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RAIL-ROAD NEWS.

Railways and Electric Telegraphs in India.

India, which for thousands of years has remained stationary, in the progress of the world, seems to be, in some degree, waking from the sleep of ages. A railway is being built from Calcutta, running to the large towns and cities of the northwest; and it is expected that, within a few years, it will be extended far up even to Lahore, a distance of 1,000 or 1,200 miles. In the region of Bombay, also, within a few months, a portion of a railway has been so far completed that a locomotive has been put on and set at work. The electric telegraph, which, with steam, is revolutionizing the world, is also about to be extensively adopted. Lines are projected from Calcutta to Madras, Bombay, Agra, Lahore, &c. Dr. O'Shaughnessy, who has successfully established a line of telegraph from Calcutta to Kedgeree, has been deputed by Lord Dalhousie, Governor General of India, to visit the Court of Directors of the East India Company, in London, in order to report his success, and to secure the making and carrying out a plan for a line throughout all India, as above mentioned. He will visit the United States to see the operation of the magnetic telegraph. It is expected that he will return within a year.

Canada Railroads.

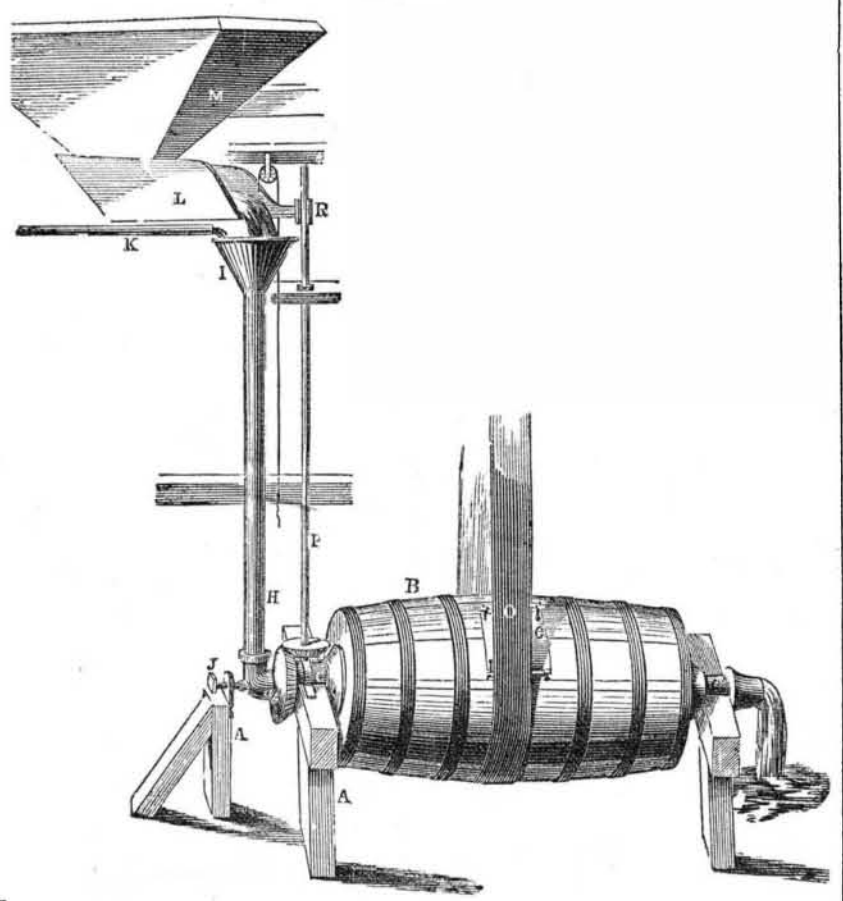
The Canadian Government is about to commence a singular project (as we view it), it being nothing less than a railroad from Quebec to Hudson's Bay, a distance of 600 miles. What in all the world is to be the traffic, we cannot divine. The Hudson Bay lies away up north, far beyond the bounds of habitation and civilization, and what our Canadian neighbors can find there for the support and maintenance of such a long line, is more than we can conjecture. It is so cold up at Hudson Bay, the winters are so long, and the snows so deep, that the railroad must cease operations during a great part of the year. Is it expected that the timber regions of the north are to supply traffic enough for this road; or is Hudson Bay so prolific of fowl, fish, and peltries that a large commerce in these will be established and maintained. It is a prevalent opinion, on this side of the Canadian line, that excepting a strip of about 60 or 70 miles wide along the frontier, all north of that, in Canada, will never be peopled, owing to the severity of the winter seasons there.

It is proposed to build an air-line railroad fron Norfolk, Va., along the eastern shore of Maryland, through the States of Delaware and New Jersey, to the town of Freehold, there to connect with the Freehold and Keyport Railroad. Steamboats are to connect the various termini across the Chesapeake, Delaware, and Raritan Bays, and thus passengers will be conveyed to New York from Norfolk, from sunrise to sunset.

A beautiful car, with Paine's Ventilators attached, is being constructed at Hartford, for the Hudson River Railroad.

BARCLAY'S GOLD WASHER AND AMALGAMATOR.

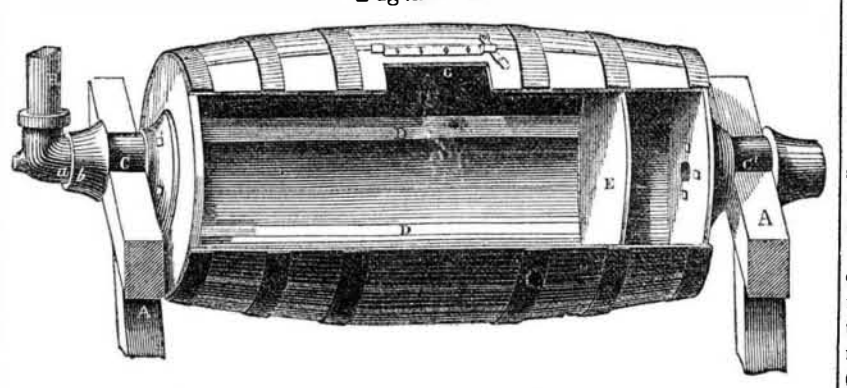
Figure 1.



The annexed engravings are views of improvements on machinery for washing and amalgamating gold dust, invented by Alexander Barclay, of Newark, N. J., and for which a patent was granted on the 22nd of last June.

Figure 1 is a side elevation, and fig. 2 is a vertical longitudinal section. The same letters refer to like parts. The nature of the invention consists in the employment of a hollow cylinder, with brackets placed longitudinally around its inner periphery, said brackets extending from the feed end of the cylinder to within one-fourth of its length from the discharge end, and connected with an inner head or partition, between the outer periphery of which, and the inner periphery of the cylinder, an annular space is left through which the water and earthy matter pass to the discharge pipe, while a fresh supply is being poured into the cylinder through a feed pipe having a funnel at its top. A is the frame for supporting the cylinder and working machinery. B is the revolving cylinder, the interior of which is shown in fig. 2, G being the door, and D D the brackets. The journals, C C′ of the cylinder, B, are hollow, one is the discharge and the other is the entrance pipe. H is the feed pipe connected to the hollow journal of the cylinder by a hollow elbow, *a b*, which is tightened by a screw, J. I is the funnel; K is the water pipe; L is the feeder, and M, is the hopper, in which the golden earthy matters are placed. The feeder, L, is hung upon swinging straps, to allow it to shake down the golden matters in pipe, H. This feeder receives its shaking motion by cams, R, on a vertical shaft, P, which is revolved by bevel gearing below. The cylinder is revolved by a belt, O, or by any of the known ways. The brackets, D D, are secured to the inner periphery of the cylinder, and to the inner head or partition, E, fig. 2. This partition is of less diameter than the cylinder head; the object of this is to form an annular space for the passage of the earthy matter and water to the discharge pipe, C′.

Figure 2.



The objects effected by constructing the cylinder with brackets along the inner periphery, and with an inner head, are these: the brackets serve to agitate the mass thoroughly and separate the gold from the earthy matters, and thereby prepare it for washing and amalgamation. The inner head serves to stop any central current which might pass from the central feed to the discharge pipe; all the particles, as the cylinder revolves, are compelled to pass to the surface of the inner periphery of the cylinder, when the gold, by its gravity and the centrifugal action of the force applied, is retained; the lighter earthy matters pass off with the water through the annular space between E and the cylinder, and out at the discharge pipe. To amalgamate the fine gold which is mingled with ground quartz, if mercury be placed in the cylinder, and the pulverized ore fed in by the feed pipe, water being constantly admitted, the brackets, D D, serve as distributors and agitators, to throw the quicksilver so minutely and forcibly among all the particles of the ore, as to cause the gold to unite very quickly with the mercury, while the lighter matters pass out with the water.

The claim is for constructing the hollow cylinder, B, with the brackets and partition, E, for the purpose of washing, separating and amalgamating gold as described.

More information may be obtained by letter addressed to the patentee.

The Oil of Cloves.

The oil of cloves is extracted from the dried flower-buds of the caryophyllus aromaticus. It is colorless, or yellowish, has a strong smell of the cloves and a burning taste. Its specific gravity is 1 061. It is one of the least volatile oils, and the most difficult to distil. At the end of a certain time it deposits a crystalline concrete oil. A similar stearessence is obtained by boiling the bruised cloves in alcohol, and letting the solution cool. The crystals thus formed are brilliant, white, grouped in globules, without taste and smell. Oil of cloves has remarkable chemical properties. It dissolves in ether, alcohol, and acetic acid. It does not solidify at a temperature of 4° under 0° F, even when exposed to that cold for several hours. It absorbs chlorine gas, becomes green, then brown, and turns resinous. Nitric acid makes it red, and if heated upon it, converts it into oxalic acid. If mixed by slow degrees with one third of its weight of sulphuric acid, an acid liquor is formed, at whose bottom a resin of a fine purple color is formed. After being washed, this resin becomes hard and brittle. Alcohol dissolves it and takes a red color; and water precipitates it of a blood-red hue. It dissolves also in ether. When we agitate a mixture of strong caustic soda lye and oil of cloves in equal parts, the mass thickens very soon, and forms delicate lamellar crystals. If we then pour water upon it and distil, there passes along with the water, a small quantity of an oil which differs from oil of cloves both in taste and in chemical properties. During the cooling, the liquor left in the retort lets fall a quantity of crystalline needles, which being separated by expression from the alkaline liquid, are almost inodorous, but possess an alkaline taste, joined to the burning taste of oil. These crystals require for their solution from 10 to 12 parts of cold water. Potash lye produces similar effects. Ammoniacal gas transmitted through the oil is absorbed, and makes it thick. The concrete combination thus formed remains solid as long as the phial containing it is corked, but when opened the compound becomes liquid; and these phenomena may be produced as many times as we please. Such combinations are decomposed by acids, and the oil set at liberty has the same taste and smell as at first, but it has a deep red color. The alkalies enable us to detect the presence of other oils, as that of turpentine or sassafras, in that of cloves, because they fix the latter, while the former may be volatilized with water by distilling the mixture. The oil of cloves found in commerce is not pure, but contains a mixture of the tincture of pinks or clove-gilly flowers, whose acrid resin is thereby introduced. It is sometimes sophisticated with other oils.

Salve for Burns.

Take two parts of olive oil to one of laudanum, to be applied as soon as possible It has long been used, and never known to fail in giving immediate relief, and heal without leaving a scar.

MISCELLANEOUS.

Soluble Glass.

