

flange of the slider or top ring by means of a circular wire.

Nor do I claim confining said wire in place by twisting its ends together in the usual way.

But I claim my method of confining the wire in the flange, viz., by means of a flange made tubular or with a groove and space formed to admit and receive the circular split ring of wire, as described and bent down laterally on the ring and between the spreaders or ribs as specified, the same not only causing the wire to be grasped between each two joints of the spreaders or ribs, but providing a smooth flange without any projections likely to tear or injure the cloth cover of the umbrella.

**MACHINE FOR SKIVING BOOT COUNTERS**—William Butterfield, of Boston, and Bradford Stetson, of Uxbridge, Mass., assignors to themselves and Elmer Townsend, of Boston, Mass.: We claim the combination and arrangement of the secondary or adjustable feed roller and skiving cutter with the driving and feeding shafts, and the primary or stationary feed rollers and skiving cutter, the whole being made to operate as specified.

**MACHINES FOR GRADUATING LINEAL MEASURES**—S. C. Hubbard, (assignor to C. C. Hubbard,) of Middletown, Ct. Antedated Dec. 16, 1856: I claim, in combination with dials for imparting the figures and transverse lines upon the rule, gages or points, arranged and held as described for marking the gage or longitudinal lines on the rule as described.

I also claim the pressure disk, D, with one or more indentations on its periphery corresponding to the knuckles of the joints of folding rules when this is combined with dials for imparting the figures and self-acting reverse motion, to bring it back after each impression of a rule to the precise point whence it started, substantially in the manner and for the purpose specified.

**STEAM PRESSURE GAGES**—J. H. Miller and John Kelley, (assignors to themselves and John Danner) of Canton, O.: We claim the bell-shaped end of the mercury tube, d, and the manner of fastening the gum elastic floor to the bottom of said bell-shaped tube, d, by being clamped between the glass, d, and the metal, P, P, thus securely protecting the mercury from air, steam and water; this we claim when arranged and combined substantially as set forth for the purpose specified.

**GAS STOVES**—Patrick Mihan (assignor to himself and Robert B. Pitts,) of Boston, Mass.: I do not claim arranging a gas distributing tube and an air and gas mixer between two concentric surfaces provided with air inlets arranged so that air may pass with gas through the perforations of the mixer or cap only, as my arrangement involves something more than this.

Neither do I claim an annular gas burner arranged between two radiators, and having passages for air to pass between it and each radiator, and to the flame that may be generated above the exit holes of said burner, as I employ an air and gas burner, and not a mere gas burner.

Nor do I claim simply making the air and gas mixer or cap in a conical form, nor do I claim combining with a gas burner an ascending and descending flue, one being concentric with the other, and whether the descending flue is either within or without the other.

Nor do I claim the construction of gas stoves as described on pages 86 and 87 of Webster's Encyclopedia, my invention differing essentially therefrom.

I claim arranging an annular gas distributing tube, G, a perforated or wire gauze mixer, I, two radiators, C and D, an air space within the radiator, C, and air inlet spaces, B E, the one leading air above, and the other below the surface of the mixer, substantially as described in this arrangement involving, inclining the gas mixer, I, and the radiator, C, in opposite directions with respect to one another substantially as described.

I also claim the arrangement of the secondary radiator K and its discharge tube M, with reference to the radiator, C, the open air space within the latter, and the chamber, F, and the air and gas burning apparatus disposed at the bottom of said chamber, as specified.

**SCREW WRENCH**—G. C. Taft (assignor to H. W. Mason) of Worcester, Mass.: I do not claim the mere addition of auxiliary screws to the wrench of the said Coes, and made with the face thereof reversed in pitch with respect to the pitch of those of the primary screws.

But I claim arranging the nut G, between the two male screws, F and K, in connection with applying the auxiliary female screw, b, and its support, I, with reference to the handle and shank, substantially as specified.

**PORTABLE STEAM SAWING MACHINE**—S. R. Wilmet, of Watertown, Conn., and R. G. Fairbanks, of Brooklyn, N. Y.: We claim attaching a portable steam sawing apparatus to the object to be sawed, by attaching apparatus at one side of the saw only, as set forth.

We also claim the combination of an adjustable live clamping apparatus with the portable steam sawing apparatus, the several parts of the combination being constructed and combined substantially as set forth.

We also claim combining the stock of a steam sawing apparatus with the mechanism for actuating the saws by means of feeding mechanism constructed and operating substantially as herein set forth, so as to feed the saw into the object to be sawed, while the latter remains stationary.

We also claim locking the saw, and the mechanism winging therewith, to the stock, in the manner set forth, so that the parts of the machine may be rigidly connected with each other, so as to facilitate their removal from place to place.

We also claim connecting the swinging members of a portable steam sawing apparatus to the stock at a point intermediate between the pivots and the extremity of the stock as set forth.

