

the works at once ordered enough milk every morning and evening for all of the workmen, and from that time all symptoms of lead poisoning disappeared. The suggestion is worthy of attention on the part of all persons who are exposed to the poisonous action of lead, to make free use of milk. It is at once an agreeable and easily attainable remedy.

#### USE OF ELECTRICITY IN CAUTERIZATION.

The old method of cauterization by fire is to be replaced by the electro-thermic or galvano-caustic apparatus. The latter process is safer and more certain in its operation. It is possible at will to vary the degree of heat, to raise it instantly to the highest intensity, to diminish or suppress it, to render it intermittent or continued, to direct it into deep cavities, and to destroy all the tissues by contact. It is said that the wounds produced by electricity are less liable to contagion and miasmatic infections than those caused by sharp instruments.

The apparatus can be made of any desired shape so as to be applicable to all parts of the body, and it is known that important cures have been effected by the introduction of platinum wires and the cauterization by the battery of parts of the body inaccessible in any other way. Electricity has already been tried in cases of bad tumors, in amputations, in excisions of cancers, in destruction of wens, for opening cysts, for removing internal tumors, upon wounds by fire, and in numerous other cases. And a recent article in *Cosmos* claims for it the following advantages: The electro-thermic cautery suppresses all pain after the operation; avoids loss of blood; prevents the retention and alteration of the liquids; avoids all putrid and purulent infections; facilitates the organic reconstruction and healing of the parts; affords a method universally applicable, strong or weak, continuous or intermittent; capable of sloughing the tissues, of carbonizing them, of destroying them, of converting them into gas, and must be regarded as one of the most important contributions to modern surgery."

#### PRESERVED BREAD.

This bread is proposed as a substitute for the biscuit and "hard tack" used at sea. It is easily prepared though the process is somewhat tedious. The bread is baked in the usual way, it is then subjected to desiccation for eight to fourteen days, until it is thoroughly dry; it is then exposed for a short time to the action of steam, and afterwards squeezed into tablets under a hydraulic press for twenty-four hours. The tablets can be preserved for years in hermetically-sealed packages.

Bread thus prepared retains a vitreous fracture, can be easily masticated by the teeth, is admirable for bouillon and soup, and experience has shown that 200 pounds of good flour will afford 188 pounds of compressed tablets. An army provided with this bread and Liebig's extract of meat would be prepared for any emergency that might arise. A soldier could easily carry several days' rations in his knapsack.

#### DISINFECTING SOLUTION.

According to *Cosmos* the medical authorities of Paris ordain phenic (carbolic) acid for the disinfecting of the bodies of patients who have died of small-pox. For this purpose they take 12 grammes of crystallized phenic acid to one liter of water. Hitherto chloride of calcium has been employed, but never with satisfactory results, whereas phenic acid has been found to be entirely effective, and its application is unattended with inconveniences of any sort.

#### CURE OF CONSTIPATION BY ELECTRICITY.

Dr. A. Cabe, of Lyons, France, had in his practice a very obstinate case of constipation in a female subject 80 years of age, who for sixty years had suffered in consequence of a severe attack of dysentery encountered in her youth. The patient having had no passage for forty days, the doctor tried to induce a contraction of the intestines by the application of electricity. He inserted the negative pole of a Gaiffe battery into the rectum, and applied the positive to the navel, and in the course of two minutes the results were completely satisfactory.

#### SOLUBILITY OF CLAY IN WATER.

M. Schloessing has shown that clay is soluble in distilled water. There appears to be a colloidal solution that will remain for months, but if a drop of chloride of lime be introduced the liquid becomes instantly clear. The water of the Mississippi always contains more or less alumina in suspension, which can be removed by adding a few drops of a solution of chloride of calcium, or of sulphate of lime. In this manner the Egyptians clarify the water of the Nile, which is always turbid.

#### A SPONTANEOUS COMBUSTIBLE GAS.

The bi-bromide of ethylene, when mixed with oxygen gas, takes fire spontaneously in the sunlight. The bromine appears to combine with the hydrogen in a manner analogous to the union of chlorine with hydrogen in the sunlight.

