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Sorgho, or Chinese Sugar Cane.

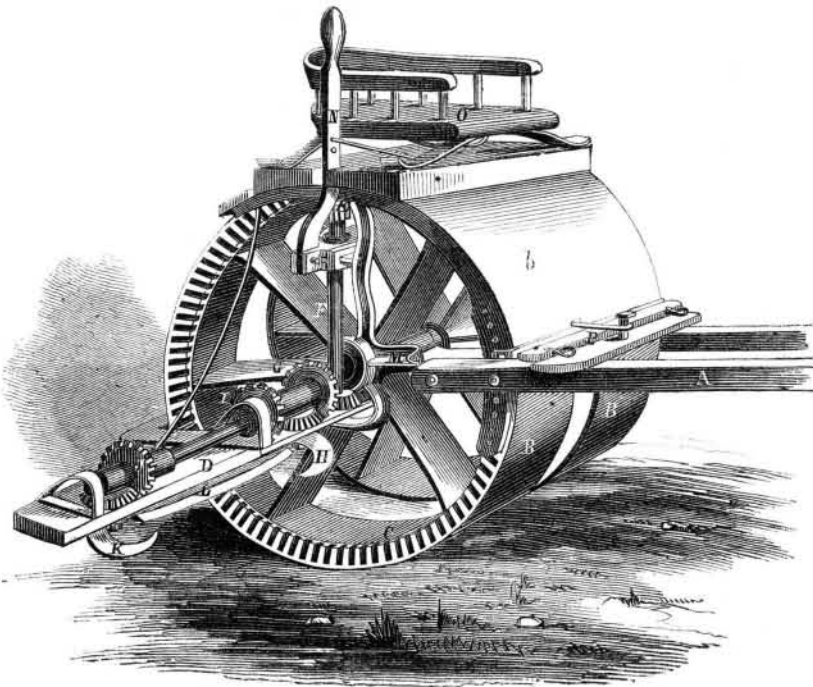
The Paris correspondent of the *Journal of Commerce* says that the sorgho, or Chinese sugar cane, which has attracted so much attention, formed a prominent feature in the late annual agricultural exhibitions of France. This plant is extensively and successfully cultivated in the south of France and in Algeria; and as an evidence of the extent and variety of the application of its material we may mention that at the late exhibition at Avignon, M. Prieur exhibited a group of samples illustrative of the metamorphoses to which he has subjected it. Nothing could be more curious than the succession of transformations there shown. In one corner could be seen the sorgho in stalk, such as it is when cut; a little further, were its fibres converted into thread, in skein; then a piece of linen woven with the thread; then a handsome cloak bordered with furs, which M. Prieur designs for the Prince Imperial.

The most curious and complete array of the products of the sorgho, however, at the same exhibition, was that of Dr. Sicard of Marseilles. With the pith he has manufactured excellent sugar, which will favorably compare with any other whatever. By grinding the seed he has obtained flour and fecula, of which he has made bread and chocolate, which the many tasters have found palatable. He extracts, moreover, from the plant an abundance of alcohol of superior quality, and besides, a most agreeable wine, containing in large quantity all the tonic and other salutary elements of the juice of the grape. In addition, he makes paper out of it, of which he showed evidence in superior samples; by chemical agents he gets from it gamboge, ginseng, carbon; skeins of cotton, wool and thread dyed with sorgho in those delicate and varying shades which hitherto have been found only in the stuffs and articles coming directly from China. We should add that the new derivations (as we may style them) from the cane are complete, and can be delivered to trade and industry at determinate prices.

Manufacture of Coke.

A patent was recently issued in England for an invention which consists in so constructing coke ovens that they shall be in communicating pairs, the waste gas and heat from each oven being made to surround, or partially surround, its fellow, by means of flues, before passing into a chimney or the open air, so that by charging each oven composing a pair alternately, neither is allowed to get cold, and it is said that by this process the operation of coking is carried on with greater economy and expedition. It is preferred that the ovens be placed in pairs, back to back, but this observance is not indispensably necessary.

TILTON'S STALK CUTTER.

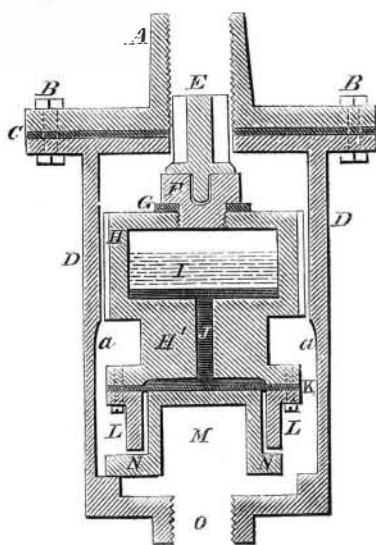


This machine is designed to cut standing corn, the center wheels passing between the rows, and there being a cutter bar on each side, it cuts two rows of corn at once. Our engraving is a perspective view of the machine, showing thoroughly the construction and arrangement of the parts, A being the shafts, and B the traction wheels which rotate as the machine is drawn along the ground, and by means of a cog wheel, C, on their outside edges, they give motion to the cutters. The shafts and cutter bar are attached and suspended from the axle of the wheels by the yoke, M, which is of metal and sufficiently strong to support the weight and strain upon it. P is the whiffle-tree to which the horses is attached. From the shafts, A, there extends up a cover, b, on the top of which is the driver's seat, O, from which, without moving, the driver can throw the cutters in and out of gear as desired by the lever, N, which is connected with the journal in which the vertical shaft, F, with its pinion, E, rotates. The lower end of this shaft, F, has a bevel wheel upon it that gives

