

American Inventions for New South Wales.

Writing from Sydney, under date of April 14, the *Times* correspondent thus refers to the supply of locomotives and carriages from America: Our appearance at Philadelphia has drawn the attention of American manufacturers to us in a most marked and unexpected degree. A country that, like New South Wales, is rolling in wealth must be a country that is able to buy, and a country that is able to buy is exactly the country that American manufacturers have been anxiously looking out for. Our representatives at Philadelphia have come back strongly impressed with the fact that there are many things that the Americans can supply us with advantage. Our Government has an offer from Messrs. Baldwin & Co. to furnish a locomotive engine for about £1,000 less than the cost of an English engine, and to leave the payment open until the engine has been thoroughly proved and approved. A Pullman's sleeping car and an ordinary passenger car have already been ordered, and American wheels, axles, rails, and brakes are strongly pressed on our acceptance. As our Government engineers are all of the English school, American novelties will have a hard battle to fight to win official acceptance, but the demand for economy in railway construction and working is so great that people and Parliament will press on the Minister for Public Works a fair trial for any American novelties that may seem to be suited to our wants. The English manufacturers, therefore, who have hitherto supplied us must look to their laurels.—*Capital and Labor.*

Man's Place in Nature.

Concerning man's true place in Nature, Haeckel says: "Whatever part of the body we consider, we find upon the most exact examination that man is more nearly related to the highest apes than are the latter to the lowest apes. It would therefore be wholly forced and unnatural to regard man in the zoological system as constituting a distinct order, and thus to separate him from the true ape. Rather is the scientific zoologist compelled, whether it is agreeable to him or not, to rank man within the order of the true ape (Simiæ)."

To whatever minutiae of detail the comparison is carried, we reach in every case the same result. Between man and the anthropoid apes there are the closest anatomical and physiological resemblances. In form and function, there is the most exact agreement between all the corresponding bones of the skeleton of each; the same arrangement and structure of the muscles, nerves and entire viscera, and of the spleen, liver and lungs—the latter being a matter of especial significance, for between the manner of breathing and the process of nutrition there is the closest relation.

The brain, also, is subject to the same laws of development, and differs only with regard to size. The minute structure of the skin, nails, and even the hair, is identical in character. Although man has lost the greater part of his hairy covering, as Darwin thinks, in consequence of sexual selection, yet the rudimentary hairs upon the body correspond, in many respects, to those of the anthropoids. The formation of the beard is the same in both cases; while the face and ears remain bare. Anthropoids and men become gray-haired in old age. But the most remarkable circumstance is that, upon the upper arm, the hairs are, in both cases, directed downward, and upon the lower arm upward; while in the case of the half-apes it is different, and not as soft as that of man and the anthropoids.

The eye, on account of its delicate structure, is peculiarly suitable for comparisons of this kind; and we find here the greatest similarity: even inflammation and green cataract occur under the same circumstances, in both. See, also, Darwin upon this point.

There is no more striking proof that man and the anthropoid apes have the same anatomical and physiological nature, and require the same food, than the similarity of their blood. Under the microscope the blood corpuscles are identical in form and appearance; while those of the carnivora are clearly different from them.

It may now be interesting, in confirmation of what has been said, to refer to the family life, and, if one may so speak, to the mental and moral life of the anthropoids. Like man, the ape provides with exceeding care for its young, so that its parental affection has become proverbial. Conubial fidelity is a general and well known virtue. The mother ape leads its young to the water, and washes its face and hands in spite of its crying. Wounds are also washed out with water. The ape, when in distress, will weep like a human being, and in a manner that is said to be very affecting. Young apes manifest the same tendencies as human children. When domesticated, they are in youth docile and teachable, and also, at times, like all children, disobedient. In old age they often become morose and capricious. Most apes construct huts, or, at least, roofs, as a protection from the weather, and sleep in a kind of bed.

One peculiarity is alone common to them and man, and this is the habit of lying upon the back in sleep. In battle they defend themselves with their fists and long sticks; and, under otherwise like circumstances, they manifest like passions and emotions with man: as joy and sorrow, pain and envy, revenge and sympathy. In death, especially, the ape face assumes a peculiarly human-like and spiritual expression, and the sufferer is the object of as genuine compassion as exists in the case of man. It is also well known that apes bury their dead, laying the body in a secluded spot, and covering it with leaves. Regarding the domestic life of the ape, Darwin says, in his "Descent of Man" (vol. 1, p. 39):

