

RECENTLY PATENTED INVENTIONS.

Engineering.

GENERATING STEAM.—Edgar A. Ashcroft, London, England. This invention is for a method of and apparatus for applying the heat of slag, etc., for the generation of steam, the slag being supplied to the boiler heating chamber spread out in a thin layer, so that its continued accretions will afford large and renewed heat radiating surface, while the convection of heat from the exposed surface is assisted by air currents passed through in a continuous cycle. The fire box is similar to that of a vertical boiler, but with a hearth at the bottom instead of a grate, and the boiler is inclosed in an annular space within a brickwork setting, the main body of the boiler being surrounded by vertical flues, and a central tube, through which the hot material is supplied, leading through the steam dome to the fire box. The boiler is held in a setting arranged above a track, beneath which is a tunnel.

GAS ENGINE DISCHARGE VALVE.—William Burger, Delphos, Ohio. This valve is designed to so control the outlet from the cylinder that the latter may be repeatedly charged with explosive mixture before ignition, the charge being retained in case of failure until proper ignition takes place. The spring-pressed exhaust valve has a longitudinally channeled stem on which is a casing provided with a port, a piston in the casing being adapted to be acted on by pressure passing through the channel and port from the cylinder, while a block carried by the piston is adapted to be engaged by the actuating mechanism for the valve stem.

Railway Appliances.

FREIGHT CAR.—James M. Peet, Allegheny, Pa. To provide for the safety of trainmen who have to walk from one end of a train to the other, and also afford means for readily operating the couplings from a platform, this inventor provides for a side platform, to extend the entire length of the car body. This platform is just wide enough for one to walk on, is made in sections, and is hinged to the car, so that it may be turned down and the car run close to a platform to facilitate loading and unloading. At the ends of the car are transverse platforms, and along the sides and ends are handrails, the improvement obviating the necessity of walking upon the car roof.

HANGER FOR BRAKE BEAMS.—Ephrem Marcotte, Las Vegas, New Mexico. This invention relates to car trucks, and provides a bearing having a U-shaped metallic yoke and a block fitted in the yoke and forming with it an opening for the hanger arm, the bearing being secured by a bolt to the end sill of the car. The bearing can be cheaply made, and is not liable to get out of order.

Miscellaneous.

BICYCLE.—John J. Naregang, Leesport, Pa. To facilitate the adjustment of the tension of the driving chain, and the removal of the chain and the rear wheel from the frame, this invention provides a frame union or joint piece to connect the rear forks, there being in the union a lengthwise slot in which an adjusting screw and nut are engaged to adjust the axle, there being a guide washer for the screw and a clamp nut working in contact with the washer.

BICYCLE.—Edwin Y. MacKenzie, Kingston, Jamaica. This invention provides an attachment to take the place of the ordinary pedal, by means of which increased leverage may be obtained in going up hill or to make a higher speed. The pedal is eccentrically pivoted on its shaft, and secured to and extending from the outer end of the crank arm is a ratchet having at each end teeth and a central plain portion, while a spring pawl pivoted on the longer end of the pedal is normally held in engagement with the teeth on the ratchet bar. The pedal operates in the ordinary way during the upward movement of the crank, but when the latter has passed the center the ankle is bent until the pawl engages the outer teeth of the ratchet, forming a practical extension of the crank arm. When the extra leverage is not required the pawl does not engage the teeth and the pedal acts like an ordinary pedal.

VEHICLE DRIVING GEAR.—Frank W. Haviland, New York City. Two patents have been granted this inventor for improved gears arranged to propel the vehicle independently of the running wheels, and at the same time prevent slip and loss of power, an independent friction surface being applied to utilize the weight of the vehicle to increase friction and overcome inertia and resistance. In combination with the running gear swinging wheels are adapted to alternately engage the ground or track, there being means for operating the wheels and simultaneously swinging one wheel out of contact with the ground when the other is swung into contact. There are also segmental guides in which the boxes of the propelling wheels have movement, the guides being fixed and curved in the direction of the wheels which they govern.

