

## RECENTLY PATENTED INVENTIONS.

## Engineering.

**ROTARY ENGINE.**—Paul J. Johnson, Los Angeles, Cal. Within the cylinder of this engine, on the end of the main driving shaft, is a hub eccentric to the cylinder, and the piston, sliding diametrically in the hub, has at each end a steam-pressed head engaging the inner surface of the cylinder. A slide valve, shifted by a hand lever, admits steam to either one of two ports for going ahead or reversing, and the piston, slidable in the hub, has at each end a chamber in which slides a shank of the piston head, there being two ports at each end of the piston and in each chamber a double valve. As the piston revolves the head is forced outward in engagement with the inner surface of the cylinder by the operation of the double valve, the steam being absolutely confined in the cylinder until it reaches the exhaust, there being no loss of power and no lost motion.

**TENDER FOR TRACTION ENGINES.**—Edward G. Ferguson and John P. Holmen, Kensett, Ia. The engine, according to this invention, has on its boiler rearwardly projecting brackets, while secured to the brackets are side bars extending from the body of a two-wheeled vehicle having pivotal connection with its axle, a drum journaled in the brackets being operated by the steering mechanism of the engine, while a chain winding on the drum is connected at its ends with the axle of the vehicle. By this means the engine and tender may be simultaneously steered, and may be as readily moved rearward as forward without danger of upsetting.

## Railway Appliances.

**RAILWAY TIE AND RAIL CLAMP.**—Charles H. Rogers, New York City. A metallic tie, according to this invention, has slots in which the rail is received, and mechanically operated rail clamps capable of being manipulated from one end of the tie to carry the clamps into locking engagement with the tie. The necessity of a gage is dispensed with. The tie is simple and inexpensive, and may be used in connection with a wooden sleeper or foundation, or a foundation of concrete, etc.

**RAIL SANDER.**—Herbert L. Graham, Augusta, Ga. An improved mechanism for delivering sand from the sand box of a locomotive to the rails is provided by this invention, the sanding device being certain in its operation, feeding the sand rapidly or slowly as desired, and not being liable to become clogged. It comprises a straight pipe extending beneath and having a branch connection with the sand box, whereby the sand is fed to the nozzle by gravity, a conveying pipe leading from one end of the nozzle pipe, while an air-blast pipe enters the other end and terminates in a nozzle just beyond the connection to the sand box. The improvement may be applied to any sand box now in place without changing the ordinary hand-feeding mechanism.

## Electrical.

**DROP SIGNAL APPARATUS.**—Oscar A. Danielson, Owatonna, Minn. This invention relates to apparatus used in connection with telephone exchange switchboards, and provides means designed to prevent induction and, consequently, obviate cross talk. Instead of using a single magnet for each drop, a series of magnets is so employed, each set comprising a number of magnets, and adjacent sets being so arranged that magnets of one set will oppose magnets of the adjacent set. The magnets of each group are oppositely wound, there being a soft iron plate for each group and a board upon which the several groups are arranged, the groups being so arranged that the positive magnets of one set oppose negative and positive magnets of an adjacent set.

**CLUSTER LAMP FIXTURE.**—Nelson Weeks, New York City. This invention provides a comparatively inexpensive fixture that is neat and compact in appearance, and which may be applied directly to a ceiling, wall or other support, and in which the usual short extended ends of the house wiring may be attached directly to the lamp contacts. It comprises a base carrying a series of electrically connected screw plugs, there being connections between the plugs and the leading-in wires, while a cap on the base has a plurality of openings to receive lamp bases. Contact plates on the walls of the openings have projections to engage the ring terminals of the lamps, the projections engaging with certain of the contacts on the base, and there being means for electrically connecting the contact plates.

## Agricultural.

**SUGAR CANE HEADER.**—Charles W. Mac Williams, Preston, Canada. This is a machine for cutting off the tops or heads, and, consequently, the seed from sugar cane, Milo maize, and like crops, in the harvesting of which it is desirable to cut off only the heads, leaving the stalks standing. The machine may be readily placed in a wagon body and the knives raised or lowered to accommodate them to the height of the stalks, the adjustment being effected in a quick and convenient manner, and means are provided for conducting the severed tops from the knives back into the wagon body. The wagon tongue is also so formed that the stalks will pass between its members, the stalks remaining upright, and not being trampled upon by the draught animals.

## Miscellaneous.

**MAILING TUBES, CANS, ETC.**—Edward Sands, Chicago, Ill. Two patents have been granted this inventor relating to the manufacture of mailing tubes, cans and similar articles from sheets of paper, strawboard, etc., whereby the layers or laps, after rolling the sheets into tubular form, are securely united and at a comparatively low cost. The sheets are provided with one or more strips of an adhesive substance of high quality, such as glue, and with a coating of cheaper adhesive, such as paste, adjacent to or between the strips, the glue strips drying and holding as soon as the tube is rolled, and thus holding the tube or can in its correct form until the paste dries and performs its share of the joining. According to this method, but a small quantity

of glue need be used, and the articles may be cheaply manufactured without impairing their durability.