"We see maternal affection manifested in the most trifling details. Thus Rengger observed an American monkey (a *Cebus*) carefully driving away the flies which plagued her infant; and Duvancel saw a *Hylobates* washing the faces of her young ones in a stream. So intense is the grief of female monkeys for the loss of their young, that it invariably caused the death of certain kinds kept under confinement by Brehm in North Africa. Orphan monkeys are always adopted, and carefully guarded by other monkeys, both males and females. One female baboon had so capacious a heart, that she not only adopted young monkeys of other species but stole young dogs and cats, which she continually carried about with her. Her kindness did not go so far, however, as to share her food with her adopted offspring; at which Brehm was surprised, as his monkeys divided everything quite fairly with their own young ones. An adopted kitten scratched the above-mentioned affectionate baboon, who certainly had a fine intellect, for she was much astonished at being scratched, and immediately examined the kitten's feet, and without more ado bit off the claws."

The number of characteristics possessed in common by man and the higher apes is, indeed, very great, and includes not only physical and emotional but even intellectual qualities.—*From Schlickeysen's "Fruit and Bread," translated by Dr. Holbrook.*

Special Notice.

Persons who have sent numbers of the *SCIENTIFIC AMERICAN* to this office, for the purpose of having them bound, will please call or send for them immediately.

Some of the volumes extend back to 1860, and as we need the room they occupy, we shall dispose of those not claimed within ten days from date of this paper.

MUNN & Co., 37 Park Row, New York.

DECISIONS OF THE COURTS.

United States Circuit Court.—District of New Jersey.
SHAWL STRAP PATENT.—GEORGE CROUCH vs. WILLIAM ROEMER.

[In equity.]

By Nixon, District Judge.

This is an action for an alleged infringement of complainant's letters patent No. 82,606, dated September 29, 1868, and reissued March 7, 1871, No. 4,289.

The subject-matter of the patent is in the reissue described to be a strap "to confine a shawl or similar article in a bundle," and termed a shawl strap. The schedule attached to and forming a part of the said reissued patent states, that before the complainant's invention "straps had been used to confine a shawl or similar article in a bundle, and a leather cross-piece with loops at the ends, had extended from one strap to the other; and above and attached to this leather cross-piece was a handle. This leather cross-piece or connecting strap is liable to bend and allow the straps to be drawn toward each other by the handle in sustaining the weight. Hence the bundle is not kept in a proper shape and the handle is inconvenient to grasp."

The invention is then stated to consist "of a rigid cross-bar beneath the handle, combined with suspending straps, that are to be passed around the shawl or bundle, such straps passing through loops at the ends of the handle."

No question can be made but that the shawl straps manufactured and sold by the defendant are an infringement of the complainant's reissue. They consist of a metallic cross-bar, with slots at the ends for the reception of the straps, and which also connect the ends of the handle.

Several defenses are set up in the answer, but the only one necessary to consider is the first, to wit: The want of novelty and prior public use.

I had occasion, heretofore, to inquire into the validity of the complainant's patent, in a controversy between the same complainant, and Speer et al., reported in VI. Off. Gaz. 1874, in which, as in this case the principal defense turned upon the novelty of the invention. A prior public use was alleged and attempted to be proved. I there said and now repeat "that the patent is *prima facie* evidence that the patentee was the original and first inventor, and that anyone who controverts this assumes the burden of proof and undertakes to show affirmatively that there was a prior knowledge and use of the alleged invention under such circumstances, as to give to the public the right of its continued use against the patentee."

The defense in this case has brought out many facts in regard to the public use of the rigid cross-bar in shawl straps anterior to the date of the complainant's patent, which were not developed in the former suit. There is no evidence which in my judgment affects the honesty of the complainant's claim, or which creates any doubt that he really believed himself to be the original and first inventor, but nevertheless I am constrained to the conclusion, after a most careful examination of the whole testimony, that the proofs show with reasonable certainty that he has been anticipated in the invention and that his patent is void, in consequence of the prior knowledge and public use, and the bill must be therefore dismissed with costs.

[E. B. Barnum, for complainant.
Arthur v. Briesen, for defendant.]

NEW BOOKS AND PUBLICATIONS.

THE ECONOMIC THEORY OF THE LOCATION OF RAILWAYS.
By Arthur M. Wellington, C.E. Price \$2.00. New York city: Office of the Railroad Gazette, 73 Broadway.

The author of this book is thoroughly conversant with his subject, and his statement that the book has gradually grown from a few notes into a volume may be accepted as an explanation of the somewhat fragmentary character of the work. He asserts that "all our railways are uneconomically located," and "in many cases these errors are shockingly evident." If these statements are true, he is right in stating that "there is something almost pitiful in the waste of human labor enforced by such costly blundering." He considers that other countries have made lamentable blunders in locating their railroads, so that the suffering stockholders of American lines may take comfort from the thought that others are or may be as badly off.