This liquid can be obtained by dissolving precipitated silica in caustic potash. Soluble glass may be obtained in a purer form by completely saturating a solution of caustic potash with precipitated silica, and evaporating the solution, or more economically and sufficiently pure for technical purposes in the following manner: 15 parts of powdered quartz or pure sand are melted with 10 parts of potashes, and 1 part of charcoal in a crucible, until complete vitrification occurs. The mass of glass is difficult of fusion, hard, filled with bubbles, and of a grayish black color; when the potashes are not pure, foreign salts are introduced into the mixture, as chloride of potassium, carbonate and sulphate of potash, and more particularly sulphuret of potassium, which is very objectionable on account of the disagreeable odor which it occasions. These substances, however, are easily separated by pulverizing the mass, and exposing it to the air. Entire pieces attract moisture on their surface under these circumstances, and cracks appear, but they are not essentially altered; the powder, on the other hand, is so hygroscopic, particularly when it is frequently turned over, that the foreign salts are readily dissolved and carried away by the water. In this state the whole is treated with cold water, in which these salts dissolve completely, and the soluble glass which remains is thoroughly washed with water. The purified mass is now boiled with 5 parts of water, in which it slowly but entirely dissolves. The dilute solution is rather quickly decomposed by the carbonic acid of the atmosphere with the separation of silica, and the solution for technical purposes must consequently be evaporated until it attains a specific gravity=1·25. In this state the glass forms a sticky, syrupy, somewhat turbid liquid, which throws up a scum when boiled that can be re-dissolved. It easily gelatinizes on cooling, and dries up when exposed to the air, without perceptibly absorbing carbonic acid, in the form of a clear, transparent, colorless, brittle, but not very hard glass, containing 26 per cent. potash, 62 per cent. silica, 42 per cent. water. This glass has an alkaline taste and re-action, as has also the solution; it is, itself, inalterable in the air, but when exposed, its surface becomes covered with an efflorescence of foreign salts, which can be removed by cold water. The solution of the glass is miscible in all proportions with water, but it is precipitated unchanged by alcohol.

Soluble glass may be more advantageously prepared, on account of the greater purity of the product, and with the same facility, by fusing together 1 part of quartz with 2 parts of crystallized soda. Although the composition of this product is different, it contains 2 equiv. soda to 3 equiv. silicic acid, yet the mode of preparing it is the same, and its properties resemble those of the potash glass. When soda and potash both enter into the composition of the glass (15 quartz, 5 potashes, 4 dry soda) the mass is rendered more easy of fusion, as the simple silicates of soda and potash are more refractory than the mixed silicates.

The chief application of fusible glass is for coating combustible substances, as wood, stuff, paper, &c. It diminishes the inflammability of these bodies by forming, when dried upon them, a layer of glass that impedes the free access of air, and thus removes the most essential condition for combustion. Wood covered with fusible glass and held in a flame, is in the same condition as wood in a charcoal furnace, it is a subject, in the first instance, to the decomposition caused by heat alone, or to dry distillation. Combustible gases are evolved, the combustion of which cannot of course be prevented by the coating of glaze. The layer of glass being very thin, it will naturally soften with the heat, the gases will at last burst the coating, and eventually the wood itself, the interior of which being then freely exposed to the air, must necessarily burn, being no longer protected by the glaze. It must, therefore, not be supposed that soluble glass renders these substances incombustible, its use is confined to rendering them less susceptible of taking fire. Soluble glass exerts no injurious action on the substances to which it is applied, it covers well, and forms a perfectly transparent varnish; it is preferable, for these reasons, to other substances such as clay-water, which is also used to diminish the inflammability of combustible bodies. In order to produce a permanent covering, it should not contain any large amount of foreign salts, which would effloresce on the surface; and the first coat that is applied must be very dilute, in order to penetrate the substance of the material before the subsequent coats are laid on. Every layer should be allowed to dry for 24 hours before a fresh layer is given; it this precaution is not observed, the whole is liable to crack and peal off. The tendency to crack and peal off is not so prominent in soluble soda glass, as in the other varieties.

Our Steam Navy---The San Jacinto.

This steam frigate, which received a very bad character at home, was sent abroad, not for the purpose of showing what the *people* could do in the way of building steamers, such as the Collins' Line, but as a sample of the work of that distinctive body—the Government. This steam frigate is a propeller, and appears to be far behind the propellers of every other navy in the world. It arrived at Constantinople on the 15th of last July, and a correspondent of the "New York Times," writing from the City of the Turks about her, says:—

"Aware of the usual reputation and abilities of American ships, a party of us were proudly waiting to see our national ship rapidly sweeping into the harbor, but after she hove in sight around the point of the Seraglio, and was in the presence of the three Cities of Constantinople, and of the whole Ottoman fleet stationed in the Bosphorus, what was our mortification to see the steamer unable to stem the current, and gradually disappearing again behind the point. The officers say the reason was, that, in obedience to orders of the Navy Department, they were so economical of coal. The commander is, therefore, as much entitled to credit with the economists, as our ships will suffer in reputation with the Turks. We should not think that the entrance into the port of one of the largest capitals of Europe, where the *coup d'œil* of the beautiful is more enchanting than in any other capital, was the place of all others to give an hour's exemplification of economy in coal."

This is humiliating, but the fact is, we have a very small number of steamers in our navy, and a miserable lot they are. The Mississippi appears to be a slow and indifferent frigate, and her officers seemed to be wonderfully afraid of a winter passage across the Atlantic in her last year. Where lies the fault? We cannot tell, but that a grievous fault lies somewhere, is a fact which admits of no dispute; it should be remedied quickly; our national reputation has suffered enough by it already.

The Steamboat Safety Bill.

We are afraid that the Bill for the protection of life,—to prevent dangers from explosions, &c., now before Congress, will not be passed this Session. It receives a few pushes from one side to the other every day, and seems to get no nearer a final passage in the House of Representatives. Something should be done to prevent explosions and dangers of life on steamboats; here we have had two steam boiler explosions, one burned, and a collision, since the fourth of July, by which 310 lives have been lost.

We learn that Mr. Bowne, from this State, has prepared a substitute for Mr. Davis's Steamboat Bill. Instead of undertaking to enter into the details of machinery, prescribing tests for iron plates, and regulating other matters, which none but practical and scientific men really understand, he proposes to fix penalties for explosions, fires, and the like, which will protect the public against these occurrences. It provides that, in every case where life is destroyed from these causes, the proprietors and owners of steamboats shall be liable to a fine of $1,000 for each life, and imprisonment, ranging from one to ten years; the United States District Attorney being required to prosecute on the finding of the Coroner's jury. The captains, pilots and engineers are also made liable to fine and imprisonment. There are features in this Bill worthy of commendation, especially the requirement of the U. S. District Attorney to prosecute. Our United States and State District Attorneys, in many cases, are mere government pargets.

The Bill, prepared by Senator Davis, of Massachusetts, after it had passed the Senate, received no less than one hundred and fifty amendment in the House of Representatives. The Senate has concurred with all the amendments. Senator Stockton, taking a most singular view of the question, asserted that Congress, by passing such a Bill, violated the liberties of the citizen In what does he consider the liberties of the citizens to consist?

The Storm.

A severe storm burst suddenly upon our city on Saturday last. At 5 P. M. the rain commenced to pour in torrents, and the wind to blow with terrfic violence. The rain was blown in sheets, and seemed to be lifted up from the tops of mountain waves in the Atlantic, and carried by the gale horizontally along our coast. For six hours the rain swept fearfully and constant over all this district of country. In this city, and the surrounding cities and villages, cellars were flooded, houses drenched from roofs, through ceilings, floors, &c., and many new houses in the course of erection were blown down.—The shipping did not suffer much in our harbor, and this is fortunate. The wind continued violent for at least twelve hours, but did not calm until 5 P. M. on Sunday, thus having lasted for 24 hours. It was the severest storm which has visited this city in three years.

Much as some have suffered by the storm, it has been the means of doing far more good than evil, it has saved the city treasury of New York at least $100,000 of scavenger expenses. Heavy rain storms are the sanitary friends of New York city; they sweep and wash the streets sometimes, or we never would be able to see the faces of the paving stones. This rain has perhaps saved us from the cholera; it has at least saved us from seas of filth and hills of dirt, all of which were carried down to the friendly sea, there to be pickled from doing evil by the briny deep.

The Ether Controversy in Congress.

On Saturday last week, on the question of Army Appropriations, Senator Borland moved an amendment to it, appropriating $100,000 for Dr. Morton's ether patent. This was the means of eliciting a long debate, in which the claims of Drs. Jackson, Morton, and Wells to the discovery were distinctly presented. In our opinion, the claims of Dr. Wells are the strongest, we have seen no evidence to nullify his claims. It would be very wrong for Congress to pass any bill that would be an act of injustice to the real discoverer's heirs, Dr. Wells being now dead. The sum, if granted, should be divided among the claimants. Mr. Hale stated he could prove that not one of the claimants was entitled to any remuneration, that the real discoverer was a deceased physician of New York; it is a very unlikely story. The amendment of Senator Borlard however, was rejected, and it is likely that no appropriation will be made for the etherists during the present session of Congress.

A Monster.

Coming down Pearl street a day or two since, we encountered on the sidewalk a huge specimen of the salamander species—an animal which, in this age of wonders, is no longer a fable, but withstands the fiercest attacks of the fiery element. We speak of the safes bearing the marks of C. J. Gayler, to whose skill and mechanical genius this specimen bears noble testimony. Its outside dimensions are—height, 8 feet 6 in., width, 6 feet, 6 in., depth, 3 feet. Its weight is upwards of 6 tons. On the outside are massive folding doors covered with heavy and wide plate iron, and secured by an ingenious patent combination lock, without key or key-hole. Within these outside doors are two other folding doors, made in the same manner, secured by Mr. Gayler's patent locks; and within these is the case, made of solid mahogany, beautifully polished, and fitted with numerous drawers and closets, for watches, jewelry, etc As a whole, this safe is a beautiful piece of workmanship, and a happy combination of elegance with massive strength.

The Streets of London.

In No. 16 of Mr. Mahew's admirable work the labor and the poor of London, we find some interesting and curious statistics of the streets of that mighty city, which we have condensed as follows:—

The three modes of pavement in the streets of London, are:—1. The stone pavement, commonly composed of Aberdeen granite.—2. The Macadamized pavement, a name adopted from the mode of Sir W. McAdam, the originator of the system; and 3. The wood pavement. The granite for the stone pavement is conveyed to London from Scotland by water. The pavement "is made by the placing of granite stone, hewn and shaped ready for the purpose, side by side, with a foundation of concrete. The concrete now used for the London street pavement is Thames ballast, composed of shingles or small stones, and mixed with lime, &c. Macadamization was not introduced into the streets of London until about twenty-five years ago. Before that it was carried to what was accounted a great degree of perfection, on many of the principal mail and coach roads."

The first thoroughfare which was Macadamized was St. James Square; after that, some of the smaller streets in the aristocratic parishes of St. James and St. George were thus paved, and then, but not without great opposition, Piccadilly. The opposition to the macadamizing of the latter thoroughfare, says Mahew, assumed many forms. It was urged by the oponents that the dust and dirt of the new style of paving would cause the street to be deserted by the aristocracy—that the noiselessness of the traffic would cause the deaths of the deat and infirm—that the aristocracy promoted this new fangled street making that they might the better "sleep o' nights," regardless of all else. One writer especially regretted that the Duke of Queensberry, popularly known as "old Q," who resided at the western end of Paccadilly, had not lived to enjoy, undisturbed by vulgar noises, his bed of down, until it was his hour to rise and take his bath of perfumed milk! In short, there was all the fuss and absurdity which so often characterize local contests.

The Macadamized street is made by a layer of stones, broken small and regular in size, and spread evenly over the road, so that the pressure and friction of the traffic will knead, grind, crush and knit them into one compact surface. The wood pavement is formed of blocks of wood, generally dead, fitted to one another by grooves, by joints, or by shape, for close adjustment. They are placed on the road over a body of concrete, in the same way as granite. There are 50 miles of the streets of London paved exclusively with stone. The stone pavements outside the city are six or seven times the extent of those in the city.

Within the limits of the metropolis proper or inner police district, there are 1,755 miles of paved streets as follows:—Granite pavement, 400 miles; Macadamized, 1,350 miles; wood, 5 miles.

The number of streets in London is said to be 10,000. There are 1,000 miles of gas "mains" (pipes) laid down in the city and suberbs, and 1,760 miles of streets within an area of 90 square miles. These streets are daily traversed by about 1,500 omnibuses, and 5,000 cabs, besides the vast numbers of private carriages and carts; so that the metropolitan vehicles employ altogether upwards of 21,000 horses.

