

men and animals. This journey adds about 1½ cents to the cost of the borax per pound. From Wadsworth to San Francisco the expense of transportation is 1½ cents, and from the latter point to New York it is stated to be 1½ cents additional a pound. The total cost per pound in San Francisco is about 8½ cents. The monthly production of borax in California and Nevada is estimated at 200 tons.

FRAUDULENT USE OF BENZINE.—Benzine is frequently substituted for and mixed with turpentine by unprincipled dealers, but it is far inferior to turpentine for mixing paint.

NEW BOOKS AND PUBLICATIONS.

PERSONAL APPEARANCE AND THE CULTURE OF BEAUTY. By Dr. T. S. Sozinsky. Philadelphia: Allen, Lane, & Scott, Publishers, 233 South 5th street.

Contains chapters on types of male and female beauty which give measurements so that anybody in *puris naturalibus* posted before a mirror, tape line in hand, can soon discover whether his or her proportions come up to the standard here set forth. That done, the reader can compare each of his or her features in turn with the ideals described in the successive chapters devoted thereto, and at the same time he or she will get some probably useful ideas as to how to improve portions which are not strictly beautiful. The author offers some suggestions as to dress and in general labors to convince his readers that "the proper study of mankind is man."

THE METALLURGICAL REVIEW. Published by David Williams, 83 Reade street, New York city. \$5 per year.

No. 1 of this new magazine has recently been issued, and we are told that it is to be devoted exclusively to the literature of metallurgy. Professor R. H. Thurston begins the initial number with a treatise on the mechanical treatment of metals; then follows the first of a series of papers by Mr. E. C. Peabon on the New Iron District of Ohio; Siphon Tap in Lead Smelting, by C. Kerchhoff, Jr.; on Steel by W. Metcalf, C.E., besides other valuable articles. We can compliment the publisher on the very handsome dress in which the magazine is presented.

THE LOCUST PLAGUE IN THE UNITED STATES. By Charles V. Riley, Ph.D. State Entomologist of Missouri, etc. Illustrated. Published by Rand, McNally & Co., Chicago, Ill.

A number of Professor Riley's admirable papers on the grasshopper scourge have appeared in this journal, so that our readers are already familiar with the comprehensive and lucid manner in which this and other entomological subjects are treated by him. In the present work, the various articles which have been published by the author in Missouri entomological reports and elsewhere, relating to the Rocky Mountain locust, are collected in compact form, and as all are based upon an extensive personal experience and long study, the work may be pronounced as invaluable to agriculturists whose crops are yearly invaded. The book is copiously illustrated and colored maps are given, showing the territory devastated or visited by the locusts during different years. There is a full discussion of all the practical ways and means for the prevention of locust injuries; and also of the various legislative enactments calculated to encourage the extermination of the insect.

Inventions Patented in England by Americans.

From August 7 to August 21, inclusive.

- BALL VALVES.—B. C. Hay, Washington, D. C.
- BOXES FOR SHAFTING, ETC.—J. Tomlinson, Black Hawk, Cal.
- CIGAR HOLDER.—E. S. May, Campbelltown, N. Y.
- COMPRESSED AIR APPARATUS.—E. Barr, New York city.
- ENAMELLED IRON.—S. C. Quimby et al., St. Louis, Mo.
- ENVELOPES.—C. K. Marshall et al., Vicksburg, Miss.
- FASTENINGS TO ROPE, ETC.—J. K. Lake et al., Chicago, Ill.
- ICE-MAKING MACHINERY.—A. Albertson, Hudson, N. Y.
- LUBRICATING AXLES.—W. Y. Selleck, New York city.
- MUSIC STAND.—J. F. Walters, Boston, Mass.
- PAPER.—W. A. Miles, Copake, N. Y.
- POSTAL CARDS.—C. K. Marshall, Vicksburg, Miss.
- PREPARING FOOD.—C. Moritt (of Baltimore, Md.), London, Eng.
- PREPARING HAY.—J. B. Lafitte, New Orleans, La.
- PREVENTING INCrustATION IN BOILERS.—R. H. Harcourt, Chicago, Ill.
- PROPULSION OF CARS.—W. Eppelsheimer, San Francisco, Cal.
- REFRIGERATORS.—A. W. Zimmerman, Dayton, Ohio.
- STEAM MOTORS.—E. H. Angamar, New Orleans, La.
- STUFFING HORSE COLLARS.—B. F. Grayson, Jr., Luray, Va.
- TREATING HAIR, ETC.—J. F. Green, Brooklyn, N. Y.
- TREATING WOOD.—L. S. Robins, New York city.
- TREADSCREWS.—R. Boeklin, New York city.

