Correspondence

Information About Milling.

MESSRS. EDITORS:—In my communcation last week I presented my experience on the modes of dressing mill stones. I will now give some information respecting the balancing of the stones. The balancing of the runner stone I regard as a matter of great importance. It frequently happens that a stone will be in good balance when at rest, but greatly out of balance when in motion. This is accounted for by the manner in which the weight on the back of the stone is disposed. For instance, the blocks composing the stone are sometimes thicker and heavier on one side, than on the other, and in backing up the stone, more heavy material is sometimes placed on one side, than on the other near the face. It is the custom, in order to secure a balanced stone to run some lead into it back on the light side, and as there is no means of ascertaining the right distance to place it from the face of the stone, it is liable to be placed too far above the face to be on a level with the weight on the opposite side, hence there is a heavy point on one side below the resting point of the stone on the spindle, and a corresponding weight above this point on the opposite side. As motion has the same influence on these weights as it has on the balls of a governor of a steam engine, the reason it is thrown out of balance when in motion is obvious. When we place one ball of a governor above its hanging point at the center of the shaft, and the other below this point, and then give it a rapid motion, that one ball is drawn down to find its level, while the other is drawn up. A millstone hanging loose on the top of a spindle is governed by the same law. The heavy point below the resting point on the top of the spindle, is drawn up when in motion, and the heavy point above is drawn down, causing the side carrying the upper weight to drag upon the bed stone. To remedy this evil, I balance the stone at rest in the ordinary manner, then raise it about ½ an inch above the face of the bed stone, and run it up to a grinding motion. I then take a shingle or thin piece of board, with a little paint on it, and push it carefully between the stones, when the heavy side will receive the mark of the paint. I then make a hole in the back near the skirt on the opposite side of the stone, and run in a quantity of lead to balance, and then put the stone in motion again. If it has not received sufficient lead, add a little more, and repeat the process until the face runs perfectly true.

From 1836 to 1844 is a period that will long be remembered by millers and millwrights, as the period that fast grinding was undertaken to be accomplished by means of heavy runners, and when little or no attention was given to dressing or hanging stones. I have seen runners of 4 and 4½ feet diameter, that weighed from 4,000 to 5,000 pounds. One half of this weight was worse than useless. It could not be used as grinding weight, and it bore heavy on the spindle step. The stone was top heavy and inclined to rock and injure the faces. It was then a common fault to crowd feed, and add pressure beyond the capacity of the stones to do good grinding. The consequences were rich offal and bad flour. The average amount of grinding with these heavy runners did not exceed 50 or 60 barrels per day without injuring the flour. This slow grinding was for the want of proper attention to dressing and hanging the stones, as has since been proven. A stone 4 feet in diameter, of good quality, and properly dressed and hung, weighing 2,000 pounds, and making 220 revolutions per minute, will grind upon an average 80 barrels per day, and do its work well when the wheat is in good condition. The first 24 or 36 hours after dressing they will make at the rate of 100 barrels per 24 hours, the amount lessening as the stones become dull, as a dull stone must be fed lighter or the flour will be injured. From 4 to 6 days is as long as it is profitable to run a stone without being taken up and cracked, although a stone of very sharp grinding properties may be run longer. Cracking should be governed by the quality of the stone, and the quality and condition of the wheat to be ground. A stone that is very sharp and porous, requires broader cracking than one that is dense and dull. In my experince I have found that a stone of medium quality requires about 20 cracks to the inch, with wheat in good condition. When the wheat is very dry, and the hull very brittle and tender, wider cracking is necessary, and frequently it is necessary to crack but one stone at a time, on account of cutting the bran too fine and specking the flour. When the stone is very dense, and the wheat damp and the hull very tough, I have found it necessary to crack as fine as possible without breaking the face between the cracks, and frequently to give the furrows a slight cutting edge the whole length. A berry of wheat is composed of innumerable small granules or round particles, and when pressed so close between the stones as to flatten these particles, the life of the flour is destroyed, and on rubbing it slightly between the thumb and finger it feels moist and clammy. In using such flour for bread, it will be found heavy, sticky and dark colored. When the grinding is not close enough to separate these particles of the wheat, the flour will be rough and harsh, and the bread formed of it will be dry and crumbling. There are many varieties of spring wheats, the Scotch Fife and Black Sea wheat requires a greater pressure to reduce it to its proper degree of fineness, than the Genesee and Michigan winter wheat. The Rio Grand and Milwaukee Club wheat require about the same pressure. There are other kinds that require higher grinding. In grinding Genesee and Michigan winter wheat, with all the grinding apparatus in perfect order, it will bear reducing to such a degree of fineness, that on observing the meal at the spout, it will have a very fine, smooth and round appearance, and feel pleasantly between the fingers. With the grinding apparatus imperfect, the meal cannot all be reduced to this state of fineness. Some portions will be too fine and some too coarse, hence the necessity of keeping all that pertains to the grinding in the most perfect order. Wheat should be ground as close as possible without injuring the flour, as it secures a greater portion of gluten, which is the choisest part of the flour.

