

THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

The Introduction of the Metric System into Medicine

was the subject of two papers read by Dr. H. W. Wiley, of Indianapolis, and Professor E. B. Elliott. The former gentleman said the other sciences have adopted a uniform system of weights and measures, and that it is now proper time for medicine to accept the doctrine of science. Proximately, we may take the gramme as 15.5 grains. It is evident that all medicines now given in from one to two grain doses could as readily be presented in gramme doses, since all grain weights could easily be reduced to corresponding terms of the gramme. In regard to fluid remedies, we can make similar reductions.

Thus 1 cubic centimeter equals 16 minims; .25 centimeter equals 4 minims; 2 centimeters equal 32 minims; 4 centimeters equal 64 minims, equal 1 fluid dram, equal 1 teaspoonful, equal 60 drops.

The paper was principally devoted to the subject of unification of doses, in order to avoid those serious accidents which result so often from the carelessness of physicians, druggists, and nurses. In order to this, both solid and liquid remedies should have a standard dose, say for solids 2 grammes, and for liquids 4 centimeters, or a teaspoonful. This could be accomplished by rubbing up the solids with some inert substance like sugar of milk or chalk, and mixing liquids with mint water.

Professor Elliot harmonizes the metric and apothecaries systems on the basis of the troy grain. If we augment the weight of the troy grain by about three (more exactly 2.88) per cent, the new grain so formed will be contained in the gramme exactly fifteen times—a very simple ratio; and the accidental substitution of this new grain for the old grain and *vice versa*, by the apothecary, would not appreciably change the quantity of medicine in a dose. The following is the scale of relation to the new grain with the metric series proposed by Mr. Elliott:

Proposed Apothecaries Weight.

	Equivalent wt. Troy grains.
5 grains* equal to 1 tergram (1/2 grain).....	5.144+
30 tergrams equal to 1 decagram.....	154.32+
100 tergrams equal to 1 ounce (new).....	514.4+
30 ounces equal to 1 kilogram.....	154.32+

* 1 new grain equal to 1.08365 troy grains.

The corresponding table of measures of capacity is as follows:

	Old Minims.
5 minims* equal to 1 fluid tergram.....	5.14830
30 fluid tergrams equal to one centiliter (in fluid decagram).....	163.54990
100 fluid tergrams equal to 1 fluid oz.....	541.83000
30 fluid ounces equal to 1 liter.....	1625.490000

* 1 new minim equal to 1.083650 old minims.

Professor W. Holley discussed

The Proximate Future of Niagara.

Professor Tyndall said that, if the rate of recession named by Sir C. Lyell, a foot a year, was correct, in 5,000 years the Horseshoe Fall would be far above Goat Island, and the American channel would be dry. Professor Holley showed that Sir Charles's rate was the result of a conjecture founded on a guess. He also, by means of the most trustworthy data we have since the commencement of the historic period, showed that it would be more than twice that length of time before the Falls would recede a mile. He also described the formation of the bottom of the river, the course and depth of the different currents and the location of the bars, all of which indicated that the American channel would never be without water.

Professor Tyndall thinks that the depth of the water will determine the course of the chasm channel as the gorge recedes, and the rate of excavation. Professor Holley cited the physical facts which tend to prove that it is the character of the bed of the river, the harder or softer nature of the material to be broken down, that will decide these points. He particularly noticed the fact that the Falls were constantly diminishing in height as they receded, until they reached their present site, where the river makes an acute angle with its former direction. This was necessarily the case, because they were receding in the line of the dip of the underlying rock. They are now rising on the dip, and will be 50 feet higher than now when they are two miles up stream. To this bend in the river we owe one of the most beautiful features of the great cataract—the rapids above the Falls.

Do Snakes Swallow their Young?

was the title of a paper read by Mr. C. B. Coode, of Middle-town University, in which he referred to the habit observed in certain snakes of allowing their young a temporary refuge in their throats, whence they emerge when danger is past. On this subject, through a note inserted in a monthly journal asking for observations, the testimony of 96 persons had been obtained. Of these, 56 saw the young enter the parent's mouth in 19 cases, the parent warning them by a loud whistle. Four saw the young rush out when the parent was struck; 18 saw the young shaken out by dogs or running from the mouth of their dead parent; 29 who saw the young enter killed the mother and found them living within, while only 13 allowed the poor parent to escape; 27 saw the young living within the parent, but as they did not see them enter, the testimony is at least dubious.