Recent American and Foreign Patents.

Notice to Patentees.

Inventors who are desirous of disposing of their patents would find it greatly to their advantage to have them illustrated in the SCIENTIFIC AMERICAN. We are prepared to get up first-class WOOD ENGRAVINGS of inventions of merit, and publish them in the SCIENTIFIC AMERICAN on very reasonable terms.

We shall be pleased to make estimates as to cost of engravings on receipt of photographs, sketches, or copies of patents. After publication, the cuts become the property of the person ordering them, and will be found of value for circulars and for publication in other papers.

NEW MECHANICAL AND ENGINEERING INVENTIONS.

IMPROVED CAR COUPLING.

James Rockwill, Penca, Neb.—This invention refers to an improved car coupling of that class of couplings which are self-coupling on the approach of the cars, without requiring any one to step in between the same for holding the link; and the invention consists of the arrow-shaped draft hook of one drawhead coupling with fulcrumed hook-shaped jaws of the opposite drawhead, the lower jaw being extended to the rear of the drawhead, and locked by a pivoted and weighted catch into open or uncoupled and closed or coupled position. A loop-shaped lever extends backward through the rear end of the drawhead to admit the throwing forward of the draft hook for coupling, or the drawing back of the same within the mouth of the drawhead whenever it is not desired that the cars should couple. When the draft hook is thrown forward the draft hook, link, and wire loop are securely retained in line and prevented from swinging back into the drawhead. The catch block retains the coupling jaw either in locked position, so as to produce the reliable interlocking of jaws and draft hook, or supports the lower jaw in open and uncoupled position, until, by the entrance of the draft hook, the catch block is released by the raising of the rear end of the lower jaw, and the weighted rear end dropped, and the heel of weighted catch block thrown into the recess of the rear end, so as to rigidly lock thereon.

IMPROVED SAFETY VALVE.

Erastus B. Kunkle, Fort Wayne, Ind.—This invention has relation to safety valves for steam generators, and especially to valves which have applied to them means for preventing them from being tampered with by improper persons. The tubular box or body of the instrument is enlarged above and contracted below, and constructed with a male thread cut on its lower end, and a number of holes in its largest end, to receive a spanner for screwing it into place on a boiler. A screw thread is also cut on the upper end of the body to receive a perforated cap, which is held fast by a small set screw. In the center of the cap is a tubular hub, which is

screw-tapped inside part of its length, and tapered outside below the top of the cap. Above the interior threaded portion of the hub is a chamber, into which a nut is applied, receiving inside of it a screw. A cone-pointed screw is screwed into the hub, so as to bear centrally on a flanged cup. This screw is grooved to receive the feather on the inside of the barrel of a key, by means of which key and a lever the screw can be turned, and a helical spring compressed more or less, as may be required. After this adjustment a soft metal cap or seal is stamped upon the perforated head of the screw, and the latter locked by means of the jam nut. The top of the cover is slotted for the escape of steam during an alarm, and concentrically cast on the bottom of the cover is another flange, which laps over the largest part or upper end of the valve, and shuts off communication between the interior of the cap and the long spring chamber of the valve, thus excluding everything injurious from the spring chamber.

IMPROVED GRAIN DISTRIBUTER.

