Correspondence

Clay vs. Iron Gas Retorts.

MESSRS. EDITORS:—Can you inform me why iron retorts are still used in the gas works of this country? It is a well-established fact that fire-clay is not only more durable but, if made in a systematic manner, comes much cheaper than iron. I was connected with a clay-retort works in England and know that they have entirely superseded iron there.

CLAY RETORT.

Philadelphia, July 16, 1866.

[It is a matter of surprise to us that all large gas works have not adopted the use of clay instead of iron retorts, especially after informing themselves of what practice and experience has fully demonstrated both in this country and in Europe. In such gas works where the trial may not have resulted favorably, the result can only be attributed to defective setting or mismanagement, as they actually require less care in working them. It is only in very small works, which cannot, from their size, use an exhauster, that clay retorts are not so well adapted. Yet there are many such who do use them profitably.

At a meeting of the London Institution of Civil Engineers, a paper was read on the use of clay retorts in gas making from which we make the following extract —

"The iron retorts, lasting 365 days and working 1½ cwt. of coal for each charge, effected the carbonization of 2,190 cwt. of coal, which, at 9,000 cubic feet of gas to the tun, gave a total quantity of 985,500 cubic feet of gas per retort, while clay retorts lasted 912 days, carbonized 5,472 cwt. of coal, which, at 9,000 cubic feet of gas per tun, gave 2,462,400 cubic feet of gas per retort.

"The most practical working of clay retorts was with the addition of an exhauster. This reduced the pressure on the retorts, and prevented the escape of gas through pores and fissures, and by that system, the quantity made was increased about 200 feet per tun of coal."

In the discussion the general results given in the paper were confirmed. It was, however, stated that the quantity of gas obtained from iron and from clay retorts must be in proportion to the quality of the coal used. In some places where 7,600 cubic feet of gas had been produced by iron retorts, as much as 9,200 cubic feet had been made in clay retorts, and the production had been as high as 11,000 cubic feet.

There are now, we believe, in the vicinity of this city three clay-retort works whose products are nearly, if not quite, equal to those formerly obtained from Europe.—EDS.

Pressure in Boilers.

MESSRS. EDITORS:—Your correspondent who inquires why his boilers fail to stand the pressure required, was properly answered so far as his queries and statement went. There is one important point which he does not state. That is, the size of his grate surface and the area of the passage between the bridge wall and shell of the boiler. The area of the flues would warrant a grate surface of 36 feet. The area of the passage over the bridge wall should not have been less than 1,200 square inches. There is a vicious habit, attending boiler setting, in making this passage too small, thereby concentrating the intense heat of the furnace in front and over it, thereby heating the plate so hot as to make globules of the water in contact, hence destroying the plates. I think the whole trouble will be found, if we get the facts in the case, in a contracted passage at the point mentioned. F. W. B.

New York, July 9, 1866.

Home-Made Aluminum.

MESSRS. EDITORS:—Being in want of some aluminum, I overhauled (as usual in case of a want) some two or three back volumes of the SCIENTIFIC AMERICAN, but only found a brief note in a recent number; acting, however, on the suggestions, I procured a lump of alum, dissolved, added soda, and to the washed precipitate added muriatic acid; to this solution I afterward added aqua ammonia, expecting to see a metallic precipitate; but got only a pasty mess, which yielded alumina before the blow pipe, with no trace of anything like metal. Will you please put me right?

If there is any practicable method of obtaining the metal at a cheap rate, I think many of your readers would prize the information. AR. IND.

[The brief note to which Ar. Ind. refers, explained how to produce alumina, a very different thing from aluminum. The metal cannot be produced at a cheap rate.—EDS.

Questions for Millers.

MESSRS. EDITORS:—I have been reading your paper for some time, and find there is a great deal of information to be gained from it. I wish to gain a little upon a point I have not yet seen discussed in its columns. I am at present running a steam flouring mill at this place, and have some trouble in keeping the bush of one of my burrs in order; it is a cast bush, with wooden followers, burr running with belt; I wish to know where the pull on the bush is—whether directly in front of the power, or at some other point. I wish to know this in order to set my followers in their proper position.