FRUIT AND BREAD. A Scientific Diet. By Gustav Schlickeysen. Translated from the German by M. L. Holbrook, M.D. With an Appendix. Illustrated. New York city: M. L. Holbrook & Co.

The author and translator of this little treatise are firm believers in vegetarianism, and present in a highly attractive form the main arguments which sustain them in their position. The subject is most carefully and systematically treated, and although the conclusions at which the author arrives are greatly at variance with modern belief and practice, the book is nevertheless entitled to proper and respectful consideration. Illustrations are given of the teeth and stomachs of various animals, and these are compared with the similar organs existing in man, so exhibiting in a clear and satisfactory manner the perfect adaptation of the latter to a purely vegetable regimen, which is certainly something more than merely accidental. Altogether the book is well worthy of perusal by others than those more immediately interested in the question of diet.

THEORETICAL NAVAL ARCHITECTURE: a Treatise on the Calculations involved in Naval Design. By Samuel J. P. Thearle, F.R.S.N.A., etc. Two Volumes: Text and Plates. New York city: G. P. Putnam's Sons.

This book is designed to meet the requirements of both those who possess but a moderate amount of mathematical knowledge as well as of those who are much further advanced. Numerous formulae and rules clearly stated will enable the former to perform without much difficulty the ordinary routine of the draughting office, while ample opportunity is afforded the latter to trace back the processes from which these rules have gone forth. The book is divided into six parts. Part I. embraces the calculations relating to the forms and dimensions of ships. II. those relating to the weights and centers of gravity of ships. Part III. refers to the

strength of ships. IV. and V. to their propulsion by sails and by steam engines; while Part VI. treats of the calculations relating to steering. An excellent book of plates and tables accompanies the text.

KEMLO'S WATCH REPAIRER'S HANDBOOK: being a complete guide to the young beginner in taking apart, putting together, and thoroughly cleaning the English lever and other foreign watches, and all American watches. By F. Kemlo, Practical Watchmaker. With Illustrations. Price \$1.25. Philadelphia, Pa.: Henry Carey Baird & Co.

This work will prove of great value to all in whom the curious mechanism of clocks and watches has excited more than a passing interest. None but skilled followers of the art have been allowed to contribute to its pages, so that the practical worth of the information given can be fully relied upon. A concise history of timekeepers is followed by a clear and exhaustive description of the English lever watch, which in turn is followed by articles on cleaning, putting together, and the conditions necessary to produce a good English watch. American watches deservedly engage considerable attention. Papers on repairing watches, cleaning and repairing clocks, and a short description of the necessary tools complete the book.

RECENT PROGRESS IN SANITARY SCIENCE. By A. R. Leeds. Salem, Mass.: Printed at the Salem Press.

This is a reprint of a paper read at the Lyceum of Natural History, October 9, 1876, by the well known Professor of Chemistry at the Stevens Institute.

WILLIAMS' TOURIST'S MAP AND GUIDE TO COLORADO AND THE SAN JUAN MINES. Price 50 cents each. New York city: H. T. Williams, 46 Beekman street.

Two well edited publications, deserving the attention of travelers and emigrants.

Inventions Patented in England by Americans.

June 7 to June 15, 1877, inclusive.

BOOTS AND SHOES.—Mellen Bray, Newton, Mass.
ELECTRO-MAGNETIC MOTOR.—W. W. Gary, Washington, D. C.
FURNACES.—J. J. Storer, New York city.
GAS.—M. H. Strong, Brooklyn, N. Y.
GAS APPARATUS.—D. C. Smith, East Northwood, N. H.
GAS MACHINES.—T. F. Rowland, Greenpoint, N. Y.
MINERAL WOOL APPARATUS.—A. D. Ebers, Hoboken, N. J.
MOTIVE POWER.—W. G. Smith et al., New York city.
POWER LOOMS.—James Long, Philadelphia, Pa.
PULVERIZING MACHINES.—J. J. Storer, New York city.
PUMP.—A. F. Bells et al., Boston, Mass.
REFRIGERATING APPARATUS.—B. J. B. Mills, Lexington, Ky.
SEWING MACHINES.—C. H. Warner, Sturbridge, Mass.
SHEET METAL UTENSILS.—F. G. Niedringhaus, St. Louis, Mo.
VALVE GEAR.—E. Cope et al., Hamilton, Ohio.