Cornelius E. Drake, Avoca, Iowa, assignor to himself and John S. Murray, of same place.—This invention relates to an improved grain distributor for elevator heads, by which any scattering of grain is avoided and the same delivered to as many bins as desired. It consists of a distributor with radial spouts and of an interior revolving cylinder with fishing bottom, having exit apertures of a size corresponding with the spout openings. A cylindrical casing or receptacle is provided with any desired number of inclined bin spouts, radiating at the lower part from the same. The casing is secured to the elevator head, and leaves no room for scattering grain. To the interior of the casing is fitted a revolving cylinder, having inclined or fishing bottom, forming a spout-shaped aperture that registers with any one of the bin spouts. The bottom is operated by the ordinary index rod, that is attached to the center of the bottom. The connection of spouts and casing with the tightly fitting discharge cylinder prevents the scattering of the grain, and furnishes a stronger, more durable, and cheaper distributor than those at present in use. The spouts are secured to the grain-delivering tubes and the adjustable bottom set to any one of the spouts, as required. The distributor is secured by a top flange to the elevator box, and serves in effective manner for the purpose for which it is designed.

IMPROVED CIRCULAR SAW.

Donald B. McRae, Bay City, Mich.—The object of this invention is to provide for renewing the teeth of large saw plates in a manner not subject to the objections attending the use of what are known as "insertable teeth." The invention consists of a sectional or solid toothed ring attached to the periphery of a plate or disk forming the body of the saw, the ring being "halved" on to the plate when made solid, and tongued and grooved when made in sections, and being riveted in both cases. In practice, the saw plate will be the same thickness at the center as the toothed ring, but will taper or diminish slightly therefrom to the inner edge of the ring, so that the friction will be less than it is in other saws in which the plate is the same thickness from center to periphery. This is an advantage that is made possible by this arrangement of an attached toothed ring, and cannot be had in the common saws, as they cannot be ground in such forms.

IMPROVED TIDE WHEEL.

Walter H. Andrews and Hiram Fuller, Deckerville, Mich.—This invention consists of a wheel placed on a vertical shaft and provided with buckets that open and close by the action of the current. The wheel is journaled in a frame that may be raised out of the water, and a gate is provided for regulating the motion of the wheel. The wheel consists of the heads that are secured to the shaft and the wings that are pivoted between the heads. The operation of the wheel is obvious. It is submerged in the stream and held in place by piles of timbers; and the gate being more or less open, the water spreads the wings and turns the bucket, so that all upon one side of the shaft are acted upon by the current, while upon the opposite side they automatically close or fold together, so as to offer no resistance to the current.

IMPROVED SAW.

Christopher J. Wilson, Macon, Ga.—The object of this invention is to furnish saws which will run easier, and cut faster and smoother than ordinary saws, which may be made of any desired size or kind, and will be applicable to any desired kind of work. The invention consists in constructing a saw with cutting teeth, each of which is beveled on one entire side or face from base to point, which are vertical on one edge and inclined on the other to the length or radii of the saw, according as it is a reciprocating or circular saw. The invention also consists in combining with these cutting teeth clearer teeth, which are of less length, but placed in line with the saw plate, and have a vertical and inclined side, similarly to the cutting teeth. In filing a cutting tooth, very little skill is required, since the file is laid flat against the beveled side, with its lower edge resting upon the inclined edge of the next tooth, which thus serves as a guide.

IMPROVED ROTARY VALVE FOR COMPOUND ENGINES.

Isaac Munden, Bradenville, Pa.—This invention consists in the arrangement of a hub carrying a circular valve that is made in three divisions. The casing of the said valve is provided with four ports, which admit steam into two cylinders, and with two ports connecting with a reversing valve. The object of the invention is to provide a valve that will admit steam to first cylinder in the engine at the boiler-pressure throughout its entire stroke, and conduct steam from this cylinder to the auxiliary cylinder, and from thence to the exhaust passage of the valve casing. The advantage claimed for this invention are, its economy in the use of steam, the facility with which the engine may be reversed, and its simplicity and compactness.

NEW HOUSEHOLD INVENTIONS.

IMPROVED BED BOTTOM.

