Improved Lamp Chimney.

This chimney is said to be a great improvement over the common ones used on kerosene lamps. The inventor says:—"It is less liable to break from expanding and contracting—being of equal thickness throughout—whereas the ordinary chimney is large in the center and small at each end. As a proof of the capability of this chimney to resist a sudden application of cold when heated, water may be sprinkled upon one of them with impunity, while a single drop upon the others will fracture them. They can be cleaned as readily as a tea-cup, which is quite an advantage. The cap, suspended on the top of the glass by the wires which support the shade, intensifies the light very much, and the heat is not great enough by this arrangement to injure a paper or metal shade in the least. The average breakage of these chimneys is very much less than the ordinary kinds, and they are in all other respects adapted to lamps now in use."

A patent on this chimney is pending through the Scientific American Patent Agency, by Jos. H. Connelly, of Wheeling, West Virginia; for further particulars address him at that place.

Fig. 1

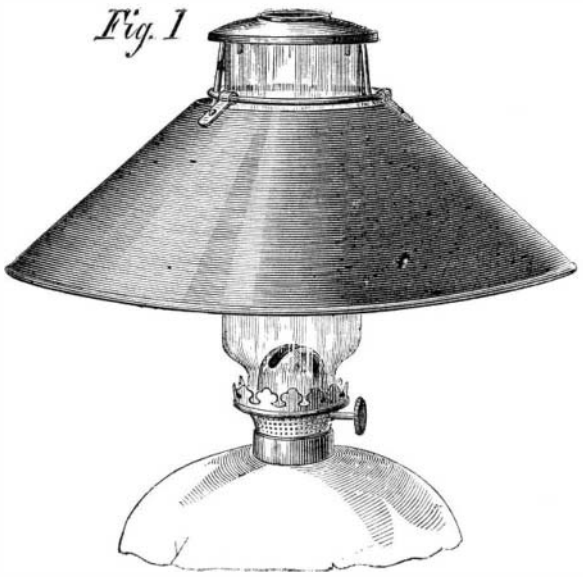
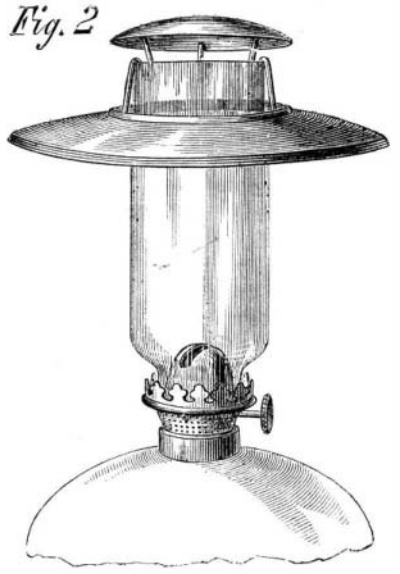


Fig. 2



CONNELLY'S LAMP CHIMNEY.

NOTES ON NEW DISCOVERIES AND NEW APPLICATIONS OF SCIENCE.

Professor Wheatstone has constructed a very powerful thermo-electric battery on the principle of that exhibited by Mr. Ladd at the Royal Institution. The battery constructed by Professor Wheastone consists of sixty pairs of small bars, and its electro-motive force is said to be equal to that of two of Daniell's cells. The battery was recently exhibited to a select circle of Professor Wheastone's friends, and it is stated that "on connecting the terminals of this battery, excited as Marcus's, a brilliant spark was obtained, and about half an inch of fine platinum wire when interposed was raised to incandescence and fused; water was decomposed, and a penny electro-plated with silver in a few seconds, while an electro magnet was made to lift upwards of a hundred weight and a half. Bright sparks were obtained from the primary and second ry terminals of a Ruhmkorff's coil connected th the battery. In fact, all the effects obtained from small voltaic combination were reproduced with ease by this thermo-electric battery." In constructing this battery, Professor Wheatstone found confirmation of the curious fact, first announced by M. Marcus, that the power of a battery of this kind is very greatly increased by frequently remelting the alloys of which its elements are composed. This is supposed to be due to the repeated fusion breaking down the crystalline structure of the alloys.

