

NEW STOVE ATTACHMENT.

The engraving shows an improved attachment for cooking stoves recently patented by Mr. James L. Wilson, of Calhoun, Ga. The object of the invention is to increase the heating power of the fuel by supporting boilers or kettles so as to expose more of their surface to the action of the fire.

The engraving shows the attachment applied to an ordinary wood or coal stove having the usual oblong orifice for receiving a clothes boiler or other heating vessel. The invention consists of a hollow oblong metallic box resting on the stove over the boiler holes and having its lower end open. In the top of this box is an opening closed by ordinary stove hole plates and fitted to the usual furniture of the stove. The engraving shows two pots or kettles suspended by the ears; of course any other heating or cooking vessel can be suspended in the same way. It will be seen that nearly the entire body of the vessel is received by the box and subjected to heat, so that the heating is quickly effected, saving both fuel and time.

Further information may be obtained by addressing the inventor as above.

Malonic Acid.

This acid was discovered in 1858 by Des-saignes, who obtained it by the action of bichromate of potassium on malic acid. In 1864 it was obtained synthetically by Hugo Mueller and by Kolbe. Ed. Bourgois has recently improved upon all the previous methods, and thus describes his method in *Bulletin de la Société Chimique de Paris*: 100 grammes of chloroacetic acid was dissolved in twice its weight of water, and the solution saturated with about 110 grammes bicarbonate of potassium. To this was added 75 grammes of pure pulverized cyanide of potassium. When this had dissolved he heated it carefully on a water bath; a brisk ebullition took place, accompanied by the evolution of heat. The liquid, at the close of the operation, was perfectly colorless. Double the volume of concentrated hydrochloric acid was added, the precipitated chloride of potassium removed, and the liquid saturated with a current of hydrochloric acid gas, an operation attended with a considerable elevation of temperature. More chloride of potassium is formed, and some chloride of ammonia, which was deposited on cooling. They are received on an asbestos filter. The liquid was evaporated on a water bath, the residue extracted with ether, which yielded on evaporation 70 grammes of perfectly pure malonic acid.

IMPROVED CATTLE PEN.

The engravings show a portable cattle pen made in sections that may be readily transported, and these sections are provided with hinged sides so that they may be easily joined together, forming a series of connected pens.

Fig. 2 is a plan view showing the manner of connecting the sections together. Each section consists of a quadrangular fence composed of vertical posts and horizontal rails or stiles. If desired, vertical palings may be employed instead of horizontal rails or bars. The sections are each provided with a trough, F, which is hinged or pivoted so that it may be turned up out of the way when not in use. Each section is provided with gates, D, on one or more sides, divided in the middle and arranged to swing outward. In the pen shown in the engraving the section, A, has two pairs of gates on two opposite sides, and the sections connected with it have gates on only one side.

The sections may each be used separately as a small pen, or they may be connected together to form a large inclosure. In the latter case the section, A, is arranged in the middle, with its gates on opposite sides opened outward, and the sections, B and C, are placed at the ends, with their gates, G, opened outward, so as to meet the gates of the middle section. The gates are connected to each other by means of the hooks and staples, which are also used for fastening them when closed.

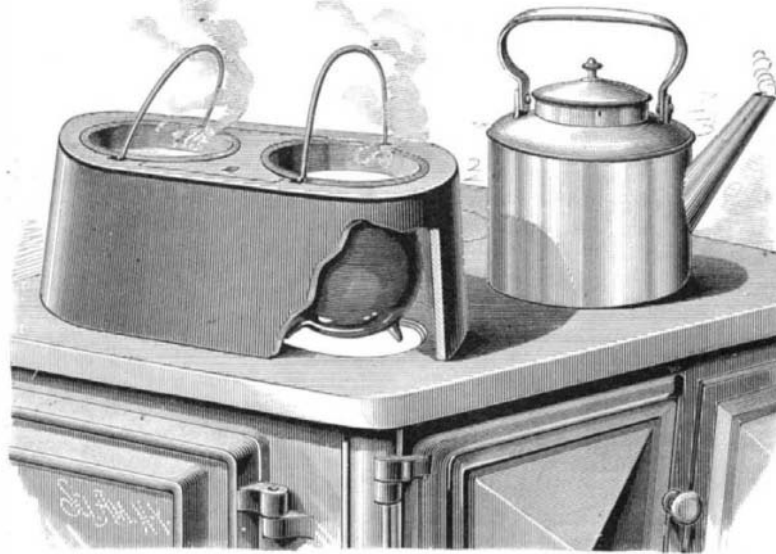
This invention was recently patented by Mr. John C. Chew, of Logan, Iowa, who should be addressed for further information.