J. R.

Ann Arbor, Michigan, June, 1862.

An Invention of the Empress of France.

MESSRS. EDITORS:—We noticed in No. 24, on page 379, Vol. VI., SCIENTIFIC AMERICAN, an article under the heading "An invention of the Empress of France," and supposing this statement to be true we regard it as a challenge to industrial inventors; it is stated to be a skirt whose making sets its face against sewing machines, as there is none yet, as intimated in the article referred to, capable of effecting hemstitching or embroidering. By the introduction of sewing machines in manufacturing industry, it has become, long since, an instrumental necessity. Accordingly we did put our intellectual and physical faculties at work toward making a machine that would do what was needed; after years of persevering labor we had the satisfaction of obtaining a machine that is capable, among the various kinds of work it does, of hemstitching, embroidering (*au plumeti*), or mat embroidering, festoon stitching, button holes, &c., all of which were acknowledged by expert judges to be a perfect result for these kinds of work, who pronounced our invention to be one of great value. Having applied and obtained a patent right for it through your Agency, we take the liberty of referring your readers to our claims, which were published in your valuable paper, on page 235 of your last volume.

This proves that this American invention had the lead of that of the Empress of the French. The want of pecuniary means only has prevented us from introducing it to the public. Having performed what we consider our duty toward American ingenuity, there still remains one more to be performed on our part toward you, gentlemen, for the able manner in which you obtained for us our patent right for the above-mentioned invention, for the correct specification you made of the several motions of our machine, also for the good counsel we received gratuitously at your hands in the course of our consultations at your office, and the kind, patient and enlightened treatment we received at the hands of the person who had charge of our business at your office. We therefore cheerfully recommend your Agency to all inventors desirous of obtaining a patent right. As for us, as soon as we have the means we will call on you again to obtain a patent right for an improvement in our sewing and embroidering machine.

DEROCQUIGNY, D. GANCE and HANZO.

New York City, June 20, 1862.

Balancing Saw Frames.

MESSRS. EDITORS:—In all wheels and shafts running at high speeds, any unbalanced part will act centrifugally on the shaft, absorb power and produce irregular motion. If cog wheels form component parts of the system, back lash and destructive wear will result as a necessary consequence of vibrating motion.

It is the practice of some mill wrights to counterbalance saw frame, connecting rod and all the parts which move with them. This is all right when the motion is slow, because the system is composed of parallel counteractive forces: that is, it is balanced.

But when the velocity in high, as all good mills run now, the relations of the parts are changed, the counterbalance becomes strongly centrifugal, ceases in part to act against the saw frame, causes violent surging of the crank shaft, back lash among the cogs, and injurious oscillations in all the working parts and frame work of the mill.

I would recommend this:—Balance the crank pin and hub in which it is fastened, the stub end of connecting rod, and about one third of the rod; make the fly wheel heavy, and balance all the wheels and shafts; make the connecting rod and saw frame as light as possible. If these things are attended to, the whole system must work well.

J. H. COOPER.

Philadelphia, Pa., June 24, 1862.

MESSRS. EDITORS:—I inclose an article from the SCIENTIFIC AMERICAN, and take the liberty of stating that our returns exhibit no rice as stated. Unofficial tables, procured in advance of revision and correction may, and probably do, contain errors such as you refer to, but this should not lead to the condemnation as "worthless" of what has not yet been published by my sanction.

I believe the census to have been better taken than ever before, and regret that efforts should be made by such a paper as yours to prejudice the public unfavorably as to its reliability and merits. The "horses" of Boston will be represented.

J. C. G. KENNEDY.

Census Office, Washington, June 23, 1862.

[The article to which Mr. Kennedy refers appeared in our last volume. Our information was obtained from the Report of the Massachusetts State Agricultural Society. We are glad to know that Boston will not be officially deprived of all horseflesh.—EDS.

Discoveries of Copper and Niter in California.

MESSRS. EDITORS:—The reason why I have not answered your last letter sooner is that I have been away from home for some time on a tour through the southern portion of this State, on a search for copper and tin. I found copper equal to the Lake Superior mines, besides an abundance of plaster of the best kind, and a fine niter bed in combination with crystals of common salt. This State abounds in mineral wealth. Within the past two years I have discovered no less than five silver leads or lodes, that will pay from 25 to 480 dollars per ton. There have been found, within two and a half years, between one and two thousand silver lodes in California. One thing very much needed here is some cheaper process for reducing the poorer ores. This is a good opening for some of your chemists.

ELISHA HUGHES.

McCartysville, Cal., March 29, 1862.

Large Strawberries.

Among the fine varieties of strawberries which have been originated within a few years, one of the largest and best is Russell's Seedling. The plants have all been purchased by George Clapp, of Auburn, N. Y., from whom we received a box of magnificent berries a few days since. Mr. Clapp says that he has been cultivating the plants for six years, and is now nearly ready to put them in market. As soon as he decides on the price and is prepared to deliver the plants, notice will be given in the SCIENTIFIC AMERICAN. We measured one berry that was 4⅜ inches in circumference; and the fruit is of rich color and excellent flavor.