

PULPING MACHINE.

The engraving represents a machine for washing, beating, pulping, grinding, ragging, disintegrating, shredding, mixing, or preparing the various materials and fibrous substances used for making paper pulp and for other like purposes, or for grinding colors, dyes, paints, and other materials.

The invention consists in a roll or disk provided with bars or ribs on one face, and fitted for revolution within a chamber at the end of a cistern or trough. The inner surface of the chamber is also faced with bars, between which and the bars on the disk the material is ground. The revolving disk is fitted with lifters at its outer edge, which act to carry the material around in the chamber.

This invention was lately patented by Messrs. E. B. and J. Cooke, of London, and Mr. G. Hebbert, of Richmond, England.

Poisoning from Quassia.

It is a very rare thing to hear of poisoning from quassia, so often used as a bitter tonic, although the fact is known that it possesses some narcotic properties. The *Lancet* records a recent case of poisoning from an overdose given in the form of an enema. As no antidote has been published, it may be of interest to state that the remedies used in this case, and which proved effectual, were powerful stimulants, such as ether, sal volatile, and brandy, aided by hot-water applications to the feet. The pupils were strongly contracted, and the symptoms exhibited appeared to somewhat resemble those following poisoning by opium.

IMPROVED STONE CRUSHER.

The engraving shows in perspective and in vertical section an improved stone crusher lately patented by Mr. S. L. Marsden, of New Haven, Conn., and now being manufactured by the Farrell Foundry and Machine Company, of Ansonia, Conn. It possesses several points of novelty which are shown in the small sectional view. The machine is driven by an engine secured to one side of its heavy frame, and connected directly with its shaft, thus avoiding the friction and the expense of belts or intermediate machinery.

The jaws in this machine do not differ materially from those of other machines of this class, but the mechanism for operating them is materially improved. The movable jaw, A, receives its motion through a toggle from the lever, B, which is fulcrumed in a beveled block suspended from the top of the frame, and backed by a wedge that may be drawn up more or less to compensate for wear and to adjust the working distance between the movable jaw, A, and the fixed jaw. The beveled face of the wedge is concave, and the adjoining face of the fulcrum block of the lever, B, is made convex to render the block self-adjusting and afford a uniform bearing for the lever, thereby avoiding breaks due to bringing all of the strain upon a small surface.

The pitman, C, is made in two parts, adjustable by a screw, so that the length may be varied and at the same time the rigidity of the pitman is maintained.

To compensate for wear the parts of this pitman may be partly unscrewed from each other, and when the worn parts of the crusher are renewed the pitman may be shortened by screwing them together.

This machine is on exhibition at the Fair of the American Institute, crushing hard boulders and cobble stones with perfect facility.

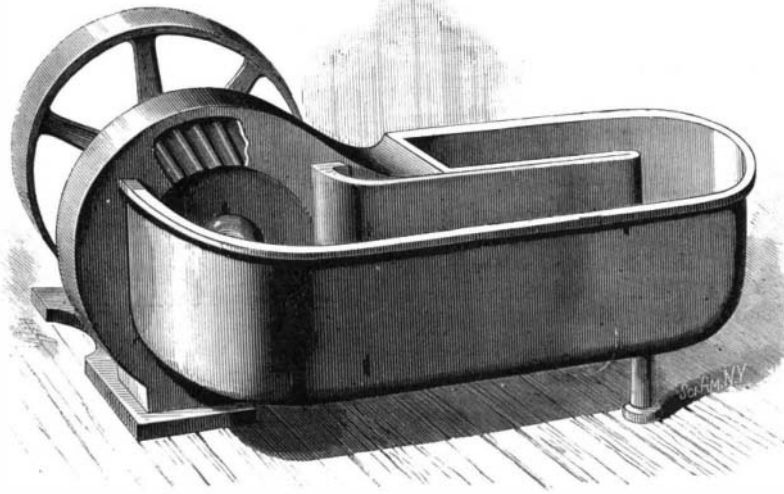
The machine is provided with a pulley so that it may be driven independently of the engine should occasion require. And on the other hand the engine may be used to drive other machinery by disconnecting the stone crusher pitman.

Charcoal.

If we wish for some substance which will catch fire from the smallest spark, we find that among thousands of bodies, simple and compound, that exist in nature

or are produced by art, the most suitable for our purpose is pure carbon in the form of tinder. On the other hand, when we want a crucible that will bear without taking fire the flame of the hottest furnace, we make it of pure carbon in the form of plumbago.

