

On the other side of the Ocean, the British Association for the Advancement of Science will open its sessions, at Brighton, on the 14th of August. The retiring President, Sir William Thompson, will transfer the Presidency to his successor, Dr. W. B. Carpenter.

New Explosive Mixture.—M. Violette has made the observation that by fusing together a mixture of the nitrate and acetate of soda, a white, hard mass is obtained, which, when heated to 350° C. (662° F.), explodes with violence. By plunging into the liquid mixture a lighted body, an explosion instantly follows.

Editorial Correspondence.

TECHNICAL NEWS FROM GERMANY.

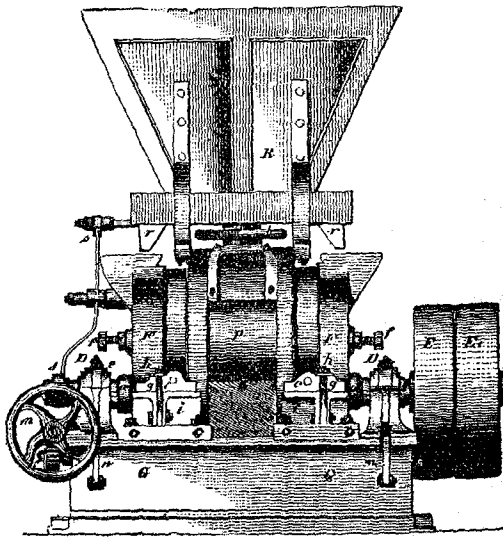
LEIPZIG, in July, 1872.

Editor Journal of the Franklin Institute:

SIR:—The technical journals have lately contained many communications upon the subject of grinding mills with vertical mill-stones. Having paid considerable attention to the improvement of mills of this description, I am able to furnish you with some exact information on the subject.

The figures 1, 2 and 3 represent views of mills of my construction,

FIG. 1.

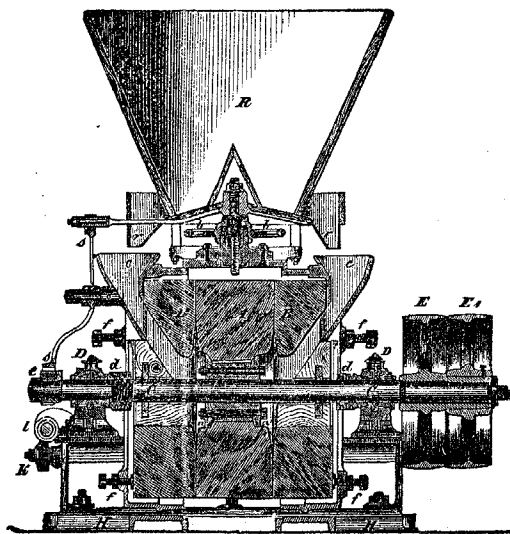


in which the parts will be recognized from the following description : The mill has three stones ; of which the two outer ones, B B, are stationary, while the third and central one, A, is movable. This is attached to the shaft C, and the stones, B B, are placed in the cases, F F. Through these outer stones pass the feeding channels for the grain, which are connected with the

funnels, *c c*, in the cases, *F F*. A cast-iron plate, *H*, serves the purpose of a base to the mill. Upon this are the standards, *G G*, over which, at both ends, are placed the bearings, *D D*, which serve to support the mill shaft, *C*.

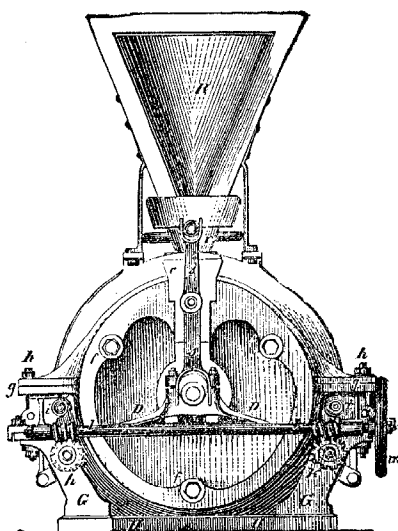
The most important problem which the constructor of these mills must solve, is to so arrange the two cases carrying the stationary stones, that they may be neared to or removed from the central rotating stone simultaneously and with equal movements, for only by this arrangement will the two grinding surfaces perform like service. For

FIG. 3.



