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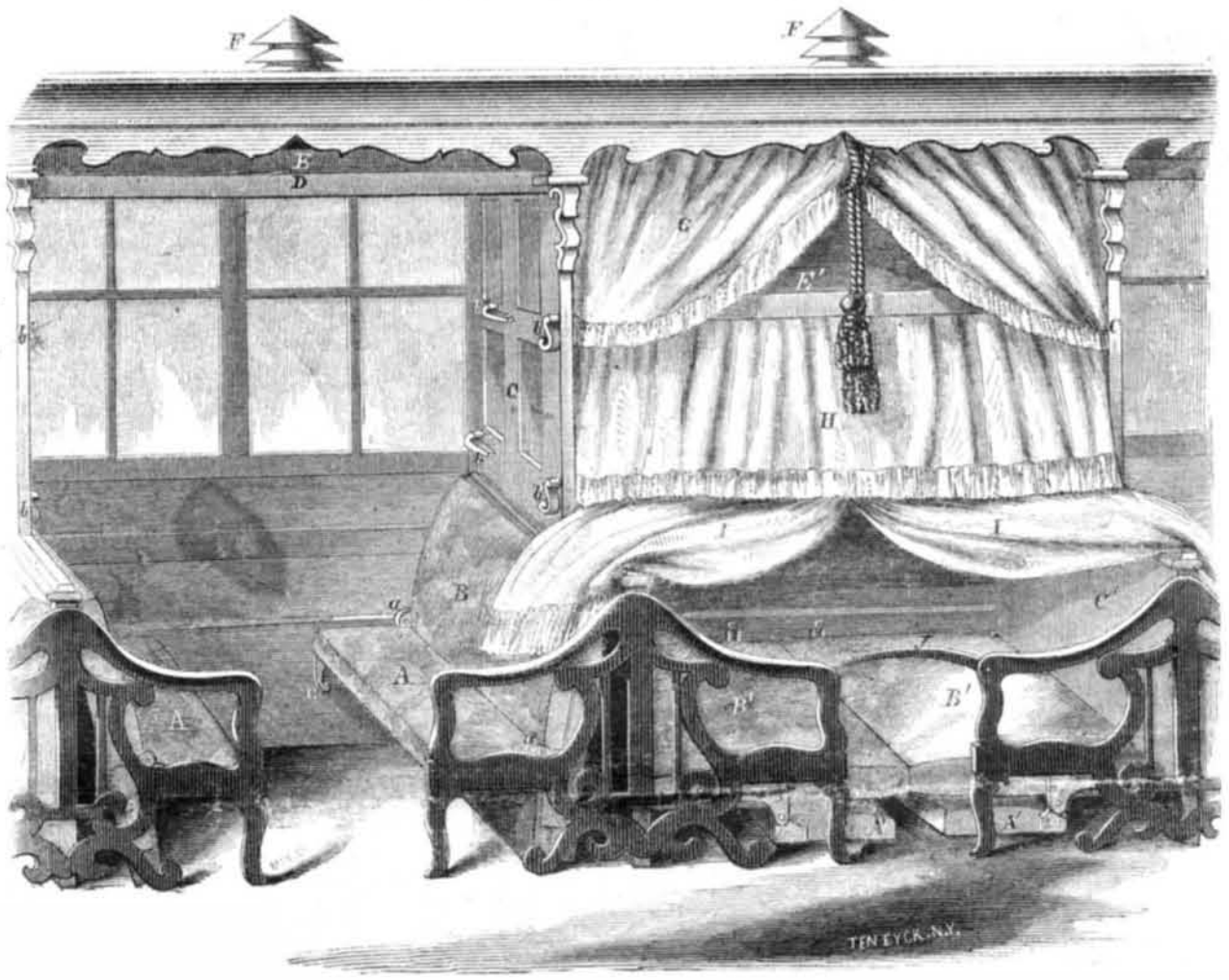
Hardening Metal.

Steel possesses the property of becoming much harder by being highly heated, and then suddenly cooled, which process is called *tempering*. Different qualities of steel are not affected precisely alike by the same process; one requires a much higher heat than another, and the degree of hardness which is finally obtained depends both upon the temperature to which it is exposed, and the coldness of the medium in which it is cooled. It requires considerable experience to become acquainted with the different qualities of steel, and the particular degree of heat to which each should be raised to give it the proper temper. One practical test is to draw a bar of steel belonging to a certain lot, or brand, to a tapered point, such as a chisel, and then temper it. The tapered point will thus be variously affected according to its thickness, and by breaking off pieces from the point inwards, the character of the grain will show the effects of the difference of temperature which has been applied, the finest grain being considered the best.

As various cooling mediums produce different qualities of temper, cold water, oil baths, and cold soap suds are employed. Steel which is required to be very hard, such as files, are plunged into a salt brine, which is colder than pure water; most tools, however, are tempered in water, In tempering large masses of steel, such as anvils, rollers, or dies, they should be heated to a low red color, and cold water applied so as to strike their whole surface evenly, and then flow off freely, which prevents them from cracking. Any degree of hardness may be imparted to steel by first tempering, then annealing it. This latter process consists in reheating the steel after it is polished, until it assumes a peculiar color, which is an index of its hardness. The gradations of these colors are light yellow or straw, violet, blue, slate, and finally black, which latter is the softest, and about the same degree as that of the steel before it was hardened, Various tools would be too inflexible, and devoid of spring, were they not annealed. Some are annealed by a temperature at which tallow or oil burns, hence their surfaces are rubbed over with oil, and then flamed in a fire, when they become elastic.

A number of theories have been advanced respecting the changes produced in the character of steel by tempering, but none of them are satisfactory. The metal undergoes no change in its composition by the process; its molecules only assume a different arrangement. In volume XII. of the SCIENTIFIC AMERICAN, a considerable amount of useful information was presented on the tempering of mill-picks, but since that period several inquiries have been made for more general information on the subject.

CASE'S RAILROAD SLEEPING CAR.



We were much pleased the other day, while taking a trip by rail, to observe at the roadside stations, that, as an additional attraction to several Western roads, it was announced that "sleeping cars" accompanied each night train. This shows that their value and comfort are appreciated, and that they are gradually coming into general use. We have therefore no hesitation in presenting to our readers all the various inventions which have been produced to supply the railroad companies and the public with a convenient and comfortable sleeping car.