CART.—Thomas Hill, Jersey City, N. J. This is a vehicle more especially designed for street cleaning purposes, to collect the sweepings and deliver them to a wagon or directly to the dump. The cart body is provided with trunnions engaging open bearings on the cart frame, mounted to swing in the side wheels as the fulcrum, the trunnions being above the fulcrum. The cart has three wheels, and may be conveniently pushed about by one man, and the load readily dumped, the cart body being easily removed from its wheeled support, or lifted back into normal position.

VEHICLE BRAKE.—Clark Snow, Oxford, Ala. This is a brake of such construction that when set to a bearing against the wheels the setting mechanism automatically locks the brake in set position, the power of the brake being substantially greater as the resistance of the wheel increases. The releasing mechanism readily frees the wheels from the brake, and the brake, when released, are held perfectly clear of the wheels. The brake may be operated from either the side, front or rear of the vehicle, and may be applied without injury to either the running gear or to the body of any form of vehicle.

GATE.—Alva H. Barnhill and Thomas I. Thurman, Altoona, Kansas. This is a tension gate of which the hinges on the swing post are out of vertical alignment, and the swing bar and latch bar are connected by wires which pass through intermediate vertical bars, while a tension bar pivoted to the lower end of the swing bar extends to and beyond the latch bar, where it engages with a keeper. The arrangement is such that the tension of the wires raises the gate as it is opened and gives the gate a strong tendency to close.

FRUIT PICKER'S BASKET.—Augustus M. Denig, Riverside, Cal. This invention provides a basket or can designed to facilitate the handling of picked fruit without danger of bruising it, the receptacle having diverging sides which increase its capacity toward the bottom. It also has two hinged bottom sections and straps connected with their free ends, while stops on the sides engage with the outermost ends of the straps. In emptying the receptacle the bottom sections are swung downwardly to permit the fruit to pass out with the least possible liability of being bruised.

REELING MACHINE FOR PAPER, ETC.—William H. Waldron, New Brunswick, N. J. According to this improvement, a winding roll is journaled in sliding bearings to move toward and from a driving roll, one of the bearings receiving the journal of the winding roll eccentrically, there being means for turning the bearing to shift the end of the winding roll transversely to the direction of the slideways. The machine is thus adapted to automatically correct any uneven winding caused by the length of the sides or seldedge of the paper or fabric to be reeled.

COLLECTING GASES.—Francois G. Waller, Delft, Netherlands. This invention provides an apparatus for collecting gases or vapors, for making analyses thereof, consisting of two communicating tanks, in one of which is a float carrying a siphon automatically controlling the flow of liquid from the tank, while the other tank has a filtering gas inlet pipe and an outlet pipe communicating with the first tank. The variations in pressure in the space containing the gases have very little influence on the mean composition of the separated sample.

PRODUCING MUSIC ROLLS.—James B. Tracy, Meriden, Conn. To from the perforated rolls used in instruments to produce the desired tones, either pneumatically or by the aid of cylinders, combs, star wheels, etc., this inventor has devised an apparatus in which a perforated pattern sheet and the sheet to be perforated are passed together over a perforated tracker board during the operation of reciprocating punches whose movement is controlled by slides, there being a bellows for each punch. The arrangement is such that a large and cumbersome stencil is not required to actuate the punches, one of the ordinary music sheets passed over the tracker board pneumatically controlling the punches to form new sheets or rolls.

MANIFOLD SALES BOOK.—William D. Bates, Grafton, North Dakota. Pairs of crossed bands connect the covers of this book to form a double hinge, and the upper end of a pad is placed such distance from the upper pair of bands that the leaves when folded outwardly will be engaged thereby. The pad comprises sales slips with which alternate duplicate slips, a transfer sheet being inserted between a sales slip and its duplicate. At the end of a day's work the duplicate slips can be readily taken out, and when the pad is used up a new one is easily inserted.