The wax mould of the electroplater is a non-conductor of electricity, and is, therefore, necessary to cover its surface with some good conducting material; it is found that the best material is finely pulverized plumbago; but this same

**MACHINE FOR PULPING AND GRINDING FIBROUS MATERIAL.**

element when crystallized, as in the diamond, is the most perfect of all non-conductors!

Carbon in one state is as soft as lampblack, in another it is the very hardest substance known; in one it is brilliantly transparent, in another it is perfectly opaque; in one it is the most costly ornament in the crowns of kings, in another it is shoveled out of the way as worthless!

In all these changes in the condition and properties of carbon no law can be discovered, with the single exception that the temperature at which various kinds of charcoal will take fire are in fixed relation to the temperature at which the

Enemies of the Wheat Plant.

BY REV. C. J. S. BETHUNE.

[Read before the Dominion Agricultural Commission.]

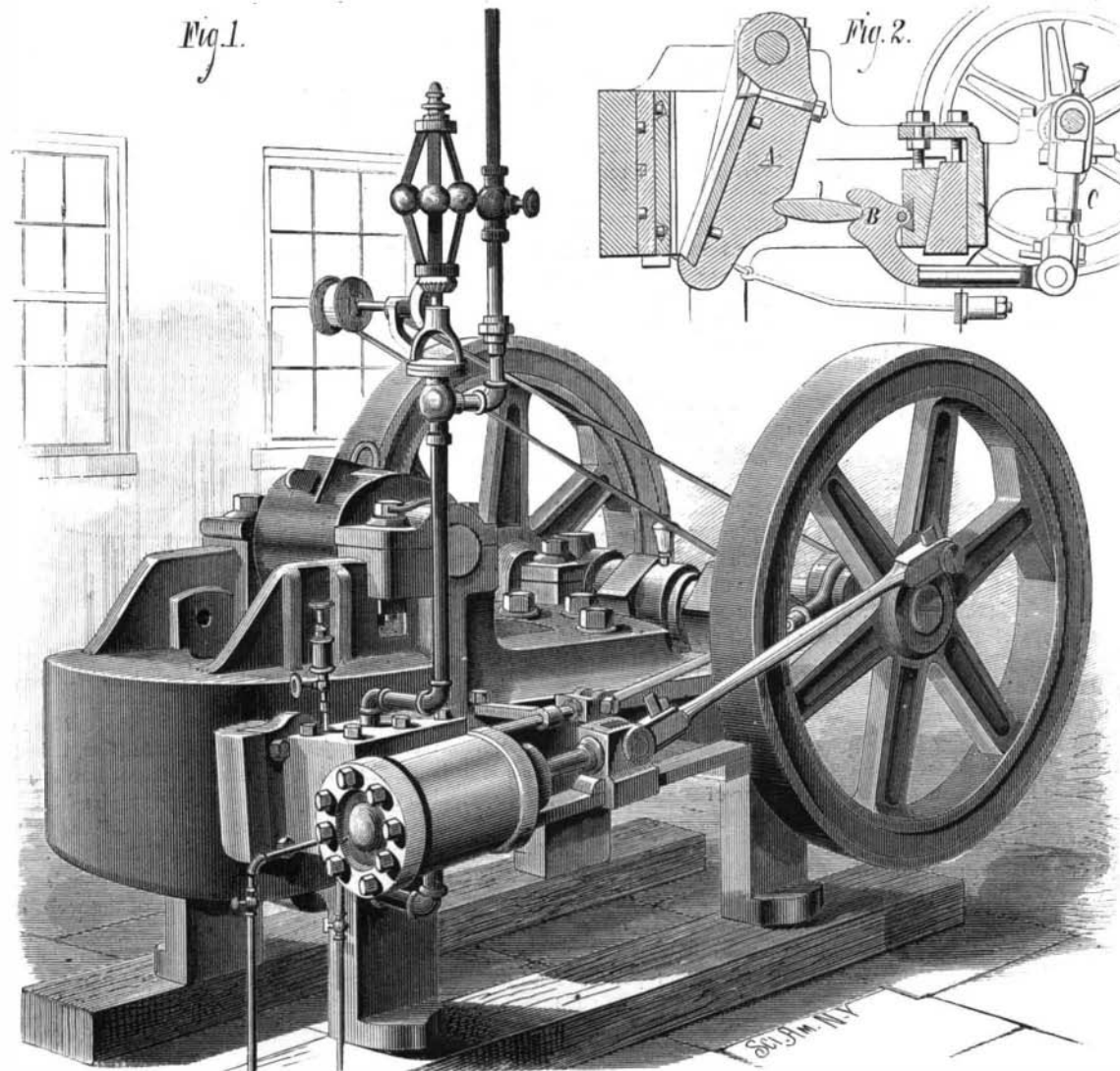
The most destructive insect pest to the wheat crop is the wheat midge, or *Cecidomyia tritici*, which had been first observed in America in 1820, when it was discovered in the State of Vermont, having been imported, like most of our destructive insects, from Europe. It spread with great rapidity over the Eastern and Central States and Canada.