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 AGRICULTURAL INVENTIONS.**IMPROVED HAY ELEVATOR.**

Eugene L. Church, Walworth, Wis.—This is a hay elevator and carrier of simple and effective construction; and it consists essentially of a traveling carriage locking, by a tilting catch, on a fixed stop block of the track, from which it is released by the action of the ball of the sheave frame of the hay fork on a pivoted grappling hook, the sheave being held in suspended position by the joint action of a fixed hook, of the pivoted hook, and of the tilting catch. A track beam, which is suspended from the rafters of a barn or other building by means of eyebolts passing through the center of the track beam. A carriage runs along the track beam by a pair of flanged wheels, at each end of which the wheels of one pair are set at such distance from each other that they clear readily the suspension bolts as they pass along the same. A hoisting rope is attached, in the customary manner, to a fixed point at one end of carriage, and passed then through the sheave frame of the hay fork, and over a pulley of the carriage, and through a sheave at the end of track beam, and down to the ground, where a horse is hitched to its free end.

IMPROVED CORN HARVESTER.

Bennett Osgood, Lenox, Iowa.—This invention is an improved machine for cutting up the corn, removing the ears from the stalks, and cutting the stalks into pieces, and which may be adjusted to cut up the corn and shock it. As the stalks are carried back by chains, pins or hooks on barc tear open the husks of the ears; and the bars, in connection with rollers, break the ears from the stalks. The ears, when broken off, drop through an opening in the platform into an elevator, up which they are carried, and are discharged into a wagon drawn at the side of the machine. The box of the elevator is supported from the frame of the machine, and its carrier is driven from a shaft by an endless band. The stalks are carried back by endless chains, and allowed to drop from the rear end of the platform upon the brackets attached to the rear bar of the frame. As they fall upon the brackets they are cut into three pieces by two knives, which work in slots in the brackets, and to the upper part of which are pivoted the upper ends of two bars. The lower ends of these bars are pivoted to a crank formed upon the shaft, which revolves in bearings attached to the rear bar of the frame.

IMPROVED SULKY HARROW.

George M. Furman, Laclede, Mo.—This is an improved riding harrow, so constructed that it may be readily raised from the ground by the driver from his seat, to clear it of rubbish, to pass obstructions, and to pass from place to place, to cut up the ground and cover the seed thoroughly, and be used for cultivating small grain and plants.

IMPROVED HARROW.

Hans Iver Lund, Charlotte, Iowa.—The object of this invention is to furnish an iron harrow which shall be light, strong, and durable, of less draft than an ordinary harrow, of less size, inexpensive in manufacture, and effective in operation, breaking up the lumps thoroughly, and stirring up the soil evenly. The harrow is designed to be made in three sections, all exactly alike, one, two, or three of which may be used at a time.

IMPROVED COMBINED COTTON SCRAPER AND CULTIVATOR.

Malachiah Roby, Kosciusko, Miss.—This machine is so constructed as to bar off and dirt or cultivate cotton plants at one operation; and the invention relates to the construction and arrangement of a center or main beam, to the forward end of which the draft is attached. To the beam, a little in the rear of its forward end, is attached the middle part of a cross-bar, in which are formed a number of holes to receive the hooks or clevises by which the forward ends of side beams are secured to said cross-bar. To the rear end of the main beam is attached the middle part of a cross-bar, to which the rear ends of the side beams are secured by a bow and yoke passed around them diagonally, and which are tightened, when adjusted in place, by nuts screw upon the ends of the bows. Bands are passed

around said beams and diagonally around said standards, and tightened in place by wedges or other suitable means, so that the scrapers can be readily adjusted to work deeper or shallower in the ground, and easily detached when not required for use. Cultivating plows or dirers have standards which are attached to the side beams, the plows and standards of the inner side beams being placed in advance of those attached to the outer side beams. When the machine is to be used as a cultivator, the scrapers are detached, and may be replaced by cultivating plows.

IMPROVED CULTIVATOR.

Austin S. McDermott, Prairie Creek (Mellera P. O.), Iowa.—The object of this invention is to furnish a cultivator which shall be readily adjusted as the character of the work to be done may require, and easily guided and controlled. The tongue of the machine is made in V shape, and its rear end is attached to the axle. The arms of the tongue are connected by a crossbar, to which the doubletree is pivoted by a hammer bolt. To the ends of the axle are attached, or upon them are formed, crank axle arms, upon the journals of which the wheels revolve. To the arms of the tongue, near the forward end of said tongue, are bolted the ends of the forward arms of the three-armed bar, the third arm of which projects to the rearward, and its rear end is bent into U form to receive a curved bar, which is pivoted to the three-armed bar by a bolt that passes through the bend of the three-armed bar and through the center of the curved bar. The ends of the curved bar are secured to the forward ends of the beams by bolts, two to each end. To the rear ends of the beams are attached handles which may be strengthened by braces, and are designed for use in guiding the plows when the machine is used as a walking cultivator.