ENVELOPE.—Alexander McL. Chalmers, Nanaimo, Canada. This envelope has extension flanges on three of its flaps, the extensions on the opposite flaps being folded and gummed on their front faces and the extensions on the other flap being gummed on their rear faces. The extension flanges on the back of the envelope are adapted to be conveniently taken hold of by the receiver to tear open the envelope without danger of injuring its contents.

BROOM ATTACHMENT.—John S. Williams, Krebs, Indian Territory. This is a spring wire clamp formed of two sections sliding one on the other, bifurcated arms being secured to the sections, and there being slides on the members of the arms whereby the sections can be adjusted by moving the slides up or down. The clamp may be readily adjusted on the brush portion of a broom to bind the straws more or less tightly together, rendering the broom adjustable for any kind of work, as carpet sweeping, scrubbing, etc.

FIREPROOF DOOR.—George Fox, II, New York City. This door has a sheet metal center-piece whose sides are covered by layers of fireproof material, a wooden facing covering each layer, while a layer of fireproof material is passed around the edge of the door, with a strip of sheet metal covering. A fire on either side of the door may burn off one face without disturbing the position of the parts on the other side of the door, which is made to have the appearance of an ordinary wooden door.

BABY CARRIAGE.—John A. Johnson, Hoquiam, Washington. This is a carriage which may be readily converted into a cradle, a crib, a high chair, or a rocking seat, the various changes being quickly and conveniently made and the carriage being as light and durable as an ordinary carriage. It has a seat and a foot portion pivotally connected to each other, a foot rest resting on the foot portion when the latter is held at an angle to the seat, and in front and rear chambers of the body are rockers to be held within or below the sections to which they are applied. The entire body is seated in a skeleton frame, to which the running gear is attached.

FOLDING BED.—Robert J. Stuart, New Hamburg, N. Y. Connected with the front portion of a stationary head board are legs on which the bed is fulcrumed, a latch pivoted at its center on the head portion of the bed having a weighted end opposite the latch end, while a keeper bar connected with the legs is adapted to be engaged by the latch when the bed is in elevated position. A curtain to conceal the bed may be attached to a curved rail extending forward from the top of the stationary head board.

MANGLE.—John A. Jackson and George S. White, Toronto, Canada. This is a device which may

be operated with but little power, by turning a crank, and may be readily set on a table for use or hung up or stored away in small space. It has an upper and a lower roller between which the articles to be pressed are passed, the upper roller shaft being pressed down by coiled springs whose pressure may be readily regulated, while the lower roller shaft is journaled on anti-friction rollers, reducing the friction to a minimum.

CLOTHES LINE HANGER.—Jacob H. Burlich, New York City. According to this improvement, an arm is pivoted to the window casing or a similar support and carries on its free end a pulley over which passes the clothes line, a locking lever for locking the arm in position also forming a guide for the clothes line. This hanger permits the user to hang clothes on the line within a room and then move the line with the clothes on it out into the yard on leaving the clothes to dry.

SCRAPER.—George E. Richardson, Pomona, Mich. In a frame carried by a loosely mounted axle on suitable driving wheels, according to this improvement, are journaled two shafts carrying a pinion at each end, in which mesh rack bars fixed to a suspended scoop, the arrangement being such that, by means of levers within easy reach of the driver, the scoop may be elevated at the front and depressed at the rear for dumping the load. The scraper may be backed up wherever the load is to be deposited, and the load dropped without requiring rehandling.

COMPOSITION FOR PAVING.—Timothy Cotter and Thomas H. Walker, Kansas City, Mo. These inventors have devised a composition for paving which may be moulded into any desired form and laid directly down in blocks or flags, or spread and tamped, or rolled directly on streets, sidewalks, driveways, etc. It is made of coal tar pitch, coal tar, hydrate of lime, oil and sand, in specified proportions and after a manner described, and is designed to be sufficiently strong to resist cutting and wear during the heat of summer, and have sufficient elasticity when frozen to give or bend slightly, without fracture, under pressure.