#### HOW OUR WHEAT CROPS ARE HANDLED.

The facts given in the following account of the mode of handling our grain crops at the west, from a Milwaukee correspondent of the *New York Tribune*, will convey to many of our readers at home, as well as abroad, some conception of the immensity of the grain business in this country:

The city of Milwaukee, with its 100,000 inhabitants, and Chicago,  $3\frac{1}{2}$  times larger, are what they are because they handle such vast amounts of the raw material of food. On an average, as Mr. Fisk remarked in his wonderful story of the gold panic, it takes one bushel of grain to bring the other to its market. When a farmer raises 200 bushels, the value of 100 is divided among railroads, elevators, schooners, and

operators, who are thus paid for delivering the other 100 to the consumers. In this view the facilities for handling grain become as important as the art by which it is produced. In the descriptions that follow, the accounts of marvelous quantities and vast warehousing apparatus, the farmer will see how stupendous is the system to which he contributes, and warm-hearted Americans may see somewhat in all this to remind them of the marvelous resources and material grandeur of this nation.

As a general mart for the sale of all grains Chicago is quite in advance of this city and of all our cities; but for wheat as the special crop of the West, the grand cereal, Milwaukee is the place for learning how it is treated after it leaves the bins of the farmers. The reason why this place thus bears off the palm and gives law in the wheat market is simply because she has had several far-seeing and enterprising citizens who were duly impressed with the importance of drawing the crops for the great grain region north and west of here to this point for shipment to Eastern cities. The railroads built, Milwaukee has laid her hands on a lion's share of the wheat crops of the Northwest by certain business virtues and by prompt and liberal expenditures at the right time and place. In this respect her example is a pattern, and is profitable for young business places and young business men to study. For it is by no means a matter of course that Milwaukee should receive and ship twenty odd million bushels of wheat. This is not the only outlet. In fact, Chicago is reaching out for this same 20,000,000 bushels, and she would have drawn it had not Milwaukee made it for the interest of all shippers of spring wheat to send their trains here rather than to her vigorous, vigilant, daring, and imperial rival.

#### WHAT IS AN ELEVATOR?

An elevator, in these grain cities, means an enormous building usually more than 200 feet long and over 100 high, with an equipment of powerful belts and buckets for raising grain, and rows of gigantic bins for storing it. I have just returned from a visit to Elevator A, that stands at the termination of the La Crosse division of the Milwaukee and St. Paul Railroad. This structure is 280 feet long and 80 wide. The total length of the great driving belt, urged by a 200-horse power engine, is 280 feet, that is, the half extending from cellar to comb is 140 feet, and the down half is of course equal to it. This belt is thirty-six inches wide and three-quarters of an inch thick, and is made of six-ply or thicknesses of canvas, with sheets of india-rubber passed between and into them. But such immense strength will not seem excessive when we see the Titan work it has to do. It drives nine receiving elevators or belts set with buckets; each of these is as long as the main belt; that is to say, they lift the grain 140 feet. The buckets are made of thick tin bound with hoop iron, and are well riveted to the belt at intervals of fourteen inches. In shape they are like the buckets in a common grist mill, but very much larger, for these are six inches across the mouth and eighteen inches long. When full one contains a peck. They do not usually go up quite full, but, allowing for this, there are 100 pecks, twenty-five bushels, loaded on one side of one of these belts whenever it is at work. If all nine are running at once, as is often the case, the quantity of wheat lifted on these swift-running belts is 225 bushels. The established weight of a bushel of No. 2 Milwaukee Spring is fifty-five pounds. This would make the total lift of the receiving elevators, every moment they are at work, over 12,000 lbs. Discharging upon each of these nine is a hopper-shaped bin beneath the railroad track. A car load of wheat is rolled over the bin, the doors lifted, and six stout men step in with big, bright, grain shovels. Each knows his place, and they work like so many engines, with a stroke steady and true and effective. In four minutes from the time these six step into the car there is nothing left but a quart or two of sweepings on the floor. A car carries from 250 to 300 bushels, and the swift-running belt that rushes by them in its tireless industry has carried the 300 bushels 140 feet in the air, as fast as those six stout Teutons could shovel it out. I was pleased to note a manly and candid expression on the faces of all who were at work in wheat. They did not look like men who spent their earnings on bad whiskey or smoked them away over lager and pretzels, coming home late to pound a hard-working woman and curse their children.

