

NEW VERTICAL FRENCH BURR MILLS.

We give herewith perspective and sectional views of a new vertical French burr mill, which is manufactured by Mr. C. K. Bullock, of 1357, 1359, and 1361 Bridge avenue, Philadelphia, Pa. This mill is adapted to all kinds of grinding, from ordinary feed to the heavy work of reducing gold quartz. It is particularly adapted to regrinding middlings and bran; and the manufacturers state that there is no work done by burrstones that this mill will not do satisfactorily.

In the engraving Fig. 1 is a vertical section of the mill; Fig. 2 is a transverse vertical section; Fig. 3 is a face view of one of the millstones; Fig. 4 is an exterior side view of one of the stones, and Fig. 5 is an enlarged view of part of the mill spindle.

The cylindrical casing, A, is made in two parts, the interior being separated by a partition, *e e'*, into the feed compartment, B, communicating with the hopper, B', and the grinding compartment, D, devoted to the millstones, and having an outlet, D'. The horizontal mill spindle, E, has bearings, *d d'*, at opposite ends of the casing; one end of the spindle is furnished with a pulley, *f*, and an adjusting screw, *h*, bears against the opposite end. The screw is provided with a jam nut, which prevents it from becoming loosened accidentally. G and G' are the two millstones. The millstone, G', is secured to a flanged disk, H', the central hub, *i*, of which is fast on the spindle, E. As the millstone is vertical and revolves at a high rate of speed, it must be properly balanced in order to prevent the violent shaking of the mill. For this purpose there are in the flange, J, of the disk, H', a number of holes at equal distances apart throughout its circumference, each hole being threaded for the reception of the stem of a set screw, *k*. Should the stone be out of balance in the first instance, one or more of these set screws may be entirely removed at the proper points in the circumference of the disk, or lighter or heavier screws may be attached to the flange, until the stone is balanced.

The fixed millstone, G, is secured to a flanged disk, H, having a central opening forming a continuation of the eye of the stone. The disk, H, is secured to the end of the casing at three points—at one point to the enlarged portion, *a*, by a bolt, *n*, and at the other points by similar bolts, *n'* and *n''*, to the upper ends of bars, K K, which are bolted to their lower ends to the inner face of the casing. Rubber cushions, *p*, are placed between the disk, H, and the casing, so that the stone, G, can be readily adjusted so that its grinding face will coincide with that of the stone, G'. Between the flanged disk, H, and the partition, *e*, there is a rubber ring, S, adapted to a recess in the outer face of the disk.

This ring prevents the grain from passing into the compartment, D. The only communication between the feeding compartment and the grinding compartment of the mill is through a circular opening in the partition exactly opposite the eye of the stone. A portion of the spindle (shown on an enlarged scale in Fig. 5) has a number of projections, N N, of triangular form, one edge of each projection being in a plane at right angles to the shaft, and the other two edges being inclined. This portion of the shaft, with its triangular projections, is contained partly within the feed compartment, B, partly within the opening in the partition, *e*, and partly in the eye of the stone. The feeding is effected by the triangular projections when the spindle is turned in either direction. This seems to be an important feature of this mill, as it enables the user to drive it in whichever direction may be most convenient.

The amount of grain fed to the eye of the stone will depend upon the position of the two adjustable gates, P P'. These gates are made to fit to the spindle between the triangular projections. When closed the gates will entirely cover the opening in the partition, *e*. One or both gates can be partially or wholly opened, as required. In the present instance the gates are adjusted by screws. In mills having stones the grinding faces of which are vertical, the flour is apt to pass from the stones having the ordinary dress in an unfinished condition. To avoid this the inventor has adopted the dress shown in Fig. 3, the depressed portions of the face of the stone being shaded and the land portion unshaded. The radial portion, W, concentrate at the center of the stone, and do not extend out through the edge. Hence they form pockets, from which the partially ground grain cannot escape without crossing the land before reaching the triangular depressions.

Steamboat Inspection.