In the opinion of Professors Wyman and Gill and other physiologists, there is no physical reason why the young snakes may not remain a considerable time in the dilatable throat and stomach of the mother. The gastric juice acts very feebly upon living tissues, and it is almost impossible to another reptiles. Toads and frogs often escape unharmed

from the stomach of snakes. If the habit is not protective, if the young cannot escape from their hiding place, this habit is without parallel; if it is protective, a similar habit is seen in South American fishes of the genera *arius*, *bagrus* and *geophagus*, where the males carry the eggs for safety in their mouths and gill openings.

Professor Gill, in commenting on the above, said that the popular idea that snakes are sometimes swallowed by men and live afterwards in the stomach was an error which he was glad of the opportunity to denounce.

Professor Burt C. Wilber, of Cornell University, read several papers on the general subject of

The Brain.

This organ has been studied with three objects: the descriptive anatomy of its parts, the comparison between the brains of man and apes, the illustration of function. The proper method of preserving specimens was explained and the study of fissures especially commented upon. The speaker said in conclusion: After a pretty careful study of the specimens at my command, and the consultation of all works in which brains are accurately delineated, I feel justified in asserting that we cannot as yet characterize the fissural pattern of any mammalian order, family, genus, or even species, without the risk that the next specimen will invalidate our conclusion: that our studies in this direction should be based upon the careful comparison of accurate drawings of a much larger number of specimens than now exists in any museum; that nearly allied forms of carnivora should be compared; and that the most satisfactory results are obtainable from large series of foetal and young brains of the same species, and if possible, family and sex, in order to eliminate minor differences.

An Automatic Filtering Apparatus

was exhibited by Dr. H. W. Wiley, which consists of an ordinary filter stone with two arms. The upper arm carries a large funnel of from one to three quarts capacity, an electro-magnet with a system of levers for working a stop to the funnel, and a glass bulb and mercury cup. The lower arm is fitted with an ordinary Bunsen funnel, in which floats the glass bulb attached by a platinum wire to a lever carrying the mercury cup. As the fluid in the small funnel falls, the float sinks, and the mercurial cup rises, until the mercury touches two platinum wires, which are the poles of a small galvanic battery connected with the electro-magnet. This completes the circuit. The armature of the magnet is pulled down, the stop in the large funnel is raised, and the liquid runs through into the small funnel until the connection is broken. This continues until the whole of the fluid runs through into the small funnel. By means of this apparatus the quantitative analyst can save several hours daily.

Dr. J. S. Newberry exhibited a series of exquisitely preserved small scaled

Fishes from the Cannel Coal of Ohio.

In these fishes every scale and fin ray is shown; and the whole animal is coated with a thin film of sulphide of iron and thus "gilded." Sharks' teeth and spines, scales and teeth of large ganoids, and skeletons of many carnivorous salamanders are found all preserved in the same beautiful manner. Dr. Newberry also read a paper in which he said that the different strata which compose the geological column have been divided into several groups or systems, of which the base is formed by the old crystalline rocks called Laurentian and Huronian. Each of these systems consists of circles of deposition; first, sandstone, Potsdam, Medina, etc.; second, mixed mechanical and organic sediments, the calciferous, Clinton, etc.; third, a limestone, the Trenton, Niagara etc.; and fourth, a mixture of mechanical and organic sediment, the Hudson, Helderburg and the coal measures. Dr. Newberry claimed that each of the circles of sediments was formed by an invasion of the land by the sea, producing, first, a sheet of sea beach sand and gravel; second, the offshore deposits following and covering the first; third, the open sea calcareous organic deposit—a limestone; fourth, a mixed sediment—shale and limestone, or an earthy limestone—the product of the retreating sea. Between these submergences perhaps millions of years elapsed, in which the fauna of the sea and the flora of the land were changed. Hence the different fossils of the different geological systems.

Dr. Hill of Portland related a striking anecdote of a toad which had swallowed one end of a large earthworm, and had become so tired in its attempts to get the rest down that it was in danger of losing the whole, the worm crawling out of the toad's mouth faster than it could be swallowed. The toad then brought up its right hind foot, and grasping its stomach and the worm in it, held the worm in with its foot, taking a fresh grip after every gulp, until the job was finished.

In closing the session, Professor Lovering delivered a speech congratulating the members on the extent and variety of their labors during the past year. The usual resolution of thanks to everybody concerned in the affair were adopted, and it was afterward decided to hold the next meeting at Hartford, Conn., on the second Wednesday in August, 1874. The President elected is Dr. Le Conte, of Philadelphia; Vice President, Professor C. S. Lyman, of New Haven, Conn.; Secretary, Dr. Hamlin of Bangor; Treasurer, Wm. S. Vaux of Philadelphia.

