

Two different kinds of these surface planers are manufactured, with or without the attachment to plane out of wind above the cylinder. Referring to the accompanying engravings, Fig. 1 represents the surfacer, with attachment to plane above as well as below the cylinder. Fig. 2 represents the same planer without the attachment to plane above the cylinder, and only for planing below the cutter head. Three sizes of each of the two machines are made, to plane 24 inches, 20 inches, and 16 inches wide. The difference is only in the width, all working parts being the same. The frame of the machine is strong and heavy, the joints are carefully planed and then bolted together, and the table is cast in a solid piece, resting on two slides and screws, which are operated simultaneously by one hand wheel. An index attached to the table shows at a glance the different thicknesses to be planed, from five inches down to one sixteenth of an inch. There are six feed rollers, made of the best wrought iron, four resting in the solid table. The center feed rollers, of which one is fluted, are close to the cutter head, so that short as well as long material may be planed without clipping the ends. The gear wheels are very strong and are covered with a bonnet to keep them free from dust and shavings. An adjustable roller scraper is attached to the back feed roller to keep it free from gummy matter. The feed rollers are all adjustable, and the front and back pressure feed rollers are kept down by strong spiral brass springs, which can be easily adjusted and furnish an even yielding pressure. The pressure bar is also of a new construction and is held to its place and evenly forced down where the pressure is needed. The cutter head has a cast steel journal, rests in self oiling boxes, and is made with two or three knives, as may be ordered. The bonnet and feed roller apron can be swung to the side so as to enable the operator to sharpen the knives whenever necessary. The feed of the machine can be changed by a patent differential pulley, from fast to slow or vice versa, and started or stopped by means of a feed lever, which is of a new construction and very easily operated. The driving pulley on the cylinder is of five inches diameter and has a five inch face, and should make 4,000 revolutions per minute. The upper tables are adjustable, so that, in planing out of wind, a cut from 1-32 to 1/2 inch can be taken on stuff up to 24 inches in width (the width of the cutting surface of the knives), or, in other words, stuff up to 24 inches in width can be planed out of wind, from 1-32 to 1/2 inch cut at one time, passing over the cutter head.

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THE SEWING MACHINE MONOPOLISTS AGAIN AT WORK.

The sewing machine ring, not content with the enormous sums already extorted from the people, are again attempting to renew their power by lobbying a bill through Congress, which will extend their monopoly for seven years longer.

The A. B. Wilson feed patent was granted for one of the first abortive attempts to make a practical sewing machine;

but so imperfect and crude was the model, filed with the application, that we doubt if any machine constructed like it was ever used, or was capable of being used practically. Yet as it happens that this is the first case in the Patent Office that shows an approximation to the modern feed motion, the patent has been construed by the courts to cover all styles of feeding devices in which the cloth can be turned around the needle, or in which the cloth is fed between two clamping surfaces. In view of these decisions of the courts, although the patent was granted for an impracticable machine, the Commissioner of Patents extended it for seven years; and Wilson, with an eye to the present application for an extension, immediately sold, for the comparatively insignificant sum of \$50,000, all his rights to Messrs. Wheeler & Potter, as trustees for the Wheeler & Wilson, Grover & Baker, and Singer companies, and it has ever since been held and used in common by those companies as their most effectual instrument in monopolizing the sewing machine business, and in extorting millions yearly from the poorest and worst paid people in the land. On the strength of the small amount of money for which Wilson sold his patent, the combination now wants to have the privilege of plundering the people for seven years longer. In considering this sale of \$50,000, it should be remembered that this valuable patent was not owned by a poor man who was obliged to sell his rights for a mess of pottage; the wealthy Wheeler & Wilson Manufacturing Company were doing business amounting to millions of dollars yearly, of which three fourths were clear profit; the patent was sold to the presidents of the Wheeler & Wilson and Grover & Baker companies as trustees for a combination of three corporations, of which the Wilson company was one of the most interested; that any capitalist conversant with the sewing machine business would gladly have purchased it by paying a double eagle for every dollar that Wilson is stated to have received; and that whoever owned this patent had the whole sewing machine business in his control, and could dictate his own terms as to royalty. In view of this, it is plain that the object of this sale was simply to form a foundation on which to apply to Congress for another extension to enable the owners of the patent to continue their extortions, and compel the poor seamstresses and other purchasers of sewing machines to contribute for another long period to the groaning coffers of these grasping corporations.