and in 1856 the loss to Canadian agriculturists from its ravages was estimated at \$2,500,000, while in the following year, 1857, it was calculated that \$8,000,000 bushels of wheat were destroyed in the Province of Ontario alone. From that time up to 1868 it continued to be very destructive, but since 1869 it had been almost unknown. It is probable that the checking of the midge plague was due partly to a parasite which preyed upon the insect itself, and which was well known in England and the countries of Europe, though owing perhaps to its extreme minuteness it had never been detected in this country, and partly to the general introduction of what were known as midge proof varieties of wheat. Some of these varieties resisted the midge on account of the hardness of the envelope which inclosed the kernel, and some on account of their maturing either before the midge became formidable, or after it had ceased to be so. The midge resembles the Hessian fly in appearance, the main difference being that the color of its body is yellow, while that of the Hessian fly is black. It frequents the ripening ears of

the grain, and lays its eggs in the blossom of the wheat. As soon as the larvæ are hatched they begin to feed upon the juices of the grain, causing the latter to gradually shrivel up and become useless. When the period of the ripening of the grain arrives, the midge descends into the earth, remaining there throughout the winter. In the following spring it emerges into the pupa state, and in the month of June becomes a perfect insect. It is fond of moisture, and therefore likely to be found in low-lying lands, or lands not thoroughly drained.

The Hessian fly, or *Cecidomyia destructor*, is of older standing

on this continent than the midge, its first appearance in America being about the year 1776. It was first observed in Ontario in 1846, and since then has been a very familiar insect, though its ravages have not been serious of late years. Although the insect is very similar to the midge, its mode of attack is entirely different. It appears first in the fall of the year at the roots of the plants, lays its eggs, and the larvæ are hatched out and remain in the earth all winter, the brood appearing in the spring. There is a second brood in the spring which attacks the stalk, and it is upon this portion of the plant that the Hessian fly is most commonly observed. There are happily a number of parasites which prey upon this pest, the chief being a species of apis, ichneumons of various kinds, and probably some of what are more properly termed bugs. Spring wheat is not so much affected by this pest as fall wheat, as the grain ripening the same season in which it is sown affords no place for the larvæ to hibernate during the winter. This fact would point out as a remedy for the Hessian fly the abandonment for a time of the cultivation of fall wheat, and the substitution of spring wheat. Another remedy would be the sowing of fall wheat as late as prac-

**MARSDEN'S STEAM STONE CRUSHER.**

several kinds are prepared. This is of the utmost importance to the manufacturers of gunpowder; they have caused it to be investigated with great care.—*Monthly Magazine, London.*

The Improvement of the Mississippi River.

The Mississippi Valley Interstate Convention, having for its object the improvement of the navigation of the Mississippi River and its tributaries, was organized at New Orleans, November 17. The officers elected were: Hon. H. F. Simrall, of Mississippi, President, with vice-presidents from Louisiana, Missouri, Kentucky, West Virginia, Pennsylvania, and Ohio; Secretaries, H. Dudley Coleman, John Henderson, James N. Scuddy, and T. Wharton Collins.

ticable in the fall, in order that the larvæ might not find the plant sufficiently advanced for its attacks at the root before the winter sets in. Thorough cultivation would also aid in lessening the damage done by this pest, as the stronger and more healthy the plant, as a matter of course, the less it would suffer from the ravages of the fly.

The chinch bug, or *Micropus leucopterus*, might be called the most powerful insect foe of the United States agriculturist, but it has never been known to be destructive in Canada. Our proximity to the States, however, renders us liable to an invasion by this plague, and there is nothing except a slight difference in climate that would warrant the belief that it would not thrive in this country. It is an in-