Section Q—Scientific Fun.

A burlesque session, in which a number of the members participated, was attended by a large audience, which several learned professors managed to keep in convulsions of laughter for an hour or more.

Professor Morse, taking the chalk, stepped to the blackboard and began the reconstruction of an unknown animal,

a fragment of bone belonging to which had been found. Proceeding step by step and speaking as he sketched, he quickly built up the figure of a hideous tomcat. Then he suggested certain anatomical objections and improvements which produced amusing changes in the drawing. Finally he concluded to restore the fragment on a different hypothesis, and by a few strokes revealed the true character of the fossil, which proved to be the handle of a jug. Professor White, discoursing on ancient shell heaps, produced a heavy bag, which, he said, contained specimens collected near Portland. A broken shovel, a stone bottle, a lobster, and a pile of clam shells were recognized, amidst peals of laughter, as relics of the recent clam bake participated in by the Association. Each separate article was then described in connection with the peculiarities of the race that had used it, as indicated by its condition. Perhaps the most amusing of these was a corn cob, which indicated the size of the mouth by the bite that had been taken out of it. A blackboard drawing was then made to illustrate a race with these peculiarities. "You can infer," said the speaker, alluding to a paper of no great value read the previous day, "that the length of this mouth indicates that its maternal grandmamma must have been very long lived."

Several other speakers read ludicrous papers, their remarks being illustrated by Professor Morse with grotesque sketches on the blackboard.

VIENNA PREMIUMS AND SEWING MACHINES.

We copy the following from the New York *Herald* of August 12th:

THE REGION OF THE SEWING MACHINES.

If Dante had been gifted with the spirit of prophecy, he would have set apart a region in his *Inferno* to illustrate the rivalries and emotions of the sewing machine manufacturers of the United States. The conflicts, the misunderstandings, the ambitions, the yearnings for approbation and notoriety, the old, incessant efforts to win medals of progress and renown and merit and honor, which inspire the gentlemen who manage this industry, have given constant motion and life to the American department. So, when His Majesty came into the sewing machine department, every effort was made by our Commissioners to introduce him to each special machine and explain its peculiar qualities. Let me give you a list of the machines in the catalogue, so you may know what His Majesty was asked to do. First, the Howe Machine Company, New York; then the Singer Manufacturing Company, New York; the Whitney Sewing Machine, Paterson, N. J.; the Wheeler & Wilson Sewing Machine Company, New York; the Wilson Sewing Machine Company, Cleveland, Ohio; the Wilcox and Gibbs Sewing Machine Manufacturing Company, New York; Ezra Morrill & Co., Derby Line, Vt.; George N. Bacon & Co., London, England; the Weed Sewing Machine Company, Hartford, with the patent effective stop motion of Fairchild's attachment; the Secor Sewing Machine Company, New York; the Mackay Sole and Shoe Machine, Cambridge; the Universal Feed Sewing Machine Company. Every exhibitor expected a special visit from the Emperor, and His Majesty, with a patience and courtesy that should be commended, endeavored to visit them all.

After waiting a few minutes to comprehend the explanations to him of the advance of the industry so largely represented in America, the Emperor continued his tour of the other departments, especially inquiring of his attendants what different principles were presented by each separate machine, in what respect one machine differed from the other—all of which was explained to him, especially the new principle of the patent stop, or the application invented by Mr. Fairchild, and now owned by the Weed Machine Company, by which the action of the needle is arrested by the pressure of a spring, without stopping the motion of the wheel.

In the New York *Herald* of August 19th, we find awards were made as follows:

- To the Wilson Sewing Machines of Cleveland.
- Elias Howe Sewing Machine Company, for sewing and stitching.
- Wilcox & Gibbs Sewing Machine Company of New York, for best single thread sewing machine.
- The Weed Sewing Machine Company, for best stop motion applied to sewing machine treadles.
- The Wilson Sewing Machine Company being the only exhibitor that received a grand prize medal for the best sewing machine, and medals of honor.

Small Fast Steamers.