A few figures will show something near the amount that has been wrung from the people by these cormorants. The Singer machine is probably the most expensive one made by any of these companies, and that, as we learn by a sworn statement of I. M. Singer, costs, on an average, \$11.83 to build. Those made by the other companies referred to cost much less; but we have been unable to find any reliable or sworn statement of the expense of building these machines, and we will therefore, for the sake of argument, estimate them at the same price. The plainest and cheapest of these machines are priced at \$55 dollars each. If from this we deduct \$25 as a fair selling price (which would be considered an enormous profit, in any other business, on a first cost of \$11.83), we find that these companies have extorted from the people \$30 on each machine they have sold, over and above the very liberal profit we have estimated above. These three companies alone, according to their sworn statements, sold, in 1872, 445,776 machines; and if one fourth of these were exported, the balance sold in the United States will amount to 334,332. Now multiply this by the \$30 above the fair profit, and the product gives the enormous amount of \$10,029,960. If, in addition to this, we deduct one fourth, for export, from the number of machines sold by the favored licensees of these companies, we have a balance of 289,788; and if we multiply this by the \$30 as before, we have a product of \$8,693,640, which, added to the above, will give us a grand total of \$18,723,600 as the amount extorted, mainly from the poorest and neediest of the people of the United States, in one year alone, by the operations of this ring, who, not content with this wholesale robbery so far, want the privilege of continuing it seven years longer; which will enable them, without allowing for any increase of business, to bag the modest sum of \$131,065,200, over and above an enormous legitimate profit.

That the extension asked for will be for the benefit of this ring of capitalists, and not solely for the poor (?) inventor and ostensible applicant, is clearly shown by an inspection of the before mentioned assignment, in which it is stated that "I have assigned, sold, and set over, and do hereby assign, sell, and set over unto said Wheeler & Potter * * * all my right, title, and interest in and to the same * * * with all renewals, reissues, and extensions thereof."

From this it is very plain that the only object of this application is to renew the power of this formidable ring; and if the people generally do not stir themselves, this mighty incubus will be fastened on them for seven years longer, as the best of legal talent and the most influential members of the "third house" have been retained to work the case through. The sum of \$50,000 has, we are credibly informed, been raised as a first instalment and sent to Washington to be "placed where it will do the most good;" and if the people do not let their representatives know their will on this point, it is possible that the weighty reasons of which the ring is so lavish will have their usual influence, and the people be obliged to endure another seven years' servitude to these wealthy extortioners; but if due efforts are made, the ring will undoubtedly suffer an ignominious defeat; and in the course of a year or two, as soon as manufactories now organizing are ready with their machines, the price of these necessary implements will be reduced to reasonable proportions, as machines can be built which may be sold at a good profit at from \$15 to \$20 each.

THE DEPRESSION IN THE IRON TRADE.

"The iron trade," says Mr. Samuel J. Reeves, President of the Iron and Steel Association, and also of the Phoenix Iron Works, the largest establishment in the country producing manufactured iron, "has not been so bad for fifteen years; and there is little prospect of improvement before the fall." Manufactured iron, according to the same authority, is a drug; the demand is less than that of three months since, and the delay of Congress to settle the vexed question of the currency, the late panic, and the strikes, past and impending, have, it appears, all contributed to produce a condition of affairs, in one of the most important branches of the national industry, which indicate widespread and alarming distress.

A brief review of the course of business during the past twelve months shows that, up to the summer of last year trade was quite brisk and iron in demand at moderate rates. The year bid fair to be a prosperous one until the opening of autumn, when a falling off took place, followed by the financial crash which blocked business. Still trade dragged on until February of the present year, when, in the opinion of some, a very slight improvement took place, and has continued; others however, maintaining that such is not the case, and for a reason point to the fact that the demand for manufactured iron is far below the average. A correspondent of the *Tribune* says that new railroad improvements are at a comparative standstill; railroads in operation are doing only a limited carrying traffic; the coal market is dull and flat, and operations in improvements are not by any means as extended as they have been. The product of rails at Pittsburgh is said to be not more than one fourth the quantity of the same period of last year—630 furnaces are out of blast in the State—and the antagonism existing between the Iron Manufacturers' Union, composed of capitalists on one hand, and the United Sons of Vulcan, of puddlers and boilers on the other, appears to be increasing, rendering labor troubles imminent, which must tend still further to complicate the unfortunate state of the trade.