I also wish to know why the composition boxing, as it is generally used about engines, has not been adapted for bushing—if it is good at one place why not at another? H. C. WILKINS.

Bloomingdale, Ind., July 6.

Personal.

We understand that Congress proposes to establish a Commissionership of Education, for statistical and other purposes. It is an excellent idea, if it falls into right hands. We have heard the name of Alfred B. Ely, of Massachusetts, suggested in connection with the place. No better appointment could be made for the good of the country, and we hope the suggestion may be carried out in good faith. We have known Mr. Ely for several years, and feel assured that he would bring to the office ripe experience, large attainments, and great force of character, and qualifications which would insure both popularity and success.

SPECIAL COMMISSIONER OF REVENUES.—Mr. David A. Wells, of the present revenue commission, has been appointed to the office of Special Commissioner of the Revenues, created by the new Internal Revenue act, from on and after the 1st of August next. The office is one of wide scope, and Mr. Wells is necessarily invested with great discretionary power in investigating frauds and bringing offenders to justice. For a year past Mr. Wells has devoted himself assiduously to the interest of the Revenue Department, and his appointment to the new office is a well-merited compliment and reward.

The European Squadron.

Our present force in European waters amounts to twelve vessels, carrying 141 guns. But it is thought that should the existing war between Austria, Prussia and Italy continue for any length of time, this force will require to be largely increased in order to afford adequate protection to American interests in that quarter. The splendid new steam frigate *Chattanooga* has been assigned to duty in the squadron of Admiral Goldsborough, and will sail for Europe as soon as her outfit is completed. The *Chattanooga* will prove a most valuable acquisition, being not only a very powerful vessel, carrying a heavy battery, but also a very swift one, having on her trial trip made an average of 15 knots an hour under unfavorable circumstances. Several other vessels are also spoken of as being designed for duty in Europe, among which we may mention the new sloops-of-war *Madawaska* and *Neshaminy*, both fitting for service at this port.—*Journal of Commerce.*

RATHER WARM.—Prof. Loomis of Yale College states that on the 17th inst. the thermometer stood at 102 in the shade at New Haven, and that the day was the hottest that has occurred for 89 years. We are thankful for this information, and trust that the same length of time may elapse before the return of another such spell. At Wheatsheaf, N. J., the thermometer actually reached 104 degrees for a short time in the shade.

THE HEATED TERM---HOW TO KEEP COOL.

It is probable, if not certain, that never in the history of this country, has a summer of such severity of heat as this been experienced. In our school-boy geography, we were told that the climate of the temperate zones consisted of "extremes of heat and cold." It is literally true. We have in winter polar cold, and in summer tropical heat. It is not an exaggeration to say that the temperature of the thermometer here during the first two weeks of July equals anything of the sort under the equator. Not only in large cities, as New York for instance, but in the country, that anticipated paradise to which the citizen flies on the approach of the warm season, the heat has been anything but temperate. Existence has resolved itself into the simple effort to follow the oft quoted advice, "keep cool," but how is it to be done? We have a few advisory suggestions to make, applicable, we are aware, not to all, but peradventure to some whose circumstances may make their adoption feasible.

1st—Diet. Eschew carbon-generating food, such as meats, rich cake, spiced dishes. Let alone crude substances which require a large draught on the force of the animal organism to prepare them for assimilation and absorption with the blood, as fresh fish, pastry, puddings, and rich soups. Eat lightly; only enough to keep the system in tone. Avoid repletion and over eating. Shun stimulants. Use ripe fruit freely, salt meats well cooked, fresh vegetables, bread, farina, moderately strong tea, no coffee, and but little ice-cold water.

