Correspondence

Rediscovery of the Formation of Nitric Acid by Electricity.

MESSRS. EDITORS :—Recently, in making some experiments with an electrical machine, in connection with which some vessels of electrified water were used, I observed that when a succession of sparks was passed through a stratum of air impregnated with moisture, a peculiar odor, which I took to be that of nitric acid, was perceptible. This was altogether different from the odor of ozone which is generated when the electric spark is made to pass through dry air or oxygen gas. Prosecuting the experiment, I found that when several discharges from a battery of Leyden jars were conducted over the surface of a stratum of water, the water became acidulated so as slightly to affect the color of test papers. When a solution of caustic potash was substituted for the water, after many discharges, crystals of niter were obtained by evaporation.

Whether these are original discoveries I do not know. It is probable that others, in making similar experiments, may have noticed such phenomena. The practical application which I propose to make of them, however, I think is new.

That nitric acid is generated by the action of the spark upon the air is unquestionable. My theory of the operation is this :—The affinity between oxygen and azote being very weak, and atmospheric air being simply a mechanical mixture of those gases, it may be supposed that their atoms. as they exist in the air, are not brought within the sphere of mutual attraction. Now, it is well known that when an electrical discharge takes place through the air, the latter undergoes a violent agitation, the most notable feature of which is a sudden expansion of volume. Probably condensation takes place also, and prior to expansion, but so suddenly and so immediately followed by the expansion, which may be only the recoil of the condensed gases, as to be imperceptible. When this condensation is sufficiently violent the dissimilar atoms are brought within the sphere of affinity, combination ensues and the nitric acid generated is absorbed by the water or alkaline solution. May not the extensive beds of niter found on or near the surface of the ground, in various parts of the world, be formed in a similar manner by the action of discharges of lightning from the clouds? The nitrous earth of caves and old buildings probably arises from the decay of organic matter.

The application which I propose to make of my discovery (?) and upon which I wish to ask your opinion is this :—For the electrical machine and battery of jars substitute a powerful electrical apparatus driven by steam for the generation of the nitric acid—is it not probable that this costly chemical may be thus economically manufactured? Or, by the use of the alkaline solution, the nitrate of potash, of so much political importance in the present state of national affairs? And since condensation is the agent which produces the result, let the stratum of air which should be pervaded by a system of broken conductors, in order to multiply the spark, be subjected to powerful mechanical pressure in order to increase its effect. Or, where it is convenient, erect instead of the electrical apparatus, a system of ærial conductors to collect and apply the atmospheric electricity.

May I ask you to state, among your "Answers to Correspondents," in your valuable paper, your opinion as to the feasibility and economy of the manufacture thus hinted at, and also whether a patent could be procured for the process and machinery necessary to carry it into practice. Should you think proper to address me upon the subject, by letter, I should be greatly obliged, but I suppose your time is not sufficiently at your disposal to admit of such special attention. R. D.

Washington, D. C., June 2, 1862.

[The fact that nitric acid is formed by the passage of electricity through the air was discovered by Cavendish, a rich old bachelor and amateur student of science, who died in England in 1810. It seems to have been rediscovered by our correspondent. We do not believe that he will find this an economical mode of making either nitric acid or nitrate of potash, but should be pleased to hear the results of his experiments. A new process of manufacture is patentable. —EDS.

Information about Milling.

MESSRS. EDITORS:—As the SCIENTIFIC AMERICAN diffuses more mechanical knowledge than any paper in America, I peruse its columns with a great degree of interest. Having noticed in No. 23, vol. vi. (new series), two questions, one on stone dressing and grinding, the other on bolting, I as a practical miller, accept the invitation to answer, and will do so according to the experimental knowledge that I have on the subject. After trying many experiments, and with a practice of twenty-eight years, I will say that the first principal in dressing stones is to secure the right proportion of face and furrow. Second, to have them only where they are needed. Third, to give the furrows the right width and depth. Fourth, to arrange the draft that it will receive the grain freely and distribute it properly over the entire surface of the stones, so as to produce the greatest quantity of good flour from the smallest quantity of wheat, and with the least power.