In Pittsburgh, the iron workers are becoming restive under the reduction of 20 per cent in wages since the panic, and a strike is impending, the result of which cannot but be ruinous to the interests of both sides. The leading houses are not running at their full capacity, and declare that is impossible for them to raise the rate of wages because their margins are scarcely two thirds of what they were last year. To those who are working at a loss, strikes are a matter of indifference; but to such operators as are striving to lift themselves from the effects of the panic, the closing of the works will bring renewed distress.

In the eastern section of Pennsylvania, the points of dispute between employers and employed are the sliding scale of wages and arbitration. The workmen, the vast majority of whom belong to the union, demand that their wages be so adjusted that when prices of iron advance they shall participate in the manufacturers' gains, and conversely share in the losses in times of depression. The employers are opposed to these conditions and assert their right and privilege to pay the men such wages as they choose. Arbitration is a conference between a committee for the Central Union and the manufacturers, which aims to settle difficulties which may arise before a strike is resorted to. Eastern operatives, it is said, dislike the unions and the established scale. West of the Alleghenies, both are quite widely recognized. Thus affairs now stand, and it is to be hoped that an amicable settlement may in the end be reached, though at the present time none seems clearly apparent.

The reports in the English journals show that the British iron trade is suffering severely from foreign competition, and that it is probable that the advantage of the increased imports to us, necessitated by the difficulties in our domestic productions, will be secured by continental manufacturers to a much greater extent than by those of England. The *Iron-monger* affirms that iron making in Great Britain is not only profitless but attended with loss. A ton of rails made in South Wales and delivered actually costs \$70.25, while at the present time they are sold at from \$45 to \$47.50 per ton. The slackness of orders necessitates taking them at almost any price to keep the works going.

It is also stated that never before has Belgian competition proved so severe. Bar iron from that country is offered in England at \$52.50 per ton, which English masters could not furnish at less than \$62.50. *Iron*, while admitting the state of affairs to be bad, predicted some time since renewed activity, owing to the falling prices of fuel; but in the latest issues received, the trade summary of that journal says that business is in a state of suspense, and will probably remain so until the prices of fuel and the wages question are again settled.

GLACIAL REMAINS IN CENTRAL AMERICA.

Until quite recently it has been thought that glacial action on any extensive scale was altogether a northern phenomenon its southern limit on this continent appearing to be about the latitude of Washington and St. Louis, and in the Old World a line of corresponding temperature, that of Paris and Vienna. Lately evidence has been accumulating to prove the prevalence of glacial cold at the same time, not only in the southern hemisphere but practically over the greater part of the globe. Professor Hartt has discovered glacial drift all the way from Patagonia, its supposed northern limit, to within ten degrees of the equator; while Professor Agassiz claimed to have found glacial moraines under the very line. The development of glaciers north of the equator was no doubt equally general, since their remains are found to be abundant where they might have been least expected, in the most central part of Central America. At Libertad, the

center of the mining region of Chontales, on the northeastern shore of Lake Nicaragua, the author of "The Naturalist in Nicaragua" observed transported boulders that gave unmistakable proofs of ice action, while in the adjoining district of Matagalpa the evidences were overwhelming. All along the eastern flank of the sierra are ranges of boulder clay, some of them exceeding a thousand or twelve hundred feet in height, made up entirely of a brown clay mixed with angular and partly rounded blocks of stone derived from the higher mountains to the west. These ridges were particularly observed by Mr. Bell between San Rafael and Yales and northward to Ocotal, the capital of Segovia. A section of strata between Ocotal and Depilto, a small silver mining town nine miles nearer the boundary of Honduras, shows very clearly the depth and importance of the glacial deposits. At Depilto the rock appears to be Laurentian, great, bare, rounded masses of hard quartzite protruding through the scanty soil, while the river bed is filled with enormous boulders of granite-like gneiss. Descending the valley the massive beds of quartz and gneiss are soon succeeded by overlying, highly inclined and contorted schists, with veins of quartz running between the laminae. About a mile below Depilto unstratified beds of gravel, enclosing boulders of quartz and schist, begin to be exposed in natural sections, which deepen as the river is descended, until at Ocotal they are from two to three hundred feet in depth. The undulating plain on which the town is built is composed of the same material. Near the town the formation is almost level, excepting where it is worn into deep gulches by the water courses. Across the river the same gravel beds extend two or three miles to where a deeper deposit of gravel, with boulders of trap and conglomerate, overlies the schists.

