

WORRELL'S "HERCULES" DRIER.

The accompanying engraving represents a new drier adapted for drying very wet substances, such as starch refuse, offal, brewers' grains, distillery feed, salt, tannage, sewage, clay, fertilizers, etc., at a low cost.

The direct effects of combustion in the furnace are utilized without any auxiliaries, such as steam boilers, heaters, stoves, or ovens. This is attained by using forced currents of cool as well as hot air, acting as moisture removers, and at all times under easy control of the operator.

The apparatus is supported upon a plain brick furnace, the fire box being at one end, and the drier proper consisting of a large iron open-topped trough with a circular bottom, having round hot air conduits at the sides, with numerous perforations connecting the latter with the interior of the trough. Inside of the trough, too low down to be seen in the view, and supported by the journals at each end, is a tubular rotary agitator, with numerous guarded perforations connecting its interior with the inside of the trough, and to it are secured iron or steel flights and agitators, the outside edge of which scrapes the circular bottom. The side flanges are bolted to two iron superheaters, also acting as a foundation for the machine, embedded in the furnace walls; at the front end these heaters are connected with the hot air ducts above by half bend pipes, only one of which is in sight. Motion is transmitted to the agitator by the cone pulley and two spur wheels.

The air discharged from the blower in the rear is divided into three currents by the pipes shown, in each of which is placed a cut-off gate for regulating the amount and force of the blast. The two outside pipes lead into the superheaters, while the center one passes into the hollow agitator. As the flames come in contact with the bottom of the trough and the parallel air ducts and the inner sides of the superheaters, the air entering the trough through these hot channels will be heated to a high degree, while that portion passing in through the agitator will be of a cool or nearly natural temperature.

The operation is simple. The wet stuff to be dried passes down from the hopper into the machine. Here it encounters the agitator, and is constantly commingled and agitated by the flights and scrapers, the inclination of these gradually moving it along the drier. It is quickly heated by the hot surface of the trough and hot air forced in through the perforations at the sides. The moisture is brought to the surface of the damp particles by the heat, where it is absorbed by the hot air and carried off in the form of vapor or steam. This action is continued until the material reaches the opposite end of the machine, where it is discharged in a thoroughly dry condition. Most of the air blast is admitted through the hot conduits; but should the product be in danger of scorching, its temperature is quickly reduced by more widely opening the gate in the middle pipe, thereby increasing the volume of unheated air entering through the agitator. This novel feature admits the use of an unusually high degree of heat. The scrapers remove any glutinous matter adhering to the hot metal surfaces, effectually prevent "balling," so fatal to many driers, and act as pulverizers when drying lumpy materials like tannage, etc. The perforations in the trough and agitator are ingeniously protected, so as not to become clogged or closed. When drying substances of a disagreeable nature, the trough is covered with a hood and exhausting device for removing the offensive fumes. The scrapers are moved out as their edges wear down, and their inclination can be changed so as to increase or shorten the speed of passing the material through the drier.

This machine is compact, durable, well proportioned, and easy to operate. The motion is slow, and only a moderate amount of power is required. Its consumption of fuel is low in proportion to its drying capacity. Application for letters patent has been filed, covering all the novel features in this drier. The inventor is Mr. S. E. Worrell, of Hannibal, Mo.

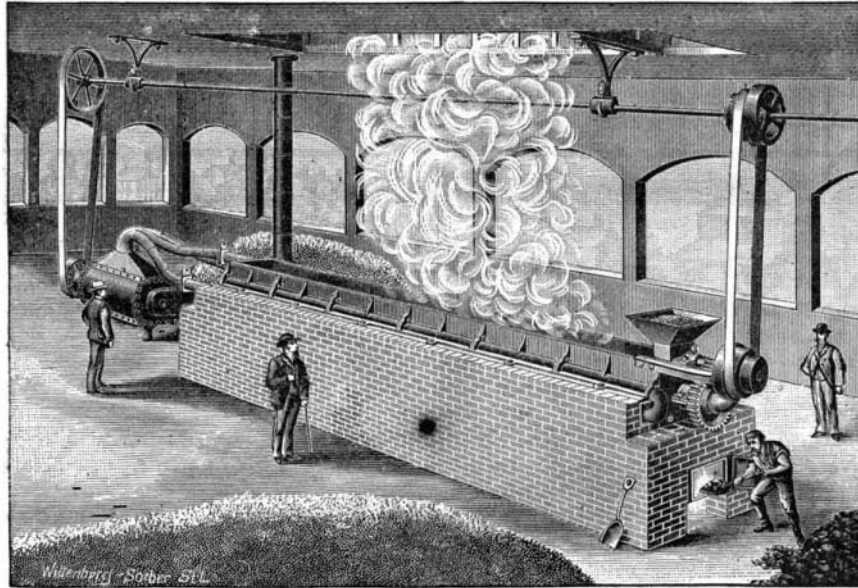
Poppy Alcohol.

