

ENGINEERING INVENTIONS.

A car coupling has been patented by Mr. John Bersch, of Kingston, Pa. Combined with a draw head having a transverse perforation, the coupling bar has its upper and lower edges with inclined shoulders to fit against an inclined top and bottom of the drawhead mouth, the coupling pin being held forward by a spring, and there being a pin-withdrawing mechanism.

A street bridge has been patented by Mr. John O'Donnell, of Albany, N. Y. It is formed of a series of girders rabbeted on opposite edges, adapted to abut at opposite ends against the curbs of the side of the street, with rollers at their ends, which rest on the sidewalk and permit moving the girders laterally along the street, there being corrugated floor sections fitted to the rabbets of the girders and halved together to form tight joints.

A grading machine has been patented by Mr. John C. Sage, of Gainesville, Ga. It is especially designed for use in widening the sides of cuts through which a line of railway passes, and is mounted on tracks on a flat platform car, on which are also dirt receptacles, the dirt being cut out by scoops and carried by conveyer belts to the receptacles, the grader moving along over a train of platform cars chained to the track, with the mouths of the scoops open in the direction in which the grader is moving.

MECHANICAL INVENTION.

A forging roller for nail machines has been patented by Mr. George E. Michon, of Essex, N. Y. The invention consists of a pair of steel pins carried by the stock in a position to be borne upon by the side face of the roller, whereby the usual wear upon the small side of the stock is greatly reduced or entirely overcome, and the oil reservoir is so located that almost every drop will be used up before it is necessary to replenish the supply.

AGRICULTURAL INVENTION.

A cotton chopper and cultivator has been patented by Mr. Robert E. Clark, of Fort Motte, S. C. This invention covers a novel construction and arrangement of parts in that class of machines where the stalks to be left standing are covered up while plows throw earth upon and crush down the remaining uncovered stalks, the covers shutting down over the plants to be protected as the machine is drawn forward.

MISCELLANEOUS INVENTIONS.

A fender has been patented by Mr. Barker V. Butts, of Halifax, N. C. It is formed of an inner and outer plate and damper, and designed to attach to open fireplaces to prevent coal, sparks, etc., from snapping out into the room, while in no way interfering when thus used with the draught of the fireplace.

A safety attachment for elevator cars has been patented by Mr. Charles R. Whittier, of Yonkers, N. Y. It is to prevent the elevator car from falling in case the hoisting rope should break, and consists of a special arrangement of wedges and counterweight rope, in connection with the hoisting ropes.

A nut lock has been patented by Mr. Charles O. McBride, of Muscatine, Iowa. A wire is clamped between the washer of the bolt and the beam to which the bolt is applied, and bent around the nut and twisted together, making a simple, inexpensive, and secure lock to prevent the bolt from turning.

A combined door plate, bell pull, and mail receiver has been patented by Mr. Michael A. McGlenn, of Lancaster, Pa. The plate has an oblong aperture corresponding with the mail-receiving aperture in the door, and a pivoted spring-actuated plate which acts also to operate the door bell.

A suspender end has been patented by Mr. William Bloomberg, of New York city. This invention consists in making the end portion solid and the adjoining upper part cut into strands and braided, all being of leather, making the suspended end thus formed pliable edgewise and elastic.

A spring for vehicles has been patented by Mr. Albert Barling, of Racine, Wis. This invention covers a novel arrangement of coil springs, with auxiliary springs to relieve the main springs, making an easy riding vehicle with a small load, while the construction is such that a heavier load will be well supported.

A miner's pick has been patented by Mr. James M. Matthews, of Pocahontas, Va. It is formed with a solid yoke, and detachably secured to a handle recessed to receive it, by a screw bolt, making a light yet strong pick, in which the old form of an eye pierced therein is dispensed with in attaching the pick to the handle.