Not unnaturally, this thermo-electric battery is exciting the imaginations of men of science, causing them to call up wonderful visions of a future when much of the work of the world shall be done by *sunshine*. Thus a cotemporary suggests that, "like windmills, thermo-electric batteries might be erected all over the country—finally converting into mechanical force, and thus into money—gleams of sunshine, which would be to them as wind to the sails of a mill. What stores of fabulous wealth are, as far as our earth is concerned, constantly wasted by the non-retention of the solar rays poured on the Desert of Sahara. Nature here refuses to use her wonderful radiation-net, for we cannot cover the desert sands with trees, and man is left alone to try his skill in retaining solar energy. Hitherto helpless, we need not be so much longer, and the force of a Sahara sun may be carried through wires to Cairo, and thence irrigate the desert, or, possibly, if need be, it could pulsate under our streets, and be made to burn in Greenland." A fascinating dream enough—and one which may prove to be "not all a dream."

In extracting gold and silver from their matrices by the process of amalgamation, the mercury employed often "sickens" and "flours." "Sick" mercury is mercury which has become tarnished at the surface by ox dation; "floured" mercury is mercury which has been tarnished by combination with sulphur. When triturated, in the amalgamating machines, with the rock from which the gold or silver is to be extracted, mercury tarnished by either of the causes mentioned "breaks up into minute particles, which will not again unite, and are carried off with the slimes, so that with many ores the loss of mercury forms a considerable item in the cost of extracting the precious metals." Mr. Crookes, however, the editor of the *Chemical News* and the discoverer of thallium, has found that "by the addition of a small quantity of the metal of sodium the sickening of mercury is entirely prevented, floured mercury is immediately brought together again, and the amalgamating action of ordinary mercury is greatly increased." Mr. Thomas Belt, who has experimented with sodium amalgam, at Mr. Crookes's suggestion, adds the following particulars:—"It is found," he says, "that a surprisingly small amount of sodium is sufficient to effect the clearing of fouled mercury. It will require a longer series of experiments than there has yet been time to carry out, to determine the smallest effectual proportion, but it has already been proved that one 20,000th part of sodium, added to the mercury is amply sufficient, so that this discovery has the great advantage of cheapness to recommend it. Sodium may even now be obtained in large quantities for 5s. per lb., and if a demand were to spring up for it, its price would be greatly reduced; but calculating at the present price of the metal, and using the quantity that experiments have proven to be amply sufficient for any description of ore, the cost is a mere trifle, in comparison with the advantage gained. With the ordinary amalgamating troughs used in mining, 120 lbs. of mercury are used to each set of four stamps, reducing 4 tuns of quartz in twelve hours; the cost would be less than 1d. per tun of quartz treated, which would certainly be more than covered by the loss of mercury prevented, without reference to the greater quantity of gold obtained, in consequence of the improved condition of the mercury" The sodium would seem to produce the beneficial effects thus indicated by virtue of its energetic power of reducing oxides and sulphides.

Interesting Experiments Upon the Auroral Current.

In the month of August, 1859, the beautiful phenomenon of the aurora borealis excited wonder and admiration in the minds of the people, both from the grandeur of the display and its effects upon the magnet c needle, particularly the electro-magnetic needle, with the coil of wire in the circuit of a telegraph line. In addition to the experiments made with the galvanometer at that time, several telegraph lines were worked, messages transmitted, etc., without the aid of artificial electricity, the aurora borealis assuming the entire duty of the usual batteries, and although the work was not performed as well as it might have been done with our usual battery power, without the aid or interference of the auroral current, yet it was a great satisfaction to many wonder-stricken telegraphers, who had never seen the like before.

Many of the effects of the phenomenon and accounts of experiments made upon telegraph lines were placed on record in the various newspapers at that time, some of which were also published in works on electricity and telegraphy. As the effect of the auroral current of Thursday, August 3, 1865, upon the electro-magnetic needle and telegraphic instruments differed considerably from that of August, 1859, we wish to place on record, for comparison with the previous experiments and for future reference, the result of comparatively rude observations, made with instruments, on a wire running from Boston to Springfield, Mass.

