

ENGINEERING INVENTIONS.

A car coupling has been patented by Mr. Francis M. Rariden, of Waynetown, Ind. The drawhead is provided with a coupling hook and link adjuster, combined with a sliding horizontal shaft having a cross pin and loose notched collar, with other novel features, the coupling being effected without the necessity of the trainmen going between the cars.

A crosshead for steam engines has been patented by Mr. Frank Robb, of St. John's, Mich. It has on each side a bearing made in two parts, one being rigid on the crosshead and the other dovetailed and sliding on the rigid part, with set screws for adjusting the sliding part, being simple in construction and easily adjusted to take up wear on the ways.

An improvement in railway construction has been patented by Mr. Robert P. Faddis, of Socorro, Territory of New Mexico. The invention consists principally in a metallic tie having its ends split longitudinally, one portion being turned up to engage the rail and the other portion adapted for engagement with the stringers by means of stirrups.

A boiler has been patented by Mr. Joseph Leighton, of Reading, Pa. It is especially adapted for rolling mills and similar shops, the invention having for its object to protect the boiler over the neck of the furnace, to increase the heating surface, utilize the products of combustion most efficiently, and introduce heated water to the boiler.

A stake and socket for flat cars has been patented by Mr. Thomas J. Vaughan, of Shawano, Wis. This combined socket and stake is more especially adapted for use on cars employed in the transportation of logs, and provides for the stake being normally held upright, while in unloading it may be conveniently and expeditiously swung downward out of the way.

A switch operating attachment has been patented by Messrs. James P. Tryner and Charles E. Gleesner, of Denver, Col. It consists of a bar, with means for moving it transversely to the track, the bar having shoes adapted to engage a projection from the switch tongue, whereby the driver or engineer on a car or locomotive may throw the switch tongue as desired.

An elevated framework and support for electric wires and street railways has been patented by Mr. Linus W. Brown, of New Orleans, La. It has iron cross beams or girders supported by upright iron posts, the latter resting on suitable foundations in the street, the structure to serve as a means whereby street cars may be moved by traction, without putting down surface rails, and to carry any number of electric wires.

AGRICULTURAL INVENTIONS.

A pruning implement has been patented by Mr. Francis A. Hall, of Ennis, Texas. It has a staff or pole which may be made in sections, with jaws which may be operated by sliding a handle up and down on the pole, making a simple and convenient device for pruning trees, shrubbery, etc.

A fruit gatherer has likewise been patented by the same inventor. The pole or staff is similar to that used in the pruner, and there is an attachment for receiving the fruit, consisting of a canvas tube, a metal frame, and an adjustable sleeve.

A rotary harrow has been patented by Mr. Thomas C. Cook, of Rushville, Ind. This invention covers a simple and economical construction which may be conveniently converted from a harrow into a cart, or *vice versa*, the harrow being readily moved from place to place, or used to carry a load to and from the field.

A cultivator has been patented by Mr. Samuel B. Cunningham, of Iuka, Ark. It has a regulator wheel which may be adjusted to determine the depth to which the plowshare shall cut, and also laterally to serve as a fender, to prevent the crop being covered up by the earth thrown up, being especially designed for use in cultivating young crops.

MISCELLANEOUS INVENTIONS.

A wash stand has been patented by Messrs. Gayger D. Tolman and Lorenzo D. Roberts, of Shawano, Wis. It is a bracket stand adapted to be secured to a wall or similar support, having a folding wash bowl supporting frame and folding pitcher shelf, all adapted to fold up together.

An ironing machine has been patented by Mr. Jean L. Mazoyer, of New York City. The invention covers a novel construction and combination of parts in machines where a heated polishing cylinder moves upon the articles to be ironed while they are held in position upon a bed or table.

A sash fastener has been patented by Mr. Ezra S. Hubbard, of Belmont, Iowa. It consists of a piece of spring wire bent to form a coil and arms, and pivoted on a screw in a recess cut in the face of the sash, by which the sash may be locked when closed or held in any position to which it may be raised.

An ice cream freezer has been patented by Mr. Henson C. Condon, of Rochester, Ind. It consists of a can with a shaft having radial arms upon its opposite sides, one set of radial arms bearing a freely revolving dasher pivoted on an axis parallel with the shaft, and the other set of radial arms bearing a scraper.

A can opener has been patented by Mr. David H. King, of New York City. This invention provides a simple construction of can opener and stove pipe cutter, affording a secure rest for the thumb of the operator, and the easy puncturing of the can or pipe for the insertion of the member having the cutting edge.

