

NOTES ON FAIENCE AND ITS MANUFACTURE.  
No. II.

The word "faience" is now generally used to designate that class of earthenware which, consisting of an interior body of white or colored clay, is externally covered with an opaque enamel, the base of which is formed of oxide of lead and tin. The art of enameling was introduced into Europe by the Arabs in the eighth century, subsequent to the invasion and subjugation of Spain. While enamel was at first used only to decorate pottery, it was gradually applied as an impermeable covering to replace the old primitive glazing. From Spain this art soon found its way into Italy, where goods enameled in this manner were called "majolica," from the island from which the first goods of this character had been imported. The largest majolica works in Italy were situated at Faenza, a small city near the river Po. A potter employed in that town, toward the end of the thirteenth century emigrated to France, and founded there the first majolica works, at Nevers. From the maker's native place these goods received in France the name "faience," which has since been universally adopted.

The faience industry soon became very important throughout France; this was especially due to various improved processes and apparatus invented by Bernard Palissy, of Saintes. The goods produced by him at the latter place were highly esteemed for their artistic merits, and are even to-day eagerly sought for by antiquarians. In Italy the ornaments were generally formed by hand, while Palissy used moulds of plaster of Paris and wood for that purpose. In this way he was enabled to furnish an unlimited number of copies of the same design at a lower price than his opponents, and he soon controlled the entire market. His eminent success induced King François I. to establish a faience factory at Rouen, and it was at that place that this branch of industry subsequently attained its highest development. Nicholas Poirel and one Poterat were the first private persons to which royal letters of permission were granted to engage in faience, in 1644 and 1673 respectively; in course of time that favor was conferred upon many others, and in the eighteenth century thousands of men and women were employed in the numerous workshops of that place. Rouen ware was very heavy but tasteful, blue being the predominating color, and employed in all shades. Few other colors were used.

From France faience was gradually introduced into Germany and England. Nuremberg potters were especially renowned for their productions, and for nearly a century the faience of Hirschvogel and his sons, the principal manufacturers of that city, was exported to foreign countries all over the world. In England, Wedgwood, by his many improvements, his skill and energy, elevated the faience industry to the rank of one of the prime factors of English wealth.

In commerce there are distinguished two classes of faience principally, the "common" and the "fine." Common faience is again divided into the "brown" and the "white." For making brown faience the following mixture is generally used:

Clay.....	30 parts.
Green marl.....	36 "
White calcareous marl.....	12 "
Sand or quartz, containing a little clay.....	22 "
	100

White faience is composed as follows:

Clay.....	8 parts.
Green marl.....	36 "
White calcareous marl.....	28 "
Impure (aluminous) sand.....	28 "
	100

These materials are finely pulverized and then mixed in large rectangular tanks with sufficient water to form a thin, easily flowing liquid. The stony particles subside, and the supernatant mass is then drawn off through a sieve provided at one end of the tank, into large ditches dug in the ground in the neighborhood of the factory. These ditches are lined with cement, and in them the clay is exposed to the influence of the air. By this means its qualities are greatly improved. This is probably due to the action of the air on the iron and other metallic oxides present in clay. After three or four months the pulp is taken out and worked for some time on a table like dough. It is then formed in large balls, and again laid aside for several months in cellars or excavations to "ripen," by which it is said to

be further improved in quality. Previous to use it is thoroughly kneaded with the feet and divided into portions of about 50 lbs. each, which are distributed among the formers for further manipulation.

Circular vessels are shaped on the wheel, moulds of wood, metal, and plaster of Paris being used for other shapes. Figs. 1 and 2 represent the wheels used in the operation. Fig. 1



Fig. 1.—POTTER'S WHEEL.

shows a wheel used for pottery of larger dimensions; Fig. 2 one for making small ware. After being moulded the articles are dried either in the air or in special drying rooms, and then go to the "finisher," who, with an iron or steel tool, perfects the form and makes the necessary impressions. Next, the handles and various ornaments are attached and dried again in a hot air chamber, when the goods are ready for the oven.