At a recent meeting in Washington, the Board of Supervising Inspectors of steam vessels amended rules 4, 14, 29, 40, 76, and 78 of General Rules and Regulations of 1877. It was also ordered that at their annual inspections of steam boilers the local inspectors shall remove from the surface of such boilers as are covered so much of the covering as may be necessary to enable them to examine parts of the boilers which cannot be properly examined from the inside. There is added to Rule 4, a method of testing boiler iron, which boiler makers will find important. Samples of iron may be tested on any reliable testing machine. Rule 14 provides that "All life rafts and floats composed of hollow cylin-



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ders, and approved by the Board of Supervising Inspectors, must be rated in their carrying capacity according to the cubical dimensions of such cylinders, in the ratio of one person to every three (3) cubic feet for ocean steamers, and two (2) cubic feet for lake, bay, sound, and river steamers. Such life rafts and floats must be suitably equipped with life lines and oars."

The transportation of petroleum, especially on passenger vessels, is permitted only under stringent regulation. The use of steamers for excursions is also made subject to careful regulation, particularly with regard to ample provision of life saving apparatus.

RECENT AMERICAN PATENTS.

A simple and ingenious permutation padlock, which consists of a body, or case, a sliding hook having pins which are engaged by slotted disks, and a series of index disks connected with the slotted disks, is the invention of Mr. Mortimer B. Mills, of De Witt, Iowa.

An improved apparatus for casting metals in vacuo has been patented by Mr. H. W. Barnum, of Omaha, Neb. The mould is contained in a vacuum chamber, and the metal, in its passage to the mould in the chamber, is spread out

It is intended to be worn with a shoe or boot, and is made of leather, felt, or cloth, the material being chosen to suit individual cases.

A shoe brush having a hollow back and tubular handle for containing liquid shoe blacking, and provided with a valve for letting out the blacking as the spreading brush is applied to the foot, is the invention of Mr. J. A. Stable, of Crestline, O.

An improved beer faucet, which is constructed so that the operation of a single handle or lever will cause the escape of beer and the admission of air simultaneously, has been patented by R. W. Tavener, of West Bay City, Michigan. The faucet may also be used independently as a beer drawing or air forcing pump or as an air vent.

An improved telescope drinking cup having a stand which gives it the appearance of a goblet when in use, is the invention of Mr. G. H. Hazleton, of Birmingham, Conn. The stand, when not in use, is contained by the cup.

An improved pump having a heavy plunger fitted to a barrel, having at the top a large funnel for receiving water and at the bottom a single valve, has been patented by Mr. Rocco Misso, of Macon, Miss.

A wedge provided with a spring pawl, to be used in connection with one or more wedges having ratchet teeth, has been patented by Mr. L. F. Johnston, of Pocahontas, Ark. It is designed for splitting logs; the ratchet arrangement obviates bouncing or the slipping out of the wedge.

An improved ventilating flue cap, invented by Mr. John D. McLinden, of New York city has a rotary shield or cap which moves with great freedom and is not liable to become choked by the accumulation of soot around the spindle, the latter being incased by a tube.

Mr. M. J. Hughes, of Jersey City, N. J., has invented an improved apparatus for casting stereotypes, which simplifies and facilitates the operation of casting and preparing for the press. The invention consists in an arrangement of adjustable bars and slotted section pieces which cannot be clearly explained without an engraving.

