o'clock, 40 minutes, 50 seconds. Engine began to work in 7 minutes 52 seconds from signal; water from pipe almost instantaneous; water in boiler perfectly cold; no fluid, grease, or anything foreign in the boiler; the average of the steam taken every five minutes was at the start 3 pounds, in 10 minutes 45 pounds—subsequently ranging from 154 to 40 lbs., on the fourth 5 minutes, this result arose from over-firing; in five minutes after, the steam ran quickly up again until they stopped with 135 lbs.; this boiler steamed perfectly free, the fuel being coal. The results obtained through 50 feet of Boyd's hose, out of 1½ in. nozzle, were 209 feet; for the first 6 minutes the wind was rather fresh, and blew the stream about some—last 4 minutes no wind whatever; auxiliary feed pump on boiler. On quantity, same engine, through 800 feet of hose; signal to start at 11.25; steam at start, 140 pounds; fuel, wood and coal; pumped 15 minutes on the tank, whose capacity was 2,459 gallons to a foot, size of tank 15 by 22 feet; stopped playing at 11.40, and lowered water in tank 1 foot and 20-100 of a foot.

Steamer *Mechanics' Own*—Third class engine.—Trial on distance, 50 feet of hose, 1½ inch nozzle; started at 12.01, stopped at 12.31, having thrown 174 feet against a good cross breeze. This engine did not commence playing until 11 minutes from signal; cause, some obstructions in the smoke pipe unavoidably overlooked; the steam subsequently ranged from 8, 9, 12, 55, 140, 100, 105 lbs.; fuel, wood. Same engine pumping on tank, 800 feet of hose, open butt. Started at 12.38; pumped in 15 minutes 1 foot and 26-100 of a foot from tank 15 by 22 feet; steam ranging from 150 lbs. at the start to 155 lbs. at the close; fuel, wood and coal.

The next engine was No. 2 *Amoskeag*—Second class—L. H. Straw, agent; engine described previously. Started at 1.11; water from pipe in 7.30 from application of torch; no wind at all during trial; played 30 minutes through 1½ in. nozzle 160 feet 3 inches; water gage indicated 50 pounds per square inch; last minute 100 lbs.; the steam ranged from 20 lbs. at the start to 75 lbs. on the last stretch; but the average was very poor indeed, owing to an inferior quality of coal, imported from Liverpool; the mean pressure during this trial was 51 pounds. This was a single plunger pump engine. Same engine on quantity—Started at 1.55; water pressure on hose, 140 pounds; steam at the start 135, ranging to 65 lbs. at stopping; quantity exhausted from tank, 1 foot 53-100 of a foot. The steam was better during this trial, but there seemed to be a lack of fire-surface for continued playing.

Next engine—Silsby, Mynderse & Co.—One first-class machine. Started at 2.34; steam in six minutes from signal; water from pipe in 7 minutes 20 seconds threw an inch and a quarter stream 216 feet; no wind whatever; fuel used, coal. Played 26 minutes and was then ruled out by the judges; cause, joint blowing out of the steam cylinder; this machine stood steadier than any of the others whilst playing. Same engine on tank—Signal given at 3.16, stopped at 3.31, quantity discharged from tank, 1 foot 29-100 of a foot; steam ranged from 90 to 82, 60, 55 lbs. This engine should have pumped 18 in. against time from its class; but it was overlooked by the judges.

Next engine—Steamer *Huron*—First class—Built for the city of Detroit by the Amoskeag Co. Signal to start fire at 3 o'clock 56½ minutes; water from pipe in 6 minutes 30 seconds from signal; no wind during trial; distance thrown through 1½ in. nozzle, 223 feet 9 inches; during the last five minutes ran very irregular-

ly; steam ranged 23, 40, 85, 125, 130, 150 lbs.—stopped at 90 lbs. On quantity—same engine, pumping 18 inches out of tank against time; 800 feet of hose, open butt; 13.30 seconds.

Next engine—Lee & Larned's self-propeller, *Niagara*. Signal to start at 5 o'clock 11 minutes: water from pipe, 6 minutes 30 seconds, through 1½ in. nozzle; distance thrown, 208 feet 8 inches. At this point, after having played 16 minutes, the cast-steel pump shaft, 3¼ inches in diameter, was twisted off, and the engine was ruled out very reluctantly by the judges. Fuel used, wood; steam at starting, 5 pounds, ranging from thence to 120.