A respirator has been patented by Mr. Joseph C. Locke, of An Sable Chasm, N. Y. It consists of tapering tubular perforated shells, to conform to the shape of the user's mouth, and filled with fibrous air-filtering material, in combination with fastening

devices whereby it may be easily and securely applied and readily removed, to secure protection for both the nose and mouth.

A safety device for music boxes has been patented by Mr. Gustave J. Jaccard, of New York City. It consists of a shaft to which is pivoted a pin, a coiled spring for holding the fan closed, with stops for the fan to strike, the device to be applied to the spring barrel of a music box, and to be caused to act by air pressure.

A cigar box trimming machine has been patented by Mr. Henry Leiman, of Brooklyn, N. Y. Combined with a bed having spaced cutters, is another bed having cutters projecting through its bottom, abrading rollers, and other novel features, whereby the box, when nailed together, may be placed in the machine and the edges automatically trimmed and finished.

A permutation lock has been patented by Mr. Charles Hill, of Los Angeles, Cal. This invention covers a novel construction and combination of parts in a safe lock in which all danger is obviated of turning on the full combination by any one who meddles with the knob, as the knob is wholly disconnected from the tumblers of the lock, with various other novel features.

A bake pan has been patented by Bettie H. Bicknell, of London, Tenn. This invention embraces an improved cover consisting of an inverted pan and an outer band or box united at its lower end to the inverted pan, forming an intermediate water chamber or receptacle, to avoid the necessity of boiling meats or fowls before baking, and better retaining their juices and flavors.

SCIENTIFIC AMERICAN

BUILDING EDITION.

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3. A residence at Richmond Hill, N. Y., lately built, at a cost of ten thousand dollars. Perspective and floor plans.
4. A dwelling for three thousand five hundred dollars. Floor plans and perspective.
5. Villa at Fontainebleau—M. E. Brunnarius, architect. Cost, eight thousand six hundred dollars. Floor plans and perspective.
6. View of the new Protestant church at Lyons, France. Cost, eighty thousand dollars.
7. Page of engravings showing the house at Stratford-on-Avon in which Shakespeare was born—Anne Hathaway's cottage, near Stratford-on-Avon—Trinity Church, Stratford-on-Avon, where Shakespeare is buried—The residence of Mary Arden, the mother of Shakespeare—Old Elizabethan house, Stratford, showing the domestic architecture of the time of Shakespeare.
8. The chancel, Holy Trinity Church, Stratford-on-Avon, showing the Shakespeare memorial bust and tablet, and the stained glass window, the gift of American visitors.
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Lockwood's Dictionary of Terms used in the practice of Mechanical Engineering, embracing those current in the drawing office, pattern shop, foundry, fitting, turning, smith's and boiler shop, etc., comprising over 6,000 definitions. Edited by a foreman pattern maker. 1888. Price, \$3.00. For sale by Munn & Co., 361 Broadway, New York.

Patents Bought & Sold. H. W. Booth & Co., Detroit, Mich.

Wrinkles and Recipes.—Compiled from the SCIENTIFIC AMERICAN. A collection of practical suggestions, processes, and directions for the mechanic, the engineer, the farmer, and the housekeeper. Illustrated colored frontispiece. Edited by Park Benjamin, Ph.D. Third edition. Price, \$2.00. For sale by Munn & Co., 361 Broadway, New York.

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NEW BOOKS AND PUBLICATIONS.

AMERICAN COLLEGE MANUAL. BY C. Powell Karr. New York: W. T. Comstock. Price 25 cents.

This is a pamphlet giving information about 74 of the leading colleges and universities of the United States and Canada, the courses of study, professors, requirements of admission, text books used, etc.

DESIGNS FOR SCHOOL HOUSES. Published by the Department of Public Instruction of the State of New York, Albany, N. Y.

This book contains nineteen different designs for school houses, with plans and specifications, and papers on school house grounds, ventilation, outbuildings, blackboards, school desks, etc. The designs are those accepted in a prize competition authorized by the legislature, with the view of increasing the proportion of attractive and comfortable low-priced school houses in the State, especially in the country districts. The State Superintendent of Public Instruction, A. S. Draper, under whose supervision the work is published, has endeavored to show to country school trustees, and others having such work in charge, just how to do a good thing in the way of providing neat and wholesome buildings for public school purposes.

GREAT EARTHQUAKES: THEIR HISTORY, PHENOMENA AND CAUSES. By Wirt Arland (A. S. Hooker). New York: W. Carlton Regand. 1887. Pp. xxxii, 600. Price \$1.50.