**LADIES' SKIRTS**—E. F. Woodward, of Brooklyn, N. Y.: I claim the employment of the spiral stiffener or cord for stiffening the skirt, &c., together with the saturation thereof in manner set forth, and for the purposes specified.

**FAUCETS**—D. N. B. Coffin, Jr., of Newton (Center), Mass., assignor to the Boston Valve Company: I claim the combination of the annular lifter or lifters guide and pin substantially as described, with or without the top incline for closing the valve shown in fig. 12.

I also claim pivoting the annular lifter or lifters at m.

**SPRING BED BOTTOMS**—George W. Dow, (assignor to himself and Walter F. French,) of Lynn, Mass.: I do not claim supporting a set of slats on springs arranged longitudinally in a bedstead or frame.

But I claim my improved spring bedstead or bed bottom, as made with two series of rests or bearers, BB, two elastic bands or belts, C C', and a series of transverse bars or slats, D D, arranged together, and in the bed frame, substantially as described.

**PREPARING LIQUID ROSE PINK**—John W. Perry, (assignor to James W. Gates,) of Boston, Mass.: I claim the combination of the ingredients described for producing a transparent liquid rose pink, to be used in imitating rose wood, &c., the same consisting of potash, ground red sanders wood, and gum shellac and water, mixed substantially in the proportions described.

**KEEPER FOR LOCKS AND LATCHES**—Andrew Patterson, of Birmingham, Pa., (assignor to J. H. Jones, of Pittsburgh, Pa.): I claim the employment, in combination with a blunt or round ended latch bolt in a double faced or reversible lock case of a keeper, the face of which is curved or made concave, in the manner substantially as described and set forth.

**KNITTED FABRICS**—Joseph Vickerstaff (assignor to Maria Landerberger, of Philadelphia, Pa.): I claim exclusively the production of a knitted fabric ornamented by the transposition of threads of different colors.

But I claim as a new article of manufacture a fabric knitted with threads of differing colors, and composed of two separate thicknesses, interlocked during the process of knitting, at any required intervals, by transposing the threads in such a manner that a knitted fabric may be produced, both sides of which shall present a plain uninterrupted surface of loops, and free from the loose unknitted threads common to other ornamental knitted fabrics.

**VENTILATING VAULT AND PLATFORM LIGHT**—John C. Wolvin, (assignor to George Peckham and himself) of New York City: I do not claim ventilating holes and a gutter for vault lights in itself, as these have before been used.

But I claim the manner specified of securing the glass sections in place by the combined operation of the rebate, I, and clamping plate, F, as specified.

I also claim the groove, 5, in the flange, 2, on which the glass rests, to retain a cord of india rubber or other elastic material or cement, and make a tight joint with the glass, as specified.

I also claim the gutter, 5, formed at the center, c, of the

radial bars, b, in combination with the perforated clamping plate, f, and pipe, g, as specified.

RE-ISSUES.

**LOCOMOTIVE TENDERS**—Ross and Thomas Winans, of Baltimore, Md. Patented May 23, 1854. Antedated May 9, 1854: We claim the tender with an upper and lower platform, in combination with and for the purpose of feeding with greater convenience the furnace of a locomotive steam engine, having upper and lower feeding holes, substantially as described.

**LOCOMOTIVE FIRE-BOX**—Ross and Thomas Winans, of Baltimore, Md. Patented May 9, 1854: We claim, in the construction of locomotive fire boxes, the downward and rearward inclination of the top or roof, in combination with the flat grate surface and the usual feeding hole or door, and with or without the fuel feeding boxes through the roof, as described.

**GUIDING LINE FERRY BOATS OR FLYING BRIDGES**—Wm. A. Jordan, of Thibodeaux, La. Patented August 18, 1856: I claim adjusting the boat, A, relatively with the cable or rope, x, by the means described, or by any mechanism, when said mechanism is so arranged as not only to effect the adjusting or turning the boat, but also to retain it when adjusted, for the purpose set forth.

[This is an improvement on an old and useful method of moving ferry boats, and consists in having adjustable devices for setting a boat more or less obliquely with a rope stretched across a river, from bank to bank, the boat being connected with the rope by traveling pulleys, and held in the proper position to be moved across the river by the force of the descending current. When the boat has made a passage across to one side, the devices are shifted to set it in proper position to make the return trip, making the water of the river the ferry motor.]

**FLOURING MILL**—Joseph Weis, of Bordentown, N. J. Patented Jan 29, 1856: I claim the tapering burr, F, when covered with steel plates, G, having teeth in disjointed lines, and oblique with the axis of the burr, in combination with the steel pieces, h, having also oblique teeth, but inclined in a contrary direction to those of the burr, and being dovetailed into projections cast to the shield, H, the said projections forming longitudinal grooves, I, running lengthwise on the cone and crossing the inclined dress, substantially in the manner and for the purposes set forth.