Our present illustration shows the invention of Sidney C. Case, of Detroit, Mich., with one compartment arranged for day, and the other for night use. In both of these the seats, A, are hinged to their backs, B, at *a*; the backs, B, being also hinged to the side rails or arms and sides of the car, so that they can fold down as seen at A′, B′. These folded down form berths for two. The divisions between the compartments, C, are provided with small rests or supports. *b*, so arranged that the supplemental berths, D E, in the daytime placed in the top of the car out of the way, can be readily placed in their respective positions by turning them down and can be supported in the grooves by small pins projecting from the ends of the supplemental berths. Each of these berths, D and E, hold one person, thus making a compartment hold as many persons lying down, as in a sitting position.

Ventilators, F, are placed in each compartment to keep up a proper circulation of air, so necessary when sleeping. throughout the car and berths.

Near the roof of the car the curtains, G, are attached, which completely conceal the occupant of the top berth, and this has curtains, H, attached, that in like manner conceal the occupant of the next single berth, while it has curtains, I, that pass over the hand rails or arms, and cover the occupants of the lower berths. To the bottom or underside of the top berth groove, supports are secured, in which the lower single berth can be supported, when they are placed out of the way in the top of the car, in which position the curtains fold in with them and are kept out of the way. There is room between the backs, B, and the division of the compartments, C′, for the pillows; the bedding is placed under the seats, and an arm, J, extends across the arms, to afford a support for the curtains, I, when thrown over the occupants. The seats, A, are supported by pieces, *c*, in the arms and sides, from which, however, they can be readily detached when a bed is to be formed. The change from a sitting to a sleeping car can be easily and quickly made by the passengers themselves, to accommodate either one, two, three, or four persons.

It was patented June 22, 1858, and any further particulars can be obtained by addressing the inventor of this, a most excellent arrangement, as above.

Superheated Steam and Cylinder Jackets.

In the recent address of J. Macquorn Rankine, C. E., F. R., S., delivered before the Institution of Engineers in Scotland, we find some exceedingly practical and useful information on this subject. He states that in the working of expansive condensing steam engines, in order to obtain the economy properly due to expansion, means should be taken, by the use of steam jackets, or some other mode, to prevent that condensation which always takes place in saturated steam, when it performs work by expansion, and is not supplied by heat from some external source. The water condensed in an expansive working cylinder cools the steam at the beginning of the stroke, lowers the initial pressure, and injures the vacuum so as to reduce the work of the engine below that which is properly due to expansion, and to make it approximate to that of a full pressure engine working at some pressure intermediate below that of the exhaust. By the use of a steam jacket the condensation of a certain quantity of steam is not prevented, but instead of this taking place in the cylinder, it is effected in the jacket where the condensed water does no injury. Besides the proper management of the expansive working of steam there is another means of improving the economy of power in the cylinder of the engine, namely, by using steam heated to a temperature above the boiling point at which it was generated ("superheated steam"). The efficiency of any engine is as the difference between the temperature at which the steam performs its work and that temperature at which the steam is condensed. The use of "superheated steam" enables work to be performed at a high temperature without producing a dangerous pressure.

Sugar in Louisiana.

The New Orleans (La.) *Delta* says:—Sugar is twenty thousand hogsheads and molasses twenty thousand barrels ahead of last year. We do not think it extravagant to say that the aggregate value of the receipts of the products of the valley of the Mississippi at this port, up to the present period, is double that for the same period last year.

Issued from the United States Patent Office

FOR THE WEEK ENDING DECEMBER 21, 1858.

[*Reported officially for the Scientific American.*]

⁂ Circulars giving full particulars of the mode of applying for patents, size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

MODE OF CLEANING RICE—Wilson Ager, of Rohrsburg, Pa. : I am aware that air has been injected into masses of grain by perforation tubes and otherwise, for the purpose of cooling the grain and preventing fermentation. To such I make no claim.

But what I claim as an improvement in the mode of cleaning rice is, the forcing of a current of air into or through the grain during the cleaning operation for the purpose set forth.

CAR SEATS AND COUCHES—Horace L. Arnold, of Elk Horn, Wis. : I claim, first, Jointing the ends of the seats, next the sides of the car to a stud or bolt, B, so as to enable them to be arranged to right angles to the sides of the car, or to be swung round or turned to a diagonal position, and to thus occupy the spaces between them longitudinally and increase the width of the passage-way, and thus admit of their elongation to convert them into distinct sleeping berths or couches, as set forth.

Second, I claim the combination of the slotted bar, F', eccentric lever clamp, H, and plates, I K, with lips or raised edges for firmly fastening the seats in the required position to answer their designs, as described.

Third, I also claim the combination of the slides, O, or their equivalents, and the T-shaped bars, M M', for sustaining the backs, N, of the seats in an inverted position and bolts or slides, s, for securing the backs in their said inverted position, as described.

[The nature of this invention and improvement consists in so constructing the car seats as to enable them to answer all the requirements of the ordinary reversible car seats, and at the same time allow them to be swung round or turned on a pivot at one end, in such a manner as to assume an angle of about 45°, with the passage-way through the car, and almost entirely occupy the space between them, and increase the space or passage-way between their ends to such a degree as to leave room in the passage-way for an elongation of the seats when converted into sleeping-couches or berths, to accommodate the length of the passengers by turning up or inverting the backs and extending the slides from their ends.]

SEEDING MACHINES—John Badger, of Bailyville, Ill.: I do not claim, separately, any of the parts described, for they have all been used under different forms of arrangements and in combination with other parts.

But I claim the circular plates, I, and stirrers, h, attached to the rotating shaft, F', within the seed-box, C', arranged and combined with the slotted bottom, D, and slide, E, substantially as and for the purpose set forth.

[In this invention a series of circular plates and stirrers are employed; they are fitted in a rotating shaft, which is placed in a seed-box provided with a slotted bottom and a slide, the whole being arranged so that seed may he sowed very evenly in a broadcast manner, and the amount of seed to be sowed on a given area of ground graduated as desired.]

PEGGING JACKS—T. D. Bailey, of Lowell, Mass.: I claim, first, The method of jacking the last, by turning the plate to which the last is fastened.