The traffic of these streets of London is enormous, and Mr. Mayhew's statistics of it are both interesting and novel.

New York Reaper.

In our notice last week of the reapers which were tried at Geneva, the New York Reaper of Seymour and Morgan, of Brockport N. Y., was left out unintentionally; it is believed to be equal, if not superior to any other.

Floating Steam Battery.

The Senate has passed an appropriation for the construction of a shot-proof steamer for the defence of New York. R. L. Stevens is the designer and builder.

Starch Gum---How to Make It.

Starch gum is closely allied to gum arabic; and this is still more the case with reference to its practical applications. The extensive use of gum arabic in the arts is mainly attributable to the properties which it shares with starch-gum, of producing with water a sticky, mucilaginous, chemically indifferent, slightly colored or colorless solution. Since the invention of the process for the production of gum from starch, and more particularly since the improvements introduced by the French, the expensive foreign gum is gradually giving place, in manufactories, to the cheaper starch-gum, the fabrication of which is rapidly increasing.

Starch-gum occurs in three different forms in commerce; sometimes in the shape of small transparent particles, in imitation of gum arabic; oftener as a thick syrup; but generally in the form of starch, more or less colored.

At the commencement of the production of this gum, the starch was converted into gum by simple heat, or by roasting. This method, though simple, is not without its own peculiar difficulties. When all the starch is to be converted into gum, without leaving any portion unchanged or over-burned, all the grains must be heated to a temperature neither above nor below 284°—320° Fah. A slow but gradual rise of temperature effects the object in view in the surest manner, as it is thus most easy to prevent over-heating; but the process is too tedious for the manufacturer. When the heat is applied more rapidly, there is great danger of over-heating the starch; and any degree above the temperature indicated gives rise to the production of empyreumatic products. This is the most common case in practice.

Starch is often roasted on the level surface of an oven, of the same construction as an ordinary baker's oven, over which it is spread out in thin layers. British gum is prepared in a similar manner, with several iron plates, one above the other, upon each of which a layer of starch is strewn. In this manner, relatively, large quantities are made in a short time; but the temperature is regulated with difficulty, and the gum can only be obtained as a yellowish-grey, or dark-yellow flour. A safer method consists in spreading out the starch upon hurdles, in a kind of drying chamber, which is heated by the waste heat from another firing. This indirect heat renders the temperature more uniform, and easy of regulation.

Boilers over an oil-bath are better calculated to afford a good product. These are constructed flat, and with a double bottom; the space between the two bottoms is filled with oil, which, with the aid of a thermometer, can be regulated to a fixed temperature; and this constitutes the chief value of the apparatus. The starch is placed in the interior, upon the upper bottom, and is kept in constant agitation by a stirring apparatus, that each granule may come into contact with the metallic sides of the vessel, and thus become heated to the proper temperature. An excessive heat cannot possibly occur under these circumstances. In order to hasten the process, however, the temperature must be raised higher than is absolutely necessary for the conversion of the starch into gum.

The contrivance in most general use is the roasting cylinder. This consists of a large drum or roller of tin-plate, placed in a special oven, and revolving on its axis at any required speed, resembling, in short, the common coffee-roaster. The revolution of the drum performs the same function as the rouser or stirring apparatus, in the foregoing plan, and effects the change of position of the individual grains much more effectually. Drums present the additional advantage that they can be speedily emptied, when the roasting process has attained the proper stage. In all these cases, the yellow or brownish color produced by incipient decomposition is not to be avoided, and the tint of the starch is indeed the chief criterion by which the completion of the roasting process can be ascertained. On the other hand, it is well known that the color is altogether foreign to the nature of the gum, and attributable to small quantities of empyreumatic matters, which can easily be removed by alcohol. This color, however, is retained by the solution of the gum, and it transferred to all the objects treated with it; and so detrimental is it to the lighter colors in calico prints, that starch-gum cannot be used in those cases. For these reasons, improved processes were introduced; it is founded upon the principle of aiding the action of a low temperature by that of acids, in such a manner that the original form of the starch is retained.

Starch is moistened throughout its entire mass in cold water, in such a manner that it easily forms itself into balls, and to this water 1-400th of the weight of the starch, of nitric acid (sp. gr. 1·40) is previously added. The object of this moistening is to disseminate thoroughly the small quantity of acid through the comparatively large mass of starch. The moistened mass is first dried in the air in lumps, weighing about 25 lbs. each; the lumps are broken, after a short time, into smaller pieces, which are then dried in a drying chamber by a current of air. The temperature is gradually raised to 140°—194°, when all the moisture is removed. The thoroughly dried lumps, which are not yet converted into gum, are finely ground and sifted, the meshes of the sieves being so small that only single starch granules can pass through. The starch is thus brought back to its original form, and is then again placed on the drying-stove upon hurdles, and the temperature raised to 212°—248°. The change is effected in fifteen or five minutes, according to the temperature; the more nearly the temperature is retained at 212°, the whiter the product; this product is named Leiokom, and can only be distinguished from starch by its pale-yellow color, and its complete solubility in cold water. The separate granules have not been altered in shape, as may be seen under the microscope.

Sulphuric and hydrochloric acids have been employed in place of nitric acid, but not with such signal success. Sulphuric acid renders the leiokom deliquescent, and consequently difficult of preservation.

Medical.

Heart Diseases.—The New Jersey Medical Reporter has an article on the Action of Whey Baths, either pure or in a state of mixture with sulphuretted water. It is translated from the French of Dr. Niepce, who relates several successful cases. A number of patients came to him for various diseases of the heart, and he observed that most of them, when immersed in the bath, had their pulses reduced in a remarkable manner. He has collected data from 217 invalids, who made use of the whey baths at his residence, in Allevard, France, during 1849–51. In 69 cases the pulsations were reduced to 34, in 93 cases to 38, in 31 cases to 42, in 24 cases to 45. It is to the lactic acid in the whey that he attributes the moderation in the circulation. The most numerous cases of disease of the heart were nervous palpitations. Here, then, in our country places, there is an opportunity of laboring to arrest that common disease, palpitation of the heart. It is more prevalent among females than males; the cure is a simple one, indeed, and is worthy of repeated experiments.

Collodion in Erysipelas—Collodion has been used successfully for arresting erysipelas by Dr. West; he had used the nitrate of silver first, on a lady, and having found that it did no good, he shaved her head and applied a thick coating of collodion over it, and for an inch over the healthy surface. The burning ceased almost instantly, and the disease ceased to spread. He also applied it to a case of a child of eight years, and after three applications it recovered entirely.

Antidote for Phosphorus.—The Northern Lancet contains an account of a new treatment for those who may be poisoned by phosphorus. As soon as a person has been poisoned by phosphorus taken in a solid state, an emetic should be given at once to throw it off the stomach, ere it has time to act. If it has been swallowed in a diluted form, the patient should drink large quantities of water in which decarbonized magnesia has been dissolved. If magnesia is not at hand, soda dissolved in the water, will answer about as well. It is very dangerous to swallow any portion of phosphorus, as it will burn the stomach. The above plans are old; the following is the new antidote, calcined magnesia, 2 grains, chlorine water 8 grains, distilled water, 122 grains. This is administrated in copious draughts.

Recent Foreign Inventions.

Bending and Annealing Glass.—F. H. Thomson, and George Foord, of London, Patentees.

The invention consists in combining means and apparatus for bending and annealing sheets of glass, so as to obtain the same in concave forms, suitable for reflectors and other uses, according to the shape of the moulds employed.

The moulds used in carrying out this invention are made, by preference, of cast-iron, with a small hole or air-passage through the centre of each; and, on the under side, they are suitably formed to admit of being fixed upon an upright axis within the muffle or oven in which the glass to be bent is heated. The muffle or oven has a fire on each side externally, the heat and flame from which ascend and enter at the upper part of the muffle, by a long opening, extending from front to back, on either side thereof; so that the flame and heated products from the opposite fire-places meet in the middle of the arch or roof over the muffle, and pass off through openings in the arch or roof; and, by this means, the greatest heat will be at the upper part of the muffle. The door of the muffle has an opening or sight-hole in it, through which the workman can see when the glass is sufficiently heated. Through a hole in the bottom of the muffle projects an upright axis, which is capable of rising and falling, and has a rotary motion given to it by suitable gearing.

The operation of bending and annealing the sheets of glass is as follows:—The workman places on the upright axes, within the muffle, a mould of the proper shape and size for the circular sheet of glass to be bent; so soon as the mould has become heated to such an extent as would cause it to present a slightly red appearance in the dark, he removes it from the muffle, and places the circular sheet of glass just within the upper part of the mould; and then he replaces the mould upon the upright axis, which is at this time to be at its lowest position, in order that the sheet of glass may be subjected at first to the lowest degree of heat. The axis is kept constantly rotating, and is raised by degrees, so as to bring the upper part of the mould and the sheet of glass nearer the top of the muffle; and, when the workman sees that the glass has arrived at the bending heat, he presses upon it a convex surface or piece of cork or soft wood (previously dipped into water), fixed at the end of a handle; whereby, as the axis rotates, the glass is pressed into and caused to assume the form of the interior of the mould. The mould and glass are now removed from the muffle, and another mould introduced to be heated, in order that a fresh sheet of glass may be operated upon. The hot mould, containing the bent sheet of glass, is to be covered, when taken from the muffle, with a cover of sheet-metal; and the bent glass is to be allowed to cool down with the mould; whereby it will be partially annealed. The annealing is completed by placing a number of such bent sheets of glass in an annealing muffle, wherein the glass is heated and cooled down in a suitable manner for effecting that object.—[Newton's London Jour.

New Solvent for India Rubber.—G. E. M. Gerard, of Paris, patentee.

This invention consists in certain improved means of dissolving india rubber and gutta percha.

The patentee commences his specification by remarking that heretofore all solutions of india rubber, whether clear or thick, have possessed great coherence and elasticity,—the solvent, whatever it may have been, has always expanded the gum to a great extent; and as it is not until after this has taken place that the real act of dissolving the gum commences, a large quantity of the solvent is consequently required. To remedy these inconveniences, and to obtain a thick solution, the india rubber has been expanded in the solvent and afterwards pressed by means of cylinders; but the solution thus produced possesses great cohesion and elasticity. Now it is stated that, by the patentee's process, he obtains caoutchouc or gutta percha, or the two combined, in a state of solution, as thick and concentrated as may be required; and, however thick it may be, it loses its tenacity and elasticity, and will assume the form of paste after the evaporation of the solvent, and will retake all its former properties.

The new process consists in mixing with the solvent (of whatever nature it may be) a certain quantity of alcohol, and macerating therein the caoutchouc or gutta percha, which will expand very little; and at the end of twenty-four hours it will be in the state of paste, suitable for being moulded into any desired form. The patentee prefers to employ as a solvent sulphuret of carbon, chloroform, sulphuric ether, naphtha, essential oils of coal, or turpentine, and to add thereto from five to fifty per cent. of alcohol. The caoutchouc is mixed with the alcoholized solvents in all proportions, varying from equal parts to thirty parts of the latter to one of the former, according to the thickness of the solution required; and, after one or two days, the paste is submitted to the ordinary process of masticating, if the solution is made of equal parts, or when it is made with small quantities of the solvents; in other cases this is not necessary. The patentee adopts the same system when treating gutta percha. He dissolves it in the alcoholized sulphuret of carbon, and dilutes it until it arrives at the consistence of thick syrup of sugar; in this state he permits it to remain for three or four days, during which time the impurities will be precipitated or will rise to the surface; and then he draws off the gutta percha in a state of complete purity.

The character of the invention is the mixture of alcohol with the solvent used for dissolving caoutchouc and gutta percha. As alcohol is the liquid which most quickly precipitates caoutchouc from its solutions, the patentee avails himself of this property by causing the alcohol, by means of a solvent, to enter into the interior parts of the caoutchouc, or to detach all the adherent atoms which form the mass of the caoutchouc. By the addition of alcohol the particles are rendered less adherent among themselves, and are easily separated by pressure, retaining the form resulting from this pressure, and not returning to their ordinary form. On the solvent and the alcohol being evaporated, the caoutchouc will return to its original state. The patentee states, that all liquids which possess the properties of alcohol may be mixed with the solvents.

