

Arrangement and Maintenance of Batteries.

The quantity of electricity which exists in the form of a current upon a given length, size, and quality of wire, is proportional to the number of cells in the battery; for, while the quantity of electricity produced by a battery is proportional to the amount of zinc decomposed in each cell, and is no greater in a battery of one hundred cells than in any one single element of that one hundred cells, the electro-motive force which is required to overcome the resistance of the conductors, or to force the quantity generated by a single cell through the wire, increases with every additional cell.

The quantity of electricity existing in the form of a current upon a telegraph wire from a given number of battery cells, is inversely proportional to the resistance of the wire, relays, and battery. To summarize: The electro-motive force being constant, the quantity of electricity which flows through any circuit is inversely proportional to the resistance.

The resistance being constant, the quantity of electricity which flows through any circuit is directly proportional to the electro-motive force.

It is evident from the above considerations that the number of cells employed in a battery for working a telegraph wire should be strictly proportional to the resistance of the wire and relays. If a battery of a certain number of cells is employed to work several wires, the resistances of all the circuits should be approximately the same; for if a wire one hundred miles long is attached to a battery which supplies another wire of twice the length, the shorter wire will have twice the quantity of current that the longer wire receives. If, therefore, the electro-motive force of the battery is sufficient to work the longer wire, it is twice as great as the shorter wire requires, and the surplus strength is wasted. In estimating the length of a wire, of course the resistances of the relays must be included, and the size and condition of the wire, or its conductivity, properly considered.

Applying the foregoing principles, the strength of current upon each of the following wires when supplied from separate batteries of 50 cells each, will be found as stated in the eighth column. When all the wires are supplied from one battery of 50 cells the strength of current upon each will be as stated in the ninth column.

Table with 9 columns: Number of Line, Resistance of Line, Resistance of Relays, Resistance of Line and Relays, Resistance of Line and Relays increased by 50=Battery, Conductivity of Wires, Conductivity of Wires, Strength of Current when supplied by separate batteries of 50 cells each, Strength of Current when supplied by one battery of 50 cells.

The problem of working the twelve wires from one battery is a case of branch circuits, and the question is, What is the joint or combined resistance of the twelve branches? This will readily be found to be R=337,384. If now we add to this the common resistance of the battery R=50, the total resistance of the circuit will be R+R=337,384, and the strength of current flowing through the battery, or generated by it, will be S=500000/337384=129.0709. Now, this strength of current divides itself among the twelve branches in proportion to their several conductivities, as exhibited in the sixth column (conductivity is reciprocal of resistance, thus 1/337,384 = 0.000002933).

If the resistance of the battery were less than 50, the strengths of current in the last column would approach more nearly to those in the eighth column; but, on the contrary, were the resistance of the battery more than 50, the strengths of current upon the wires supplied from a common battery would depart more widely from those supplied by separate batteries of the same electro-motive force.—George B. Prescott in the Journal of the Telegraph.

Use for Blast Furnace Slags.

We have published several articles on this subject, giving an account of the manufacture of chemical salts, cements, pavements, and the like, from what has always been a waste material, and now hear of the proposition to cast the cinder from the furnaces into slabs, garden rollers, posts, pillars, and so forth. In certain metallurgical operations these articles can be made to resemble porphyry. In some parts of Germany the slag is cast in molds, and is at first used by the workmen for cooking and heating purposes, and afterwards for building houses and walls. The prospect is fair of furnace slags becoming valuable for many purposes.

Professor Huxley's Address Before the British Association.

Our readers will find in another column a portion of Professor Huxley's inaugural address before the British Association for the Advancement of Science. As a discussion of the origin of life and the various hypotheses in regard to this interesting subject, and as a clear expression of the views of one of the greatest biologists of the age, it will be found worthy of the most careful perusal. We shall conclude the address in our next issue.

STEEL TYPES FOR TYPOGRAPHICAL USE.—By an ingenious mechanical contrivance, not unlike that in use for making nails, previously softened steel wire is converted into types which are afterwards hardened. With a single machine and a one-horse power steam engine it is said in an English journal 35,000 types can be made in twelve hours, while the types thus made are of a superior finish, and cheaper, also, on account of the less expense of the steel as compared with the ordinary type metal (usually an alloy of antimony and lead, in the proportion of one part of antimony to four of lead, with a very small quantity of copper, the latter being usually present in sufficient quantity in what is termed hard lead).

