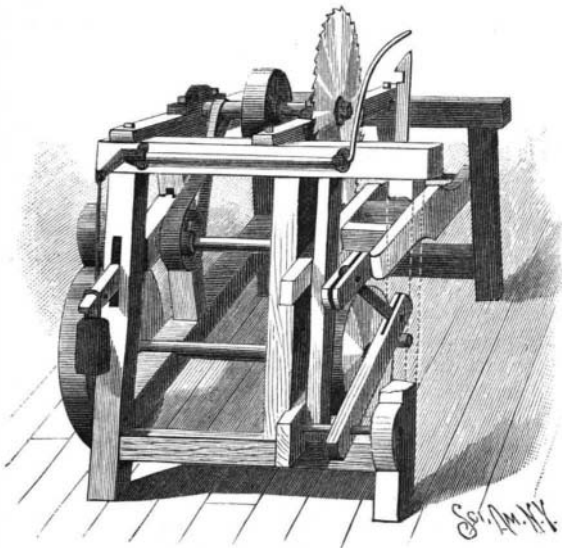


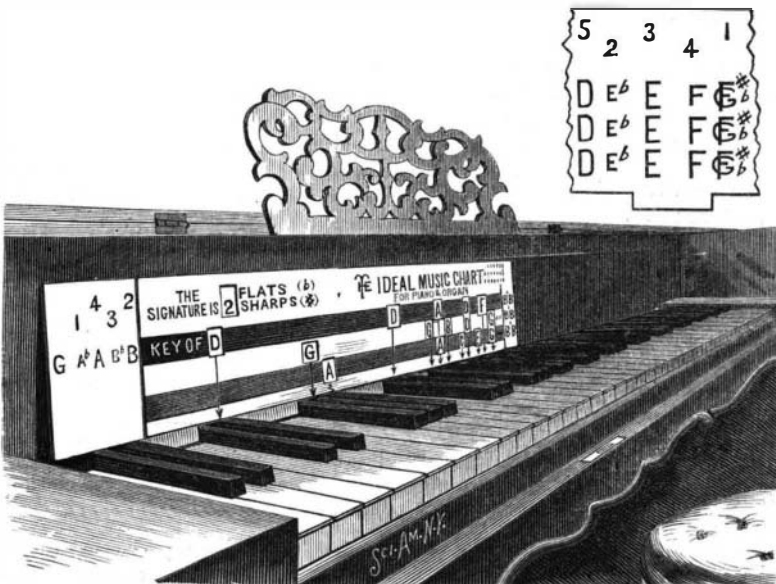
**IMPROVED FEED MECHANISM FOR SAWING MACHINES.**

A feed mechanism specially adapted for shingle or box sawing machines, and having a pivoted frame supporting the block carriage, with means for imparting a swinging motion to it, has been patented by Mr. Joseph W. Frank, of Emporia, Fla., and is illustrated herewith. The block carriage itself is not shown, and may be of any approved construction, but its pivoted supporting frame may be seen at the right in the illustration, a front extension therefrom passing between guides to prevent wobbling in its up and down movement. On the under side of the pivoted frame is a slotted arm, pivotally connected by a link with an arm fulcrumed on the main frame, the bottom edge of the latter arm being engaged by a friction roller held near the edge of a wheel secured to a transverse shaft in the lower front part of the main frame. There are apertures in the arms forming the pivotal connection through the link with the bottom of the pivoted frame, to increase or diminish the amount of throw given to the frame, by the required adjustment with the pivoted ends of the link. On the other outer end of the transverse shaft in the lower front part of the main frame is a friction wheel, the rim of which engages a friction pinion on a shaft above, operated by a crossed belt passing over the saw arbor, so that when the latter is rotated it also imparts motion to the shaft carrying the friction pinion. The inner end of the latter shaft is held in a bearing on the main frame, but its outer end rotates in a bearing on a pivoted arm, to which a weight is attached on the



FRANK'S CIRCULAR SAWING MACHINE.

free end, the outer end of this pivoted and weighted arm being also connected, through a link and transverse shaft on the top and front of the main frame, with a catch, whereby the arm may be held up so that the friction pinion rotating in a bearing thereon will be held out of contact with the friction wheel. When the saw arbor is operated, and this arm carrying the friction pinion is freed from the catch and held in its lowest position by the weight, the shaft in the lower front part of the main frame will be rotated, communicating an up and down motion to the pivoted frame carrying the block to be sawed, feeding the block upward on the saw. The block is of such length that when the pivoted frame is in its uppermost position, the saw has cut a shingle or board off of the block on the block carriage. When shingles are to be cut, the block is tipped by suitable mechanism, when the frame is in its lowermost position, to give the desired taper. To stop the motion of the feed frame, the operator has only to move the upwardly extending arm at the right into its catch, thus lifting the friction pinion out of contact with the friction wheel.