The Wheeling Bridge.

The good citizens of Wheeling, Va., are going to accomplish a victory over the decision of the United States Supreme Court, which ordered the bridge to be taken down, or alterations of a most expensive character to be made. The people of Wheeling having appealed to Congress to legalize the structure; the Senate and House of Representatives have passed the bill by a large vote. The steamboats on the Ohio must shorten their pipes, and it is our opinion they can do this without any injury to their speed. We took the ground, when the decision was made, that the U. S. Supreme Court exceeded its authority by making such a decision; this was the opinion of Roger Tanney, Chief Judge, and his reasoning appeared to us so clear for dissenting from the decision of his brethren on the bench, that we could not but coincide with his conclusions.

A Long Tunnel.

One of the longest tunnels in the world is now approaching completion. It is situated in Hungary, and leads from the shore of the river Gran, not far from Zarnowitz to the mines in the Schemnitzer Hills. It is about ten English miles long, and is intended to answer the double purpose of a channel to drain off the water accumulating in the works, and of a railway to transport the ore from the mines to the river.

No less than four hundred and seven of our fellow beings have lost their lives by public accidents since the fourth of July. Our country is infamous for such wholesale slaughtering; the great reason why there are so many, is owing to the ease with which criminals get off because the laws are badly enforced.

NEW INVENTIONS.

To Prevent Incrustations on Boilers.

John Garst, of Dayton, Ohio, has taken measures to secure a patent for a useful improvement for preventing incrustations in boilers. The nature of this improvement consists in the employment of an oblong box of suitable length and width placed above a long partitioned trough, and in such a relation to the steam engine as to allow the steam passage of the upper box being connected with the exhaust steam pipe of the steam engine into which the steam escapes, and into which the cold supply water is also admitted. The water from thence flows down into the trough below, which is so partitioned that it flows through shavings, or other substances from one chamber to the other through the series, and is taken away from the last one by the pump to supply the boiler. The water so treated is filtered from calcareous substances which adhere to the inside of boilers and form incrustations. In places where hard water is employed for steam boilers we consider this improvement of great value, for there is no doubt but when the water is heated to a certain degree by the steam, and then suffered to spread over minute surfaces like shavings or brushwood, and become cool, but the limous matters separate from the water and adhere to the minute surfaces. This improvement has been tested with the very best results.

Clamp for Rigging Vessels.

John F. Ward, of Hartford, Conn., has invented a very neat and useful clamp to be used in rigging vessels. The clamp is formed with two parallel jaws, one of which is attached permanently to the end of a screw rod, the other jaw works loosely on the screw rod, and is prevented from turning upon it by a feather in a groove. The movable jaw is screwed or pressed towards the stationary jaw by a nut on a screw. This instrument is to be used for bending the loops of ropes together preparatory to seizing or binding them with yarn. This improvement will be found of great benefit to riggers, and we have no doubt but it will soon be in general use. Measures have been taken to secure a patent.

New Potato Digger.

T. B. Stout, of Keyport, N. J., has taken measures to secure a patent for a new machine to dig potatoes, which consists in the employment of a cylinder having teeth upon its periphery, so arranged as to take out the potatoes from the hills; in connection with said cylinder are a revolving beater and a forked cutter, by which the potato vines are cut off before the cylinder, to allow the teeth of the cylinder to operate freely and effect their work thoroughly.

Carriage Springs.

John M. Perkins, of this city, has taken measures to secure a patent for a new and useful improvement in springs for carriages and other vehicles. The nature of the improvement consists in a peculiar arrangement and combination of the elliptic and spiral springs with diagonal rods and nuts by which arrangement and combination the elasticity of the springs may be graduated according to the weight put upon them; much of what is termed "the running gear" is dispensed with by this improvement, and carriages can therefore be made more light and economical.

Fan Bedsteads.

William Monds, of Macon, Ga., has taken measures to secure a patent for an improved fan bedstead. A fan is hung on a vibrating rod passing through arms attached to the head posts, which by appropriate gearing of cords and pulley is attached to the slats on which the bed is placed, and on which, when a person throws himself to luxuriate in repose, his weight sets the machinery in motion to keep the fan vibrating all night long. For warm climates it will be the grand ideal of nocturnal happiness.

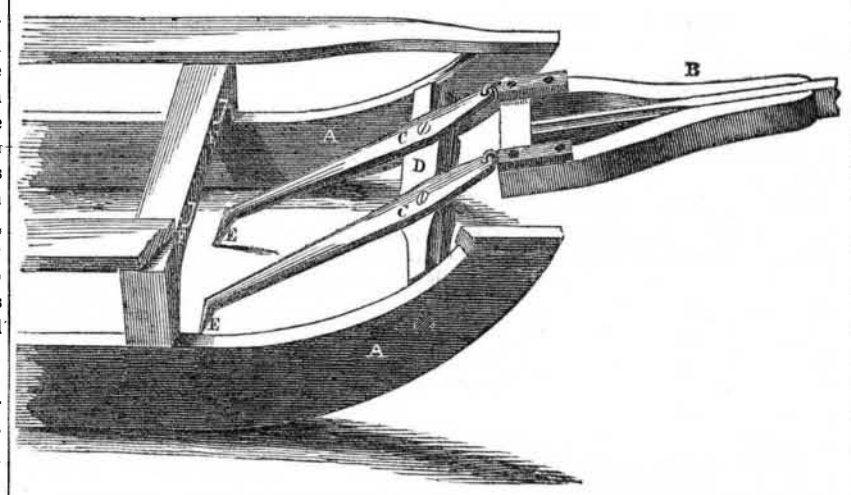
Board or Plank Roofs.

Samuel Taylor, of Petersham, Worcester Co., Mass., has taken measures to secure a patent for an improvement in board or plank roofs. The roof is formed of two layers of boards, the joints of said layers being covered. In the under layer there are grooves or channels directly underneath the joints of the upper layer, which channels convey all the water that may pass through the upper joints into the eaves through a gutter.

Tanners in the United States.

There are 6,263 tanneries in the United States, with an invested capital of $18,900,557, and which produce tanned hides and skins yearly valued at $32,861,796. The number of hides tanned is 6,128,970, skins, 2,653,865. The number of hands employed is 20,909 males and 102 females.

PATENT HOLD-BACK FOR SLEDS.

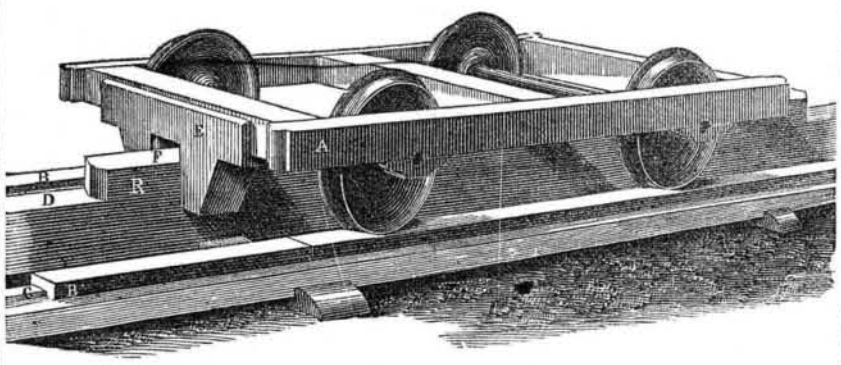


The accompanying engraving is a perspective view of an improved Hold-back for sleds, invented by Perry Dickson, of Blooming Valley, Crawford Co., Pa, and for which a patent was granted on the 27th of last April,—the claim will be found on page 270, this Volume Scientific American. The improvement relates to attaching the hold-backs rigidly to the roller, and connecting the tongue—the inner end of the pole—to the hold-back, or to the roller, by hinge joints, in such a manner that the stoppage or backing of the draught animals, will turn the roller partially over on its bearings, in the runners, and drive the dogs of the hold-backs into the ice, snow, or frozen ground; on the other hand, the draught forward will raise them; they are, therefore, of great importance in going up steep acclivities during the winter season.

A A represent the runners of the sled; B is the pole commonly called the tongue, and the back parts of it are named the "hounds;" D is the roller; it is inserted in the runners at the curved parts, and turns in bearings or holes made in them: it is the axis of the sled. C C are two stakes having metal pointed projecting ends or dogs, E E; these are the hold-backs; they are bolted on to the upper surface of the roller, D, and are attached by joints or swivel hinges to the hounds of the tongue, B. The hold-backs extend under the bridge or front cross-brace, F F, of the sled, which has a hollow part cut below for each stake, to allow it to rise up nearly to the top surface, but to be kept down by a projection of wood or metal, in the front part of the bridge; this is to allow the hold-backs to rise up and be on a horizontal line with the roller when the animals are drawing. When the draught animals stop, the least backing up gives the roller, D, a roll backwards and over in its bearings; this action throws the stakes, C C, downwards, and the sharp prongs or dogs, E E, are forced into the ice, snow, or ground, and assume such an angular position to that of the tongue, as to form a rest and hold-back to the animals which are employed to draw the sled; the draught forward easily lifts the prongs out of the ice, &c., and relieves the hold-back. The invention is a very simple and useful one; it can be easily applied for a very small amount of extra cost.

More information may be obtained by letter addressed to the patentee.

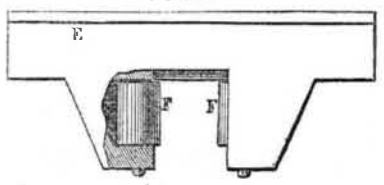
CARPENTER'S SAFETY RAILROAD.---Fig. 1.



The annexed engravings are views of an invention for preventing locomotives and cars running off the track, also to improve the rails, in a very simple manner. The inventor is H. Carpenter, of Rome, Oneida Co., N. Y., who has taken measures to secure a patent for the same.

Figure 1 is a perspective view of truck and track, constructed according to the improved plan; figure 2 is a transverse section of the

Fig. 2.



truck bridge, with part of the wood broken away to show the anti-friction side rollers. The same letters refer to like parts on all the figures. As the improvement is very simple, it will not require many words to render it perfectly intelligible to every person. First, let us explain the new rails: C is a rail made with a metal top and side flanges, B, (one not seen), the inside is filled with wood. This rail is keyed down on the sills in any proper manner, and projects like any other rail. A is the truck; it is made in the usual way, except the cross braces, or bridges, E, a correct idea of which will be obtained by figure 1, as connected with the truck, and fig. 2, as to construction; R is an elevated central guide rail. F F are two anti-friction and guide rollers, set on spindles in the cheeks of each bridge, E, in a truck; it will be observed that the truck spans the elevated central rail, while the weight of the engine or car is thrown upon the lower rails, B B; any obstruction, therefore, which would throw the wheels off the ordinary track, cannot throw them off this one; the elevated rail will prevent such accidents completely. The side rollers, F F, along with the rail, give the cars a smoothness and steadiness of motion, which is altogether unknown upon any of our roads at present. The side pressure being thrown upon the central rail, will greatly reduce the friction, and at the same time prevent the wearing and splitting off of the flanges of the wheels, and thus affect an important saving in this respect; a transverse roller may be set upon F, in the roof of the bridge, E. It makes no matter how high the velocity of the train may be, if a wheel or axle should break, the central guide rail will support and keep up the disabled car until the whole train can be stopped. The central rail is secured on the cross-ties, and tends to strengthen the whole track, and obviate that jerking, shaking motion now so sensibly felt in turning curves. Mr. Carpenter claims that his light wood filled rail, with his elevated rail, will answer just as well as the heavy T rail on the common tracks, and will save $3,000 per mile; the vertical flanges, B, render this rail strong, for it is in the form of a rectangular tube, and is therefore much stronger than the old flat rail. The lower part, D, fig. 1, is merely to show the crossing; but we hope the time is not far distant when no road way crossings will be allowed on any railroad, and when all the tracks will be fenced in and well guarded, and when it will be as safe to run at the rate of 80 miles per hour, as it would be now to run at the rate of 10 miles in that time. We are not at the end of improvements on railroads, by a long distance. We may yet see double tracks between our populous cities, straight as the path of an arrow, eight and ten feet wide, with huge cars running at the rate of one hundred miles per hour with perfect safety. The plans of Mr. Carpenter deserve the attention of all our railroad companies and engineers; his central rail can be sawn out at the mill, and the extra expense, according to the contemplated advantages, should not weigh much in the scale of opposition to its adoption.

