

BURSTING OF A MOUNTAIN WATER RESERVOIR IN MASSACHUSETTS.—A TERRIBLE CALAMITY.

The beautiful valley of Mill river, a tributary of the Connecticut, near Northampton, Mass., was the scene of an awful calamity on the morning of the 16th inst. At about 8 o'clock A.M. the dam of an immense water reservoir, located high up among the hills, above the village of Williamsburg, suddenly burst, and a tremendous flood poured down the river bed, overrunning the banks and sweeping away like chaff whatever stood in its path. Dwelling houses with families peacefully sitting at the breakfast table were instantly swept to destruction. Great factories, mills, bridges, stores, and property of all kinds disappeared in a moment; and upon the summit of the watery crest were to be seen the broken roofs of buildings, timbers, trees, wheels, pianos, and household goods of every description.

The village of Williamsburg was first struck. One third part of the village was instantly plowed through, leaving a broad bed of shapeless disfigured ruins of stones and debris where cottages, flowers, and scenes of peaceful beauty had previously existed. Many of the principal dwellings, factories, and other buildings were taken off, and a large number of the inhabitants perished.

Haydenville seems to have been unfortunately situated between two river curves, and hence, at one end of the town, are to be seen the effects of the madly rushing torrent; in a sweep of highlands at the other, the effects of the devastating undercurrent of the backwater, as it receded from and finally leaped over the lower bank. The great brass works of Hayden Gere & Co. were first swept, by a wall of debris from fifteen to twenty feet high, and with the added momentum the flood went over the road bed, devastating lawns and porticos of houses, leaving a boiler 2,000 feet from its original position, and placing it on an elevated spot in front of a house, tearing out the stone sides of the river and placing the boulders in the bed of the channel or on the sidewalk, and sweeping men, women, and children into eternity. Wooden houses were seen to come bounding along like corks, and from the interior of more than one were heard the shrieks of wives and daughters, whom their husbands and fathers had left a few moments before in fancied security. It was a sight which paralyzed every beholder.

At Skinnersville, the most frightful havoc of all, as regards extent of damage to property, took place in Skinnersville, although fewer lives were lost there than elsewhere. Only three houses were left standing in the village.

On the main street and village green of Leeds only three buildings remain. The Nonotuck silk factory, a solid structure, together with its costly dam, quickly fell, then the Emery Wheel Co.'s premises, the engine house, church, Wagner's button factory, and all the other buildings in the vicinity.

Over one hundred and fifty lives were lost, and property destroyed to the amount of between one million and two millions of dollars.

This terrible calamity was due to the weakness and bad construction of the reservoir dam, built six years ago. Its condition has at all times been a cause of uneasiness to knowing ones at Williamsburg.

THE RESERVOIR AND DAM.

The reservoir was one of a system of dams and reservoirs owned by a corporation called the Mill River and Williamsburg Reservoir Company, which included all the manufacturing establishments on the line of Mill River from Williamsburg to Northampton. It was situated on the east branch of Mill River, about three miles from the village of Williamsburg, in the northeastern corner of Northampton. The stream which supplied it, after joining the west branch at the village of Williamsburg, forms Mill River proper, which flows through Haydenville and Florence, and empties into the Connecticut river at Northampton.

In building the dam a stone wall was first built, which was stipulated to rise from a width of eight feet at the base to two feet at the top, which latter was 42 feet above the bed of the stream. This wall was contracted to be laid in the best known cement, and the projectors claimed it would be as strong as a single shaft of granite. Enveloping this wall on either side was a mass of earth, which sloped down on the water side at an angle of 30°, and on the lower side at an angle of 45°; a lateral section of this earthen support measured about 120 feet at the base, the greater mass of which was on the water side. At the center of the stream, inclosed in a stone wall, running at right angles to the main wall of the reservoir, ran an iron tube of two feet in diameter, for controlling the flow of water, extending, of course, a few feet beyond this eastern wall, at both extremities of its base. This wall of earth, 120 feet wide at bottom, was 16 feet across at the top, covering the crest of the stone wall, two feet in depth, in order to prevent danger from frost, and along its top furnished a good drive way. The water never rose quite to the crest of the dam, being kept about two feet below that line by means of a waste way at the western side. The reservoir covered an area of one hundred and eleven acres, and its average depth was twenty-four feet.

Is the Skunk's Bite Deadly?