The poppy planters of mid-Germany will be interested to learn that a botanist of Pondicherry has discovered what he considers will prove a new and economical source of alcohol or brandy. It appears that the pulp which covers the poppy seed contains saccharine matter, which, after due fermentation and distillation, produces a kind of brandy of an agreeable flavor. As

this pulp has hitherto been thrown away, the discovery, it is said, affords poppy planters an opportunity of realizing more profit from their crops, without a very great expenditure of capital.

Explosion of a Coffin.

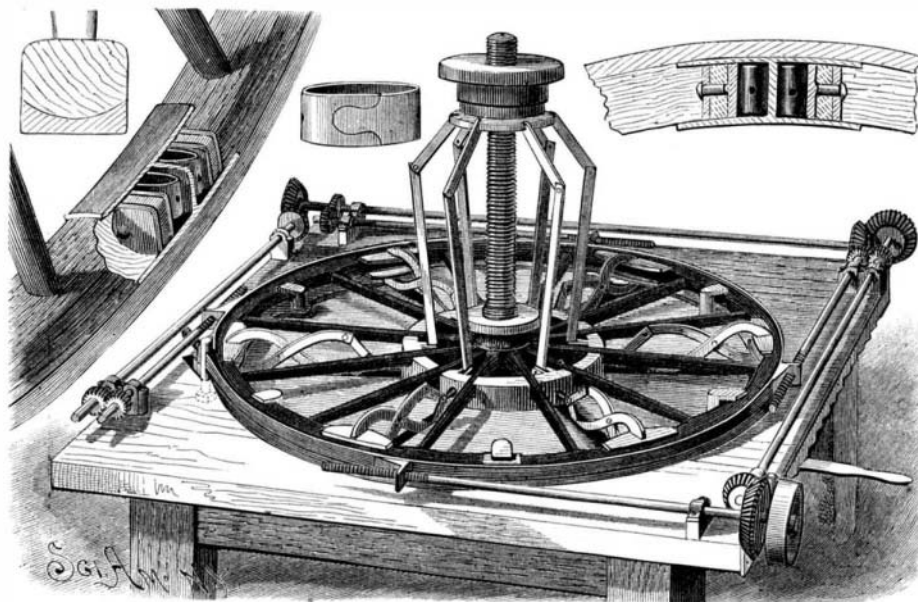
Recently, there was an occurrence in the cemetery at this place, the like of which, perhaps, was never known before. In 1875, James A. Watson, of Clover, whose family then resided in Yorkville, lost a child, aged four years, by death. At that time Watson was living in Baltimore, a teacher in the Bryant-Sadler



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Commercial College, and he could not conveniently leave his business to attend the funeral, and in his absence only temporary burial was given the body, awaiting his return home to secure a permanent burial lot in the cemetery. This was not practicable until recently on the extension of the cemetery grounds, since which time he has bought a lot, and a few days ago, in company with J. E. Jeffreys and Dr. J. B. Allison, he went into the cemetery to remove the body to his lot. The burial case, a Fisk metallic, was raised from the grave, and a natural desire to look upon the face of the child which died and was buried in the father's absence prompted Mr. Watson to ask Mr. Jeffreys to remove the lid covering the glass panel over the face. The lid was unscrewed and removed, all three standing near, but, observing a film on the surface of the glass, Mr. Watson requested Dr. Allison to procure some material for cleaning it off.

