

roating connecting rod, G, the vibrating lever, E, the pawls, w w', and the ratchet wheel, O, whereby an increasing rotary speed of the log or bolt, U, is obtained from the traveling collar, M, passing down to a wider sweep of lever, E, as set forth, the power being transmitted from the ratchet shaft, P, to the bolt U, as shown, or by any other equivalent device, for the purpose described.

Second, The cutters, p, attached to the carriage, L, operated automatically by and in combination with the vertical screws, for the purpose set forth.

Third, The lateral moving knife plate or stock, c, crank D, operated by and in combination with the vibrating lever, E, for the purpose shown.

Fourth, The combination of the knife, C, cutters, p, and the feed movement of the bolt or log, U, when the whole are arranged to operate as and for the purpose set forth.

RE-ISSUES.

SIRUP CASTERS—Edmund Higelow, of Springfield, Mass. Patented April 6, 1858: I claim the combination of a self-measuring faucet and air tube with each of two or more reservoirs for sirup or like fluids, the reservoirs being on a common base forming a caster, substantially as and for the purpose specified.

HARVESTERS—Charles Crook, of New Hope, Pa. Patented May 5, 1857: I claim, first, Operating and changing the speed of the cutters by means of the internally geared wheel, I, and spur wheel, D 2, in combination with the pinion, J, the same being arranged and rendered adjustable, substantially as set forth and for the purpose specified.

Second, Connecting the rod, G, to the end of the lever, F, by means of the swivel joint, i, when the said joint is situated at or near the center of vibration of the cutter frame.

BAGASSE FURNACES—Abraham Hager, of Baton Rouge, La., and Young Allyn, of New Orleans, La. Patented May 6, 1856: We make no claim to the insertion in Bagasse furnaces of a grate inclining from the front of the furnace to a position under the exit flue for the products of combustion, as the operation of such grate will be different from what is designed to be effected by our construction.

But we claim inserting in the furnace a skeleton dome rising above the exit flue, so as to arrest the fall of the wet bagasse, and for a limited time retain it above the fire, without obstruction to the draught for the furnace, substantially as set forth.

BOXES FOR RECEIVING PASSENGERS' FARES—John B. Slawson, of New Orleans, La. Patented July 28, 1857: I claim a fare box having two compartments, into one of which the fare is first deposited and temporarily arrested previous to its being deposited in the other when the former is provided with glass sides, so arranged that the passengers can see through one, and the driver or conductor through another, in the manner substantially as and for the purposes set forth.

DESIGNS.

COOKING STOVES—Russell, Wheeler, and Stephen A. Bailey, of Utica, N. Y.

CLOCK CASE FRONTS—Samuel B. Jerome, of Waterbury, Conn.

Wear of the System by Railway Traveling.

Now that all the world travel by railways, it is a circumstance of universal interest to determine what influence railway traveling exerts upon the health of the community, and more particularly since a suspicion has arisen that the great rate at which an express train runs produces an injurious effect upon the mind. A paper upon this subject, read before the Royal Society by Dr. Smith, contains some curious information, according to the London *Engineer's* abstract of it.

Dr. Ed. Smith, the author of the paper, is one of the physicians attached to the hospital for consumption and diseases of the chest, at Brompton, England. The plan he adopted was to determine the effect of railway traveling upon the respiration and pulsation, on the principle that the wear of the system will be in proportion to the activity of those functions. Dr. Smith, therefore, traveled repeatedly in each of the three classes of English railway carriages, and upon the engine, and at various rates of speed, and the influence on the quantity of air breathed was ascertained by the use of a spirometer. The greater part of the experiments were made upon the broad gage, but some were prosecuted on the narrow gage. The result of seventy-three series of experiments went to show that the greatest wear on the system occurred whilst sitting upon the engine. The precise average increase of air inspired was about 250 cubic inches per minute on the engine, 200 cubic inches in the second class, and 150 cubic inches in the first class; but, on many occasions, the quantity of air breathed in a first class carriage was scarcely more than would have been breathed when sitting quietly at home rocking in an easy chair. Upon the whole, the wear of system may be better understood by stating, that, five hours of railway traveling in a first class carriage are equal to six hours quietly sitting at home; or upon the engine, to eight hours. As compared with the old coach traveling, it is vastly lessened taking distance for distance.

In reference to the speed of the train, Dr. Smith found that the greatest wear was not with the greatest speed of fifty-five miles per hour, but at a rate of from thirty to forty miles per hour. The effect varied much at the same speed in different carriages of the same class; but there was the greatest constancy in the first class and the least upon the

engine. The general expression of the results of the inquiry was, that the quantity of air breathed was as the oscillation of the body and not as the speed, except so far as that speed and inequality of road tended to induce greater oscillation.