Before describing the dress that I have adopted to accomplish these ends, I will make a few comments on the various other dresses that have been in general use for the last thirty or forty years, in order to point out their principal defects, and the better to explain the advantages that this dress possesses over them. Now, it will be noticed by making a draught of the old "straight-quarter dress," as it is commonly called, having the bed stone with the runner lying upon it (diameter of stone four feet; draft of leading furrow four inches, measuring from center of stone to feather, or cutting edge, with thirteen sections and three furrows to the sections, and lands of equal width at each end), that it is a very unequal dress. We will suppose the leading furrow to be right, which I believe it is, or nearly so, as the draft of the center is very great and the motion very slow. This draft decreases to the periphery, at the same ratio as the motion and centrifugal force increases. The leading furrow being right, the first short furrow is certainly wrong, because the draft is much greater. And the second furrow is still worse, as the draft is greater still. These furrows cross at the periphery at nearly a right angle, and at about the same angle as the leading furrows cross at the eye, hence it is evident that large quantities of meal enter these furrows improperly ground, and they are thrown out by the great draft and pass off into the offal. There is also too much face at or near the eye. This hinders the easy reception of grain, and prevents proper ventilation, which are indispensable to good and fast grinding. The same difficulties attend the circle-quarter dress, and all of the circular dresses that I have ever known, as based on the old Elmore plan, patented in 1833, namely, on circles varying from four and a-half to six feet, with from thirty-six to forty-two furrows, one half of them running to the eye, and the other half running to a point, and terminating about six inches from the eye, leaving a land at this point about three inches wide. It is evident, that with a small amount of furrow and a large amount of face, at or near the eye, that the grain enters a narrow furrow and passes over a broad face, consequently it performs its cracking of the grain, and nearly all the finishing too near the center, where the motion is too slow to do good work. This leaves the skirt of the stone comparatively nothing to do but flutter and wear out of face.

I will now describe the dress that I have adopted. Stone four feet diameter, and of medium quality as regards closeness or openness, as is commonly termed by millers; draft four inches, measuring from center of stone to feather, or cutting-edge of furrow. Divide the stone at periphery into thirteen sections, and divide these sections by two furrows, making three furrows to the section, and thirty-nine in all. Connect the first furrow with the leading furrow at the eye, so as to make the first land a quarter of an inch wide at the eye. Connect the second furrow with the leading furrow, so as to make the second land three-quarters of an inch wide at leading furrow. The third land necessarily terminates at a point about eight inches from the periphery. The lands are all of the same width at periphery; the furrows straight and one and-a-half inches wide throughout, and three-sixteenths of an inch deep in bed-stone, and a quarter of an inch deep in runner. Bring them up on a true bevil, or inclined plane to the face, finish them very smooth with a sharp pick, give them a nice cutting edge for about six inches next the eye, and the remainder of the distance to periphery without the cutting-edge. Keep the faces about one-thirty-secondth of an inch lower around the eye as far as the cutting-edge of the furrow extends. It will be seen by making a draught of this dress, that the furrows at, or near the eye, cross at nearly a right angle, and at half the distance from eye to periphery at an angle of about 45°, and decreases in the same proportion to periphery. By means of the tapering lands, the draft in the two short furrows is nearly the same as in the leading furrows, which I believe to be about correct. The true theory of stone dressing is slowly being disclosed by practice. It is now proved that the only face necessary where the stone receives its feed, is sufficient only to crack the grain. With the narrow lands, broad furrows, and great draft, the grain is drawn freely between the stones and is slightly crushed and moved rapidly from the eye and distributed over the entire surface of the stones, the lands gradually increasing in width as the finishing becomes necessary. In regard to grinding wheat, all the apparatus connected with the stones should be in the most perfect working order. I have found in practice that the spindle is an important consideration. I would not use one less than six or seven feet long, and having a diameter corresponding with its length, to prevent springing. The pressure of the spur wheel when running causes less friction at the upper bearing, or neck of the long spindle, than in the case of a short spindle, thus rendering it less liable to heat, get loose, and injure the grinding. Another consideration is the point and step. It frequently happens that the pressure of the spur wheel against the spindle point, causes the step to wear out of a true circle. In tramming the spindle, great care should be taken to press the point hard in the same direction that the spur wheel presses it when grinding, otherwise there is no certainty of its being in tram when at work. This is required whether the step is worn out of shape or not, as it is necessary to give the point a very little play to guard against accidental heating and expansion. Another important point is the fitting of the bail and driver. The bail should be so constructed and placed in the stone as to leave the heaviest portion of the stone below its resting point on top of the spindle. Great care should be taken to have the bearing points of the driver equal when the face of the runner is at a right angle with the spindle.