Although the auroral current was undoubtedly as powerful as that of August, 1859, it was observed that our wires were not so greatly disturbed by fluctuations (with our usual batteries on duty), but rather showed a weakness of currents, as though the batteries were not in proper working condition, while the effect in August, 1859, was to alternately and continually augment and decrease our battery currents, in consequence of the continual reversing of the polarity of the auroral current, thus making it exceedingly difficult to keep the instruments adjusted for the currents and rendering for a while lines almost useless.

In our experiments on the 3d instant we found, after removing the batteries, quite a powerful and steady current, each wave of which appeared of much longer duration, and the increasing and decreasing of the current more gradual, than was observed in August, 1859. But the most remarkable effect shown in our recent experiments with the galvanometer, was the almost entire absence of the changes of polarity, which were very marked in the experiments of 1859, each wave having been almost invariably succeeded by a wave of opposite polarity.

In the experiments of the 3d instant the positive polarity of the auroral currents was almost invariably west during the observations, which is the reverse of the usual battery currents on the Western wires, thus accounting for the weakness of currents observed previous to the experiments—as the two currents, being generally opposed, were partially neutralized.

The following observations of the needle will roughly show the power, constancy and polarity of the auroral current during the fifty minutes occupied by the experiments:—

The batteries having been removed and the galvanometer placed in the circuit of the wire extending from Boston to Springfield, Mass., at twelve hours fifty-one minutes P.M., a deflection of 3 deg. east was observed, the needle at the time gradually ascending. It should be remarked that a deflection in the needle east in this instance simply shows the polarity of the auroral current to have been the reverse of the usual battery current. After a comparatively steady upward movement of three minutes duration, with an occasional check or slight downward movement (a characteristic observable throughout the experiments), the needle remained stationary at 44 deg. deflection, but for only a few seconds, having descended rapidly to zero in the succeeding thirty seconds. After remaining quietly at zero one minute another ascent was commenced east, stopping at 28 deg. at twelve hours fifty-seven minutes thirty seconds, the duration of that ascent having been two minutes. Remaining at 28 deg. one minute, it descended to zero in one minute and thirty seconds, but immediately commenced another ascent in the same direction, reaching 60 deg. at one hour three minutes, this ascent occupying three minutes. The needle remaining steady at 60 deg. for three minutes,

when, during the succeeding minute, it ascended to 70 deg. and returned to 67 deg., where it remained two minutes. During the next succeeding minute it ascended to 72 deg., descended to 65 deg., and again ascended to 78 deg.

Remaining at 78 deg. two minutes, it commenced a descent occupying one minute, and remaining stationary at 38 deg. for thirty seconds, when it rapidly descended to zero, as if the current had been suddenly removed. Remaining at zero thirty seconds, another ascent was commenced east, reaching 50 deg. at one hour and sixteen minutes. During the succeeding minute the needle descended to zero, ascended three degrees, met and returned to zero. After remaining at zero one minute, an ascent west was commenced at one hour and eighteen minutes, reaching 34 deg. in thirty seconds. Remaining at 34 deg. one minute, it rapidly descended, as though the entire current had been suddenly removed. The needle then remained stationary at zero until one hour and twenty-six minutes, when it ascended five deg. east and remained between that and zero until one hour and thirty-three minutes, when it stood perfectly quiet at zero until one hour and forty minutes, at which time the observations were discontinued.

In order to give an idea of the comparative value of the auroral current during the above experiments, we would state that, with the same galvanometer, a battery with thirty-four cells in New York, with a resistance of No. 8 galvanized wire from New York to Boston, produces a deflection of 70 deg.—*Boston Journal, August 5.*

A DAY AT THE NARROWS.

There is probably no spot on the face of the earth that has experienced a greater change since 1630 than the island and bay of New York.

"Then all the broad and boundless mainland lay
Cooled by the interminable wood; and where yon bright blue bay
Sends up his willing waves to kiss his decorated brim,
And cradles in his soft embrace the gay
Young group of grassy islands born of him,
And, crowding nigh or in the distance dim,
Lifts the white throng of sails, that bear or brmg
The commerce of the world, with tawny skin
And belt and beads in sunlight glistening,
The savage urged his skiff like wild bird on the wing."

There is probably no spot in the country where a more comprehensive idea may be obtained of the movement of the national industry than on this same bay. At 10 o'clock in the forenoon of August 5th, we stepped from Pier No. 4, North River, on board the *Naushon*, one of those white, fleet steamboats that give life to all American waters, and, fanned by the cool, delicious sea breeze, were borne swiftly southward through that busy scene which characterizes perpetually, day and night, without ceasing, the harbor of the commercial metropolis.