MASON'S MUSIC CHART.

**AN IMPROVED GATE.**

A gate that is adapted to swing or slide, and so constructed that it can be swung inwardly or outwardly, and slid back and forth, is illustrated herewith, and has been patented by Mr. Frank William Berning, of Ottawa, Ohio. It is mounted on a frame of iron rods,



BERNING'S GATE.

with a vertical side and inclined sides, and suspended from the hinge post through this frame. The outer pointed end of the frame has pivoted thereto an inclined bar or rod, which has a grooved roller at its lower forward end, upon which one of the lower bars of the gate is adapted to move, the upper end of this bar having perforations, with which the bent end of another bar is adapted to engage, the latter bar being pivoted to the side of the frame near the hinge post. By adjusting this rod in different perforations, the gate may be raised and held up in winter to clear the snow. The frame on which the gate is mounted has a grooved roller upon which one of the upper bars of the gate is adapted to move, and also a hook in which a lower bar is adapted to move, and which serves to steady the gate. To use this construction as a swinging gate, it is only necessary to slide it back sufficiently to have the latch clear the post. For further particulars with reference to this invention address Jos. Unterbrink, Ottawa, Ohio.

**AN IMPROVED MUSIC CHART.**

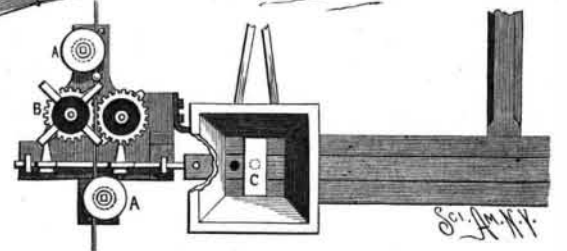
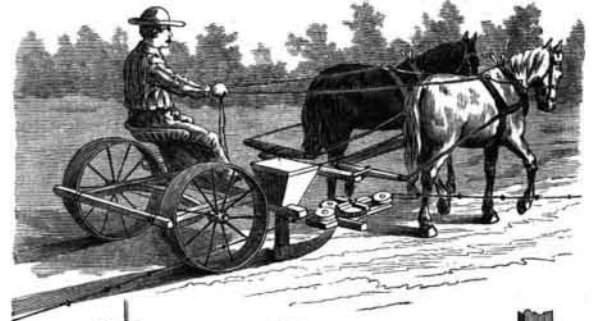
In our issue for January 21 last we gave an engraving of this invention, but as the arrangement of some of the letters was not quite as it should have been, we now present it again. It is a simple and efficient device for use in connection with pianos and organs, for transposing music from one key to another. It is illustrated herewith, and has been patented by Mr. Charles S. Mason, of El Modena, Los Angeles County, Cal. A card, which forms the body of the chart, is provided with three rows of letters, representing in three series the notes of the scale, as shown in section in the small figure. The letters represent the notes of the natural scale and sharps larger than the flats, while the flats are printed in red, so that when they are superposed upon black they may be readily distinguished. The card has projections upon its bottom edge adapted to fit into the wider spaces between the black keys of the keyboard to locate the chart with reference to the scale of the instrument, and is provided with appropriate indices and numerals representing the signatures. An apertured card, with three stripes of different colors, is arranged to slide over the other one, the apertures being in the order required for showing the letters of the different chords of the various keys, with an aperture also for exposing to view the figures on the rear card representing the signatures, the top line or color stripe representing the tonic or first chord, the second line the sub-dominant chord, and the third line the dominant chord. The chart, which only costs \$1.25, cannot be wrongly placed upon the instrument, and the rapidity and simplicity with which changes can be made from one key to another are obvious at a glance.

