

## ENGINEERING INVENTIONS.

A feed water heater has been patented by Mr. George Green, of Corpus Christi, Tex. It is composed of a series of pipes attached to half cylindrical heads, placed diagonally in the fire box of the boiler, and connected with its water space, being designed also to serve as a spark arrester and increase the fire surface.

A method of heating water in steam generators has been patented by Mr. Frederick G. Wheeler, of New York city. This invention covers an improvement on a former patented invention of the same inventor, and consists in first charging the generator with water at ordinary temperature, and then obtaining the initial heating by injecting superheated steam.

A spark arrester has been patented by Mr. Orlando T. Owings, of Le Mars, Iowa. The smoke stack projects into a cap, a deflector being supported from the upper end of the smoke stack, and having a central aperture, with a lid or cover, and other novel features, the device being simple in construction, and calculated to prevent sparks from passing out of the smoke stack.

A reversing gear for engines has been patented by Messrs. Robert Rutherford, of Reutcher, and Thomas Moore, of O'Fallon, Ill. An eccentric with a forked pin is adjustable on a disk attached to the crank shaft, a cam plate sliding in the disk, with diagonal grooves which engage with the forked pin, and other novel features, whereby a positive motion is given to the slide valve at all times, and the link commonly used for reversing is dispensed with.

An automatic danger signal has been patented by Mr. Errett E. Phillips, of New Castle, Pa. Combined with a signal operated by a slide is a chain mounted on sheaves and carrying a bar, a spring, and lever, with stem, and means for operating the slide from the chain, with other novel features, so that an approaching train will trip the parts and cause the signal to be displayed, the invention being more particularly applicable to points upon the track not visible from each other.

## AGRICULTURAL INVENTIONS.

A harrow has been patented by Mr. Mathias C. Theisen, of Diana, Dakota Ter. This invention covers a novel construction of a harrow designed to be readily adjusted for use as a rigid or a flexible harrow, or as a smoothing harrow, or a straight toothed harrow, and at the same time simple, strong, and durable.

A combined drill and planter has been patented by Mr. William H. Halfaker, of Acton, Ind. This invention covers a novel construction and combination of parts for a machine that can be readily adjusted to drill or plant the seed, and to drill the seed at a greater or less distance apart, and which can be readily controlled and will be reliable in operation, however adjusted.

A corn and cotton planter combined has been patented by Mr. Joseph G. Davis, of Huntsville, Texas. This invention covers a novel construction, in which the various parts are so arranged that the number of grains planted in a hill may be regulated as desired, while the depth of the furrow may likewise be regulated as desired, the planter being calculated for planting cotton or other small seeds.

## MISCELLANEOUS INVENTIONS.

A rein holder has been patented by Mr. Frank J. Gibbs, of Philipsburg, Pa. It consists of a novel construction of buckle adapted to be clamped on the rein, and having a loop for receiving the hand of the driver, making a simple, easily attached, and efficient hand hold or rein holder.

A fabric turfing or rug making implement has been patented by Mr. Damas M. Chamberland, of Duluth, Minn. It is a simple device for making succession of loops in a fabric which forms the body of a rug, the device being one which can be conveniently held in the hands in making the rug.

A barrel vent has been patented by Mr. Frederick Hopkins, of Chicago, Ill. It is especially for use on beer barrels and similar vessels, and is so made as to admit air, to permit the withdrawal of the contents at the top, and yet prevent the passage of gases from the barrel.

A laundering machine has been patented by Mr. Robert H. Cornett, of Livingston, Kan. It is for washing and wringing clothes, and has a washer so fixed in a tub that by turning a crank the clothes are passed between a main roller and bed rollers, some with corrugated and some with plain faces, while a wringer is held in convenient attachment to the tub by brackets.

A process of extracting tannin from wood has been patented by Mr. Edouard Tavernier, of Paris, France. The process involves the use of a specially devised centrifugal machine, by the use of which the heavier impurities of a tannin extract are eliminated from the lighter and purer portion, the latter liquid being drawn off from a point near the center of rotation.