Steamer *Southwark*.—Lee & Larned engine. Signal at 5 o'clock 50 minutes, 30 seconds; water from pipe in 6 minutes 47 seconds from signal; whistle blown 6 minutes from signal; started with 10 pounds of steam; distance thrown against a stiff breeze, through 50 feet of hose, and 1½ inch nozzle, 172 feet; the darkness prevented us from taking the steam, but the average was not over 75 pounds. Same engine on tank through 800 feet of hose, pumping 18 inches against time, 14 minutes 25 seconds; average steam 80 pounds; 579 gallons per minute discharged from pump. This engine ended the trial.

REMARKS.

It will be seen, by examining the figures, that, thus far, the plunger pump party have the best of it, in distance, and also in quantity; but this must not be taken as evidence of the superiority of one over the other, both parties claiming, from their experience, that their respective pumps are the ones which do the best service. The hand engines of Messrs. Lee & Larned are much smaller than the one of Amoskeag No. 2 pattern, yet their engine pumped within 27-100ths of a foot as much on quantity as the Amoskeag, and beating them by 13.9 inches on distance, out of the same sized nozzle. We cannot discuss this matter at present, as at our time of going to press, the judge's verdict was not made public. The award will, however, probably be given to the rotary pump of Cary, with Lee & Larned's boiler, as regards distance, and to the Amoskeag on quantity discharged in a given time. The Silsby & Mynderse engine presents many excellent features as regards its arrangement and general construction. The boiler steamed very freely, and seemed to make plenty of vapor for an engine that took a good deal. Their stream, however, was not so solid in its body as those of other exhibitors. The committee propose to offer a premium the next year, of \$1,500, for the best steam engine drawn by hand. This is the true way to encourage inventors to step forward and try their several inventions; and we doubt not that it will result in bringing the steam fire-engine system to a degree of perfection not yet attained. Any man who looked upon the friendly strife upon that day in the field, and saw the solid columns of water flying swiftly through the hose, could not but wish that such a stream were turned upon the old hand engines, and they washed away entirely. The number of steamers multiply rapidly, we are happy to say, and each company and city is becoming more and more emulous in so good a cause. May the day soon come when none else shall be used; with every exhaust and every separate impulse of the water, they work out practical victories, and attain to greater results in the public mind than any pen or tongue could effect in a year.

COL. JOHN C. BOYD'S HOSE.

We saw this excellent hose fully tested at the trial of steamers, last Thursday, and can speak of its merits personally. Through all the tremendous strain which the steamers put upon it, even when the *Niagara* accident took place, there was not enough moisture on the outside to soil a handkerchief. It is made of four-ply cotton goods, lined with a composition, and has successfully withstood a pressure of over 360 pounds per square inch.

We desire to return thanks in this place, to Wm. E. Hagan, chairman of the committee, for a place on the judge's stand. It is wholly due to this gentleman's exertions that the affair was pushed forward with the spirit in which we have set forth.

The judges on this occasion were, Daniel Doncaster, L. A. Orcutt and J. P. Collins, Esqs.

The engines upon exhibition have all of them done much better than upon this occasion. It seems at times when the best duty is required, that circumstances will not mold themselves to suit the will.

The time of raising steam varied but 30 seconds in the whole number of engines, with the exception of the *Mechanics' Own*, whose pipe was choked, and we are pleased to be able to record so signal a success in the way of steady playing as these engines accomplished. One half hour of such work with a steamer is a worse test upon it than half-a-day at a fire, on account of the desire of all parties to do their very best, and the rapid rate of working to which the machines are subjected. The accident to the *Niagara* was unavoidable, and could not have been foreseen; we hope it may not be long before we shall have another such trial to record, with better success.



ISSUED FROM THE UNITED STATES PATENT OFFICE
FOR THE WEEK ENDING SEPTEMBER 25, 1860.

[Reported Officially for the SCIENTIFIC AMERICAN.]

* * Pamphlets giving full particulars of the mode of applying for patents, size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

30,109.—Ethan Allen, of Worcester, Mass., for an Improvement in Metallic Cartridges:

I claim constructing a metallic cartridge with a projection or lip, for the reception of the fulminate, substantially in the manner and for the purpose set forth and described.

30,110.—L. L. Alrich, of Carthage, Mo., for an Improvement in Faucets:

I claim the valve plug C, with its key-hole recess, g, and spring, G, in combination with the cylinder, F, and the faucet portions, A and B, the whole being arranged and operated by a key, in the manner and for the purposes set forth.