The Milling Industry in America.

Mr. Josef J. van den Wyngaert, who was commissioned by the Prussian Government to make a report concerning the Millers' Exhibition in Cincinnati, is said to have expressed the following opinions on the American industry of milling: In the different mills he had visited in the Eastern part of the United States he had found many excellently constructed, but also many primitive ones, built 30 or 40 years ago.

America had undoubtedly been the most advanced country on earth in regard to milling, and when anything was said at that time about American mills in Europe, as a matter of course only the best and most excellent ones were meant. Since then things have changed. While

America, as well as England and France, had come to a standstill, Germany and Austria had excelled remarkably in the progress of this branch of business. The construction of mills in these two countries is to-day much better than that of American mills, and it was only in the last few years that America had made efforts and adopted the improvements of the Germans and Austrians, and taking them for a basis had made further progress. Thus the roller system, for instance, for the grinding of grain, had been transplanted from Germany to America. We had first met with it in Naples, and introduced it into Germany in 1874, from whence it had only

**WILSON'S STOVE ATTACHMENT.**

in the very last years found its way into America.—*Oesterreichische Ungarische Mueller.*

Method of Determining the Fatty Acids Contained in Oils.

M. Carpentin takes a small flat-bottomed flask or a medicine phial holding about 250 c.c. Into this phial are measured 50 c.c. of the sample of oil, and 100 c.c. of alcohol at 90 per cent, and 3 or 4 drops of tincture of turmeric are added. The phial is then corked and violently shaken. The phial is then placed under a Mohr's burette containing a solution of 40 grms. pure sodium hydrate per liter of water.

As 40 grms. soda saturate 282 of oleic acid, 1 c.c. of the liquid, containing 0.04 gm. soda, corresponds to 0.282 gm. of oleic acid. If another fatty acid has to be determined this number is modified accordingly. The alkaline

of color, and add more hard drying varnish to whatever color is left, and apply with the same brush. Let this stand until dry, when rub down with fine pumice, and apply second coat with more hard drying added. Each coat of rubbing should have some of the white added. Place four coats on, and on the last coat, instead of using fine finishing varnish, you may use same as under coats and polish on it.

Polishing a body is very difficult and tedious, and a large number of our painters know very little about it. When the last rubbing coat is on, let stand for two weeks if possible, and rub with fine pumice, careful not to rub through. Wash clean and chamois dry. Next, rub with rotten stone and sweet oil, with a piece of clean chamois, leaning very heavy, but careful not to heat the varnish. Should the varnish become warm under the rag, stop until cooled.

When the rubbing is finished, sprinkle flour or pulverized slippery alum over the job, and it will remove any particles of oil or moisture that may remain. Most painters prefer flour; this can be taken off by using camel hair duster. After dusting, take a silk handkerchief and rub lightly, leaving your job white and clean. If properly cared for this body will outwear some of our best oil-coated jobs, with no risk of its turning yellow, and seldom cracks, unless sufficient time was not allowed between coats.—*Carriage Monthly.*

