

IMPROVED GRINDING MILLS.

Geared mills with vertical spindles, says the inventor of the improved mills illustrated in the annexed engravings, are going out of use. Their toothed wheels or cogged gears are too rough in running and too expensive, while spindles in a vertical position do not run well, because they cannot be kept thoroughly oiled, and do not lie steadily against their bearings. Almost all the shafting used for driving machinery is now horizontal, with vertical pulleys, and therefore the driving pulleys of grinding mills should obviously also be

The engravings show three different types of mill, the principal points of difference being the construction and mode of adjusting the spring bearings by means of which the pressure of the stones is automatically controlled. The mills are adapted to all varieties of grinding and for every substance, whether wet or dry, hard or tough, heavy or light, brittle, or fibrous.

The strength and durability, necessary to enable these mills to be run safely at a very high velocity, is secured by the employment of the best materials, metal and stone only

From the annexed engraving it will be seen that the ice receptacle, A, is arranged in one end of the space within the counter, from the main portion of which it is separated by an open work partition which admits of the free circulation of air therefrom around the cooling vessels, B. These are supported by top flanges on side strips, so that there is an open space at their sides and beneath them, for the circulation above noted. The coolers are constructed of any suitable material, and in form suitable to the milk or solid articles which they are to contain. They may be used for milk

Fig. 1

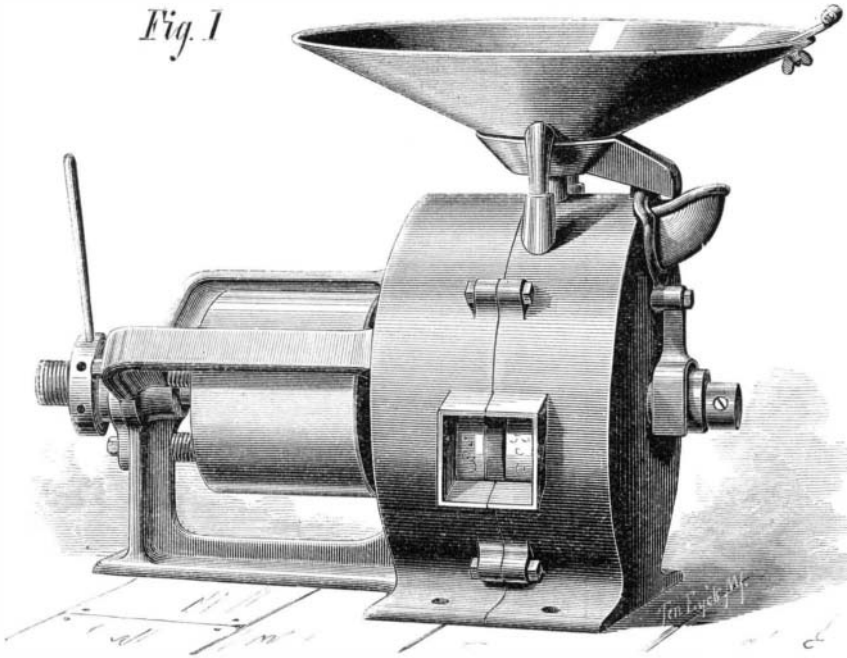
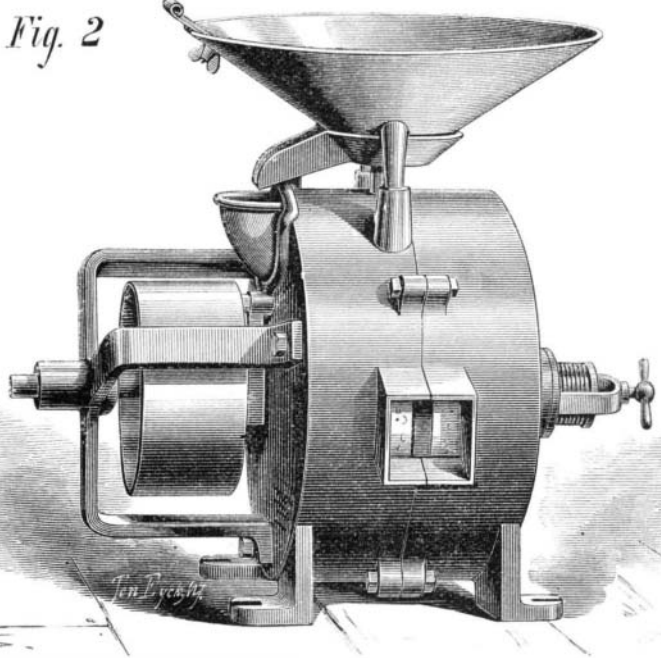


Fig. 2

**HARRISON'S GRINDING MILLS.**

vertical, in order to be as convenient as possible to set up and put in operation.