2d—Condition of mind and body. Do not argue on politics, religion, or any pet hobby. Avoid scandal. Do not get angry, nor fearful, nor anxious. Don't fret. Don't arraign Providence, nor find fault with your neighbors. Cultivate patience, and a stoical calmness under provocation. Do not run, walk fast, nor get into a perspiration unnecessarily. Although perspiration may not, in itself, be injurious when provoked by a laudable endeavor, do not allow it to be suddenly checked by ceasing exertion and remaining passive in a cool place.

3d—Preventives. Wash the whole body every morning, and if convenient, at night, also. This can be easily done with a quart of water and a sponge or rag, or with the bare hands. Rub down dry with a towel. Apply a brush to the skin smartly, or a bit of hard woolen rag if you have not horse-hair mittens. Your body needs a surface glow as much in summer as in winter. Those who have a bathroom in their houses know the advantages of daily bathing, especially in summer. But a bowl of water is a good substitute. Change under-clothing every day if possible, if not as often as is practicable and convenient. Put in your ice-water a little spirit, or if you do not use ice, cool your water with a little tartaric acid. It is equal to lemon juice, and cheaper. A piece as big as a walnut put in a common bucket, or kept in the glass from which you drink, will give a delicious acidulated taste to the water, and increase its cooling properties.

To keep the house cool, hang up before your open doors or windows, or suspend in the draught across the rooms, blankets dipped in cold water and wrung out sufficiently to prevent dripping. This is an easy, simple and wonderfully effectual method of cooling rooms. Keep the door steps and pavement wet, and sprinkle water in your entry. Do not sleep on feathers nor hair mattresses. Straw, palm-leaf, or husks are preferable. Never sleep naked. Wear a woolen or gauze undershirt, and cover with a sheet. The sheet need not touch the body, but can be easily secured by the corners to the bed posts, leaving a space under its roof. It is a mistaken idea that entire nakedness is conducive to coolness. It is not so. Some material to absorb the perspiration should be worn next the skin.

These suggestions are drawn from an experience of years, and may be relied upon as worthy of at least one trial. The pivot upon which the whole turns is that of internal and external cleanliness, both of mind and body. A perturbed, anxious, excited mind, is as impure as a surfeited stomach or a neglected skin.

Photographic.

Card groups, now much in favor at Vienna, are as follows:—It is a card of the ordinary dimensions, containing a group of seven persons, distributed

lengthwise on the card. It represents the interior of a drawing room, a paneled wall, chimney piece, etc., forming the background. Two of the figures are seated at a grand piano, playing a duett, while a third one turns over the music; a fourth, standing near, leaning on the chimney-piece, apparently listens to the music; a fifth sits with an embroidery frame on her lap, engaged at work; another sits before a writing desk, or Davenport, writing a letter; while another stands by with a letter in her hand, apparently in conversation with the last. The scene is simple and domestic; a family group at home. The grouping is admirably managed, the photography exquisitely perfect and delicate, at once excellent in definition, light and shade and pictorial effect.

Another new style is a full-length *carte-de-visite* portrait of a gentleman, front view, and on the back of the card is pasted the portrait of the same person, in the same position but taken from his back, and this being reflected in a little piece of looking-glass placed in front of the back picture, you see the whole of the gentleman at one glance, both front and back view.

NEW INVENTIONS.

The following are some of the most prominent of the patents issued this week, with the names of the patentees:—

STOVEPIPE DRUM.—C. C. WEBBER, Calmar, Iowa.—In this stove drum are a series of flues to thrice convey the product of combustion from end to end. In connection with the central flue is an adjustable pipe, worked by a rod passing out of the top of the drum; by adjusting this a direct passage of products can be formed with the stovepipes, or by lowering it the circuit can be established.

CLOTHES-WASHING MACHINE.—PHILIP VAN BUSSUM, Henderson, Ky.—This invention consists in a novel construction and arrangement of the concave and the manner of applying the pressure thereto, whereby it is believed that a very simple and efficient washing machine is obtained.