Wall paper forms the subject of a patent issued to Mr. William Campbell, of New York city. It has a design or figure, with a continuous surface of flock of a single color, through which the design appears, the design being first printed, the paper then entirely coated with glue, and the flock applied to the entire glue coated surface.

A method of blasting earth has been patented by Mr. Henry H. Bourne, of Manhattan, Kan. It consists in boring a hole of proper depth, inserting a tube, and exploding a small cartridge at the bottom of the tube, then filling the chamber caused by this explosion with the desired explosive, withdrawing the tube, and firing the larger charge.

A vehicle has been patented by Mr. Charles Dinsmoor, of Warren, Pa. It is made with a series of wheels journaled in connecting links, with a

track consisting of hinged links, to make endless tracks, whereby springs can be dispensed with, and the vehicle is designed to have a smooth and easy motion, without jolt, strain, or friction.

A half sole for boots has been patented by Mr. Darius Banks, of Morrisville, Pa. It is formed with a V-shaped recess at its rear, into which a metallic fastening plate is inserted, with apertures for nails or other fastening devices, for securing the half sole to the instep sole, the main body of the half sole being secured to the boot or shoe by nails in the ordinary way.

A sewing machine improvement has been patented by Mr. Otto L. Schastey, of New York city. It is for machines that sew with a single thread, used for making a cross or binding stitch, and has its throat plate made movable with the other parts, the invention being an improvement on a former patented invention of the same inventor.

A conveyor has been patented by Messrs. Job C. Conger and George W. Henderson, of Columbia, Mo. It is designed to convey grain, flour, sand, etc., in such way that the material will not be injured in handling, and has a reversible flight, with a stop, whereby the flight is held in a positive vertical position or allowed to slant as desired.

A chin rest for violins has been patented by Mr. William V. Arthur, of Oakland, Cal. It is made of hard wood or other suitable material, and has its top surface hollowed out to adapt it to receive that part of the jaw usually rested on the top, the rest when in place being above the belly of the violin, and not in contact with any of the vibrating parts.

A picture hanger has been patented by Dora Mitchell, of Ottumwa, Iowa. It consists of a pole made in sections hinged together and provided with a fastening at the joint, with a double forked head piece fixed to one end and a spring clamp fixed to the other end, making a light, strong, and efficient tool for hanging and taking down pictures.

A spark arrester has been patented by Mr. John H. Optenberg, of Oshkosh, Wis. This invention covers an improvement on a former patented invention of the same inventor, in a novel arrangement whereby the main deflector may be raised from its normal position to one that will allow a free draught through the smoke stack, with other novel features.

A hand mirror and brush has been patented by Mr. William Booth, of Leominster, Mass. This invention covers an improved frame, with a back plate, a handle front plate on the handle extension of the back plate, and a grooved band frame surrounding the whole, in such way that these articles can be made at less expense and with greater facility than when made in the ordinary manner.

A stock car has been patented by Mr. Benjamin F. Williams, of Springville, N. Y. The car is divided by four partitions, which are pivoted so their lower ends may be swung up against the roof of the car, there being movable feed troughs, a slide rod for securing the heads of the stock between bars, and other novel features, whereby the stock may be kept, fed, and watered.

A hydrocarbon burner has been patented by Mr. William Barraclough, of Balmain, near Sydney, New South Wales. It consists of a reservoir and burner connected by intermediate pipes, one being filled with glass, and there being heaters and mixing tubes, whereby heated air can be mixed with kerosene vapor, with other novel features, for burning the vapor without the aid of a wick.

An opera chair has been patented by Julia A. Callahan, of Brooklyn, N. Y. It has a garment knob or button on the top of the chair back, a hook or support pivoted to the side of the chair back, and a hook or support pivoted to the chair near its lower end, a drip cup being fastened to one of the rear legs for receiving the lower end of an umbrella stick or cane, the chair itself being of the usual construction.