**CONSTRUCTION OF CEILINGS.**—Louis Aronowitz, New York City. According to this invention, panels are formed of bars and connecting links in such manner that they may be folded for transportation and inserted between the flanges of the ordinary floor beams, where they are expanded into normal shape. The parts are all securely fastened together, each supporting the other to make a strong and rigid structure, which may also be used for floors, and the panels may be put together at a shop in sections of considerable length, enabling the handwork to be done where special facilities are provided for assembling the parts, so that but little labor need be done at the building.

**LOG HAULER.**—Thomas J. St. Louis, West Superior, Wis. To facilitate the hauling of logs by means of steam power instead of by horses, this inventor provides a device which may exert its power without tearing up the roadway or without using rails, employing in the work a stationary chain stretched along the roadway and fastened at each end. The chain is engaged by a chain hauling or winding mechanism mounted on a suitable frame supported on runners to permit the sled or bob under each end of the frame to pivot in going about curves or in passing obstructions. Means are also provided for cutting ruts or tracks in which will travel the runners of the sleds on which the logs are loaded, so that all the sleds will follow in the same track, it being expected that the tracks will be in hard snow, or ice made by freezing water poured therein.

**FOLDING TOP FOR VEHICLES.**—Morris Kassmayer, New York City. This top is arranged to permit the occupant of the vehicle to conveniently and quickly raise or lower the top without leaving the seat, the top when lowered being completely folded in the seat casing. The top is made with a lower folding section, a middle non-collapsible section, and an upper extension section or hood, which may or may not be used, and is adapted to be folded within a casing at the rear of the seat, or to be elevated, by turning a crank at the front of the seat at one side, the crankshaft being connected with gear wheels which are connected with racks from which rods extend to the frame bows.

**PRODUCING ALCOHOL AND YEAST.**—Johannes C. Boot, Bath Beach, N. Y. To produce alcohol and yeast from substances such as sirups, molasses, sugar and saccharified amylaceous substances, this inventor ferments the saccharine substances in the presence of a chromium compound, whereby secondary fermentations are prevented, and the main fermentation may be completed in a short time, while the products of fermentation are pure and the alcohol is obtained in larger quantities than according to the processes heretofore used.

**SHARPENING HORSESHOE CALKS.**—James L. Martin, Marion Centre, Pa. A simple machine by which the calks of a horseshoe may be restored to their proper shape or sharpened, without removing the shoe from the hoof, according to this invention, consists of a frame with an operating lever and shaping levers pivoted at opposite sides in the frame, the inner surfaces of the latter levers being shaping surfaces, and there being link connections between the shaping levers and the operating lever.

**GLASS MOULDING MACHINE.**—Lawrence H. Dolan, Alexandria, Ind. This invention relates to a machine in which a separable mould is employed, in which the hollow article to be produced from molten glass is blown while the mould is closed and released when the mould is opened. A two-part closable paste mould is used and a douche tank, there being means for moving the mould into and out of the tank by pressure of the foot of the operator, and means for closing the normally open mould by foot pressure. The machine is especially adapted for the rapid and perfect production of electrolite bulbs or other hollow glassware by a work man, without requiring an assistant.

**AUTOMATIC WINDMILL REGULATOR.**—George S. Long, Hinckley, Ill. This invention provides a mechanism for automatically throwing windmills into or out of the wind, for the purpose of stopping or pumping of water. Combined with rotatable ratchet disks on the hub of which the windwheel chain winds, is a pump rod, lever and weighted push and locking pawls, in connection with a float and balance weight, the rising of the water in the tank, and the consequent lifting of the float, throwing the wheel out of the wind when the tank is full, and the dropping of the float with the withdrawal of water from the tank allowing the wheel again to fall into the wind.

**WATER WHEEL.**—Charles T. Monroe, Wisdom, Mont. To so construct a wheel that practically all the water running into it will be utilized is the object of this invention, the arrangement being such that the stoppage of the wheel will act as a cutoff to store unneeded water. Mounted to rotate in a suitable casing is a wheel carrying radial blades or buckets, flanges on the wheel forming the outer walls of the buckets, while a water-fed pipe extending into the casing has lateral outlets, the pipe being adapted to engage against the inner ends of opposite blades to form the inner walls of the buckets.