IMPROVED CHICKEN COOP.

Daniel M. Sullivan and Thomas A. Retallic, Montgomery City, Mo.—This invention consists of a coop adjustable vertically on a standard, and provided with removable partitions and doors for convenience in cleaning. The frame of the coop is placed on a standard, at the top of which is placed a pulley. A cord is attached to the top of the coop frame, and runs over the pulley, and is attached to a counterweight. The coop is divided by a central transverse partition into two compartments, which are subdivided by transverse partitions composed of slats, and held in place by a dowel pin at the bottom and by a pin at the top. The vertical strips that hold the slats of the partitions together are grooved on each side to receive sliding partitions which are arranged on a central longitudinal line of the coop, and at right angles to the partitions. Grooves are also made in the ends and central partition of the coop to receive these sliding partitions.

NEW TEXTILE INVENTIONS.

IMPROVED FULLING MILL.

James Hunter, North Adams, Mass., assignor to himself and James E. Hunter, of same place.—The object of this invention is to improve the construction of fulling mills in such a way that there can be no possibility of injuring the cloth while passing through the rollers, and in such a way as to give the operator full control over the friction caused by the tongue or lever upon the goods, whether said goods be heavy or light.

IMPROVED SHUTTLE-DRIVING MECHANISM FOR NARROW-WARE LOOMS.

William B. Willard, New York city.—This invention, relating to looms for weaving narrow ware, consists in the arrangement of a spur wheel traveling on a fixed rack, and actuating a movable rack attached to the shuttle carrier. Motion is given to the spur wheel by a cam on the main shaft of the machine, which acts through a slotted lever and a connecting rod. The object is to provide mechanism for throwing the shuttle in such looms. In the loom the shuttle race is divided at its center, leaving a space of sufficient width to admit of the passage and shedding of the warp. The shuttle slides in the race, and is of such length as to overlap the opening, so that it may pass smoothly from one section of the shuttle race to the other. The shuttle is pierced to receive the fingers of the shuttle carrier, which slides on the bar. The latter is a piece of sheet metal, which is turned over at its upper edge to receive the bar, and is provided with guides for the fingers. The said fingers are capable of engaging with the holes in the shuttle and project below the piece of sheet metal, and are bent at right angles, and provided with grooved friction rollers, which engage with a cam slot of such form that it will draw the fingers, one at a time, downward out of the shuttle, and retain them below the warp during the passage of the portion of the shuttle with which they engage, through the threads of the warp, and replace them after that part of the shuttle passes the warp.

IMPROVED LOOM TEMPLE.

Christian H. Schlaf, Rockville, Conn.—This is an improved device for stretching the cloth while being woven. It is so constructed as to adjust itself as the cloth is being woven and carried forward to the cloth beam.

NEW WOODWORKING AND HOUSE AND CARRIAGE BUILDING INVENTIONS.

IMPROVED THILL COUPLING.

Josiah Kitzmiller, Keedysville, Md.—This is an improvement upon that form of thill coupling in which a pivoted cap is employed to slide over the end of the bolt or pin which secures the eye of the thill iron to the lugs or ears of the axle clip, the said cap serving to prevent the said pin from becoming accidentally displaced without the use of a screw nut or other securing device. It consists in the construction and arrangements of a spring catch for holding said pivoted cap down to its place against any tendency to rise accidentally, the said spring catch being located in a transverse groove or recess in the cap and between the cap and the adjacent lug and being provided with a beveled head and square shoulder, which engages with the under side of the lug to hold the cap down. The merit of this arrangement is that the catch is concealed from sight by the complete inclosure of the spring and the position of the beveled head beneath the coupling, and hence the exterior of the coupling presents a plain, smooth, and neat appearance, free from catches or projections, which would be liable to hook into the clothing in getting into or out of the carriage.

IMPROVED VEHICLE SPRING.

Fredrick W. Faber, Columbus, Texas.—This invention consists in combining an auxiliary spring with a spring suspended from goosenecks attached to the axle, the said auxiliary spring being attached to the axle, and provided with yokes for embracing the suspended spring, the object being to provide a device for steadying the main spring and preventing lateral motion.

IMPROVED TIRE HEATER.