[This invention is an improvement in faucets wherein a key is used to open or close the faucet. It consists in operating a plug or valve that is fitted into a cylindrical chamber projecting up from the top of the faucet, so that it may be moved up and down, but which will not turn in the cylinder; said plug being seated in such a manner in the faucet tube and acted upon by a spring that the flow of liquid can only be obtained by using a key adapted to the faucet.]

30,111.—G. B. Arnold, of New York City, for an Improvement in the Manufacture of Ruffles:

I claim, as a new article of manufacture, the ruffle or plaited fabric made as described; that is to say, the fabric to be plaited or ruffled being operated upon so as to be ruffled by the feeding device, and fastened by the stitching apparatus of a sewing machine at one and the same operation, when no binding or foundation fabric is employed.

30,112.—G. B. Arnold and Alfred Arnold, of New York City, for an Improvement in Sewing Machines:

We claim, first, in a sewing machine, the employment of the separator, C, or its equivalent, for the purpose of separating two pieces of cloth, E and F, and thereby protecting F from the action of the gathering mechanism, substantially as set forth.

Second, Gathering cloth and stitching or fastening the gathers on a sewing machine, by the combined action of the single feeding device, A, presser foot, B, and separator, C, or their equivalents, substantially in the manner described.

Third, Regulating the length of the stitches in the production of a gathered fabric, by changing the position of the separator, C, or of C, and the presser foot B, relatively to the forward extremity of the path traversed by the feeder, A, substantially as set forth.

30,113.—J. C. Baldwin, of Waterville, N. Y., M. D. Baldwin, of Brantford, C. W., and Robert Brayton, of Buffalo, N. Y., for an Improvement in Preserving Hops:

We claim the described process of preparing and preserving hops, substantially as set forth.

30,114.—G. S. Ball and Wm. H. Nauman, of Dayton, Ohio, for an Improvement in Seeding Machines:

I claim the arrangement and combination of the feeder, A, the indicator, D, graduated arc, E, slides, B, B, and cut-off, F, the whole constructed and operating as set forth.

30,115.—Benj. Barnard, of Farmington, Ohio, for an Improvement in Seeding Machines:

I claim the arrangement of the plates, n, h, g, j, slide, v, screw, p, a, and bars, K, L, and rod, M, as and for the purpose shown and described.

[This invention consists in an improved seed-distributing apparatus, the mode of constructing and arranging it, together with gages for regulating the depth of the planting of the seed, and agitators for preventing the choking of the seed in the seed-boxes, the parts being so arranged, whereby an exceedingly simple and efficient machine is obtained for the purpose specified, and one not liable to get out of repair or inoperative by use.]

30,116.—G. E. Beach, of Jersey City, N. J., for an Improved Railroad Switch:

I claim, first, So hinging and connecting two rails, B C, or J K, in a continuous series that their positions may be shifted, for the purpose of guiding a train upon another track without breaking their continuity, substantially as set forth.

Second, I claim the fixed bearings, m, m, in combination with the forked bar or rod, P, and the hinged continuous rails, B C, and J K, substantially as and for the purpose described.

Third, I claim, in combination with the hinged continuous rail, or rails, B C J K, the employment of the tongue or tongues, E, G, operating together, substantially as and for the purposes described.

Fourth, I claim, in combination with the hinged continuous rails, B C J K, and tongues, E, G, the spring or springs, R, T, or their equivalents, arranged substantially as and for the purpose set forth.

30,117.—S. A. Black and F. C. Ford, of Erie, Pa., for a Substitute for Railroad Frog:

We claim the arrangement of the levers and bars set forth, in combination with the piece, c, of the rail, supported upon the chair and operated as described.

30,118.—J. H. Boyd, of Baltimore, Md., for an Improvement in Saddles:

I claim the application to the cantle of saddles of an india-rubber roll, as described.

30,119.—T. E. C. Brinly, of Louisville, Ky., for an Improvement in Cultivators:

I claim the combination and arrangement of the plow beam, A, provided with removable feet or standards, D C F, and the two pairs of adjustable rings or arms, H H N N, provided respectively with the shares, J, and teeth, L, as and for the purposes set forth.