The evidence of glacial action along this valley seemed to Mr. Bell—with a single exception—as full and clear as could be found in any Welsh or Highland valley. There were the same rounded and smooth masses of rock, the same moraine like accumulations of unstratified sand and gravel, the same transported boulders that could be traced to their parent rock several miles distant. The exception was doubtless one of observation rather than of fact. His visit was a hurried one; and as he did not see any rock near Depilto that had been recently bared, his failure to see any glacial scratches is not surprising.

That the gravel and boulder clay formations were not due to floating icebergs is argued on zoological grounds. It is well known that the faunas of the two oceans have been distinct, certainly since the miocene period. Had icebergs floated in the neighborhood of Ocotal (now three hundred feet above the sea) during the glacial period, the low pass between the Atlantic and Pacific, through the valley of the San Juan and the lake of Nicaragua, must have been submerged something like twenty-eight hundred feet. That the faunas of the two coasts could have been kept separate under such circumstances it is impossible to believe.

DEAD SUBJECTS AND A LIVE DISCUSSION.

If the talk about cremation ever amounts to anything more than talk—and the present indications are that it must—it will afford a memorable illustration of the power of the press, if nothing more.

A gentleman not very widely known, and to most of those who have heard of him somewhat unfavorably remembered as the suggester of the "prayer test," publishes in a magazine of limited circulation a few more or less substantial reasons for radically changing a custom, more deeply rooted, perhaps, than any other in the prejudices, inherited sentiments, religious observances, and other conservative elements of Christian civilizations. The proposition is taken up and discussed in rapidly widening circles, and in half a year is a familiar topic wherever newspapers are read. Still more surprising: the reform is, in the main, not unfavorably considered, societies are organized for carrying it out; and in some cases, city corporations have made provisions for the exercise of the new rite by any so disposed.

As might have been expected in the general discussion by all sorts of people of a subject appealing to sentiment rather than reason, there has been a vast amount of nonsense uttered on both sides. Indeed, with the coolest headed, it is almost impossible to consider the subject dispassionately the moment we cease to think of the dead abstractly, or as belonging to some one else, and take ourselves and our own dead into account.

Burning has so long been associated with violence and accident, and burial with the undisturbable repose which we have learned to look forward to under grass and flowers, that few can compare them calmly. And though we may personally think with Laurens that our bodies are too good for the worms, and prefer that the elements of our cast-off frames may be quickly and surely dispersed by the purifying agency of fire, rather than slowly, uncertainly, and loathsomely by natural corruption, yet the most logical among us might shrink from the sight of a wife or child, parent or dear friend, thrust into the furnace seven times heated, and beg for the accustomed ministrations of earth and air in the quiet burial ground.

Unreasoning prejudice, it is true; but it is a power in the world none the less, and, like inertia in mechanics, it is an essential factor in all social calculations. A generation must grow up familiar with the thought from childhood before the practice of burning the dead can have a more than sporadic development among us.

The greatest difficulty, or rather danger, to the proposed reform is the wild and offensive extravagance of some of its advocates. The cessation of breath does not immediately convert the forms of our loved and lost into "loath-

some carcasses," "carrion," or anything of that nature; and to demand their treatment as such is not likely to make converts to the new rite—hideous wrong, the sensitive may rather say—except to the limited extent of applying it to its proposers.

It is true that a lifeless body may be represented chemically by a few symbolic letters and signs, which also stand for plant foods and manures. It is true that the sequestration of the bodies of our dead withdraws annually some hundredweights of fertilizers from our fields. But there are other and higher values than those quoted in the guano markets—higher to us, if not to the rabid utilitarian. Besides, it is slightly absurd, to say the least, for him to declaim so earnestly against our burying, once for all, a hundred pounds or so of loved remains, when he deposits yearly in the sewers a vastly greater weight of more available fertilizing material, and thinks nothing of it.