More information may be obtained by letter addressed to Mr. Carpenter, who has taken measures to obtain a patent.

Galvanic Battery for Doctors.

Louis Drescher, of this city, has taken measures to secure a patent for a new galvanic battery, of a peculiar character and form, to be used by doctors as a substitute for blisters, and for the removal of toothache and other pains. The galvanic battery or pile consists of several pairs of small electric generators, each pair being made with the negative plate of copper or platina, gauze, and the negative of zinc gauze, or perforated plate. Each pair is separated by a disc of some substance which will retain moisture for some time, and are not united by a metal conductor, but each pair is connected to the next by a fine metal conductor, to carry the full current of electricity generated from one pair to the other, through the entire series of plates in the pile. Every pair is a battery of itself, and their diameter is about two inches. They are bound together by wires, and are dipped in weak acid, or salt water, to moisten the cloth between each pair, and then set upon a table. The secondary current, which flows in a set of plates placed all together in a fluid connection, is obviated; the plates present an extensive surface, and a current of great intensity is generated in a very small pile. This battery only occupies the space of a few inches, and can be carried about in a gentleman's coat pocket. To apply it for the raising of a blister, the two poles are connected with handles which have metal buttons on their ends, the patient takes the negative handle in the one hand, and places the positive button on the spot to be operated, and retains it in close contact for about five or ten minutes, when the blister will be formed. It can thus be applied in a very superior manner, to raise blisters of any size, according to the size of the buttons applied. It has cured toothache by being applied to the root of a tooth on the gum. It has cured stitches and rheumatic pains, and it may be applied to relieve many other ailments. Its action is first that of a gentle thrilling warmth, then, according to the time it is kept in action, it becomes more acute to the feelings until it is time to be removed. It is a new and wonderful application of electricity for medical purposes.

Erratum---Ingham's Water Wheel.

In giving the residence of Mr. Ingham last week, after describing his water wheel, it stated "West street," it should have been "West 13th street."

Scientific American

NEW-YORK, SEPTEMBER 4, 1852.

Screw and Paddle Wheels Combined.

J. Bourne, C. E., the well-known author of a number of works on practical engineering, has published a long and able article, in the 'London Artizan," on propelling steam ships by the conjoint action of paddles and screw. He states that the best old steamships of the Peninsular Steam Packet Company were constructed under his direction, but they have become old, and having no interest in the Company now, the new steamships built since then, are worse than the oldest. The new vessels being slower than the old ones, general dissatisfaction has been manifested. To increase the speed of the old vessels, as it was impossible to sell them in order to get others of greater power, he, some years ago, recommended that one of the small ships of the company should be fitted with a screw at the stern, and a pair of extra engines of 140 horse-power to drive it, as auxiliary to the paddles and the engines which she had; the screw engines were to have no air-pumps or condensers; they were to have high pressure cylinders, from which the steam was to pass, when cut off, into the old large cylinders, and there work expansively, and then be condensed; this involved no increased consumption of fuel, and if the power was thus doubled, the speed would be increased in the proportion of the cube root of 1 to the cube root of 2—an increase from 10 knots per hour to 12½, with a duplicature of power. His suggestions, after great vacillation and delay, were neglected. Since then a rival company has started, which has cut down the profits of carrying the mails, and an increased speed has to be maintained at the expense of an increased quantity of fuel. It is to save expense in fuel, and yet increase the power, that he suggests the propriety and utility of employing both paddles and screw in one steamer. The idea is a good one for adding auxiliary power in an old vessel, and strange enough, both paddles and screw are represented in the figure of John Fitch's old steamboat, which he exhibited on Collect Pond, in 1796, in this city, the place where the "Tombs" now stand. Mr. Bourne contends that a steamship, with a pair of paddle engines of 500 horse-power, and a pair of screw engines of 500 horse-power, would be more efficient when deeply laden, than the same vessel with 1000 horse-power engines driving paddle wheels alone, and that it would be more efficient in head winds, than if driven by the screw alone and 1000 horse power engines. If either the screw or the paddles were deranged, the vessel would still be able to proceed with the remaining power. He has a high opinion of this plan, but only recommends it to increase the speed of existing vessels, not for new steamships.

At a meeting of the Eastern Steam Navigation Co., held in London on the 12th ultimo, a most ponderous scheme was proposed; it is no less than a line of huge steamships to run from England around the Cape of Good Hope to Calcutta. These ships are to be of such a size that they will carry 3,000 to 4,000 tons of coal, and run at the rate of 16 knots an hour, to make the passage in 30 days. They are not to stop for coal on the way, but make one long bold stretch from the west of Europe to the east of Asia, and vice versa. It is a settled matter, by experiment, that the speed attainable by large vessels is greater in proportion to their power than with smaller vessels. These steamships are to be constructed principally of iron, and to be propelled by paddles and screw together,—thus carrying out the proposition first made by Bourne. At that meeting Scott Russell was present, and stated that there were steamboats now running between England and Ireland, which made 18 miles per hour, and he had built one of twelve times the length of her breadth, which ran at the rate of 18½ miles per hour. The changes which may be brought about in ocean steam navigation by the combination of screw and paddle, have yet to be demonstrated; the reasoning upon the proposed changes is good but experience is the only test of economy. One thing is certain, the great length of American River steamboats in proportion to their breadth, has afforded an instructive lesson to British ship builders, especially Scott Russell.

Manufacture of Gold Pens.

We have made a few remarks on several occasions about the manufacture of gold pens, and had we nothing new to say just now, we should not utter a single word upon the subject, but having witnessed the operations of some new machines, a few days ago, in the manufactory of A. Morton & Co., No. 25 Maiden Lane, this city, we took the opportunity of examining into the whole of the operations, and acquiring new information respecting many things unknown to the world at large. The gold for pens is rolled into thin strips, about the thirty-second part of an inch in thickness; in this state it is black on the surface, and looks like brass; the first operation is cutting it into stubs—short pieces pointed and angular at one end, and cut square off at the other; this is done in a die. The stubs are then run through a machine, and each point is indented for the reception of the real pen points. The next operation is pointing the stubs; the substance used for points is rhodium, a hard brittle metal like steel, but unoxidizable. It is to this metal we wish to direct particular attention. There are various qualities of it, some worth 12, 20, 30 and 40 dollars per ounce, and Mr. Morton told us he had paid even $120 for a superior quality. It is found in the ores of platinum associated with irridium, osmium, and palladium. Irridium is used by some for the points of gold pens, but rhodium is the dearest and best. All of this metal used in the United States comes from the Peruvian or Russian mines, but Mr. Morton assured us that there was plenty of it in California, and he had seen some which had been brought from that gold land. It is also found there, pure, associated with sands, and requiring no chemical manipulation for its separation, as in the platina ores of the Ural. Our gold seekers in California should direct their attention to this metal, as it is far more valuable than gold; it is of a white glassy steel color, and in minute roundish particles like sand; the round globular particles are the best for pen points; in fact, out of one ounce of this metal, perhaps not one seventieth of the granules can be used, the rest are rejected. A fine particle of rhodium is soldered on the indented point, of each stub of gold—the solder is mostly composed of gold, for unless it is good, ink soon corrodes it, and the rhodium point drops off; this is the case with poor pens made by indifferent makers. After the pen is pointed, it is rolled out between rollers with indents in them to save the points, until the stub is drawn out to its proper length and correct thinness; the rolling also makes the gold elastic. Many suppose that gold pens can be re-pointed, and we actually had one re-pointed ourselves seven years ago, by getting it exchanged for a new one; we paid the full price, feeling conscious, at that time, that our old pen had really a new point put upon it. But old pens cannot be re-pointed, for the heat employed to solder on the point, renders the gold as plastic as a piece of tin; the heat changes the relative position of the crystals of the metal—thrusts them out, as it were, and the gold requires rolling or hammering afterwards, to give it elasticity—that spring so requisite for pens; this is the reason why old pens cannot be re-pointed. Some makers do not hammer their pens after being rolled; they are never so good. After being rolled they are cut to the proper form in a finishing die, then stamped with the name of the maker, and afterwards turned up to the rounding quill form. This is done in the establishment above named in a new and ingenious machine, invented by Mr. Morton, which makes a superior pen. After this the point is slit with a thin soft copper disc revolving at a great velocity; the great speed makes the soft metal disc cut the hard metal rhodium; the gold is slit with another machine, therefore to make a slit in each pen, it has to undergo two operations. The point is next ground on a copper wheel revolving at a high velocity; this is a very delicate operation, and a good artist gets high wages. After this the pens are "stoned out," that is, they are ground down on the inside and out by fine Water-of-Ayr stones, by hand, on a bench alongside of a tub of water; the stones are long, thin, roundish slips, and the pens have to be operated so as to make one part more thin than another, to give them the proper spring; they are then polished on swift revolving copper rollers, and afterwards finished with fine powder and soft chamois skin. Thus, to make a gold pen, it undergoes twelve operations; inferior pens can be made with less labor, but they soon develope their true characteristics.

This business has largely increased, and is rapidly extending. New York is the headquarters of the manufacture, and there are now perhaps no less than forty makers in this city. How the demand is made to increase, we do not attempt to explain; it shows, of a truth, that Americans are verily a writing people.

A Few Reasons why Persons should Subscribe for the Scientific American.

In this age of rapid improvement, no manufacturer, mechanic, or artizan, is safe who does not strive to keep posted up in inventions and discoveries. Scarcely a day passes but we receive a dozen letters from persons describing some invention on which they have expended considerable money and labor, which has been illustrated in some of our former volumes; the usual inquiry is, "can a patent be obtained for the invention?" Had they been subscribers to the Scientific American since its origin, they would have saved time and money; it has been the means of saving hundreds of dollars to many subscribers. One article in this volume, in the series on boilers, was the means of enabling a subscriber to save $1,000 per annum for fuel. Many papers, at the same price, have more reading matter; if more reading matter was our aim and object, we could print a larger paper at less expense; but quality and quantity are two different things. No man can now be considered intelligent, unless he is well informed on subjects of science and art; it would be much better for all young mechanics, everywhere, if they read more useful and less trashy works. As a volume for binding, the Scientific American is a yearly record of all new and useful discoveries, and many of the rare receipts which we publish are worth more than the year's subscription.

Draining of Harlaem Lake.

In No. 9, Vol. 2, Scientific American, we published an illustrated description of the "Leeghwater" Steam Engine, for pumping the waters out of the Harlaem Lake, in Holland, in order to reclaim the land This lake covered about 70 square miles, and was 13 feet deep. Three engines of great power were constructed in England in 1846-7, but the pumping was not thoroughly commenced until 1848. The steam engines are nearly through with their labors; the last accounts from Europe stated that much of the bottom was now exposed, and only large pools were left. To lower the lake one inch, four million tons of water had to be lifted. In three years the lake was lowered 7 feet 3 inches; in December, last year, it was lowered to 9 feet and a half, and now it is nearly dry. It is believed that no less than 700,000,000 tons of water have been lifted by the engines since they commenced operations. This is equal to a mass of solid rock, a little more than three square miles, and one hundred feet high, that is, allowing fifteen cubic feet for a ton. We can easily see what an immense amount of labor the engines performed, and what power there is in coal applied in a state of combustion to water, for the purpose of raising water. Each engine was 350 horse-power, and so economical were their working qualities, that two and a quarter pounds of Welsh coal per hour were all the fuel used for each horse-power of an engine. The Dutch engineers were nearly unanimous for using the old-fashioned wind-mills, which had been so often employed for the same purpose, but it was asserted by two English engineers that the steam engines could be built and do the work for one half the amount of wind-mills; this has been completely fulfilled.