This work describes, in popular form, a number of the great earthquakes of the world. The famous Peruvian earthquake at Arica, in which the United States steamer Wateree was carried ashore by the tidal wave, is first described, and then, beginning with the marine records of South America, the history is brought down to the present day and to more familiar regions. The records of 1638 in New England, those of 1811 in the Mississippi valley, and those of Great Britain all receive due attention. In this way the whole world is traversed until the recent disaster of Charleston is reached. To this a number of chapters are devoted, describing in great detail all the features of the occurrence. The last six chapters are devoted to the causes of earthquakes, protection of life, volcanic action, external influences, and earth movements in general.

STEAM BOILERS—A PRACTICAL TREATISE ON BOILER CONSTRUCTION AND EXAMINATION. For the use of practical boiler makers, boiler users, and inspectors, and embracing in plain figures all the calculations necessary in designing and classifying steam boilers. By Joshua Rose, M.E., author of "Modern Steam Engines," "The Complete Practical Machinist," "Mechanical Drawing," "The Slide Valve." Illustrated by 73 engravings. Philadelphia: Henry Carey Baird & Co., industrial publishers, booksellers, and importers, 810 Walnut Street, London: Sampson Low, Marston, Searle & Rivington, Limited, St. Dunstan's House, Fetter Lane, Fleet Street, E. C. 1888. Pp. xvi, 250. Price \$2.50.

This work by the eminent engineer is devoted to the practical art of boiler construction. It is adapted for use by the actual constructor, as the cylindrical shell of a circular boiler, its strength, reduction of strength by riveted seams, and the spacing of rivets and all points connected therewith are treated. The strength of riveted joints is next considered, and next the method of calculating working pressures for boilers. Leaving the realm of calculation, attention is now given to experiments on the strength of riveted joints, of stayed flat surfaces, and furnace sheets. The calculations for a modern high pressure marine boiler are then given, followed by a draught of a specification for the same. Stationary and locomotive boilers are treated, the rules of the British Board of Trade and of the United States government for the inspection of steam boilers are given in detail, and the final section is devoted to useful tables. The very practical nature of the book, its classified contents, and very full index make it a work of standard value, and one which will always be in demand by the steam constructor. It is illustrated with upward of seventy cuts.

THE AMERICAN STEAM ENGINEER, THEORETICAL AND PRACTICAL. With examples of the latest and most approved American practice in the design and construction of steam engines and boilers of every description. For the use of engineers, machinists, boiler makers, and students. By Emory Edwards, M. E. Illustrated by seventy-seven engravings. Philadelphia: Henry Carey Baird & Co., industrial publishers, booksellers and importers, No. 810 Walnut Street, London: Sampson Low, Marston, Searle & Rivington, Limited, St. Dunstan's House, Fetter Lane, Fleet St. 18:8. Pp. xxi, 419. Price \$2.50.

Boiler construction, the theory of the steam engine, economy in combustion of fuel, are all treated of in this work. In the details of engineering practice the proportions of slide valves and ports, valve motions, slide valve setting, and the general proportions of engines and boilers are carefully considered. The United States regulations for steam boilers are given, and rules for calculating the sizes of compound engine cylinders for given horse power and logarithmic methods for finding the mean steam pressure follow. Special forms of engines are then considered, such as the Trenton steam engine, the improved Corliss engine, the Green automatic cut-off engine, and agricultural engines. Steam yachts and launches receive due attention, and in the appendix practical directions for boiler felting, counteracting foaming in boilers, polishing metals, belting, etc., are given in detail. The 77 engravings illustrate excellently the topics of the text, and a very full index completes the work.

GRASSES OF NORTH AMERICA, FOR FARMERS AND STUDENTS. By W. J. Beal, M.A., M.Sc., Ph.D. Published and copyrighted by the author. P. O. Agricultural College, Mich. 1887. Lansing. Pp. xiii, 457. Price \$2.50.

In this work the subject of grasses is elaborately treated. The structure, form, and development of the family are described, and then a chapter follows which is devoted to the much discussed subject of the power of motion in plants. After some chapters on plant growth and methods of classifying, collecting, and studying grasses, the subjects of lands for grazing and grasses for cultivation are treated at considerable length. Over thirty varieties of grasses are described in detail. Early attempts to cultivate grasses, methods of testing seeds, preparation of the soil, the care of grass lands when once under cultivation, how to make hay, improvement of present grasses and the search for better ones, are the subjects next spoken of. Departing from the strict subject of the work, the pulse family, including the clover, the vetch, and other leguminosae, are spoken of in a special chapter. Then the enemies of grasses and clovers, including animals and insects, are given a chapter, while a final chapter is de-