When carried aloft the receiver throws the grain into a hopper-bottomed bin fixed on scales, and the weight is accurately given. Before the wheat is rolled into the warehouse it is carefully inspected and graded. Nineteen out of every twenty bushels coming here is spring wheat, and thirty-eight per cent of all that arrives this year is graded No. 2. The inspector gives his memorandum to the weigher, and he turns the spout over the bin containing No. 1, No. 2, or No. 3, as directed by the marks on the inspector's book. Very much depends on the care and honesty of this inspector, and the laws of the Milwaukee Chamber of Commerce require that he be sworn, that he give heavy bond, and be himself in no sense a buyer or a seller of wheat. Here let me remark wheat is often graded No. 2, not so much because it lacks plumpness and weight as because you let oats get in with it. And this neglect is rather on the increase. Farmers do not appear to be as particular as they were about their seed wheat. For instance, Mr. Langston, the secretary of the Board, showed me his tables, and from them it appears that in 1865 seventy-seven per cent of the wheat was No. 1. The next year we had that bad fall when it rained all August, and everybody's grain sprouted. There was but ten per cent of No. 1 in 1866. In 1867 it was sixty per cent. In 1868 and 1869 the harvest has been nothing to complain of, but Milwaukee saw but thirty-eight per cent of No. 1 wheat.

The bins in which this wheat is poured are of great size,

being 60 feet deep, 20 wide, and 10 across, containing 12,000 cubic feet. The total receiving and storing capacity of this establishment is 1,500,000 bushels. Of the crop of 1869 it has received 7,000,000 bushels. About 10,000 bushels are taken into a train of the average length. So 2,100 trains have rolled into this elevator and discharged.

#### HOW WHEAT IS SHIPPED.

Milwaukee has an admirable harbor. Two rivers run into the lake, and at the junction is a wide spread of marsh grown up with bulrushes and green with aquatic rankness. But the mud is soft, and canals are easily cut, so that a hundred of these warehouses could be so stationed that while cars rolled up on one side, ships drawing ten feet of water might anchor on the other. As soon as a grain ship is anchored beside an elevator the hatches are removed, and great spouts extend over them from the bottom of one of the enormous bins I have described. The gate is raised and a torrent of wheat pours down. The loading power of these spouts is 12,000 bushels an hour. The *Orient*, for Oswego, was loaded the other day in an hour and a half, and her capacity is 18,000 bushels. The Oswego and Ogdensburg schooners and vessels destined for the Welland Canal usually take on from 12,000 to 20,000 bushels. The Buffalo vessels are larger, often receiving 30,000 and in a few cases 45,000 bushels.

It must not be supposed that one of these bins of wheat stands week after week without further care. It is the business of a good warehouseman to watch his wheat, and see that none of it is heating. If he thinks it needs air he can, by lifting a gate, throw it all in a cascade on the floor, and lift it back with the elevator.

Milwaukee has seven such elevators as I have described, but this is the largest. They vary in receiving capacity from 500,000 to 1,500,000 bushels. During the year past more than 14,000,000 bushels have been shipped to the lake cities. Of this Buffalo takes one half, Oswego the rise of 3,000,000 bushels, Kingston 1,500,000 bushels, and the rest goes in dribbles to Erie, Cleveland, Toledo, and Dunkirk.

#### ACTIVITY IN WHEAT.

Napoleon's war, though it brings quaking and ashes to those Rhenish provinces which he proposes to conquer, adds millions and millions to the pockets of Northwestern farmers. The large dealers say they expected nothing but a decline; one large buyer, the largest in the Northwest, says he expected to see No. 2 Milwaukee Spring at ninety cents, and falling by this time. But by a curious coincidence wheat sells to-day at just the figure it held on the 18th July, 1869—that is, \$1.30.

I see large crowds in the Chicago Board of Trade, a confused blending of shouts, men reeking with perspiration making swift entries in little books, and bantering each other and betting in words and figures which I do not wholly understand; and the telegraph wires are loaded with messages about wheat, ordering, countermanding, and again confirming the first order. The language in which the business is conducted is very much condensed, but it is easy to see that the fever in Europe brings tossing and tumult to us, but on the whole it benefits the farmer greatly. Milwaukee No. 2 often commands five and sometimes ten cents more than Chicago No. 2. That is, a farmer or a country merchant has a lot, and sends half to one city and half to the other; that which goes to Milwaukee will sell the best. Why? First, because the more northern wheat is generally better and plumper than that which grows in a hotter sun. Secondly, because the men who handle and inspect wheat in Milwaukee are more careful and honest, and those who have charge of the elevator do not let it heat. Thirdly, these circumstances have given Milwaukee wheat a good position in market, and everywhere "a good name is better than rubies."