HOLLOW AUGER.—J. H. SMITH, Pineville, Pa.—This invention consists of a frame or stock provided with an adjustable center rod, two adjustable jaws, operated by a right and left screw, and cutter.

CULTIVATOR.—ISAAC AVERY, Ottawa, Ill.—This invention consistsin an improved draught attachment, whereby the device may be operated or drawn along by a moderate application of power, the plows moved either vertically or laterally, and the whole device placed under the complete control of the operator.

STENCH TRAP.—FRANCIS H. WILLIAMS, Syracuse, N. Y.—This nvention consists in a sink, the interior of which is provided with an inclined apron extending over the edge of a tray in combination with a valve which closes the communication between the sewer and the tray in such a manner that water or other liquid poured down through the sink will fill the tray and then by forcing the valve open run down to the sewer, but as soon as the supply of water stops the valve closes down on its seat, and the water contained in the tray, together with the valves, prevent the escape of stench from the sewer through the sink.

This inventor has also secured another invention for a similar purpose, which consists in the arrangement of a siphon tube with a floating valve, in combination with the sink or waste pipes leading from the sink or sinks in a building and with a suitable pipe leading to the sewer in such a manner that by the liquid remaining in the lowest part of the siphon, and by the valve, the communication from the sewer back to the sink is firmly closed and the escape of stench from the sewer into the house or building is prevented, and at the same time the communication from the sink or waste pipes to the sewer is uninterrupted.

STOVEPIPE DAMPER.—B. F. COWAN, New York City.—This damper is a hollow spheroid and revolves within an enlargement of the same shape made in the pipe where it is used. The flattened sides of the damper and of the enlargement in which it revolves are parallel with each other, and are also open. The damper is suspended from points which are midway from its flattened sides, and its place of suspension in the pipe is likewise midway of the flattened sides of its enlargement, so that when their flattened sides coincide with each other, an opening is formed through the pipe and through the damper from side to side, and communication between the lower part of the pipe and the upper part is interrupted.

TRUNK.—LUTHER JACKSON, Newark, N. J.—This invention consists in the arrangement of spring stops on the ends of the inside cover or tray in such a manner that when the tray is opened it is retained by the spring stops, and not liable to close down spontaneously, to the great annoyance of the person packing or unpacking the body of the trunk.

MUSICAL ATTACHMENT TO CAGES.—G. GUNTHER, New York City.—This invention consists in the application of a music box to a cage, in combination with a suitable detaching lever and rod extending in the interior of the cage in such a manner that whenever the bird jumps or steps upon the rod or stop lever, the music box begins to play, when wound up, and an agreeable surprise to the persons in the room is effected.

MACHINE FOR FLUTING WASHBOARDS.—CALVIN J. WELD, West Wardsboro', Vt.—The object of this invention is to provide mechanical means for fluting washboards, and it consists in a novel construction of devices for feeding the boards to the cutters; in raising the carriage when it is moved back, so as to keep the boards from interfering with the knives; in the holders that keep the boards in proper position while their flutes are being cut, and in the construction of the knives or cutters that produce the flutes of the boards.

CASTER BOTTLES.—BURROUGHS BEACH, West Meriden, Conn.—This invention consists in arranging within the bottle and extending in the direction of its length, a center shaft or spindle, having a series of radiating arms, in such a manner that without opening the bottle, it can be rotated therein, and thus by means of its several arms thoroughly pulverize the salt or other article in it, so that it can be freely discharged through its perforated cap.

ARTIFICIAL HANDS.—J. F. MAGUIRE, East Boston, Mass.—This invention consists in a novel manner of hanging the fingers and thumb to the hand, whereby they can be made to firmly grasp and hold articles of various shapes and sizes, and the fingers can be operated independent of the thumb.