Philip W. Cassell, New Athens, O.—To the top of the furnace or firebox is secured the ring heating chamber, which consists of the ring plate having a ring flange or rim formed around its outer edge. To the ring plate are attached the outer ends of a number of arms, the inner ends of which meet in the center of the ring plate, and have a journal attached to them. The journal may be hollow or solid, and upon it is placed a hub to which are attached a number of radial arms, to the outer ends of which is attached a rim. The rim fits against the inner part of the ring plate, and forms the inner wall of the heating chamber.

IMPROVED CHIMNEY COWL.

Andrew F. Barry and Ira G. Lane, New York city.—This invention is a chimney cowl or ventilator which will deflect the natural current of air, so that a draft is continually maintained. To the upper end of a sheet metal chimney top is attached a strip of metal, bent into a spiral form, and having

spaces between the successive convolutions of the spiral. The spirals overlap each other, and increase in diameter toward the top. The coils are connected at intervals by stays, and the end of the upper and outer coil is tapped on to the one that precedes it, and is trimmed off horizontally, and upon it is placed an ornamental border. The wind, striking this top from any direction, is deflected so as to cause a draft. The device is claimed to be ornamental in appearance, is cheaply and easily made, and does not obstruct the chimney.

IMPROVED WAGON AXLE.

Wilbur F. Buckelew, Shreveport, La.—The object of this invention is to strengthen the wooden axles of wagons, and to fasten the skeins so that they will not become loose. A wooden axle is grooved longitudinally upon its under side throughout its entire length, to receive a rod, which is reduced in size at its ends, and threaded to receive the nuts. This rod is bent so as to conform to the tapering portion of the axle upon which the skein is placed. The skeins, having countersunk outer ends, are placed on the ends of the axle, and nuts having a beveled face corresponding to the countersunk ends of the skeins, are placed on the ends of the rod, and clamp the skeins securely on the axle. By giving the nut this peculiar form, it contains more threads than it otherwise would, and is in consequence stronger. The rod not only serves to retain the skeins securely in their places, but it also acts as a stay or truss rod for the axle, greatly strengthening it.

IMPROVED WAGON BRAKE LEVER.

Jacob P. Outson, Racine, Wis.—This invention consists of a curved ratchet bar and two levers working on the same pivot, one carrying a spring pawl, that engages with the curved ratchet bar, and the other carrying a stud for throwing the pawl out of the notches of the ratchet bar. When the brake is to be applied to the wheels of the wagon, one lever is thrown forward, carrying with it the other lever; and the pawl, by engaging the notches of the bar, holds the lever at any desired point. When it is desired to release the brake first named, the lever is drawn back, moving first the length of the slot, the stud striking the pawl and throwing it out of engagement with the ratchet bar, when the lever may be carried back to any required position.

NEW HOUSEHOLD INVENTIONS.

IMPROVED BAKER.

Luna Drew, Irving, Wis.—This is an improved baking attachment to heating stoves of all kinds, so that the heat of the same may be utilized for baking, warming, raising bread, and other purposes. It consists of a baker supported on adjustable legs, and secured to a round, oval, or square heating stove by suitable top and bottom slides. A warmer is arranged below the baker. The front of the baker is detachable, to admit its use for baking or warming purposes.

IMPROVED FIRE KINDLER.

John G. Distler, Brooklyn (Greenpoint P. O.), N. Y.—This invention is an improved fire kindler, simple in construction, convenient in use, and effective in operation, burning freely, and lasting long enough to fully kindle the fire. It is formed of corn cobs, steamed, having a number of transverse holes formed through them, dried, dipped in melted white resin, and wrapped in paper. The corn cobs are steamed to prevent them from breaking while being bored. The cobs, while still moist with the steam, have a number of transverse holes bored in them with a rapidly revolving bit, and are then thoroughly dried. When dry the cobs are dipped in melted white resin, and before they are fully cold they are wrapped in ordinary paper, which adheres to them, prevents any odor from passing off into the room, and prevents them from soiling the hands while being handled.

IMPROVED MATCH SAFE.

John A. Field, Racine, Wis.—This is a match safe, the back, top, and front of which are made from a single piece of tin, and to which a lighter of wire cloth is attached, which is placed over a picture, to give the match safe an ornamental appearance. It is so arranged that the matches are delivered singly to a pair of hooks, from which they may be readily taken by the fingers.

IMPROVED NURSERY CHAIR.

