ed, the whole applied and operating in combination with a regulating valve, B B', or its equivalent, substantially as described.

[A notice of this improvement will be given next week.]

BRUSH—Reuben Shaler, of Madison, Conn. : I am aware that brushes have been made in which the bristles have been attached to a cylinder in tufts spirally arranged in rows around it; I make no claim to such a form of arranging the bristles.

I am also aware that bristles have been secured in position, after they have been attached to the handle, by pouring melted resin upon their ends, or by filling the end of the brush with glue. I do not claim these modes of cementing in the bristles.

I claim as a new article of manufacture, a brush, the bristles of which are secured by winding them into a spiral groove, and fastening them in the manner described or by winding them into cement, as set forth.

BOILER FURNACES—Evan Skelly, of Plaquemine, La. : I am aware that stoves have been made in which the fire chamber is fashioned in the form of a cone, the escape opening being contracted.

I do not claim, broadly, the making of furnaces of conical shape.

I do not claim, broadly, the idea of contracting the escape opening.

I do not claim the arrangement of bridge walls alternately on opposite sides of the main flue.

But I claim the combination and arrangement of the gradually contracted fire chamber, C, with the bridges, F F G G, as shown and described, for the purposes set forth.

[This invention consists in a novel arrangement of bridges under a double cylinder boiler, to arrest the too rapid escape of the gaseous products of combustion, and keep them in contact with the boiler till they have yielded up as much as possible of their heat to the boiler. It also consists in the gradual lateral contraction of the fire chamber and grate towards the rear, for the purpose of preventing the escape of any air or combustible gases without being consumed.]

HARNESS BUCKLES—Orin B. Smith, of Monticello, N. Y. : I claim the combination of the lever, C, operating as described, with the bow, B', for the purpose of making a harness or other buckle, and to which may be attached straps, A and B, as set forth.

HOMINY MILLS—Ira Speight, of Woodville, Miss. : I claim hanging mill-stones by means of right and left screws, substantially as and for the purposes set forth.

BUCKLES FOR SKIRT HOOPS—John Stevens and Jas. Handley, of New York City : We claim the buckle, when constructed substantially in the manner described, in combination with the slides, having holes to receive the hook of the buckle, for the purpose set forth.

MITER BOX—Asa F. Tait, of Rockport, Mass. : I claim as an improved article of manufacture, a miter box having a sliding frame, F, attached to pivoted standards, g, and otherwise made as shown and described.

[To an ordinary miter box a sliding guide frame is attached, so arranged as to guide the saw perfectly without the aid of the usual kerfs in the box, and thereby obviate the difficulty attending the wearing or cutting away of the kerfs—a contingency which occurs in using the ordinary box, and soon renders them inaccurate.]

CAM PRESS—Enoch Thomas, of Beverly, Va. : I claim the mode of making and arranging the journal boxes so as easily to vary the space under the follower, and retain the uniform position of the pressure, in combination with the cam and windlass, cast solid, when constructed and operated substantially as specified and for the purposes set forth.

DYNAMOMETER—Wm. Tucker, of Blackstone, Mass. : I claim the combination of the grooved slider, D, and its screw connection, G, with the index-pointer, E, or its equivalent, and the spring, C, and pulley, A, or its equivalent, applied to a shaft, B, substantially as described, the slider having a feather connection, a, with the said shaft, as explained.

PLOWS—Reed Vincent, of Rockton, Ill. : I claim the combination of the convex standard, A, the braces, B D, and the mold-board, when arranged in connection with the beam and bent handles, C, as described and represented, and for the purpose set forth.

LABLES FOR TREES, &c.—Francis T. Cordis and William W. Wade, of Long Meadow, Mass. : We claim the combination of a metallic rim or back with paper, or other suitable substance, on which is written or printed the name of a tree, shrub, plant, or seed, and a plate or plates of mica and a metallic ring, in either of the modes in the specification described, as a tag or label for designating and distinguishing the varieties of trees, shrubs, plants and seeds, in orchards, nurseries, and gardens, as described.

APPARATUS FOR PURIFYING GAS—Andrew Walker, of Claremont, N. H. : I do not claim the purification of illuminating gas by means of water, when applied in a shower of drops, or of finely-divided streams.