Second, I claim the combination of the lever, H, screw, F, and turn-table, T, for jacking the last, substantially as described.

Third, I claim fastening the screw, F, or its equivalent, stationary, by means of the coupling pin, L', and plate, I, so that when the turn-table, T, is revolved, it shall operate the lever and jack the last, substantially as described.

Fourth, I claim fastening the screw, F, or its equivalent, to turn the plate, T, after the last has been jacked by means of the coupling wheel, L, and pin, R, operated by the thumb latch, O, and spring, P, for the purpose of preventing the screw, F, from turning round and loosing the lever, H, substantially as described.

Fifth, I claim the combination of two hinges, S S', cam levers, U U', hinge seat, B, the link, C, and hand set screw, W, for the purpose and substantially as described.

HARVESTERS—J. A. Barrington, of Fredericktown, O.: I claim the combination of the bell crank, C', and guide piece, G, with the crane, C, rod, r, connecting the crank arm, h, with the rakes and the crank shaft, S, giving motion to the system, the operation being substantially as described.

I also claim connecting the entire raking mechanism with the vibrating frame, F, substantially as and for the purpose set forth.

STOVES—B. W. Belson, of Philadelphia, Pa.: I am aware that an annular chamber with air jets above a fire for consuming gases is an old and well-known device, and I therefore limit my claim to the improvement described, to wit:—

The combination of the air chamber, a, surrounding the base of the fire-pot with the annular chamber, f, at the upper part of the fire-pot, as described.

I also claim the jet-pipe, h, in combination with the annular chamber, a, and escape pipe, i, as described.

I also claim the adjustable heater, r, constructed, arranged and operating over the fire, substantially as described.

COMPOSITION FOR ROOFING—C. A. Bremner, of Goshen, N. Y. : I claim the composition consisting of marl and the other substances specified, combined and compounded in about the proportions and in the manner substantially as set forth.

[This is a compound of coal tar, rosin oil, india rubber, shellac and linseed oil, with alum, litharge, borax, ochre and dry marl, which when mixed in the proportion specified in the patent make an excellent and durable roofing cement.]

PEPPER CRUET—H. T. Clawson, of Newberne, N. C.: I claim placing within the perforated top or cap, B, of a pepper cruet or box, A, a rotating or reciprocating partially rotating brush, C, arranged substantially as and for the purpose set forth.

[A rotating or semi-rotating brush is placed within the top of the pepper cruet to prevent the perforations in the top becoming choked, and a free discharge of pepper always obtained.]

CUT-OFF GEAR FOR STEAM ENGINES—John Broughton, of New York City. I claim, first, The combination of the two rockshafts, H H, their arms, N N, the vibrating links, O O, the rods, L L, and the lifters, M M, the whole applied substantially as described to operate upon a tappet or tappets on the valve stem, E, or its equivalent, for the purpose of lifting the valve, and subsequently tripping it by the continued and inherent motion of the lifters.

Second, In combination with the above specified lifting and tripping mechanism, I claim the combination of the pendulous rods, R R, the toggle links, S S, and the slide, T, or their equivalents, connecting with a governor or other means of adjusting the same to vary the positions of the centers of motion, c c, substantially as described for the purpose of varying the point of cutting off the steam.

[By a certain combination of vibrating arms, vibrating links, rods and lifters, the cut-off valve is opened and subsequently tripped by a continuation of the same inherent movement by which the opening is effected. There are also certain devices operating in combination with the lifting and tripping apparatus, for the purpose of rendering the trip motion variable to cut off the steam at different points within the first half of the stroke of the engine. Patents have been procured in foreign countries for this invention.

HARVESTERS—Chester Bullock, of Jamestown, N. Y.: I claim attaching the vibrating cutter to the vibrating bar and fingers, as described.

PROPELLER FOR LIFE-BOATS—Mortimer M. Camp, of New Haven, Conn. : I am aware that submarine boats and diving bells have been so arranged as to be propelled by a single occupant, and I do not therefore claim my invention for the propulsion of either of those articles, as it is only practically applicable to life-saving boats, as described; nor do I claim its application to the life-boat shown, for my invention is applicable to any description of inclosed life-boat however constructed.

But I claim the method of propelling inclosed life-boats by the application of the power of the occupants of the boat, as set forth.

ELLIPSOGRAPH—E. G. Chormann, of Philadelphia, Pa. : Having fully described the construction and operation of my improved instrument, and disclaiming the broad feature of changing the relative position of the shoes or pins which run in the slots of the plate, or the changing of the distance of the pencil or graver-carrier from the foci.

I claim, first, Constructing the shoes, I, and i', in two parts swiveled together as specified, in combination with the adjusting screw shaft, d', the whole arranged and operating as described.

Second, In combination with the screw adjustment of the movable shoe, the arrangement of the pencil or dry point carrier, f, on a screw shaft, C, in order that the relative lengths of the axes may be readily varied to the smallest extent or a series of concentric ellipses be drawn varying very slightly in size.

Third, Arranging the drawing apparatus with a vibrating adjustable arm, D, on a vertically adjustable arm, B', as described for the purpose set forth.

BREECH-LOADING REVOLVING FIREARM—E. Claude, of New York City : I do not claim of itself extending the chambers through the cylinder, nor the attachment of the barrel to an exterior pin, A, separately considered.

But I claim making the arm, U, between the barrel and exterior shaft, the bearing for the cylinder by a shaft on the forward end of the cylinder passing through and secured to the arm, substantially as described, when the said parts are combined with breech-piece and stock, so that the cylinder is rotated and stopped and the discharge effected, substantially as set forth.

SHINGLES—H. T. Clay, of Gardiner, Me. : I claim, first, A shingle of uniform thickness at the butt so far as it is to be laid to the weather.

Second, A shingle that commences to taper at the point on the upper side, where the next layer above covers it, and tapers all on that side.

PRESERVE CANS—P. H. Cotton, of Demopolis, Ala. : I claim, in combination with the channel, C, outside of the neck of the can, the employment of a recess, e, in the neck and the extension of the rim of the cap over such recess, substantially as and for the purpose specified.

