

## IMPROVEMENT IN GRINDING MILLS.

The reducing of grain to flour, either by grinding or pounding, must have been one of the first steps in the growth of the mechanic arts, and we learn from the old Egyptian paintings that this was effected by rubbing the grain between two stones long before the commencement of written history. Notwithstanding the great antiquity of this art, it has not yet reached perfection, and scarcely a week passes in which we are not called upon to procure a patent for some new improvement in grinding mills. Indeed, the sixty years of the present century have brought forth a larger number of these improvements than all previous time, and the last decade has been more prolific than any former one. The modern improvements, however, generally relate to some detail in the construction of the mill, such as hanging or adjusting the stones, lubricating the bearings, &c. But so extensive is the manufacture of flour, that these improvements, however slight, provided they do really effect a better operation of the mill, are of very great value.

The objects of the invention here illustrated are to secure a more perfect adjustment of the stones to each other, and a greater convenience in the lubricating of the joints. We give the inventor's own description:—

"A represents a cast iron frame, on the upper part of which is a cylindrical shell, B, to receive the runner or understone, C. This shell is of larger dimensions than the stone, C, so as to leave a space, *a*, all around and underneath the stone, C, as shown clearly in Fig. 1. The shell, B, has its upper edge made perfectly smooth and even, so that all parts of its surface will be in the same plane. The shell is cast in the same piece with the frame, A.

"In the lower part of the frame, A, there is placed a horizontal driving shaft, D, which has a bevel wheel, E, secured to its end. This wheel, E, gears into a bevel pinion, *a*, on a spindle, F, the lower end of which is stepped in a socket, *b*, the upper end of which has a flanch, *c*, around it. This socket is fitted within an adjustable box, *d*, which rests upon a lever supported at its further end 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, F, is provided with a collar, I, Fig. 2,

which is fitted within a box, J, attached to the underside of the shell, B. This box, J, is of cylindrical form, concentric with the shell, and within it there are placed bearings, *h*, which are adjusted snugly against the collar, I, by keys, screws, or other means. The collar, I, is hollow and open at its lower end, having a space, *i*, all around between it and the spindle, as shown at *j*, in Fig. 2. 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, as shown clearly in Fig. 2. The upper part of the collar, I, is perforated with holes, *l*, which are just above the bearings, *h*, and below the upper end of tube, *k*. *K* is a tube which extends along underneath the shell, B, and communicates with the upper part of the box, J. This tube, *K*, is shown clearly in Fig. 1, and it forms a means of supplying the box, J, with oil at any time. The collar, I, within the box, J, forms the bearing surface of the spindle.

"The box, J, is covered within the shell, B, by the cap, *m*, having a circular aperture in its center to allow the spindle to pass through, said aperture having a

flanch, *n*, around it, which flanch is covered by a cap, *o*, on the spindle, as shown clearly in Fig. 2. On the upper end of the spindle, F, there is placed a clearer, L. This clearer is formed of two arms, *p*, attached to an eye, *g*, which is fitted on the spindle and secured thereto by a feather and groove. The arms of the clearer, L, extend nearly to the side of the shell, B.

M represents the driver, which is fitted on the upper part of the spindle, F, and, like the clearer, is secured to the spindle by a feather and groove. The driver, M, rests on the eye, *g*, of the clearer, and the drivers has two arms, *r*, projecting from its opposite sides, as shown in Fig. 3. The arms, *r*, are rounded at their face sides or bearing surfaces, the curvature being in a vertical plane, as shown at *s*, in Fig. 4. The arms, *r*, of the driver fit within recesses, *t*, of a shell, N, which is secured concentrically within the runner, C, and has a pendant bearing, *u*, which rests upon the apex of the spindle, as shown in Fig. 1. The damsel, O, is attached to the upper surface of the shell, N.

"P is a cast metal cylindrical box, in which the upper stone, Q, is secured by set screws, *w*. This box is