While it is apparently difficult to add anything to the odium which is already attached to the common skunk, Rev. Horace C. Hovey finds a way of so doing by bringing forward proof that the animal is as dangerous as it is disagreeable. In the *American Journal of Science and Arts* is a paper by the above writer, in which he considers that a new disease has been discovered, which generally resembles *rabies canina* (of which hydrophobia is a symptom), while differing

from it specifically. To this he gives the name of *rabies mephitica*. It is transmitted by the bite of the skunk, and occurs when the glands which discharge its offensive fluid are inactive, so that it is possible that there may be a causative connection between this inactivity and the generation of malignant virus in the glands of the mouth. Mr. Hovey gives a large number of instances of men and animals dying from this cause in fearful convulsions. The mephitic inoculation, he says, is sure death. From the diagnosis given of the resulting disease, it seems that the period of incubation is about the same as that of *rabies canina*—from ten days to twelve months. The characteristic pustules of hydrophobia, which appear under the tongue and near the orifices of the submaxillary gland, are absent. So also is the abhorrence of water, catching of the breath, difficulty in swallowing, and various other symptoms of the *rabies canina*. There are, however, oscillations of the pupil, rapid alternate contraction and relaxation of the muscles, wiry radial pulse, and rapid action of the carotid, loss of perception, and delirium. The struggles of Nature to eliminate the poison are less prolonged in the *rabies mephitica*, and may be abridged by morphine, which has no narcotic effect in hydrophobia. In view of the great number of skunks in various portions of the country, it would appear that a further and more extended investigation into the nature and causation of this disease is of much importance. If the animal is so fearfully dangerous, its extermination should follow as relentlessly as that of the rattlesnake.

A New District Telegraph Instrument.

We have recently seen a new telegraph instrument designed by Mr. Hamilton E. Towle, and Mr. William Unger, of this city, to replace the apparatus now employed on the district telegraph lines. The device, like the ordinary instruments, gives three distinct calls, "police," "messenger," and "burglar alarm," and may be used for transmitting signals by sound. The notched wheels which break and close the circuit at certain times, making a distinctive signal, in the ordinary apparatus, are replaced by vertical bars formed of metal and rubber, so arranged that the switch passing over them receives the current when touching the metal portions, which are placed at certain intervals apart, and transmits the same to the sounding device at the main office. The machine is set in motion by pressing a button, which removes a detent from holding the clock work. A rod then rises from the top of the apparatus until the signal is completed, when it is pushed down, thus winding up the mechanism ready for another signal. The burglar alarm is so arranged that, by breaking a wire or connection, the current, which before preferably traversed that wire, passes to an electro-magnet, setting the device in action and transmitting a proper signal. We shall probably present before long an illustrated description of this invention, until which time further details are unnecessary.

How the Germans grasp American Inventions.

Engineering recently devoted a page of its space to editorially discussing the subject of breech-loading ordnance in general, and in particular the system invented by Mr. L. M. Broadwell, an American engineer. Our cotemporary says that, with a few unimportant exceptions, all the breech-loading guns exhibited at the Vienna Exposition were constructed after this plan. The specialty of the invention consists in the combination of a self-adjusting gas ring with an adjustable circular bearing plate, which together forms a perfectly gas-tight joint, and which can be repaired at an insignificant outlay of time and money. The history of the device, published in *Engineering*, is quite detailed, and it seems that the claims of the inventor have been fully recognized in France, Russia, Austria, Turkey, Italy, and Switzerland, and that these countries have paid him large sums for his patent rights.

In Germany, however, the usual course of injustice has been followed. Krupp has adopted the improvement, is manufacturing it on a large scale, and declines payment therefor; while the government has refused the inventor a patent on a clearly absurd pretence. The story is perhaps too long to find place in our columns, but it adds new corroboration to the facts which we have already published regarding the oppressive workings of the German patent laws as regards foreign inventors.

Unprofitableness of Government Telegraphs.

Our British friends have no doubt become convinced that, as a financial operation, government management of the telegraphs does not pay. With all the possible manipulation of the accounts and charging to the general post office expenses much that is properly chargeable to the telegraph service, there is a deficit, stated by the *Railway News*, of London, at \$5,000 per week, and which is constantly increasing. The private companies which were superseded by the government in the business, most of them, made the said business profitable to the stockholders, and the public was as well accommodated as it is now, to say the least.

