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IMPROVED BRICK MACHINE.

We illustrate herewith a new brick machine, in which the bricks are moulded in sockets made in the periphery of a cylinder which rotates beneath a pug mill. The construction of the apparatus is both strong and simple, while its action is as rapid as is consistent with the production of properly pressed bricks. A perspective view of the machine is shown in Fig. 1, and a section in Fig. 2.

A is the pug mill, in which the clay is ground and mixed. Beneath is a hollow cylinder, on the end of the shaft of which is a ratchet wheel, not shown in Fig. 1, being on the obscured side of the machine. The periphery of the cylinder is provided with a series of recesses or moulds, in each of which works an accurately fitting plunger. Each plunger has a stem, about which a spiral spring is coiled, and on the end of which is a roller. The clay having been received into the mould, from which the plunger is withdrawn by the action of its spring, the cylinder is then caused to rotate. Two levers, B, are secured, one at each end of the cylinder shaft, so as to have free motion thereon. The upper ends of these levers, C, which, in turn, are attached to the wristpins of the crank wheels, D. Said crank wheels receive rotary motion from the pulley on the main driving shaft, E, by the belt shown.

The inner face of the lever, B, on the opposite side of the machine from that shown in Fig. 1, has a spring pawl, so arranged that it will engage with the ratchet wheel on the cylinder shaft, and rotate the same. Another pawl prevents any backward motion of said wheel. The levers, B, are connected by the arms, F, with a horizontal bar or press, G, and in their operation draw said bar against the clay in the series of moulds presented to it. The endless belt placed below the machine, for the reception of finished bricks, is prevented from sagging by passing over a series of small rollers, and is driven by a band from the main shaft.

The clay is delivered from the pug mill into the moulds while the cylinder is stationary, and, at the same instant, the press bar operates upon the clay in another set of moulds. The cylinder is then rotated, presenting another series of recesses to the mouth of the pug mill, as the press bar is drawn back. In the continued forward motion of the cylinder, and after the bricks in the moulds have been subjected to the action of the press bar described, the rollers on the end of the plunger stems roll upon the outer face of a fixed cam, H, Fig. 2, and force the bricks out of the moulds by throwing outward the plungers: so that, when the first mould filled has reached a point directly under its first position, the knife, I, Fig. 2, will pass between the brick and the face of the plunger and cause the brick to fall upon the endless belt.

For further information, address the patentees, Messrs. W. H. & H. P. L. Machen, Jr., Toledo, Ohio.

To Take Rust Out of Steel.

Place the article in a bowl containing kerosene oil, or wrap the steel up in a soft cloth well saturated with kerosene; let it remain 24 hours or longer; then scour the rusty spots with brickdust. If badly rusted, use salt wet with hot vinegar; after scouring, rinse every particle of brickdust or salt off with boiling hot water; dry thoroughly; then polish off with a clean flannel cloth and a little sweet oil.

Stopping the Wood Pores in Barrels.

The *Brewers' Gazette* gives the following: Put into an open vessel 1 lb. fine shreds of leather, 1 oz. oxalic acid, and 2 lbs. water. Suspend the vessel containing this mixture in one of larger size containing water, and boil until the contents of the inner vessel are dissolved by the action of the

Dyspepsia and Long Life.

A writer in the *New York Sun*, who has undoubtedly experienced the feeling produced by the disease, or he could not describe the effect so truthfully, says:

The dyspeptic, as a rule, is not numbered among the happiest of men; and there are good reasons why he should not be. He has an abiding notion that something is wrong somewhere in the universe, maybe everywhere; though, like the man who meets death suddenly, he often does not exactly know what hurts him. In some extreme cases he doesn't much care; only he would like to get rid of it, whatever it may be.