ARITHMETICAL.—Any number of figures you may wish to multiply by 5 will give the same result if divided by 2—a much quicker operation; but you must remember to annex a cipher to the answer when there is no remainder, and when there is a remainder, whatever it may be, annex a 5 to the answer. Multiply 464 by 5, and the answer will be 2,320; divide the same by 2, and you have 232, and as there is no remainder, you add a cipher. Now take 359—multiply by 5, the answer is 1,795; on dividing this by 2 there is 179 and a remainder; you therefore place a 5 at the end of the line, and the result is again 1,795.

It is stated that an average Egyptian can see nothing distinctly at a distance of more than 500 yards, and has no acuteness in detecting an object within as many feet. A recent traveler says that when the railway was constructed the utmost difficulty was found in procuring men capable of seeing or recognizing the difference between signals only a hundred yards off. Many candidates came, but few passed the test. One man was nearly passed, but the engineer was not quite satisfied that the fellow had not been "making good shots" at the colors. So he held up his hat at 150 yards, and the hapless signalman pronounced it to be "the red flag."

THE HOOSAC TUNNEL, during last month, advanced 150 feet at the east end, and 112 at the west. The central shaft reached the grade of the tunnel August 13, and a force was employed during the remainder of the month in trimming pouches of rock and putting in new timbers and machinery.

WE are indebted to James R. Smedburg, C. E., of the San Francisco (Cal.) Gas Works, for a copy of the Engineers' Index to the London Journal of Gas Lighting, covering the first seventeen volumes of that valuable publication. This Index will be of great value to all who are interested in the science and laws of gas engineering.

TWO thousand of Krupp's workmen are said to have enlisted in the German army. Krupp's guns are also in the same army, and are giving good reports.

NEW BOOKS AND PUBLICATIONS.

A PRACTICAL TREATISE ON SOLUBLE OR WATER GLASS, Silicates of Soda, and Potash for Silicifying Stones, Mortar, Concrete, and Hydraulic Lime, Rendering Wood and Timber Fire and Dry Rot Proof, etc., with Hundreds of Recipes for Soap, Cements, Paints, and Whitewashes, Railroad Sleepers, Wooden Pavements, Shingles, etc. By Dr. Lewis Feuchtwanger, Chemist, and Mineralogist. Concluded with various Essays on the Origin and Functions of Carbonic Acid, Limestones, Alkalies, and Silica; and a Complete Guide for Manufacturing Plain and Colored Glass. With several Woodcuts. New York: Published by L. and J. W. Feuchtwanger, 55 Cedar street.

It will be seen by this title that a great variety of practical subjects are discussed by the author, who is well known as a man thoroughly posted in these and cognate matters, and also as the author of a valuable treatise on gems. The author was the first to introduce the use of soluble glass to the American public, and has devoted much time in experiments with it. Whoever reads the book will not be disappointed in finding much information on points not generally well understood in this country. An extract from the work will be found in another column.

THE CANADIAN ILLUSTRATED NEWS.

This excellent weekly periodical, which is about the size of the SCIENTIFIC AMERICAN and other current illustrated papers, now comes to us greatly improved in its style of illustrations. Our Canadian contemporary has from the first exhibited a commendable spirit of enterprise in the production of all its engravings by the photographic process, and now, by the recent introduction of improved steam presses, it is enabled to print its photographic pictures as quickly and in almost as good style, as the ordinary hand-cut wood engravings. We have seen some admirable specimens of printed photographs from nature done by the same method as that employed for the illustrations of the Canadian News, namely, Leggo's process, of Montreal. The publisher of the Canadian Illustrated News is Mr. George E. Desbarats, a practical printer of much experience, ability, and enterprise. The credit of establishing a weekly newspaper, profusely and regularly illustrated by photographic plates, belongs to Canada. There is no other paper like it in the world, that we know of. The Leggo process above alluded to, was some time ago fully described in the SCIENTIFIC AMERICAN.

Inventions Patented in England by Americans.

(Compiled from the "Journal of the Commissioners of Patents.")

PROVISIONAL PROTECTION FOR SIX MONTHS.

- 1,431.—LOOMS AND SHUTTLES.—H. E. Towle, New York city. May, 18, 1870.
2,051.—TOILET AND OTHER MIRRORS.—G. H. Chinnock and E. P. Williams, New York city. July 20, 1870.
2,324.—PRINTING PRESSES.—W. Braidwood, New York city. August 24, 1870.
2,330.—PRINTING MACHINERY.—R. M. Hoe, New York city. August 24, 1870.
2,338.—LIQUID METERS.—J. F. De Navarro, New York city. August 25, 1870.
2,340.—TRAMWAYS AND ROAD SURFACES.—S. D. Tillman, Jersey City, N.J. August 25, 1870.
2,353.—TUNNELING.—W. Sykes, Toronto, Canada. August 27, 1870.
2,358.—SEWING MACHINE ATTACHMENT.—G. H. Collins, New York city. August 27, 1870.
2,359.—TACKS AND NAILS.—H. W. Wright, Taunton Mass. August 27 1870.