I will present information respecting the balancing of the stones, their speed, size and weight, and also remarks on bolting in another communication next week. J. R.

Ann Harbor, Mich., June, 1862.

The Armor Plate Question in California.

MESSRS. EDITORS :—Gentlemen I have inclosed you a small gold piece and trust its radiant face will be a guarantee that your paper is really appreciated and that it will insure a continuance of its receipt. We have had a heavy winter up here (six thousand feet above the level of old ocean), a pleasing proof to you I hope of the great altitude your paper has already reached. While the little hills have been skipping like young rams and our Halleck has been thundering in the South West the SCIENTIFIC AMERICAN has come regularly by every mail. As a blue jacket you have my humble thanks for the jealous care with which you have watched over the interest of our navy. I should be much pleased to know that your paper was circulated in every company in our army and as a seaman I would cheerfully contribute my mite to furnish each mess of every naval ship afloat belonging to good old Uncle Sam a copy. Cannot something be done for our brave boys in the manner indicated. Neptune's intellectual gems would sparkle all the brighter for it. We are having quite an exciting time over iron-clad gun boats. The "cheese box" seems to be the pet; every body you talk with is sure we have reached perfection in that line, but your humble subscriber doubts it very much. He well remembers when quite a boy of aiding in the first experiment in the year 1845 in a large vessel of war with the screw. This was tried in the frigate *St. Laurence* (the old *Shannon*) on the Medway river under specifications submitted by Commander Flemming, R. N., to the Admiralty. The screw was worked by the chain-pump brakes managed by sixty-five men. We were cast loose on an ebb tide and succeeded in turning her against wind and tide. I think the object of this trial was to demonstrate the practicability of handling a dismasted ship in action (the *St. Laurence* being a hulk passed over) this was a small beginning and you know what a revolution has since followed. Liners, frigates and corvettes are now filled with powerful screws working up to many hundred-horse power, thus enabling them to now perform what was then impossible. And so with iron-clad ships, we have made a good small beginning, but a very short time will prove them only second rates. By all means let us have a fleet on proof but let them be built on sound principles demonstrated by practical trials.

FRED. MACDONALD.

Lake Bigler, California, May 11, 1862.

More Questions for Millers.

MESSRS. EDITORS:—You will oblige me by publishing the following in the SCIENTIFIC AMERICAN. I have read the question by a "Young Miller" and all the answers given, but did not learn all that I would like to.

I would like to know what is the best size for a millstone and what is the best kind of dress, viz., the number of furrows and their form, also the cracks to the inch and the speed required to do the best work. Then I would ask what length bolt you would use, and what diameter and what fall to the foot; also what kind of cloth you would use for both grist and merchant work, and what speed would be required for the same. Any more information you can give in respect to milling, that you think may be beneficial, will oblige

A YOUNG MILLWRIGHT.

Shullsburg, Wis., June 9, 1862.

Fly Wheels of Sawmills.

MESSRS. EDITORS:—We noticed on page 374, (present Vol. SCIENTIFIC AMERICAN over the signature of "H. F.," the inquiry whether the balance in the flywheel of a saw mill should be equal to the saw frame and crank and whether the balance should be put directly opposite to the crank? Having some practical knowledge in sawmilling and millwrighting we will give our views.

For an ordinary sawmill the flywheel should be 6 feet in diameter and weigh six hundred pounds. The balance should not equal the frame and crank by 30 or 40 as the motion of the saw will make up for the difference in weight. The balance weight must be put opposite the crank, so that the centrifugal force of the one will exactly balance the other.

A. H. & J. A. BUCKWALTER.

Kimberton, Pa., June 10, 1862.

Setting a Quarter Twist Belt.

MESSRS. EDITORS:—Your correspondent "V," is all right in his rule for setting a quarter twist belt, although I do not think his general practice will apply to mechanics in this latitude; for when an apprentice, thirty-five years ago, I saw one put up for the first time without shifting and trying. I studied it and solved the problem, and have verified it in practice (and a pretty large one), ever since. Query? Does the same rule hold good when the shafts are at other than right angles?

VULCAN.

New York city, May 31, 1862.

What May Be Seen in a Life Time.