In consequence of this arrangement of parts, it is possible to move the cases, *F F*, with the stationary stones, *B B*, to any distance from the running stone, *A*, and at the same time to preserve their even distance from it by the movement of the supports, *i i*, which is accomplished by the rotation of the shafts. Both shafts are simultaneously put in motion, since the worms, *l l*, operating the toothed

FIG. 2.



this purpose each of the standards is furnished with a shaft, on the outer ends of which are placed the screws which engage in the wheels, *K K*. The wheel shafts are provided with right- and left-handed screws, and carry four box nuts, which are attached to the supports, *i i*, upon each pair of which the case for holding the stone is placed and fastened by the screws, *h h*.

wheels, K K, are on a common shaft. This is provided with a hand-wheel, *m*, by turning which the adjustment of the stone is effected.

The running stone, A, is firmly attached to the shaft, C; and may be secured in proper position by the screw-collars, *d d*.

The mill is driven from the pulley E (the loose pulley E' is also provided). Both pulleys are arranged so as to be detached, for convenience in case the mill need to be taken apart for repairs.

The grain is fed into the hopper, R, and after passing through *r r*, and the funnels, *c c*, reaches the grinding surfaces. The shoes, *r r*, are given a shaking motion by the lever, *s*, and the eccentric, *e*. The quantity of feed is regulated by raising or lowering the shoes from hand-wheel, *b b*.

In order that the mill may be readily taken apart for the purpose of sharpening the stones, the bearings, D D, as well as the stone cases, F F, are so attached as to permit of their being removed. To assist in the removal of the stone-cases, F F, together with the stones B B; openings, *c c*, are made in the plates, *g*, which permit of the application of a crane for the purpose.

The mills are built of two sizes: for stones of 500 and for those of 800 millimetres in diameter. The following resumé will indicate the advantages to be derived from this form of mill:

The work of the mill, estimating from the grinding surfaces, is doubled; and it is possible, with this construction, to use much smaller stones than are necessary in horizontal mills, at the same time affording quite as great an amount of grinding surface, and quite as great a production of meal, as the latter.

Suppose, again, that we have a vertical and horizontal mill of equal producing capacity. It will be found that the former will require much less power to run it than the latter, from its more compact form and its much lighter weight.

The putting up of a vertical mill is very simple. It is finished in the machine-shop, and needs only to be fastened to the floor with four screws in order to be ready for operating. In addition to this, one story of the mill building may be saved by its use, seeing that the space required in horizontal mills for the wheel work is here not required, and a conveyer for transporting the meal may be brought directly beneath the mill.

Another advantage of these mills, not to be undervalued, consists in the extreme simplicity of the method of transmitting the power required to operate them. Complicated and expensive trains of wheel

work are unnecessary, and a simple, relatively small shaft, placed at a level with, or over, or under the mill, will answer the purpose. Cooling devices are found to be unnecessary, since but little heating of the meal occurs, owing to the construction. The product, too, is, from this cause, found to be improved for storage.

The amount of attention required with the vertical mill is considerably less than with the old form, respective both of the running and repairing.

Experiments with this form of mill have been made in the grinding of cements, heavy spar, &c., and have afforded very satisfactory results.

In addition, when the fact is taken into consideration that, with equal producing capacity, the vertical mill is considerably cheaper than the horizontal, the following summary of advantages may be arranged :

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| 1. Large duty, at least equal to the best constructed horizontal mills. | |
| 2. Economy of power. | } Therefore economy of space,
capital, and in cost of operating. |
| 3. Simple transmission. | |
| 4. No cooling apparatus. | |
| 5. Small first cost. | |
| 6. Small mill building necessary, lessening first outlay. | |
| 7. Ease of repairing and sharpening stones, and therefore economy of labor. | |

W. H. UHLAND, *Engineer.*

(To be continued.)

A Solvent for Shellac.—Dr. I. Walz describes the following process for obtaining a neutral solution of shellac in water.

The shellac is broken up and covered with a concentrated solution of carbonate of ammonia, and boiled upon the water-bath until the ammoniacal smell has disappeared. More of the solution is added, and the boiling is continued until the shellac forms a coherent, sponge-like mass. The carbonate of ammonia is then expelled by further boiling, and the mass will readily dissolve by pouring boiling water upon it. A kind of soap will be found floating on the surface, which may readily be removed by straining. The solution, brought on paper, cloth, &c., dries rapidly, and leaves a thin, lustrous and adherent film of shellac behind.