WEIGHING MACHINE.—Richard H. Taylor, Westport, Conn. This machine has a series of beams to support the weighing platform, the beams having segmental concentric faces with which are connected bands to support the beams and connect them with the support for carrying the platform, while a band also connects the beams with the weighing beam above the platform. The arrangement is such as to afford a very sensitive platform scale, and one not liable to get out of order with great wear.

WEIGHING OR MEASURING MACHINE.—Samuel P. Mackey, Ridgefield, Washington. For grocery and other stores, this invention provides a machine adapted to handle oils, sirups, etc., and solids which pour easily, as spices, powder, shot, etc. It has a receptacle which, when placed in connection with a source of supply, automatically shuts off the supply when a certain quantity or weight of material has been received, relieving the dealer from the necessity of close attention in weighing or measuring quick-flowing articles, or from the need of waiting for slow-flowing materials.

SCUTTLE HOLE PROTECTOR.—Adolf Gauzenmüller, New York City. A downwardly dropping door, according to this invention, has hinged connection with a frame, and is held closed by locking devices, while a cord attached to the door passes over pulleys on the under side of the frame. Should the scuttle be removed, the protector effectually prevents access from the roof to the chamber or apartment beneath, although the scuttle hole may be quickly and conveniently opened to substantially its full extent when desired.

TOOTH BRUSH.—Edward H. Hamilton, Poona, India. According to this invention two tooth brushes are so combined as to be used as a single brush, to simultaneously clean the teeth on both the back and front surfaces. The two brush backs are placed at angles to one another, their bottom faces having opposite inclinations, and the backs are connected by a bridge which may be of spring material if desired, the backs thus forming a partially separated V-shaped trough, in which are arranged bristles of different lengths, the shortest in the upper row and the longest in the bottom row.

GARMENT STRETCHING FRAME.—Albert E. Phelps, Irvington, N. Y. To prevent woollen garments from shrinking when being washed, this inventor has devised a simple and inexpensive frame composed of two plates having openings for holding garment receiving wires, having arms slidably connected to the main portions, while expansive springs engage the arms and body, all of the parts being preferably made of galvanized iron.

PUZZLE.—Dallas Du Bois, Montclair, N. J. A game board having circular openings is an accompaniment of this puzzle, some of the openings being grouped around an oblong opening, and rings are adapted to be passed through the openings, and from one opening to another, the rings having a transverse cut and beveled ends. The rings may be readily slipped over each other and moved from point to point in the board without being removed from it.

Designs.

FEATHER DUSTER.—Israel B. Cohen, New York City. This design pertains to the shape of the head or base of the handle, which is made up of cones having the appearance of being nested, all approximately of the same diameter, and with the inner or lower one merging smoothly into the lines of the handle.

SAVINGS BANK.—Joseph F. Langton, Waltham, Mass. This design affords a miniature representation of a castle, in which a large tower is surrounded by smaller towers.

BORDER FOR SILVERWARE.—Charles D. Graft, New York City. Two design patents for borders have been granted this inventor, in one of which a foliated scroll is intertwined with an oak branch bear-

ing acorns, while the other is a relief representation of a branch of roses with intertwined rococo scrolls, sprigs of forget-me-nots extending from some of the scrolls.

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.

NEW BOOKS AND PUBLICATIONS.

REMINISCENCES OF AN OCTOGENARIAN OF THE CITY OF NEW YORK. 1816-1860. By Charles H. Haswell. New York: Harper & Brothers. Pp. xii, 581. Price \$3.00.