motion by another wheel, G, to a horizontal shaft carrying bevel wheels, I J. This horizontal shaft and gearing is on the top of the cutter bar, D, on the lower side of which cutters, H K, move by their axis passing through the cutter bar, and terminating in bevel wheels which are rotated by I and J. To the underside of the cutter bar, D, a stationary cutter, L, having a curved shape, is placed, and the moving cutters being sickle-shaped, they take in their rotation, as the machine is drawn along, a sickle-full of corn stalks and bringing them against the stationary cutter, L, cut them evenly and clearly off, which is the great advantage of sickle-shaped cutters. Two or more cutters can be placed on one shaft, so that each machine will have eight cutters, there being a bar and connecting pieces exactly similar to the one described on the other side of the wheels, B.

The machine works well, and it is remarkably simple and complete, compact and strong. The inventor is William S. Tilton, of Boston, Mass., from whom any further information can be had. It was patented June 17, 1856.

Hoard & Wiggins' Trap Valve.



The vast length of pipe which a building of any size requires when it is heated by steam, gives, of course, a large cooling surface, and the steam becomes at first rapidly condensed

into water, which, if not removed, prevents the operation of the heating arrangement. To remove this water, and yet prevent the escape of any steam, and to allow all the condensed water to escape as fast as it is condensed away, so that it may not absorb any of the heat which should be employed in elevating the temperature of the building, has long been a desideratum, and has at last been invented by J. W. Hoard, of Providence, R. I. The device is small, being only six inches long by four in diameter, and it cannot freeze.

Our illustration is a section of one of these valves, which we will now proceed to describe. A is the cover, which is connected to the end of the heating pipes, and may be any distance from the building. It is attached to the cylinder by bolts, B, an india rubber packing being interposed between them. In the bottom of the case or cylinder, D, is an escape pipe, O. E is a feathered valve, stepped into a nut, F, and it does not rest on the step, but on the top of the nut. This nut, F, completely closes, by means of an india rubber packing, G, a box, H, which is smaller than the inside of D, so that plenty of water way is

obtained between the inside of D and the outside of H, and it is prevented from shaking, and compelled to move steadily up and down D by three projections cast on its outside. This box is hollow, and contains mercury, J, which fills up the narrow tube, H', and presses, in the extended hollow, on the diaphragm of rubber, K; above the mercury is a small quantity of alcohol, I. To the under surface of H is attached by bolts a cylinder, L, which fits loosely around a cap, M, that covers the exit, O. This cap, M, is supported over O by a trident base, N, so shaped that it is firmly secured over the opening, and yet admits of plenty of water way.

The operation is as follows:—When the steam is turned on it rushes through, A, (the valve being always open when steam is not in contact with it, so that all water can run out of the pipes when not in use for heating) and coming in contact with H, heats it, and vaporizes the alcohol. The alcohol vapor being confined, presses on the mercury, and causes it to expand the diaphragm, so that the whole of H is lifted up by the pressure of K upon M, and the feathered valve, E, closes A. It remains closed until water has accumulated, when the alcohol cools down, resumes its liquid state, and the water runs through. The case, D, is chamfered out at a, to increase the water way, and the device works, after once beginning, giving a regular stream of condensed water, and not by jumps, as would be supposed, no steam ever passing through. We have seen certificates from various manufacturing establishments where steam is used for heating and evaporating purposes, and where this trap valve is in use, and all speak in the highest terms of its operation, as it enables them to keep the steam in the pipes at the same pressure as in the boiler, and allows the escape of all the condensed water. It is a simple and useful little contrivance, and recommends itself for general adoption.

It was patented May 25, 1858, by the inventor, who has assigned the invention to himself and G. B. Wiggins, 20 Friendship st. Providence, R. I., either of whom may be addressed for further information.

Electrical Phenomena.

Mr. L. R. Breisach, to whom two patents were lately granted for ventilating chairs, has noticed that if any air be forced from bellows through tubes, electricity is developed. It is supposed that air so charged will be beneficial to nervous persons, and much easier of respiration by persons of weak lungs than the common atmosphere. We cannot see on what facts these suppositions are based, for if they be correct, persons living in a place where clouds that have swept over a mountain side, and that are full of electricity in a highly excited state, come in contact with them, should be very healthy indeed, instead of being, as they are, subject to epidemics and such diseases as *goitre* and the like.

Profitable Mining.

At the Freiberg mines, which are nearly the oldest in Germany, they have made a most lucrative discovery. In a mine which has been profitably worked for the last 120 years, large lumps of metallic silver have been found, each weighing from 3 to 12 pounds; the largest lump weighed 60 pounds, and was in the form of a side of bacon. This would seem to be a reward for scientific mining, as these mines are worked entirely on the results of scientific investigation conducted by the professors of the mining school in that place.