[The object of this invention is to combine the plow, harrow and cultivator in such a manner or by such an arrangement of parts that the device may be used in any of the capacities aforesaid by a very simple adjustment, and made to work under any of its adjustments equally as well as those implements intended for any of the above named purposes separately.]

William Falton, of Cranberry, N. J., for Improvement in Lamps. Patented August 8, 1858. Re-issued Sept. 13, 1859:

I claim, first, The perforated plate, C, or the gauze wire, C, for the purpose of regulating the elastic force of the air so that it may be presented evenly to the flame or their equivalent.

Second, I claim the perforations, b, in the lower part of cap, D, as shown in Fig. 1, in combination with the perforated or air distributing plate, C, or the gauze wire, C, or their equivalent.

Third, I claim the register formed of the perforations, e, in the bottom, A, as shown in Fig. 5, in combination with the perforated plate or gauze wire, C, and the holes, b, in the lower part of cap, D, as shown in Fig. 1, the whole being arranged substantially as and for the purpose herein described.

William Joslin, of Cleveland, Ohio, formerly of Waterford, N. Y., for an Improvement in Machinery for Manufacturing Cordage. Patented Jan. 19, 1847:

I claim the employment of a condensing tube and laying block, or other equivalents thereof, in combination with the means of giving the fore twist to the strands, and the twist to the laid rope, substantially as described, or the equivalent thereof, for the purpose specified.

I also claim the series of flyers turning in stationary bearings to give the fore turn or twist to the strands, as described, in combination with the flyer for giving the twist to the rope, and provided with cross capstan, and means of giving tension to the rope, substantially as described.

A. S. Southworth, of Boston, Mass., for a Plate Holder for Cameras. Patented April 10, 1855:

I claim, bringing the different portions of a single plate or several smaller plates successively into the field of the lens of the camera, substantially in the manner and for the purpose specified.

B. Sexton, of East Windsor, Conn., for an Improvement in Machinery for Drying Cloth. Patented May, 8, 1860:

I claim combining with the wheels armed with tenter hooks substantially as described, the arrangement of rollers, or equivalents thereof, for presenting and drawing off the cloth, so that it shall form part of the periphery of a hollow vessel, substantially as described, and an apparatus, substantially as described, for introducing a blast of air through the segment of the periphery of the said hollow vessel, between the end wheels and between the place where the wet cloth begins to form the periphery of the said hollow vessel, and where the dry cloth is drawn off, substantially as and for the purpose specified.

N. C. Travis, Nathan Johnson and Richard Emerson, of Alton, Ill., assignees of Nathan C. Travis, aforesaid, for an Improved Regulator Valve for Steam Engines. Patented Oct. 11, 1859:

We claim, first, The arrangement and combination of the valve box, A, and casing, C, as and for the purposes herein shown and described.

Second, The arrangement and combination of the screw socket, k, stem, j, rod, l, arm, n, groove, g, and hand wheel, j, so that by turning the hand wheel, j, the stem, i, may be elevated and depressed respectively of the rise and fall of the rod, l, and without rotating the latter, all as herein shown and described.

[This invention was illustrated on page 321, Vol. 1, new Series of SCIENTIFIC AMERICAN.]

DESIGNS.

Thomas Loring, of Blackwoodtown, N. J., for a design for Sad Irons.

James Horton and John Martine (assignors to David Stuart and Richard Peterson), of Philadelphia, Pa., for Design for the Plates of a Stove.

James Horton and John Martine (assignors to David Stuart and Richard Peterson), of Philadelphia, Pa., for Design for the Plates of a Cylinder Stove.

W. W. Stanard (assignor to S. S. Jewett and F. H. Root), of Buffalo, N. Y., for Design for a Cook's Stove.

W. W. Stanard (assignor to S. S. Jewett and F. H. Root), of Buffalo, N. Y., for Design for a Cook's Stove.

NOTE.—The number of patents reported in the above list is eighty-six. Out of this large—considering the season—number, thirty-four of the cases were solicited through the Scientific American Patent Agency.