A bobbin reamer has been patented by Mr. Stephen C. Ketchum, of Winchendon, Mass. This invention covers a centering spindle adapted to accurately fit the interior upper bearing, and a special rotating and longitudinally traversing reamer, arranged to revolve and travel upon the spindle, for reaming out an enlarged interior base bearing of the bobbin.

A harness has been patented by Mr. William Olewine, of Hazleton, Pa. Double back straps are attached to the hames and to the rump ring, in combination with hip straps and crupper attached to the ring, so that there will be no pulling or working up of the collar, as with a single back strap, and no danger of choking the horse.

A safety snap hook has been patented by Mr. Isaac M. McKay, of Rocklin, Cal. It has a polygonal-chambered shank, with an arm arranged to slide on the shank for closing the hook, and a spring-acted tongue for engaging the arm and holding it in a closed position, the hook being designed for use in connection with harness, ship's rigging, and mining machinery.

Taping furs forms the subject of a patent issued to Mr. Charles Theinert, of New York city.

This invention covers the method of taping, and also the fabric as an improved article of manufacture, making a fur fabric in which the continuity of the hairs of the fur will be practically unbroken, however the fur may be bent fur side out when in use.

A water closet has been patented by Mr. August F. Blesch, of Columbus, Ohio. This invention covers an improvement in that class of closets which are supplied with flushing tanks, and provides a siphon communicating with the tank and suitable means to start the same, so that, if the chain be pulled but for an instant, a thorough flushing will result.

A fancy show card has been patented by Mr. Charles Kernitz, of Long Island City, N. Y. It is made in the form of a shield, and curved in semi-cylindrical form, with a three-armed strap secured to the side parts and lower end of the shield, making a card especially designed for firemen's use in advertising balls and displaying other notices.

A guide board has been patented by Mr. William W. Case, of Baptistown, N. J. Combined with a head having a vertical dovetail recess are clamp plates with vertical flanges on their rear edges engaging the dovetail recess, and a sign board held between the clamp plates, making a strong and durable sign board, that may be set to point in any direction.

A wire stretcher has been patented by Mr. Andrew B. Graham, of Barleson, Tex. This is a machine with a shaft carrying a movable pinion, racks with clamping jaws, pawls, etc., whereby the parted ends of a broken strand of wire may be brought together to be bound, being designed for use in mending wire fences, telegraph wires, and for similar purposes.

A grain weighing and registering apparatus has been patented by Mr. William H. Ernst, of Chase, Kan. It has two movable hoppers, a shifting gate or valve which conducts the grain into the hoppers, and devices for weighing and registering, the apparatus being simple in construction and automatic in operation.

A folding sponge basket has been patented by Mr. David A. Gabay, of New York city. It consists of a number of circularly arranged compartments elevated from the floor, adapted to revolve around a central fixed standard, the various parts being made detachable, whereby the entire structure may be folded for shipment.

A necktie fastener has been patented by Mr. George B. Haines, of New York city. The invention consists of a scarf made of a piece of cloth folded over a metal shield, and having a detachable fastener to which the neckband is attached, preventing the scarf from being affected by perspiration, and the metal shield preventing the scarf from losing its shape.

An ironing table has been patented by Mr. Daniel C. Woodward, of West Randolph, Vt. It is a table which may be readily folded together to be out of the way, and in which, as ready for use, one end is supported free from all obstruction for ironing such articles as require the introduction into them of an ironing board.

An animal poke has been patented by Mr. Finley E. Benson, of Lake Park, Ia. It is designed to prevent an animal from spreading apart the wires of a fence when attempting to pass through, for which purpose an outwardly projecting hook is so arranged just back of the horns as to cause barbs to prick the neck of the animal as it makes the attempt.

A slag cart has been patented by Mr. August Werner, of Leadville, Col. It is formed of an annular frame, with axles, with a bowl received in and having a flange resting upon the frame, to support the bowl in position for use, while there is a segmental cover pivoted to the edge of the bowl, having a central spout for the discharge of the lighter melted matters.