Immediately after leaving the wharf we passed through a fleet of naval vessels at anchor. A gentleman at our side pointed out the *Hartford*, the flagship of Admiral Farragut, the vessel of the most heroic achievements of any that floats upon the waters of this globe. Two years ago we saw her proudly steaming up through the Narrows, receiving and returning salutes from the forts and from the vessels of foreign navies, as she bore the old "Salamander" from the scene of his glory to the substantial rewards and the undying gratitude of the Republic. Then she was painted the lead color of the blockaders, but she is now glistening in a new coat of black, and presents the clean and trim appearance characteristic of men-of-war.

Not far from the *Hartford* was a French gunboat, with a curiously cut cap for her smoke-pipe, and otherwise loaded with ornaments. Near her was an American gunboat of about the same size, neat and snug like the Frenchman, but in her smooth, plain smoke pipe and entire absence of ornament, exhibiting that love of severe simplicity which marks the taste of American ship-builders—a taste that commands our highest admiration.

A little to the left, towards Governor's Island, was a large, dingy, dirty sailing ship, crowded with passengers, and bearing the English flag at the peak—manifestly an immigrant passenger ship from Liverpool.

A little further down the bay we met a large American propeller, also crowded with passengers, but these are men who are going to their homes. They are soldiers returning from their many marches and battles, and their final glorious triumph, to hearts that are yearning to welcome them, and to communities that will delight to do them honor, and which will transmit the memory of their services, with ever-increasing veneration and gratitude, from generation to generation.

On our swift way down the bay we pass several other steamers, besides large numbers of sloops, schooners, brigs, barks and ships, many of the sailing vessels in tow of those vigorous little screw tugs that are perpetually swarming all over the harbor. One of the steamers was a long iron ship propelled by a screw, crowded with immigrant passengers, and bearing a striped flag—we suppose of one of the German States. At the quarantine were a number of vessels with their flags in their shrouds, as a warning of their dangerous character.

After a run of seven miles we step on shore at Fort Hamilton. On the dock are five 15-inch guns, and a gang of men with a horse and windlass are slowly moving another up the sloping road towards its place in the battery. These are the last of the 31, the others being mounted on their iron carriages, each with its pile of 300 or 400 pound shells by its side. The 20-inch 1,000-pounder is also mounted on its iron carriage, and a pile of cast-iron globes, each weighing half a tun, are ready to be hurled through the sides of any hostile ship that may attempt to pass before its hollow throat. Across the Narrows, a mile away, is Fort Richmond, with its long lines of intrenchment, with the walls of the Water Battery glistening in white granite below, and the row of massive guns in Battery Hudson stretching away to the south. The old 64-pounders of this battery have been replaced by a large number of the heavy Rodman artillery, and, as we are looking, a flash rises from one of these, followed by the booming report and a great splash near a buoy in the water of the Lower Bay. The artillerists are evidently practicing to get the range of the new ordnance. After a few more shots some military officers near us remark that the distance is about two miles, and that the practice is very fine. We came to the conclusion that our warning given three years ago in regard to the light ordnance of the harbor forts is no longer needed, but that if the combined iron-clad fleets of England and France should attempt to force their way into this harbor, every vessel would be sent to the bottom.

Now, however, the scene is one of peaceful, though busy life. Far down towards Sandy Hook a long line of smoke is rising against the sky, showing that some bituminous-coal-burning steamer is coming in—doubtless a European steam ship just arriving from across the Atlantic. As far as the water can be seen from the neighborhood of New York City to the southeast horizon, it is studded with craft of various kinds—pilot boats with their huge figures painted on their sails, oyster sloops in large numbers, coastwise propellers of various sizes, white steamboats, and great ships—all coming and going perpetually—and they will doubtless continue to thus come and go through countless centuries.

The same swash and roar that here beats perpetually on the shore of Long Island is sounded along the coast from Cape Horn to Labrador. Beyond the south-eastern horizon stretches the Atlantic Ocean, a waste of waters, to the coast of Africa,

"At all times, calm or convulsed,
Icing the pole or in the torrid clime
Dark heaving, boundless, endless and sublime."