Frederick P. Edmans, Troy, N. Y.—This invention consists in looped C-shaped springs fixed to and overhanging the head and foot crossrails, in combination with angular hooking blocks fixed to the slats. The free looped ends of the springs are adapted to receive and engage with the beveled ends of angular blocks, which are notched longitudinally and rigidly secured to the bottom of the slats near the ends thereof. The blocks are adjusted on their slats in such relation to the overhanging looped ends of the springs, when the rails are fixed in their places, that the blocks will firmly hold their places without rattling. This is a substantial and cheap bed bottom, which can be easily taken to pieces and put together, and which can be packed away in a very small space.

IMPROVED WASHING MACHINE.

Michael B. Naus, Goldsborough (Etters P. O.), Pa.—The object of this invention is to furnish an improved washing machine, which shall be simple in construction, convenient in use, and effective in operation, washing the clothes with a rolling, rubbing, and squeezing movement, which may be manufactured at small cost, and which may be used in an ordinary wash tub. The machine is designed to be attached to an ordinary wash tub, so that it will not be necessary for the purchaser of a machine to buy also a large tub or box to put it in. The invention consists in washing clothes between two corrugated boards or rubbers made in strips or sections, and the sections moving at different rates of speed and different distance, and the devices for so moving the several parts as set forth.

IMPROVED CARPET FASTENER.

Jesse Failing, Umatilla, Oregon.—This invention has reference to a simple and durable device for fastening carpets along the base board of the room, and taking them up with great facility, the carpet presenting, by the use of this fastening, a smoother and neater surface than when fastened by the common tacks; and the invention consists of a metallic rod running along the base board, and having the edge of the carpet placed around the same and pressed down on studs or pins driven into the floor in front of the rod, which is finally retained by grooved eccentric buttons or cams

bearing on the rod. An iron rod runs along the base board of the room to be carpeted. In front of the rod are driven, at suitable distances from each other, wire pins or studs that project nearly up to the level with the top of the rod. Buttons or eccentrics are screwed to the base board above the rod, two or three feet apart, the buttons being made in the shape of eccentric cams, with a grooved or concave circumference to fit over the metallic rod. The edge of the carpet is folded around the iron rod, pressed down over the pins, and the eccentric buttons are then brought down on the rod by pressing on the levers of the same until the rod and carpet are rigidly and evenly retained along the entire base board of the room. The carpet may be readily taken up by releasing the buttons from the rods and removing them, admitting thus the convenient laying down and taking up of carpets, and furnishing a superior and neater fastening than the common tacks in general use.

NEW MISCELLANEOUS INVENTIONS.

IMPROVED WHIP.

Frank Hopkins, Helena, Montana Territory.—This invention has relation to whips, and the nature of the invention and improvement consists mainly in a snap ring linked to a swivel, which is applied to a ferrule on the end of the whip stock. The whip staff or handle, on which is screwed a ferrule, has a short tube rigidly secured into one end, so as to form a shoulder for the spherical head of a swivel. The swivel consists of a spherical head, a cylindrical spindle or stem, and a ring or link. A snap ring is linked to the swivel, and designed to receive the loop of the whip lash. This ring is constructed with a pivoted section or tongue, held shut by a spring, thus allowing the lash to be quickly applied to, or detached from, the ring. It will be observed that the swivel and snap ring afford a safe and durable attachment for the whip lash, and allow perfect freedom of motion thereto.

IMPROVED FIRE ESCAPE.

Benjamin F. Frank, Colfax, Cal.—The object of this invention is to utilize the slats of a bedstead for a ladder, by means of which persons can escape from the upper stories of a burning building should other means of escape be cut off. The nature of the invention consists in a ladder which is composed of slats connected together by strong ropes, and provided with crosspieces, which are secured at proper intervals apart, and adapted to serve as foot-rests and hand-holds. They should be made sufficiently strong to sustain the weight of several persons, and they may be made of any desired length. The ends of the slats are all connected together by ropes, which are, preferably, passed twice through the ends, and prepared by tarring, so that they will be very strong and durable. To increase the strength of the slats at their ends, and prevent them from splitting when subjected to strain, metal plates are inserted into the ends. For the purpose of affording foot and hand holds, crosspieces are secured to the slats at suitable distances apart. These crosspieces are not in the way when the slats are arranged in a bedstead. On the contrary, they serve to space the slats and hold them in their proper places. When the slats are used for a ladder they are suspended from a hook made fast in the building wall, just below a windowsill, and for this purpose a hole is made through the end of the topmost slat to receive the hook.