MONEY RECEIVED

At the Scientific American Office on account of Patent Office business, for the week ending Saturday, Sept. 29, 1860:—

- C. G., of Pa., \$30; W. L., of Conn., \$25; J. H. L., of Ky., \$25; J. N. N., of Pa., \$30; L. S., of Ky., \$30; C. D., of Mass., \$30; E. L. G., of Conn., \$30; D. L., of Ill., \$30; W. H. H., of Ala., \$35; P. H. of Mo., \$35; H. & H., of Ind., \$20; W. C. E., of Tenn., \$30; J. S. Jr., of Pa., \$30; N. J., of N. Y., \$30; H. S. H., of N. Y., \$30; F. & S., of N. Y., \$25; J. B. & S., of N. J., \$100; Z. F., of Mo., \$10; G. & S., of Mass., \$30; V. Van V., of N. Y., \$25; L. G., of Ia., \$30; A. R., of N. J., \$100; H. & K., of Ill., \$30; C. W. W. S., of Fla., \$30; O. B. L., of N. Y., \$25; G. K. W., of R. I., \$30; C. V. M., of Mass., \$30; S. & L., of Pa., \$100; D. B., of Pa., \$25; W. A. D., of Ill., \$35; G. S. R., of Miss., \$35; G. W. H., of Pa., \$30; C. E. A., of N. H., \$30; A. C., of N. H., \$30; J. R. J., of Ky., \$25; R. T. K., of Pa., \$30; H. H., of N. Y., \$35; H. Van S., of Conn., \$55; McN. K. Co., of N. Y., \$30; C. H. B., of Conn., \$30; J. P. F., of N. Y., \$30; J. H. B., of N. Y., \$10; I. M., of Ohio, \$25; C. R. O., of N. Y., \$30; F. & H., of Va., \$20; E. P. W., of N. Y., \$25; W. S., of N. Y., \$40; J. J. S., of N. Y., \$30; J. B. Van D., of N. Y., \$30; J. B. C., of Ohio, \$70; H. S. M., of R. I., \$30; C. G. C., of N. Y., \$25; J. O., of Pa., \$30; B. C., of Pa., \$30; S. & G., of Ill., \$10; A. F., of N. Y., \$15; R. L. U., of N. Y., \$30; W. A. L., of N. Y., \$25; H. McD., of N. Y., \$30; S. L., of Ohio, \$25; W. D. A., of N. Y., \$30; F. W. H., of Conn., \$10; T. S., of N. J., \$25; H. W., of N. J., \$25; D. M., of N. Y., \$25; G. H., of N. Y., \$25; A. T. B., of N. Y., \$25.

Specifications, drawings and models belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Sept. 29, 1860:—

- F. W. H., of Conn. (3 cases); W. H. H., of Ga.; W. L., of Conn.; C. L. of Cal.; J. M., of Minn.; F. & S., of N. Y.; A. T. B., of N. Y.; T. B. J., of Ill.; N. F. B., of Ill.; J. J. P., of Austria; E. G. C., of N. Y.; W. H. L., of N. Y.; W. D. A., of N. Y.; J. H. L., of Ky.; J. W., of England; H. V., of N. J.; D. M., of N. Y.; S. L., of Ohio; H. H., of Iowa; A. A., of N. Y.; F. & H., of Va.; L. L., of N. Y.; J. B. C., of Ohio; J. J. McC., of N. J.; A. C., of Mass.; T. S., of N. J.; Z. G. A. N. P. O., of France; O. B. L., of N. Y.; G. H., of N. Y.; C. W. F., of N. Y.; J. W., of Ohio; C. A. R., of Ala.; H. S. W., of R. I.; J. M., of Ohio; H. McD., of N. Y.

THE RISE AND PROGRESS OF INVENTIONS.



During the period of Fourteen Years which has elapsed since the business of procuring patents for inventors was commenced by MUNN & Co., in connection with the publication of this paper, the number of applications for patents in this country and abroad has yearly increased until the number of patents issued at the United States Patent Office last year (1859) amounted to 4,538; while the number granted in the year 1845—fourteen years ago—numbered 502—only about one-third as many as were granted to our own clients last year; there being patented, through the Scientific American Patent Agency, 1,430 during the year 1859. The increasing activity among inventors has largely augmented the number of agencies for transacting such business.

In this profession, the publishers of this paper have become identified with the universal brotherhood of Inventors and Patentees at home and abroad, at the North and the South; and with the increased activity of these men of genius we have kept pace up to this time, when we find ourselves transacting a larger business in this profession than any other firm in the world.

We may safely assert that no concern has the combined talent and facilities that we possess for preparing carefully and correctly applications for patents, and attending to all business pertaining thereto.

FREE EXAMINATION OF INVENTIONS.