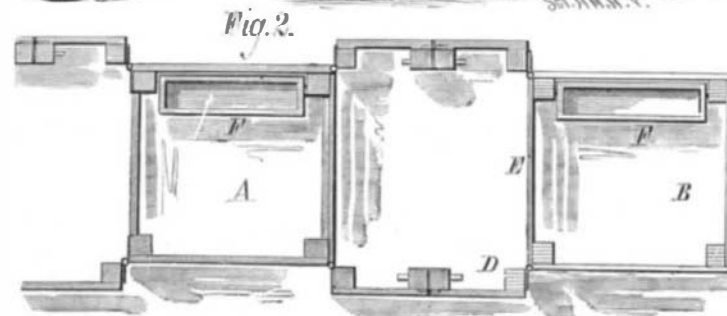
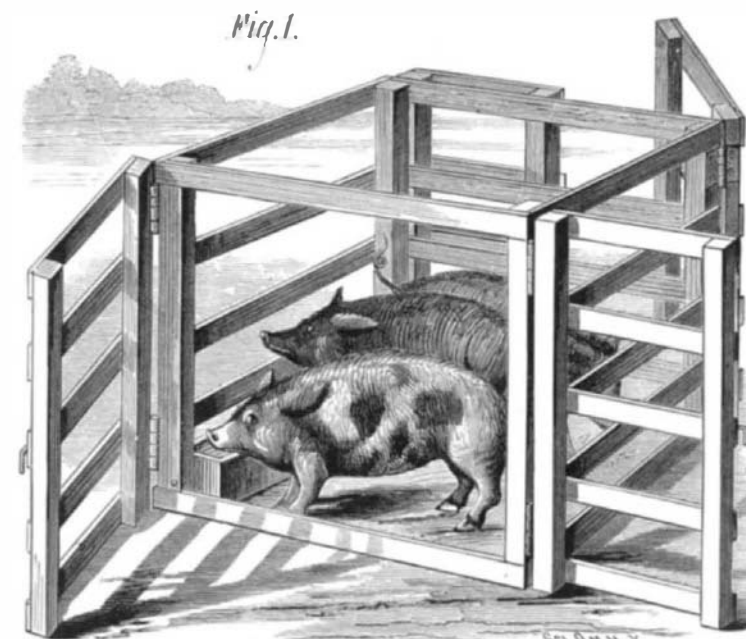
To Distinguish Artificial Honey from Bees' Honey.

We have long been aware that much of the honey sold in this country was innocent of any relationship with bees or their work, but we had hoped that the Swiss were more fortunate, that the famous Alpine honey was what it claimed to be. We learn from the *Swiss Bee Journal* (*Bienenzeitung*) that this is not the case, and that not only is glucose the adulterant, but also common molasses and sirup.

Dr. Planta-Reichenau says that the consumption of honey in Switzerland is so enormous that genuine bees' honey cannot be procured in sufficient quantity to meet the demand, hence an artificial product, called "table honey," is extensively employed. In the manufacture of this artificial honey starch sirup and colonial sirup are chiefly employed. The former is imported from France under the name of "glucose cristallisée," and is used for the finest quality of table honey, while the poorer and cheaper kinds are made by mixing it with cane sirup or molasses. Water, flour, and starch are seldom added because so easily detected; the same is true of glycerine.

A determination of the amount of ash does not suffice to distinguish it from real honey unless it is made entirely from best beet or cane sirup.

The specific gravity furnishes no better criterion of its genuineness. Adulteration is more easily detected by mixing it with alcohol. A solution of 20 parts honey in 60 of water, when mixed with alcohol, gives a heavy white precipitate of dextrine, if glucose has been added, while natural honey only becomes milky under the same circumstances. The safest method is to determine the sugar. The grape sugar is determined directly in a weighed quantity of honey; an equal weight of the same honey is boiled with two per cent sulphur