A composition of matter to be used in soldering has been patented by Mr. Arthur P. Smith, of Pipe Stone, Minn. It consists of melted tallow purified with quicklime, white wax, and resin, combined after a specified manner so that it will stand every climate, and making a composition by which many of the objections to the fluxes in common use are avoided.

A harness saddle has been patented by Mr. Albert L. Liston, of Pleasant Plains, Ill. The object of this invention is to provide a saddle tree in which the loops and various parts for receiving the straps are secured by dovetailed tongues and grooves, in connection with retaining screws or bolts, rendering the different parts secure without an undue amount of fitting.

A pinch bar has been patented by Mr. William Franklin, of Corry, Pa. It consists of a simple system of compound levers, having a longitudinally slotted base in which the pinch bar lever is pivoted, the hand lever being pivoted in the slot of the base piece, whereby cars with heavy loads can be started more readily than can be done with pinch bars of ordinary construction.

A hose carriage has been patented by Messrs. Conrad A. Dorr and Edward B. Hill, of Brooklyn, N. Y. The hose reel is mounted on wheels, and has pulleys of different diameters, with endless chains, combined with pulleys carried by the axle of the hose carriage, and a sliding clutch, whereby the traction of the hose carriage may be utilized for reeling up the hose.

A time stock feeder has been patented by Mr. Louis Deguenant, of Cour-Cheverny, France. The invention consists in a box or feed receptacle divided into one or more compartments, with discharge vents and gates or valves, and mechanism actuated by clock-work for operating them, whereby food, water, etc., may be automatically distributed to stock and other animals at the proper time.

A combined shutter bower and fastener has been patented by Messrs. David Conner, of Groton, Conn., and Frederick A. S. Perry, of New York city. It has a vertically movable bolt or latch secured to the inner side of a shutter, and a securing plate provided with a series of notches or openings, arranged in the arc of a

circle, and adapted to be entered by the vertical bolt, the device being simple and easily applied.

A combination tool has been patented by Mr. Joseph D. Galloway, of Belmont, Kansas. It has offset pivoted jaws, with lever handles, with serrated semicircular notches in the jaws and in the handles, and with a hammer face on one side of the jaws, the tool being for use as a pipe tongs, hammer, screw driver, tack claw, wire cutter, measure, pliers, and for other purposes.

A subterranean water collecting dam has been patented by Mr. David H. Valentine, of Brooklyn, N. Y. The dam is combined with a conduit upon its source side, the dam and conduit being built from a central point or reservoir in a valley, up an elevation or hillside, and serving to intercept the earth flow of spring water through gravelly soil to the ocean or any water-course.

A combined feeder and hopper for cotton gins has been patented by Mr. John P. Ketteringham, of Natchez, Miss. This invention covers a novel construction and combination of parts, so that the cotton will be fed to the gins uniformly, the feeders readily adjusted to feed more or less cotton in a given time, and that they will not have to be moved when it is necessary to remove the gin saws.

A swinging paddle for vessels has been patented by Mr. Berend Doscher, of Charleston, S. C. This invention covers a novel construction and combination of parts for a system of propulsion of vessels by an easily controlled arrangement of swinging paddles at the sides, whereby it is designed that the vessel may be propelled forward or backward, or turned short around without reversing the engine.

Eyeglasses form the subject of a patent issued to Mr. George W. Hassellund, of New Castle, N. Y. Combined with the frames of a pair of eyeglasses are pivoted nose pieces, provided with removable cylindrical yielding contact pieces, so that the contact surface may be readily removed and replaced, while there is also a spring of peculiar form for connecting the eyeglasses.

A door bell has been patented by Mr. Frederick Sanderson, of Chicago, Ill. It is a simple and cheap device, intended for a mechanical imitation of an electric bell, both in sound and appearance, the bell being operated by a push button and without the use of a winding spring, a series of vibrations being communicated to the hammer of the bell by a single push of the button.