It was rendered very evident that traveling in our days is very far less an exercise than it was in the days of our forefathers. It was also proved that of all modes of traveling, none is so inexpensive to the system, so fitted to the necessities of invalids, as that of British first class railway carriages; and that traveling in private carriages on the common roads, hour for hour, and distance for distance, induces a far greater amount of wear. This is a very cheering result, as showing that one of the greatest improvements of the age is tending not only to the comfort but to the health of the community.

In our country there is neither first, second nor third class railway carriages—all are equal on the train. The first class carriages in England are for the superlatively rich, and are very comfortable, but not much more so than some of the carriages on our railroads. Railway traveling in England is smoother than with us; there is therefore less oscillation on the railroads in that country, consequently there is more wear of the body in traveling on our railroads. The improvement in ease and speed is incalculable in comparison with traveling on the old stage coach.

Science and Justice.

The *SCIENTIFIC AMERICAN*, in commenting on the case of an individual who had robbed a roost by giving the hens chloroform, answers the query, "when thieves get scientific, what should the police do?" by referring the latter to its own columns. There is a great deal of common sense in this remark. The time may not be as yet, but it will be when science will be the strongest arm of the detective.

We find in a late English magazine a curious instance of the extreme point of delicacy to which chemical tests have been carried. A professor ascertained accurately into which one of a number of basins of water a lady had dipped her finger. The well-known story of the detection of a railroad robbery by Ehrenberg, opens a wide field of scientific research for philosophy in aid of justice. The microscope which reveals the smallest points of identity, if once fully used, might often establish connections of which ignorant ruffians would never dream—the very mud on a man's boots being enough to identify the connection of person and place, when examined by an experienced microscopist. The utility of photography and the telegraph in detective service is already recognized, and an even careless perusal of Berk's or Stille's Medical Jurisprudence cannot fail to convince the reader that the whole subject of the application of science to justice is of itself a science as yet in embryo, yet one which is perfectly capable of developing to a degree which would vastly increase the perils to which crime is at present liable. If one great mind could devote all its powers to this end, it would do as much for justice, peace, and order, as any which the world has ever witnessed. There is no reason why as much talent and education should not be devoted to the practical execution of the law as to punishing the guilty; in fact, we may say that the perfection of the former would be preventive, while the latter is only curative. At present, native unaided talent and experience are almost the sole qualifications employed in identifying malefactors. This is not enough. Reduced almost to certainty, this branch of justice would cast a terror over rogues which would be of the greatest service to humanity.—*Philadelphia Bulletin*.

A child was poisoned, in Norfolk Co., Va., through sucking the flowers of the yellow *jesamine*, and died within one hour after tasting them.

In one parish in England not less than \$4,000 are expended annually by the working classes for laudanum.

Secret of Horse Taming.

On the 21st of last month, at Astley's Amphitheatre, London, Mr. Cooke, the celebrated equestrian, undertook to exemplify Rarey's system of subduing vicious horses, and as a consequence there was a crowded house. The *Morning Advertiser* states that Mr. Cooke informed the audience, when the exhibition opened, that he was ready to tame any horse that was brought to him, and a vicious hunter which had been sent for this purpose was then taken into the ring. He then took a strap and attached it to the fetlock of the animals' right foreleg, brought it over its right shoulder and held it firmly by hand. The left leg was then doubled up inwards till the hoof was brought in contact with the thigh, when it was tied in that position with a strap. Mr. Cooke then took the reins of the bridle in one hand, and the strap attached to the horse's right leg in the other, and holding them taut, urged the animal to walk on three legs, with his head inclined to the left. The horse was made to walk in this manner three times round the ring of the circus, when he exhibited signs of great exhaustion, got down on his knees, and finally lay down in the most submissive manner. The straps were then taken off, and Mr. Cooke lay down upon him, patted him, and the animal received these caresses in the most docile and quiet manner, and appeared to be perfectly under the control of his tamer.

Recent Patented Improvements.

The following inventions have been patented this week, as will be found by referring to our List of Claims:—

TYMPAN FOR PRINTING PRESSES—L. T. Wells, of Cincinnati, Ohio, has invented an improved method of attaching the cloth or parchment to the tympan frame. He inserts in the frame strips of leather with eyelets, and to these the cloth or parchment is secured by lacing. It can be easily attached or removed, and forms a great convenience to the printing office.

TURNING MACHINE—John McNary, of Brooklyn, N. Y., has invented an improved turning machine for shaping regular or cylindrical ornamental forms, such as newels, ballusters, and similar beaded or ornamental work. The invention consists in a peculiar arrangement of means for operating rotary cutter stocks, and traveling heads, between which the stuff to be turned is centered, whereby the machine is rendered automatic in its action throughout, and made to work rapidly, and in the most efficient manner.