An old negro, who says he was born one hundred and three years ago, now sits about on the steps of the only two brick houses in Yorktown, and tells the Northerners how his master Robert Anderson, was the host of General Washington, after the capture of Cornwallis; and how he knows his age because he remembers General Washington perfectly. His present master, son of Washington's host (or grandson) is now in the rebel army; and this old patriarchal servant of three generations is left to take care of himself in his supra-centennial existence. "What are you going to do—how do you get your meals now-a-days?" asked my friend. "Oh the men here give me plenty to eat. I do very well." The old fellow was not at all concerned about his future treatment. But what suggestive pictures are the two great struggles he has lived through on that peninsula at intervals of 80 years.

Utility of the Morse Magnetic Telegraph.

The following letter from Parker Spring, Superintendent of the Construction of U. S. Military Telegraph lines, gives an interesting account of the services of the Morse telegraph to the army, and of Gen. McClellan's use of it:—

GAINES' HILL, Va.,
7 miles from Richmond, June 2, 1862.

From the time the army of the Potomac first left Washington the United States Military Telegraph has never for an hour been allowed to remain in the rear. Before reaching his new headquarters Gen. McClellan almost invariably learns that the wire is on the advance; that an office has already been opened at the point designated before he left his old camp, and that communication to the War Department at Washington is open for him. In several instances when the army had marched fifteen miles in one day, the telegraph had reached the new quarters two hours in advance. When our troops are obliged to remain a few days in one position, wires are immediately run from Gen. McClellan's quarters to the headquarters of all commanders of divisions, thereby placing the entire section of country occupied by our troops under his instant control. Assistance like this is surely valuable to our glorious cause, and, I am happy to say, it is fully appreciated by the General.

Saturday previous to the evacuation of Yorktown, Gen. McClellan ordered me to run a wire into our battery No. 6, in order to give him telegraphic communication from his headquarters, which were distant about one and a half miles. This battery laid half a mile in front of Gen. Heintzelman, and within half a mile of a long chain of rebel batteries. The office at battery No. 6 was to be located under ground, in a bomb-proof arrangement, in order to save the precious life of the manipulator, who would be in his hole before daybreak the next morning. I was informed by Gen. Heintzelman's aids that it was a very hazardous experiment; that from the point where the line must cross the fields the rebel officers could be heard distinctly giving command; that the rebel tickets were within 250 yards of us, and if we attempted to distribute poles with our wagon we would be fired upon. Of these facts I informed all our men. Regardless of danger, they unanimously voted for the extension. Fortunately that night was dark, and promptly at 9 P. M. we were in readiness to commence operations.

After cautioning all hands to work quietly, I detailed the men as follows: Cosgrove, Hoover, Greiner and McGuffie to dig holes; Rote, Keiler, Benedict and Jones to distribute poles on their shoulders, who had to carry them a full mile. John Tryer I posted as guard. His duty was to watch the flash of the rebel guns, and notify the men, who were working and could not see, when to fall on the sod, should the rebels hear us and open. Thus far all was quiet in the secesh quarters. Scarcely had our operations commenced when a compliment from Gen. Magruder in the shape of a shell was sent us. Through the timely notice received from our guard, Mr. Tryer, that "he saw a flash, and that something with a fiery tail was coming toward us," we were enabled to drop. It came within fifty yards of us, bursted, but did no damage. After that shot and shell followed in rapid succession, until we completed our task, which, owing to loss of time in dodging, occupied fully five hours. A number of these missiles fell within thirty feet of us, showing conclusively that the rebel pickets had discovered our operations, and were directing the fire of their artillery. We have preserved pieces of a shell that knocked down a pole behind us, which had been erected not five minutes before the shot was fired. The line was run through a soft corn-field, and it was amusing next day, after the evacuation, when we returned to this field, to see the life-like pictures of Tryer, Cosgrove and several others, nicely portrayed in the mud, and which no artist in the world could excel. They were at once recognized by all hands, and I promised to give you the particulars.