Business and Personal.

The Charge for Insertion under this head is One Dollar a Line. If the Notice exceed Four Lines, One Dollar and a Half per Line will be charged.

Pattern Molding Letters to put on patterns of castings. Wholesale and retail, by H. W. Knight, Seneca Falls, N. Y.

Propeller Engine Cylinders, 28 inches square, for sale cheap, by Daniel W. Richards & Co., 92 Manzan st., New York.

Foundry Cranes, ten and fifteen tons capacity, wanted. Address Box 2,348, Postoffice.

The Oil Cups and Lubricators manufactured by H. Moore, 41 Center st., are the most simple, durable, and perfect. Send for circular.

Metallic Pattern Letters for putting on patterns for castings, etc.; also, engraved plates for numbering church pews, etc. Allen & Brim, Seneca Falls, N. Y.

Parties West of Harrisburg, Pa., who can influence trade with Manufacturers, and are desirous of securing agencies for the celebrated "W. H. Tupper & Co. Furnace Grates," are requested to correspond immediately with the Western Controllers, W. C. Childs & Co., Pittsburgh Pa. Grates tested for seven years, and endorsed by the most prominent manufacturers throughout the country. See Circular. Delivered free of freight.

A good Patent Salesman wanted to sell rights for the best Gas Machine invented. Full particulars by calling on or addressing C. F. Dundendale, 90 Wall st., New York city.

Stager's Automatic Boiler Feeder. The water is kept at just the right height by the filling and emptying of a tube. For Rights and Machines apply to J. B. Smith, 417 Broadway, Milwaukee, Wis.

Foundry Cranes, thirty tons capacity, for sale cheap. Address Postoffice Box 2,348.

Send to H. Moore, 41 Center st., for Circulars of the best self-closing and compression faucets, water-closet valves, etc.

Send prices and pamphlets of all kinds of wood working machinery to A. J. Williams, Madison, Ga.

Manufacturers as well as Owners of Buildings would do well, before purchasing their paints, to read the advertisement of the Averill Chemical Paint Co., in this number.

Silver Medal Machinery Lathes, Presses, Engines, all kinds of light machines, dies, models, etc., by John Dane, Jr., Newark, N. J.

Peck's patent drop press. For circulars, address the sole manufacturers, Milo Peck & Co., New Haven, Ct.

Millstohe Dressing Diamond Machine—Simple, effective, durable. For description of the above see Scientific American, Nov. 27th, 1869. Also, Glazier's Diamonds. John Dickinson, 64 Nassau st., N. Y.

For foot power engine lathes address Bradner & Co., Newark, N. J.

Peteler Portable R. R. Co., contractors, graders. See adv'tment.

For Am. Twist Drill Co.'s Patent Grinders, and other fine tools, address J. W. Storrs & Co., 252 Broadway, New York.

"507 Mechanical Movements."—No Mechanic or Inventor can afford to be without The Illustrated Book of 507 Mechanical Movements. They will find in it just what they require—what they can find nowhere else. Price \$1. By mail, \$1.12. Address Theo. Tusch, 37 Park Row, New York.

Pictures for the Drawing Room.—Prang's "Lake George," "West Point," "Joy of Autumn," "Prairie Flowers." Just issued. Sold in all Art Stores.

Roofing Materials, House Sheathing, Roofing Felts, & Psints, full directions for applying. Mica Roofing Co., 73 Maiden Lane, New York.

Edging or Profiling Machines, having a valuable improvement in device for cutting "formers;" superior shaping, die sinking, spindle and cutter grinding machines are made by the Pratt & Whitney Company, Hartford, Conn.

Parties having patented or other machines which they desire to have manufactured, can have it done at very low rates, in wood or iron (facilities ample), by the Diamond Mill M'fg Co., Cincinnati, Ohio.

The paper that meets the eye of manufacturers throughout the United States—Boston Bulletin, \$4.00 a year. Advertisements 17c. a line.

A New Waltham Watch, made especially for Railroad Men and Engineers, is fully described in Howard & Co.'s Price List of Waltham Watches. Every one interested should send for a copy, which will be mailed to any address free. Address Howard & Co., 785 Broadway, N. Y.

Building Felt (no tar) for inside & out. C. J. Fay, Camden, N. J. See advertisement of New Work on "Soluble Glass," published by L. & J. W. Feuchtwanger, 55 Cedar st., N. Y. Price \$3.20, mailed free.