#### Boiler Incrustation.

Incrustation is injurious in three distinct ways: It increases the consumption of fuel, injures the boiler, and may even compromise its safety. Incrustation less than one eighth of an inch thick allows the passage of only one quarter of the heat it would if the plate were clean.

One way in which incrustation injures the boiler is by its requiring the fires to be forced, thereby furthering the oxidation, diminishing the strength, and tending to tear away the plates of the boiler. The very cleaning of the boiler tends to injure the plates and structure. At the same time, there is no doubt that a thin incrustation protects the surfaces of the plates against corrosion, and that it often closes up the joints and prevents escapes.

To prevent evil effects from incrustation, the water can be purified before being fed in, or different apparatus, applied inside the boiler, can be used for the purpose. Before feeding it in, water can thus be purified by chemical reactions: by heating it; or it can be distilled by using the condensed steam as feed-water. In the case of the presence in the water of carbonate of lime, held slightly in solution in the form of bicarbonate, the state of solution being aided by the presence of a slight excess of carbonic acid, by saturating, by means of a sufficient quantity of lime, the excess of carbonic acid, the greater portion of the neutral carbonate will be deposited on account of the very slight solubility of that salt.

The processes employed within the boiler consist in blowing out; mixing the water with substances modifying the incrustations either chemically or mechanically; employing the circulation of the water for extracting the matters in suspension, and applying electricity against the incrustations. Marine boilers are continually blown out. In France very good results in preventing solidification have been obtained by the use of logwood shavings. The steam, though the boiler does not prime, is of a violet color; no doubt from its taking up a little water.

### New Method of Producing Ice.

Franz Windhouser, of the Duchy of Brunswick, in Northern Germany, has, it is said, invented a new ice machine. The cooling process takes place in a cylinder, where the air is first powerfully condensed, then cooled by the admission of water, and finally expanded till its pressure is about equal to that of the atmosphere. This simple process, we are told, leads to astounding results, for it lowers the temperature of the air, so that after the latter has been conducted, in moderate quantities, into a space through which water flows, this water is almost immediately turned into ice, of which enormous blocks may be thus obtained if desired. The inventor is very sanguine about the utility of the machine for cooling large apartments, theaters, hospitals, and other localities where the want of pure, cool air is often much felt. No chemicals whatever are required, either for the freezing or cooling process. Of course this is all correct in theory, but practically we doubt that air can be thus used as a cooling agent with economy.

### The Ocean Race.

The race between the *Dainless* and the *Cambria* has terminated in the defeat of the former. The *Supho*, which started two days later, has at the present writing, July 29th, not yet arrived. The relative speed of the vessels has not been, and could not be decided by this race. The somewhat remarkable fact that the *Dainless* arrived only an hour and forty minutes later than the *Cambria*, proves nothing, since the distances the vessels were separated on their different routes probably placed them under very different conditions of wind and weather. Beyond a transient pleasure enjoyed by talkers and betters upon the race, nothing has been gained. Per contra, two lives are lost, and the already too great sporting tendencies of American youths have received an additional stimulus.

Has the race paid? We think not.

### Domestic Fowls and Destructive Insects.

It is said that M. Giot, a French entomologist, has lately found new employment for fowls. He says that French farmers have, during the past year, complained bitterly of the prevalence of worms, which infest corn and other crops, the highest cultivated fields being the most infested. Fowls are known to be the most indefatigable worm destroyers, pursuing their prey with extraordinary instinct and tenacity. But fowls cannot conveniently be kept upon every field, nor are they wanted there at all seasons. Therefore M. Giot has invented a perambulating fowl house, which is described as follows: "He has large omnibuses, fitted up with perches above, the nest beneath. The fowls are shut in at night, and the vehicle is drawn to the required spot, and the doors being opened every morning, the fowls are let out to feed during the day in the fields. Knowing their habitation, they enter it at nightfall without hesitation, roost, and lay their eggs there."

### Facts for the Ladies.

Mrs. A. V. Snow, of Port Kent, N. Y., has used a Wheeler & Wilson Sewing Machine eleven and a half years without a cent's worth of repairs. She is a seamstress and dressmaker, and made, the first year, one hundred shirts, besides doing all her family sewing for a family of eight persons. For two years past, the machine has earned over \$250 a year on custom work, besides doing all Mrs. Snow's family sewing. She has yet some of the first dozen of needles sent with the machine.