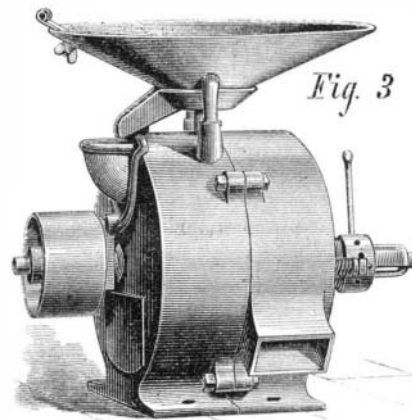
In constructing the mills represented, the horizontal shaft was the inventor's main object; but subsequent experiment showed him other and superior advantages attaching to the form. The machines became more quiet and light running, but ground more rapidly, while their simplicity evidenced that the extensive repairs required in the use of gearing would be avoided. As now made, the mills are compact and convenient to be driven from portable steam engines or horizontal shafting. The boxes for supporting the spindles are four times longer than are usually made, extending almost through the entire mill; and they carry the runner, which is solidly attached to the spindle, in a true plane with the face of the bedstone.

Millstones and the framework on which they are usually mounted are liable to be broken by hard substances passing through the mills, which in many cases have proved destructive to life and limb. To avoid such accident, the inventor constructs his mills so that they may be readily adjusted to any desired strain; and should nails, slugs, or bolts go through the stones, the latter immediately return to their places with such accuracy that no stoppage of the machine is required, but the working position is kept, and all delay avoided.

It is claimed that anything, however hard or ungrindable, which will pass through the eye of the stone will pass out without injury to the stones or mill. In order to accommodate different articles, which require more or less strain in grinding, and each needs a pressure peculiar to itself, the mills are provided with safety springs, which can be readily adjusted or changed to suit. These are also applicable to change of pressure, needed according to the quantity to be ground, as of course it takes more working pressure to grind 50 bushels than 10 bushels of meal per hour. A common working speed for the 20 inch mill is 1,400 turns per minute, and 1,000 turns for the 30 inch mill. The small portable burrstone mills grind 50 bushels of good meal per hour, as regular work, from day to day, and have averaged as high as 80 bushels. This, the inventor claims, is due to the peculiar mode of mounting and dressing the stones, their facility for receiving grain at the eye, and the ease with which the meal passes out of the new discharge spouts. It is due also to the vertical position of the stones, the extraordinary velocity at which they run, and to such an adaptation of speed to grinding surface that, when the meal is once properly ground, it is thrown out and does not clog the furrows and consume the driving power.

The inventor has submitted to us written certificates as to the above mentioned capabilities of his mill. He further states that over 9,000 machines were sold up to the beginning of the present year

being employed in their construction. They are delivered to purchasers ready for use and complete running order.



For further information address the inventor and manufacturer, Mr. E. Harrison, New Haven, Conn.

IMPROVED REFRIGERATOR AND COUNTER.

We illustrate herewith a useful combination of counter and ice box, especially well adapted to the uses of dealers in butter, milk, poultry, and similar perishable staples. The idea is to convert the counter, or rather the unutilized space

below, butter, poultry, etc., or for either kind of produce alone. The lids of the coolers are hinged together in pairs, and are movable, so that they can be cleansed conveniently. The lid of the ice box is hinged to the center. The cold air from the ice receptacle keeps the coolers at a uniformly low temperature, as no air is admitted to the inside of the refrigerator by the opening of the lids of the vessels. This separate access to each cooler thus necessarily tends to economize the consumption of ice. The cooling effect of the latter is further increased by the passage of the cold drip water over the inclined bottom of the refrigerator to a depressed box in the further extremity of the same, where the water accumulates until it escapes from an adjustable faucet, shown at C.

The slab used to cover the box in winter is represented at D. When the refrigerator is in use, the lid of the ice receptacle, which need be opened for replenishing the contents but once daily, serves as a counter, and a hinged leaf, E, upheld by a brace, augments the space, and answers as a support for the scales.

The present arrangement, among the dealers in Washington and other large markets in New York city, is to pack their goods directly upon the ice when the refrigerator is used as a counter. As this is detrimental to the quality of meats and cannot be beneficial to butter in firkins, especially as that material is so easily affected by impure surroundings, the improved counter and refrigerator above described will doubtless be found an advantageous substitute.

Patented through the Scientific American Patent Agency, by Mr. H. H. Barnes, September 7, 1875. For further information relative to sale of rights and of patent, address the patentee, 1,004 Pacific street, Brooklyn, N. Y.

A Microscopical Soiree.

At the recent microscopical soiree of the British Association, 110 microscopes were arranged in classified divisions, devoted to crustacea, arachnids, insects, marine and fresh water fauna, ciliary action, vertebrate circulation, fertilization of flowers, cryptogamia, microspectroscopes, etc. The idea of practically illustrating Sir John Lubbock's "Fertilization of Flowers by Insects" was novel, and so far carried out as to give a vivid idea of the processes to those who were previously unfamiliar with them. The geological division included an exhibition of the perennial *Cozium Canadense*, which must be exhibited again and again to live down the hostility to its animal nature.

BARNES' REFRIGERATOR AND COUNTER.

beneath the same, into a refrigerator. In winter, when ice is not required as a preservative, the refrigerator lids are closed, and a slab of marble or wood placed above. By this arrangement not only does the seller have his refrigerator conveniently at hand, but he is not obliged to find space for the storing of the same when its use is not required. Furthermore he is provided with an ice box of superior construction, which, by an economical employment of ice, refrigerates a large quantity of goods.

THE Cincinnati Exposition closed on October 9. In spite of the prevailing business depression, the fair was in every way successful, having been visited by over 350,000 people. There will be no exhibition next year. It is intended to devote \$400,000 to the construction of a magnificent brick building, in which will be held the Exposition of 1877.