[This invention relates to that kind of preserve can whose cover consists simply of a cap fitting upon the mouth of the can, and is sealed by wax or composition poured into a channel surrounding the neck of the can and rim of the cover. It consists in the way of confining the cover on the can against the pressure of steam that is generated to expel the air, until condensation takes place, and the sealing composition becomes sufficiently hard to retain the cover in its place. It also consists in forming a recess in the lower part of the can, and making the rim of the cap to extend down some distance over the said recess, for the purpose of preventing the sealing composition becoming detached from the sides of the channel, and the cap being thereby loosened.]

BUCKLES—John Cumberland, of Mobile, Ala., and J. R. McClintock, of New York City: We claim the buckle or clasp composed of the parts, A and B, or their equivalents, substantially as described and for the purposes described.

BAGASSE FURNACES—Felix Daunoy, of Carrollton, La. : I claim the construction of bagasse furnaces, having the exit flue, F, located in the interior of the furnace with the openings, K, to admit the gas from combustion, when in combination with the wood or coal chamber, having a skeleton crown, and the grates, B, on which the bagasse is consumed, when made and arranged substantially as and for the purpose set forth.

SLIDE AND FASTENING FOR SKIRT HOOPS—Alexander Douglas and S. S. Sherwood, of New York City: We are aware that a slide and fastening for skirt hoops has been made of a single piece of metal so as to embrace and fasten to the end of the hoop, while a part of the hoop near the other end was permitted to slide through it, or in other words, through a loop which formed a part of it, the attachment to the hoop being formed of loops folding in one direction from a central piece upon the end of the hoop and the slide or loop for the hoop to slide in being formed of loops folding from said central piece in the opposite direction, as seen in the patent granted to R. J. Mann, June 22, 1858, and not in either case forming a continuous connection and junction of metal around the hoop.

We are also aware that the tapes of skeleton skirts have been attached to the hoops by a clamp made by folding lips over from the ends, and punching up a longitudinal strip of the metal to hold the tapes, as shown in the patent granted to A. Smart, Aug. 31, 1858. We make no claim to either of these devices.

The particular improvement which constitutes our invention, and which we claim, is the combined clamp and slide, made entire of one piece by forming the clamp of the divisions, b and c, and the slide of the lips, d, as described, the divisions, b and c, being entire, and connected at both ends to the plate, as shown, thus forming a continuous connection around the end of the hoop for the purpose stated.

CARPET FASTENER—Richard DeCharms, of Philadelphia, Pa. : I claim the described new article of manufacture, to wit, an eyeletted carpet or floor cover binding, for the purposes set forth.

HYDRANTS—S. P. Francisco, and Wm. P. Dickinson, of Reading, Pa. : We do not claim the application and use of a piston and cylinder in connection with a hydrant or fire plug, nor do we confine ourselves to the precise details set forth, so long as the peculiar character of our invention is retained, as the same may be varied.

What we claim is providing said cylinder and piston with suitable openings for the admission of the air, and for the purposes set forth.

BALANCING MILLSTONES—John Fairclough, of Louisville, Ky. : I am aware that adjustable weights have been previously used on millstones, and I therefore do not claim, broadly, such feature.

But I claim the arrangement of the cylinders, I, within the boxes, H, the former being provided with tubes, e, having screw threads on their outer and inner surfaces, and provided with screws, g, and the cylinders provided with projections, l, which fit in the grooves, m, of the boxes, as and for the purpose set forth.

I also claim the plates, h, and bottoms, j, of the cylinders, I, when screwed on the tubes, e, and used in connection with the nuts, k, substantially as and for the purpose specified.

[This is an improved arrangement of adjustable weights, which are fitted in the upper stone or runner in such a manner that the stone may be perfectly balanced on its spindle, both as regards its gravity or weight and the centrifugal force generated by its rotation.]

EXTENSION FINGER RING—Samuel Friend and George Seilor, of New York City: We claim the combination of the spring ring and folding bars, substantially as and for the purposes specified.

MACHINE FOR SEPARATING GARLIC FROM GRAIN—Philip C. Fritz, of Barrytown, N. Y. : I do not confine myself to the precise arrangement of parts shown and described, for the purpose specified, for they may be modified in various ways.

But I claim separating garlic from grain by passing the same between crushing rollers, in the manner substantially as shown and described, that the garlic seed and kernels of grain will be crushed separately between the rollers, and the crushed grain allowed to descend into a proper receptacle, while the garlic seed, on account of the moisture or juice they contain, adhere to the rollers, and are scraped therefrom.

[The grain from which the garlic is to be separated is passed between rollers in such a manner that the garlic seed will be kept separate from the grain, and both crushed by the rollers when the former are not in contact with each other, the grain as soon as crushed falling immediately down between the rollers, while the garlic seed, owing to the moisture or juice they contain, adhere to the rollers, and are scraped therefrom—the separation being due to the adhesive tendency of the crushed garlic seed.]

HORSE POWER FOR DRIVING RECIPROCATING SAWS—Edward M. Fuller, of Salisbury, N. Y. : The particular improvement which constitutes my invention, and which I claim is, the connection of the saw to the main body of a horse power which is operated by the circular movement of the animal, and extending the reciprocating rod, o, or its equivalent, from the main body of the machine across the track of the horse to the saw, in such a position as to allow the horse to pass over it, the parts being constructed, arranged and operating substantially as and for the purposes set forth.

CUT-OFF GEAR FOR STEAM ENGINES—P. W. Gates, D. R. Fraser, and Thomas Chalmers, of Chicago, Ill. : We claim the two sliding toe pieces, L L', constructed as described, and applied within the rocking frame, J, to operate substantially as described, in combination with the double lifters, G e e, attached to the valve-stem, and with a stud and roller j i, or their equivalent, connected with a governor, or otherwise made movable.

[This invention consists in a novel construction of two sliding toe pieces and mode of applying the same to a rocking frame operated by the steam engine, in combination with a double lifter attached to the stem of the cut-off valve, and with a governor or other regulating apparatus to produce and vary the action of the cut-off, for the purpose of controlling the speed of an engine.]

MEDICATED FABRICS—Henry Glynn, of Baltimore, Md. : I claim as a new article of manufacture, cloth or paper chemically prepared, for sanitary purposes, with a solution of which copper, or copper and calomine, are the bases, such manufactured article being designed for the prevention, or as a protection against, infectious or contagious diseases, and made as stated.