**Porcelain Shot.**

Under this name small white globules of porcelain are made in Munich. They are made to take the place of ordinary lead shot used for cleaning wine and medicine bottles, as porcelain is entirely free from the objection of producing lead contamination, which is often the result when ordinary shot is used. Their hardness and rough surface producing, when shaken, greater friction, adapt the porcelain shot well for quickly cleaning dirty and greasy bottles, and as they are not acted upon by acids or alkalis, almost any liquid can be used.—Rundschau; Am. Jour. Pharm.

**IMPROVED CHECK-ROW ATTACHMENT FOR PLANTERS.**

A check-row attachment for planters, designed for use in connection with a rope or wire secured in the field in the usual manner, has been patented by Mr. Isaac Jackson, of Kingman, Kansas, and is illustrated herewith, the smaller figure showing a plan view of the mechanism at one side of the machine. In the bottom of each seed box is an aperture registering with a downwardly extending tube, reaching into the furrow opener or runner of the planter, while a bar held to slide transversely on the bottom of each seed box is provided with apertures to register or disconnect simultaneously with the apertures in the bottom of the seed boxes. Each outer end of the bar sliding transversely in the bottom of the seed boxes is connected by a rod with a check-row attachment, the mechanism of which is worked to discharge the seed at regular intervals by balls attached to the rope or wire secured in the field, this rope or wire being guided through the attachment by the pulleys, A A. The rod connected with the sliding feed bar has slots in which lugs are held adjustably to be engaged alternately by arms on the under side of the gear wheels, B, rotating on studs secured to the frame of the check-row attachment. On top of one of the gear wheels are secured four radial arms, each arm having a slot in its outer end, through which passes the rope or wire, the knots or balls thereon being of a size sufficient to engage the slotted ends of the arms, thereby moving each arm along as each ball passes through, and moving alternately inward and outward the rod connected with the sliding feed bar, whereby the seed is fed through the tube and into the runner to be deposited in the furrow.

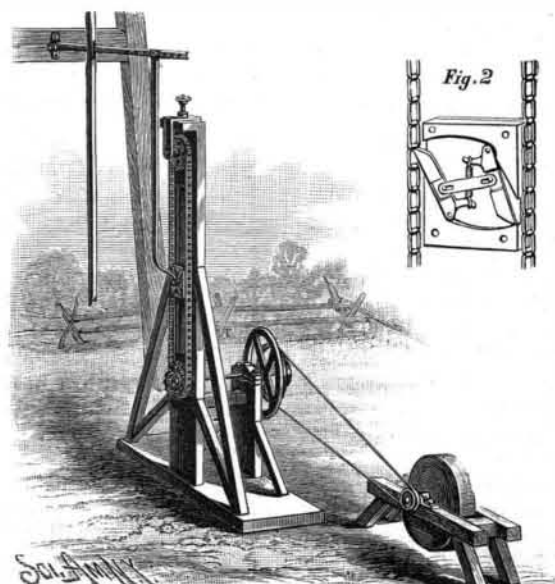


JACKSON'S CHECK-ROW ATTACHMENT FOR PLANTERS.

The stroke of the feed bar and rod can be increased or diminished by adjusting the lugs on the latter, so that it will require a longer or shorter time for the apertures of the feed bar to register with those in the bottom of the seed box.

**AN IMPROVED WINDMILL MOTOR.**

A motor adapted more particularly for connection to a lever operated by the pump rod of a windmill is illustrated herewith, and has been patented by Mr. George C. Hunter, of Chebanse, Ill. A main post or upright is fixed to a suitable base, and at one side of this post is fixed a shorter one, supporting one bearing of a main driving shaft, carrying on its outer end a fly wheel and a couple of belt pulleys, through which power may be conveyed for use as desired, the other bearing of the shaft being in the main post, and carrying in front of this post a cone of chain wheels or pulleys. There is on top of this post a metal saddle, the pendent arms of which afford bearings for a short



HUNTER'S AUXILIARY MOTOR FOR WINDMILLS.