Persons having conceived an idea which they think may be patentable are advised to make a sketch or model of their invention, and submit to us, with a full description, for advice. The points of novelty are carefully examined, and a reply written corresponding with the facts, free of charge. Address MUNN & CO., No. 37 Park-row, New York.

PRELIMINARY EXAMINATIONS AT THE PATENT OFFICE.

The advice we render gratuitously upon examining an invention does not extend to a search at the Patent Office, to see if a like invention has been presented there, but is an opinion based upon what knowledge we may acquire of a similar invention from our long experience, and the records in our Home Office. But for a fee of \$5, accompanied with a model or drawing and description, we have a special search made at the United States Patent Office, and a report setting forth the prospects of obtaining a patent, &c., made up and mailed to the inventor, with a pamphlet, giving instructions for further proceedings. These preliminary examinations are made through our Branch Office, corner of F and S seventh streets, Washington, by experienced and competent persons. Over 1,500 of these examinations were made last year through this office, and as a measure of prudence and economy, we usually advise inventors to have a preliminary examination made. Address MUNN & CO., No. 37 Park-row, New York.

CAVEATS.

Persons desiring to file a caveat can have the papers prepared on reasonable terms, by sending a sketch and description of the invention. The government fee for a caveat is \$30. A pamphlet of advice regarding applications for patents and caveats furnished gratis on application by mail. Address MUNN & CO., No. 37 Park-row, New York.

HOW TO MAKE AN APPLICATION FOR A PATENT.

Every applicant for a patent must furnish a model of his invention, if susceptible of one; or if the invention is a chemical production, he must furnish samples of the ingredients of which his composition is composed for the Patent Office. These should be securely packed, the inventor's name marked on them, and sent, with the government fee, by express. The express charges should be prepaid. Small models, from a distance, can often be sent cheaper by mail. The safest way to remit money is by draft on New York, payable to Munn & Co. Persons who live in remote parts of the country can usually purchase drafts from their merchants on their New York correspondents; but if not convenient to do so, there is but little risk in sending bank bills by mail, having the letter registered by the postmaster. Address MUNN & CO., No. 37 Park-row, New York.

REJECTED APPLICATIONS.

We are prepared to undertake the investigation and prosecution of rejected cases, on reasonable terms. The close proximity of our Washington Agency to the Patent Office affords us rare opportunities for the examination and comparison of references, models, drawings, documents, &c. Our success in the prosecution of rejected cases has been very great. The principal portion of our charge is generally left dependent upon the final result.

All persons having rejected cases which they desire to have prosecuted are invited to correspond with us on the subject, giving a brief history of their case, enclosing the official letters, &c.

FOREIGN PATENTS.

We are very extensively engaged in the preparation and securing of patents in the various European countries. For the transaction of this business we have offices at Nos. 66 Chancery Lane, London; 29 Boulevard St. Martin, Paris; and 25 Rue des Eperonniers, Brussels. We think we can safely say that three-fourths of all the European patents secured to American citizens are procured through our Agency.

Inventors will do well to bear in mind that the English law does not limit the issue of patents to inventors. Any one can take out a patent there.

Circulars of information concerning the proper course to be pursued in obtaining patents in foreign countries through our Agency, the requirements of the different Patent Offices, &c., may be had gratis upon application at our principal office, No. 37 Park-row, New York, or either of our branch offices.

CAUTION TO INVENTORS.

Messrs. MUNN & CO. wish it to be distinctly understood that they neither buy nor sell patents. They regard it as inconsistent with a proper management of the interests and claims of inventors, to participate in the least apparent speculation in the rights of patentees. They would also advise patentees to be extremely cautious in whose

hands they entrust the power to dispose of their inventions. Nearly fifteen years' observation has convinced us that the claims of patentees cannot be conducted by the same parties who solicit them for others, without causing distrust.

BUSINESS CONDUCTED CONFIDENTIALLY.

We would inform inventors that their communications are treated with the utmost confidence, and that the secrets of inventors confided to us are never divulged, without an order from the inventor or his acknowledged representative.

TESTIMONIALS.

The annexed letters, from the last three Commissioners of Patents, we commend to the perusal of all persons interested in obtaining Patents:—

Messrs. MUNN & Co.:—I take pleasure in stating that while I held the office of Commissioner of Patents, MORE THAN ONE-FOURTH OF ALL THE BUSINESS OF THE OFFICE CAME THROUGH YOUR HANDS. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the Office, a marked degree of promptness, skill and fidelity to the interests of your employers. Yours, very truly, CHAS. MASON.