A hot water apparatus has been patented by Mr. Sam. F. Collins, of Binghamton, N. Y. This invention relates to attachments for boilers from which frequent draughts of hot water have to be taken, and in which it is desirable to keep the water at a uniform or a given temperature, and provides novel means for automatically regulating the heat of the water in the boiler, either above or below the boiling point.

A buttoner has been patented by Mr. Charles E. Cookerly, of Kansas City, Mo. It consists of two crossed levers, with eyes at one end for receiving the thumb and finger, and at the other end oppositely arranged hooks for grasping the neck of the button, one of the levers having a pivoted cap plate for covering the button and the hooks, to prevent the button from catching at the sides of the button hole.

A land anchor has been patented by Mr. Cyrus C. Pratt, of Lincoln, Kan. It is an expandible anchor, adapted to be inserted in a cylindrical hole bored in the earth, and arranged to expand when the tie or rod with which it is connected is drawn, being designed to make buildings more secure on their foundations, and also to effectively anchor bridges, wharf boats, etc.

A secondary battery has been patented by Messrs. Victor Sass and Karl Friederich, of Berlin, Germany. The electrodes for accumulators are made by heating the zinc and lead together in equal parts, and then heating the composition until a complete oxidation of the lead sets in, after which the heated pliable mass is formed into plates, from which the zinc is dissolved by the use of dilute sulphuric acid.

A camera stand has been patented by Mr. John J. Higgins, of New York city. The top is formed of two or more hinged parts arranged to fold one upon the other, and the legs each consist of an upper section formed of parallel bars connected together by plates, the lower section being pivoted between the lower ends of the parallel bars, and carrying a spring-acted latch for holding the leg in an extended position, with other novel features.

The placing and manipulating of marine torpedoes forms the subject of a patent issued to Mr. Charles S. Aylesworth, of Speegleville, Tex. The torpedoes are connected to guide lines passing under anchored sheaves, and leading to a point where all are connected to a single manipulating line which leads to the shore, whereby the torpedoes may be drawn out of the way of friendly vessels, and automatically resume their position.

A tether has been patented by Mr. William B. Farrar, of Greensborough, N. C. From an iron stake driven into the ground, on which is a spring casing, extends a tether pole, at such angle that it will rise above the stock, and to the outer end of this pole is fastened the tethering rope, to which the stock are tethered, the tethering pole moving freely around the post, so that in traveling around the rope will not get under the feet of the stock.

A wick tube for oil burners has been patented by Mr. William H. Wilder, of Gardner, Mass. This invention consists of a novel arrangement for the support of the spindles of the wick raisers, and an arrangement whereby the intermeshing gears carried by the spindles are inclosed and protected, so that the wicks may be uniformly raised throughout their width, and the wick tube will not be injuriously affected by heat.

A telegraph transmitter has been patented by Mr. James W. Shryock, of Trinidad, Col. It consists of a series of sliding bars or rotating disks car-

rying transverse ribs corresponding in width to the dots and dashes of characters, a contact spring moved by the ribs, and making contacts corresponding in duration with their width, combined with the bar of a circuit opener and closer, and with other novel features, to transmit electric signals and characters by a single motion of the finger for each character.

A vaginal syringe tip has been patented by Mr. Charles B. Dickinson, of Brooklyn, N. Y. It is composed of tubes of soft rubber upon a socket, the whole surrounded by an outer closed tube of soft rubber, so that it will bend and yield to any excess of pressure.

NEW BOOKS AND PUBLICATIONS.

FIRST ANNUAL REPORT OF THE FOREST COMMISSION OF THE STATE OF NEW YORK, FOR THE YEAR 1885. Albany, 1886. Pp. 362.