J. C. X. states that he and a friend are building a small steamer, of the following dimensions: Length 24 feet, width amidships 6 feet 4 inches, high amidships 3 feet and at stern 4 feet. She has a white oak keel, her ribs are of hickory, and she is built up with a double thickness of half inch white pine boards, all joints being lapped and tarred. She is covered with sheet zinc, the joints being lapped and soldered. "The boiler is an upright tubular, 3 feet high, 20 inches diameter, and has 19 two and a half inch flues, with a fire box 18 inches diameter and 1 foot high. The engine, attached to the boiler perpendicularly, is of about the same power as the boiler, and has double cranks set at right angles. The boat will be propelled by a 20 inch screw of four blades, each blade having a pitch of 6 inches, with space between each blade of one third the size of blade, and is so constructed as not to make any wave towards the banks of the canal. She is expected to run at from 8 to 12 miles an hour. The boat and all the machinery have been constructed by us two, it being our first piece of carpenter work. We are both machinists, and everything was done between work-

ing hours, and together we spent twenty days on the wood work. She is to be used as a pleasure boat on the Schuylkill canal, and will carry about 30 passengers."

DECISIONS OF THE COURTS.

United States Circuit Court--District of Kentucky.
PATENT BALING PRESS.—WENDELL E. KING vs. THE LOUISVILLE CEMENT COMPANY.

BALLARD, J.:

The complainant in his specifications declares that his "invention consists in the arrangement in one apparatus of two presses, which are operated alternately by a single screw in such manner that turning the screw in one direction to compress the bale in one compartment of the press retracts the follower and releases the bale in the other compartment thereof, so that said bale may be readily removed as desired, thus by said simultaneous and alternating action avoiding all loss of time in operating the press."

The complainant does not claim any of the separate parts of this machine. He claims only the combination of the gears with the screw and the boxes, when constructed and operating substantially as described. The machine used by the defendant, like that of complainant's, is provided with two boxes, a screw between and extending into both boxes, and a gear by which the slow and rapid motion is obtained.

The same result substantially is accomplished by each machine. The mechanical powers employed in both of the machines have been long known, and it is hardly necessary to prove, what the testimony, however, does establish, that it would occur to the merest tyro in mechanics that a substitution of the gearing employed in defendant's machine for the gearing employed in complainant's would enable him to accomplish the same results which complainant's do. As he would substitute strictly mechanical equivalents, it is obvious he would produce the same results, and by an operation really similar, though somewhat disguised.

The question then is—the complainant's patent being admitted to be valid, though it is for a combination—can the defendant avoid the charge of infringement by substituting, in lieu of some of the parts of the combination, well known mechanical equivalents? I am quite sure that he cannot, either on principle or authority.

It is not to be disputed that the inventor of an ordinary machine is, by his letters patent, protected against all mere formal alterations, and against the substitution of mere mechanical equivalents. Why should not the inventor of a mere combination receive the same protection? If he cannot, then will his patent not be worth the parchment on which it is written. If no one can be held to infringe a patent for a combination unless he uses all the parts of the combination and the same identical machinery as that of the patentee, then will no patent for a combination ever be infringed, for certainly no one capable of operating a machine could be incapable of adopting some formal alteration in the machinery, or of substituting mechanical equivalents. No one infringes a patent for a combination who does not employ all the ingredients of the combination, but if he employs all the ingredients or adopts mere formal alterations or substitutes for one ingredient another, which was well known at the date of the patent as a proper substitute for the one withdrawn and which performs substantially the same function as the one withdrawn, he does infringe.

I have not examined minutely the testimony of the experts produced by the respective parties in this case, because I do not ordinarily attach much importance to the reports of witnesses produced—I find them generally advocates of the party producing them—and I have rarely ever derived any assistance from any expert who was not summoned and examined on the suggestion of the court itself. But in this case I have not referred to their testimony, chiefly because the nature of the complainant's invention and of the operation of both his and the defendant's machines is so easily understood that assistance has not been needed.

Being of the opinion that the machine used by defendant is clearly an infringement of complainant's patent, I shall direct a perpetual injunction and give a decree for costs, but as complainant has offered no proof touching the damages, and as they must be small, I shall direct no inquiry concerning them.

Inventions Patented in England by Americans.

[Compiled from the Commissioners of Patents' Journal.]

From August 19 to August 21, 1873, inclusive.

GAS REGULATOR, ETC.—C. E. Seal, et al., Winchester, Va.
HULLING RICE, ETC.—G. L. Squier, et al., Buffalo, N. Y.
LAMP, ETC.—J. D. Whidden, et al., Chelsea, Mass.
PANEL AND MOLDING MACHINE.—L. McD. Hills, New Haven, Conn.
STEAM ENGINE.—G. G. Lobdell, Wilmington, Del.
TRACTION ENGINE.—R. C. Parvin, Farmington, Ill., et al.
TREATING FABRICS.—J. T. Waring, Yonkers, N. Y.
TURPENTINE PRODUCT.—R. Lloyd, New Orleans, La.