### Recent American and Foreign Patents.

Under this heading we shall publish weekly notes of some of the more prominent home and foreign patents.

**GLOVES.**—D. S. Hulett, Gloversville, N. Y.—This invention relates to a new and useful improvement in re-inforcement of gloves for driving and other purposes.

**UMBER COMPOUND.**—A. H. Bourne, Fort Scott, Kansas.—This invention relates to a new compound of earths and minerals, for making umber, for use in painting.

**MITER AND CUT-OFF BOX.**—E. M. Wilcox, Bloomer, Wis.—This invention relates to a new and useful improvement in an apparatus for sawing miters and "cutting off," in the various processes incident to working in wood, whereby much labor is saved and accuracy is secured.

**CHURN.**—M. J. Wikoß, Stout's Postoffice, Ohio.—This invention relates to an improved arrangement of the shaft and arms of a churn dasher for introducing air into the cream, either from the outside of the churn case, or from the space in the case above the cream.

**WOOD PAVEMENT.**—Henry Dowson, Springfield, Ill.—This invention relates to a new and useful improvement in wood street pavements, whereby they are made more durable than such pavements have hitherto been, and it consists in so forming the lower portion of the blocks that double dovetail spaces are left between the blocks, in which spaces double dovetail strips or pieces are inserted.

**MANUFACTURE OF IRON.**—Henry Davies, Newport, Ky.—This invention relates to improvements in the manufacture of iron, according to what is known as the "Eilershansen Process," and consists in an arrangement of mixing table, molten iron ladle, and ore-feeding apparatus, whereby the mixture of ore or earthy matter with the molten metal can be made in exact and predetermined proportions.

**UNIVERSAL COUPLING JOINT.**—Moses A. Keller, Littlestown, Pa.—This invention relates to improvements in universal coupling joints for shafts, and consists in a concave socket, in the end of one section, and a short cylindrical extension, and a ball on the other, fitting the socket, and secured to the socketed section by a pin or bolt fixed in the shell of the socketed section, and passing transversely through a bolt in the base, and traversing its axis perpendicular to a slot formed in the ball for the pin of the socketed section.

**GRINDERS FOR CLEANING CASTINGS.**—Geo. Miller, Providence, R. I.—This invention relates to improvements in the grinding or rattling machines used for grinding and polishing castings, and consists in the arrangement of the cylinders, when mounted on friction rollers, with an opening in one end for loading and unloading them, so that the cylinders, which, being arranged, as they are, on the friction rollers, to have motion imparted to them, may be readily raised up and placed on end, may be filled or emptied while standing.

**COOKING STOVE.**—Benj. F. Warren, Fishkill-on-the-Hudson, N. Y.—This invention relates to improvements in cooking stoves, and consists in the application thereto, under an elevated rear plate and over the oven, in a

way not to take up any of the space of the stove available for other purposes, of a magazine for holding fuel, the bottom of which is hinged or pivoted at the back part, and shelving downward and resting at the front on a rear elevation of the grate, and extending the whole length of the same, whereby the fire may be continuously fed at the back from the magazine, and the latter may have a shaking motion imparted to it by the shaking of the grate.

**WATER WHEEL.**—Alfred Kneass, Northumberland, Pa.—This invention relates to improvements in that class of water wheels in which the application of the water is designed to be such as to impart both direct and reactionary force, and it consists in a peculiar arrangement of curved buckets, receiving the water at the periphery from a scroll in a direct-acting way, and discharging toward the center through issues common to two or more buckets, and above and below a central disk, by which the buckets and rim are attached to the vertical shaft.

**HINGES.**—S. D. Van Pelt, Anderson, Ind.—This invention relates to improvements in blind and door hinges, and consists in forming the leaves or parts which are attached to the doors or blinds, and frames in some cylindrical form, so that they may be fitted by boring round holes between the doors or blinds and the frames, half in each, when the doors or blinds are fitted and wedged up to the frames. The invention also consists in an arrangement of lugs and notches on the blind hinges, for locking them open or closed, and in a locking stud on the pintle to prevent the blind from being lifted off, except when a slot in the one part coincides with the locking stud on the pintle.