The Doctor went to a residence near by for some cloth for this purpose, and while he was in the house an explosion of gas ensued, shattering the glass, which was a quarter of an inch thick, into numberless fragments, several striking Mr. Watson in the face, cutting it severely. One piece struck the bridge of the nose, cutting entirely through it. A few pieces of the glass also struck Mr. Jeffreys, but he was not seriously hurt. The casket had been out



ROHRER'S IMPROVED WHEEL AND METHOD OF SETTING TIRES.

of the ground several minutes when the explosion occurred, which was the result of the expansion by the warmth of the sun of the gas formed in it. The report of the explosion was equal to that of a dynamite cartridge, and was noticed by persons on Main Street, more than a quarter of a mile distant.

The face of the child was in excellent preservation, as were also its burial clothes, and a wreath of flowers on the breast seemed to be nearly as fresh as when buried, twelve and a half years ago.—*Yorkville (S. C.) Enquirer.*

Clarifying Older, Ale, Beer, and Similar Liquids.

In Bavaria, the country which is renowned for the best and purest malted liquors, the government supervision over the entire process of brewing is so strict that infringements of the law have become very scarce, as they are punished by very heavy fines.

The only clarifying agents permitted to be used there are mechanical, that is, such as will not enter into solution or remain in the liquid under any circumstances. The principal ones are isinglass and fine wood shavings. Clarifying by means of isinglass is well known, and need not be described here. The second method is quite effective, and a brief description may be of use.

Any kind of moderately close fibered wood which is free from strongly tasting resinous matters may be used for this purpose, but the most suitable has been found to be beech wood and hazel wood. Either of these is cut into lengths of six to twelve inches, the bark carefully removed, and the wood reduced, by a machine, to shavings, which ought to be as thin as possible. These must be deprived of tannin by being soaked for several days in cold water, and afterward repeatedly boiled with water until the latter no longer acquires any color. Only a comparatively small portion of these purified shavings need be used for a cask of the liquid to be clarified—about 1/4 pound for 15 gallons. The *modus operandi* by which the clarifying is accomplished is, of course, a purely mechanical one, mostly due to currents established by capillary attraction into the fibers of the wood floating on top of the liquid, and the mechanical adherence of suspended impurities to the surface of the shavings, as a new portion of the turbid liquid is brought toward the surface.

When the casks are emptied, the shavings may be taken out, washed, and used over again. The wood shavings are a regular article of trade, and may be obtained through dealers in brewers' supplies.

METHOD OF SETTING WAGON TIRES WITHOUT HEATING.

The accompanying illustration shows a means of putting tires on wheels cold, so that steel may be used as well as iron, the tire not having, when this invention is used, to be expanded by heat and then suddenly cooled. The platform which supports the wheel and mechanism for setting the tire has a circular rest for the felly, which also holds a draw band, that may be tightened or loosened by rods revolving in journal bearings, all of these rods being operated from the belt pulley, by cog gearing, to draw the band in upon the wheel with uniform pressure. By this means sufficient force can be exerted upon the outer rim of the wheel to cause the spokes to buckle horizontally, but the bend caused in the spokes is prevented from extending to the hub, and loosening them in their sockets, by a fulcrum wheel or flange, which extends around the hub, and at a short distance from it. In order to hold the wheel in this position until the tire can be adjusted, a system of duplex levers is provided, the outer links of which operate jaws which may be made to grasp the felly at several different points, these links being controlled, through the upright jointed lever arms, by a plate on the screw-threaded king bolt. When the tire is put in place and the jaws loosened, the wheel springs back into its proper position.

In order that this method can be followed, it is necessary that parts, at least, of the felly shall be compressible and have an expansive force as well, to cause it to resume its position and hold the tire in place. To this end a joint is used for the meeting sections of the felly, consisting of a shell which holds movable heads, and between these heads a powerful spring. This construction and the arrangement of parts is shown in detail in the small views, the felly being preferably made convex on its outer side, and the tire made concave on its inner surface, to fit snugly thereon.

Those desiring further particulars respecting this wheel and method of setting may address Messrs. Henry Rohrer & Co., of Stockton, Cal.

A VERY complete filling for open cracks in floors may be made by thoroughly soaking newspapers in paste made of one pound of flour, three quarts of water, and a tablespoonful of alum, thoroughly boiled and mixed. Make the final mixture about as thick as putty, and it will harden like papier mache. This paper may be used for moulds for various purposes.—*Cal. Architect.*