Recent American and Foreign Patents.

Improved Combined Spade and Fork.

Heber Stone, Galveston, Texas.—The object of this invention is to adapt a fork to be used as a spade; and it consists in a sheet metal sheath or pocket adapted to receive a fork and be secured thereto. When the fork is inserted in the sheath, a ring on the handle thereof is slipped down over projections, and thus the sheath is secured to the fork, and the same is thereby converted into a spade.

Improved Tyre Shrinker.

Robert Gibbs, Spring Hill, Mo.—This invention consists in a new mode of shortening tyres by means of a slide bar gage and hook lever, which enable a work to be done very effectually as well as very quickly. The mechanism is easily and cheaply prepared, and is without need of oil.

Wood Filling.

Jerome B. Dittenhaver, Chapaleer, Ohio.—This invention relates to a compound for filling wood previous to the application of paint or varnish, and consists in a preparation, which is entirely devoid of color and will not therefore change the characteristic hue of the wood, which can be applied with an equally favorable result to all varieties, and which permeates so thoroughly the pores and fills so completely the interstices between the fibers that a single coat of varnish or paint will be generally sufficient to produce the designed outside face upon the wood.

Improved Washing Machine.

Henry H. Mercer and Samuel Mehaffey, Cambridge, Ohio.—This invention consists in a machine possessing in an eminent degree three essential elements of a good washing machine, namely: Friction, pressure, and concussion. The lower roller being composed of polygonal rolls, each of which has an independent movement, a greater amount of friction is produced than by a cylinder composed of round rolls. The shape of the rolls results in carrying the materials under the pressure roller, instead of drawing or pulling them under, as is the case with solid rollers composed of round rolls, thereby preventing the clothes from stretching or being torn or in anywise injuring or interfering with buttons, buckles, etc. It is also much easier to operate than any other machine now in use, as it requires less power to carry materials under the pressure roller than it does to drag or pull them under the same, by the kind of motion common to the kind of rollers now in use.

Improved Cotton Press.

Michael M. Scherer, Batesville, Ark.—This invention consists in providing with a gravitating cover the press box, and winding it up by a windlass mechanism; in supporting the follower on the outside ends of the press box upon a wheeled carriage; and finally, in the peculiar construction and location of the press box.

Improved Ice Casket.

Frederick N. Troll, Baltimore, Md.—This invention relates to burial caskets for preserving the bodies of deceased persons until it is convenient for their friends to bury them, and consists in providing, between the body receptacle and casket, a pipe connection through which the air may be exhausted; also, in applying a rubber lining to the inside of the casket and cover to exclude all air from the outside.

Improved Car Coupling.

E. N. Gifford, Cleveland, Ohio.—This invention is an improvement upon the coupling for which letters patent were issued to A. Pritz, March 25, 1873, and consists in forming a right angled slot or recess in the side of the coupling or catch, and a right angled notch in its forward edge to adapt it to be held in place, and also guided in its movements by a short cross bolt projecting through the side of the drawhead.

Improved Paint Compound.

Charles Campbell, New York city, assignor to himself and James H. Davidson, of same place.—This invention relates to a new composition for paint, whereby the paint is held perfectly in solution without settling, combining the pigment and oil, producing a glossy and consistent covering for the preservation of wood work and other bodies, and effecting a considerable saving in the pigments employed. The solution is prepared by dissolving bicarbonate of soda and borax in water. This is then mixed with dry oxide of zinc, linseed oil, and benzine, and thoroughly ground together, producing a glossy, cheap, and durable paint compound, which may be used as a base for any desired shade or tint by adding the necessary color to it.

Improved Terret and Martingale Ring.

John Geraghty, Jersey city, N. J.—This invention consists of a fluted roller and pawl to be used in the terrets and martingales in substitution of the ordinary check rein rings for guiding and controlling the reins; also, for aiding the driver in controlling the horse by turning freely with the rein when pulled backward by the driver, but not turning in the other direction, so that when the horse gets advantage of the driver he must also overcome the friction of the reins on the rollers.

Improved Trace Buckle.

John Kennedy, Osage Mission, Kansas, assignor to himself and John Moffit, of same place. This invention consists in a trace buckle in which the tongue is pivoted and provided with a lock. As the trace is passed forward the tongue enters the hole therein; and as it draws back it pulls the tongue plate into the angular recesses in the lugs of a plate, and thereby locks the same. This movement of the tongue is effected by slots in the plate. With this buckle the trace is kept straight and smooth, without cracks or wrinkles.