Government telegraphy, as a remunerative branch of the postal service, is a failure; but having assumed the ownership of the elephant, he must, of course, be retained and supported. If government telegraphy in a country like Great Britain, which is densely populated, and whose telegraph facilities are very generally used by the public, the circuits short and easily maintained, and the compensation of employees comparatively very small, cannot be made to pay, what is the prospect in this country? The experience of Great Britain has probably saved our own government and people from the loss, damage, and dissatisfaction inevitably attendant upon government telegraphic administration; but it is well to keep the facts before the public and Congress.—*The Telegrapher*.

Fish Scale Ornaments.

Among recent patents is that of Eduard and Julius Huebner of Newark, who have invented certain new and useful improvements in preparing fish scales for use in the arts, of which the following is a specification:

The object of the invention is to utilize the scales of several varieties of fish, hitherto thrown away as useless, and prepare them for application in the arts, by producing articles of jewelry, artificial flowers, and similar objects. This invention consists in the process of cleansing and purifying the scales till the clear, horny substance or core of the same is obtained, which produces a new article of manufacture, which may be stamped into various ornamental shapes and dyed in all colors, for use in the arts.

Large scales are the most advantageous, taken from fresh fish. Old scales cannot be used, as they lack elasticity and clearness. The fresh scales are exposed for twenty four hours to the action of pure salt water, for loosening and partially separating the outer layers of organic matter. They are then transferred to distilled water, being placed every two or three hours in clean water and washed therein five or six times, which renders the scales soft and clear. Each scale is then carefully rubbed with clean linen rags, then passed through a press having a linen lining so as to remove the moisture in the scales. The scales are finally placed for one hour in alcohol, and again rubbed and pressed, when they are dry and have a perfectly clear appearance, a mother-of-pearl-like hue, and great elasticity and durability.

The scales are used in this prepared state, or they may be dyed with aniline and other colors, in the usual manner, to be stamped into various kind of ornamental shapes, leaves, and flowers, and applied to the manufacture of jewelry and artificial flowers, for embroidering and inlaying wood, and other uses in the arts.

The New Steam Hammer at Woolwich, England.

To say that it is the largest and most powerful in the world conveys but an inadequate idea of its magnitude and might. The weight of the falling portion is within a few pounds of 40 tons, and the force of the falling weight is accelerated many times by the use of steam to drive it down from the top. It is at least four times as powerful as Krupp's hammer. It is estimated that the use of top steam is equal to allowing the hammer to fall of its own weight 80 feet. It has been allowed a striking fall of 15 feet 3 inches, and nobody has yet determined what is the actual force of the blow which it will strike. The hammer is 45 feet in height, and covers, with its supports, a base of about 120 feet square. Above the ground it weighs 500 tons, and the iron in the foundations below weighs 665 tons. It has cost altogether about \$250,000, the greater part of which has been paid to Messrs. Nasmyth, Wilson & Co., the patentees and manufacturers.

Steam on the Erie Canal.

The Baxter steam canal boat City of New York left this city for Buffalo, with way freight, Saturday 9th inst., at 5:35 P. M. She discharged and received cargo at Utica and Syracuse, and arrived at Buffalo Saturday morning, 16th inst., at 6 o'clock. Time, including all detentions, 6 days, 12 hours, and 25 minutes. She loaded to return on the same day. This seems to demonstrate the perfect practicability of using steam in canal navigation, as the usual time of horse boats is 12 to 14 days. The City of New York is the second boat of the line, and a number more are now being built.

Thallium burns in oxygen with a splendid green flame, and its use has been suggested for fireworks in lieu of chlorate of baryta. Thallium is a comparatively new metal. It was discovered in 1861, and has as yet few commercial uses. It resembles lead in appearance and many of its characteristics. Its weight is nearly the same as lead, but it oxydizes much more rapidly than lead.

Recent American and Foreign Patents.

Machine for Matching, Measuring, Singeing, Brushing, and Rolling Carpets.

James Short, New Brunswick, N. J.—This invention consists of an endless belt, with divisions of its length corresponding with the distance from center to center of the figure of the carpet or other woven goods to be matched; also mechanism in connection therewith for drawing the goods alongside of the belt in unison with its movement, and preferably over a table or cylinder, by which the variation of each piece, in the distance from center to center of the figures, if any, is shown in the aggregate at the end of each piece, where it can be accurately measured with a rule, to be noted on the tag attached to the piece when rolled. The invention also consists in combining, with the mechanism employed for drawing the goods along the matching device and operating the latter, mechanism for measuring, singeing, brushing, and rolling the goods at the same time they are matched, by which one movement of the goods answers for all these several operations. This machine is by the same inventor who devised the very ingenious loom for weaving carpets of any width, illustrated some time ago in our columns. The present invention does away with a large amount of hand labor, and, it is believed, will prove of great utility in the wholesale trade.