**GUITAR OR LIKE INSTRUMENT.**—Charles M. Bourc, Dodge City, Kansas. An improved construction of guitar bridges and an improvement in the manner of fastening the strings, is provided by this invention, the openings for the strings being so located and the bridge and top so reinforced that neither the bridge nor the upper face of the guitar will be injured when the strings are placed under severe tension. The strings may not only be attached to the bridge, but the bight of the strings is engaged by a cross bar on the under face of the upper board of the instrument, thus preserving the board against undue strain and causing the strain to be sustained jointly by the bridge and the transverse bar.

**MUSICAL INSTRUMENT.**—Charles Nalence, New York City. For pianos, harps, autoharps, phonoharps, banjos, mandolins, etc., this invention provides improvements whereby the strings are operated on by a striker in such manner that either a solid tone or a tremolo is produced, the device being also arranged to

be used as a silent clavier. The instrument is provided with a movable support on which is an adjustable rod having a flexible connection with a striker to hold it suspended or move it nearer to or farther from the strings. After the striker has been propelled against the strings by the action of the support, it returns to its former position by its own gravity.

**BLOWPIPE.**—Charles H. King, Granite Falls, Minn. A device that will blow a very strong heat without blackening the metal being soldered or treated is provided by this invention. The improvement comprises a boiler adjustably held on a standard above a heating lamp, the boiler communicating with a blowpipe extending over a flame lamp, while a deflecting plate depends from a hood mounted on the tray or base, the hood mainly surrounding the flame lamp. Alcohol is preferably used in the lamps and in the boiler, and the construction is comparatively inexpensive. The blowpipe extends upward from the boiler into a condensing chamber, from the upper part of which the blowpipe proper leads to the flame.

**TRANSPORTATION TICKET.**—Samuel Lumpkin, Atlanta, Ga. A ticket applicable in all modes of transportation, to be carried out by straight or round trips, or by means of whole or half tickets, is provided by this invention, the purpose being to prevent the use of tickets by other than the original purchaser. The ticket has a slot and offsets forming stops, a sleeve or pocket sliding on the ticket being limited in its movement by the offsets, while a tongue held at one end to the sleeve is movable at its other end through slots in the sleeve and ticket. The use of the ticket involves the concealing of an identification portion, and successively unsealing it and resealing it by the several officials in the order of the coupons passed upon.

**LOCK.**—Walter and Paul Wolfgramm, Guben, Germany. This is an improved safety lock having groups of tumblers lodged one above the other in pairs, which may vary in number and be so arranged that the separate tumblers of each individual pair are not in contact with each other when the lock is opened, while at the moment of closing there is a distribution or rearrangement in position of the different groups or pairs of tumblers, which is brought about by the arrangement of the parts of the key bit and their direct action on the lower tumblers of each group. By using a key to which a variety of bit forms may be given, a large number of ways of closing and locking the lock mechanism is provided, each one differing from all the rest, as the lock can be opened only by a key having exactly the same arrangement of bit as that which closed the lock.

**LINEWAY.**—Martin F. Kohinka, Scotia, Cal. To facilitate the lifting and transporting of timber, this invention provides for a line run taut at an inclination so that a carriage may roll along the line, the carriage being dropped to the ground on relaxation of the tension on the line. The invention supposes the line connecting two trestles or elevated structures of differing height, the line being attached to one of the trestles and running over the other, the line being made slack or taut by a winding apparatus, while a second line, also provided with a winding device, is attached to the ground at one trestle and runs over the other trestle.

**TRANSOM LIFTER.**—Oscar C. Rixson, Chicago, Ill. This device is of simple construction, easily manipulated, and applicable to transoms hinged either at the top, middle or bottom, while being completely hidden from view. A rack bar is mounted to slide in a guideway within the door casing and a link pivotally connects the rack bar with the transom, there being a gear wheel in mesh with the rack bar and a pinion in mesh with the gear wheel, while a spindle, which may be locked in place as desired, engages the pinion and is under the convenient control of the operator, the device not being liable to get out of order and not forming an unsightly obstruction on the outside of the door.

**DOOR SADDLE.**—Richard Wilson, New York City. A threshold strip, according to this invention, is so made as to entirely close the space between the door and the threshold, the closing medium having a rotary and a vertical movement, and being located within the saddle or threshold strip, entirely out of the way. The threshold strip has a longitudinal opening in which a roller rests upon bearings, springs normally holding a portion of the roller above the upper surface of the threshold, while an adjustable strip supports the springs.

**THILL COUPLING.**—Silas Speed, Barron, Wis. The clip section, according to this invention, has end ring bearings provided with entering slots and an intermediate cushion, and the thill section has lugs fitting in the bearing rings and overlapping the slots when the thill section is in position for use, the cushion then pressing the thill section to set its lugs tightly in the bearing rings overlapping the slots. The cushion may be a rubber block and also serves as an effective anti-rattler.