upper shaft carrying a sprocket wheel, from which a chain belt passes downward to one of the cone pulleys on the main driving shaft, the saddle being adjustable by a screw at the top, whereby the tension of the belt may be adjusted as desired. Ranging vertically on the front face of the main post is fixed a metal guide plate, on which slides up and down a pawl-carrying head, on a central pin of which head is fitted the lower end of a pitman rod, the upper end of the rod being connected to the outer end of a lever fulcrumed to a suitable support on the windmill tower, and connected with the vertically movable pump rod, driven directly from the windmill in any ordinary or approved way, of which the details are not shown. The pawl-carrying head is shown in Fig. 2, the pawls being pivoted to diagonally opposite parts of the head in such way that they have a solid bearing when they alternately engage the belt to drive it as the head reciprocates. Each pawl has a projection at its pivoted end, a spring connecting the projections of both pawls, and acting normally to throw the free ends of the pawls into engagement with the cross bars of the link belt. Each pawl is also provided with a face recess in which is fixed a pin that enters a slot at one end of a metal link, the springs holding the pawl pins at the outer ends of the link slots, so that when one of the pawls engages one side of the link belt, the other pawl will be disengaged from the other side of the belt, each pawl alternately coming into engagement as the pitman moves up and down, thereby imparting continuous rotary motion to the driving shaft. The speed of the latter may be regulated by setting the pin which connects the pitman with the lever operated by the pump rod at a greater or less distance in or out from the fulcrum of the lever.

#### The Perfected Phonograph.

The improvements in the phonograph have now been carried to such a degree of perfection that the instrument is practically ready for general introduction. Undoubtedly means will be hit upon from time to time to enhance the value and efficiency of the phonograph, but it stands to-day, in our opinion, far more practical and complete than was the type writer when first brought out and placed on the market. Back of all the tall talk and exaggeration on the subject, for which the daily press is chiefly responsible—certainly not those who are introducing it—is a machine of admirable performance, whose utility is so wide and various that it is hard to determine just which work will give it the largest fields of employment. And then, too, aside from the practical use, is the wonder—for wonder it is—that not only can the human voice be registered, but it can be duplicated in countless electrotypes. We may be wrong, but not greatly, in believing that this century will be memorable above others because it is that which first preserved articulate speech for after time. All poetry, of every age, is full of the yearning, one of the deepest in human nature, for the voice whose gentle greeting could be heard no more, and yet this tender sentiment will be gratified, and each elusive tone and accent now has conferred on it a perpetuity that is not an attribute of even the graven stone or brass.—*Electrical World*.

#### A Good Word for Leghorns.

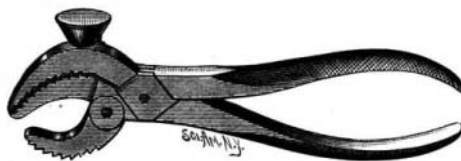
There is no better fun in the world than keeping chickens. From Boston—and all fads originate there, says a contemporary—the hen fever is sure to spread over the South and West. If you catch it, pay attention to these few simple rules: Buy Leghorn hens—no others lay as well as these Italian fowls—and feed them liberally with a variety of grains. Give them all the scraps from the table in a hot mess each morning, with plenty of red pepper and burnt bones. Keep their quarters clean and well ventilated, and be sure that they are warm in winter. Water they should have in plenty. Herein lies the essence of all poultry wisdom. Act upon it, and you will have—with twenty hens and a couple of roosters—enough fresh eggs to supply your household all the year round. And, after all, what delicacy is there that equals an egg taken warm from the nest and popped into boiling water for one's breakfast?

THE Thursday's lecture on April 19, on "Public Health in India," was delivered at the Parkes Museum, London, by the Hon. Mr. Justice Cunningham, who spoke as the representative of an association which has for some years past made the public health in India its especial care. The lecturer stated that the annual death roll in India was probably nearer seven or eight millions than five, which was the official return for the year 1885. The following statement shows how largely the death rate is contributed to by diseases which we here recognize as preventable:

TOTAL DEATHS IN 1885.	
Cholera.....	385,928
Small-pox.....	80,690
Fevers.....	3,396,239
Bowel complaints.....	293,638
Injuries.....	83,282
Other causes.....	937,903
Total.....	5,177,600

