

David C. Delinger, of Red Oak, O., has patented a Road Gate, adapted to swing horizontally, and operated by cords and levers, the latter being extended from the pivot post laterally or parallel to the roadway, so that the cords which are pendent therefrom may be seized by persons on horseback or in carriages, without dismounting. The improvement relates to the construction and arrangement of the devices for operating the gate.

NEW PORTABLE MILL

We present herewith an engraving of a patent portable mill, made by Messrs. Munson Brothers, of Utica, N. Y. In the engraving A is a cast iron frame, on the upper part of which there is a cylindrical shell, B, to receive the runner or understone. This shell is of larger dimensions than the stone, so as to leave a space all around and underneath the stone, as shown in Fig. 1. The shell, B, is cast in the same piece with the frame, A, and has its upper edge made perfectly smooth and even, so that all parts of its surface will be in the same plane.

In the lower part of the frame, A, there is a horizontal driving shaft to which is secured a bevel wheel, which gears into a bevel pinion on the spindle, C, the lower end of which is stepped in a socket, D, the upper end of which has a flange around it. This socket is fitted within an adjustable box, which rests upon a lever supported by a nut and screw, by which means the stones may be made to run at a greater or less distance from each other to vary the fineness of the flour.

The spindle, C, is provided with a collar, I, Fig. 2, which is fitted within a box, J, attached to the underside of the shell, B. The box, J, is of cylindrical form, concentric with the shell, and within it there are placed bearings, L, which are adjusted snugly against the collar, I, by keys, screws, or other means. The collar, I, is hollow and opened at its lower end, having a space all around between it and the spindle. The box, J, is provided with a central vertical tube, K, around which the collar, I, works, the tube, K, passing up between the collar, I, and the body of the spindle. The upper part of the collar, I, is perforated with holes, which are just above the bearings and below the upper end of tube, K. M is a tube which extends along underneath the shell, B, and communicates with the upper part of the box, J. This tube forms a means of supplying the box, J, with oil. The collar, I, forms the bearing surface of the spindle.

The box, J, is covered by the cap, N, having a circular flanged aperture in its center to allow the spindle to pass through. A cap, O, on the spindle, C, covers the flange of the cap, N. On the upper end of the spindle, C, there is placed a clearer, P. This clearer is formed of two arms attached to an eye, which is fitted on the spindle and secured thereto by a feather and groove. The arms of the clearer extend nearly to the side of the shell, B.

The driver, Q, is fitted on the upper part of the spindle, and like the clearer is secured to the spindle by a feather and groove. The driver rests on the eye of the clearer, and has two arms which fit in recesses in a shell, R, which is secured concentrically within the understone or runner, and has a bearing which rests upon the apex of the spindle. The dandel, S, is attached to the upper surface of the shell, R.

The upper stone is secured in a cast metal cylindrical box, T, which is turned true at its lower part so that it may fit into the shell, B. The upper stone has a central eye, and the box, T, is secured in proper position by means of screw rods and nuts; the rods are attached to the shell, B, and pass through eyes at the outer side of box, T. A hopper frame is placed on the box, T, for supporting the hopper and shoe, which may be arranged as usual. It will be seen from the above description that the runner will, in consequence of the arrangement of the driver relatively with the apex of the spindle, be allowed to adjust itself to the stone, so that the parallelism of the faces of the two stones may be preserved as the stone rotates. This arrangement, to wit, the having of the apex of the spindle in line with the bearing surfaces of the arms of the driver, admits of a universal joint movement of the stone, an effect which cannot be attained in the ordinary arrangement.

This invention also enables the spindle to be always kept properly lubricated, as oil may be poured into the box, J, at any time, and the oil in the box is retained therein, in consequence of the perforations in the upper part of the collar, I. These perforations cause the oil, which may have a tendency to rise in the space between the tube, K, and the col-

lar, I, to pass the holes into the box, instead of passing over the top of the tube. This is an important feature in this invention, as it effectually prevents the escape of the oil from the box, J, when the latter is not oversupplied. For further particulars address Messrs. Munson Brothers as above.

THE NEW SPANISH PROCESS FOR SILVER AND COPPER.

The new Spanish process for the chlorination of silver and copper ores, which dispenses with preliminary roasting, seems to be better fitted for laboratory determinations than for work on the large scale required in mining operations. It consists in treating the pulverized ore with a solution of

supply of fuel), into a hot bath of salt and water, while the decomposition of the salt is effected and the chlorine liberated to attack the silver and copper by wetting down the sulphur fumes on their way up the stack and returning them to the bath. The method of recovering the metals is alike in each instance. This Spanish process is apparently but a modification of, not an improvement on these which we have mentioned, and we think it will be difficult, if not impossible, to evolve a chlorinating process better adapted to the requirements than these, either in theory or in practice.

THE AUSTRALIAN JABIRU.

The Jabiru rank among the giants of the feathered race. There are very few species known, and they all seem to have similar habits—hunting on the borders of lakes, marshy grounds, and banks of rivers, where they find abundance of fish and aquatic reptiles on which they feed.

The Australian Jabiru appears to be a very rare bird, and it is extremely wary and haunts wide expanses where but little cover can be found. It can with difficulty be approached. To shoot one is a difficult task. A good sportsman, who succeeded at last in killing a jabiru, followed it for several days before he could get within long range of the suspicious bird. Dr. Bennett in his "Gatherings of a Naturalist in Australia" gives an interesting account of one of these birds which he tamed.