**SHELVING.**—Orville J. Hubbard, Buffalo Center, Iowa. According to this invention, a series of shelves is formed of bars arranged in horizontal lines to support and display goods advantageously without permitting the usual accumulation of dust, the construction also preventing the access of rats and mice to the goods. The parallel bars are preferably tubular, and the shelves may be readily adjusted to the desired height.

**SALT SHAKER.**—William M. Myers, Hannibal, Mo. Within the body of this shaker is a cone-shaped discharge tube, with its small open end uppermost, its sides closed and its lower large end coinciding with and fitting in the bottom outlet opening of the body. The salt or other article to be shaken out is held in the space around the conical discharge tube, and the shaker has a conical lid by which, on a quick upward and downward movement, the salt or other article is caused to enter the small upper end of the discharge tube, the quantity discharged varying with the angle at which the shaker is held.

**NOTE.**—Copies of any of the above patents will be furnished by Munn & Co. for 10 cents each. Please send name of the patentee, title of invention, and date of this paper.

## RECENT ANALYSIS OF CIGARETTES.

I desire to supplement my remarks on the cigarette (THE SCIENTIFIC AMERICAN, vol. lxxviii, No. 11, p. 173) with the following analysis made by J. W. Mallet, Professor of Chemistry in the University of Virginia.

JOHN WALLACE.

UNIVERSITY OF VIRGINIA,  
CHARLOTTESVILLE, VA.

February 7, 1898.

Having purchased, in open market, at Charlottesville, Va., large samples, in original, unbroken, manufacturer's packages, of the following brands of cigarettes, viz., No. 1, No. 2, No. 3, No. 4, No. 5,\* I have carefully examined these samples and find them to consist of good, light-yellow tobacco, with wrappers of thin, delicate paper.

The percentage of nicotine in the (air-dried) tobacco was found to be:

No. 1	1.19
No. 2	1.08
No. 3	1.24
No. 4	1.36
No. 5	1.17

On being burned, the tobacco and paper respectively left the following amounts of ash, counted on the materials in their original air-dried state:

	Tobacco. Per cent of ash.	Paper. Per cent of ash.
No. 1	13.43	2.81
No. 2	13.41	0.79
No. 3	11.65	2.03
No. 4	13.35	2.05
No. 5	13.17	2.56

The average weights of the tobacco and paper respectively of a single cigarette (air-dry), and of the ash from same, were:

	One Cigarette.			
	Original Material.		Ash.	
	Tobacco. Grains.	Paper. Grains.	Tobacco. Grains.	Paper. Grains.
No. 1	17.24	0.60	2.32	0.017
No. 2	21.53	0.62	2.89	0.005
No. 3	16.76	0.68	1.95	0.014
No. 4	16.98	0.60	2.27	0.012
No. 5	16.04	0.60	2.11	0.015

Both tobacco and paper were, in very considerable quantity, carefully examined for the noxious foreign ingredients which have sometimes been said to be added in the process of manufacture. None of these could be found. Neither morphine nor any other characteristic constituent of opium was detected; nor was atropine, strychnine, cocaine or any other fixed alkaloid present in the tobacco. No traces were obtainable of any compound of arsenic, lead or copper in the paper.

The whole examination lends no support to the sensational stories occasionally circulated in regard to dangerous adulteration of cigarettes. J. W. MALLET.

\* I have no desire to advertise the particular brands of cigarettes analyzed; hence I have substituted numbers. I shall be pleased to furnish the names by letter to any one who is sufficiently interested in the subject to desire to have them.

## Business and Personal.

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## NEW BOOKS, ETC.

**THE SHIPPING WORLD YEAR BOOK.**  
Edited by Major Jones. Port directory of the world, tariffs of all nations, etc. 1898. Pp. xxxii, 1054.

This is a very useful book. It is filled with matters very important to all who are in any way interested in shipping. It is convenient to have the tariffs of all nations in a condensed and handy form. The tariffs are corrected to December 15, 1897. The port directory includes all of the ports of the world, with memoranda as to charges of pilotage, etc.

**TRIBUNE ALMANAC AND POLITICAL REGISTER FOR 1898.** Henry E. Rhoades, editor. New York: The Tribune Association. 1898. Pp. 336.

The Tribune Almanac is always a welcome visitor. It is particularly valuable to those who are interested in any way with political matters, as it probably goes into this subject more fully than any other almanac or manual.

**PUBLICATIONS OF THE UNITED STATES COMMISSION OF FISH AND FISHERIES AVAILABLE FOR DISTRIBUTION ON JUNE 30, 1897.** Extracted from United States Fish Commissioner's Report of 1896. Appendix 7. Pp. 343 to 356. Washington. 1897.