The people of Albany are enthusiastic about a tunnel under the Hudson at that place; why don't they try H. N. Houghton's Aerial Bridge, illustrated on page 169, Vol, 7, Sci. Am.

A Chapter of Suggestions.

FOREIGN SUBSCRIBERS—Our Canada and Nova Scotia patrons are solicited to compete with our citizens for the valuable prizes offered on the next Volume. [It is important that all who reside out of the States should remember to send fifty cents additional to the published rates for each yearly subscriber—that amount we are obliged to pre-pay on postage.]

BINDING—We would suggest to those who desire to have their volumes bound, that they had better send their numbers to this office and have them executed in a uniform style with their previous volumes. Price of binding 75 cents.

MISSING NUMBERS.—Subscribers who have failed to receive some of the numbers during the year, can have them supplied by stating what numbers are missing at the time of remitting for the new volume.

INFALLIBLE RULE—It is an established rule of this office to stop sending the paper when the time for which it was pre-paid has expired, and the publishers will not deviate from that standing rule in any instance.

RECEIPTS—When money is paid at the office for subscriptions, a receipt for it will always be given, but when subscribers remit their money by mail, they may consider the arrival of the first paper a bonafide acknowledgment of the receipt of their funds.

GIVE INTELLIGIBLE DIRECTIONS.—We often receive letters with money enclosed, requesting the paper sent for the amount of the enclosure, but no name of State given, and often with name of post office also omitted. Persons should be careful to write their names plainly when they address publishers, and to name the post office at which they wish to receive their paper and the State in which the post office is located.

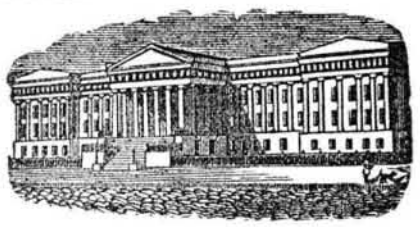
TO CORRESPONDENTS.—Condense your ideas into as brief space as possible, and write them out legibly, always remembering to add your name to the communication.—Annonymous letters receive no attention at this office. If you have questions to ask, do it in as few words as possible, and if you have some invention to describe, come right to the business at the commencement of your letter, and not fill up the best part of your sheet in making apologies for having the presumption to address us. We are always willing to impart information if we have the kind solicited.

PATENTEES.—Remember we are always willing to execute and publish engravings of your inventions, provided they are on interesting subjects, and have never appeared in any other publication. No engravings are inserted in our columns that have appeared in any other journal in this country, and we must be permitted to have the engravings executed to suit our own columns in size and style. Barely the expense of the engraving is charged by us, and the wood-cuts may be claimed by the inventor, and subsequently used to advantage in other journals.

☞ The above chapter of variety we have inserted for the mutual benefit of our patrons and ourselves. If our subscribers will retain in mind the suggestions contained in the above paragraph they will be likely to be benefitted thereby; besides they will save us much valuable time and a good deal of perplexity.

Patent Appeals.

A Bill has passed Congress, authorizing appellants from the decision of the Commissioner of Patents to have their appeals tried by the Assistant Judges of the Circuit Court of the District of Columbia, because the Chief Justice of the District, Judge Cranch, is now too frail to try them. The law, as it stood, demanded all appeals from the decision of the Commissioner to be tried by Judge Cranch in person. He is now very old, and has not been able to act upon any such cases for a long time. There are a number of appeals, which, for a long time, could not be acted upon, owing to the want of the amendment now made to our patent laws. We hope the Assistant Judges will act upon them promptly, and thus relieve those deeply interested in their decisions.



Reported Officially for the Scientific American

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING AUGUST 24, 1852.

BILL REGISTERS—By J. N. Ayres, of Stamford, Ct. : In combination with the perpetual calender in the same table, frame, or box, I claim the bill register, consisting of the strips or sheets of paper, or other material, suitably ruled for names and amounts, and inserted in or attached to the table, frame, or box, in any convenient way, so as to be easily removable, or removable on either side of the columns of days of the month and week, under suitable headings, which denote whether the bills are payable or receivable, as set forth.

COOKING STOVES—By R. J. Blanchard, of Albany, N. Y. : I claim placing two separators in the front and back descending and ascending flues of a cooking stove, to divide the products of combustion whilst they are permitted to pass undivided over the top and under the bottom plate of the oven, substantially as described

LASTING BOOTS—By Hezekiah Conant, of Worcester, Mass.: I claim the combination of the two levers connected together and connected to the jaws, also connected to the step, by which combination, on opening the pincers, the simultaneous motion of the two jaws are guided so as to take hold of both sides of the leather, and by pressing the handles towards each other, bring up the leather with equal tension on both sides. I claim this for the purpose and in form, substantially as described.

MACHINE FOR CUTTING CHEESE—By W. K. Foster, of Bangor, Me.: I claim the combination of the groove, and the slot, with the spindle and its sustaining board, so as to guide the point of the knife, and support the pointed end of the knife, when the knife is forced down through the cheese, as stated.

And in combination with the groove, slot, and plate or board, I claim the secondary rotary board, to be applied and used, substantially in the manner and for the purpose specified.

BED FOR INVALIDS—By S. D. Hopkins, of Staunton, Va.: I claim suspending the sheet, hammock, or mattress upon which the patient lies, to a carriage which moves on a frame placed over or around a common bed, so that by said carriage, the patient may be raised up or let down upon the bed, or moved from one place to another, or gently exercised, the whole being arranged, combined, and operating, substantially in the manner described.

LASTING BOOTS—By Benj. Livermore, of Hartland, Vt.: I claim the mode of bringing the arms together by means of the slots in the arms, and the bolt operating in the slots, when this is used in combination with the standard, substantially in the manner described.

CHURNS.—By Rufus Maxwell, of Lewis County, Virginia: I claim, first, the forcing of the milk through a rack, by revolving the churn in an orbit, without turning it on axis.

Second, the bow and rods connected together as described.

ABUTMENT MOTION FOR REVERSIBLE ROTARY ENGINES—By C. A. Mills, of Coldwater, Mich. : I claim the combination for the purpose of withdrawing the sliding heads, at proper intervals, and retaining them, whichever way the engine is working, of the rods, the levers, the wheels (two), with their wedge-shaped projections or inclines, and the springs, the whole arranged and operating in any way, substantially as set forth.

MACHINES FOR CUTTING HAND RAILS—By Geo. B. Pullinger, of Philadelphia, Pa.: I claim arranging the rollers, one above the other, within a revolving frame, so as to allow of the curved roller, or its equivalent, being substituted for the roller, at the time desired, and in the manner and for the purpose fully specified

HORSE POWER—By David Russell, of St. Louis, Mo.: First, the combination of the canting tread wheel, an horizontal sweep shaft, and friction wheel for producing motion in the manner described, by which the whole is always running down hill, by throwing the weight of the horse on to the canting wheels, just forward of it, as described.

MECHANISM FOR GRIPING WOOD-SCREW BLANKS, ETC —By T. J. Sloan, of New York City: I claim for operating the griping jaws on the mandrels of machines for threading or shaving the heads of wood screws, the employment of a wedge on a stem within the mandrel to act on the jaws to close them, substantially as specified, when the said wedge stem is combined with a sliding frame, or its equivalent, by means of an interposed spring, substantially as specified, for the purpose of adapting the jaws to the griping of blanks of various sizes, as set forth.

And I also claim, in combination with the said spring connection for the purpose specified, the making of the wedge faces curved, substantially as specified, to insure an equal, or nearly equal, force on the griping jaws, as set forth.

THREADING POINTED WOOD SCREWS—By T. J. Sloan, of New York City: I claim giving to the mould or former, or its equivalent, motion, substantially as specified, whereby the cutting away of the metal at the end of the shank is divided amongst several threading motions, instead of being cut away at the first threading motion, as heretofore practiced.

RAILROAD TRUCK—By Edwin Stanley, of Bennington, N. Y.: I claim, first, the combination of the brake with the wheel and rail, arranged and operating substantially as described.

Second, making the wheel substantially as described, for the purpose of preventing from clogging with snow or other substances, and giving it a better hold upon the rail, as suggested.

APPARATUS FOR FEEDING BOILERS—By Andrew Walker, Jr., of Johnsbury, Vt.: I claim the combination of the heater, or vessel, and its pipes and stock cocks, or either of them, with the tank, boiler and force pump, so as to operate therewith, or enable the force pump to be operated, substantially in manner and under the circumstances as set forth.

RE-ISSUE.

LAMP BLACK—By J. G. Mini, of Philadelphia, Pa. Patented originally Nov 13, 1844: I claim the mode described of burning lamp black, that is to say, burning it in a confined building or room, without chimney or draught, substantially in the manner set forth

Woodworth Patent.

[Continued from page 398.]

So far as the claim is urged on the attention of Congress upon the score of expense incurred in the various suits brought by the proprietors of the Woodworth patent, it presents some peculiar aspects. If the administrator made an absolute sale to Wilson of his rights under the second extension, over four years before the term began to run, it is not easy to perceive on what principle he can claim the supposed expenses of Wilson's lawsuits as entitling Woodworth to further bounty. If, on the other hand, the sale was merely ostensible, and made with a view to obtaining a still further extension, it is equally difficult to perceive on what principle he can claim that he is to be paid over again by the public, who have paid such immense sums already, by his authority, to his agent and grantee. But he claims that the courts are favorable, and the infringers wealthy. The laws against piracy are severe, and the remedies ample and easy of access. The costs fall upon the defendants, and the owners of the patent receive the damages. The remuneration is abundant; the owners are not slow to assert their rights; for each wrong they claim and obtain redress; the remedy survives the term and is in no degree dependent upon its duration.

But in connection with these litigations there are other matters which invite serious attention when the administrator appears before Congress as a petitioner for further bounty. It seems from his own showing that the original patent was invalid, and was only made effectual by the re-issue six years after the death of the patentee; yet the litigation was as rife and the owners were as successful under the void patent then, as under the valid patent since. Even the original grant embraced what was never invented by the patentee, as conceded by the disclaimer filed in the Patent Office, by William W. Woodworth, on the 2nd of January, 1843, four years after his father's death. The extension of 1842 was obtained by the administrator upon papers which, to say the least of them, did not disclose the whole truth; but even then, no pretence was made that William Woodworth had invented anything more than what was claimed in the original patent of 1828. The second extension of 1845 was procured from Congress without the usual investigation, without even the customary report by a committee, without discussion in either house, and upon papers which did not disclose the facts material to a proper decision upon the application. But even then no pretence was made that the invention covered anything more than was claimed in the original patent, nor was any intimation given to Congress of an intention to change the subject matter of the proposed grant by obtaining a re-issue of the patent upon new and expanded claims, so framed as to strike down the intermediate inventions of other citizens as infringements and to cut off by anticipation, as far as human foresight could go, all subsequent inventions in this department of mechanical industry.

Within five months afterward the re-issued patent was obtained; by what means it was procured is unknown to the public. The evidence in such cases is secret and *ex parte*.—It is sufficient to say that after a previous deliberate decision of the Commissioner of Patents, rejecting the application of William W. Woodworth for re-issued letters patent, a re-issue was granted by the Chief Clerk of the Patent Office, embracing claims not contained in the original patent, and enabling the owners to wage successful war upon numerous inventors whose machines threatened to compete successfully with their own. From that time the claims, even under the re-issued patent, have been expanding, until the only fixed fact in its construction seems to be that it is a general declaration of war upon every possible invention for dressing lumber more successfully than the Woodworth machine. The records of the Patent Office show that William Woodworth, the father, admitted the validity of the patent of Uri Emmons, and acknowledged his title by holding under him. Yet, even when that invention became public property, those who claimed the right to use its combinations were prosecuted by the owners of the Woodworth patent as infringers. One of the unfortunate effects of the grant of a re-issued patent upon the *ex parte* evidence of interested parties is, that the instrument itself becomes presumptive evidence that all it grants was a part of the original invention of the patentee, thus throwing upon the defendant the burden of proving the negative fact that he did not conceive the invention. The fact that no such claim was made in the original patent is not admitted by the courts to overcome the effect of the new grant. This legal presumption has been held so sacred as not to be overcome even by the acts and declarations of the patentee, his recorded admissions, and his deliberate oath.

