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UPRIGHT BORING MACHINE.

We illustrate herewith an upright boring machine of a new and improved construction, designed and constructed by one of the largest and best tool manufacturers of the West. The engraving presents the different parts with such clearness that it is hardly necessary to enter into any detailed description of the mechanism, and therefore we confine ourselves to calling the attention of the reader to the special points of advantage claimed. The steel mandrel of $1\frac{1}{4}$ inches in diameter, which can be made to bore to a depth of 14 inches, is connected with the treadle, and the bit is thus brought down the desired distance. The bit is readily changed and adjusted; its return or upward motion is caused by the weight, placed in a convenient position at the bottom of the machine. The table is gibbed to the frame, can be placed to bore at any angle, and may be raised or lowered through a distance of twenty-two inches by means of a suitably arranged rack and pinion. At A is shown a small movable sleeve attached by a thumbscrew to the vertical rod; this, fastened at any point on the latter, serves as a gage to regulate the depth of the orifice to be bored. The belt communicating power passes over one of the idlers shown, then around the vertical pulley and back over the other idler.

For further particulars address the manufacturers, Messrs. McBeth, Bentel & Margedant, Hamilton, Ohio.

Cheap Saline Disinfectants.

Professor Sidney W. Rich, on the experience derived from a large amount of experimental labor devoted to a study of the relative power of various salts when applied to animal and vegetable solids and fluids, and also to sewage, states that the greatest efficacy and general applicability will be found in a solution containing hydrochlorate of alumina with a small quantity of chloride of iron. The hydrochlorate of alumina will serve to do the general work of a disinfectant and antiseptic, while the iron salt will absorb the sulphuretted compounds which arise from the decomposition of some kinds of organic matter.

The chloride of calcium is the cheapest, inasmuch as it is a waste product in all alkali works. In this particular, hydrochlorate of alumina will, however, be able to compare favorably in the future, as the result of late improvements in the manufacture of alum will be to cause the manufacture of large quantities as a waste product.

In recommending chloride of calcium as a disinfectant, Mr. Stanford recommends that the solution should contain 25 per cent of the solid salt, acidified with 12 per cent of hydrochloric acid. Certainly, such a solution would have a considerable disinfecting power, but most chemists would attribute this to the hydrochloric acid. Moreover, a solution containing 12 per cent of hydrochloric acid would be a very disagreeable fluid for ordinary purposes.

German Machinery at Vienna.