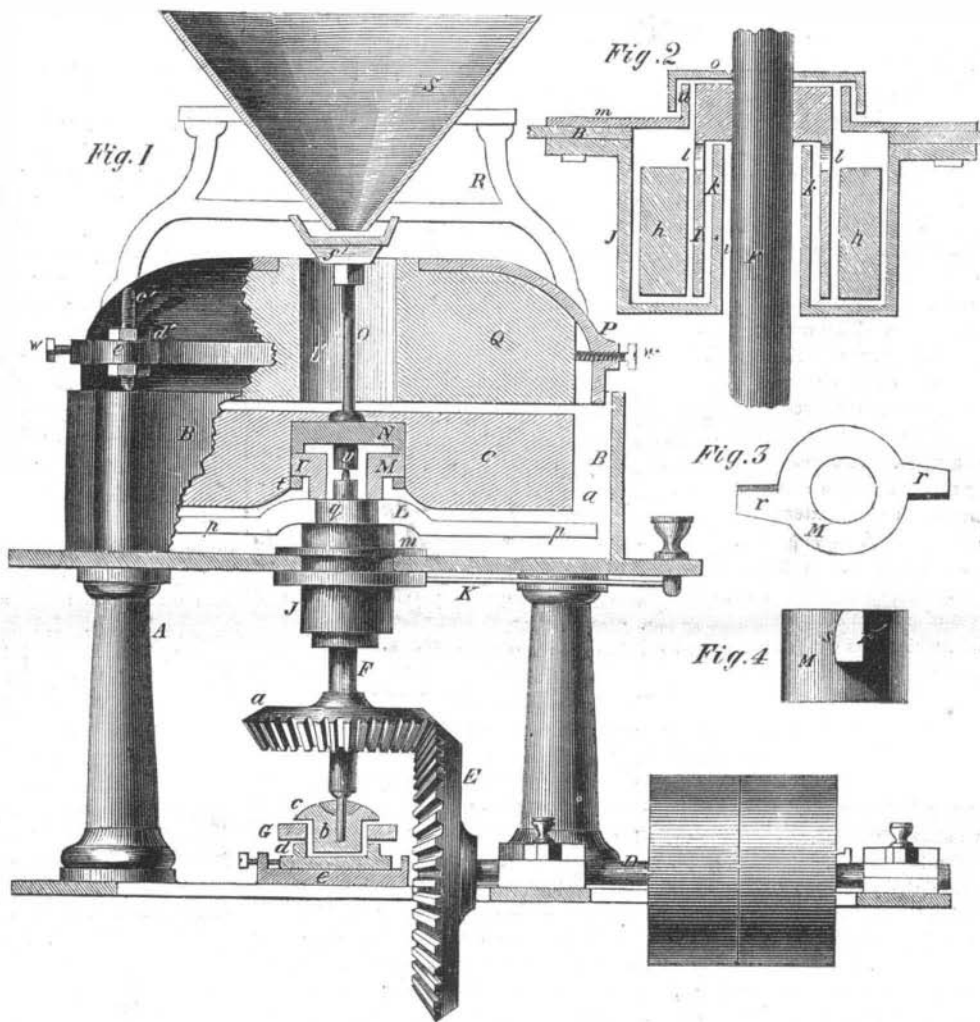
always kept properly lubricated, as oil may be poured into the box, J, at any time, and the oil within the box is retained therein, in consequence of the perforations, *l*, in the upper part of the collar, I. These perforations cause the oil which may have a tendency to rise in the space between the tube, *k*, and collar, I, to pass the holes, *l*, into the box, instead of passing over the top of the tube, *k*, which extends above the holes or perforations, *l*. 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 over-supplied."

The patent for this invention was secured to Edmund Munson, through the Scientific American Patent Agency, April 3, 1860, and any further information in relation to it may be obtained by addressing Hart & Munson, manufacturers of grinding mills, at Utica, N. Y.

## THE JAPANESE AT THE PATENT OFFICE.

On the morning of the 21st ult., at 10½ o'clock, the Envoy and a suite of about forty left Willard's hotel to visit the Patent Office. On their arrival they were conducted into the office of the Secretary of the Interior,

where they were formally introduced to him, also to the Commissioner of Patents. The Commissioner, taking the Envoy, led the way up into the halls above, where they were slowly conducted among the long rows of cases containing models of inventions and relics of the country. The case containing the uniform worn by General Washington during the Revolution was pointed out to them; they stood and looked upon those precious relics with the most reverential awe—words could not have expressed their feelings—the sober, thoughtful countenances of these inhabitants of the far-off isles of the sea showed that wherever the name of Washington is known, it is revered. The Declaration of Independence and Washington's Commission were pointed out to them, and when they fully understood their import, they made a low *salaam* in token of their reverence for those honored documents. They were interested in the case containing the clothing presented to Minister Harris at Yeddo, and by him forwarded to our government. Their attention was particularly given to the examination of fire-arms and agricultural implements. The stuffed birds interested them



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turned true at its lower part so that it may fit into the shell, B; the box being provided with a shoulder or flange, *a'*, all around it, which flange is parallel with the lower edge of the box, P. The stone, Q, has an eye, *b'*, made in it centrally, and the box, P, is secured in proper position by means of screw rods, *c'*, and nuts, *d'*, the rods, *c'*, being attached at the shell, B, and passing through eyes, *e'*, at the outer side of box, P. On the box, P, a hopper frame, R, is placed containing the hopper, S, and shoe, *f'*, which may be arranged as usual.

"It will be seen from the above description, that the runner, C, will, in consequence of the arrangement of the driver, M, relatively with the apex of the spindle, F, be allowed to adjust itself to the stone, Q, so that the parallelism of the faces of the two stones may be preserved as the stone, C, rotates. This arrangement, to wit: the having of the apex of the spindle in line with the bearing surfaces of the arms, *r*, of the driver, admits of a universal-joint movement of the stone, C, an effect which cannot be obtained in the ordinary arrangement.

"This invention also enables the spindle to be

very much, and they showed their acuteness by remarking "No smell." Throughout the whole visit they expressed their admiration for everything in the highest terms, and several times asked where all these things were obtained. The Japanese artists took no sketches, but an opportunity of doing so will be afforded them if they wish it. It is believed that their government will publish an illustrated report of the Embassy in this country, in which, probably, many of our best inventions will appear.

The crowd soon became so oppressive as to block up the passages, and it being very warm, the Envoy signified his desire to retire. They then took their leave—expressing their warm thanks to the Commissioner and his *attaches* for the courteous manner in which they had explained everything to them.

M. Thomas, of Paris, has made an improvement in the Bunsen battery to obviate the unpleasant smell arising from the nitric acid in the carbon cell. He causes the gases, as they arise, to pass into a porous vessel, where they are decomposed, and produce a secondary electric current.