Pumping Water without Labor or Cost, for railroads, hotels, houses, cheese factories, stock fields, drainage, and irrigation by our self-regulating wind-mill. Strong and well tested. Con. Windmill Co., No. 5 College Place, New York.

Steam Gages, thoroughly made, no rubber or other packing. Address E. H. Ashcroft, Boston, Mass.

Self-testing Steam Gages. E. H. Ashcroft, Boston, Mass.

Screw Wrenches.—The Best Monkey Wrenches are made by Collins & Co. All Hardware Dealers have them. Ask for Collins Wrench.

Profitable Canvassing.—"Universal Sharpener," for Table Cutlery and Scissors. A correctly beveled edge can be obtained. See Adv't.

Blind Stile Mortising and Boring Machine, for Car or House Blinds, fixed or rolling slats. Martin Buck, Agent, Lebanon, N. H.

Builders.—See A. J. Bicknell's advertisement on outside page.

The best selected assortment of Patent Rights in the United States for sale by E. L. Roberts & Co., 15 Wall st., New York. See advertisement headed Patentees. Sales made on Commission.

Best Boilertube cleaner.—A. H. & M. Morse, Franklin, Mass.

For Sale or to Lease.—A never-failing water-power at Ellenville, N. Y., 1/2 mile from depot of the Ellenville Branch N. Y. and O. Railroad R. R., and only 80 miles from New York city, by rail. For full particulars address Blackwell, Shultz, & Co., Kingston, N. Y.

"Your \$50 Foot Lathes are worth \$75." Good news for all. At your door. Catalogues Free. N. H. Baldwin, Laconia, N. H.

The Best Hand Shears and Punches for metal work, as well as the latest improved lathes, and other machinists tools, from entirely new patterns, are manufactured by L. W. Pond, Worcester, Mass. Office, 98 Liberty st., New York.

One 60-Horse Locomotive Boiler, used 5 mos., \$1,200. Machinery from two 500-ton propellers, and two Martin boilers very low. Wm. D. Andrews & Bro., 414 Water st., New York.

For solid wrought-iron beams, etc., see advertisement. Address Union Iron Mills, Pittsburgh, Pa., for lithograph, etc.

Keuffel & Esser 116 Fulton st., N. Y., the best place to get 1st-class Drawing Materials. Swiss instruments and rubber Triangles and Curves.

For tinners' tools, presses, etc., apply to Mays & Bliss, Plymouth st., near Adams st., Brooklyn, N. Y.

Glynn's Anti-Incrustator for Steam Boiler.—The only reliable preventative. No foaming, and does not attack metals of boiler. Liberal terms to Agents. C. D. Frearicks, 57 Broadway, New York.

Cold Rolled—Shafting, piston rods, pump rods, Collins pat. double compression couplings, manufactured by Jones & Laughlins, Pittsburgh, Pa.

Business Men Find It

Much more convenient to contract with an established Advertising Agency, like that of Geo. P. Rowell & Co., No. 40 Park Row, New York, than to make contracts direct with publishers. They gain the advantage of dealing with one person instead of dozens or hundreds, while the cost is not increased.

Answers to Correspondents.

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

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

A. S. W., of Ca.—Evidently your chimney is not of sufficient capacity for your boiler furnace. Undoubtedly the cheapest way in the long run will be to increase the height of the chimney by masonry, not by a 11-inch pipe, as proposed, in one corner of the chimney. Such a pipe would reduce the sectional area of the chimney flue, now 400 square inches, to 95 square inches. We consider the area of 400 square inches small enough for your boiler. The best thing for you to do is to get a competent engineer to calculate for you the proper dimensions of the chimney, and correct its deficiencies under his direction.

A. G. G., of N. Y., wishes to know the correct spelling of the name of the frame which supports the step and spindle of a flouring-mill stone. He says it is spelled by different people, "Hearsh," "Hurst," and "Husk." We answer that the latter spelling is correct, and that the word is pronounced as spelled, "Husk."

B. B. D., of N. Y., wants to know if imperfectly glazed earthenware bottles may be rendered so tight by the use of water glass that they will not leak under the pressure of fermentation when holding root beer? The beer is put into the bottles while hot. As water glass is dissolved in hot water, this substance will not answer the purpose. Perhaps some of our correspondents may have met with a similar difficulty, and found a good way to remedy it.

H. L., of Wis.—The scale which adheres to the inside of tea-kettles is difficult to remove without injury to the kettle. There are no acids we can recommend for the purpose. It may often be mechanically removed by tapping the outside of the kettle with a hammer. Sometimes boiling oak bark, or slippery elm bark in the kettle will start the scale. More often, however, it resists removal, except by chipping with a pointed steel instrument—a tedious operation.