RECENT AMERICAN PATENTS.

The following are some of the most important improvements for which Letters Patent were issued from the United States Patent Office last week; the claims may be found in the official list:—

Helix for Electro-magnets.—The helices which are generally used with electro-magnets are made out of a number of strands of wire, which is covered with silk or some other non-conducting material, and which is wound very close on a cylinder or roller of wood or other suitable material, and such helices really answer every purpose. They are not produced, however, without the use of covered wire, which renders them very expensive, and all experiments which may have previously been made for the purpose of producing a helix of naked wire, have proved abortive for want of the proper precaution in placing the several strands. It is obvious that when naked wire is to be used for a helix, the strands have to be so arranged that each convolution of the coil is perfectly and completely separated from the adjoining convolutions, in order to compel the electric current to travel through the entire length of the wire from which the helix is formed, and, notwithstanding it may perhaps have been tried before to accomplish this object, it is certain that hitherto no helix made of naked wire has been successfully used, and that no helix has ever been made of naked wire having each strand or convolution completely and perfectly separated from the other. Such is the helix which forms the object of this invention, and which has the naked wire, constituting its coil, wound in such a manner that each convolution of the coil is separated from the convolution adjoining it, in a radial direction, by means of sheets of paper placed between it and the adjoining convolution, and in a longitudinal direction, or in a direction parallel to the axis of the helix, by winding the wire so as to leave a space between the convolutions sufficient to cause the electric current to pass through the entire length of the wire. Dr. L. Bradley, of Exchange Place, Jersey City, N. J., is the inventor.

Gage for Quartering Cork.—In the manufacture of cork stoppers the cork is first cut into strips of the requisite width and thickness for the size of cork desired, and these strips are again cut up into cubical pieces, each just large enough to make one stopper. This last-named operation of cutting up the strips of cork is technically termed "quartering" corks, and it is generally performed by hand with a large and sharp knife. During this operation it is necessary to have the end of the strip of cork bear against a gage which is in the proper position to correspond to the requisite size of corks. In this invention the gage is made adjustable in a longitudinal and in a transverse direction, and the plug, against which the end of the strip of cork bears, is made adjustable and yielding in such a manner that when the main part of the gage is set a final adjustment can be given to the plug; and, furthermore, by having the plug yielding it is allowed to give as the knife passes through the cork, and the operation of cutting is considerably facilitated. John Power, of Boston, Mass., is the inventor.

Grease Cup.—This invention consists in the application of two valves, connected together by a jointed stem, which can be easily lengthened or shortened, in combination with two seats, one above and the other below the bulb or reservoir of the grease cup, in such a manner that, by turning the handle attached to the valve stem in one direction, the lower valve is closed and the upper valve opened ready to admit the lubricating material from the receiving cup into the bulb, and by turning said handle in the opposite direction, the upper valve is closed and the lower valve opened, and the interior of the bulb brought in communication with the steam cylinder or other device to be oiled. In order to allow the steam and air contained in the bulb to escape, when it is desired to introduce the lubricating material into the same, it is provided with a spring valve, which will open by a slight pressure of the hand, and when released, close by the action of a spring combined with that of the steam in the interior of the bulb. Gebhard Hagenmeyer, of Big River, Cal., is the inventor.

Jar for Well-boring Tools.—In boring deep wells, such for instance as oil wells, a device is connected with the drill or drill rod to admit of the drill, in case of the latter becoming fast, being subjected to a series of blows or concussions in order to loosen it. This device, commonly termed a "jar," is indispensable in boring deep wells, owing to the great difficulty which would be otherwise experienced in withdrawing or loosening the auger. The ordinary jar in use is attended with some disadvantages. It is liable to get fast itself, and is subjected to considerable wear in consequence of being in contact with the grit in the wall of the well. It is also liable to break or give way when worn, and the withdrawing it from the well is attended with considerable difficulty; these disadvantages, it is believed, are fully obviated by this invention. Miles Joy, of West Greenville, Pa., is the inventor.

Musical Instrument.—The object of this invention is to improve the valves of cabinet organs and other musical instruments. It consists in so constructing the valve that the face thereof shall be free to adjust