Machinery for Burnishing Heels of Boots and Shoes. Oliver G. Critchett, Belfast, Me.—Steam is introduced into a revolving chamber through a pipe which passes through a stationary head which is tightly packed. On the end of the chamber is a burnishing disk. The chamber is given a rapidly revolving motion, and, being heated by the steam in the chamber, it produces the desired effect.

Improved Pipe Wrench and Cutter.

William W. Micks, Elmira, N. Y.—A clamp-shaped on the inner side, comes in contact with the pipe, and has a round screw-threaded stem that passes through a block, provided with a gripping tool and cutter, and enters a handle which is bored and screw-threaded for the purpose. By turning the handle on the clamp stem the distance between the clamp and block may be altered to accommodate different sizes of pipe. The block is arranged to take a new hold on the pipe whenever the handle is vibrated for that purpose. The tenon of the cutting tool has no play. When it is desired to attach one pipe section to another, or to disconnect the same, the jaw is used. When a pipe section is to be cut in two, the block is reversed and the cutter inserted, the handle being adjusted on the stem according to the size of the pipe.

Improved Signal Lantern.

James C. McMullin, Chicago, assignor to himself and William H. Masterman, and John Adams Jackman, Jr., Bloomington, Ill.—This invention relates to improvement in the signal lights of locomotives, railroad cars and stations, vessels, docks, lighthouses, and other objects, by which the light is thrown out in such a manner that portions of it are seen at greater, and other portions at lesser, distances, permitting, thereby, the approximate determination of the distance of the lights from the points of observation, and avoiding, to some extent, the danger of collisions or other accidents. The invention consists, mainly, in the construction of the front part of the signal light with a number of lenses of different sizes, arranged with or without colored glasses, or the arrangement of the front part with suitable designs of colored glasses, so that a similar graduation in the intensity of the emitted light is produced.

Improved Compound for Coating Iron Ships' Bottoms.

Samuel Williams, New York city.—This is an improved compound for the outside of iron vessels below the water line, formed of shellac, wood alcohol, Venetian red, and sulphate of lime. The paint is applied with a brush in the ordinary way, and will dry instantly, so that the vessel may be lowered into the water within an hour after the paint has been applied.

Improved Bag Fastener.

Daniel Jones, Hortonville, Wis.—Upon the edge of an arc-shaped plate are formed hooks, the concavities of which connect with fulcrum notches by inclines. To one loop is pivoted the plate, and to another loop a lever, the loops being jointed together and being of such a length that the lever may be fastened on the hooks. The lever is so curved that its short loop may be easily placed in a fulcrum notch, and will allow the long loop to be turned over at great advantage of leverage, drawing the fastener tight around the bag. As soon as this is effected, the loops slip back out of the notches, over the incline, and into the concavity of the hook, where they are securely held.

Improved Watch Chain Hook.

Henry T. Salisbury, Pawtucket, R. I.—This is an improved watch chain hook, by which the watch chain remains always securely attached to the vest without being liable to detachment by accident or pickpockets. The invention consists of a circular pivoted guard hook, which is locked to its stem by means of a central bolt sliding in a tubular sleeve at the inside of the stem. The sleeve is slotted for guiding a projecting rib of the central bolt, which rib is notched and locked by two or more annular bands or rings, and detached from the same when a notch of their inner circumference is brought in line with the slot of the sleeve, so that the bolt may be withdrawn and the hook opened.

Improved Reamer for Earth Borers.

John A. Chandler, Monticello, Iowa.—This invention is a reaming attachment to earth-boring apparatus, by which the lower section of a well below a stratum of quicksand may be quickly enlarged or extended, for the purpose of carrying the curbing down to the bottom of the well, and producing a well of uniform width. After the cut has been continued with the smaller auger till water is obtained, a reaming attachment to the shaft is used, having adjustable guide plates and sliding cutters, for enlarging the narrower section of the well below the curb gradually, from the bottom upward to the full width of the same, so that the curb slides down to the bottom of the well, and produces thereby, after the earth has been removed, a well of equal width.

Improved Saw Table.