DESIGN.

**STOVES**—S. W. Gibbs, of Albany, N. Y.

ADDITIONAL IMPROVEMENT.

**CUTTER FOR BORING WHEEL HUBS**—Leonard S. Mearing, of Fall River, Mass. Patented October 4, 1853: I claim, first, an additional reamer in connection with the shaft, c, for the purposes set forth.

Second, I claim a serrated, notched, sickled or ragged edge of reamers, or as at y and w, for the purposes set forth.

The Missouri Lead Mines Again.

**MESSERS. EDITORS**—Permit me, through the columns of the SCIENTIFIC AMERICAN, to answer the many inquiries that have been made of me since the publication of my short note in your paper of the 9th ult. I presume all those who have written me on the subject are readers of your paper, and I therefore send you an answer to their inquiries.

I am by profession a physician, actively engaged in the duties of my calling, and in no way connected with the mining business. I had no speculation in view; my object was to direct the attention of mineralogists to the rich deposits of lead in this region.

The railroad alluded to is the south-west branch of the Pacific Railroad, which commences at St. Louis, and runs forty miles west to Franklin Depot, where it bifurcates; one branch leads up the Missouri river and terminates at the mouth of the Kansas river, on the western boundary of the State; the other branch runs through the counties of Laclede, Webster, Green, Lawrence, &c., and terminates in this county, it being bounded on the west by the Shawnee Indians. The river branch is completed to Jefferson City on the Missouri river; our branch is under contract to this place, and we think it will be completed to Massey's iron works by fall.

The general government gave to the State of Missouri the alternate sections of land extending back six miles on either side of the road, except where the land had been entered; in this case, they have the privilege of going fifteen miles on either side to get the quantity to make the six miles on either side.

The land where most of the lead has been discovered belongs to the railroad company, but no rent has yet been paid by the miners, as, by the terms of the grant, they are not allowed to dispose of the land until the road is finished to within twenty miles of the land proposed to be sold, so that the company, if they see proper, can sell their land twenty miles west of the finished work as they progress with it; but it is not expected they will sell any of the land until the road is completed, which, by the terms of the contract, will be four years from last December. The State has endorsed the bonds of the company for four and a half millions of dollars, and with the credit which the lands will give them, they will have ample means to finish the road to this place. Boonville on the Missouri river is the point to which we now haul our lead. Its price in St. Louis is six and one-half to seven cents per pound. Capital is wanted to pay for minerals as it is brought to the furnace. The smelters are generally responsible men, but owing to the great diffi-

culty of getting lead to the river their means have become exhausted. Mineral can now be bought for cash at from twelve to fifteen dollars per thousand.

The lead is found at from twelve to seventy-five feet from the surface. The machinery needed is for pumping out the water and hoisting the mineral to the surface of mines. I think, from the description I have seen in the SCIENTIFIC AMERICAN of A. L. Archambault's portable steam hoisting and pumping engine, that it would be the very thing needed in the mines.

The face of the country is generally good, and well adapted to agricultural pursuits. There is a great quantity of land yet vacant in this country, but speculators are busy entering it every day; in a few years it will all be gone. The government price is \$2.50 per acre for its reserved lands, six miles on either side of the road. A geological survey of these lands was made by Prof. Swallow; his opinion is that mineral will be found all through this and the adjoining counties.

H. S. CHENOWETH.

Neosho, Mo., June, 1857.

State Fairs for 1857.

The following State Agricultural Societies have designated the time for holding their exhibitions:—

Name.	Where held.	Date.
Indiana,	Indianapolis,	Oct. 4—10
Pennsylvania,	—	Sept. 29, Oct. 2
New York,	Buffalo,	Oct. 6—9
Ohio,	Cincinnati,	Sept. 15—18
Canada East,	Montreal,	Sept. 16—18
E. Tennessee,	Knoxville,	Oct. 20—23
Illinois,	Peoria,	Sept. 21—24
Iowa,	Muscatine,	Oct. 6—9
Kentucky,	Henderson,	Oct. 12—16
Maryland,	Baltimore,	Oct. 21—25
Massachusetts,	Boston,	Oct. 21—24
U. S. Ag't's'y,	Louisville, Ky.,	Sept. 1—6
Vermont,	Montpelier,	Sept. 30, Oct. 2
Virginia,	—	Oct. 28—31
W. Tennessee,	Jackson,	Oct. 27—30
New Jersey,	N. Brunswick,	Sept. 29, Oct. 2

The American Institute has taken a lease of the Crystal Palace for its next Fair in October, and will receive machines from July 5th up to the opening of the exhibition.

How Rain is Formed.