F. E. M., of Pa.—The explanations you seek comprise a somewhat extensive course of reading. They cannot be made in our columns. They cover nearly the whole fundamental basis of mechanics and physics. For enlightenment you should peruse some able treatises on celestial and terrestrial physics and mechanics.

D. P. R., of Mo.—Colza oil is a general commercial name employed in France, Belgium, etc., for the oil manufactured by expression from the seeds of different species of Brassica, and has there the same significance as "rape oil" in England. "Colza" koolzaad, means cole or cabbage seed. "Colza" is the French name for "rape seed."

L. V. R., of N. Y.—A "noggin" is a wooden cup or mug of no definite capacity. We do not recollect ever seeing it used in any work as a definite measure, though it would seem that it has been, since the treatise on dyeing, of which you speak, so uses it. We are informed that in Ireland it is a measure of one gill.

R. S., of Pa.—The gas issuing from the spring you describe is undoubtedly sulphureted hydrogen. You can test it by holding over the spring a piece of paper wet with solution of acetate of lead. If sulphureted hydrogen be present it will turn the paper black.

W. J. H., of Ind.—Directions for softening water for manufacturing purposes, may be found on page 217, Vol. XXI., of the SCIENTIFIC AMERICAN, and in any good and complete treatise on dyeing.

N. A. H., of Ca., has tried several recipes for covering the soles of boots with rubber without success. He now appeals to our correspondents for information. If any have been successful we shall be happy to publish their method.

S. R. V., of Tenn.—A preparation for marking the glossy black letters used on show cards, and highly recommended, is lamp black, from which the oil has been removed by roasting, mixed with whites of eggs.

L. M., of N. Y.—The words upward and downward, when applied to direction, mean away from or toward the earth's center, in radial lines. It is obvious, therefore, that up or down, is not precisely the same direction for any two persons on the earth's surface.

W. P. D., of Vt.—The smell of petroleum is very difficult to remove from barrels which have contained it. We know of no method whereby you can accomplish it.

D. L. M. of Va.—The pressure of a vertical shaft and its appurtenances upon the step, is just the same while revolving, as when at rest.

C. L. P., of Minn.—Temper your brass plates for springs by hammering them cold. You can give elasticity to the softest brass in this way.

D. T. D., of R. I.—The notion that a given head of water will drive a wheel faster in the night than in the daytime, is a mistaken one.

L. P. W., of La.—The plates upon which music is engraved are made of 90 parts block tin, and 10 parts antimony.

Recent American and Foreign Patents.

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

WASHER CUTTER.—Patrick McCormick, Newark, N. J.—This invention has for its object to provide an instrument by means of which two or more concentric washers can at once be cut from one piece, and their size regulated at will.

CURTAIN FIXTURE.—W. P. Yates, Elmira, N. Y.—This invention relates to a new and useful improvement in curtain fixtures, having particular reference to the mode of revolving the cutter roller, and consists in so applying the power to the roller that a variable purchase is obtained, and so that at one point in each revolution the curtain will balance the spring.

LOCK NUT.—James Moorcroft, Newport, R. I.—This invention relates to a new manner of locking a nut by applying it to the split end of a bolt, together with a conical screw for expanding said bolt within the nut, whereby the nut will be securely fastened.

METALLIC ROOF.—W. M. Barry, Nashville, Tenn.—This invention relates to a new and useful improvement in the construction of roofs for railroad and other purposes, whereby many of the objections which have hitherto been met with in the construction of roofs are obviated.

JOINTED OAR.—C. Dann, La Crosse, Wis.—The object of this invention is to provide an oar which can be operated by a person facing the bow of a boat.

PEPPER SAUCE.—E. McIlhenny, New Iberia, La.—This invention relates to a new process of preparing an aromatic and strong sauce from the pepper known in the market as Tobacco pepper.

SHUTTER BAR.—Julius Berbecker, New York city.—This invention relates to a new construction of the shutter bars or fastenings used on inside shutters.

WASHING MACHINE.—E. S. Harper, Sutherland Springs, Texas.—This invention has for its object to furnish an improved washing machine, which shall be simple in construction, effective in operation, and easily operated, and which will not injure the clothes.

MOUSE TRAP.—W. K. Bachman, Columbia, S. C.—This invention has for its object to furnish an improved mouse trap, which shall be simple in construction, not liable to get out of order, easily set and reliable in operation.

OYSTER TONGS.—Edward Ward, Smyrna, Del.—This invention relates to a new and useful improvement in tongs for taking oysters from the water, and consists in such a construction and arrangement of parts that the tongs are opened and closed by means of cords.