Edward H. Hanna and Charles W. Hanna, Dover, Ky.—The pitch board is supported on the bed by means of two screws which are jointed to the board, and work through stands, and are confined in any desired position by nuts. One of two adjusting bars is jointed to the pitch board, and the other to the bed. These bars have each a serrated edge, and lap past each other, so that the serrated edges engage with each other, and are confined by means of a screw clamp when the board is properly adjusted. The pitch board rests on the bed at one end, and is made to stand at any desired angle to the saw. The plank is lapped over the edge of the pitch board, and is sawed by turning the pitch board and bed on the pivot bolt, the desired wind being given by means of the inclination and position of the pitch board.

Improved Burglar Alarm.

George A. Beaver, Richmond, Ind.—This invention consists of the combination of a series of register keys, which are connected in suitable manner to the windows, doors, etc., with a spring match holder, which lights the lamp, sets a clock train and bell in motion, and discharges percussion caps as soon as any one of the register keys releases the spring holder from the catch plate. The change of position of the key indicates the room in which the alarm originated.

Improved Saw Tooth Swage.

Andrew J. McCollum, Indianapolis, Ind., assignor to himself and George D. Emery, same place.—The object of this invention is to provide means for swaging the teeth of circular saws, square or parallel with the saw arbor, so that the saw will run true; and it consists of a slotted arm attached to the saw arbor extending out beyond the saw, having attached to it an adjustable curved arm which carries the swage.

Improved Machine for Cutting Rubber Soles.

George H. Ives, New Haven, Conn.—The object of this invention is to produce for manufacturers of rubber goods an improved machine for cutting out soles, fillings, or any other article from rubber cloth. The usual form of cutters or stamps may be employed. A spring board attached in front of stamps raises the cloth slightly above the stamp after each stroke. The pieces, after being cut, drop on an endless belt or apron, which carries the same off. The rubber cloth is fed from the cloth roller by reciprocating sliding feed blocks, which are operated by the driving shaft, their extent of motion being regulated by adjustable guide pieces. The feed blocks take hold of the cloth after each stroke, and feed the same to the stamp, releasing it on the return motion by passing along inclined guides, which raise the upper feed block.

Improved Rotary Engine.

Truckson S. La France, Elmira, N. Y.—This invention relates to that class of rotary steam engines and pumps in which two revolving cog wheels are employed in a case with semicircular ends, the teeth of the wheels meshing together to cut off the passage between them; and it consists of constructions of the teeth whereby pressure is balanced on the cutting-off teeth to better advantage than in the ordinary arrangements, and water of condensed steam is allowed to escape at the starting of the engine.

Improved Carbureter.

John M. Cayce, Franklin, Tenn.—This invention relates to means whereby air may be carbureted and supplied to the burner with greater uniformity of illuminating power than usual, and in a more economical manner. The invention consists in an air-supply governor that automatically maintains any definite pressure and supply of air; of means by which an over supply of carbon to the air may be prevented, and the relative proportions of oxygen and carbon accurately gaged; in making the carbureter sections held to joint band by a cohesive that will quickly melt during a fire and enable the apparatus to be easily handled and removed; and finally in means for obviating the jerking movement of a double action air pump, and causing it to move with great uniformity of motion.

Improved Portable Steamer for Potatoes, etc.

Carey K. McDonald and John W. Dewees, Philadelphia, Pa.—This is an improved device for outdoor and street trade, for steaming potatoes, ears of corn, oysters, &c. It is made in the general form of a locomotive engine, and is mounted upon wheels. There is a fire chamber, the flue from which passes back beneath the boiler. Steamers, which pass in through the top of the shell of the latter, receive wire baskets, in which the articles are placed to be steamed. In the rear end of the shell is formed an oven. When the articles are removed from the steamers they are placed in the oven to drive off the moisture, and are then placed in the upper compartment to be kept hot until sold.

Improved Blower for Fire Grates.

William D. Guseman, Morgantown, West Va.—This invention relates to counterbalancing the blower by a weighted lever, and operating it by means of a knob projecting through the front of the fireplace, and applied to the lever fulcrum.

Combined Table Castor and Fly Expelling Fan.

William R. Fowler, Baltimore, Md.—This invention relates to fans turned by clock mechanism for the purpose of frightening flies from the family table at meals, and consists in connecting a fan, castor holder, and clock mechanism so that the fanning device and clock mechanism can be laid aside when fly time is over, and the castor employed in the usual way, the appearance of the latter being graceful and acceptable under either contingency.

Improved Gin Saw Filing Machine.

Louis Monroe Asbill, Ridge, S. C.—This invention relates generally to machines that are used to facilitate the filing of gin saw teeth and to supersede the old means of performing the work by hand. The improvement consists in means for giving a variable adjustment to the pile stroke without changing the position of the forward end or point of the file.