SAWING MACHINE—H. S. Vrooman, of New York, has invented a machine for sawing timber or logs spirally or in volute form in one continuous piece from the periphery to the center. The invention consists in a peculiar arrangement of means for operating a reciprocating knife or saw, and giving the same a proper feed movement towards the log or stuff being sawed, and also in giving the log or stuff which is centered between arbors, a gradually progressive rotating speed, so as to compensate for its gradually diminishing diameter while being sawed, and thereby allow the knife or saw to cut the log or stuff in spiral or volute form from periphery to center, or nearly to the center in a single or continuous piece. The invention is designed for sawing thin stuff, such as is used for the backs of mirrors, boxes, veneers and other purposes. The inventor has assigned his invention to H. Albro, of Covington, Ky.

MACHINE FOR BENDING WOOD—Thomas Blanchard, of Boston, Mass., whose invention of a machine for a similar purpose we noticed on page 240 of the present volume of the *SCIENTIFIC AMERICAN*, has invented certain improvements relating to a device by which wood is bent in the desired form without having its fibre distended longitudinally, so that the strength of the wood will not be impaired in consequence of being bent. The invention consists in the employment of a rotating pattern or mold with a metallic strap attached,

used in connection with a sliding pressure bar, having an adjustable stop fitted to it, the outer end of the metallic strap being attached to the sliding bar, and the whole arranged so as to form a simple and efficient machine.

QUARTZ MACHINE—W. H. Howland, of Sacramento City, Cal., has invented a machine for this purpose, the object of which is to obtain a very compact and efficient machine, and one that will not easily get out of repair, and having its parts so arranged that each will perform its full portion of the work to be accomplished. The machine is designed for crushing auriferous quartz, and consists of a series of pestles placed within an annular mortar and around a feeding spout, the pestles being operated by a horizontal double inclined cam, which acts against circular disks attached to the pestle rods, so that the pestles will be rotated as they are raised by the cam. There is also in connection with the above parts a screen and pulp trough, for the purpose of better separating the crushed materials.

BRICK KILN—This invention obviates many serious objections which are experienced in the burning of brick in ordinary kilns. The most prominent among these are the rapid destruction of the grates or furnaces, choking up the throats of the furnaces by the collection of charred fuel thereat, difficulty in burning the "heads" or sidewalls of the kiln to the same degree, within a given time, as the body of the same; also the unequal diffusion of the heat throughout the entire kiln from the side walls to the centre, and a too rapid escape of the heated flame or current directly up between the bricks forming the stands and arches; want of facilities for controlling the flame or heat, so as to equalize the heat at all parts of the kiln; loss of heat from the escape into the open air of partially ignited smoke or gases emitted from the fuel of the furnaces. We regard this as a first-rate improvement, and as a step in advance of anything we have seen in this line. The inventor is J. W. Cray, of New Orleans, La.

GAS ENGINE—In using the vapors of gaseous liquids as a motor, it is found that owing to the vapor being so rapidly generated or thrown off by the action of heat, and as readily condensed by contact with surfaces of less temperature than themselves through which they circulate that unless a uniformity of heat is maintained throughout the whole heating and working arrangement, great loss of effective power, as well as an irregular and unsteady working of the engine, will be experienced. The object of this invention is to avoid this loss of power, and to maintain a uniform pressure of vapor, and consequently effect a regular and steady working of the engine which is accomplished by diffusing, by means of a heating medium enclosed within a tight chamber, an equal heat over the whole surfaces through which the gaseous vapors necessarily have to circulate in order to exert their force upon the piston. The inventor is J. C. Fr. Salomon, of Baltimore, Md.

SAW MILLS—In saw mills which have the carriage arranged to run upon friction wheels having a lateral movement by means of offset boxes from toward the saw while gidding back, and which have the feeding head blocks, feed automatically by means of an oblique inclined gage bar and ratchet lever, inaccuracies are experienced in the thickness of the boards sawed. This difficulty arising from the wear of the boxes and track, and the consequent chance allowed the carriage of being forced from the saw, when the feeding ratchet lever comes suddenly in contact with the inclined gage bar, and is resisted by said bar in a manner to effect the feeding of the head blocks, and yet, at the same time, to pull over the carriage head blocks and log the same distance as the wear of the boxes and rails will allow. This invention of W. M. Ferry, Jr., of Ferrysburg, Mich., which is clearly defined by the claim, completely obviates the above objections, and therefore will prove a valuable auxiliary to self-setting saw mills.