We are not opposed to cremation. Indeed there is one aspect of the case in which it is all but imperative; only let it be done decently, and with due regard to sense and sensibility. From a sanitary point of view, our present mode of disposing of our dead is anything but commendable. The ordinary graveyard is demonstrably dangerous to the living, and a source of possible poison to generations that are to come. Especially where the burying is rapid or unwisely done, as is too commonly the case, the air is tainted, and the underground water courses are polluted: a double evil made increasingly noxious by the tendency of modern society to congregate in cities, and consequently to accumulate great numbers of dead bodies within limited areas near centers of population.

As for the alleged cheapness of cremation, that is a matter altogether doubtful and of small moment. It is true that a couple of dollars' worth of coal, properly burnt, will speedily convert a corpse of average weight into a few pounds of clean ashes and an indefinite amount of invisible and inoffensive elementary gases; but funerals will be a burden none the less. Fashion will invade the pyre and the urn as surely as it has the cemetery and the grave; and it can be as lavish in expenditure in the one case as in the other. To expect that funeral rites will be done away with, and the possibilities of ostentatious grief prevented, by burning the dead, is to overlook some of the strongest impulses of human nature. It is more likely that burning would simply add another item to the expense of funerals, since a few eccentrics only would have their ashes scattered to the winds, while the multitude would retain their decorated burial plots, and have their ashes interred as formally as now. Indeed, if made harmless by fire, we are disposed to think the cemetery, with its shady walks and well kept shrubbery and flowers would and should be retained. It is well to leave some spots sacred to bereavement and tender recollections of the dead.

OLEOMARGARIN.

We recently published an illustrated description of the mode of manufacture of the oleomargarin; and so far as our investigation of the process by which it is made extends, so long as pure caul fat is employed, the resulting product presents no qualities either in taste or smell at all offensive or even disagreeable. It is unquestionably, when thus made, superior to the detestably bad low grades of revamped butter which are sold to the poor from corner groceries in this city, and to a large extent shipped South; but if, as is asserted, it be produced from soap fat and butchers' waste, then a more revolting mass could hardly be placed upon our tables, and the resolution of the Exchange, condemning its sale, has not come too quickly.

It has also been alleged that it has been sold for genuine butter, and that it has been employed as an adulterant for the same; hence the Exchange "emphatically condemns any process of adulteration or mixture and the fraudulent attempt to sell such product for pure butter."

SCIENTIFIC AND PRACTICAL INFORMATION.

THE BAMBOO A DANGEROUS POISON.

The *Strait Times*, a Javanese journal, publishes some novel information on the poisonous properties of the bamboo, which heretofore has been considered one of the most inoffensive of vegetables. The natives of Java use the poison against their enemies, and obtain it by cutting the bamboo at a joint, and detaching from the saucer-shaped cavity, formed by the cane at such portions, some small black filaments, which are covered with almost imperceptible needles. The filaments constitute the venom, against which no remedy has been found to act. When swallowed, instead of passing to the stomach, they appear to catch in the throat and work their way to the respiratory organs, where they immediately produce a violent cough, followed by inflammation of the lungs. The poison, tried upon dogs, produces loss of appetite, severe cough, burning thirst, and gradual emaciation. The animal froths at the mouth, and finally dies by suffocation as if under the influence of a deleterious gas.

FLOATING PARTICLES IN THE AIR.

When a ray of sunlight crosses a shaded room, an immense number of fine particles will be noted, apparently in suspension therein. M. Tissandier has recently made some investigations into the quantity of this dust contained in 353 cubic feet of air, by causing that quantity of air to pass through a tube packed with gun cotton, which filtered out the particles. He afterwards dissolved the gun cotton in ether, and thus was enabled to obtain the particles in a separated condition. After a heavy rain, M. Tissandier has collected 09 grains of dust in the above mentioned quantity of air, but during dry weather this proportion rose to 3 of a grain.

With regard to the nature of the material, he found that about one third was organic, another third silicious, and the rest composed of various substances and sulphate and oxide of iron.

AN ALCOHOL AND VINEGAR POLYPUS.