Without pausing to consider the propriety of giving such force to a presumption based upon evidence so objectionable and unsatisfactory, it will readily be seen how disastrous the effect must be upon the rights of defendants. By the operation of this and similar rules of presumption in favor of the validity of patents, and by the aid of other circumstances, to which it is not necessary here to allude, the re-issued patent has been as yet upheld in the courts, and skillful experts, whose frequent testimony in the suits brought by the owners of the Woodworth patent has made their names familiar to the country, have not failed to find a new construction of the claim whenever it became necessary to strike down some new invention. That the claim of the re-issued patent, in any form, should ever have been sustained seems strange enough, in view of the fact that it embraces combinations which William Woodworth never put forth as invented by him down to the last day of his life, which he repudiated in his affidavit of 1838, and which were never claimed for him even by his administrator until many years after his death. Even if he had actually invented all that is embraced in the re-issue, the omission to claim it at any time during the fourteen years was a dedication to the public of all which he did not choose to embrace in his original patent. That dedication could neither be recalled by his administrator nor revoked by the Patent Office.—The re-issue was granted after the second congressional extension. That this was in conflict with the policy of the law will not be disputed; and it requires an ingenuity of construction beyond the reach of ordinary minds to reconcile the grant with the language of the statute under which it was made. That statute authorized a re-issue during the original term, and expressly provided that it should issue "for the residue of the period then unexpired for which the original patent was granted." (See patent act of 1836, chapter 357, section 13.) The various attitudes assumed by the owners of the Woodworth patent in the assertion of their claims, as disclosed by the reported cases and other papers and documents submitted to the committee by the memorialist and the remonstrants, are not unworthy of a passing notice in this connection. The novelty of the Woodworth invention was questioned in some of the earlier cases, on the ground that the combinations claimed in the re-issue were substantially the same in principle with the prior inventions of Bentham, Bramah, and Muir. The owners of the patent insisted that the use of the stationary planes in those machines constituted a substantial difference between them and the Woodworth machine, in which the rotating planes are employed. In the case against Mercien, in 1846, Judge Kane, in delivering his opinion, after showing the difference in this element of the combination between the Woodworth machine and those of Bentham, Bramah, and Muir to be entirely decisive and controlling, says:—

"Regarding, then, the Woodworth machine as substantially different from the three last mentioned, I find the substantial difference to consist in this, that they act in planes parallel to the surfaces to be removed, Woodworth's in vertical curves; that theirs produce an absolutely level surface, his a surface apparently level, but in fact corrugated or grooved."

In the case of Woodworth versus Edwards, tried at Boston in 1848, the late Mr. Justice Woodbury, after showing that stationary knives were employed by Muir, and revolving knives by Woodworth, says:—

"The principle is entirely different.—Woodworth operates by an adze cut, while in Muir's machine the knives are stationary, and the board is shoved over."

Having thus sustained the novelty and validity of the Woodworth patent against previous inventions on the very ground that in the re-issue the combination was restricted in the claim to the revolving knives the exact converse of that position is taken by the owners of the patent for the purpose of stopping subsequent machines; and they are now prosecuting, as infringers, parties who use the stationary planes, and not the revolving knives. This is claimed upon a new construction of the patent which is put forth to meet new cases. It is insisted that the patent is for certain functions; that as the office of a knife is to cut, any thing which will cut, whether rotary or stationary, answers one of the functions of the patent; that as the office of a pressure roller is to hold the board, whatever will serve to hold a board answers the other function of their patent. The practical result of this theory would be that any machine which would plane a board to a uniform thickness would be an infringement of the Woodworth patent; for it is of course impossible to plane without using some cutting instrument, and the board, unless held in its place, would of course be pushed off by the knife. This doctrine is directly at variance with all former constructions of the patent by the courts; and the committee congratulate the country upon the fact, that in the only instance in which it has been directly presented and passed upon, it has met with the prompt rebuke of the bench. This was in the case of Brooks *et. al.* vs. Fiske *et. al.*, decided in February last in the United States Circuit. The following is an extract from opinion of Mr. Justice Sprague, which was adverse to the Woodworth patent:—

"Another view presented by the plaintiff's counsel is, that this is a patent for an organized machine, containing parts performing certain functions and producing a certain result, and that any machine in which those functions are performed and such result produced, is an infringement, although it have no rotary cutter or pressure roller, but accomplishes its work by other instrumentalities. This construction cannot be maintained."

[Concluded next week.]

Another Use for the Telegraph Wires.

Scientific investigation and practical experiment have demonstrated the ability of the magnetic telegraph wires to ring, at the same moment, all of the bells distributed in various sections of our city, for the very useful purposes of fire alarms. This fact suggests another idea, namely; that of lighting all the gas lamps of the city by the same means of telegraph wire. Very simple machinery only would be required to turn the cock of the gas-pipe, and, simultaneously with the escape of the gas, to apply the electric spark. This experiment would ultimately prove an economy to the city; and would also prove another triumph to scientific art, which has been already applied successfully to the business of every-day life.—[Boston Commonwealth.

[This has been proposed a number of times during the past five years, and some experiments, we believe, were made on a small scale in Paris. Could this be accomplished, a very desirable and important saving would be effected in all our cities, but it cannot be accomplished as suggested above.

Steam Grain Elevator.

Messrs. Godard and Hovey, of Albany, have just completed a floating elevator, for the purpose of unloading and loading grain. The elevator is so arranged that it will not only measure grain from one boat, and deliver it on another, and give the accurate quantity, but will also receive it from a boat and deliver it into the first, second, and third stories of any building, at a very cheap rate. It will handle 15,000 bushels of gsain per hour—will separate the cobbs from corn, or other large substances, most always in grain, and will also screen and blow it, and give the exact weight.

TO CORRESPONDENTS.

R. W., of Pa.—There can be no doubt about the excitement respecting reaping machines: we are glad to see such an interest manifested by our farmers for improved machinery, and appreciate your acknowledgments respecting the good which the Sci. Am. has done in this field. We are collecting reliable information respecting reaping machines; we shall publish the same with some engravings in our next volume. We shall have something to say about old Reapers.

R. S, of Ill.—We know of no manner in which you can prevent parties, who manufacture from the same machine, selling their products to go into the limits of your territory. It is the machine that is patented, and the Letters of Grant do not cover the products. Perhaps your assignor has a special clause attached to his assignments, which confine each assignee to the sale of the product in his own territory, in which event the party, from whom you received your grant, could interpose and prevent others from obtruding their products upon your territory.

F. A. L, of Mass.—A patent was granted not long since for embedding imitation of marble chimney-pieces, painted on glass, into an iron case, by means of cement.

J. P. O., of Pa.—The information you solicit respecting the price of seamless stocking looms we cannot give.

G. D., of N. Y.—We believe your mode of attaching hubs to axles is new and patentable. We have never seen the like before.

S. L. S. of Ohio—We have never seen the machine patented by Mr. Smith, but from the nature of his claim we should think your drill an improvement on his. We are more strongly of the opinion than ever that your machine would receive a patent on certain points, but we could not so well define the particular points on which to base the claims until we have a model to examine. Your subscription expired at No. 43, but for the dollar enclosed in your last letter we have re-entered your name for another six months. Sent back numbers.

G. E. D., of Me —The notice must have got into your paper by mistake : your subscription is paid to the middle of next volume.

W. G H, of Pa.—We have now credited you for the whole of Vol. 8.

T. H., of Pa.—Oxygen is not that which makes what we call "impure or bad iron," other matters, sulphur, phosphorus, &c., are the evils. Nitrogen would be of no use in a furnace; there would be no combustion without the oxygen. No oxygen is admitted into a crucible; the charcoal does absorb the oxygen during combustion.

J. S., of Ohio—It is a common custom, in the East Indies, to hang up mats in the windows of the houses and keep them wet during the hot season. The air passes through the moist mats, and the evaporation enables Europeans to bear the weather tolerably We have never heard of a blanket arranged like a syphon, as you have done, nor has it ever been applied to the same apparatus before. We believe it to be good and patentable.

A. K., of N. Y.—A patent for a life-preserving hat was patented in this country, in 1840, by an Englishman of the name of White. The plan you suggest seems to be precisely the same as the one described in the patent alluded to.

P. S., of Iowa—The Patent fees are required at the time the application is made. It will be necessary that you forward the model to us, accompanied with government fees ($30), free of expense. The examinations are about three months behind at the Office.

T. S. P., of Pa —The first 26 Nos. of Vol. 7, Sci. Am, we will send you on receipt of $1. For further information concerning the Voltameter Battery, address George Mathiot, Washington, D. C.

S. B., of O.—We regret to be obliged to inform you that neither of the plans you submit are patentable.

L. J. G., of Md.—If your pump will work as you have illustrated it by diagram, you have an important invention. The best thing you can do is to build one and try it; we predict it will not operate at all.

B. D. G., of S. C.—If you will turn to the 4th page of your second volume of the Sci. Am., you will find the full claims of Howe's Sewing Machine.

G. G. C., of N. Y.—There are more than one patented machine for making mouldings. The work is done by machinery in this city, in a number of establishments.

E. C., of Boston—We know of no portable mills with bolts attached that are kept for sale in this city. Your subscription would have expired with the volume had you not remitted.

W. F., of Pa.—Your plan for gathering fruit may be very good, but there is nothing patentable about it.

B. M. H., of Ind —We are unable to discover from your description that you have made any invention whatever. You certainly would not ask for a patent on a square box, because it was made water-tight and the applying such a box for any specific purpose would not require invention. Who is the next man with a life preserver? We have had scores of letters on the subject of life preservers since the burning of the Henry Clay, and not one of them suggests a new idea.

G. M. R., of Pa.—Your bundle of drawings and manuscript has arrived, but we cannot afford the time it would occupy to even read all your communications without attempting to decypher your diagrams. Send us $5 and we will report on all the inventions.

Money received on account of Patent Office business for the week ending Saturday Aug. 28:

K. & N., of Pa., $15; E. W. N., of Mass., $40; T. S, of Pa., $20; J. W. M., of N. Y, $20; J. L B, of ●., $65; F. T, of N. Y, $2; M J, of N. Y., $20; P. J. C., of Ct., $40; W. N. C, of N Y., $20; J F. M., of Pa., $20; J. D. W., of N. Y., $30: G. & Co, Paris, $350; L. B. B., of Vt, $30; G. & S, of N. C., $10; J. W. M, of N. H., $35; J. I., of N. Y., $33; W. M., of Ga., $15; W. M., of N. Y., $55.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Aug. 28:

C. B, of N. Y.; T. S., of Pa.: M. J., of N. Y.; P. J. C., of Ct; J. J. W., of Mass.; W. N. C., of N. Y.; G. & S, of N. C.; J. I., of N. Y.; T. & C., of Ky., re-issue.

Back Numbers and Volumes.

In reply to many interrogatories as to what back numbers and volumes of the Scientific American can be furnished, we make the following statement:

Of Volumes 1, 2 and 3—none.

Of Volume 4, about 20 Nos.; price 50 cts.

Of Volume 5, all but 4 numbers, price, in sheets, $1.

Of Volume 6, all; price in sheets, $2; bound, $2,75

Of Vol. 7, all back numbers at subscription price.

Patent Claims.

Persons desiring the claims of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office;—stating the name of the patentee, and enclosing one dollar as fee for copying.

Patent Laws, and Guide to Inventors.

We publish, and have for sale, the Patent Laws of the United States. The pamphlet contains not only the laws but all information touching the rules and regulation of the Patent Office. Price 121-2 cts. per copy.

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Advertisements exceeding 16 lines cannot be admitted; neither can engravings be inserted in the advertising columns at any price.