The telegraph has been called upon to perform a still more mysterious wonder. For some time past I have been ordered by Col. Eckert (our superintendent of military telegraphs), to try a telegraphic experiment from a balloon. Saturday morning, when we heard that a great battle must be fought, Prof. Lowe notified me that I should extend the wire to his balloon, and we would try it. In one hour we had brought the wire a mile and a half, and I was ready to ascend with the Professor. The battle had commenced. When it had reached its zenith, Prof. Lowe and myself, with the telegraph, had reached an altitude of 2,000 feet. With the aid of good glasses we were enabled to view the whole affair between these powerful contending armies. As the fight progressed, hasty observations were made by the Professor and given to me verbally, all of which I instantly forwarded to Gen. McClellan and Division Commanders through the agency of the obedient field instrument, which stood by our side in the bottom of the car. Occasionally a masked rebel battery would open upon our brave fellows. In such cases the occupants of the balloon would inform our artillerists of its position, and the next shot or two would, in every case, silence the masked and annoying customers. For hours, and until quite dark, we remained in the air, the telegraph keeping up constant communication with some point. From the balloon to Fortress Monroe, a distance of over 100 miles, this wire worked beautifully. A number of messages were sent and received between these two points, and had it not been for the tremendous rush of business on the wire, I should have telegraphed you directly from the balloon, while the battle was raging. Sunday morning, at daybreak, we again ascended. Early in the morning the battle was renewed, and with more fierceness than the day before. Incessant firing of musketry and artillery was kept up until noon, when I had the extreme pleasure to announce by telegraph from the balloon, that we could see firing on James River, to the left of Richmond, distance from the balloon, some said, fifteen miles. This fire was of short duration.

The streets of Richmond in the morning presented a deserted appearance, but very few people to be seen in the streets. During the afternoon and evening of Sunday nothing of interest transpired beyond the removal of the rebel dead and wounded, all of which we could distinctly see from the balloon. Every available machine that had wheels was brought into requisition for this purpose. From the scene of battle into the City of Richmond, the road was literally lined with ambulances, wagons and carts, conveying dead and wounded. About twilight we saw camp fires innumerable around the city; smoke issued from all their hospitals and barracks, which showed us to a certainty that the main body of their army had fallen back to Richmond. Monday morning we made several ascensions, and found a small force near the last scene of action, and thousands of troops marching out from the city; so you may look momentarily for a report of another severe battle.

A Good Word.

SCIENTIFIC AMERICAN.—We want to repeat our former kind word of this excellent and substantial weekly—published in New York. It is in quarto form, 16 pages. Every intelligent farmer and mechanic ought to have it. He will certainly lose treble its cost, if he does not. It keeps one well posted in all the mechanical movements of the age, and furnishes him with topics for thought—and thinking makes the man as it makes the world. "By thinking," said Sir Isaac Newton, "I have triumphed." Not only, is the AMERICAN beautifully printed and well filled with solid matter, every number is handsomely embellished with clear, bright, rarely executed wood engravings. How nice a volume, bound, will a six month's or a year's subscription make! Take our word for it, young thinkers, and supply yourselves with the SCIENTIFIC AMERICAN. We say this word for your good.—*N. H. Journal of Agriculture.*

PINS were worth a dollar a paper in 1812, and were poor at that. Then it took fourteen processes to make a pin; now only one, by a machine which finishes and sticks them into the paper. Saving pins, a half a century ago, was as important as saving cents, and hence the habit thus formed sticks to many elderly gentlemen whose coat sleeves are ornamented with rows of them, rescued from loss.

Hinged Plates for Pianofortes.

Science and mechanical skill undertake one of their most difficult and delicate tasks when they attempt to improve the pianoforte. The sensitive ear of the skillful musician detects the slightest inaccuracy, not merely in the harmony, but also in the volume, the tone, the rythm, the melody, of all the various sounds that enter into the composition of music, and the formation of these sounds of the proper quality, and their combination in exact harmony is certainly one of the nicest of all arts. The universal love of music has created an enormous demand for the most fashionable musical instrument, the piano; and this great demand is constantly stimulating the numerous manufacturers to make improvements in the instrument, in order that their own articles may be more acceptable to the public than those of their rivals. Many of the patents granted are for modifications which are no improvements, but the few actual improvements which have been patented have shown that there is hardly any department in which good inventions are more profitable.

Horatio Worcester, an old-established and well-known manufacturer of pianofortes, of this city, has recently invented a modification in the plate of pianos designed especially to increase the volume and improve the quality of the tone. The modification consists in making the plate in two pieces, and connecting the piece to which the strings are attached with the stationary piece by a hinged joint, so that the hinged piece may vibrate with the strings. The invention is illustrated in the annexed engravings.