#### AN IMPROVED LASTING TOOL.

A special form of pinchers for shoemakers and saddlers, which will not tear or disarrange the thinnest insole, is illustrated herewith, and has been patented by Mr. Joseph R. Jacques, of Hancock, Mich. On the under side of the lower jaw of the tool are ears, between which is pivoted a lip that is curved upwardly and forwardly, to contact, in use, with the lower jaw, the under surface of the lip being corrugated to prevent slipping when the lip is utilized as a fulcrum in using the tool. The lip thus forms a rocking fulcrum for the tool, and when not employed falls down out of the way. Differing from a rigid lip, which would be liable to slip and draw the inner sole from the upper, the pivoted lip remains stationary when in use, and



JACQUES' LASTING TOOL.

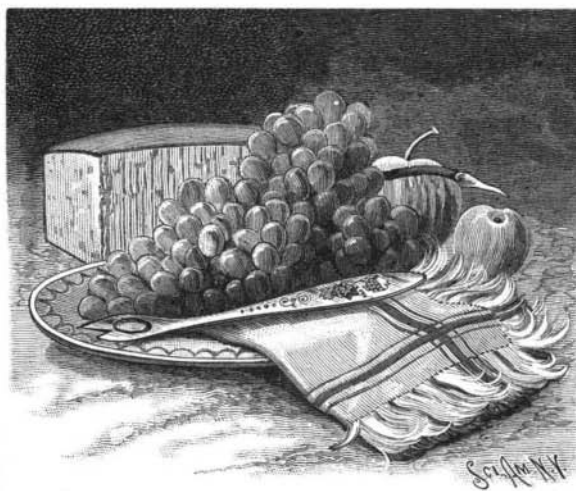
facilitates drawing the leather quickly in the direction of the middle of the last. Upon the outer surface of the upper jaw is a projection adapted for use as a hammer.

#### Projection of a Globule of Liquid in the Spheroidal State.

Instead of heating the globule in a metallic capsule, polished so as to give perfect reflection, Professor P. Colardeau recommends, in Buguet's *Journal de Physique*, the use of the ever brilliant surface of mercury as the mirror. The mercury is placed in a porcelain capsule, and the whole is heated on a water bath to a temperature of 212° Fah. Next a drop of ether is allowed to fall upon the mercury, and from any source of light a beam is directed upon it by means of a prism arranged for total reflection. The reflected beam of light is caused to fall upon and pass through a convex lens or regular objective, and thus there is produced upon the screen a sharply defined image of the drop. The mercury retains its heat long enough for convenient observation of the projection of the phenomenon.—*Revista Scientifico-Industriale*.

#### IMPROVED UTENSIL FOR EXTRACTING GRAPE SEEDS.

A simple and serviceable implement for extracting the seeds from grapes before eating them, and which may be made in quite ornamental patterns, is shown in the accompanying illustration, and has been patented by Sarah E. Toucey, of New York City (P. O. box 2425). It has a flat pick, with a sharpened point on its end in line with the handle, a cavity in its top face, and a cutting blade projecting laterally from the pick, its point forking out therefrom a short distance within the point of the pick. The top of the grape can, with this utensil, be quickly sliced off by the cutting blade, so as to uncover the grape seeds, when, by



TOUCEY'S GRAPE SEED EXTRACTOR.

introducing the flat pointed pick beneath them, they can be readily received in the cavity and removed without injuring the edible part of the grape.

PEROXIDE of hydrogen, according to Dr. Love, of St. Louis, is a most valuable agent in the treatment of diphtheria, ozæna, and in all cases of cancerous ulceration and of suppuration or necrosis. He employs it in a solution containing 0.5 to 3 per cent, using most frequently, however, a strength of one per cent, diluting the commercial "ten volume" peroxide with two or three times its volume of water. Of its value in clearing away and effectually deodorizing the decomposing exudate in cases of diphtheria he speaks in the most emphatic terms, and he regards the remedy also as one of great usefulness in scarlet fever, whooping cough, and other specific diseases.

#### On the Detection and Estimation of Magenta in Orchil and Cudbear.

BY CHRISTOPHER RAWSON, F.I.C., F.C.S.