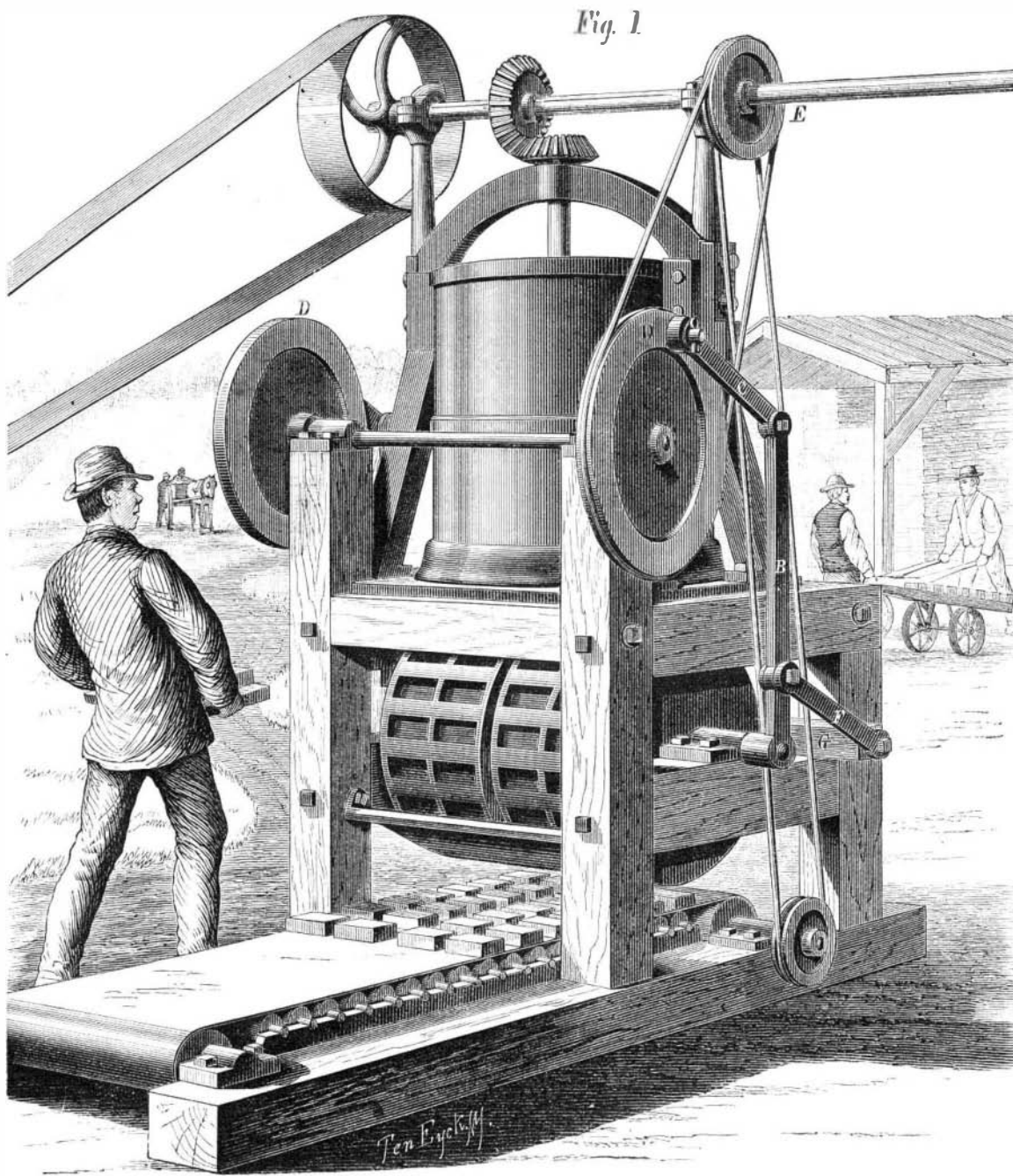
There is a well founded American tradition that pie baking and the frying pan have been fruitful sources of dyspeptic woes, though there are many victims of indigestion who have not fed upon pie crust or fried meats, while there are many people who have grown robust and ruddy on this diet, or in spite of it. Randolph, of Roanoke, who contributed to the philosophy of dyspepsia the cynical theory that though the Lord had given us the meats the devil had sent the cooks, only touched one part of the evil, for there are more sufferers from ill regulated digestion among luxurious people, who live upon the most nutritious and best cooked food, than among those whom exercise and labor give a hearty appetite for whatever they can get to eat.

The late Dr. W. W. Hall, formerly editor of the *Journal of Health*, has written very sensibly of this disorder in a little book just published in this city by R. Worthington. According to this writer, nine out of every ten cases of dyspepsia are caused not by any defect of the digestive organs, but by improper dieting and insufficient exercise, mental or physical. People, whom a disordered digestion requires to pay attention to these matters, frequently outlive by many years their more robust

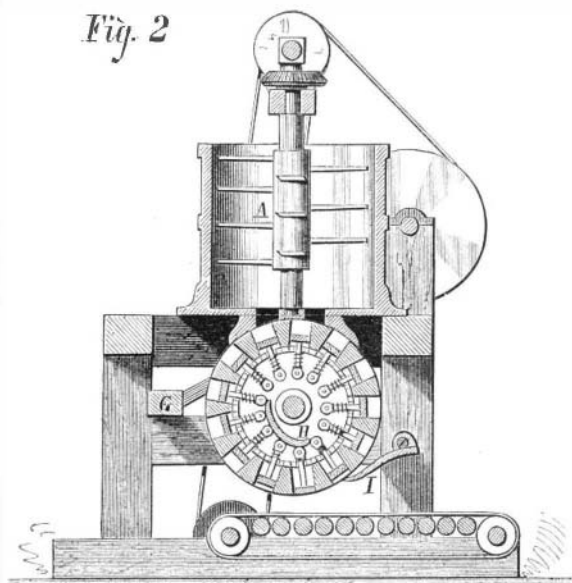
neighbors. The author cites the case of one poor dyspeptic patient in whose case no less than sixty-three ailments were manifested: among them fretfulness, nightmare, and, most dismal of all, a sense of goneness. This was undoubtedly a very bad case, for, in spite of all that wealth could supply or careful treatment do to remove the disorder, it remained unabated, until finally the offending article of diet was discovered, and then recovery was rapid. In about a month's time the only trouble this restored dyspeptic had to complain of was that she could never get enough to eat. With this instance before his eyes, the most desperate dyspeptic may hope to live cheerfully to a ripe old age by searching out the cause of his troubles and resolutely applying himself to the removal of it.