This interesting and carefully compiled volume contains a report which was transmitted to the State Legislature, May 18, 1886. It shows what is being done for the preservation of the forests of this State. The origin of forest fires is given in some detail, and the sad results of these destructive agents are shown on a map accompanying the volume. The tenth census of the United States is quoted to show that nearly 150,000 acres of woodland were thus destroyed in 1880. Windfalls, landslides, lumbering, timber stealing, tanning, wood pulp, charcoal burning, iron manufacturing, railroad building and operating, are all treated of as affecting the question of preservation. The drying of springs and streams is spoken of, and the views of experts on the subject are given. The rules established by the commission, as regards fires principally, are given in the text. Special agents' reports on the condition of different counties come next in order. The co-operation of the Adirondack and Catskill guides is asked for in the furtherance of the objects of the commission. The suggestion is also made that "Arbor Day" be made coincident with "Decoration Day," in order to secure a universal interest in the planting of trees. In the body of the work, European methods of forest preserving are described. In the appendix are given the laws of the State pertaining to the subject in question, a very full bibliography of forestry with reference to leading libraries of this country, and a list of land in the State forest preserve. The work is ably compiled, represents much labor, and embodies information that it would be hard to find elsewhere.

ALUMINUM: ITS HISTORY, OCCURRENCE, PROPERTIES, METALLURGY, AND APPLICATIONS, INCLUDING ITS ALLOYS. By Joseph W. Richards, A. C., Chemist and Practical Metallurgist, Member of the Deutsche Chemische Gesellschaft. Illustrated by 16 engravings. 12mo, 36 pages. Philadelphia: Henry Carey Baird & Co. Price, \$2.50.

At last a glaring vacancy in English scientific literature has been filled, and, we may say, very satisfactorily. The author states in his preface that he has endeavored to give every fact of value published in regard to this subject, whether in English, French, or German. The different divisions of the subject are given in the words of, and credited to, the original authorities, such as Deville, Woehler, and others, in addition to the author's own comments. The order of treatment adopted is logical and convenient, commencing with the history of the subject, next describing the occurrence of aluminum-bearing minerals, after this the properties, physical and chemical, of the metal, and then its metallurgy. We notice that the chapter on sodium, altogether interjected as subsidiary to the main subject, is very complete and of much value. Especially interesting will be found the part entitled "Reduction of Aluminum by Other Agents than Sodium," in which, for instance, we find eleven pages devoted to Cowles' process, and seven pages to reduction by zinc. In conclusion, we would remark that, while here and there a point might be raised as to the homogeneity of a chapter, yet we can suggest no fact bearing on aluminum which has been omitted from the book.

GEOLOGICAL SURVEY OF ALABAMA. On the Warrior Coal Field. Eugene Allen Smith, Ph.D., State Geologist. Henry McCalley, A.M., C., and M.E., chemist and assistant geologist. Pp. 571. Montgomery, Alabama, 1886.

This is an exhaustive report on these extensive coal fields, of special interest at the present day, when Alabama is so rapidly coming to the front as an iron-producing State. Exact details as to thickness and disposition of various seams at various localities make up the bulk of the work. At the end an extensive collection of proximate analyses of over eighty specimens of coal are given. Some are of really surprising purity, others are of a low grade. Other analyses of fire clays, slates, clay, iron, stones, and millstone rock are also given. The geological details, re-enforced by the analyses, make the work of great value in the economic sense, as indicating the probable quantity and quality of coal in any given locality.

THE TRIBUNE BOOK OF OPEN AIR SPORTS. Illustrated. Pp. 500. New York, 1886.

In this work all the leading outdoor recreations are treated of, by special writers and experts on the subject. Seventeen sections are included, and in them fifteen sports, such as rowing, yachting, running, and archery, are described. Anecdotes relating to the different subjects, and the records of amateurs and professionals, are included. The opening chapter is by William Blaikie, on "Why We Want to be Strong." The names of George Goldie, Thomas Clapham, David Kirby, W. S. Rossiter, and Charles E. Emery, who figure as contributors, give an idea of the quality of the writers. A very acceptable chapter on useful facts, such as the treatment of accidents, fording of streams, care of the eyes, and the like, closes the work. It is provided with an index. It is given as a premium to subscribers to the *New York Tribune*.