PAPER FILES—Edward R. Godfrey, of New York City: I am aware that the method of locking the points of the receiving and transferring hooks or wires have been used as applied to another purpose, and therefore make no claim to this feature of my improved paper and letter file.

But I claim the method of securing and transferring hooks, c and d, to the back or steadying weight, a, by folding and uniting their ends down the entire length of the channel or groove in the lower surface of the back, so as to prevent them from twisting and dropping the file of papers, as would be the case if the ends of the wires were simply riveted into the back.

SEATS AND SLEEPING COUCHES FOR RAILROAD CARS—Plymon B. Green, of Chicago, Ill. : I claim, first, The arrangement under the seat of a sliding drawer, F, which has one portion of its top cushioned, and the other portion open, in combination with the hinged back or cushion, A, and stationary cushions, D N, substantially as and for the purposes set forth.

Second, In combination with the above arrangement of the upper couches on hinges in the peculiar manner specified, so that they can be adjusted with facility, substantially as described.

HANGING WINDOW SASH—Theodore F. Hall, of Marietta, Ohio: I claim the employment and arrangement of pulleys or friction rollers at the lower corners of the sash, and the balancing of the sash on cords, in combination with pulleys and weights, or a weight, substantially as set forth.

MANUFACTURE OF PORTABLE FANS—John C. Hall, of Fayette, Miss. : I claim the fan as a new article of manufacture, when constructed in the manner described.

[This invention consists in having a series of short bars or rods jointed together, so that they may be folded into a compact cylindrical form, and distended to an annular shape. The bars or jointed rods form the frame of the fan, and a piece of silk or other suitable material can be attached to them to form a cover or body, which, when the frame is distended, is stretched sufficiently tight to form an efficient fan. The fan, when the frame is closed or folded, occupies very little space.]

RAILROAD RAILS—Augustus Plinta, of Albany, N. Y. : I claim the construction of a railway rail by forming the same hollow of an elliptical or oviform shape in cross section, the lower portion of the arch being extended into a foot or flange, and a segment of the upper arch being extended into a lip or face for the tread of car wheels, slots being made through the bottom and across the lower part of the body of the rail, substantially in manner and form and for the purposes set forth in the specification.

MANUFACTURE OF SCISSORS—Henry Havell, of Newark, N. J. : I do not claim, generally, the soldering of a steel plate on to malleable iron, by means of brass or other metal.

But I claim the forming of the blades of scissors or shears by means of the use of the intermediate plate, b, or by soldering or brazing the malleable cast iron and steel together, substantially in the manner and for the purpose described.

I also claim, in the manufacturing of scissors or shears, the use of the die, as before mentioned, and the striking together and into the required line and shape, the component parts of the blades, substantially in the manner and for the purpose described.

METHOD OF GATHERING GRAIN UPON, AND DISCHARGING IT FROM, THE PLATFORM OF HARVESTERS—Obed Hussey, of Baltimore, Md. ; I claim the method described of gathering grain upon and raking it from the platform of a reaping machine, and depositing it upon the ground by a raker riding on the machine directly behind the horses and the gearing facing obliquely towards the grain which the machine is advancing to cut, and who, at a single operation with his rake, first, presses the grain in front of the machine backward against the cutter and over upon the platform; secondly, by a pivotal motion turns the prostrate grain upon the platform with its stalks parallel to the cutter; thirdly, slides the grain endwise off the platform at the side of the machine; and fourthly, deposits the grain in a gavel on the ground behind his seat and across the track of the driving wheel of the machine as set forth.

HOOP LOCK—Edwin A. Jeffery, of Corning, N. Y. : I claim as an improved article of manufacture, a hoop lock composed of a shell or socket, A, and a taper pin, B, made as shown and described.

[A metal socket or shell is provided with a recess or indentation, and a conical key or pin passes through the socket, so that the ends of a a hoop, by being looped or doubled and fitted in the socket, may be firmly secured or connected together.]

BOTTLE-STOPPERS—Thomas Lewis, of Malden, Mass.: I do not claim a tubular self-closing bottle-stopper having a ball valve.

Nor do I claim the improved stopper as patented by Williams.

But I claim my improved ball valve-stopper, as made with the separate cap, C, provided with a discharging tubular mouth, i, and crossed bars, g h, or equivalents, for detaining the ball, as described, and connected with the main tube or body by a screw, or its equivalent.

FOLDING BENCH—Tristam S. Lewis, of Kendall's Mills, Me. : I claim the arrangement and combination of the hinge blocks, a b, the leg slides, E F, and the confining slide, G, as applied to the parts, A B, and their legs, C D, connected or hinged together so as to fold up in the manner substantially as specified.

MACHINES FOR ELEVATING HAY—James C. McGrew, of Smithfield, Ohio: I claim in the described machine for elevating hay, grain, fodder, &c., the arrangement of the bar, a''', and inclined platform, a' a'', with the sheers and hoisting fork, all substantially as described, for the purposes set forth.

BUOYANT PROPELLER—James Montgomery, of New York City : I claim, first, The described or substantially equivalent means of securing the flotation of a screw propeller by ejecting water therefrom by centrifugal action.

Second, The detachable hollow blades, B, in the described combination with the shaft, A, for the purposes set forth.

Third, The application of the valve, l, arranged as described, in the forward end of the hollow shaft, A, for the purpose explained.

SEEDING MACHINES—Albert W. Morse, of Eaton, N. Y. : I do not claim a clod-crusher, nor roller, nor a seed-sower separately.

I claim the arrangement of the hopper, f, with the rollers, g g, belt or strap, E, rollers, m, and rings, a, as described, for the purposes set forth.

DRAUGHTING SHIRTS—John Peckham, of New Haven, Conn. : I am aware that measures for draughting garments have been made by folding tapes or paper strips in such manner as to form a graduated scale, and I therefore do not claim the measures in themselves considered.

But I claim draughting shirts by means of the neck and breast measures, A B, formed and applied to the cloth, as shown and described, so that the neck circle will be chiefly cut or formed in the back portion of the shirt, and the upper part of the back portion folded over and united to the top of the front portion on a line with the base of the neck, as set forth.