MELODEANS.—J. C. Briggs, Ansonia, Conn.—The object of the present invention is to provide for a more even motion of the valve in an expression chamber, and not to allow the sudden violent movements of the same which are produced if the air only acts on one side of the pivot.

HORSE HAY RAKE.—G. E. Carleton, Oldtown, Me.—This invention has for its object to improve the construction of horse hay rakes, so that the rake may be raised to discharge the collected hay by the advance of the machine.

WHEAT STEAMER AND DRYER.—C. T. Hanna, Keokuk, Iowa.—This invention has for its object to furnish an improved apparatus for steaming and drying wheat to soften it preparatory to girdling, which apparatus shall be simple in construction, effective in operation, and easily applied.

HEMMEK.—Abel H. Bartlett, Spuyten Duyvil, N. Y.—This invention relates to improvements in that class of hemmers for sewing machines which are designed for making hems of different widths, and which are attached to the presser foot.

STEM-WINDING ATTACHMENT FOR WATCHES.—Fritz Robert Theurer, Chaux de Fonds, Switzerland.—This invention relates to improvements in attachments to watches for winding and setting them by turning the stem, and consists in an improved arrangement of means having for its object, mainly, to provide an apparatus which may be applied to watches already made, as well as to those being made.

ELEVATORS.—Theo. H. Rudiger, Lawrence, Kansas.—This invention relates to improvements in elevators, and consists in arranging the spout on to which the articles elevated by the buckets are dumped, so that previous to the dumping the upper end will swing back under the bucket, so as to ensure the receiving of all the contents of the bucket, and then swing out of the way of the downward movement of the bucket in time to let it pass without obstruction.

WAGON SEATS.—C. E. Hollenbeck, Kirksville, Mo.—This invention relates to improvements in the detachable spring wagon seats, used by placing them on the tops of the sideboards of the wagon boxes, or on cleats or ribs attached to the sides. The invention consists in an improved construction and arrangement of the springs.

WIPING ATTACHMENT FOR FEED ROLLERS.—Lyman Crawford, Holyoke, Mass.—This invention relates to improvements in wiping apparatus for the feed rollers of carding machinery, and consists in a combination with the rollers of wiping plates, one placed above the upper rollers, and another below the lower ones, each plate, having a concave face, to be provided with a wiping cloth, acting on the surface of the roller; also, a slot behind the wiper, through which the substance wiped from the said rollers, and collecting in masses, may escape or be removed, and the lower wiping plate is provided with a guard or scraper plate, arranged in conjunction with the lower roller to prevent any large collections of waste from being carried up by the said roller to the sliver.

DUMPING CAR.—Ed. C. Hegeler, La Salle, Ill.—This invention relates to improvements in dumping cars, and consists in arranging the boxes with one side, or end, as the case may be sloping from about the center of the bottom upward, and providing the sloping side with rockers, on which the box, in tilting, will roll toward the edge for dumping, instead of tilting on hinges, as heretofore. The said rockers are provided with flanges, to keep them on the rails whereon they roll, and they have chains attached to their ends, and to the truck frame, in a way to prevent them from sliding on the rails they roll upon.

FURNACE GRATE.—Abraham L. Pennock, Upper Darby, Pa.—This invention relates to a new and useful improvement in grate bars for furnaces, whereby they are made cheaper, more useful, and more durable than they have heretofore been, and it consists in locking the bars together by means of locking pins running through, and at right angles with the bars, the said locking pins having notches for holding the bars, by means of which the distance of the bars apart may be varied so as to adapt the grate to either coarse or fine coal.

COTTON-SEED PLANTER.—Fletcher Sloan, Bolivar, Tenn.—This invention has for its object to furnish an improved cotton-seed planter, simple in construction, and effective in operation, and which shall be so constructed that it may be readily adjusted for planting corn, peas, and other seeds, and for distributing guano and other fine fertilizers.

PLOW.—David Morris, Bunker Hill, Ill.—This invention has for its object to improve the construction of plows in such a way as to enable the beam to be adjusted laterally to adapt the plows for use as a two or three-horse plow, as may be required, and which shall, at the same time, be simple in construction and effective in operation, holding the beam securely however adjusted.

ATTACHING DRAFT TO PLOWS, ETC.—George W. Kidwell, Elwood, Ind.—This invention has for its object to furnish an improvement in attaching draft to plows, harrows, reapers, mowers, and other machinery where the draft is attached by means of a clevis, which shall be so constructed that should the plow or other machine strike a stone or other obstruction, the horses will be kept from being injured and the machine from being broken by the sudden shock, and which will enable the line of draft to be adjusted to cause the plow to cut a wider or narrower furrow, as may be desired.