A combined blackboard and map support has been patented by Mr. Henry E. Hayes, of Brooklyn, N. Y. It consists of rods, three in a set, of which two sets are used, the upper ends of each three rods being inserted in the angles of a triangular case, with other novel features, making a readily adjustable support for maps, charts, etc., and one which will allow of their being easily reversed.

An apparatus for cutting circular wooden plates has been patented by Mr. Isaac M. Rhodes, of Hancock, Mich. In the base plate is a screw, to secure the plate to the wood to be operated upon, and there is an upwardly extending hub, which forms a central bearing for an operating handle that carries adjustable cutters, which can be readily arranged to cut in a circle, as desired.

A tricycle has been patented by Mr. William N. Smith, of Bad Axe, Mich. The invention consists of an interchangeable train of gear wheels rotating the driving wheels, and operated by treadles, with a steering device and an adjustable seat, making a machine especially adapted for regulating the speed as required for racing, traveling on rough roads, or in hilly country.

A wheeled vehicle has been patented by Mr. William B. Kelly, of St. Louis, Mo. It has a series of independent wheels arranged between opposite sides of the platform, springs sustaining the load on the wheels, and wheel guards so arranged as to strike any obstruction and lift the wheels successively over it, the springs afterward forcing the wheels back to the ground.

A gate has been patented by Messrs. Henry P. Bullock and Henry P. Cayce, of Jonesborough, Texas. Its construction is such that it may be opened automatically by the depression of a platform in the gateway or by the pulling of cords pendant from a support at or near the gateway, being designed especially for a farm gate which shall be simple, inexpensive, and self-closing.

A shutter for photographic cameras has been patented by Mr. Cyrus Prosch, of New York city.

A pair of apertured shutters are pivoted in a case intersecting the camera tube, and arranged to swing past each other, to open and close the camera tube, a spring-actuated lever operating both shutters simultaneously, the device being adaptable for either instantaneous or time exposures.

A vegetable and root cutter has been patented by Mr. Ira P. Cribb, of Canandaigua, N. Y. The frame has two hoppers divided by a partition, a screen, troughs, a reciprocating cutter frame provided with horizontal and vertical knives, and other novel features, the whole so arranged as to work efficiently and rapidly without danger of the machine becoming clogged.

A lock-up for printers' forms has been patented by Mr. Walter Lloyd, of Chicago, Ill. It consists of two bars slotted lengthwise, and two cross bars fitted thereto, all fitting into a tongue on the inner edge of the chase, the bars having ratchet teeth on their outer faces, and there being corner blocks to engage these teeth on the bars, and hold them in position as they may be closed up on the type forms.

A former for sheet metal vessels has been patented by Mr. Charles A. Wilbraham, of Poquonock, Conn. It has a bed plate to which a former block is held, one or more gauge bands fitting over the block and over each other, and a clamp adapted to hold the blank to the band or bands prior to bending the blank, with other novel features, whereby the bodies of sheet metal vessels can be bent or shaped truly with economy of time and labor.

A valve attachment for hydrants has been patented by Mr. Lyman G. Keyes, of Armstrong, Kansas. The chamber or case of the valve is connected to the lower water chamber by means of a bushing, the exterior thread of which is a left hand thread, and the valve and its chamber are so inserted that they may be disconnected from and lifted out of the hydrant case, saving the digging down around the hydrants for repairs from freezing, etc.

A middlings purifier has been patented by Mr. Ora L. Anderson, of Pleasantville, Ind. It has a vertical series of shaker frames, two vertical series of sieves mounted therein, intermediate conveyor troughs, a feed spout for one series, and an elevator landing from the conveyors below this series to the upper sieve of the opposite series, the machine being designed to thoroughly purify and grade middlings passed through it.

A stem winding device for watches forms the subject of two patents issued to Mr. Olof Johanson, of New York city. The invention consists in a key constructed with a ring and a U-shaped loop bent three times at right angles laterally, to adapt it to receive and engage with the crown of a stem winding watch, the construction also being such that the guard ring is attached to the rotary crown of the stem, to facilitate the easy and quick winding of stem winding watches.