The Jardin d'Acclimatation of Paris was recently presented with a medusan polypus, which, on its reception, was placed in a tank of water with similar organisms. To the surprise of the curators of the aquaria, it was found that after the lapse of twenty-four hours the creature had killed every other occupant of the vessel, and remained alone in the midst of a quite large empty space. After some speculation over the apparent mystery, the analysis of the water was made, proving that the liquid was water no longer, but vinegar. The polypus, it appeared, was one of a very rare species of mollusk, which when placed in pure water, has the property of changing the same into a strongly characterized acetic solution. The animal, it is said, produces alcohol, which it transforms into vinegar.

EGYPTIAN BLUE.

A remarkable and very beautiful shade of blue is noticeable upon many of the ancient ornaments found in the tombs of Egypt. Analysis sometime since proved the color to be formed by a combination of soda, sand, and lime, with certain proportions of copper, from which substances the Egyptians managed to produce three different products: first, a peculiar kind of red, green, and blue glass; second, a brilliant enamel, and lastly the color to which reference is above made, and which was used for painting. By synthetical experiments, M. Peligot has succeeded in reproducing this peculiar shade of blue, by heating together 73 parts of silica with 16 of oxide of copper, 8 of lime, and 3 of soda. The temperature should not exceed 800° Fah., as, in such case, a valueless black product is the result.

THE AKKAS.

The Italian Geographical Society has recently received news of the death of the African explorer Miani, and also a number of interesting objects forwarded to them by that traveler just previous to his decease. Among the curiosities were two African dwarfs belonging to the tribe of Akkas. These individuals, aged respectively 18 and 19 years, are but 28 and 34 inches in height, and belong to a peculiar race of people, the existence of which, first affirmed by Herodotus, has of late years been rediscovered by Du Chaillu and Schweinfurth. These strange beings are of a light copper color and noticeable for their extreme ventral prominence and very thin members. The lips are very long, the chin sharply recedes, and the hair, though tightly kinked, is very long and abundant. Their agility is said to be remarkable in view of their peculiar build.

ADULTERATION OF CHOCOLATE.

Chocolate is one of those articles of food which are rarely sold in an unadulterated condition. These adulterations are so considerable that frequently the spurious chocolate is a mere imitation, containing every ingredient except the principal one, the pure cocoa. Particularly is this the case with the imported material from France, a fact very evident considering that the poorest chocolate is sold in that country at wholesale for some three cents a pound, when the cocoa alone sells for 21 cents. The imitation chocolate is a mixture of cocoa shells finely pulverized, burnt flour, beef marrow, and a little spice, and such is the composition of much of the stuff for which medals have been awarded at fairs and expositions.

The purity of the chocolate can, however, be determined by very simple means. One part of the material to be tested is warmed with ten parts of water. The solution is allowed to cool; and on being thrown on a blotting paper filter, leaves a reddish brown deposit. The liquid should pass through promptly and be of a clear red, having an agreeable cocoa taste. The material on the filter should also on being dried yield a light powder of very little coherence. If, however, the chocolate is adulterated, the liquid passes through the filter slowly, and is of yellowish color, having a sweet taste. A viscous mass remains on the paper, which dries slowly into a solid form. The more viscid the residuum, the more burnt flour the chocolate contains. Glucose is frequently substituted in the spurious material for cane sugar.

A Fortunate Inventor.

Our readers will remember that not long since we devoted our first page to a description and illustration of Mr. E. F. Loiseau's machinery for the manufacture of artificial fuel from coal dust, and have since frequently alluded to the inventor's progress in introducing the invention. We have recently learned with much pleasure that Mr. Loiseau has disposed of the right to manufacture the fuel in Great Britain, under his English patents, for the sum of \$60,000 gold and a royalty of twenty-five cents per tun when coal sells at from 15 to 25 shillings per tun in London, the royalty varying with the price above or below these figures. The purchasers agree to manufacture a minimum amount of 100,000 tuns the first year (!), and after that to keep the market supplied, on failure of which the inventor can manufacture for himself. This at the beginning, supposing coal to sell at the above figures, would give the inventor the neat income of \$25,000 for the English market alone. Mr. Loiseau is organizing a company for the manufacture of the fuel in this country.

TO GIVE IRON A TEMPER FOR CUTTING PORPHYRY:—Make your iron red hot, and plunge it into water distilled from nettles, acanthus, and pilosella, or else in the juice pounded out from these plants.