

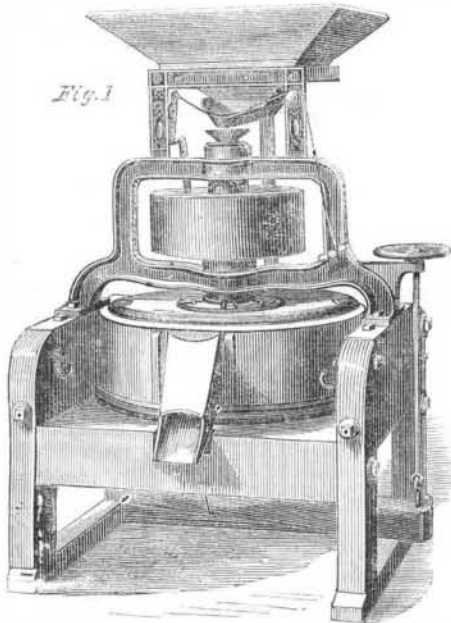
IMPROVED GRIST MILL.

The accompanying engravings illustrate one of the latest improvements in grinding mills. Although they have of late years engaged a large share of the attention of inventors, and it would seem as if there was but little room for improvement, yet this one has some features that are really novel and important, especially the method of attaching the spindle to the runner stone, which differs in principle from any hitherto known.

The grinding is done by French burr-stones cemented into broad, shallow cast iron cups, *s* and *t*, leaving two or three inches of the naked stone projecting above the cup to allow for dressing down and wear. The lower or bed stone, *g*, with its cup, is supported on a steel point or cockhead, let into a recess under its center and is perfectly balanced, thus naturally hanging level, though permitted to rock freely on the central point. It is prevented from rotating by pins, *w*, on the sides, which project into vertical slots, *k*, in the frame, and thus allow entire freedom to the rocking motion, which permits it to assume any position necessary to adapt its surface to that of the runner stone.

To prevent it, however, from assuming a vibratory motion while the mill is in operation, a series of elastic bars, *i* *i*, are made to press on the sides of the cup by means of set screws, producing any required degree of friction, and thereby holding the stone perfectly steady. By this arrangement the stone *trams* itself, as soon as it is brought up against the runner, with unerring certainty, and is held steady by the spring bars.

The cockhead which supports the bed-stone passes down through a sleeve, *5*, and stands with its lower end on a bridge-tree, *q*. One end of this bridge-tree rests on



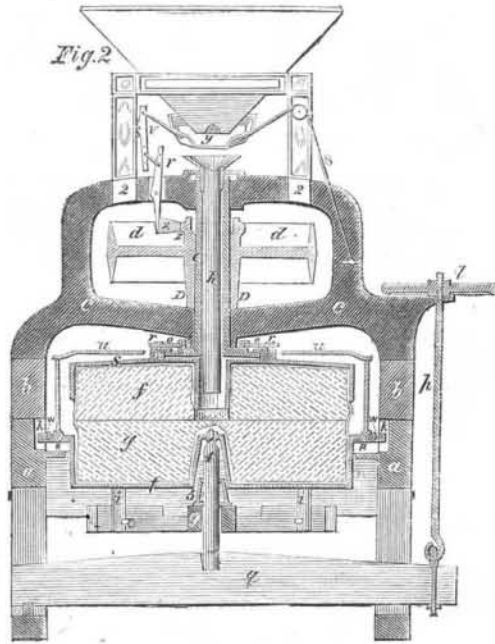
a pivot and the other end is supported by the rod, *p*, passing through a projection in the upper frame, and having a screw and hand wheel, *l*, at the top. By this means the bed-stone is raised or lowered to regulate the fineness of the grinding.

The upper stone, which is the runner, is strongly cemented into a cup, *s*, which is attached to the spindle by a contrivance hereafter described. This spindle is hollow and runs in an iron frame, *e* *c*, cast in one piece, which stands upon and is bolted to the upper part, *b*, of the husk. The lower box of the frame projects downwards into a groove around the lower end of the spindle, which forms a pivot for holding oil, and the lower end, *D* *D*, of the hub of the pulley rests on the upper side of the same box. On the upper end of the hub are projections, *z* *z*, which, when rotating, strike the block, *x*, and through the levers, *v* *v*, act on the shoe, *y*, to give it the proper vibratory motion for feeding the grain into the mill.

There is a projecting ring, *R*, on the edge of the lower cup, *t*, which supports the curb, *u*, which covers the runner stone and cup, leaving only the central portion exposed to sight.

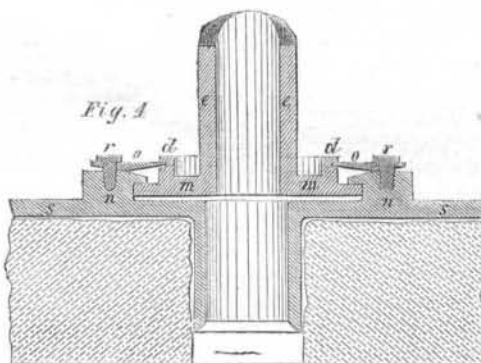
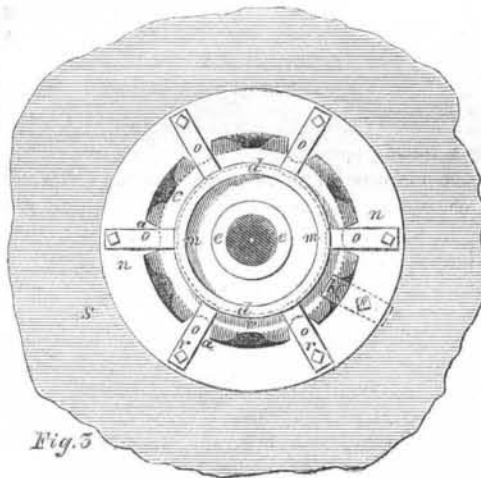
A stationary tube, *h*, passes down through the hollow spindle, which prevents the grain from touching the revolving surface until it reaches the point of entrance between the stones. In order to get at the stones for the purpose of dressing, the husk, *B*, is furnished with hinges, which permit the upper part, with the iron frame