Combined Fender and Ash Sifting Attachment.

William C. Dobbin, Zanesville, Ohio.—This invention is a combined fender and ash sifting attachment, to be used in connection with an ordinary fireplace grate, for the purpose of separating the ashes from the unburnt pieces of coal that fall from the fire grate, so that the latter can be readily replaced upon the fire freed from ashes.

Improved Car Coupling.

John Crist, Tiffin, Ohio.—This invention relates to automatic car couplings wherein the link lifts a catch hook by its own forward movement, and consists in attaching said hooks to a bar pivoted at the rear end, held down by a spring and lifted by a vertical rod. It also consists in a novel and effective mode of raising the lift rod.

Improved Cotton Bale Tie.

William J. Orr, Charlotte, N. C.—This invention relates generally to bales ties, but particularly to that class consisting of a strap of thin metal having one end turned into the form of a hook, and the other end broadened into a transversely slotted eye piece provided with a side stop at the outer end of the slot. There has been experienced, practically, with these bale ties a good deal of difficulty in turning the band after it is tightened sufficiently to secure the hook and eye together, while there is necessarily more or less play of the hook in the eye afterwards, which causes the sleeve to become displaced and the bale to become loose and even untied. The invention consists in the peculiar mode of arranging and constructing this eye piece so that it can be easily inserted within the hook of the strap and be securely held, with or without the sliding sleeve or loop which is sometimes used.

Improved Composition for Waterproofing Wall Paper.

Cornelius Van Herwerden, Williamsburgh, N. Y., assignor to himself and Cornelius Jansen, of same place.—This invention has for its object to furnish wall paper which shall be so prepared that, when applied to the wall in the ordinary manner, the papered wall may be washed, and which will leave the colors upon the paper wholly unaffected. The invention consists in first dissolving white soap in warm water. When fully dissolved, white wax and isinglass are added and the mixture stirred continuously until it boils. When fully cold it is ready for use. To apply the mixture, the paper is spread upon a smooth table, and the former is applied with a soft brush, care being taken to cover the paper evenly by rubbing it well with the brush. The paper is then rubbed with a dry brush to give it a gloss.

Improved Glove Fastening.

Charles H. Hall, Trenton, N. J., and Robert Knott, Brooklyn, N. Y.—This invention consists of a little bar with a series of notches in each edge and wide portions between the notches, hinged to a clip fastened to the glove at one side of the wrist, and a notched hook on a clip fastened to the glove at the other side, so arranged that it can engage the bar behind anyone of the enlargements to fasten the glove tight or loose, as may be desired. The clips by which the bar and the hook are fastened to the glove consist of thin plates of silver, gold, or any ductile metal, with spurs formed on them, to fasten them to the glove, by punching them out of the metal in the ordinary way of making such fastenings.

Improved Ice Shaving Machine.

James D. Freeman, Abbeville, Ala., assignor to himself and James Gillespie, of same place.—This invention furnishes an improved machine for attachment to the counter in soda water and other saloons for shaving the ice. The forward parts of the downwardly projecting sides of a hopper are cut away to allow a tumbler to be placed beneath said hopper to receive the shaved ice. In the lower part of the hopper is placed a small cylinder, to which are secured a number of knives or cutters, rotated by a crank. The piece of ice is placed in the hopper, rests upon the cylinder, and is held down by a plate which is placed upon it, and which is attached to a lever. The lever passes through slots in the hopper, and its forward end is pivoted to a plate which slides up and down in a groove. The latter plate may be raised and lowered to adjust the position of the lever and plate according to the size of the piece of ice to be operated upon. The rear end of the lever projects so that the operator can grasp it in one hand to hold the ice down with the requisite pressure while he operates the crank with the other hand to shave the ice.

Improved Insect Powder Gun.

William Henry Ball, Brooklyn, N. Y.—The object of this invention is to provide a commercial package for insect powder, which may also be used as a gun or ejector for discharging the powder into crevices, etc., at the same time that the cost will not be much more than common packages. The invention consists of a cylindrical box, of light and inexpensive material, and a short piece of flexible tube joined together at one end, the paper or wood box having a cap at the other end, and, by preference, a hopper-shaped bottom at the end connected to the flexible tube, with a small hole for the powder to pass from it into the said flexible tube. The latter has a small nozzle through which to eject the powder by compressing the tube, the nozzle being detachably connected so as to pack the packages economically. The hopper bottom is employed to retain the mass of the material in the paper or wood box in which it is packed and deliver it into the flexible ejecting portion in small quantities as the box is shaken.

