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[NEW SERIES.]

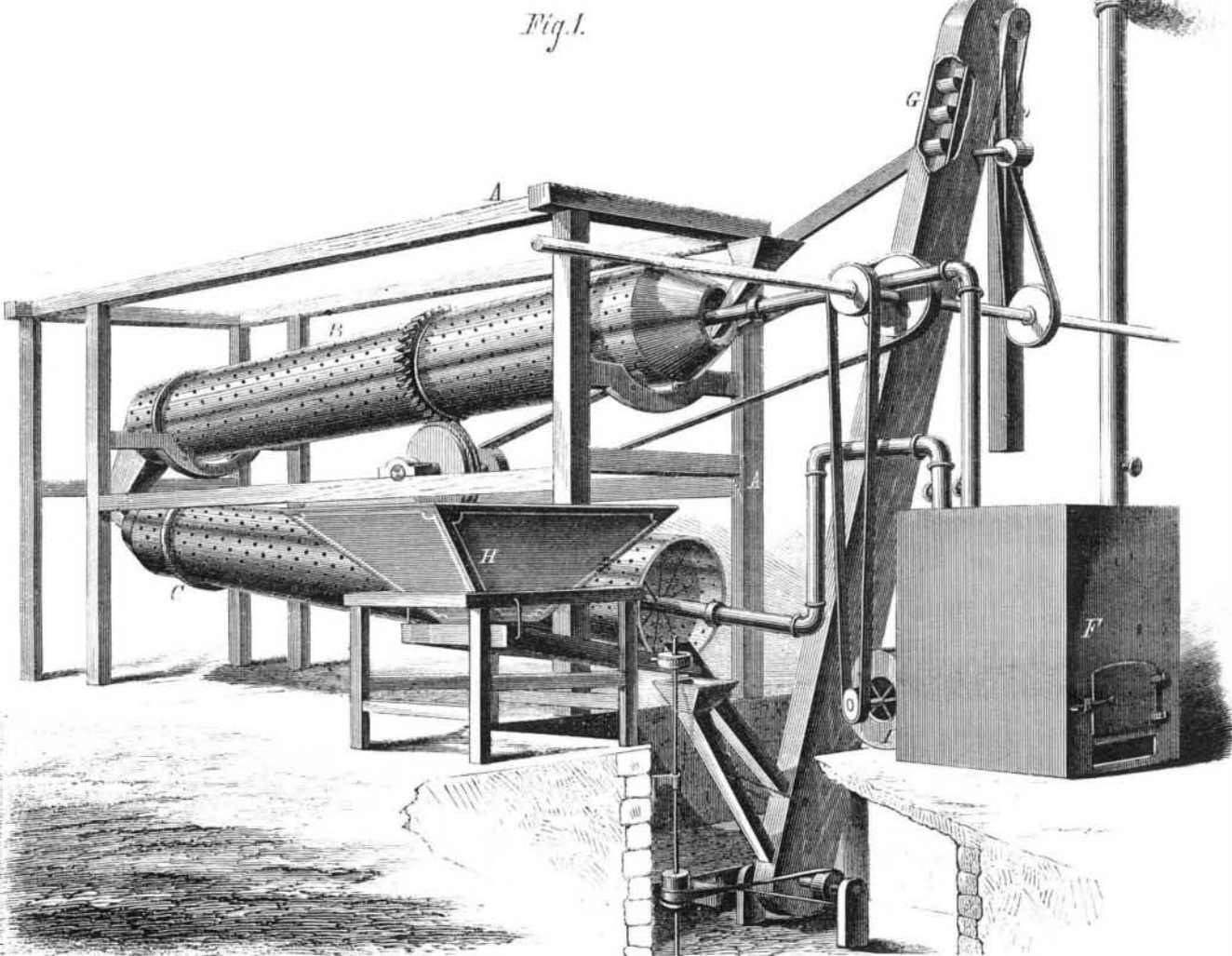
NEW YORK, JUNE 15, 1872.

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[IN ADVANCE.]

Improved Coffee and Grain Dryer.

We this week illustrate a new machine, invented by José Guardiola, of Chocóla, Guatemala, Central America, for artificially drying grain, coffee, malt, etc., so as to prepare it for preservation, transportation, or other purposes. It is more particularly intended to supersede the common method of drying such articles by exposure to the sun, by materially hastening the evaporation of the surplus moisture. It consists of a new arrangement of cylinders, hot air tubes, etc., for drying the grain, and a new construction of furnace for heating the air.