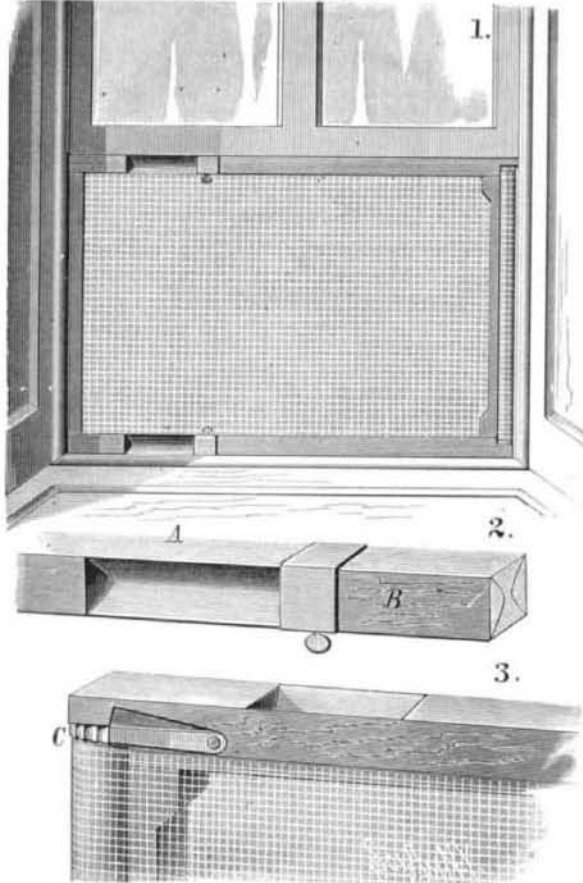
**CHEW'S CATTLE PEN.**

liquid is carefully dropped into the phial, which is shaken. When a red coloration appears it is corked, agitated for a considerable time till the yellow color reappears, the alcohol having extracted a fresh quantity of acid out of the oil. These operations are continued until the red color becomes permanent. The number of c.c. and the fraction of a c.c. consumed are then multiplied by 0.282 gm., in order to find the quantity of oleic acid present in the sample examined.

ric acid, and the sugar determined after inversion; finally, the dextrine is determined in a third portion by precipitation with alcohol. The difference in the quantity of sugar found before and after inversion is so great as to furnish a certain method for distinguishing natural and artificial honey. He says that the quantity of dextrine will be proportional to the difference in sugar found before and after inversion, but this is not always true, as some glucose contains no dextrine, and the composition of glucose depends on the method of its manufacture.—*Industrie Blaetter.*

NOVEL WINDOW SCREEN.

The engraving shows an extensible window screen that can be readily adapted to any window, and at the same time



JOSEPH'S WINDOW SCREEN.

is little if any more expensive than screens of the ordinary kind. It is as strong when extended as when closed. The frame of the screen consists of end bars and side bars, the latter being made in two pieces, A B, which are tongued and grooved together, as shown in Fig. 2.

A metal band surrounds the two bars, being attached to the bar, B. A screw passes through this band and enters one of several holes in the bar, A. At one end of the screen frame a roller is journaled in the side bars, B. The netting is attached to the end of the frame opposite the roller and wound on the roller, so that the frame is covered and the surplus wound on the roller.

On the ends of the roller are fixed ratchet wheels, C, which are engaged by spring pawls attached to the bars, B, hold the roller, and the frame prevented from collapsing by the strain of the netting. By this construction a strong and durable extensible screen frame is produced. The side bars are made of uniform size and equally strong throughout. They offer no obstruction to the light and are applicable to all windows.

For further information apply to Mr. John Joseph, 162 Broadway, New York city.

A NOVEL BLIND.

An entirely novel article in the way of window blinds is shown in the annexed engraving. The movable slats consist entirely of glass, either plain pure white or colored any desired tint and cut. The slats have no staples or rods to operate them or interfere with the entrance of light. Each slat has formed on it at one end a small pulley, around which a cord passes which operates all of the slats simultaneously.

For inside shutters these slats are exceedingly well adapted, as they may be of glass, colored to match the carpets and upholstery.

Of course curtains and shades are wholly unnecessary where this blind is used, and it admits of having any desired color of light in the room. It affords good ventilation and prevents the entrance of mosquitoes and flies. It never needs painting, it is always fresh and new, and is ornamental rather than otherwise. Considering its durability and elegance this blind is not expensive. The slats may be cut and engraved, increasing its beauty to any desired extent, and it affords an efficient protection against burglars.

It effectually excludes vision from the outside, while it offers no impediment to the entrance of light, and the light which enters is so softened and diffused as to be incapable of injuring the eyes, or of fading delicate colors

in carpets and furniture. The engraving shows the face of a portion of a blind having glass slats in Fig. 1, and Fig. 2 is a vertical transverse section showing the form of the slats and the relative size of the glass pulleys.

This novelty is manufactured by the Corning Glass Blind Company, Corning, N. Y., who should be addressed for further information.

Liquefaction of Ozone.

At a recent meeting of the French Academy, MM. Hautefeuille and Chappuis announced that they had liquefied ozone. These chemists have been able to ozonize oxygen to a greater extent than has hitherto been done, by passing the silent discharge through the oxygen at a low temperature. The tube containing oxygen was immersed in liquid methylic chloride, which boils at -23° . After being submitted to the electric discharge for fifteen minutes at this temperature, the oxygen was conducted into the capillary tube of a Cailletet's apparatus, the temperature of which was maintained at -23° .