Improved Steering Apparatus for Vessels.

Amie Slebenthal, Vevay, Ind., assignor to himself and F. R. Dufour, of same place.—The object of this invention is to construct for river and ocean vessels an improved steering apparatus, by which the power transmitted to the rudder is equalized, and the same more fully within the control of the helmsman. The invention consists in the hinge connection of the tiller with the rudder post, together with a supporting guide arm of the same. The nearer the tiller approaches the center, the quicker turns the rudder post, so that the rudder moves rapidly when in position at either side of the axis of the vessel, where also less power is required. On the approach of the tiller to a horizontal position, the rudder moves with decreasing speed but with increasing power, as the pivoted arm relieves the strain on the steering rope by supporting the end of the tiller.

Improved Composition Filling for Painters.

Richard Sharp, Pittsburgh, Pa.—The object of this invention is to provide for carriage manufacturers an improved "painters' rough stuff," which is put on after the paint, and leaves a smooth and solid surface after rubbing. It consists of a mixture of pulverized pumice stone and white lead, thinned by coachmaker's Japan and rubbing varnish. The wood is first filled with from three to five coats of keg lead, and then coated with this surface protector, which causes the work to take a fine polish.

Improved Cotton Bale Tie.

William Crone, Galveston, Texas.—This invention consists of a small S shaped bar for tying the bands and cross ribs on the bands, both lower and upper sides, at short distances apart near the ends, which are fastened together. This is effected by inserting the band in the notches of the aforesaid bar, one part on each side, in a very simple manner.

Improved Straw Cutter.

Thomas Webb, Elyria, Ohio.—This invention is an improvement in the class of straw cutters having feed rolls, one of which is adjustable vertically, and yet so geared with the stationary roller as to continue its revolution, whether they are separated by a small or large quantity or thickness of the material to be cut.

Improved Tool for Seating Bung Bushes.

Lomax Littlejohn, New York city.—This invention has for its object to furnish an improved tool for beveling the bung hole of a cask and countersinking said hole to adapt it to receive a bung bush. The body of the tool is cast hollow, and of such a taper as will give the desired level to the bung hole. In one side is formed a recess to form a seat for the knife cutter, in which, directly opposite the edge of the cutter, is a slot for the chips to escape through. Around the upper edge of the tapering body is a flange of a breadth equal to the desired breadth of the countersink of the bung bush. Upon the upper side of the flange are formed two projections, one of which is so arranged that its face may be nearly flush with the edge of the flange, so that the cutter attached to said face and the cutting point may project below the flange to cut around the edge of the countersink. The other projection is arranged across the flange so that the cutting edge of the cutter may project through a notch in the flange to cut the countersink. Upon the upper edge of the body is formed a rigid ball, having a socket formed upon its upper part to receive a handle, by means of which the tools operated.

Improved Saw Swage.

Andrew J. McCollum and George D. Emery, Indianapolis, Ind.—This invention consists of an improved attachment of a saw swage, by means of which the swage will be held perfectly square across the tooth, so as to make all the cutting points exactly alike, and thus enable the saw to be filed much more quickly than it could otherwise be done. The invention consists in the guide arms connected at their upper ends by a back, and pivoted to the stock of the swage. The guide arms are provided with a set screw which passes through one of said arms and screws into the other arm, so that the lower ends of the arms may be adjusted closer together or farther apart, as the thickness of the saw plate may require. By using the swage upon the teeth of a saw partly filed, and then filing the teeth by the marks of the swage, it is claimed that the saw may be filed in less than half the time that would otherwise be required.

Improved Inside Blind.

Elliott Metcalf, Rome, N. Y.—This invention has for its object to improve the construction of Venetian or inside blinds, and it consists in the arrangement of an upper roller, carrying front and rear ribbons, attached to the slats of the blind, and provided with cords for suspending the same, so as to enable the blind to be lowered and raised from the top. This, together with the angular adjustment of the slats is effected by turning the roller. The vertical movement of the slats from the bottom is accomplished by elevating cords. The invention further consists in a novel method of attaching the slat-shifting ribbons to the latter, dispensing with the use of rivets, staples, or other fastening devices, and insuring, also, a more perfect closing of the slats; and it consists in passing or looping the ribbons through slots near the edges of the slats, so that when the latter are in a vertical or closed position the edges of the same will abut more perfectly than in ordinary blinds.

Improved Paint Brush.