OIL WELL PUMP.—W. E. MORRISON AND W. L. BETTS, Funkville, Pa.—This invention consists in attaching to the piston rod of the pump, above its upper valve, a cup-shaped vessel, perforated upon its sides and bottom, with its open end up. This vessel surrounds the rod, and is of a size to closely fit within the pump or well tube; and in the operation of the pump, it acts as a receiver for rivets or other articles falling through the well tube above it, by the presence of which heretofore much damage has been caused to the pump valves, etc.

INVALID BED.—HENRY CARDES, Bellville, N. J.—The object of this invention is to furnish an improved bed for hospitals, for use when the invalid is too feeble to be moved, in order to preserve the bed from becoming wet or defiled. It consists of a series of pipes, plane and concave plates, and a valve, combined with each other and with a bed or mattress.

BURGLAR ALARM.—R. M. WEBB, New York City.—This invention consists in so arranging upon the inside of a door, and with regard to the key hole of the lock in it, a device connected at its inner end with any suitable alarm that when a key is inserted in the door from the outside, or any tool used in the key-hole for picking or forcing the lock, the alarm will be instantly set free and sounded.

CURING ROLLER FOR CLOTHES WRINGERS, ETC.—J. B. FORSYTH, Roxbury, Mass.—This invention consists in curing a roller made of india-rubber or other vulcanizable gum on a hollow metallic core in such a manner that the heat is equally diffused throughout the entire mass of vulcanizable gum and the articles produced are of superior tenacity and toughness.

LAMP CHIMNEY AND SHADE.—J. H. CONNELLY, Wheeling, West Va.—By using a cylindrical glass chimney with a metallic cap piece, the durability of the chimney is greatly increased and liability to fracture by heat avoided. The cap piece is so formed as to constitute a most convenient means of applying the improved lamp shade to either the improved or common chimney-

SUPPORTER FOR WINDOW SASHES.—BURROUGHS BEACH, West Meriden, Conn.—This invention consists in a novel manner of operating the arms of the sash supporter, of that class having two arms hung upon a common center, whereby, when so desired, they can be both so swung or turned, and in conjunction with each other, as to be entirely relieved from the sash.

CORSET SPRINGS.—SAMUEL H. BARNES, New York City.—This invention consists in forming the springs of corsets of two or more thin metallic plates, placed one upon another, and so fastened together that they can move upon each other in the direction of their length, as the springs are bent, whereby their flexibility and elasticity, as well as durability, are greatly increased.

HATS AND CAPS.—CHARLES L. RAHMER, Brooklyn, N. Y.—This invention consists in a novel mode of securing the sweat lining within a hat or cap, for the purpose of allowing its interior to be ventilated when worn, while at the same time, the edge of the lining so secured, and which comes in contact with the head will readily adjust itself thereto, without being in the least degree inflexible.

THE MARKETS.

The exports of specie from the port of New York since January 1st amount to $49,363,138. For the week ending July 18, $2,289,270. Gold has fluctuated considerably. On Monday, the 15th, it was at 148¼ per cent., but next day it was 150 and above. The rate of interest was lower than before. Call loans are readily adjusted at 5 per cent.

ASHES—Pots are quite dull, but with continued light receipts, prices are supported; the sales are a few small lots at $8 25@$8 37½. Pearls are unsettled, and offered at lower rates, but we hear of no business.

BRICKS—Common Hard have advanced to $10 50@$11 50. Croton and Philadelphia are unchanged at $14@$15 for the former, and $40 for the latter.

CEMENT—Is in steady demand at $1 75 cash.

COFFEE—Laguayra, 17c.; Java, 24½c. gold, 32c.@33c. currency.

COPPER—Detroit, 33c.; Portage Lake, 32¾c.

COTTON—Fair demand. Ordinary, 25c.@26c.; middling, 32½c.@37c.

FLOUR—Common brands, $8 30@$10; Genessee extra, $10 30@$13 50; Canada, $8 70@$10 20.

MEAL—Rye, $6 75@$7 40; corn, $4 75@$5 10.

GRAIN—Corn, 82c.@83c. medium Western; 83½c.@84½c. extra; Oats, 50c.@51c.