**SULKY CULTIVATOR.**—N. G. Blauser, Etna, Ohio.—This invention has for its object to furnish an improved cultivator, light, strong, and durable of easy draft, fully under the control of the driver, and guarded from breakage should the shovel strike an obstruction.

**FOLDING COUNTER STOOL.**—John L. Young, New York City.—This invention has for its object to furnish an improved folding counter stool, which shall be simple in construction, reliable and efficient in use, not liable to get out of order, and which, when not in use, may be folded up close to the counter, so as to be entirely out of the way.

**LIFE-PRESERVING SKIRT.**—Sarah E. Saul, Brooklyn, N. Y.—This invention relates to a new and useful improvement in means for preventing persons from drowning, and consists in a skirt made buoyant by any suitable means so that it will support a person up in the water.

**ADJUSTABLE DOOR SILL.**—Maurice Armstrong, Girard, Ill.—The object of this invention is to provide efficient means for excluding mud and water from beneath outside doors, and consists in an adjustable sill for the door, which, by means of a hook attached to the door, is made to rise and form a close joint with the bottom of the door.

**GLASS LANTERN.**—McClintock Young, Frederick, Md.—This invention relates to a new and useful improvement in lanterns, whereby they are made cheaper and more useful than the ordinary globe or glass lanterns have hitherto been, and it consists in the construction and arrangement of the frame of the lantern so that the ordinary kerosene glass lamp chimney may be used instead of the common glass globe.

**SIDE SADDLE.**—Fenwick Smith, Austin, Texas.—This invention relates to a new and useful improvement in side saddles, and consists in forming the saddle tree hollow, or with air chambers therein, and in the construction and arrangement of parts.

**FLOATING TIDE DOCK.**—William Rickard, Jersey City, N. J.—This invention relates to a new and useful improvement in docks for repairing or building canal boats and other marine vessels, more designed for repairing canal boats, and it consists in a water-tight floating dock, with a gateway for the entrance of the boat or vessel.

**CARPET UNDERLIE.**—Nelson Edwards, Jericho, Vt.—The object of this invention is to provide efficient means for preventing the rise of dust from carpets in sweeping or walking on them, and also for protecting the carpet and rendering it more durable than it would otherwise be; and it consists in an elastic underlie, of cellular construction, provided with self-closing slits or orifices.

**SAWING MACHINE.**—Moses N. Clark, Harrison City, Pa.—This invention has for its object to furnish a simple, convenient, and efficient machine to be operated by hand power, for sawing off logs and shingle stuff, and for various other purposes for which a crosscut saw is generally used.

**ADDING MACHINE.**—Nels Ockerlund, New York City.—This invention has for its object to furnish a simple and convenient machine, by means of which numbers may be added and subtracted quickly and accurately, and which will enable the several amounts or differences to be registered as they are obtained.

**CORN PLANTER.**—W. H. Littel, Prairie Du Chien, Wis.—This invention for its object to furnish a simple, convenient, and effective corn planter, which shall be so constructed and arranged as to enable the corn to be readily planted in accurate check row, without its being necessary to previously mark out the ground either way.

**FLOUR SIFTER.**—George Gessert, Edwardsville, Ill.—This invention relates to a new machine for dividing and cleaning the middling, and liberating it from specks, so that a grade of flour may be produced from middling fully equal to the first grade. The invention consists in the construction of a machine, whereby the middling is reboiled and exposed to an adjustable draft.

**ELECTRO-MAGNET.**—Ludovic Charles Adrien Joseph Guyot d'Arllincourt, Paris, France.—This invention relates to a new system or arrangement of electro-magnets applicable to every electric apparatus, with the view of obtaining more rapid operation than could hitherto be produced, of reducing the necessity of regulation and of providing a reservoir with a single current.

**SAFETY GUARD FOR RAILWAY CAR.**—John Atwater Wilkinson, Wilson, N. Y.—This invention relates to a new attachment to railroad cars, whereby the same may be prevented from being thrown from the track over the embankment, and whereby the motion of the train is gradually stopped as soon as the wheels leave the rails. The invention consists in the application to the car or truck of a double, runner-shaped guard, arranged between the wheels, so that it will serve to support the car, when the wheels leave the rails, and to arrest it by friction on the sleepers.