Luther I. Adams, East Templeton, Mass.—This chair may be readily converted into a high or low chair, and in which an attached toy box retains the toys when the chair is in either position. The armed low chair has curved legs. Between the rear legs a shaft is journaled, upon which two wheels are placed. The support for the low parts when it is used as a high chair consists of two similar sides, each composed of two curved strips, which are held together partly by crossbars and partly by triangular metallic pieces that are attached to their upper ends and pivoted to the center of the crossbars that connect the legs. A shaft, having upon it wheels, is journaled in the curved strips at the back of the chair near the lower ends. The toy box consists of a tray that is concave at its upper edge and is made convex at its lower end, and is provided with a cover that extends over a portion of it, and forms a receptacle for toys when the box is in a vertical position.

IMPROVED FRUIT JAR.

Catherine Hastings, Oswego, N. Y.—This is an improved attachment for fruit jars, to enable them to be conveniently handled when filled with hot fruit, and at other times. It does not interfere with standing the full fruit jars upon their tops, if desired, and enables the jars to be used for holding and carrying various articles. There is a metallic screw band, by which the cover is secured upon the mouth of jar. To the opposite sides of the band are soldered lugs to which are pivoted the ends of a wire bar.

IMPROVED VENTILATOR.

Charles E. Darling, Lewiston, Me., assignor of two thirds his right to Henry Free and John E. Lydston, of same place.—This ventilator for wind, doors, etc., works in noiseless manner, and is watertight. It consists of radially recessed face disks, clamped to the glass frame, and having an intermediate pivoted disk with corresponding recesses that are set by a crank lever and cords into open or closed position.

IMPROVED BAKING PAN.

Charles I. Kagey and Fred W. Stoneburner, Arcola, Ill.—The body of this roaster is made of sheet iron, and is rectangular in form. To one end of the body a cap is secured, and to the other end a rectangular cast iron frame is fitted, to which a cast iron door is hinged. At the top of the roaster, at or near its center, an aperture is made, which is closed by a tapering projection that extends downward from a plate that is hinged to the top of the roaster. Rings are attached to the top of the roaster near each end for convenience in handling. The apparatus, when in use, is placed upon a stove or in an oven.

IMPROVED STOVEPIPE SHELF.

John W. Jackson, Sharpsville, Pa.—A wire of the requisite strength is bent into the shape required to form the horizontal support. To this the shelf is attached, and also the bracket, which rests against the pipe for supporting the same.

NEW MECHANICAL AND ENGINEERING INVENTIONS.

IMPROVED WATER WHEEL.

Isaac Mallory, Dryden, N. Y.—This invention relates to downward discharge turbine waterwheels; and it consists in the employment, in combination with a stationary chute case and an independent adjustable frame, of a series of gates, which are pivoted to this frame and adjustable to the periphery of said case. The bucket wheel is formed of curved and inclined

buckets arranged around a hub, and applied to a cap ring and a skirting. This wheel is keyed on a driving shaft, stepped on a bridge, and passed up through a tubular sleeve, which is cast on the top of a cylindrical chute or guide case. This case is rigidly secured to the base or bed frame, and constructed with oblique issues, which direct the currents of inflowing water against the buckets of the wheel.

IMPROVED VALVE MOTION FOR STEAM ENGINES.

Henry Haering, New York city.—This is an improved device for operating the slide valve of a steam engine from the piston rod of said engine, in such a way that the valve will be moved slightly to partially uncover the inlet and exhaust ports as the piston completes its stroke, and its motion will be continued in the same direction as the piston begins to move upon the return stroke, until the ports are fully opened, and will then stand still, with the ports fully open, until the piston has nearly completed its return stroke. It consists in the combination of a three-armed bar, two levers, connecting bar, and connecting lever, with the piston rod and the valve stem of a steam engine; and in the combination of a lockbar, spring, two cylinders, and pin, with the two levers and the three-armed bar. As the piston approaches the end of its stroke, the upper end of an upright arm of a bar strikes the concave side of the upper part of one of the levers operating it, and moving the slide valve to close the ports and admit steam in front of the piston. As the piston begins its return stroke the inclined upper surface of one of the side arms of the three-armed bar comes in contact with the lower end of the said lever, and continues its motion in the same direction, fully opening the said inlet port, which remains fully open until the piston has again nearly completed its stroke.

IMPROVED REVERSIBLE ECCENTRIC.

George G. Lafayette and Pitt W. Strong, Brockville, Ontario, Canada.—This is an improved device to act as a substitute for the link motion on a reversible engine, or for adjusting the stroke of a boiler-feed pump, while in motion, so as to regulate the amount of feed water supplied to the boiler, without the use of an overflow pipe and cock, and keeping thereby the pump constantly in motion, which will save the annoyance frequently experienced in pumps by their refusing to prime after having been stopped for a short time. It may be further used to control the speed of all kinds of engines, whether with plain slide valve or with a cut-off valve working on top of the other by connecting directly to the device a suitable governor, so as to automatically shorten and lengthen the stroke of the valve, and give a uniform motion to the engine under different loads.