HIDES—The market is dull, but prices are very firm. The sales are 1,900 Buenos Ayres, 21½ lb., at 18½c.; 600 Montevideo, 24 lb., 18c. gold; 2,000 do., 21 lb., 26c. currency; 5,347 Rio Grande, 20¼ lb., 16c. gold, 20 days; 200 Wet Salted do., 66 lb., and 2,500 Texas, 24 lb., on private terms.

IRON—The market for Pig is quite firm, but there is not much demand at present, and the business is small; we only notice 300 tons Glengarnock Scotch, part at $47, ex ship; small lots Glengarnock and Clarsherrie, $48@$50; and 100 tons No. 1 American, part for August delivery, $48 cash. There is no change in prices of Bar from store, and the demand is light.

LATHS—Are firm, with sales of 1,000,000 Eastern, at $3 25, three months.

LEAD—The market for Pig has become quiet, and, while the advanced prices are supported, yet it is scarcely as strong as last week; we notice sales of 300 tons Spanish and English at $7 25@$7 50 gold; some choice brands of English are held at $7 75. Bar, $11 75, and Sheet and Pipe $11 44 ₱ 100 lb.

LEATHER—The market for Hemlock Sole continues moderately active, and prices remain very firm. We quote Rio Grande and Buenos Ayres Light Weights, 32c.@33c.; Middle do., 34c.@35½c.; Heavy do., 36c@37c.; California Light, 31c.@32c.; Middle do., 33½c.@34½c.; Heavy do., 34c.@35c.; Orinoco, &c., Light, 30c.@31½c.; Middle do., 32c.@33c.; Heavy do., 29c.@32c.; Slaughter Upper in Rough, 31c.@33. Oak Sole is active at previous prices. French and American Calf Skins are in fair demand and firm.

LIME—Rockland is in fair demand, with sales of 3,000 bbls. at $1 50 for Common, and $2 10 for Lump, cash.

LUMBER—There is a good demand for Eastern Spruce, with sales of 465,000 feet at $23@$26, usual terms.

MOLASSES—Cuba (clayed and Muscovado mixed), 50c.; Muscovado, 52c.@58c.; Demerara, 65c.@75c.; Porto Rico, 68c.@80c.

NAILS—Cut, 6¾c.@7c.; Clinch, 8½c.; Forged Horse, 32c.@34c.; Pressed do., 22c.@24c.; Copper, 50c.; Yellow Metal, 33c.; Zinc, 20c.; and Ship and Boat Spikes, 7½c.@8c for 5 and 6 inch, and 7c.@7½c. for 6½ and 3½ inch, net cash.

SUGAR—Hard white, 16¾c.; soft white, 15¼c.@15¾c.; yellow, 13½c.@14¾c. cash. Raw sugars—Cuba, 9¾c.@12½c.; clarified Porto Rico, 11⅝c.@14¼c.

WIRE—Telegraph, 9c.@10c. for Nos. 7 and 11, and for hoop skirt, 55c. for No. 18 covered, and 35c. for uncovered.

WOOL—State and Western fleeces, 50c.@60c.; pulled, 57½c.

ZINC—9½c. less 4 per cent. for gold.

Answers to Queries.

J. U. R., of Pa.—The largest monitor is the *Dictator*.

J. W. C., of Ill.—Persons who preserve fruit and vegetables, acknowledge that green peas are very difficult to keep. We have seen specimens of what were called "fine," but they did not strike us as a success. Perhaps some of our readers will tell us the best way.

W. J. W., of Ill.—We published a recipe scarcely a month ago to prevent dampness on brick walls.

J. J. W., of N. B.—Siphons of so great a length as yours are apt to cause trouble by air collecting in the highest part. It is a question whether it will supply the boilers seven in number and 36 feet long. The way to find out is to measure the boiler evaporation for a given time. We cannot tell without more facts.