After a few strokes of the pump the gas in the tube appeared azure blue; as pressure increased the depth of color likewise increased, until under a pressure of several atmospheres the ozonized oxygen appeared dark indigo blue. The pressure was increased to ninety-five atmospheres, and was then suddenly removed, whereupon a mist, indicating liquefaction, appeared in the capillary tube.

The stability of a mixture of oxygen and ozone rich in ozone appears to be chiefly dependent on the temperature. If such a mixture be rapidly compressed at ordinary temperatures, a considerable amount of heat is evolved and the gas explodes.

Ozone, say MM. Hautefeuille and Chappuis, is, therefore, to be placed in the category of explosive gases.

Berthelot has shown that the transformation of oxygen into ozone is attended with absorption of heat; the stability of products of endothermic reactions is, as a rule, increased by decreasing temperature.

Ozone is much more easily liquefied than oxygen; the latter must be compressed under 300 atmospheres at about the temperature of -29° before sudden removal of pressure succeeds in producing liquefaction.

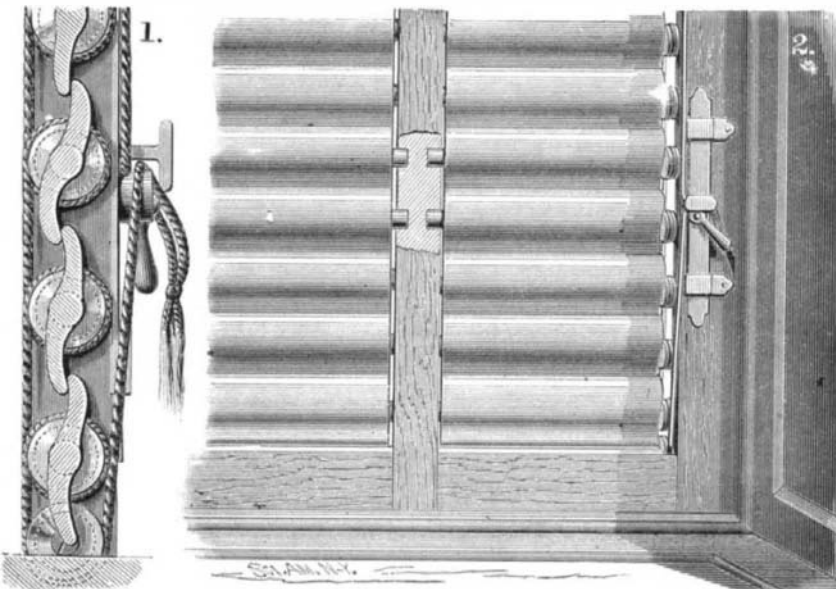
We have thus the existence through a large range of temperature and pressure of two allotropic forms of the same element, each with distinctly marked chemical and physical properties. We know that the molecule of oxygen has a simpler structure than that of ozone; the substance of simpler molecular structure is capable of existing through a much more extended range of temperature and pressure than that of more complex structure. Under special physical conditions it seems possible that new allotropic modifications of various elements might be produced.

The marked differences in color, and in temperature of liquefaction, between oxygen and ozone, furnish another illustration of the close connection which exists between the "chemical structure" and physical properties of substances; a different "linking," even of similar atoms, being evidently associated with distinctly different physical properties.

MM. Hautefeuille and Chappuis will doubtless soon be able to furnish more details of the properties of this most interesting substance, liquid ozone.—*M. M. P. M., in Nature.*

Crystals of Chromium Sesquichloride.

M. A. Mengeot allows hydrochloric acid to act upon potassium bichromate dissolved in water. If the solution is allowed to evaporate for about ten months the bottom of the vessel is found lined with deep violet crystals of chromium sesquichloride, but among these large violet crystals are some small green crystals of a salt of chromium. According to all authorities the green salts are only formed at 100° ; they are not crystalline, and they gradually pass into the violet condition. But the production of these green crystals takes place at common temperatures, and they have remained green for more than two years.



GOFF'S GLASS BLIND.

AN IMPROVED CHURN.