Improved Middlings Purifier.

William Daniels, Brooklyn, N. Y.—There is a vertical tube, of large size, into which the middlings are fed, after being dusted, to be subjected to a blast from the fan, for separating the lighter matters from the heavier by carrying them upward, while allowing the latter to fall to the discharge spout. There is an offset in the upper part of the tube, where it is designed that matters light enough to be carried up by the blast, but containing seconds worth saving, together with some refuse, shall fall, to be conducted into another vertical tube, to be subjected to another blast from the fan, by which the lighter matters are again to be separated and carried upward, while the heavier are allowed to fall to a closed receptacle. Above the blast is turned to a horizontal course, so as to further facilitate the falling of whatever matters of value for flour may yet be in the escaping current, and below is a wide laterally descending portion of the lower wall of the passage, for receiving as much of the droppings as may be of value, and conducting them into a third upright tube, when they are again treated to a vertical blast, and the heavier matters let fall, while the refuse is carried off through a horizontal discharge spout. This upright tube receives a separate blast from the fan. The spouts may all return into one receptacle, for conducting the purified middlings to the stones to be reground together, as the object is not so much to make different grades, as it is to apply blasts in the purifier adapted in force to the gravities of the different grades, for thoroughly purifying both the heavy and light matters of value without waste.

Improved Dress Elevator.

Margaret H. Bergen, Brooklyn, N. Y.—This invention consists of a tape of proper length, having rings attached at proper intervals to receive a cord, the middle of which is attached to the center of the back. The tape is sewed at the proper distance from the bottom, following the curve of the dress. From the center of the tape the ends of the cord pass through the eyelets or rings in opposite directions, and are carried up through slits in the dress to the front, where they are passed through a cord holder, which confines them when they have been drawn to the desired degree of tension for the proper support of the dress. The ends of the cord are then confined in a clasp, which is hooked up at one side of the dress.

Improved Fire Extinguisher.

Isaac C. Andrews and Amzi S. Dodd, New York city, assignors to Home Fire Extinguisher Company, same place.—This invention has for its object to improve the construction of fire extinguishers in such a way that the acid vessel may be securely held and readily and surely disengaged to discharge the acid, which cannot be tampered with without indicating it, which will give warning should any one attempt to remove the head while the apparatus is under pressure, and which shall be light and at the same time strong.

Fire Extinguishing Water Pipe Attachment for Buildings.

Thomas Miller, Jersey City, N. J.—This invention relates to utilizing the fire extinguishing water pipe attachments used to conduct the water to the upper stories and the roofs, for fire ladders also; and it consists of, preferably, two pipes side by side, or one separated into two branches above the lower story, with rungs for a ladder crossing from one to the other and connected to them. The rungs are made of tubes, for allowing the water to circulate through them to keep them cool when exposed to fire in the building, and thus form the ladder, available when it would not always be with solid rungs, which heat when solid, so as to render the ladder useless.

Improved Perch for Bird Cages.

Edward Hutchinson, New York city.—This perch is composed of a tubular piece of wood and a cylindrical piece, the latter being for the most part of its length of the same size as the former, but considerably longer, and having a portion of about equal length of the tube reduced sufficiently to enter and fit snugly, and so that the end of the tube and the shoulder of the cylinder will not quite meet together. The reduced portion of the cylindrical piece is provided with small grooves, both longitudinal and circumferential, to afford hiding and nesting places for the small insects which infest birds. By this means the insects may be readily destroyed and cleaned off from the perch by taking it out of the cage from time to time, plunging it in boiling water, and then separating the parts and removing the insects.

Propelling Canal Boats.

H. B. E. Von Elener, St. Louis, Mo.—This improvement relates to the arrangement of slotted guides and adjustable collars with the paddle levers for the purpose, respectively, of maintaining them in a vertical plane while vibrating, and adjusting the leverage of the paddles, and also the depth to which they shall work in the water.

Improved Gas Regulator.

Charles H. Gartrell, Paducah, Ky.—The object of this invention is to produce an improved gas burner and regulator, which feeds the gas steadily and equally to the flame, and economizes its consumption. The invention consists in forming the burner of different chambers, to which the admission of the gas is regulated, and the flow steadied by means of a distributing cap piece, which spreads the gas and supplies it to the flame.

Improved Circular Sawing Machine.