M. P., of Mass.—Many engines are now run by water instead of steam.

G. S. B., of Mo.—You have made a confusion in terms. The common eolian harp is acted upon by the air, but an eolian attachment to a piano is another thing, and is made to imitate the peculiar tone of the wind instrument.

F. E. H., of ——.—If you will look in the back numbers of the SCIENTIFIC AMERICAN, you will find a good deal upon the time to cut timber. That cut in the months of August, September, and October, is found to be the hardest, heaviest, and most durable, by actual experiment.

C. J. H., of N. Y.—We have examined your valve and its arrangement. Will not the steam leak through about the diaphragm as much as it would by unequal expansion of the valves? This trouble is very much overrated.

N. C., of Wis.—Any respectable hardware firm will sell you genuine emery.

A. D., of Ind.—We have used plain collodion to give an insulating coating to copper wire, with good results. Gun cotton and the dried collodion film are among the best known electrics. There is no such coated wire on sale.

R. J., of N. J.—An ordinary jackknife seems generally to be the most handy instrument for removing the tin-foil caps from bottles. This so-called tin foil is lead foil with a very thin skin of tin, and costs only about 30 or 40 cents per lb.

IMPORTANT DECISION IN INTERFERENCE CASE.

BEFORE THE EXAMINERS-IN-CHIEF ON APPEAL.

S. H. Hodges for the Board.

Interference between the application of Wait and Phelps, and that of A. Witherell.

No testimony was filed in this case by either party. On reference to the oaths of invention filed with the application, that of Witherell was found to bear date one day previous to that of Wait and Phelps; and, in accordance with the practice of the Office, the question of priority of invention was therefore decided by the Examiner in his favor.

On inspecting the files anew, however, it appears that the authority of the Justices of the Peace, who administered the oaths, is not certified by the County Clerk of their County, in either case, nor by any other officer who is shown to have the custody of their commissions. This was once required by the regulations of the Patent Office, but is no longer insisted on in practice. It is perfectly competent, no doubt, for the Office to dispense with it in *ex parte* hearings, and receive as evidence of the oath, the naked jurat of the magistrate, without inquiring into his authority. If they are satisfied, no one else can well complain, in such cases. But, when the question is between adverse parties, it is to be tried upon the usual rules of evidence, modified by such positive regulations as the Commissioner may prescribe. Among these rules of evidence, it is well settled, that the certificate of a Justice of the Peace, to an oath, is not admissible in trials at law, unless his official character is established under the seal and signature of the officer who has the legal custody of his commission, or is otherwise legally cognizant of his character.

In the course of the proceedings against Aaron Burr, an affidavit of his character, sworn to before such a magistrate, in New Orleans, was excluded upon two grounds, one of which was, that the certificate of the Governor, which stated that a man of the name bore that character, did not also state that he was the person signing the jurat. In Dunlap *vs.* Waldo, 6 N. H. R., 450, a deposition was offered, which had been taken before a Justice of the Peace in New York, and his authority was certified by the Clerk of the County in which it was taken. It was objected to as not sufficiently authenticated, and the necessity of some such voucher was distinctly recognized by the Court in a very full and elaborate discussion. But it appeared further, that in New York the County Clerk has the custody of the proper evidence of the magistrate's official character, and of his having taken the oath; and upon that ground only was the deposition admitted. There can be no question as to the insufficiency of the oaths in the case before us, as evidence between litigating parties. They must therefore be laid aside, and resort must be had to other testimony. No other means of ascertaining the dates of the invention by the respective parties remains except the filing of their applications. That of Witherell's was received in the Office on the 25th of February, 1862; that of Wait and Phelps on the 14th of the same month. The latter must, accordingly be adjudged the first inventors.

As there are reasons for supposing that this determination may operate upon Witherell as a surprise, he ought to be allowed an opportunity to introduce testimony upon the question, and to have a new hearing for that purpose.

The decision of the Examiner is reversed, and Wait and Phelps are declared to be the first inventors of the device in controversy.

Washington, D. C., Nov. 25, 1862.