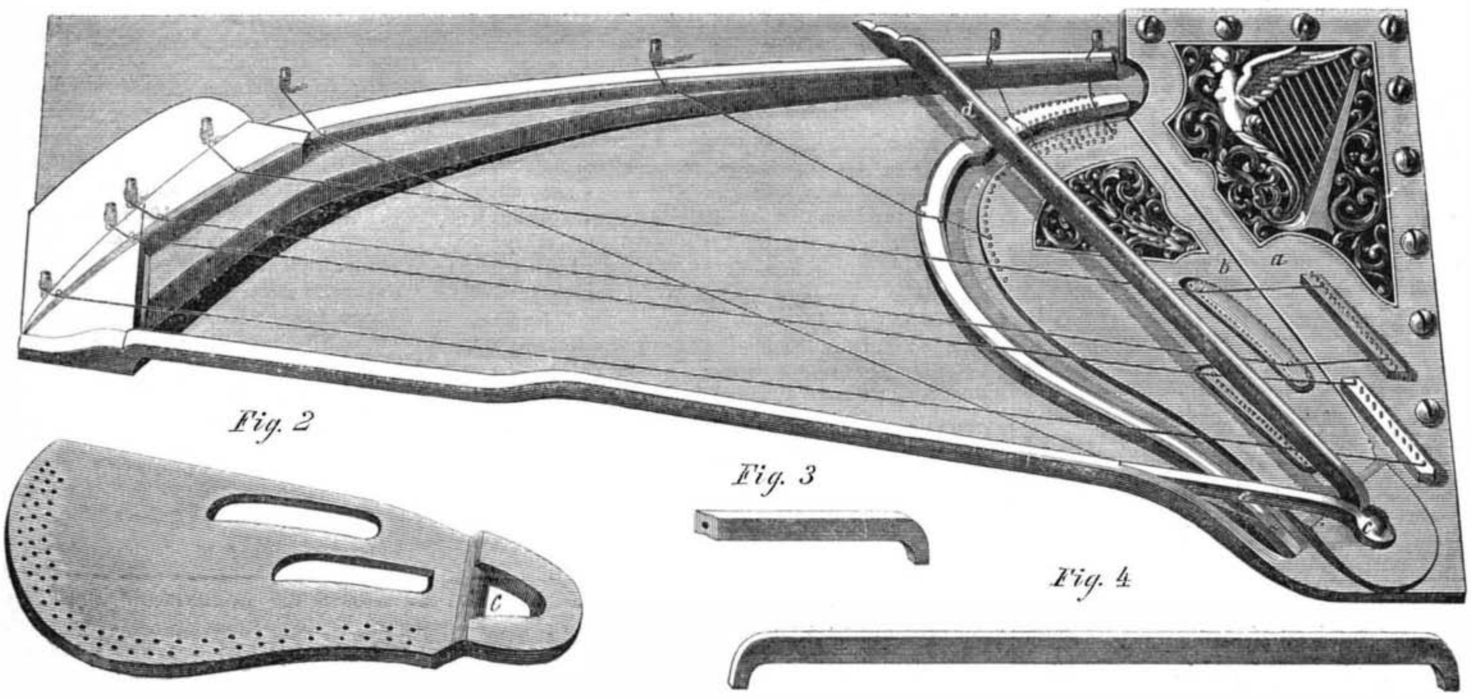
The stationary piece, *a*, Fig. 1 of the plate, is secured firmly to the piano in the usual manner, and the piece, *b*, is connected with it by a hinge at *c*. This piece is represented detached in Fig. 2. The hinge is formed by catching the slot, *c*, upon a short stud which rises from the stationary plate below. The strings are attached to the opposite edge of the hinged piece, *b*, as indicated, supporting this end of the plate simply by their tension.

As the combined strain of so many strings amounts to some five or six tuns, it is necessary to counteract it by devices of corresponding strength. Braces, *d* and *e*, are accordingly introduced to hold the piece, *b*, against the strain of the strings. These braces are made of metal, and are represented detached in Figs. 3 and 4.

By this arrangement the vibration of the strings is imparted to the piece, *b*, prolonging the note, giving increased volume to the tone, and imparting to it a singing quality which has been much admired by the most eminent musicians of the city. The inventor describes the freedom given to the sounding board by the hinged plate as similar to that found in the violin, the action of the tail piece of which beautiful instrument furnished the suggestion for this improvement. It will be observed that this plate strengthens the treble and tenor portions of the scale which are usually the weakest parts of the keyboard. It is estimated by the inventor and by impartial musicians who have tried pianos with this hinged plate, that the improvement *doubles* the volume of sound.