Oscar A. Dean, Bethel, Vt.—This invention has for its object to improve the construction of circular saw machines, so as to prevent the lumber and silvers from being thrown against the operator, to prevent the operator's hands from being cut while attending the saw, and to prevent the operator from being injured by the saw flying into pieces when running free and when sawing thin lumber; and is an improvement upon the patent granted to the same inventor August 12, 1873. A circular spreader enters the kerf and opens the lumber, so that the same may not bear against the sides of the rear part of the saw. A guard fits over the upper part of the saw, and prevents anything from coming in contact with the upper part of the saw, and also prevents silvers from being thrown by the saw against the operator. It may be raised and lowered as the thickness of the lumber may require, and can be adjusted without disturbing the gage, while the gage can be adjusted without disturbing the guard.

Improved Mincing Machine.

Edward Cluney, New Bedford, and Charles Leptine, Boston, Mass.—This is an improved mincing machine for whalers, for mincing or slicing blubber before putting it in the trying kettles. It consists in a carrier and self adjusting holding device in combination with each other, for feeding the blubber forward to the knives, and in knives for slicing or mincing the blubber as it is carried forward by the carrier. The blades are curved, and are twisted spirally, to correspond with the rapidity of feed, so that the cutting point of the blades may move forward as the piece of blubber, being operated upon by the said blades, is carried forward. The shaft is so arranged, in connection with the carrier, that the blades will cut the slices of blubber not quite off, enabling the blubber to be handled with forks.

Improved Baby-Exercising Corset.

Catherine Tardy, Paterson, N. J.—This is a device which will enable mothers, nurses, and others having the care of children to let them exercise by moving their limbs without creeping about the floor. It consists in an improved baby-exercising corset formed of two parts, connected in front by a cord or lace, and in the rear by cords, straps, or ribbons, and provided with long loops at their upper edges. The long loops enable the attendant to support the child while standing in an erect position.

Improved Carriage Curtain Fastener.

Aaron T. Rice, Reaville, N. J.—This invention relates to an improvement in the class of carriage curtain fastenings formed of annular metallic plates, and a slitted or apertured elastic disk. The improvement consists in providing the elastic disk with a tongue (formed by slitting it diagonally), which engages with the head of the knob; also, in providing the annular plates with coincident notches to adapt them to receive or fit the shank of the button; and in a protective covering applied to the inner metallic plate or ring, to prevent abrasion or wear of the carriage top bow.

Improved Pipe Wrench.

Adam Collis, Altoona, Pa.—The head has a central hole, which allows it to be slipped over the stud which is to be turned. A projecting steel die is placed in one side of the hole, and passes entirely through the head. Its edges are designed to penetrate the stud and prevent the wrench from turning on it. The working lever works loosely in the head. Its end is serrated, and projects into the hole and engages with the bolt. The end of a screw enters a slot in the lever, which allows it to play back and forth. In gripping the bolt, a lip which works through a side slot bears upon the side of the slot, by which a short and most powerful purchase is obtained.

Improved Furnace for Steam Boilers.

Daniel T. Casement, Painesville, Ohio.—This invention consists in a system of inclined tubes in the upper part of the furnace for supporting metal balls, to facilitate the combustion of the gases by their impinging on the red hot surfaces of the balls, in which heat is stored up. The said tubes are arranged in two series, extending from the top or near it on opposite sides diagonally across and downward, crossing each other at the middle forming chambers for storing the balls. They are arranged in this way to facilitate the fastening of them in the furnace walls; also, the cleaning of them from time to time of the deposit that may result from the use of salty or limy water.

Improved Composition for Blackboards.

Richard Sharp, Pittsburgh, Pa., assignor to himself and Robert W. Hare, of same place.—This is a compound composed of ground or powdered pumice stone, colored to the proper shade by ivory black or similar material. The pumice stone thus colored is mixed with coach varnish and turpentine in sufficient quantity to form an adhesive plastic mass, with which wood, stone, metal, or other material is covered. The composition adheres firmly and soon dries, leaving a hard, smooth surface, admirably adapted for blackboards and slates, and for many other purposes.

Improvement in Converting Motion.

James Vivian and Henry S. Mackenzie, Falmouth, England.—This invention relates to means whereby two screw propellers on the same shaft may be conveniently rotated in the same or opposite directions. A shaft is rigidly attached to the screw propeller, and a sleeve, on which is made fast a second propeller, is itself loose on the shaft. There are two wheels, one fast on the shaft and the other on the sleeve, having, respectively, the wrist pins placed on their opposite faces, and each pivoted in sliding blocks. The piston is bifurcated to straddle the shaft, and provided with confined guide boxes placed side by side, and formed by plates and a partition. In these boxes the wrist pin blocks slide from one end to the other at each half revolution of the shaft, going back on the second half revolution. If these blocks are on the same side of the shaft when the piston is operated, the propellers will both move in the same direction, while if placed on opposite sides they will be carried in opposite directions.