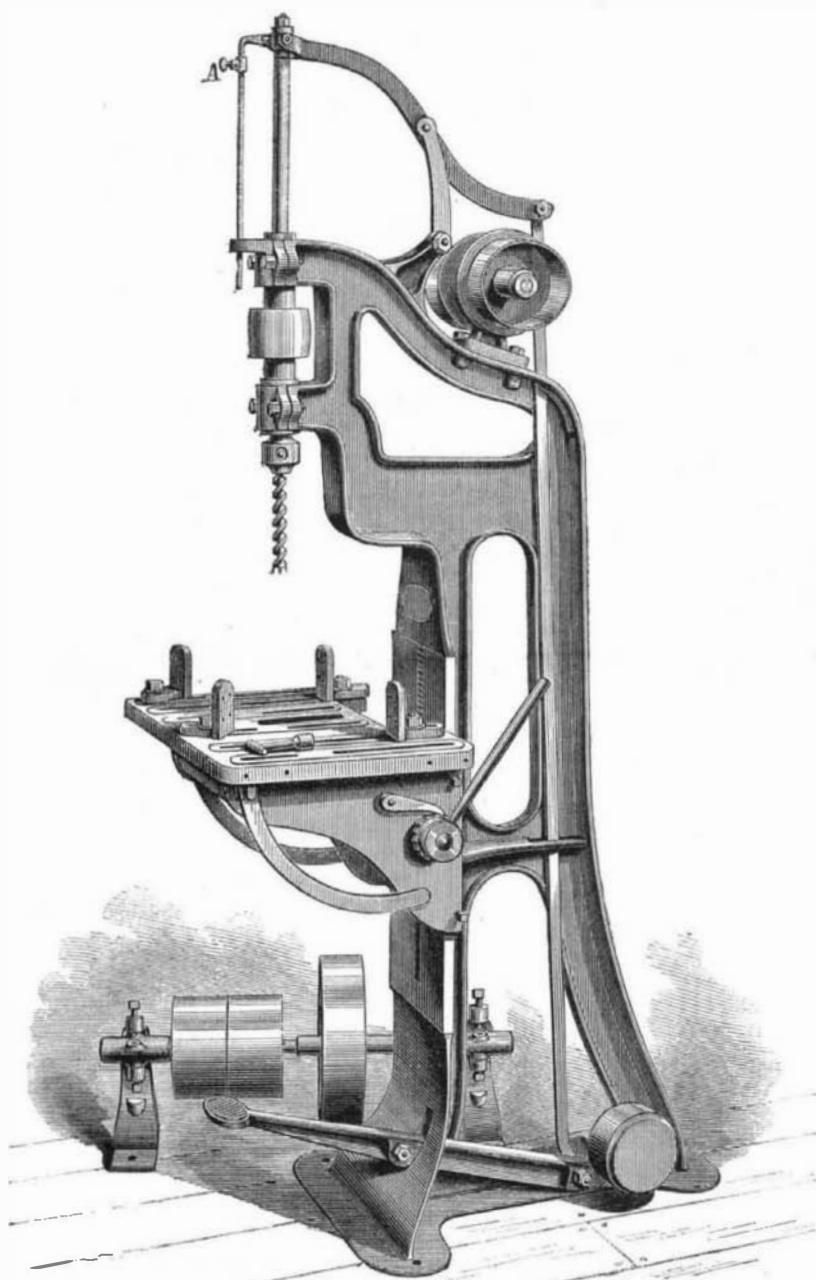
There will be 58 firms exhibiting prime movers, steam generators, boilers, steam engines, turbines, etc.; of transmission machines, etc., 24; machinery for metallurgy and metal work, 68; wood-working machinery, 17; machines for spinning, weaving, knitting, and embroidering, etc., 78; for the manufacture of paper and printing machines, 60; machines and apparatus for sugar-making, 26; distillery and brewery machines, etc., 60; machines for mining, etc., in particular, 24; exhibitors of sewing machines, etc., 55; of agricultural machines, 125; machines for army purposes, pumps, etc., will be exhibited by 50 firms; other kinds of machinery and apparatus, which cannot be specially classified, will be represented by 45 firms. The exhibition of fire engines, etc., embraces 42 exhibitors, and street locomotives, 39 firms. Lastly, there will be 42 firms exhibiting railway material, such as locomotives, wagons, trucks, etc. The total number of German exhibitors in group 13 (Machinery Exhibits) is 763.

Indian Tea vs. Chinese Tea.

A Glasgow correspondent furnishes the following on this subject, testifying to the purity of Indian tea:

"During a sojourn of several years among the tea districts of India, I visited scores of the tea plantations, and saw the tea leaf undergoing the various processes of manufacture, from the green state as it comes from the shrubs to the final drying and packing, and I have never seen a leaf other than that of the tea shrub being converted into tea." The correspondent of the *London Grocer* further says: "I have for-

warded from 70,000 to 80,000 chests of tea for shipment to this country, and can safely affirm that not one of them contained an ounce of anything other than the pure tea made from the leaf of the tea shrub. Last year 16,000,000 lbs. of tea were sent from India to this country, and it is expected that the crop this season will be nearly 20,000,000 lbs. In the London market, to which all tea for this country both from China or India is now sent for sale, the price of Indian tea is 50 per cent higher than China tea. The Indian tea possesses nearly double the strength of the Chinese article, and it is principally used by tea merchants and grocers for mixing with China tea to give strength and flavor to the lat-



UPRIGHT BORING MACHINE.