Various methods have been proposed from time to time for detecting the presence of magenta in orchil and cudbear. But on account of the difficulty hitherto experienced in completely separating orsein from salts of rosaniline, there are few, if any, published methods which are sufficiently delicate to detect very minute quantities of magenta in these coloring matters. H. Crossley\* precipitates the magenta by ammonia, and E. Knecht† makes use of caustic soda for the same purpose, but since rosaniline is appreciably soluble in alkalies, a small quantity of magenta would be entirely overlooked by the employment of either of these methods. Liebmann and Studer‡ saturate a solution of the orchil or cudbear with sulphurous anhydride, and after filtering, add either acetone or aldehyd, when, if magenta be present, the color of the liquid changes from red to violet. They state that by this reaction  $\frac{1}{10}$  per cent of magenta in cudbear can be detected. In making use of this process, on account of the cudbear which remained in solution after saturating the liquid with sulphurous anhydride, I have been unable to detect such a small quantity.

The method which I have to propose is based upon the complete precipitation of the coloring matter of orchil and cudbear in an aqueous and alcoholic solution by basic acetate of lead, followed by an excess of ammonia. Magenta, under the same conditions, remains in solution.

From 1 to 2 grammes of cudbear (or an equivalent amount of orchil liquor) are boiled with 50 c. c. of alcohol, and afterward diluted with 100 c. c. of water; 15 to 20 c. c. of a strong solution of basic acetate of lead (sp. gr. 1.25) are then added, followed, after stirring, by a similar quantity of strong ammonia. The mixture is filtered, and if the amount of magenta present is to be estimated, the precipitate is washed with a solution containing 1 part of ammonia, 5 parts of alcohol, and 10 parts of water; otherwise the washing may be neglected. With pure cudbear the filtrate is quite colorless; if magenta be present it is either colorless or pink, according to the amount of ammonia present in the solution. The liquid is then acidulated with acetic acid, when the presence or absence of magenta is at once made apparent; in the case of pure cudbear or orchil the solution remains colorless, whereas, if a salt of rosaniline be present, the well known color of magenta is immediately developed. If further proof be wanting, a small piece of worsted yarn may be dyed in the solution and afterward tested in the usual way with such reagents as hydrochloric acid, caustic soda, and a mixture of hydrochloric acid and stannous chloride.

By means of this method I have been able to detect with certainty 1 part of magenta in 100,000 parts of cudbear.

For determining the amount of magenta present, I make use of a colorimetric process. A standard solution of pure magenta is prepared so as to contain  $\frac{1}{10}$  milligramme per c. c. It is acidulated with acetic acid in order that it may be under the same conditions as the solution to be tested. The latter is made up to a known bulk, say 250 c. c. (or, if magenta present be very small, concentrated to 100 c. c. and the whole taken for estimation), and an aliquot part run into a Nessler tube and diluted to 100 c. c. The standard solution of magenta is then run from a burette into a second cylinder in such quantity that the depth of color is equal to that in the first, as in the case of Nesslerizing ammonia. The amount of magenta present in the sample of cudbear or orchil under examination can be then readily calculated. In place of Nessler tubes the colorimeter or Lovibond's tintometer might be used with advantage.

It will no doubt be apparent from what I have already stated that this method is capable of detecting very much smaller quantities of magenta than the manufacturer of cudbear would ever think of using for the purpose of adulteration. But as the amount present can, at the time, be easily and readily estimated, there is little danger of genuine cudbear which may have become accidentally contaminated with a trace of magenta being pronounced sophisticated.

In a valuable paper on the "Detection of adulterations in orchil and cudbear," F. Breiul§ employs basic acetate of lead for detecting magenta and other basic coal tar colors. Some time previous to the publication of that paper, however, I tried the same reagent at the suggestion of my friend Dr. E. Knecht, but a considerable amount of cudbear still remained in solution, and it was only by adding an excess of ammonia or soda that it was completely precipitated.—*Chemical News*.

THE Bank of England is the most extensive banking institution in the world. It employs over 1,000 clerks, and its buildings cover 8 acres.

\* *Journal of the Society of Dyers and Colorists*, vol. ii., p. 23.

† *Ibid.*, vol. ii., p. 58.

‡ *Journal of the Society of Chemical Industry*, vol. v., p. 237.

§ *Mitt. d. Techn. Gewerbemuseums in Wien*, 1887, 37.