IMPROVED EXPANDING REAMER.

Robert Blair, San Francisco, Cal.—In this improved tool there is a clamping bolt by which the cutters are clamped fast after being adjusted. The cutters are arranged to slide directly across the stock in dovetail grooves, and are slotted to slide along the clamping bolt and washers, by which they are clamped fast after they are adjusted to the position required by a toothed pinion and racks. The pinion is arranged in the stock between the cutters, and the shaft extends out of the end of the stock, with a nick in the end for a screwdriver to turn it.

NEW MISCELLANEOUS INVENTIONS.

IMPROVED TORTOISE-SHELL HANDLE.

Christian W. Schaefer, New York city.—The object of this invention is to mount the handles of canes, umbrellas, parasols, whips, opera glasses, and similar articles with a tortoise-shell covering, in such a manner that the present inefficient mode of attaching the same by glue may be dispensed with, the covering attached in tightly fitting and durable manner, and the joint or weld of the edges be not noticeable in the least.

IMPROVED HAND STAMP.

Leonard Tilton, Brooklyn, E. D., N. Y.—This invention consists in novel devices for giving positive rotation to the stamp heads after the impressions are made, in combination with a reciprocating inking pad, and in means for adjusting the throw of the inking pad with respect to the printing faces of the stamp heads.

IMPROVED BUCKLE.

John Fenton, Indianapolis, Ind.—This invention is an improved buckle, neat in appearance, strong and durable, which may be easily fastened and unfastened, which will not require the strap to be perforated, and will hold it securely in any position into which it may be adjusted. The buckle is formed of a plate having holes in its middle part to receive the rivets by which it is secured to the strap, and having cross slots formed in its ends to receive the free end of the said strap, and the eccentric, having its outer side corrugated radially, and provided with a handle.

IMPROVED LIQUID DIFFUSER.

George M. Smyth, Brooklyn, N. Y.—This invention consists in the combination of an air compressor, an air reservoir, and a receptacle for the liquid, and an arrangement of pipes and nozzles for atomizing the liquid. An air compressor of any ordinary construction is connected with the reservoir by a pipe, in which two stopcocks are placed. There is a receptacle for containing the liquid to be diffused or atomized. A pipe passes through a stopper placed in the neck of the said receptacle, and extends nearly to the bottom of the same, and its upper end is provided with a stopcock and nozzle. A nozzle is arranged at right angles to the first-mentioned nozzle, and is attached to a brace that is secured to the pipe.

IMPROVED OIL CAN.

John Graves, New York city, assignor to himself and James L. Miller, Westfield, N. J.—This is an improved case for packing oil cans for transportation, the case furnishing the additional facility that the can may be readily inserted into the same and tilted for use. The invention consists of a wooden projecting case with side slots, in which trunnions of the can are guided and supported for swinging the can on pivot hooks, which serve also for the purpose of locking the lid to the case.

IMPROVED HARNESS TUGS.

Charles Hauff, Ashland, O.—The body of the carrier is made in the form of a ring with outwardly projecting flanges around its edges. The strap is passed around the ring in the groove formed by its flanges, and its inner end is sewed to its body at the side. Small wedge-shaped blocks of leather are inserted in the angle between the parts of the strap where they meet and the ring, which angular blocks are covered by angular projection of the flanges of the ring.

IMPROVED COMPOSITION FOR CASTING ORNAMENTAL FIGURES.

August Kieselee, New York city.—This consists in a composition formed by the admixture of dry pulverized sugar, melted paraffin, and stearine. It is poured into moulds and allowed to cool. The article is then removed from the mould, and powdered starch or sugar is dusted over it to destroy the gloss and give it the appearance of alabaster.

IMPROVED PEN RACK.

Harvey W. Forman, Golden City, Col.—This consists of an upper frame with intercrossing wires, forming wide spaces or meshes, and of a second frame with closer wires below the same, for holding the pen in upright position, in connection with a bottom pad or absorbent below the rack frames.

IMPROVED STOPPER FOR MUCILAGE BOTTLE.

James Tilghman, New York city.—This is a combined brush and stopper, consisting essentially of a handle having a stem and a flat end corresponding to the top of the cork. The brush has a flat head, corresponding to the bottom of the cork. The cork is interposed between the said head and end of the handle, and held in place by the central stem.