EARRINGS, DROPS, ETC.—Gottfried Haberland, Bloomington, Ill.—The object of this invention is to so construct earrings and drops that the same may be applied without requiring the perforation of the lobes. The invention consists in constructing the earring in form of a spring which will retain itself on the ear by spring pressure; the application and removal of earrings and drops is thereby considerably facilitated.

MANUFACTURE OF HYDROCARBON OILS.—William Spears, Jamestown, N. Y.—The object of this invention is to produce a highly valuable hydrocarbon oil or liquid for illuminating or other purposes, from the products of distillation in the process of manufacturing oils from crude petroleum, and consists in uniting (by the application of heat) the first and most volatile product of distillation (benzine) with the refuse tar, thereby forming a compound from which a highly valuable oil is distilled.

VALVE COCK.—John C. Macdonald, St. Louis, Mo.—This invention has for its object to improve the construction of valve cocks so as to enable them to be ground to their seat at any time when necessary without removing them from their fittings, and, at the same time, to have a true working guide while being re-ground.

Caveats are desirable if an inventor is not fully prepared to apply for a Patent. A Caveat affords protection for one year against the issue of a patent to another for the same invention. Patent Office fee on filing a Caveat, \$10. Agency charge for preparing and filing the documents from \$10 to \$12. Address MUNN & CO., 37 Park Row, New York.

CITY SUBSCRIBERS.—The SCIENTIFIC AMERICAN will be delivered in every part of the city at \$3.50 a year. Single copies for sale at all the News Stands in this city, Brooklyn, Jersey City, and Williamsburgh, and by most of the News Dealers in the United States.

Official List of Patents.

Issued by the United States Patent Office

FOR THE WEEK ENDING Sept. 27, 1870.

Reported Officially for the Scientific American

SCHEDULE OF PATENT OFFICE FEES

Table with 2 columns: Fee description and Amount. Includes fees for each caveat, applications for patents, extensions, and disclaimers.

For copy of Claim of any Patent issued within 30 years... \$1. A sketch from the model or drawing, relating to a portion of a machine... \$2. The full Specification of any patent issued since Nov. 20, 1866... \$1.25.