Immediately after the appointment of Mr. Holt to the office of Postmaster-General of the United States, he addressed to us the subjoined very gratifying testimonial:—

Messrs. MUNN & Co.:—It affords me much pleasure to bear testimony to the able and efficient manner in which you have discharged your duties of Solicitors of Patents while I had the honor of holding the office of Commissioner. Your business was very large, and you sustained (and, I doubt not, justly deserved) the reputation of energy, marked ability and unimpeachable fidelity in performing your professional engagements. Very respectfully, Your obedient servant, J. HOLT.

Messrs. MUNN & Co.:—Gentlemen: It gives me much pleasure to say that, during the time of my holding the office of Commissioner of Patents, a very large proportion of the business of inventors before the Patent Office was transacted through your agency, and that I have ever found you faithful and devoted to the interests of your clients, as well as eminently qualified to perform the duties of Patent Attorneys with skill and accuracy. Very respectfully, Your obedient servant, WM. D. BISHOP.



S. B. L., of N. Y.—We know of no instrument which is specially manufactured for testing the strength and purity of cider. A hydrometer would be of some use, but not so reliable as the judgment of an expert, founded on inspection and tasting. Pure milk and pure cider are seldom found in commerce. The purest cider is sometimes called champagne.

O. C. W., of Pa.—The yellow substance in the stones which you send us is mica, one of the three constituents of granite.

O. G., of Minn.—We have worn out several pairs of india-rubber soles on leather boots, and liked them very much. Manufacturers have them put on at 75 cents per pair. Any one may put them on with the cement sold by them, but the operation must be very thoroughly and carefully performed, or they will peel off.

J. C. R., of Ind.—Your question has been thoroughly answered on page 313, Vol. II. (new series), of the SCIENTIFIC AMERICAN. Whether it is competent for State laws to authorize the transfer of an interest in a patent, by levy and sale, has never, as we believe, been settled by judicial decisions. It certainly cannot be done as the laws now stand.

A. L., of Ohio.—Your mode of driving the needle in sewing machines is not patentable, unless some novel effect is obtained by it, as it would be regarded as a mere substitution of one mechanical equivalent for another. We think a very limited claim might be obtained on the feed. The thread controlling apparatus does not differ sufficiently from others that are in use, to be patentable.

E. E. W., of N. H.—You will find pretty good treatises on pyrotechny in any of the large encyclopedias. Professor Cutbush, of West Point, published a large book on the subject about 30 years ago. The only other book we remember is a small treatise by Mr. Mortimer.

G. H. A., of Wis.—The recipe you name is correct, and in skilled hands will produce a good article. We know of no cheap varnish which is durable. The cheapest varnishes are made of white turpentine or resin dissolved in oil of turpentine; dryers should be added.

T. D. S., of Pa.—We put little faith in fly traps and fly poisons. The molasses or sugar which it is necessary to mix with the poison attracts to a house about as many as are killed. We know of no substance which will kill flies and at the same time be safe for a child to eat.

C. H. Y., of N. Y.—The most approved process for case-hardening is to inclose the article to be hardened in a case filled with horn or similar substances, and heat it for about 6 or 8 hours, according to the size of the article.

T. M., of Mo.—The only reliable way to determine the variation of the magnetic needle is by actual experiment. On certain lines upon the earth's surface, called "lines of no variation," the needle points towards the north pole. Such a line at the present time passes a little south of Cape Lookout, and through the center of Lake Erie, in a N. N. W. direction. The magnetic poles are about 15° from the poles of the globe, and they change their longitude about 1° in 12 years, vibrating between certain limits. In London, in 1675, the variation was 11° easterly; from 1657 to 1662, it was reduced to nothing, and then slowly advanced to its maximum in a westerly direction, which, in 1812, was 2° 17' 18". Since that time it has been slowly decreasing. On the N. E. boundaries of the United States, the variation is full 15° West; in Wisconsin, about 9° East; and in Oregon, about 22°, the needle there pointing nearly N. N. E.

L. H. R., of Ill.—The idea of carrying the smoke and cinders of a locomotive, by a pipe, over to the rear of a train of cars, is an old device. It was illustrated in Vol. II. (old series) of the SCIENTIFIC AMERICAN.

J. M. M., of Mo.—To learn with certainty which are the five highest structures in the world would require more labor than the knowledge is worth.