But I claim the combination and arrangement of separate chambers, opening into each other in such manner that a current of water or fluid may be made to flow through the series in thin falls or sheets, or from one chamber to the next in a thin fall or sheet, substantially as described, and a current of gas be made to pass upward and through the several chambers, and successively through and against the several falls or sheets of fluid, essentially as explained, the chambers being disposed one over the other in column, and the whole being to effect the purification of gas for illumination, as described.

STOVES—David Wells, of Lowell, Mass. : I am aware that various plans have been devised for admitting heated air into stoves and furnaces, so that the products of combustion may be mixed therewith, in order to insure the burning of the same; I therefore do not claim, broadly, such idea.

But I claim the arrangement of the flues D' D', smoke chamber, E, air-heating chamber, G, and fire chamber, B, the latter communicating with the smoke chamber by means of the perforations, b, and the smoke chamber communicating with the air-heating chamber by perforations, a, substantially as and for the purpose set forth.

[This invention consists in a peculiar arrangement of flues, an air-heating chamber, and smoke chamber, whereby the combustible portion of the products of combustion is brought in contact with a suitable portion of heated atmospheric air, and ignited in a chamber separate from the fire chamber, but by the heat or fire therefrom. The object of the invention is to obtain all the advantages derived from the consuming of the combustible portion of the products of combustion without detracting from the efficacy of the fire chamber itself as a source of heat, by admitting directly upon or over the fire, atmospheric air, in order to consume the inflammable portion of the escaping gas.]

MANUFACTURE OF GLASS FURNACES AND POTS—Ezra Wells, of Covington, Pa. : I claim a new article of manufacture, namely, pots and furnaces made of the black American clay, for use in manufacturing glass and glass ware, substantially as set forth, for the purposes described.

METHOD OF ATTACHING CUTTING LIPS TO AUGER SHANKS—Norman S. White and Aaron Denio, of Shaftsbury, Vt. : We do not claim, broadly, attaching the cutting parts to the screw shaft of augers.

But we claim the specific manner set forth and shown in the specification.

SMUT MACHINES—J. A. Woodward, of Burlington, Iowa : I do not claim the curved blast spout, A.

Nor do I claim, broadly, a scouring device connected therewith, for such may be seen in the patented case of mine formerly alluded to.

But I claim the arrangement of the wire cloth cylinder, G, scourer, E, deflecting or separating bar, I, spout, f', and shoe, J, as and for the purpose set forth.

[The smut mill patented by this inventor October 20th, 1857, in the subject of the present improvements, the object of which are to effect a more thorough separation of the dust and other foreign matters from the grain before the latter is brought in contact with the scourers, and also to augment, to a very considerable degree, the efficiency of the scouring device, as well as the part designed for the separation of the light or imperfect grain from the offal or foreign matters.]

INSTRUMENT FOR MEASURING ALTITUDES, &c.—George C. Ayling, (assignor to himself and Henry A. Ayling), of Boston, Mass. : I do not claim the combination of the detector glass with the index and horizon glasses.

But I claim the arrangement of the index glass with respect to the detector glass, so as to enable the latter to be moved either into parallelism with, or at right angles to the former, and combining with the detector glass and the main divided arc and index, a secondary index and divided arc, applied to register the movements of the detector glass, substantially as described.

WATCH FACES—Samuel Baldwin (assignor to Baldwin & Co.), of Newark, N. J. : I claim arranging the figures of the dial without turning the works of the watch in a plane parallel to its face, substantially as described, so that they may be in the proper positions in relation to the pendant, whether the dial faces the open or closed bizzle of the case.

CLOTHES FRAME—William Hathaway (assignor to William G. Maynard), of Worcester, Mass. : I claim arranging the center of motion of the cross bars, substantially as described, so that the center of motion of the outer end of the cross bar, when the frame is closed, will be over or within the center of motion of the inner end of the cross bar, for the purpose set forth.