to which the upper stone is attached, to open out and turn completely over (the hopper and its frame having been removed), which brings the grinding surface of the upper stone uppermost and leaves that of the bed-stone exposed. The latter is dressed in the usual manner; but the runner (should the face ever get untrue, which will



seldom happen) must be dressed by being turned round on the spindle under a stationary point stick, which will indicate the high points and bring the face perfectly true with the spindle.

The contrivance by which the spindle is attached to the runner stone is shown more clearly in Figs. 3 and 4. Fig. 4 is a section of that part of the spindle and cup where the attachment is made. Fig. 3 is a horizontal projection of the same, showing its appearance when viewed from above. At the bottom of the spindle, *e* *e*, is a plate, *m* *m*, cast in one piece with it. On the upper side of this plate is a ring, *d* *d*, at a sufficient distance from the spindle to receive the bottom of the lower box into the groove thus formed, which becomes a cup for holding oil. On the outside of this ring is a groove to receive the points of the springs, *o*. The plate extends



beyond the ring, *d* *d*, some distance, and the edge is accurately turned to fit the inside of the ring, *n*, which is cast in one piece with the cup, *S*. Around the edge of the plate are notches, *c*, which are of proper size to permit the projections, *a*, on the inside the ring, *n*, to pass

through them. These projections are near the top of the ring, so that there is room for the thickness of the spindle plate under them and about a quarter of an inch to spare. When, therefore, the notches, *c*, are made to register with the projections, *a*, the plate will drop into the ring, *n*, and on being turned so as to bring the projections between the notches represented in the engraving, it cannot be withdrawn. To retain the two in this relative position, a key, *k*, is passed through the ring, *n*, into one of the notches in the plate and is held there by the screw bolt, *s*. This locks them both together, so that one cannot rotate without the other. The stone and cup thus hang on the spindle plate by means of the projections or hooks, *a*, and are carried round with a true and even motion so long as the weight will keep the hooks down so as to rest on the edge of the plate. To provide for cases in which the weight is not sufficient for this purpose a number of springs, *o*, are placed around the spindle with their points entering the groove on the outside of the ring, *d*, and the outer ends resting on the top of the ring, *n*. These ends are drawn down by the screw bolts, *r*, and the points thrown upward with any degree of force necessary to prevent the hooks, *a*, from rising off the plate, *m*, by pressure occasioned by grinding. But if foreign substances that cannot be ground should pass through the mill, the stone can rise by the yielding of the springs and permit it to pass out, and then quietly return to its natural position without any vibratory motion afterwards, and without straining or injuring its connection with the spindle.

It will be easily seen that this principle of attachment of the spindle to the runner, as well as the method of holding the runner steady, is quite as applicable to an under as to an upper runner mill.

The patent for the above improvement was issued, through the Scientific American Patent Agency, Dec. 6, 1859, and any further information in relation to it may be obtained by addressing C. P. Buckingham & Co., Mount Vernon, Ohio.

A NEW GROUPING OF THE STARS SUGGESTED.

MESSEURS. EDITORS:—As I believe the SCIENTIFIC AMERICAN is doing more permanent good than any other paper in the land, I should be glad to see the following points suggested in it by you. Suppose the celestial map was divided by meridians running along the first points of Aries, Taurus, Gemini, &c., and all the stars south of Aries were embodied into one constellation and called *South Aries*, and all the stars north of Aries were embodied into one constellation and called *North Aries*, and the same of all the other constellations of the zodiac; this method would condense the constellations from upwards of one hundred to thirty-six in number, would reduce them all to plain mathematical forms, lessen their perplexity, simplify their names and render this portion of astronomy perfectly intelligible to children. J. W. P.

Newborn, Ga., May 14, 1860.

[The objection to this plan is that the first point of Aries is constantly moving among the stars, owing to the precession of the equinoxes. It is now about 30° west of the constellation, Aries, with which it was associated when the signs of the zodiac were named—300 years before the Christian era. The plan suggested of forming the constellations seems to us an admirable one; but would it not be better to give them names other than the names of the zodiacal signs? Signs and constellations having the same names, and still not corresponding with each other, are a manifest source of confusion.]

A HOT-BED STOVE WANTED.

MESSEURS. EDITORS:—In these days of gardening and fruit-growing we need, or think we do, a small arrangement for propagating cuttings of plants of various sorts by means of bottom heat—something movable and heated with a lamp, the plan of which some ingenious man could easily conceive; and if the thing be not expensive, I think it would find a ready market in very many houses through the country. The "Waltonian Propagating Case" described in the *Horticulturist* of 1858, (page 403) is something like the thing. THE SCIENTIFIC AMERICAN seems the right source to inquire from, whether there is any such thing within reach of country men, or whether some of your readers will not supply one in reasonable time. W. B. W.

Johnsville, N. Y., May 12, 1860.]