Improvement in Preserving Beer and Wine.

William Leist, Milwaukee, Wis.—This is an improved vent attachment, to be used in connection with barrels containing fermented liquors, by which the back pressure of the liquids in the casks and their commingling with the liquid in the seal cup are prevented, together with the drawing-up of the liquid of the seal cup into the cask, so that the uninterrupted and effective action of the vent cup is produced. The invention consists in the arrangement of a liquid sealed vessel, provided with an open air pipe and flap valve at the bottom, with a secondary flap valve in the upper part thereof, so that the air enters into the barrel without allowing the liquid in the cask to be forced in the seal cup by the pressure of the gases.

Improved Eaves Trough Hanger.

Lewis E. Gould, Nashua, N. H.—The object of this invention is to furnish an improved eaves trough support which is readily applied to the wall below the roof, and admits of adjustment in horizontal and vertical direction for obtaining the exact position of the trough. The invention consists of a horizontal slotted arm, which is screwed into the wall, and which has adjusted thereon, in horizontal and vertical direction, the upright arm with forked end, for supporting firmly the trough. The connection of the horizontal and upright arms is made by a clamping screw.

NEW BOOKS AND PUBLICATIONS.

ARIADNE FLORENTINA: Six Lectures on Wood and Metal Engraving. Given before the University of Oxford, by John Ruskin, LL.D., Slade Professor of Fine Art. Price \$1. New York: John Wiley & Son, 15 Astor Place.

The subtle criticism and ornate rhetoric of the eminent Oxford Professor are well shown in these six lectures, which exhibit, in every page, the author's marvelous perception of whatever is genuine in all works of ancient and modern art. It is illustrated with facsimile wood cuts, in every respect worthy of the text.

MY VISIT TO THE SUN: or Critical Essays on Physics, Metaphysics, and Ethics. Volume I: Physics. By Lawrence S. Benson, Author of "Benson's Geometry." New York: James S. Burton, 149 Grand street.

The author of this work confesses his "respect for the treasured wisdom of ages, but must say that it will amount to nought if it shrinks from the wand of truth, or if it avoids the light of inquiry." The antagonism between the wisdom of philosophers on the one hand, and truth and inquiry on the other, is implied throughout the book; but the author is not likely to disturb the general belief of educated people that the wisdom of Science is the result and not the enemy of enquiry, and that the organic growth of human knowledge is not likely to shrink from its own "wand," which is that of truth. Certainly, if the accumulated knowledge of the ages is ever to be uprooted by some empirical system of philosophy, it will not be by so discursive and pointless a sketch as the one which we so willingly lay down.

NEW ENGLAND HARDWARE DIRECTORY, containing a Complete and Correct List of Importers, Dealers, and Manufacturers of Metals in the New England States. Boston, Mass.: Edward H. Adams, 82 Washington street.

The information promised in the title of this book is fully given in its pages.

THE AQUATIC MONTHLY AND NAUTICAL REVIEW. Edited by Charles A. Peverelly. \$4 per annum. New York: August Brentano, 33 Union Square.

This magazine maintains the excellent reputation it has in a short time acquired, and its pages will be read with interest by all lovers of the manly sports of yachting and rowing, the season for which is now fairly on its way.

Inventions Patented in England by Americans.

[Compiled from the Commissioners of Patents' Journal.]

From April 21 to April 28, 1874, inclusive.

BOILER AND FURNACE.—W. H. Richardson, Cincinnati, Ohio.

BOILER AND GRATE BAR.—A. O. Denis *et al.*, Wilmington, Del.

FIRE PLACE, ETC.—M. A. Cushing, Aurora, Ill.

FURNITURE SPRING.—W. T. Doremus, New York city.

KNITTING MACHINE.—D. Bickford, New York city.

LUBRICATOR.—E. S. Fassett *et al.*, Ann Arbor, Mich.

NAIL MACHINERY.—W. Haddock, Pittsburgh, Pa.

REGULATING SPEED OF ENGINE.—K. H. Loomis, New York city.

SPEED INDICATOR.—E. Brown, Philadelphia, Pa.

TREATMENT OF DISEASE.—W. D. Ludlow, New York city.