In Fig. 1, A shows the frame of the machine, which serves as a support for two inclined perforated cylinders, B and C. The cylinder, B, is so placed that its lower end is above the upper end of the cylinder, C, and they are there connected by a fixed neck or conduit, as seen in the engraving. The cylinders are supported on small rollers having their supports in the frame, by which means they can be readily revolved around their axes. Rotary motion is imparted to them by a worm gear working in toothed wheels attached to them, one of which is shown at B. Each cylinder contains an inner perforated tube, which is shown in section in Fig. 2, where D is the outer shell of the cylinder and E the contained tube. It will be seen that, between the inner tube and outer shell, there are radial partitions dividing the cylinder into segmental compartments. From these partitions, transverse plates project into the compartments and carry, at some of their ends, wings which are turned alternately inward and outward, as shown in the figure. The partitions and their appendages extend the whole length of the cylinders. The inner tubes of the two cylinders are coupled so that they remain free to revolve with the two hot air flues which project from the heater, F, as shown in Fig. 1. G is an elevator for raising the grain to be dried to the requisite height; it has one spout extending from the upper part into the open end of the cylinder, B, and another leading downward to a suitable receptacle for the grain. A valve is arranged so as to open whichever spout is to be used, and to shut off the other. From



GUARDIOLA'S COFFEE AND GRAIN DRYER

be dried is conveyed from the hopper over the vibratory shoe to the lower part of the elevator, and thence to the upper end of the cylinder, B. Within this cylinder, it is distributed through the compartments and gradually conveyed to the lower end, from which it passes through the stationary neck into the cylinder, C, where it is again agitated and moved along, while within the cylinders the grain is constantly subjected to the action of the heated air which passes from the perforations in the contained tubes into all the compartments and out through the outer shells. If, after having passed through the cylinder, C, the grain should not be dry enough, it may be reconveyed to the elevator and passed again through the machine, and this may be repeated as often as is necessary. When the required degree of dryness is obtained, the grain is finally discharged through the proper spout into a receptacle provided for it. The cylinders may be revolved five or more times in a minute, or slower, according to the requirements of the case. The temperature in the cylinders is ascertained by a thermometer, and regulated by the quantity of fuel supplied to, and the use of dampers in, the heating apparatus. The complicated motions, given to the grain by the partitions, plates, and wings, cause it to travel a distance of about three miles in an hour, and the evaporation goes on rapidly. Coffee, which contains fifty per cent of water, takes from eight to ten days to dry in the sun; it dries in less than twenty-four hours in this machine. Grain would dry in one or two passages through the cylinders.

Mr. Guardiola is an extensive coffee grower, and has invented other machines of great practical value in curing coffee and like products of Central America. We have been favored with a generous sample of coffee from the Chocóla plantation, worked by Mr. Guardiola, and can personally testify to the plumpness of the berry and its fine flavor when cooked.

We notice elsewhere a coffee huller invented by this gentleman, and we shall present engravings and descriptions of other inventions pertaining to the same industry, from the same source, in future issues.

The invention was patented through the Scientific American Patent Agency, May 7, 1872. For further information Mr. Guardiola may be addressed, care of Ribon & Muñoz, 63 Pine street, New York, or care J. C. Merrill & Co., 204 California street, San Francisco, Cal.

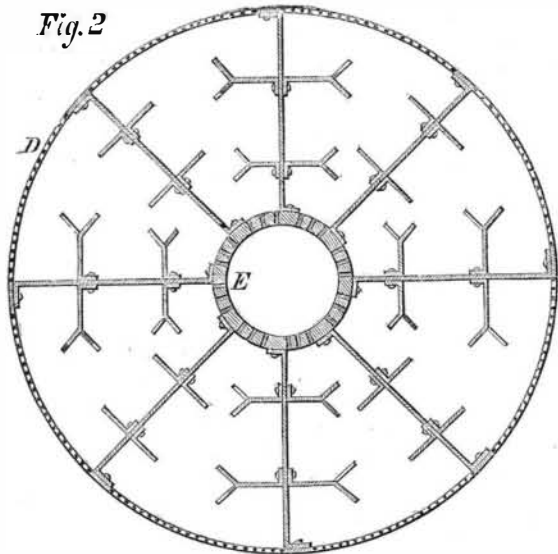
Solvent for Coralline.

The solubility of coralline in an alkaline liquid suggested the propriety of employing soluble glass (basic silicate of soda) which has necessarily always an alkaline reaction, and by the use of which there might be expected to result a compound sparingly soluble in water. The experiment proved successful. Larger or smaller quantities of coralline were dissolved in a boiling solution of one part of soluble glass of a sirupy consistence, previously diluted with four parts of water. Thus were obtained solutions which gave stains ranging from the most delicate rose to the most brilliant carmine. They are well suited for dyeing light colored woods containing but a small amount of tannin, such as Scotch fir, pine, lime, willow, etc. These, without injury to the color, may be subsequently varnished and polished. The same process may be applied to paper intended for the manufacture of artificial flowers, and for a variety of ornamental purposes. These solutions can only be preserved one or two days in a state fit for use. If allowed to stand longer, the silica separates itself out from the soluble glass, the solution gelatinizes, and the color loses its solidity and fire. The tar colors, known in commerce as ponceau, soluble in cold water and solutions of soluble glass, form beautiful red liquids, like that yielded by coralline. These, even after long standing, do not deposit their silica, and can therefore serve to prepare a brilliant red ink. Aniline yellow and vesuvine, on the other hand, are less soluble in soluble glass than in water.

GUARDIOLA'S PESTLE FOR HULLING COFFEE, RICE, ETC.



Our engraving shows a novel form of pestle to be used in hulling rice, coffee, etc., either by hand or machinery. It is



the lower part of the cylinder, C, a spout leads into the lower part of the elevator. H is a hopper, from which the grain is