Amasa S. Thompson, Little Falls, Minn., assignor to himself and Louis Vasaly, of same place.—This invention is intended to furnish ready and convenient means for raising and discharging paint and similar substances, which are applied with a brush, through the brush, so that the fluid may be readily spread by the operator. The invention consists in a rubber syringe and flexible tubes provided with suitable valves and arranged in the handle of the brush. A tube conducts the liquid from the reservoir to the apparatus.

Improved Plow.

Thomas G. Andrews and Andrews Riviere, Barnesville, Ga.—This invention consists in the construction of plows, so that the plow plates may be secured firmly to the standard without bolts, and in such a way as to prevent no unevenness for the soil to catch upon, and which will enable the plow gate to be quickly attached and detached. It consists of a lever brace, pivoted at its rear end to the slotted lower end of the plow standard, secured at its forward end detachably to the plow beam, and provided with a shoulder or pin for securing the plow plate detachably to said standard.

Improved Spark Arrester.

Michael Zech, Pittsburgh, Pa.—The cinders and sparks are deflected by an inverted cone (the upper parts of the stack) drawn through a perforated flange, and ascend and pass through a circular opening and then strike a horizontal disk, and are thrown in each direction. They are still further retarded before they escape by an interior flange around the top of the hood. Before reaching this point the sparks or cinders are broken up, so that when they escape from the hood any fire which they may retain is instantly extinguished by contact with the atmospheric air.

Improved Reed Organ Swell.

John R. Lomas, New Haven, Conn., assignor to Bernard Shoninger, of same place.—The design of this invention is to make a clear and open passage for the escape of the sound from the reeds through the case of the instrument; and it consists of a movable board or outside swell in the case, with a suitable connection with the ordinary swell, or the lever which operates it, to be opened by or with the said ordinary swell, and allow all the sound waves a clear, open, straight passage through the case, whereby a large gain of power is obtained without any extra exertion on the part of the player, at any desired time, giving nearly double the effect of the front reeds.

Improved Carpet Lining Machines.

John R. Harrington, Brooklyn, N. Y.—This invention relates to a combination of revolving screens, carding cylinders or scratchers, and feeding and condensing rollers, the object of which is to receive the cotton, flock, or other fibrous material from a willow or breaker, form it into a smooth lap of uniform thickness, and deliver it between sheets of cloth or paper, which form the upper and lower surfaces of the complete fabric and confine and secure the lap. The inventor, we believe, is the originator of carpet linings made with one or more continuous sheets of paper or cloth united together by mullage or sewn. The capacity of the machines is claimed to be 5,000 yards per day. Mr. Harrington has taken several patents on the same subject, but he asserts that the invention now under consideration is preferable to any other.

Improved Railway Rail Chair.

Samuel Huber, Danville, Pa.—The main object of this invention is to prevent the ends of the rails of railroad tracks from being battered or damaged by passing trains, and it consists of a cavity or recess beneath the joint of the rails, whereby a certain degree of elasticity is allowed the ends of the rails.

Improved Manufacture of Boots and Shoes.

John Boyle, New York city.—The object of this invention is to provide an improved clamping connection of textile or other fabrics with hard and unyielding materials, as wood or composition soles, etc., so that shoes or other articles of manufacture may be produced quicker and cheaper by means of machinery, and the hand labor, hitherto necessary for such work, be dispensed with. The invention consists in grooving the wood sole or other material at the upper edge, and binding the fabric, by a suitably shaped metallic clamp, firmly thereon, so that a strong and intimate connection of the parts is obtained.

Improved Printing Press.

Calvert B. Cottrell, Westley, R. I.—This invention consists in gearing the sliders with the frame of the press, also with the reciprocating type bed to maintain the proper relation of said sliders to the table at all times, and prevent the overrunning of one by the other, which now happens in consequence of the irregular action of the bed on the sliders, caused by the pressure of the cylinder on the bed when going one way and the freedom from pressure when going the other way.

Improved Rubber Shoe.

Lewis L. Hyatt and Jared H. Canfield, New Brunswick, N. J.—This invention consists of india rubber boots and shoes, the uppers of which are made considerably thicker and stronger at the junction with the sole than at the top and in the upper portions, and gradually lessening in thickness from the bottom upward. In carrying out the invention dies, are sunk in the rolls, by which the sheets for the upper portions of the shoes are made deeper in the parts in which the lower portions of the uppers are formed than in the parts whereon the upper portions are formed, and thus the required variations in the thickness are produced at the same time that the sheets are made.