Fig. 2.—WHEEL FOR SMALL WARE.

Photographs at Midnight.

We have before us a photograph of the spooling room of the Willimantic Linen Company's Thread Works, which was taken at midnight. The room is lighted by two Brush electric lamps, which replace sixty-two five-foot gas burners. The photograph indicates that every nook and corner is well lighted.

RECENT MECHANICAL INVENTIONS.

An improved end gate for wagons, patented by Mr. J. H. Sifers, of La Cygne, Kansas, will, when opened, catch the loose material composing the load as it falls. It may readily be converted into a trough for feeding horses and other purposes.

Mr. George Chamberlain, of Olean, N. Y., has patented an improved press for shaping leather and sheet metal caps for horse collars. It is constructed so that a number of caps may be shaped simultaneously.

An improved guide for the stems of stamping mills has been patented by Messrs. C. Crane and Wm. Raup, of Park City, Utah Ter. It consists in a continuous casting running along the guide rail, and having semicircular boxes with removable top caps for confining gibs, which may be readily removed when worn.

An improved lubricator, patented by Edward F. Gordon, of Concord, N. H., is applicable to hand planes, and the beds of planing, moulding, and scraping machines. The invention consists in holes or cavities formed in the surface to be lubricated, the cavities being filled with wood or other unyielding porous material saturated with oil.

An improved machine for pumping, forcing, and blowing, recently patented by Mr. Robert Johnson, of Sudley, near Manchester, England, has several novel features which cannot be explained without diagrams. The machine may be used either as a pump, a blower, or a motor.

An auxiliary governor for steam engines, invented by Mr. John Milton, of Hamilton, Va., is operated by the tightening of the main belt at the instant the engine is called upon to perform additional labor.

Important Patent Flour Case.

We noticed in our last issue the fact that the millers of the West who had combined to resist the claims of the Middlings Purifier Company, had been successful in defeating the latter. It being one of the most important patent suits of the times, and one affecting the interests of so large a Western industry, a brief statement of the invention and the nature of the trial, which we find in the *Commercial List*, cannot fail to interest a great many readers of this paper.

About the year 1870, a new process of manufacturing flour was introduced into Minnesota by George H. Christian, by which the middlings were purified and then ground into flour. The middling flour was found to contain so much more gluten than the ordinary superfine flour as to render it much more valuable as an article of food. This new process flour commanded from one to two dollars per barrel more in the market than the superfine flour. Shortly after this the new process flour was introduced into the St. Louis mills, and is now manufactured in the principal first-class mills in the country. In 1874, a man named William F. Cochrane obtained the reissue of an old patent granted to him in 1862. In this reissued patent he claimed the process of manufacturing flour from purified middlings, and claimed a license fee from all the mills making the new process flour. He commenced suit against one firm in Georgetown, D. C., for infringement of his patent, which suit was carried into the Supreme Court of the United States, and his patent there declared valid. An association, called the American Middlings Purifier Company, then purchased the patent, and commenced suit against Christian & Co., of Minneapolis, who were then using the process in the largest and most extensive mills in the United States located at that place. He claimed of them \$200,000 damages, and the court required them to give security to that amount. The owners of the patent at that time estimated the claims against the millers of the country at over \$30,000,000. The millers of the country associated together in convention and employed George Harding, Esq., to defend them from this claim. He immediately applied to the Supreme Court of the United States to vacate the decree in the former suit as obtained with-

out a full investigation of the patent, and the defense of the millers in Minneapolis and St. Louis was at once undertaken by him. The case was argued at St. Louis before Judge Dillon, of the Circuit Court of the United States, Judge Treat, of the District Court of Missouri, and Judge Nelson, of the District Court of Minnesota. The decision declared the Cochrane patent void, and dismissed the bills of complaint.