[The object of this invention is to obtain a definite rule or system of measurement for drafting shirts, by which a person's measure may be taken and laid or drawn out upon the muslin or other cloth with perfect accuracy, and in such a manner as not only to insure a perfect fit, but also to leave the parts so disposed as to economize in the bosom material, which is generally linen, and render the shirt more durable, and capable of being properly ironed with greater facility than usual.]

QUOINS FOR GUN CARRIAGES—David D. Porter, of U. S. Navy : I claim the combination and arrangement of the degree rack or racks, the axle thereof, the T-bolt, and its groove, with the bed and wedge, substantially as and for the purpose as described.

I do not claim the mere use of raised projections for indicating numbers by the touch of the figures, as I am aware that such is not new.

But I claim the combination and arrangement of the tangible scale and axle with the degree rack and the wedge, so that by the application of the finger to both scale and axle at one and the same time, and during the night or otherwise, the proper position of the wedge may be determined for any desirable elevation of the gun.

SELF-ADJUSTABLE LEVELING INSTRUMENT—Joseph Redhead, of Woodville, Miss. : I claim combining with the dish or case, A, an inclined rod and ball or weight, n, so that when said case is set upon an inclined staff by its steel point, the ball will swing in the case into a level position, for the purpose of making a leveling instrument for ascertaining the ascent or descent of ground, as set forth.

MACHINE FOR BORING WOOD—George F. Rice, of Worcester, Mass. : I do not claim the joints and semi-circles, as that has been known before.

But I claim the hollow cross bar, together with the double head bolt, which enables the operator to fasten the uprights at any angle by simply turning one nut, the whole being constructed substantially in the manner as described, and for the purposes specified.

GOVERNOR FOR STEAM ENGINES—H. C. Sergeant, of Columbus, Ohio : I claim, first, A steam engine governor composed in part of a steam engine which is subject to a uniform resistance, and which works independently of, and by its own velocity controls the velocity of the engine to be governed, substantially as set forth.

Second, The employment of two disks, I and N, having spiral projections, f f and j j, on their faces, and provided with stop pins, q q, applied substantially as described, to combine an engine which is to be regulated, with an isochronous revolving regulator.

Third, The combination of what is herein termed the "regulator engine," its regulator S T k l m, and regulating valve, U, or their equivalents, and the shafts, H, and M, and their spiral-faced disks, I P, one driven by said engine, and the other by the engine to be govern-

ed, the whole applied and operating in combination with a regulating valve, B B', or its equivalent, substantially as described.

[A notice of this improvement will be given next week.]

BRUSH—Reuben Shaler, of Madison, Conn.: I am aware that brushes have been made in which the bristles have been attached to a cylinder in tufts spirally arranged in rows around it; I make no claim to such a form of arranging the bristles.

I am also aware that bristles have been secured in position, after they have been attached to the handle, by pouring melted resin upon their ends, or by filling the end of the brush with glue. I do not claim these modes of cementing in the bristles.

I claim as a new article of manufacture, a brush, the bristles of which are secured by winding them into a spiral groove, and fastening them in the manner described or by winding them into cement, as set forth.

BOILER FURNACES—Evan Skelly, of Plaquemine, La.: I am aware that stoves have been made in which the fire chamber is fashioned in the form of a cone, the escape opening being contracted.

I do not claim, broadly, the making of furnaces of conical shape.

I do not claim, broadly, the idea of contracting the escape opening.

I do not claim the arrangement of bridge walls alternately on opposite sides of the main flue.

But I claim the combination and arrangement of the gradually contracted fire chamber, C, with the bridges, F F G G, as shown and described, for the purposes set forth.

[This invention consists in a novel arrangement of bridges under a double cylinder boiler, to arrest the too rapid escape of the gaseous products of combustion, and keep them in contact with the boiler till they have yielded up as much as possible of their heat to the boiler. It also consists in the gradual lateral contraction of the fire chamber and grate towards the rear, for the purpose of preventing the escape of any air or combustible gases without being consumed.]

HARNESS BUCKLES—Orin B. Smith, of Monticello, N. Y.: I claim the combination of the lever, C, operating as described, with the bow, B', for the purpose of making a harness or other buckle, and to which may be attached straps, A and B, as set forth.

HOMINY MILLS—Ira Speight, of Woodville, Miss.: I claim hanging mill-stones by means of right and left screws, substantially as and for the purposes set forth.

BUCKLES FOR SKIRT HOOPS—John Stevens and Jas. Handley, of New York City: We claim the buckle, when constructed substantially in the manner described, in combination with the slides, having holes to receive the hook of the buckle, for the purpose set forth.

MITER BOX—Asa F. Tarr, of Rockport, Mass.: I claim as an improved article of manufacture, a miter box having a sliding frame, F, attached to pivoted standards, g, and otherwise made as shown and described.

[To an ordinary miter box a sliding guide frame is attached, so arranged as to guide the saw perfectly without the aid of the usual kerfs in the box, and thereby obviate the difficulty attending the wearing or cutting away of the kerfs—a contingency which occurs in using the ordinary box, and soon renders them inaccurate.]

CAM PRESS—Enoch Thomas, of Beverly, Va.: I claim the mode of making and arranging the journal boxes so as easily to vary the space under the follower, and retain the uniform position of the pressure, in combination with the cam and windlass, cast solid, when constructed and operated substantially as specified and for the purposes set forth.

DYNAMOMETER—Wm. Tucker, of Blackstone, Mass.: I claim the combination of the grooved slider, D, and its screw connection, G, with the index-pointer, E, or its equivalent, and the spring, C, and pulley, A, or its equivalent, applied to a shaft, B, substantially as described, the slider having a feather connection, a, with the said shaft, as explained.

PLOWS—Reed Vincent, of Rockton, Ill.: I claim the combination of the convex standard, A, the braces, B D, and the mold-board, when arranged in connection with the beam and bent handles, C, as described and represented, and for the purpose set forth.

LABLES FOR TREES, &c.—Francis T. Cordis and William W. Wade, of Long Meadow, Mass.: We claim the combination of a metallic rim or back with paper, or other suitable substance, on which is written or printed the name of a tree, shrub, plant, or seed, and a plate or plates of mica and a metallic ring, in either of the modes in the specification described, as a tag or label for designating and distinguishing the varieties of trees, shrubs, plants and seeds, in orchards, nurseries, and gardens, as described.