To understand the philosophy of this phenomena, essential to the very existence of plants and animals, a few facts derived from observation and a long train of experiments must be remembered. Were the atmosphere everywhere, at all times, at a uniform temperature, we should never have rain, hail, or snow. The water absorbed by it in evaporation from the sea and the earth's surface would descend in an imperceptible vapor, or cease to be absorbed by the air when it was once fully saturated. The absorbing power of the atmosphere, and consequently its capability to retain humidity, is proportionably greater in warm than in cold air. The air near the surface of the earth is warmer than it is in the region of the clouds. The higher we ascend from the earth the colder we find the atmosphere. Hence the perpetual snow on very high mountains in the hottest climates. Now, when from continued evaporation the air is highly saturated with vapor—though it be invisible—if its temperature is suddenly reduced by cold currents descending from above, or rushing from a higher to a lower latitude, its capacity to retain moisture is diminished, clouds are formed, and the result is rain. Air condenses as it cools, and, like a sponge filled with water and compressed, pours out the water which its diminished capacity cannot hold. How singular, yet how simple, is such an admirable arrangement for watering the earth?

Notes on Science and Foreign Inventions.

**SULPHUR AND THE GRAPE DISEASE**—For several years past, the grape vines of Europe have suffered from a peculiar disease, by which the wine product has been greatly reduced. This evil has been severely felt in France, where the annual value of the grape crop amounted before the disease to over 300,000,000 francs, but which has been reduced to less than one-half. It has been found that the application of flour sulphur to the vines three times during one season cures

the disease, and it is expected that its general application regularly pursued will bring all the vineyards of France back to their former fruitful condition. If the same disease should visit the vines on our continent, the above information will be very useful to those who cultivate the grape. The sulphur is mixed with some salt and water, and is applied with a brush.

**BALLASTING VESSELS WITH WATER**—An excellent plan of ballasting vessels with water is coming into very general use in England. It is principally adapted for iron vessels, but is also applicable to those of wood. A large iron screw steamer, 250 feet long and 35 feet beam, for carrying coal, was recently launched at Newcastle, England, and constructed for water ballasting, as all vessels which carry coal from Newcastle to London have generally no return cargo, and must put in ballast to make the trip. Sand, gravel and stones have heretofore been used for ballast; the loading and unloading of such involves considerable labor and expense, but water ballast is cheap and only requires to be pumped in and out of the hold, and this is easily done, especially in a steamship. The above steamer has engines of 150 horse power, and capable of carrying 1500 tons of coal. It has been found that the cost of carrying coal cargoes decreases in proportion as the size of the vessel is increased. This hint ought to be of some value to our Pennsylvania friends.

**WATCH PROTECTOR**—A device for protecting a watch or purse in the pocket has been invented by Robert Mair, of the Royal Engineers, England. It consists of a circular slip of metal fitted into the pocket, embracing the watch tightly by means of a spring, which the weight of the watch is sufficient to bring into action. A button attached to the bottom of the device in the pocket is connected with a secret cord or ribbon outside, which the wearer pulls, and releases the spring to allow the watch to be taken out when required. This appears to be a very simple safeguard against pocket-picking. It is stated that it holds the watch so firmly that it cannot be removed forcibly without tearing the pocket. There is an American patent by Ruggles, which, in addition to the above, makes a loud ringing sound when the watch is drawn from the pocket. We consider Ruggles' decidedly preferable. The article is manufactured at Fitchburg, Mass.

**PRINTING PRESS DRIVEN BY A COLUMN OF WATER**—In the town of Stirling, Scotland, the printing press of the *Observer* newspaper is operated by a column of water 450 feet high, conducted through a pipe only two inches in diameter, we are told, leading from the top of the rock on which the castle is built. The press is driven by a small water engine, the column of water to which is shut off and let on by a cock similar to that on the steam pipe of an engine. There are many situations in our country where a small high column of water could be applied to such like useful purposes, employing a small turbine wheel as the motor for applying the power. The press of the *Boston Traveler* is driven by the water of the Cochituate aqueduct, which is allowed to act on a rotary engine. The amount paid for water rent makes this more expensive than steam, but it greatly economizes space, a valuable consideration in the center of a city.

**POISON IN THE FINE LACE MANUFACTURE**—Our wealthy ladies who wear fine Brussels lace are ignorant of the sad fact, we believe, that in its preparation the poor female operatives often lose their lives by inhaling a poison employed in removing finger marks from it. The poison is the carbonate of lead, applied in the form of powder, in the finishing operation. A portion of this is inhaled by those who use it, and their health soon gives way. Good wages are generally paid to those lace operatives, but so unhealthy is the business—so fatal has the lead poison proven in its effects—that it is only a work of dire necessity to engage in it. It is a sad reflection that many a rich piece of lace worn by a lady has cost not merely a high price in money, but the life of a fellow being. Lace manufacturers have long endeavored to find a suitable harmless substitute for carbonate of lead, but hitherto in vain, we understand.