HEMP BRAKES—Robert Heneage (assignor to himself and Edward O. Ball), of Buffalo, N. Y. : First, I claim the combination of the reversing mechanism with the brake, B B2, beater, C C2, and shell, K, substantially as described, and for the purpose of dressing hemp, as set forth.

Second, I claim the combination and arrangement of the brake, B B2, with the revolving beater, C C', shell, K, and revolving apron, J, for the purpose of dressing flax, substantially as set forth.

Third, I claim the arrangement of the chamber, X, within the machine, for the purpose of affording room for the movements of the hemp while being dressed, substantially as described.

MACHINE FOR TURNING TAPERING TWISTS ON WOOD—Reuben K. Huntoon, (assignor to himself and Jacob B. Rand), of Concord, N. H. : I do not claim the invention of pattern guides, E E, applied to a moving carriage, J, and irrespectively of a rotary twist block, and the mechanism connecting the same with the stock mandrels or arbors.

Nor do I claim stationary rests for the carriage guides, E E, to move on.

But I claim the arrangement of the several separate devices described, when operated as set forth, for turning irregular tapering forms of wood.

MANUFACTURE OF PAPER PULP FROM WOOD—Charles Marzoni, (assignor to J. Gandolfo), of New York City : First, I claim the use and application of the peculiar stone called "adamantine" described, when used as a means of tearing the woody fiber into a state suitable for pulp for paper, as described, by rotation or any other substantially similar manner.

Second, I do not claim steaming the wood, nor the use merely of hot water.

But I claim the combining the use of the hot water at the boiling point, or 210° Fah., with the stone in rotation while acting upon the wood simultaneously and continuously, so as that the hot water and flakes or particles of woody fiber immediately become united into pulp.

Third, I claim the apparatus consisting of the cover or box, E, the boxed openings therein, 1 2 3 4, and arms, rods and weights, 7 8 9, by which the blocks of wood are fed and held to the surface of the stone.

FAUCETS—Martin Robbins and James Powell (assignors to James Powell), of Cincinnati, Ohio : We claim the application to the key stem of the collar, I, cushion, Q, and loose collar, R, or their equivalents, arranged and operating in combination in the manner described, to compensate for the lateral wear or displacement of the stem.

ICE PICK—John L. Rowe (assignor to Frederick Stevens), of New York City : I do not claim the handle rod or point, as these are well known.

But I claim the spiral spring, D, in combination with the handle, A, rod, F, and point, B, as arranged, substantially as and for the purpose specified.

RE-ISSUES.

REAPING MACHINES—C. W. McCormick, of Chicago, Ill. Patented Oct. 23, 1847—Re-issued May 24, 1853 : I claim the combination of the support or stand for the raker, placed behind the axis of the reel, balanced or sustained with the raker thereon by the driving wheel with the reel, and with the short platform.

Also, I claim combining with the side draft reel reaping machine, having a reel for gathering the grain to the platform, a stand or seat for the raker fixed firmly upon the platform of the machine so as to enable the raeer securely to get at the grain as deposited on the platform by the reel and deliver and lay it properly on the ground from a single or short platform out or the return track of the horses in suitable gavels for being bound into sheaves.

Also, I claim the combination of the reel for gathering the grain to the cutting apparatus, and depositing it on the platform, with the stand or support for the raker, or the equivalent thereof, to enable him with ease and celerity regularly to remove the grain from the machine, and lay it on the ground, out of the return track of the horses.

And I also claim the construction of the stand or support for the raker, on the frame or platform of the machine, so that it gives to the raker such lateral and forward support to his body when standing at work that he may have free use of his arms and the upper part of his body to remove the cut grain from the platform, while at the same time he is so held fast that he cannot be thrown upon the reel, nor prevented from performing his functions by the jolting of the machine as it moves over the uneven ground.

ADDITIONAL IMPROVEMENTS.

MACHINERY FOR DRESSING AND SIZING WARPS—Wm. Bradley, of Manchester, Va. Patented May 11, 1858 : I claim the covering of the drying rollers, with some non-conductor of heat, or material having less conductive properties than the material, to prevent the caking, or uneven drying of the size in the warps.