APPARATUS FOR PURIFYING GAS—Andrew Walker, of Claremont, N. H.: I do not claim the purification of illuminating gas by means of water, when applied in a shower of drops, or of finely-divided streams.

But I claim the combination and arrangement of separate chambers, opening into each other in such manner that a current of water or fluid may be made to flow through the series in thin falls or sheets, or from one chamber to the next in a thin fall or sheet, substantially as described, and a current of gas be made to pass upward and through the several chambers, and successively through and against the several falls or sheets of fluid, essentially as explained, the chambers being disposed one over the other in column, and the whole being to effect the purification of gas for illumination, as described.

STOVES—David Wells, of Lowell, Mass.: I am aware that various plans have been devised for admitting heated air into stoves and furnaces, so that the products of combustion may be mixed therewith, in order to insure the burning of the same; I therefore do not claim, broadly, such idea.

But I claim the arrangement of the flues D' D', smoke chamber, E, air-heating chamber, G, and fire chamber, B, the latter communicating with the smoke chamber by means of the perforations, b, and the smoke chamber communicating with the air-heating chamber by perforations, a, substantially as and for the purpose set forth.

[This invention consists in a peculiar arrangement of flues, an air-heating chamber, and smoke chamber, whereby the combustible portion of the products of combustion is brought in contact with a suitable portion of heated atmospheric air, and ignited in a chamber separate from the fire chamber, but by the heat or fire therefrom. The object of the invention is to obtain all the advantages derived from the consuming of the combustible portion of the products of combustion without detracting from the efficacy of the fire chamber itself as a source of heat, by admitting directly upon or over the fire, atmospheric air, in order to consume the inflammable portion of the escaping gas.]

MANUFACTURE OF GLASS FURNACES AND POTS—Ezra Wells, of Covington, Pa.: I claim a new article of manufacture, namely, pots and furnaces made of the black American clay, for use in manufacturing glass and glass ware, substantially as set forth, for the purposes described.

METHOD OF ATTACHING CUTTING LIPS TO AUGER SHANKS—Norman S. White and Aaron Denio, of Shattsbury, Vt.: We do not claim, broadly, attaching the cutting parts to the screw shaft of augers.

But we claim the specific manner set forth and shown in the specification.

SMUT MACHINES—J. A. Woodward, of Burlington, Iowa: I do not claim the curved blast spout, A.

Nor do I claim, broadly, a scouring device connected therewith, for such may be seen in the patented case of mine formerly alluded to.

But I claim the arrangement of the wire cloth cylinder, G, scourer, E, deflecting or separating bar, I, spout, f', and shoe, J, as and for the purpose set forth.

[The smut mill patented by this inventor October 20th, 1857, in the subject of the present improvements the object of which are to effect a more thorough separation of the dust and other foreign matters from the grain before the latter is brought in contact with the scourers, and also to augment, to a very considerable degree, the efficiency of the scouring device, as well as the part designed for the separation of the light or imperfect grain from the offal or foreign matters.]

INSTRUMENT FOR MEASURING ALTITUDES, &c.—George C. Ayling, (assignor to himself and Henry A. Ayling), of Boston, Mass.: I do not claim the combination of the detector glass with the index and horizon glasses.

But I claim the arrangement of the index glass with respect to the detector glass, so as to enable the latter to be moved either into parallelism with, or at right angles to the former, and combining with the detector glass and the main divided arc and index, a secondary index and divided arc, applied to register the movements of the detector glass, substantially as described.

WATCH FACES—Samuel Baldwin (assignor to Baldwin & Co.), of Newark, N. J.: I claim arranging the figures of the dial without turning the works of the watch in a plane parallel to its face, substantially as described, so that they may be in the proper positions in relation to the pendant, whether the dial face the open or closed bizzle of the case.

CLOTHES FRAME—William Hathaway (assignor to William G. Maynard), of Worcester, Mass.: I claim arranging the center of motion of the cross bars, substantially as described, so that the center of motion of the outer end of the cross bar, when the frame is closed, will be over or within the center of motion of the inner end of the cross bar, for the purpose set forth.

HEMP BRAKES—Robert Heneage (assignor to himself and Edward O. Ball), of Buffalo, N. Y.: First, I claim the combination of the reversing mechanism with the brake, B B2, beater, C C2, and shell, K, substantially as described, and for the purpose of dressing hemp, as set forth.

Second, I claim the combination and arrangement of the brake, B B2, with the revolving beater, C C', shell, K, and revolving apron, J, for the purpose of dressing flax, substantially as set forth.

Third, I claim the arrangement of the chamber, X, within the machine, for the purpose of affording room for the movements of the hemp while being dressed, substantially as described.

MACHINE FOR TURNING TAPERING TWISTS ON WOOD—Reuben K. Huntoon, (assignor to himself and Jacob B. Rand), of Concord, N. H.: I do not claim the invention of pattern guides, E E, applied to a moving carriage, J, and irrespectively of a rotary twist block, and the mechanism connecting the same with the stock mandrels or arbors.

Nor do I claim stationary rests for the carriage guides, E E, to move on.

But I claim the arrangement of the several separate devices described, when operated as set forth, for turning irregular tapering forms of wood.

MANUFACTURE OF PAPER PULP FROM WOOD—Charles Marzoni, (assignor to J. Gandolfo), of New York City: First, I claim the use and application of the peculiar stone called "adamantine" described, when used as a means of tearing the woody fiber into a state suitable for pulp for paper, as described, by rotation or any other substantially similar manner.

Second, I do not claim steaming the wood, nor the use merely of hot water.

But I claim the combining the use of the hot water at the boiling point, or 210° Fah., with the stone in rotation while acting upon the wood simultaneously and continuously, so as that the hot water and flakes or particles of woody fiber immediately become united into pulp.

Third, I claim the apparatus consisting of the cover or box, E, the boxed openings therein, 1 2 3 4, and arms, rods and weights, 7 8 9, by which the blocks of wood are fed and held to the surface of the stone.