ter. Most of the China tea sold in the London market sells at 1s. or 1s. 6d. per lb., exclusive of the duty of 6d. per lb.; while scarcely a chest of Indian congou sells so low as 1s. 6d., and Souchong and Pekoe realize 2s. to 3s. 6d. per lb. without duty. China tea is retailed at 1 1-2d. to 2 1-2d. per ounce; Indian tea at 3d. to 4d. Green teas are almost exclusively the production of China. I have never seen green tea made at any of the tea plantations in India which I have visited. I believe, however, that a limited quantity of green tea is manufactured at some of the tea plantations on the Himalayas, but it is mostly sold to traders from Turkestan and Thibet, and only the surplus is sent to this country. It pays the tea planter to make his tea leaf into black tea rather than green. Tea drinkers in this country who prefer green tea must therefore be content with the product of Chinese ingenuity, and be satisfied to drink the compound of tea, turmeric, Prussian blue, China clay, etc., prepared for the British "barbarians." It is different, however, with respect to black tea, as we are no longer altogether dependent upon China for a supply, and pure Indian tea can now be obtained from most of the principal tea merchants and grocers. The consumer has only to ask for and obtain unmixed Indian tea in order to be able to enjoy the luxury of a cup of genuine tea."

A POOR man wants something, a covetous man wants all things.

Pneumatic Method of Preventing Explosions in Coal Mines.

Diminished atmospheric pressure is frequently followed by the escape of fire damp into the workings of a colliery. To obviate the risk incurred by such barometrical changes, I propose, says Professor J. A. R. Newlands, in the *Chemical News*, that artificial means should be adopted, so as to maintain the atmospheric pressure within a given mine always at one and the same level, and also, if desired, to work under a somewhat increased atmospheric pressure. Taking the case of a mine having a downcast and an upcast shaft, the mouth of each of these should be covered over by an air-tight chamber, capable of withstanding a moderate pressure either from within or without. This air-tight chamber might be conveniently constructed of sheet iron, provided with thick glass windows; it should also be made sufficiently large to admit of all the usual operations at the pit's mouth being conducted within it. The shaft of the engine used for raising coal would pass through the sides of this air-tight chamber, so as to move the necessary hoisting apparatus within. Connected with this air-tight chamber an air-tight room should be constructed, provided with two sliding doors, the inner door separating it from the air-tight chamber, and the outer door preventing contact with the external atmosphere. It will be seen at a glance that, when the outer door of the room is shut and the inner open, the room becomes part and parcel of the air-tight chamber, so that any truck laden with coal might be run from the air-tight chamber into the room, and then (by closing the inner door of the room and opening the outer) on to the ground surrounding the pit's mouth, without sensibly altering the pressure within the pit itself.

To produce the requisite current of air for ventilating the pit, the air-tight chamber over the downcast shaft should be connected with powerful air pumps, worked by steam, so that a continuous current of fresh air might be forced through all the workings of the pit before finally escaping through a pressure valve from the air-tight chamber over the upcast shaft. Any required degree of ventilation, or of increased atmospheric pressure, could thus be produced within the pit. As no fire would be wanted in the upcast shaft, it would be available for hoisting coal, etc. The air supplied to the mine might, if required, be easily cooled, by compressing it in cylinders surrounded with cold water before allowing it to pass into the pit, and thus the temperature of the pit might be reduced to any extent. The air issuing from the pit should be chemically tested at stated hours, and whenever the fire damp appeared to be increasing the men and horses should be brought up, and the air pumps should be employed in drawing air out of the mine, so as to diminish the pressure within, and thus cause any imprisoned marsh gas to be brought out of its hiding place. After keeping the mine under diminished pressure for some hours, a rapid current of air should be driven through the workings, and when—by testing the air pass-

ing through the escape valve—it was found to be nearly pure, operations could be safely recommenced.

Prizes for Improved Cabs.

The English Society for the Encouragement of Arts, Manufactures and Commerce offer the following prizes: One prize of £60 (\$290 gold) for the best improved cab of any description. Two prizes of £20 (\$97) each for the next two best. Two prizes of £10 each for the next two best. The competing cabs must be exhibited at the International Exhibition, to be held in South Kensington, London, in 1873, and, on their delivery at the Exhibition Building, they must be certified to the satisfaction of the Judge as having been in regular use in the streets of some city or town either in the United Kingdom or abroad for three months previously. They must be delivered on or before the first Saturday in April 1873.

The Society points out the following defects in the cabs of London, which should be especially remembered: Want of room, both as regards four wheelers as well as the Hansoms. The seats in the four wheelers are too high, not commodiously made, and the space underneath is lost. Difficulty of getting in and out of the Hansom, by reason of the height of the step as well as the interference of the large wheels. The arrangements for opening and closing the window and the confined space and want of ventilation when the window is closed. Lastly, imperfect locking of the wheels in four wheelers.