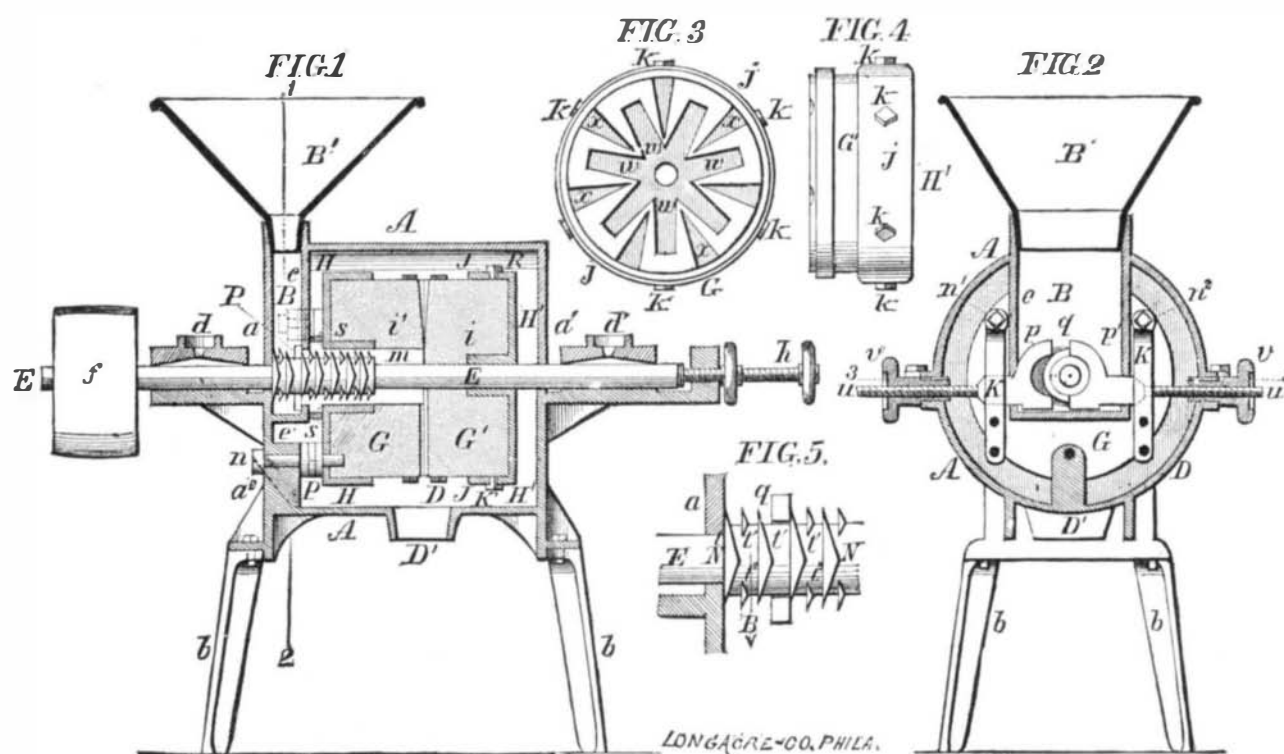
Red and White Wine.

Physicians and others, in discussing the qualities of wine, and the effect of different kinds and vintages on the human system, have arrived at the conclusion that red wine is less injurious to the health than white wine. The subject has been revived latterly in the *Spectator*, and the following reason has been given for the difference in effect. Red wines are rich in tannin; white wines are not: the natural inference being that the astringent principle present forms a counteraction to the stimulating influence of the alcohol contained.

The Steam Engine versus the Horse.

A man may now obtain a mechanical motor, exerting the power of a horse for the price of a horse. If he be able to employ 100 horses, he can obtain 100 horse power in steam engines at a much lower price than he would pay for 100 horses. And the animals will only last a few years, eight or ten at the outside. They must be regularly fed, work or no work; they must rest for at least sixteen hours out of the twenty-four.

Take what pains we will, we cannot obtain a horse power from a horse at much less than 4d. an hour, taking into account the cost for twenty-four hours, and the work done in eight hours, or fewer. For the mechanical horse power, on the contrary, which becomes cheaper the larger the quantity in which it is employed, a cost of a penny per working hour is the outside for a small engine. For a large one a halfpenny or less per hour per horse power will cover all expense. And then the steam horse never tires. Instead of one rider being able to tire out three horses or more in a day, one steam horse will work steadily on so as to employ the successive care of three drivers in the twenty-four hours, if each work for only eight hours. And the steam horse eats only in exact proportion to the work he does. He costs, as matter of interest of



SECTIONAL VIEWS OF VERTICAL BURR MILLS.

upon a fan-shaped spout, allowing the injurious gases to escape from the metal before it reaches the mould.

Mr. Albert H. Hogins, of Morrisania, N. Y., has invented an improved ironing table, whose top has a movable wedge shaped section, which may be used as an ironing board for special purposes.

A simple and effective support for weak ankles has been patented by Mr. J. G. Pugsley, of Brooklyn, E. D., N. Y.

money and depreciation, less than half the cost of the animal, per annum or per week. And as to provender, he consumes only the exact quantity which he converts into work. For all exertion of power in a continuous groove, then, the productive energy which is added to the resources of a nation by the discovery and application of the mechanical theory of heat is practically illimitable.—*The Builder*