☞ All advertisements must be paid for before inserting.

SCIENTIFIC MUSEUM.

Chloride of Soda.

The chloride of soda is one of the best disinfectants, if not the very best, in the world. It is, however, especially adapted for disinfecting soiled clothes, or those which have been employed in rooms of sick persons, because it can be employed in the water for washing them. It can also be employed for washing the human body, and for this purpose it is extensively used as a toilet liquid. The way to make it is known to but very few, and it is therefore sold by our druggists at a very high price. It is generally labelled with the name of a French manufacturer, and sold as a French product; we have seen a dollar charged for a quart bottle of it, and fifty cents is a very common price. We will inform our readers how to make it for six cents the quart at the very utmost limit:—Take one pound of good chlorate of lime, which can be bought at any of the druggists, (when it is damp it is a sign that it is not good, it should be perfectly dry), put this lime in a close vessel containing a gallon of cold rain water, and stir it well, taking care to break all the lumps; it should then be covered and left to settle all night, and the clear poured off next morning; the sediment may be thrown away. Then take and dissolve a pound of the common crystals of soda, in warm water, and pour this solution into the clear liquid, stirring all up well; it then becomes quite milky, when it should be covered up with a cloth to prevent the escape of the gas. In six hours the clear may be poured off, and bottled up tight for use; this is the chloride of soda, and it will be found to be as good as that for which people have to pay half a dollar for a quart. The soda precipitates the lime in the water, which falls as a very fine sediment; the clear liquor must be very carefully poured off, as the sediment is easily disturbed. Half a teacupfull can be put into a wash basin along with the water, for a person to wash himself with; it makes the water fine and soft, and washes beautifully with any kind of soap.

Lapis Lazuli in Calico Printing.

Lapis Lazuli, long celebrated for its beautiful blue, almost ranked among the precious stones, and was sold at a price which put it quite out of the reach of the calico printer. But chemists, ascertaining its composition by analysis, soon learned how to make it by synthesis. Artificial ultramarine is now manufactured at three or four shillings per pound. But when it was made how was it to be fastened on cloth? From its insolubility, its fixation was a real difficulty. Chemists suggested that the ultramarine might be mixed with albumen, which being coagulated by heat, would retain the color on the cloth to which it was applied. Whole barrels of the dried white of eggs are now to be seen at calico print-works. Yet this is an expensive process. Could common cheese not be substituted for the white of eggs? Cheese is soluble in ammonia, and the ultramarine being mixed with the solution, is retained by the cheese, when the ammonia evaporates. A few years ago a Scotch chemist took out a patent in England for fastening this beautiful blue by a substance made from buttermilk, and sold under the name of lactarine.

Dandelion Coffee.

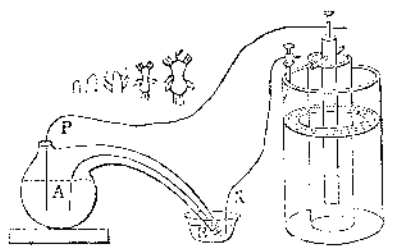
Gather the roots of dandelions in the Fall of the year, wash them well, taking care not to rub off the skin, dry them on boards in the sun, and then they will keep for years. When wanted for use, they are cut up in pieces about the size of coffee beans, and browned exactly like coffee, and they are then ground and used like it. If mixed along with coffee, at the rate of two-thirds coffee to one of dandelion root,—a very good and healthy beverage is thus made.

Another Medal for Colt.

Col. Colt has received a silver medal from the Institution of Civil Engineers, in England, for a paper read before that body, on revolving fire-arms. The paper of Col. Colt was a very able one, it went into the history and improvements on revolving fire-arms in a most thorough manner.

Development of Insect Life.

In our last number, page 295, we published an extract from the letter of Mr. Ogden, the American Consul at Liverpool, which appeared in the National Intelligencer, and made a few remarks expressing a disbelief in the conclusions therein stated. We here present a diagram of the apparatus as described, with the addition of a small battery.



A is a tubulated retort filled with soluble glass; and B is a dish of mercury, in which the neck of the retort is plunged; P is the positive platina wire, attached to the battery and dipping into the soluble glass in the retort; N is the negative wire connected with the battery, and forming a galvanic circuit with the positive wire by the mercury, and the wire in the retort.

It is stated in the letter that some notice is taken of Mr. Crosse's experiments in the "Vestiges of Creation," it also states that Mr. Crosse laughs at the idea of creating life, "he only promoted its development by accidentally bringing together the mysterious causes."

The discovery is not such a novel one after all; but the pretence of not assuming to create, and at the same time asserting that thus and so life was created by Mr. Crosse, is not candid, for the assumption of having created it is clearly put forth. It is stated that after this retort was kept in connection with the battery for some time, a small portion of a gelatinous substance was seen formed on the positive wire at its bottom then the appearance of life was manifested, and through its different stages it came forth in about 150 days, a full developed insect, the "Acarus Crossei," now known as "a distinct species."

The development theory is put forth in the "Vestiges of Creation," and the basis of it is, that all organisms are developments, not special creations: that like the Acarus Crossei, when certain substances in this chance way are brought together under peculiar influences, a new and complete species is produced—which—to use the proper term for the result—must be the work of chance. This theory received its death blow from Hugh Miller in his "Footprints of the Creator," and in that work we find a complete confutation of this very development experiment of Mr. Crosse, now put forth as a fixed fact by the respectable American Consul at Liverpool, F. B. Ogden, Esq.

On pages 256-7, in the "Footprints of the Creator," we find the editor, stone mason, smashing the Acarus Crossei, with his hammer, into a thousand fragments. He says, "to use almost the words of Cuvier, 'we know of no other power in nature capable of re-uniting previously separated molecules,' than the electric or the chemical. To these agents, accordingly, all the asserters of the development hypothesis, have had recourse, for at least the origination of life. Air, water, earth existing as a saline mucus, and an active persistent electricity, are the creative ingredients of Oken. The author of the 'Vestiges' is rather less explicit on the subject; he simply refers to the fact that the 'basis of all vegetable and animal substances consists of nucleated cells, that is, of cells having granules within them,' and states that globules of a resembling character, 'can be produced in albumen by electricity,'—and that though albumen itself has not yet been produced by artificial means—the only step in the process of creation which is wanting, it is yet known to be a chemical composition, the mode of whose production may 'be any day discovered in the laboratory.' Further, he adopts as part of the foundation of his hypothesis, the pseudo-experiment of Mr. Weekes, who holds that out of certain saline preparations acted on by electricity, he can produce certain living animalculæ of the mite family—the vital and organized out of the inorganic and the dead. In all such cases, electricity, or rather, according to Oken, galvanism, is regarded as the vitalizing principle. Organism, says the German, is galvanism residing in a thoroughly homogenous mass. A galvanic pile pounded into atoms must become alive. In this manner, nature brings forth organic bodies. I have even heard it seriously asked, whether electricity be not God! Alas, could such a god, limited in its capacity of action, like those 'gods of the plains,' in which the old Syrian trusted, have wrought, in the character of Creator, with a variety of result so endless, that in no geologic period has repetition taken place? In all that purports to be experiment on the development side of the question, we see nothing else, save repetition. The Acarus Crossei is not a new species, but the repetition of an old one, which has been long known as the Acarus Horridus, a little bristle-covered creature of the mite family, that harbors in damp corners among the debris of out-houses, and the dust and dirt of neglected workshops and laboratories. Nay, even a change in the chemical portion of the experiment, by which he believed the creature to be produced, failed to secure variety. A powerful electric current had been sent in the first instance, through a solution of silicate of potash, and, after a time, the Acarus Horridus crawled out of the fluid. The current was then sent through a solution of nitrate of copper, and after a due space, the Acarus Horridus again creeped out. A solution of ferro cyanate of potash was next subjected to the current, and yet again, and in greater numbers than on the two former occasions, there appeared, as in virtue, it would seem, of its extraordinary appetency, to be the same ever-recurring Acarus Horridus. How, or in what form, the little creature should have been introduced into the several experiments, it is not the part of those who question their legitimacy to explain; it is enough for us to know, that individuals of the family, to which the Acarus belongs, are so remarkable for their powers of life, even in their fully developed state, as to resist, for a time, the application of boiling water, and to live long in alcohol. We know, further, that the germs of the lower animals are greatly more tenacious of vitality than the animals themselves; and that they may exist in their state of embryonism, in the most unthought of and elusive forms, nay—as the recent discoveries regarding alterations of generation have exclusively shown—that the germ which produced the parent may be wholly unlike the germ that produces its offspring, and yet identical with that which produced the parent's parent."

Here then, it is asserted that no new, but a well known insect is produced. If it were true that a new insect was produced in this experiment, by varying it, another new insect would be produced, and if a new insect were not produced the development theory would fall to the ground; this it has done.

Mr. Miller refers to the Amphis when he speaks of "the germ which produced the parent being unlike the germ which produces the offspring." The amphis or plant louse is a peculiar insect; in the fall the female lays her eggs, after which the races for a time become extinct; in the spring the eggs are hatched, the females being wingless, and they produce their kind alive (not by eggs) for generation after generation for twenty generations without males. These things are mysterious, but there is never a new species developed—each race is after its kind.

Prof. Schultz, of Berlin, a few years ago, first boiled vegetable and animal infusions, so as to destroy all germs of organic life and expel all the atmosphere; he then attached an apparatus in such a manner that whatever air entered afterwards must pass through sulphuric acid, or a solution of potash. The result was that no infusoria or vegetable forms appeared during two months, but in the same infusion placed in the open air, and exposed to the same light and heat as that enclosed in the glass vessel, numerous animalculæ and fungi appeared in a day or two.

Other able authorities, such as Prof. Hitchcock, might be quoted, but enough has been said to show the development theory, or rather the experiments of Mr. Crosse to be a great mistake.

Four vessels have sailed from New York since the 9th of June, for Australia, carrying 636 emigrants to the newly discovered gold country.

LITERARY NOTICES.

THE MICROSCOPIST—This is an excellent work by J. H Wythes, M.D., and sold by Lindsay & Blakiston, of Philadelphia. The work teaches the use and philosophy of the Microscope, an instrument which reveals to us a world in a drop of water. A knowledge of the microscope should form a part of every man's education, for there can be no question of its importance. As an instructive amusement, we have derived much pleasure from examinations of insects by this instrument, and we sincerely recommend to the young of both sexes to seek pleasure in such studies.

MEN OF THE TIME: or, Sketches of living notables, Authors, Statesmen, Divines, Engineers, Politicians, Warriors, etc.—This valuable collection of cotemporary biographies forms a book of over five hundred pages, and supplies a vacuity which has long been felt by every person interested in the living great men of the day. We perceive that it is not an easy task to compile such a vast collection and in a reliable form. This may, in a measure, account for the absence of such a publication. The biographies are, so far as we can judge personally, carefully and judiciously prepared—it is impossible, however, that some misconceptions should not arise, but if there be errors they do not appear from among those known to ourselves. The publisher has put forth the book in good style and within the reach of every one. J. S. Redfield, publisher, Clinton Hall, New York.

LITTELL'S LIVING AGE—No. 433 of this best of all foreign re prints, and undoubtedly, as a magazine, the best and most useful literary work published in our country, contains 13 articles on the most important subjects. There is one on the Life and Writings of Dr. Chalmers, which is worth the whole price of the number. It is for sale by Dewitt & Davenport, this city.

"The American Phrenological Journal" and the "Water Cure Journal," are both sterling, able, and interesting monthly publications, conducted by Messrs. Fowlers & Wells, 131 Nassau street, N. Y. Terms $1 per annum each. We recommend them to our readers as excellent periodicals.

"Prairie Scout," a new novel of Western life, abounding in thrilling adventure and stirring events—we have perused it with interesting horror.—Dewitt & Davenport publishers, New York. Price 50 cents.

"Mervyn Clitheroe," by M. Harrison Ainsworth, is just published by H. Long & Brother, 43 Ann st., N. Y. The author is a good story teller, and is well known to a host of novel readers. The work before us is stamped with genius. Price 50 cents.