A take-up and let-off mechanism for looms for weaving broad silk has been patented by Mr. James Nightingale, Jr., of New York city. Its construction is such that the tension on the fabrics and warps is obtained from weighted levers, and not directly from the cloth beam, as in other looms, the adjustment of the fabric to the reed being entirely independent of the cloth beam, the only function of which is to carry the completed fabric, but not to give the same any tension.

An incased pile has been patented by Mr. John W. Crary, of Bluff Springs, Fla. The pile is driven in the usual way, and around it is built a platform suspended from cross bars on the top of the pile. Upon the platform and around the pile is built a brick casing, leaving a small space next the pile to be filled in with cement, the platform and its casing being sunk, as the casing is built, to or below the general level of the bottom, the space next the pile being finally filled with cement.

## NEW BOOKS AND PUBLICATIONS.

MICROSCOPIC FUNGI. By M. C. Cooke, LL.D. Illustrated with 269 colored figures by J. E. Sowerby. London: W. H. Allen & Co. 1886. Pp. 262.

This work is of much interest at the present day, when the need for specializing microscopic studies is so apparent. The first impulse of the possessor of a microscope is to apply it to all objects, using it really as a scientific toy. In Mr. Cooke's manual there is presented a special field for its use; and it is by following precisely such lines of work as here suggested that the best discipline is secured and most real work is to be done with the instrument. The subjects of rust, smut, mildew, and mould are treated of, and, as is evident even from the title page, are most liberally illustrated. The cuts are beautifully colored, and are selected so that one quite ignorant of the subject would be guided along the road to a full knowledge of it as far as it has been developed. The recent origin of the study is animadverted on by the author, and the great relative importance of the cryptogams is insisted on. The main part of the work is in popular language, but an appendix of some fifty pages gives the botanical classification and descriptions of the fungi treated of in the book. An index closes the work.

THE GAS ENGINE. By Dugald Clerk. New York: John Wiley & Sons.

The author has in this work endeavored to represent the different steps by which the gas engine has, from a comparatively insignificant use in 1860, obtained the large employment it now has wherever small powers are required. The book also explains the science and practice of the gas engine, treating of the different types and the chemical and physical phenomena of combustion and explosion exhibited in the leading examples of these machines. The author, although himself the builder of a very successful gas engine, generously adds, while "many inventors have contributed to its progress, its present position is in the main due to the patience, energy, and commanding ability of one man, Mr. Otto." The conclusion is that a yet greater effi-

ciency of the gas engine will probably be attained, and the direction in which to look for such improvement is in utilizing the pressure now lost at the exhaust.

MANUAL OF ASSAYING GOLD, SILVER, COPPER, AND LEAD ORES. By Walter Lee Brown. Chicago: E. H. Sargent & Co.

This is a second edition, revised and enlarged, of a hand-book especially designed for the use of those who have not had previous technical experience or scientific training. It is simple and practical throughout, all the methods and apparatus employed being explained in great detail, in what might be styled such a common sense way that beginners can readily follow the directions without the need of a teacher.

## Special.

## THE EXPERIENCE OF AN EMINENT JURIST.

The attention of social scientists has long been called to the increasing fatality among America's brain workers.

When brought to a full conviction of their increasing dangers, their souls stir within them an ardent desire for help and relief. The tendency oftentimes is to grasp at anything that promises restoration, and a thousand and one things are offered, but all seemed doomed to disappoint, for medicine can offer no cure. A change of life and habits oft affords nature opportunity to recuperate, and the individual may go on for a time; but with the aid of a true restorer to the nervous system, if there be a good foundation, it may be again built up, sometimes even where habits and life appear against them. The following is peculiarly a case in point:

## "REVITALIZED."

June 8, 1886.