Haswell's "Engineer's Pocket Book," now in its sixty-first edition, is a book that is familiar to all engineers and to many thousands of the more studious among mechanics, but it is not known to an equally wide circle that its author was, as far back as 1838, the chief engineer of the second steam war vessel of our navy, the *Fulton the Second*, which made one trip to the West Indies and back, and had a speed of fifteen miles an hour in the smooth water of New York Bay. It is pleasant to record that this worthy octogenarian, now eighty-seven years of age, not only bears the weight of his years with a strength and buoyancy of feeling which would do credit to one much younger, but has given us, in his "Reminiscences," a book which cannot fail to be welcomed by every genuine New Yorker. And more than this, it gives us a highly valuable realistic picture of life in the leading American city during the first half of this century, before the introduction of many of the modern conveniences. It seems that in 1819 the use of ice for domestic purposes was unknown, but the Humane Society issued a warning against the too free use of cold water, although the coldest water was that drawn from street wells. Lottery drawings were also publicly held, according to law, in front of the City Hall, and Aaron Clark, who had kept a lottery office, was elected Mayor in 1837. Tobacco chewing was, apparently, as much of a nuisance in the early part of the century as it is at present, but cigarettes were unknown and cigar or pipe smoking in public was very rare. The completion of the Erie Canal in 1825 is fully noted, when a flotilla of canal boats came in stately procession from Buffalo to Sandy Hook, and "water from Lake Erie, from the Mississippi and Columbia Rivers, and from the rivers of twelve foreign countries, was solemnly poured into the Atlantic." In lieu of means of more rapid communication, the start from Buffalo was signaled to New York by guns placed at suitable distances apart, the signals being similarly returned; the times between the first and last guns from lake to sea and from sea to lake again were an hour and twenty-five minutes each way. The book has numerous illustrations, and nearly every page is crowded with interesting incidents, and no one, whether a New Yorker by birth or adoption, can fail to be interested in Mr. Haswell's book, and no library should fail to procure a copy.

THE ELEMENTS OF PHYSICS. A college text book. By Edward L. Nichols and William S. Franklin. Vol. II. Electricity and Magnetism. New York: Macmillan & Company. Pp. 272. Price \$1.50.

The first volume of this series treated of mechanics and heat, and the third is devoted to sound and light. Its authors are teachers of the branches of physics elucidated, one being a professor in Cornell University and the other at Iowa Agricultural College, and the information given is largely stated in the style of mathematical formulae, designed to correspond with the "increasing strength of mathematical teaching" in university classes. It is apparent, therefore, that the book will have but a limited degree of usefulness for those who are inclined to "skip" algebraic equations or lack familiarity with the calculus, although, for teachers and advanced students, it will doubtless prove of material value.

THEATER FIRES AND PANICS. Their Causes and Prevention. By William Paul Gerhard, C. E. New York: John Wiley & Sons. Pp. 175. Price \$1.50.

Although this is not distinctively a book on theater planning and construction, it is certain that any architect having such work in hand, and every theater owner and manager, should carefully consider the data, the very valuable suggestions, and the practical reasoning, to be found in this volume. The details given of twelve prominent theater fire calamities of this century are truly appalling, especially when it is considered how easily, in each instance, any loss of life or property might have been avoided, by the observance of what should have been only elementary precautions. On such subjects there are too few publications tending to the enlightenment of the public. Two valuable papers, by the same author, on theater fires and their prevention, appeared in SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 982 and 983.

POOR'S MANUAL OF THE RAILROADS OF THE UNITED STATES. 1896. New York: H. V. & H. W. Poor. Pp. 124, xxi, and 1670. Price \$7.50.

This publication, now in its twenty-ninth year, is simply invaluable to all who wish to obtain the bottom facts about the present condition, growth, business combinations and management of our vast railroad system. Each succeeding volume has more and more justified the appreciation in which the work has been held from the first by all discerning investors and others who have need of complete information in this line. The Manual this year embraces statements of 4,399 corporations, including 2,040 steam railway companies and 1,208 street railway companies. It also has statements of 143 industrial corporations and of the debts of 1,008 States, counties, cities, and towns. The net increase of mileage for all railroads in the United States during 1895 was 1,627 miles, and the total length of track laid up to the first of this year was 190,955 miles. Poor's Directory of Railway Officials, formerly published as a separate volume, is this year incorporated with the Manual. It gives lists of officers, master mechanics, purchasing agents, etc., of operating railroads in the United States and Canada, and of the chief railroads in Mexico.