IMPROVED QUILTING MACHINE.

John J. Crall, Dry Ridge, Mo.—This invention has for its object to manufacture quilts in rapid and convenient manner by means of a sewing machine, running over the fabric stretched in suitable manner. The belt connecting the differential pulley shaft with drive shaft is transferred from a larger to a smaller part thereof, in order to produce a faster feed, and the reverse to get a slower feed. When the carriage has reached the end of its movement the differential pulley is unclutched from the shaft and the carriage run back by hand. For quilting with the machine, the fabric is first wound upon the back roller, the front roller being placed by hand levers close to the needle of the sewing machine. The upper nuts are then screwed down to hold the quilt and roller to the bed plate of the sewing machine, the latter being then passed over the fabric from right to left while the first line of stitches is being made. The fabric is then moved forward by the hand lever as far as required for the next line of stitching, and the sewing machine is run over the fabric as before. The quilted portion is then rolled up on the front roller by releasing the pawls of front and back rollers and moving the quilt forward. The quilt is then thrown back by the hand levers and slide pieces until the front roller comes again close to the needle to bring the next seam at the required distance from the one last made. The quilting is then continued as far as the arm of the sewing machine will admit the rolling up, which is generally one half or more of the quilt.

IMPROVED GAS BURNER.

William Bedell and Winfield S. Bedell, New York city.—This invention relates to gas burners, and the nature of the invention consists in combining a valve which has a guide stem or tail formed on it, with a square seat formed on the upper end of the lower section of a two-part burner, whereby there is a double check to the flow of gas into the upper section of the burner, and a uniform supply of gas, automatically regulated, is obtained. The lower tubular section of the burner receives the supply of gas through a suitable pipe, and is constructed with an external or male screw-threaded portion adapted to receive the upper section of the burner. A ball, which is of less diameter than the internal diameter of the gas chamber, is constructed with a cylindrical neck or guide stem, which is loosely applied inside of the male tubular portion of the lower burner section, and constructed with a flat bottom, although a slight concavity or convexity of the bottom will not be objectionable. This check valve may be made of lead, an alloy of lead and tin, or any other suitable metal. The spherical portion rests upon the angular edge of the flat top of section, and is held down by its own weight and the weight of guide stem. Gas rising through the lower section first impinges against the lower end of the stem and is uniformly spread outward. The gas then rises and is again spread outward all around the ball into the chamber. Thus we have two checks for the gas ascending through the burner, which will render the flow regular, even under varying pressures or heads.

IMPROVED FIRE ESCAPE.

George J. A. Taggart, Parsons, Kan.—This invention has relation to means for affording safe egress from the upper stories of a building which is on fire. A access is made in the wall of the building just below the sill of a window. If desired, this recess may be lined with metal, or a cast iron box maybe set into the wall flush with its surface. The bottom of the recess should be inclined downward and outward, so as to form a self-discharging chute for a chain ladder. A trapdoor is hinged at the bottom of the recess, and adapted for closing the same. On the inside of the door is an angular lever bolt, the upper end of which is designed to enter a recess made in the window sill, and to hold the door fast. The lower end of the lever bolt is extended outward through a hole made through the door, and has attached to it a block or blade, arranged so that a stream of water directed upward against it from a hose will unlatch the door and allow it to be forced open. In hotels and other large buildings it is contemplated establishing communication between each one of the trapdoors used and the office either by draw wires or by galvanic battery wires, so that an alarm will be sounded in the office when a trapdoor is opened. Means may be adopted for opening and shutting all of the trapdoors of a building from one fixed point, at the same time each trapdoor may be opened by a person in the room to which the fire escape is applied. A chain ladder, which is attached to the top wall of the recess, and made of sufficient length to reach the curbstone of the sidewalk, where its lower end can be attached to hooks or rings fixed thereto. The lower end of the ladder is attached to a flanged drum or reel, on which it is wound, and put into the receptacle. When the door is opened the reel will fall and unwind.