CAR SEATS AND COUCHES—A. M. Holmes, (assignor to himself and A. G. Purdy), of Morrisville, N. Y. Patented Dec. 6, 1858 : I claim the use of the adjustable back-pad or equivalent, and combined therewith the adjustable headrests.

A CARD TO INVENTORS AND PATENTEES.

INVENTORS who have made improvements upon which they desire to procure Letters Patent, will do well to bear in mind that the Proprietors of the SCIENTIFIC AMERICAN have had upwards of thirteen years' experience in the examination of inventions, and during this time have unquestionably had more cases brought under their immediate notice than any other Patent Agency in the United States. It would be absurd to suppose that this extended experience did not afford them unparalleled facilities for the rapid and successful prosecution of this department of professional business. Messrs. Munn & Co. have made *thousands* of personal examinations at the United States Patent Office into novelty of inventions, and are familiar with the law, the rules and the regulations that govern the examination of cases, and are having daily intercourse with the Honorable Commissioner of Patents and the Examiners. Messrs. Munn & Co. have, during the last few years, successfully prosecuted hundreds of rejected cases, not for their own clients merely, but for agents of limited experience, whose offices are remote from that great storehouse of American genius, the United States Patent Office. They venture the assertion that, possessing such advantages and facilities as they do, no other Patent Agency in the United States can offer equal inducements to the worthy inventors of this country. In proof of the unparalleled amount of business transacted through the Scientific American Patent Agency, it is only necessary to refer to the letter of the Hon. Charles Mason, the late respected Commissioner of Patents, published below, and to the still more significant fact that nearly ONE THOUSAND PATENTS were issued, during the past year, to inventors whose cases were prepared and prosecuted through the Scientific American Patent Office.

Notwithstanding the multiplicity of Patent Agents in the United States, the business of Messrs. Munn & Co. is steadily on the increase. At no former period has their professional practice been so extensive as at present, which fact indicates that inventors throughout the country have the most perfect confidence in their integrity and mode of transacting this class of business. Their experience covers the most remarkable years of inventive progress; their knowledge could not be purchased by money, any more than an abstruse science could be acquired without laborious study and many experiments. They have facilities within their power by which the entire business of the United States Patent Office could be successfully carried on through their Agency *alone*. If cases are rejected, they are rigorously investigated. Appeals, interferences, and extensions are also conducted with the greatest care. In fact, every department of the business connected with the Patent Office receives their attention.

If an inventor wishes to procure patents in Great Britain, France, Belgium, Austria, Russia, Prussia, Spain, Holland or any other foreign country where patent laws exist, Messrs. Munn & Co., through their old established agencies in London, Paris and Brussels, can attend to it with great dispatch, and will, upon application, furnish all needful information, either in person at their offices in New York and Washington or by letter. Inventors should remember that Munn & Co.'s office in Washington is not a *mere* "Agency," in which inventions are exposed to the view of *outside* parties, but it is a Branch Establishment, managed by Messrs. Munn & Co., and their confidential clerks.

Messrs. Munn & Co. wish it to be distinctly understood that they *neither buy nor sell* patents. They regard it as inconsistent with a Proper management of the interests and claims of inventors, to participate in the least apparent speculation in the rights of patentees. They would also advise patentees to be extremely cautious into whose hands they entrust the power to dispose of their inventions. Nearly fourteen years' observation has convinced M. & Co. that the selling of patents cannot be conducted by the same parties who solicit them for others, without causing distrust.

Inventors who wish to personally consult with Messrs. Munn & Co. can freely do so, and receive promptly all needful advice, free of charge, and their letters will be treated as confidential.

PRINCIPAL OFFICE—128 Fulton street, New York City.

BRANCH OFFICE—Corner of F and Seventh street, Washington, D. C., opposite the United States Patent Office.

FOREIGN OFFICES—London, 66 Chancery Lane.
" " Paris, 29 Boulevard St. Martin.
" " Brussels, 26 Rue des Eperonniers.

The annexed letter from the late Commissioner of Patents we commend to the perusal of all persons interested in obtaining patents :—

MESSRS. MUNN & CO.—I take pleasure in stating that while I held the office of Commissioner of Patents, MORE THAN ONE-FOURTH OF ALL THE BUSINESS OF THE OFFICE came through your hands. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the Office, a marked degree of promptness, skill, and fidelity to the interests of your employers.