**FIRE AND DECK PUMPS.**—P. M. and Oscar Snell, Williamsburgh, Ohio.—This invention consists in the combination of a lever having a movable fulcrum placed in vertical slots, with a slide valve with which said fulcrum is directly connected; the object of the arrangement being to give the slide valve the movement requisite to opening and closing the cylinder ports of a force pump. The invention was examined by the United States Board of Inspectors, which met in Washington last fall, and they adopted a resolution recommending it to the attention of manufacturers and others.

**HARROW AND SHOVEL CULTIVATOR.**—Albert B. Baum, Grantville, Pa.—This invention consists of bars mounted transversely of a frame so as to turn freely therein, except when prevented from rotating by means provided, each with two different sets of teeth projecting from opposite sides of the bars, one set being pyramidal, or such as are ordinarily used in harrows, and the other set being shovels such as are ordinarily used in cultivators, the object of this arrangement being to use either kind of teeth as may be expedient.

**MACHINE FOR PACKING SALT.**—John McGrew, West Columbia, West Va.—This invention consists in a series of self-adjusting vertically sliding hammers which receive motion from a horizontal crank shaft; also in providing the hammers with wedge-shaped projections for packing salt into the bulges of the barrel; also in vertically adjustable tubes for conducting salt into the barrel; also in a rotating table for the barrel to stand on in order to insure a packing of uniform density.

**WASHING MACHINE.**—Henry J. Moreland, Whitehall, Ill.—This invention consists of a suds box of oblong rectangular form provided at its ends with oppositely inclined slotted washboards, against which the clothes placed in the suds box are pressed by a reciprocating beater, said beater being fitted to slide upon guide ways and operated by means of a band lever.

**WAGON BRAKE.**—Henry Racine, Paola, Kansas.—This invention relates to a brake apparatus which is connected with the neck-yoke of the draft animals by a rod running forward under the tongue, and is operated by the rearward movement given to the said connecting rod by the holding back of the animals when going down hill, there being also in the combination a mechanism for preventing the application of the brakes when the animals are backing, by which mechanism also the brakes may be applied independently of the said connecting rod.

**ADJUSTABLE MULEY-SAW HEAD.**—Phillip and Michael C. Jobson, Lock Haven, Pa.—This invention has for its object to render a muley-saw head adjustable horizontally for the purpose of regulating the overhang of the saw according to the length of the feed.

**SPIRIT EVAPORATING CHAMBER.**—Joseph Dawson, Alexandria, Va.—The improvements relate to the evaporating chamber, which allows the liquid to present a larger evaporating surface in proportion to its quantity than has heretofore been attained; also to a device for preventing the wash from boiling over into the spirit chamber, and for returning the wash cooled to the evaporating chamber, when, through excess of heat, it has boiled up out of the same; also to a device which prevents the spirits from entering the cooling chamber and, at the same time, allows the wash to escape therefrom.

**CHAMELEON WHIRLIGIG.**—Ludwig O. Franke, Baltimore, Md.—This invention consists of two metallic disks placed together so that their peripheries coincide, and connected together by means of eyelets so as to form a whirligig which has its outer surfaces graduated and colored, so that as it is revolved it will constantly present to the eye new arrangements of colors which bear the appearance of rings.

**HORSE POWER.**—Robert Quinn, Whitefield, Miss.—This invention has for its object to furnish an improved horse power which shall be so constructed and arranged as to remove the necessity of building the houses for cotton gins, mills, and other machinery driven by horse power two stories high, while at the same time protecting the horse power machinery to be driven and material to be operated upon from the dust.

**FOLDING CARRIAGE TOP.**—T. H. Wood, New York City.—This invention relates to a new carriage top which is so constructed that its front part can be folded down over the driver's seat, while the front sashes are concealed in a pocket that is provided for their reception. The object of the invention is to so construct a closed carriage that it can be converted into an open phaeton without taking off or removing any part of the cover. It can then be reclosed whenever desired, while the carriage is under way.

**APPARATUS FOR REMOVING OIL FROM OLEAGINOUS SEEDS, MEALS, ETC.**—E. S. Hutchinson, Baltimore, Md.—This invention relates to a novel apparatus for separating oil from seeds, grain, meal, etc., and in fact from all vegetable oleaginous matter, by means of bisulphide of carbon or other chemical. The invention consists chiefly in the arranging the separating vats in pairs, so that a continuous process can be carried on, the two vats of each pair serving to supply each other.