The patent for this invention was granted June 3, 1862, and further information in relation to it may be obtained by addressing the inventor at the corner of Third avenue and Fourteenth street, New York city.

Fig. 1

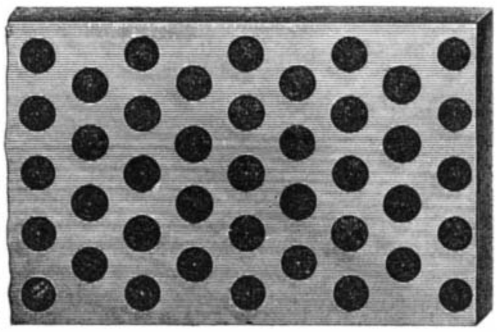


WORCESTER'S HINGED PLATES FOR PIANOFORTES.

F. Walton, of London, manufactures a substance from linseed oil, which answers as a substitute for india rubber in many cases. The oil is boiled until it becomes a thick substance like glue. It is then mixed with a portion of shellac and rolled into sheets under warm heavy iron rollers. Waterproof boots, shoes, blankets, picture frames, &c., have been made of it. It is mixed with sulphur, and vulcanized like india rubber.

VANDERBILT'S POLISHING BELT.

The annexed engraving represents a polishing belt invented by George R. Vanderbilt, of this city. It is



formed by inserting plugs of emery in a leather in the manner represented. The holes are cut in conical form, being smallest at the polishing surface, and the plugs of emery are made to fit the holes; a strip of cloth upon the back side holds the plugs in place. The emery is fastened together with a suitable cement, which wears away with the leather, and thus the plugs act as constant feeders to the entire surface of the belt. The belt, consequently, requires no replenishing with emery until it is entirely worn out. It may be connected at the ends to form an endless belt and run on two pulleys, or it may be secured to the periphery of a wheel to form a polishing wheel.

This belt has been tried at the Novelty Iron Works, in this city, and is pronounced by the foreman a good article.

Application for a patent for this invention has been made through the Scientific American Patent Agency, and further information in relation to it may be obtained by addressing the New York Emery Wheel Company at 116 Nassau street, New York city. [See advertisement on another page.]

Paraffine as an Engine Lubricator.

The common lubricating agent usually employed for the pistons in steam engines, is melted tallow. In the cylinders of engines in which superheated steam is used the tallow is very liable to be decomposed and its beneficial action as a lubricant thereby destroyed. And in those engines which have surface condensers, the steam passes from the cylinders to the condensers, thence to the boilers carrying with ti much tallow, the acid of which is liable to act chemically upon the brass tubes of the condenser, forming verdigris, which is transmitted to the boiler. When this verdigris comes into contact with the iron of the boiler, under a high heat, it is decomposed, and the copper contained in it developes a galvanic action when in contact with the iron wheel, the latter is subject to rapid corrosion. Such is the theory of the action of tallow used as a lubricant in steam engines. As a substitute for it, Mr. W. Fairbairn, F. R. S. recommends paraffine. It is not decomposed by superheated steam, and it does not act chemically on brass tubes.

Suspension of Cotton Growing at the South.

Returned prisoners from the South state that, so far as they saw and heard, the cultivation of cotton is almost entirely suspended in those States that used to produce that staple. In the early part of the present spring cotton planting was commenced, but suppressed by proclamations by the governors of the cotton States, who enjoined the planting of corn instead. The planters were by no means disposed to obey these arbitrary ukases, but they were frightened into submission by the threat of a tax to the full value of the product. The consequence is, no more cotton is planted than will suffice for seed for an ensuing crop; but instead of the deposed monarch, King Cotton, King Corn wields the scepter—nearly the entire cotton lands being converted into one vast corn field.

A Safe Railroad.—The New Jersey Railroad Co. (Jersey City to New Brunswick, 34 miles) has been organized thirty years, and since the road went into operation upward of 39,000,000 passengers have been transported over it, without the loss of a single life in any of the cars. During the past year alone nearly 3,000,000 of passengers have been carried over the road, without any serious accident to any one, except those who have either jumped from the trains while in motion, or otherwise jeopardized their own lives by violating the rules of the company.