"I am not only pleased, I am delighted with the Treatment. The third day after beginning to use it, to my utter surprise and inexpressible joy, that terrible 'sinking feeling' in the pit of my stomach, and a week later that twin curse, the dull pain above the eyes, both of which constituted the burden of my complaint when I consulted you, had disappeared, and I have not been troubled with either since. It is wonderful!

"I experienced no particular sensation in using the treatment, made some blunders, was somewhat irregular, and since I began have been severely taxed both mentally and physically, notably in the trial of a \$200,000 will case, which lasted eight days, and yet with it all I feel like a new man. Nor have I changed my habits in the least. I have smoked the usual number of cigars and punished the usual amount of tobacco, besides indulging in coffee in the morning and tea in the evening, and eating what I liked. I repeat it, it is wonderful! The benefits I have received will be worth many hundred times their cost. I feel 'revitalized'; indeed, I can hardly realize the change has been so sudden, that I who am now writing in this cheerful strain am the same miserable creature who called upon you less than a month ago."

"July 19, 1886.—It is now two months since I began the use of your Home Treatment. I still have on hand a small quantity of the Oxygen aqua, and the blue bottle is about one-eighth full, which shows probably that I have not strictly followed directions; and yet without the least change in habits or diet I find myself a new man."

"A recent writer in the Independent says: 'There is a strong tendency with the weak-minded to magnify their own diseases and cures.' I may belong to this class, but fear of being so labeled will not deter me from giving this unsolicited testimonial. I am sincerely grateful for what you have done for me, and take this method of testifying my gratitude."

"When two months ago I called at your office, an entire stranger, I was suffering from two causes—a dull, heavy feeling over and about the eyes, and a sinking sensation in the pit of the stomach. I had suffered from these causes, it is safe to say, for twenty years, and they were the twin curses of my existence. It is impossible to convey to any one who has never been thus afflicted the slightest conception of what I suffered. I do not refer to the physical pain, for that was very slight, but to the mental agony. You did not tell me that I was the victim of dyspepsia, but I suspect I was. At least, what Henry Ward Beecher says, of dyspepsia is equally applicable to a person suffering as I did, to wit, that it is utterly impossible for such a person to be a true Christian. 'It may be that my suffering was purely imaginary, if there can be such a thing as distinguished from the real article; but if it was, then my mind was diseased, and all the more credit to you for restoring it to its normal condition.'

"As before reported, the trouble about the eyes in my case disappeared the third day, I think, after I began the use of your Treatment, and the stomach trouble not over four days later. You gave me no assurance of such speedy results, and I was as much surprised as delighted when they came. Indeed, it was with considerable difficulty that I brought myself to a full realization of the facts. I have only to add that since the first disappearance of my troubles they have not reappeared. What the effect of a discontinuance of the Treatment may be remains to be seen, but I have the utmost faith in your printed statements that the results of the use of Compound Oxygen are permanent."

"August 25, 1886.—It is now more than a month since I stopped the Home Treatment, and I am happy to say that I have had no return of my old trouble. It is wonderful—I had almost said miraculous. Scientific chemists and professors of colleges may talk as they please about Compound Oxygen being a 'perfectly inert substance,' but they never will convince me."

"You ask about the constipation and the nervous tremulousness. Well, I think they are both somewhat better, although they are by no means cured. It would be strange if they were. In the first place, they were not the troubles which I consulted you about; besides, I think the constipation is inherited; and as for the nervousness, that is no doubt due to the use of tobacco, tea, and coffee, and to past indiscretions. Indeed, the most remarkable thing to me about the cure in my case is that it was effected without the slightest change in habits or diet."

Any person desiring to know more of this jurist's experience will be cheerfully gratified by him, and his name and address will be given to any upon application to Drs. STARKY & PALEN.

If you are suffering from any chronic disease, about which you are growing discouraged, such as Pulmonary trouble, Catarrh, Bronchitis, Neuralgia, Rheumatism, Nervous Prostration, etc., send a statement of your condition to Drs. STARKY & PALEN, 1529 Arch Street, Philadelphia, and get their opinion as to the value of Compound Oxygen in your case. It will cost you nothing.