Yours, very truly, CHAS. MASON.

Communications and remittances should be addressed to MUNN & COMPANY,
No. 128 Fulton street, New York.

Testing Vinegar.

MESSRS. EDITORS—Your answer to S. B. L., of N. Y., that the hydrometer is valueless in determining the quality of vinegar, is perfectly correct. But as to other instruments for testing, I wish to call your attention to an acetometer, made after Otto, where the test is chemical, and turns tincture of litmus into a red liquid, and in neutralizing the acid by ammonia, it becomes blue. This acetometer is graduated so, that in filling the first part with tincture of litmus, and the second part with the vinegar to be tested, the mixture turns red; now by adding gradually aqua ammonia of a certain strength, till the mixture commences turning blue, the quantity used indicates the purity of the vinegar. I can furnish tubes and instructions of use.

LOUIS BLACK.

Detroit, Mich., December, 1858.

The Speed of Railway Cars.

Many of the accidents which happen to persons attempting to cross railroads are the results of ignorance of the velocity of the iron horse when fairly under way. A writer in the Hartford *Courant* gives some interesting facts which it may be well to bear in mind :

"It seems almost incredible that, as we glide smoothly along, the elegantly furnished car moves nearly twice its length in a second of time—about 74 feet. At this velocity we find that the locomotive driving wheels, six feet in diameter, make four revolutions per second. It is no idle piston rod that traverses the cylinder thus eight times per second.

"If a man with a horse and carriage upon an unimportant public road in a country town should approach and cross the track at a speed of six miles per hour, which would be crossing rapidly, an express train approaching at the moment would move towards him two hundred and fifty-seven feet while he was in the act of crossing a distance barely sufficient to clear the horse and vehicle. If the horse was moving at a rate no faster than a walk, as the track is usually crossed, the train would move towards him, while in the act of crossing, more than five hundred feet. This fact accounts for the many accidents at such points. The person driving thinks he may cross because the train is a few rods distant.

"How compares the highest speed of the train with the velocity of sound? When the whistle is opened at the eighty rod 'whistle post,' the train will advance nearly one hundred feet before the sound traverses the distance to and is heard at the crossings. The velocity exceeds the flight of birds. The late Dr. J. L. Comstock, the well-known author of several philosophical works, informed the writer that he was recently passing through western New York when the train actually 'ran down' and killed a common hawk. The train was stopped, and the game so rarely captured was secured."

Locomotive Expenses.

The whole number of locomotives on the New York Central Railroad is 212, and the aggregate number of miles performed by them during the three months ending October last, was 1,011,908 miles. The total cost for repairs and running expenses in that period was $190,389 74, averaging 18.80 per mile. The fuel expense alone was 8.50 per mile; wood was used at $3 50 per cord, and no less than 24,587½ cords were consumed in the above mentioned period. The average distance run with one cord was 41.15 miles. The entire length of this railroad, with all its divisions, is 556 miles. Considerable quantities of pork are employed as a lubricating agent, no less than 2,930 pounds being used on this railroad in three months, together with 6,816 gallons of oil.

Heating Schools.

Of all the blessings that can be enjoyed by man, health is the greatest; and as it is the luxury of old age, it should be the birthright of childhood. Yet our present system of heating public schools with immense stoves, the flues of which are often hot enough to scorch the floors on which they stand, is prejudicial in the extreme; and, as every teacher knows, is productive of headaches, bleeding at the nose, and incapacity for study; it also lays the foundation of sickness, and deprives the little ones of the ruddy face, and physical strength to enjoy good out-door romps. Cannot some better system be introduced—hot water or steam? The School Commissioners should look to it if they hope to make men and women worthy the name from the pupils of the schools.

BALLS TO REMOVE GREASE.—Take soft soap and fullers' earth, of each half a pound; beat them well together in a mortar, and form into cakes. The spot on the cloth being first moistened with water, is rubbed with a cake, and allowed to dry, when it is well rubbed with a little warm water, and afterwards rinsed or rubbed off clean.

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