- 107,646.—PULLEY FOR GATES.—Ephraim S. Axtell, Macomb Mich.
107,647.—MOUSE TRAP.—William K. Bachman, Columbia, S. C.
107,648.—TRUSS.—Sir William Baker, Austin, Texas.
107,649.—METALLIC ROOF.—William M. Barry, Nashville, Tenn.
107,650.—HEMMEK FOR SEWING MACHINES.—A. H. Bartlett, Spuyten Duyvil, N. Y.
107,651.—SHUTTLE FASTENING.—Julius Berbecker, New York city.
107,652.—WASHING MACHINE.—John T. Bever, Lathrop, Mo.
107,653.—TOOL FOR CUTTING WOOD MOLDINGS.—Charles E. Boynton (assignor to himself and Isaac N. Vosburg), San Francisco, Cal.
107,654.—MACHINE FOR CUTTING MATERIAL FOR BASKETS.—L. H. Bridgeman, Rock Stream, New York.
107,655.—MELODEON.—J. C. Briggs, Ansonia, Conn.
107,656.—COUPLING JACK.—H. A. Brown and E. B. Keith, Galesburg, Mich.
107,657.—FLUTING MACHINE.—Samuel G. Cabell, Washington, D. C.
107,658.—AGEING SPIRITS.—Andrew Caldwell, Lexington, Ky.
107,659.—FLOOD GATE.—John Campbell and Addison Watson, London, Ohio.
107,660.—HORSE HAY RAKE.—Guy E. Carleton, Old Town, Me.
107,661.—WASH STAND AND TANK.—H. W. Catlin, Burlington, Vt.
107,662.—STALK CUTTER.—Martin Caywood, Peoria, Ill.
107,663.—MODE OF INSERTING GLASS IN VAULT LIGHTS.—Zenas Cobb, Chicago, Ill.
107,664.—TIN ROOFING.—Benjamin Coddington, La Fayette, Ind.
107,665.—BLOWER.—W. S. Colwell, Pittsburg, Pa.
107,666.—ROLLER FOR SEWING MACHINES.—R. W. Courts, Russellville, Ky.
107,667.—WIPING APPARATUS FOR FEED AND OTHER ROLLERS.—Lyman Crawford, Holyoke, Mass.
107,668.—CARRIAGE GEARING.—Cornelius Custer, Norristown, Pa. Antedated Sept. 17, 1870.
107,669.—JOINTED OAR.—Christian Dann, La Crosse, Wis.
107,670.—MACHINE FOR SHAPING THE HEADS OF HORSESHOE NAILS.—Norman Dexter, Bower Hill, Pa.
107,671.—BLIND-SLAT TENONING MACHINE.—Frank Douglas, Norwich, Conn.
107,672.—PENCIL CASE.—Charles H. Downes, Hudson City, N. J.
107,673.—EGG BEATER.—Timothy Earle, Valley Falls, Smithfield, and Gilbert K. Dearborn, Pawtucket, R. I., assignors, by mesne assignments, to Timothy Earle and E. D. Goodrich, Boston, Mass.
107,674.—KNIFE SCOURER.—H. E. French, Unity, N. H.
107,675.—MACHINE FOR SAWING MARBLE.—J. E. French and J. M. Stephenson, Pendleton, Ind.
107,676.—PLOW.—David Fulton, St. Helena, Cal.
107,677.—SEWING MACHINE.—Charles W. Godown, Lambertville, N. J.
107,678.—MACHINE FOR JOINTING STAVES.—S. S. Gray, Boston, Mass.
107,679.—EAR RING.—Gottfried Haberland, Bloomington, Ill.
107,680.—WHEAT STEAMER AND DRIER.—Cyrus T. Hanna, Keokuk, Iowa.
107,681.—WASHING MACHINE.—Elijah S. Harper, Sutherland Springs, Texas.
107,682.—CARPET LINING.—J. R. Harrington (assignor to G. Harrington), Brooklyn, N. Y.
107,683.—DUMPING CAR.—E. C. Hegeler (assignor to F. W. Matthieson & Hegeler), La Salle, Ill.
107,684.—WAGON SEAT.—Charles F. Hollenbeck, Kirksville, Mo.
107,685.—CHAIR AND FURNITURE TIPS.—Francis H. Holton, Brooklyn, N. Y.
107,686.—APPARATUS FOR PREPARING PARCHMENT OR WATER-PROOF PAPER.—E. P. Hudson, New York city, assignor to New York Water-proof Paper Co., New York city.
107,687.—MANUFACTURE OF RUBBER-COATED PARCHMENT PAPER.—E. P. Hudson, New York city, assignor to New York Water-proof Paper Co., New York city.
107,688.—BALING PRESS.—Wm. Her, Shreveport, La.
107,689.—METHOD OF PRESERVING FRUIT.—Geo. Jaques, Boston, Mass.
107,690.—COMPOSITION OF MATTER FOR PRESERVING FRUITS FROM DECAY.—Geo. Jaques, Boston, Mass.
107,691.—SASH HOLDER.—William F. Kells, San Francisco, Cal.
107,692.—ATTACHING DRAFT TO PLOWS.—G. W. Kidwell, Elwood, Ind.
107,693.—CHEWING GUM.—Weston W. Kilbourn, Sanford, N. Y.
107,694.—CHIMNEY ATTACHMENT.—A. H. Lanphear, Atchison, Kansas.
107,695.—HAY ELEVATOR.—James Linderman, Bullville, N. Y.
107,696.—HEATING STOVE.—Adolphus Lotze, Cincinnati, Ohio.
107,697.—VALVE COCK.—John C. Macdonald, St. Louis, Mo.
107,698.—POTATO DIGGER.—George M. Marks, Half Moon, Pa.
107,699.—LAMP BRACKET.—Riverius Marsh, New York city.
107,700.—WASHER CUTTER.—Patrick McCormick, Newark, N. J.
107,701.—PEPPER SAUCE.—Edmund McIlhenny, New Iberia, La.
107,702.—FRICTION LOCOMOTIVE.—T. S. Minniss, Meadville, Pa. Antedated Sept. 17, 1870.
107,703.—GRAIN-BINDING ATTACHMENT FOR HARVESTERS.—T. S. Minniss, Meadville, Pa. Antedated Sept. 17, 1870.
107,704.—NUT LOCK.—James Moorcroft, Newport, R. I.
107,705.—PLOW.—David Morris, Bunker Hill, Ill.
107,706.—SCAFFOLD BRACKET.—Charles Mudge, Ovid, Mich. Antedated Sept. 17, 1870.
107,707.—WASHING MACHINE.—Abraham Mutersbaugh, Lewinsville, Va.
107,708.—FOLDING CHAIR.—Julius Nicoli, Boston, Mass.
107,709.—CORN PLOW AND PLANTER.—H. C. Osborn, Clark county, Ohio.
107,710.—DITCHING MACHINE.—Jason C. Osgood, Troy, N. Y.