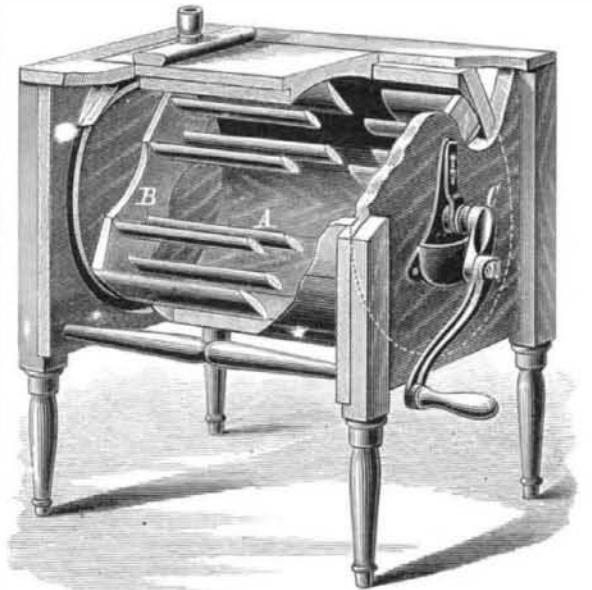
The engraving represents an improved rotary churn having a cylindrical body, whose inner surface is made continuous and unbroken, so that the dasher may revolve in contact with it and clear it of adhering cream. The dasher, A, is of peculiar construction, having blades set in the end pieces, B, so that they alternate in position, and when in motion give an undulatory movement to the cream, which thoroughly agitates it without breaking the globules.

With this construction the entire body of the cream is uniformly acted upon and converted into butter without loss, and the butter produced will be of a uniform quality.

Besides the features already described the dasher has a bearing at each end provided with a cup for catching any cream that may find its way through it around the shaft.

The crank is held in place by a plate, C, which enters a groove in the shaft, and is held in place by set screws.

The cylindrical body of the churn is held together by metal straps drawn together at the bottom of the churn by tangent screws.



MURCH'S CHURN.

This churn is easily taken care of, and is said to be thoroughly efficient. It is the result of a number of years' study on the part of the inventor, and it possesses points of novelty and usefulness that will be understood and appreciated by those familiar with the subject.

Further information may be obtained by addressing the patentee, Mr. Lewis W. Murch, of Kennedy, N. Y.

MISCELLANEOUS INVENTIONS.

An improved grain register has been patented by Mr. William B. Richardson, of Wolf's Mill, Texas. The object of this invention is to furnish registers for recording the quantity of grain measured and sacked. It is simple in construction and accurate in operation.

An improved hame hook has been patented by Mr. Moses C. Hargrave, of Wilmington, N. C. This invention relates to certain improvements in hame hooks designed to permit the worn end of the hook to be renewed and replaced by another without trouble or delay, and it consists in a peculiar hook formed in detachable parts.

An improvement in breech-loading firearms has been patented by Mr. Theodore D. Bartley, of Dresden Center, N. Y. The invention consists in a novel construction and arrangement of the breech-block and the hammer, whereby provision is made for depressing the breech-block by means of a spring and for elevating it by the motion of the hammer.

An improvement in the manufacture of artificial birds has been patented by Mr. Charles H. Bodurtha, of Delaware, Ohio. The object of this invention is to produce birds in relief covered with natural feathers, and thereby obtain a more natural and ornamental appearance than by any method heretofore practiced; and the invention consists in first forming the body from plastic material upon the prepared sheet and covering it with feathers.

Mr. Caleb W. Mitchell, of Saratoga Springs, N. Y., has patented an improved table for dispensing liquors, which is simple and convenient. It consists in combining a peculiarly constructed bottle rack with an ice box.

Messrs. Jacob S. Lowe and John H. Leiter, of Shelby, Ohio, have patented a combination ruler for facilitating mechanical drawing. The invention is especially designed for schools, and is also useful to the mechanical draughtsman and others. It consists of a series of rulers having uniform scales of inches and fractions of inches adjustably suspended on a horizontal rod, which is fixed in a headboard on the top of a blackboard or on a desk, said rulers being arranged in such a manner that by their use geometrically correct drawings of all kinds can be made.

Mr. Sewell S. Hepbron, of Fairlee, Md.,