In its coloring the Australian jabiru is a very handsome bird, and its movements are quiet, majestic, easy, and graceful. The large head and neck are rich, shining green, changing to rainbow tints of violet and purple upon the back of the head, the feathers gleaming in the sun with light metallic radiance. The greater wing coverts, scapularies, lower part of the back, and tail are dark brown mixed with rich bluish green, which changes in the adult to a rich, glossy green tinged with a golden luster. The smaller wing coverts, lower part of the neck and back, and upper part of the breast are white, speckled with ashy brown, but become pure white in the adult; the lower part of the breast, thighs, and inner part of the

wings white; eyes brilliant hazel in color. The legs are blackish with a dark tinge of red, becoming of a bright red color in the adult; and when the bird flies with the legs stretched out, the legs look like a long red tail. Dr. Bennett's specimen measured three feet and ten inches to the top of the head, but was not full grown; they are said to attain a height of four or five feet.

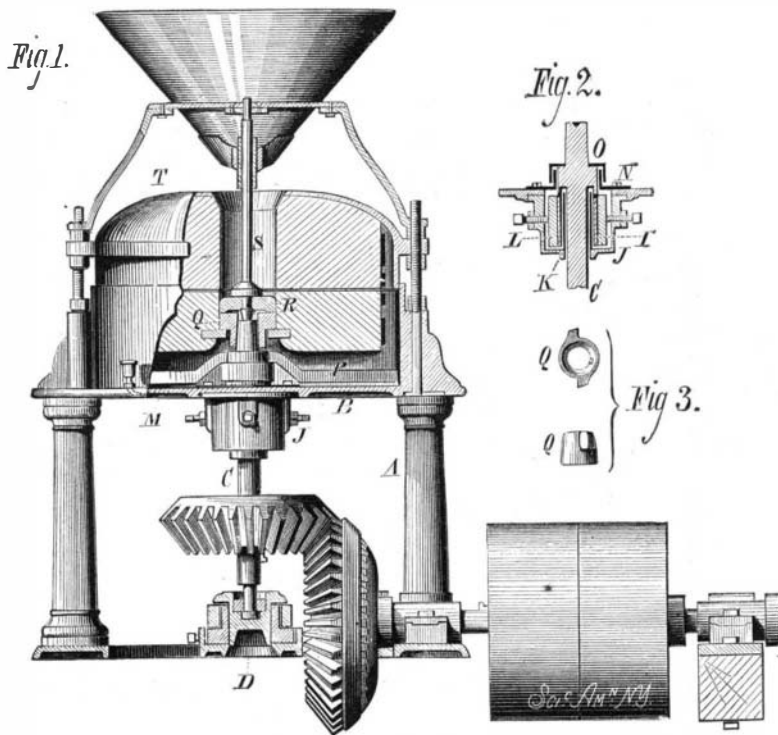
New Engineering Inventions.

John Tregoning, of Brooklyn, N. Y., has patented an improved Steam Valve for pumping engines, which consists in a circumferentially grooved piston rod, which acts as a valve, and in passages that lead from the ends of the valve chest to and across the cylinder heads, and to the exhaust receiver of the cylinder, the said passages being crossed between the valve chest and cylinder heads.

John Tregoning and Michael Hastings, of Brooklyn, N. Y., have jointly patented an improved Pump Valve, which consists in a semi-cylindrical valve fitted to a suitable valve seat, and provided with recesses in each end for receiving a head formed on the rod of a small piston. A piston is connected with each end of the valve, and works in a chamber or cylinder formed at the end of the water way in the valve seat. Communications relating to either of these two inventions should be addressed to Mr. John Farrell, No. 20 Water street, Brooklyn, or to Mr. John Tregoning, 38 Gold street, New York city.

James C. Thomson, of Barnhart's Mills, Pa., has patented an improved Vacuum Packer for oil wells, for shutting off communication between the upper strata of rock and the oil bearing rock, and it consists of three apertured metallic disks placed on the well tubing, and arranged to receive the vacuum tube, which, by its weight, compresses a rubber packing disk vertically, so as to expand it laterally to fill the bore of the well.

William Taylor, of Peekskill, N. Y., has patented an improved Gate for Patterns, which consists in a gate formed of easily fused metal, interlocked with a pattern having countersunk holes or dovetail slots, or both. Patterns attached in this manner are not easily broken from the gate in the operation of ramming the mould or rapping the pattern, as is the case with patterns made wholly from cast iron; and the patterns are attached at a trifling expense compared with the usual method of riveting them to wrought iron gates, besides giving the gate a better form for moulding and for detachment from the casting.



NEW PORTABLE MILL.

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common salt, to which are added nitric acid and manganese ore, and the chlorination and lixiviation are effected in filtering casks, and occupy from 12 to 24 hours. In the process most commonly in use with us the oxidation of the sulphur, arsenic, etc., is effected by fire, which is certainly much more economical than nitric acid, and the roasted ore is chlorinated and lixiviated in larger quantities and in less time; while by still another process the finely powdered ore is made to fall, with a sufficient supply of air, through an upright shaft furnace, heated sufficiently for the ignition of the sulphur (and a moderate percentage of sulphur maintains the heat and combustion without further



THE AUSTRALIAN JABIRU.