**FURNACE FOR REBURNING BONE BLACK AND REDUCING ORES.**—Adam Weber, New York City.—This invention relates to improvements in furnaces for reburning bone black and reducing ores, such as patented to the same inventor the 4th day of June, 1867, No. 65,470. The invention consists in certain improvements in the construction and arrangements described in the aforesaid patent.

**REIN HOLDER.**—W. H. Cooper, Glover, Vt.—This invention has for its object to furnish a simple and convenient device for holding the reins when the driver wishes to leave the team standing.

**WAGON HUB.**—J. D. Ham, Bethany, Ga.—This invention relates to a new wagon hub which is so constructed that it can be set to always hold the rim concentric to the axle, and so that the spokes can be removed and replaced without disturbing the rim.

**COMBINED TOY MONEY BOX AND WHISTLE.**—J. H. Chappell, Brooklyn, N. Y.—This invention has for its object to furnish a simple and substantial toy for children which will serve as a toy ball to roll about, as a toy money box or savings bank, as a toy whistle, and which, when it contains some money will serve as a rattle.

**MITERING MACHINE.**—John Holzberger, Newark, N. J.—This invention has for its object to construct a mitering machine which will be adjustable to always produce a true miter, and also to make up for the wear of its parts. The invention consists in making the guide or gage, on which the articles to be mitered are held, adjustable to vary its angle.

**CHIMNEY TOP.**—C. W. Bache, Philadelphia, Pa.—This invention has for its object to provide a chimney top which will at all times furnish a free exit to the smoke, from whatever direction the wind may come. The invention consists in providing the four sides of the smoke stack with doors, and in connecting the opposite doors with each other in such manner that when one is closed by the force of the wind the other will thereby be opened to permit the escape of the smoke on the side opposite to the wind.

**WASHING MACHINE.**—Emanuel and Sabisea Cool, Buckhannon, West Va.—This invention relates to a new washing machine which is provided with a spring washboard and with a vertically adjustable corrugated roller, all operating in such manner as to produce the requisite rubbing and stamping action and perfect adjustment of parts to the treatment of coarser or finer articles.

**CULTIVATOR.**—C. L. Waffle, Sharon Center, Ohio.—This invention has for its object to furnish an improved cultivator which shall be so constructed and arranged that it may be readily adjusted for simply stirring up, loosening, and pulverizing the soil, and for throwing the soil around the plants, and which shall at the same time be simple in construction and easily operated, and effective in operation in either capacity.

**SELF-OILER FOR RAILROAD CAR JOURNAL BOXES.**—Charles Ihrig, Jersey City, N. J.—This invention has for its object to construct a self-oiling journal box for the axle bearings of railroad cars, and consists in the application to the box of a pump for conveying the lubricating material from the lower to the upper part of the journal box, the said pump being operated by the vertical movement of the car or truck body.

### Answers to Correspondents.

**CORRESPONDENTS** who expect to receive answers to their letters must, in all cases, sign their names. We have a right to know those who seek information from us; besides, as sometimes happens, we may prefer to address correspondents by mail.

**SPECIAL NOTE.**—This column is designed for the general interest and instruction of our readers, not for gratuitous replies to questions of a purely business or personal nature. We will publish such inquiries, however, when paid for as advertisements at \$1.00 a line, under the head of "Business and Personal." All reference to back numbers should be by volume and page.

**R. D., of Mich.**—We presume the process of making oxygen, mentioned in the article referred to by you, is the one claimed to have been discovered by MM. Clouade and Moret, in France, for obtaining oxygen from sulphuric acid. Perous matter, such as pumice stone, is saturated with the sulphuric acid, and heated. The resulting sulphurous acid and oxygen are collected separately, and it is proposed to re-convert the sulphurous acid into sulphuric acid. We have serious doubts as to whether this process can ever prove successful, as an economical method of producing oxygen.

**C. E. G., of Ct.**—A small portable flue boiler as badly scaled as you describe yours to be, is probably spoiled. There are remedies innumerable prescribed, but we know of none that can be relied upon in all cases. Boiling with soda without pressure, as you propose, will hardly, we think, do the business. Boiling with slippery elm bark has sometimes the effect to loosen a scale, but it also often fails. Boiling with oak bark or twigs will also sometimes loosen a scale. Tannin is also used sometimes, with effect, but such a scale, in our experience rarely has yielded to anything of this kind.

**J. R., of N. Y.**—Rock-cork is an old name for a variety of asbestos.