FAUCETS—Martin Robbins and James Powell (assignors to James Powell), of Cincinnati, Ohio: We claim the application to the key stem of the collar, I, cushion, Q, and loose collar, R, or their equivalents, arranged and operating in combination in the manner described, to compensate for the lateral wear or displacement of the stem.

ICE PICK—John L. Rowe (assignor to Frederick Stevens), of New York City: I do not claim the handle rod or point, as these are well known.

But I claim the spiral spring, D, in combination with the handle, A, rod, F, and point, B, as arranged, substantially as and for the purpose specified.

RE-ISSUES.

REAPING MACHINES—C. W. McCormick, of Chicago, Ill. Patented Oct. 23, 1847—Re-issued May 24, 1853: I claim the combination of the support or stand for the raker, placed behind the axis of the reel, balanced or sustained with the raker thereon by the driving wheel with the reel, and with the short platform.

Also, I claim combining with the sidedraft reel reaping machine, having a reel for gathering the grain to the platform, a stand or seat for the raker fixed firmly upon the platform of the machine so as to enable the raeer securely to get at the grain as deposited on the platform by the reel and deliver and lay it properly on the ground from a single or short platform out or the return track of the horses in suitable gavels for being bound into sheaves.

Also, I claim the combination of the reel for gathering the grain to the cutting apparatus, and depositing it on the platform, with the stand or support for the raker, or the equivalent thereof, to enable him with ease and celerity regularly to remove the grain from the machine, and lay it on the ground, out of the return track of the horses.

And I also claim the construction of the stand or support for the raker, on the frame or platform of the machine, so that it gives to the raker such lateral and forward support to his body when standing at work that he may have free use of his arms and the upper part of his body to remove the cut grain from the platform, while at the same time he is so held fast that he cannot be thrown upon the reel, nor prevented from performing his functions by the jolting of the machine as it moves over the uneven ground.

ADDITIONAL IMPROVEMENTS.

MACHINERY FOR DRESSING AND SIZING WARPS—Wm. Bradley, of Manchester, Va. Patented May 11, 1858: I claim the covering of the drying rollers, with some non-conductor of heat, or material having less conductive properties than the material, to prevent the caking, or uneven drying of the size in the warps.

CAR SEATS AND COUCHES—A. M. Holmes, (assignor to himself and A. G. Purdy), of Morrisville, N. Y. Patented Dec. 6, 1858: I claim the use of the adjustable back-pad or equivalent, and combined therewith the adjustable headrests.

Testing Vinegar.

MESSRS. EDITORS—Your answer to S. B. L., of N. Y., that the hydrometer is valueless in determining the quality of vinegar, is perfectly correct. But as to other instruments for testing, I wish to call your attention to an acetometer, made after Otto, where the test is chemical, and turns tincture of litmus into a red liquid, and in neutralizing the acid by ammonia, it becomes blue. This acetometer is graduated so, that in filling the first part with tincture of litmus, and the second part with the vinegar to be tested, the mixture turns red; now by adding gradually aqua ammonia of a certain strength, till the mixture commences turning blue, the quantity used indicates the purity of the vinegar. I can furnish tubes and instructions of use.

LOUIS BLACK.

Detroit, Mich., December, 1858.

The Speed of Railway Cars.

Many of the accidents which happen to persons attempting to cross railroads are the results of ignorance of the velocity of the iron horse when fairly under way. A writer in the Hartford *Courant* gives some interesting facts which it may be well to bear in mind:

"It seems almost incredible that, as we glide smoothly along, the elegantly furnished car moves nearly twice its length in a second of time—about 74 feet. At this velocity we find that the locomotive driving wheels, six feet in diameter, make four revolutions per second. It is no idle piston rod that traverses the cylinder thus eight times per second.

"If a man with a horse and carriage upon an unimportant public road in a country town should approach and cross the track at a speed of six miles per hour, which would be crossing rapidly, an express train approaching at the moment would move towards him two hundred and fifty-seven feet while he was in the act of crossing a distance barely sufficient to clear the horse and vehicle. If the horse was moving at a rate no faster than a walk, as the track is usually crossed, the train would move towards him, while in the act of crossing, more than five hundred feet. This fact accounts for the many accidents at such points. The person driving thinks he may cross because the train is a few rods distant.

"How compares the highest speed of the train with the velocity of sound? When the whistle is opened at the eighty rod 'whistle post,' the train will advance nearly one hundred feet before the sound traverses the distance to and is heard at the crossings. The velocity exceeds the flight of birds. The late Dr. J. L. Comstock, the well-known author of several philosophical works, informed the writer that he was recently passing through western New York when the train actually 'ran down' and killed a common hawk. The train was stopped, and the game so rarely captured was secured."

Locomotive Expenses.

The whole number of locomotives on the New York Central Railroad is 212, and the aggregate number of miles performed by them during the three months ending October last, was 1,011,908 miles. The total cost for repairs and running expenses in that period was $190,389 74, averaging 18.80 per mile. The fuel expense alone was 8.50 per mile; wood was used at $3 50 per cord, and no less than 24,587½ cords were consumed in the above mentioned period. The average distance run with one cord was 41.15 miles. The entire length of this railroad, with all its divisions, is 556 miles. Considerable quantities of pork are employed as a lubricating agent, no less than 2,930 pounds being used on this railroad in three months, together with 6,816 gallons of oil.

Heating Schools.

Of all the blessings that can be enjoyed by man, health is the greatest; and as it is the luxury of old age, it should be the birthright of childhood. Yet our present system of heating public schools with immense stoves, the flues of which are often hot enough to scorch the floors on which they stand, is prejudicial in the extreme; and, as every teacher knows, is productive of headaches, bleeding at the nose, and incapacity for study; it also lays the foundation of sickness, and deprives the little ones of the ruddy face, and physical strength to enjoy good out-door romps. Cannot some better system be introduced—hot water or steam? The School Commissioners should look to it if they hope to make men and women worthy the name from the pupils of the schools.

BALLS TO REMOVE GREASE.—Take soft soap and fullers' earth, of each half a pound; beat them well together in a mortar, and form into cakes. The spot on the cloth being first moistened with water, is rubbed with a cake, and allowed to dry, when it is well rubbed with a little warm water, and afterwards rinsed or rubbed off clean.