Dr. Hall recommends the sufferer to begin by eating little of one or two articles of food at regular meals. If that agrees with him let him increase the quantity; if not, he should try something else. In this way the dyspeptic will soon find out what agrees with him, and what kinds of food he should avoid. After he has made these discoveries, it will be his own fault if he continues a dyspeptic.

To CLEAN paint, take 1 oz. pulverized borax, 1 lb. small pieces best brown soap, and 3 quarts water; let simmer till the soap is dissolved, stirring frequently. Do not let it boil. Use with a piece of old flannel, and rinse off as soon as the paint is clean. This mixture is also good for washing clothes.



MACHEN'S ROTARY BRICK MACHINE.



heat imparted from the boiling water (this is the water bath process). It must then be diluted with 3 lbs. of warm water. The mixture, when applied to the surface of wood, oxidizes and becomes insoluble, completely closing the pores of the wood. It is used for alcohol, and will neither crack nor peel off.

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THE EUROPEAN WAR AS AFFECTING AMERICAN INVENTORS AND FARMERS.

The latest advices report that a war between Russia and Turkey is almost inevitable. Much as such a calamity is to be deplored, especially in these days when many have hoped that peaceful arbitration of national differences would permanently supplant the appeal to the sword, it cannot be doubted but that the conflict, if prolonged, will prove of material benefit to the people of the United States. And in no instance is this so apparent as in the great impetus which will be given to agriculture and to invention.

The two great grain-producing countries of the world are South Russia and the valley of the Mississippi; and between these sections there exists active competition for the supplying of the nine to fourteen million quarters of foreign wheat required by England, and the large additional amount needed by other European nations. Already in this rivalry our Western farmers are far ahead; and statistics, recently gathered by the Odessa (Russia) Committee on Trade and Manufactures for the information of the Russian Government, show with what remarkable rapidity this advance has been accomplished. The proportions of wheat supplied by Russia and the United States to England during the seven years from 1867 to the close of 1873, the period over which statistics have thus far been compiled, are as follows:

Table with 3 columns: Year, Russia, per cent., United States, per cent. Data for years 1867-1873.

The committee say that they have reason to believe that the result for 1874 will be found even less favorable for Russia. It will be seen that within seven years the two countries have relatively changed places; and the Odessa committee frankly admit that in the near future the United States will be "so absolutely the controller of the prices of the London market that we shall be utterly unable to compete with them." Nor is this due to any decrease in the Russian supply, which the foregoing figures might seem to indicate had fallen off from 44 to 21 per cent in the period mentioned. Notwithstanding the increase from the new ports of export, Sebastopol and Königsberg, the Odessa export shows a constant increase in quantity as well as in value; and Mr. Arthur Arnold, from whose recent work relating to Russia we take the above facts, adds that "the conviction is forced upon us that Russian agriculture is stationary in comparison with the boundless and successful activity of the United States."

There are obviously two great events, either one of which, apart from the natural progress indicated by the foregoing, will tend to secure to us the supremacy of the grain trade. First, the magnificent success of Captain Eads' opening of the Mississippi, through which loaded vessels will be able to proceed directly from their river points of loading to Europe, and thus the export costs will, it is stated, be reduced fully 50 per cent; and second, the coming war, which bids fair to paralyze Russian agricultural activity, especially in the grain-producing country which is nearest to the territory of her enemy.

Already the market reports in this city show that, in view of the conflict, prices have been affected. Corn has advanced ten cents a bushel within a week, and the same increase has taken place in Chicago, doubtless through the same being held for further advance. If other nations become involved in the conflict, as appears possible, a wonderful effect on our market is anticipated by the Produce Exchange dealers, who are watching events. The closing of the Black Sea and Danube would send much of the shipping interest of Europe here, and low ocean rates would result; while this country would be called upon to make up the deficiency in the grain supply thus cut off. At the present time, owing to last year's short crop, we have little corn to spare; but next year, should the war continue and the crop prove good, the demand for both wheat and corn will, it is believed, produce one of the most exciting markets known for many years, and give large additions to the wealth of the country.

Another result of the war will probably be the requirement of the belligerents of improved weapons; and, indeed, for some time past New England factories have been filling Turkish orders for arms and munitions. We need hardly point out that the inventors will be by no means the class least benefited by the probable turn of affairs. The increased demand for grain will necessitate improved means for cultivating and harvesting, as well as for developing, the great fertile plains of the West, which will be converted into new grain-yielding territory. New means of clearing land, new draining implements, new plows and cultivators, new harvesters, new applications of steam power to agricultural machines, which will enable farmers to deal with immense fields and immense crops more rapidly and with greater economy of time and labor, will be needed. New grain-carrying vessels, new means of loading, new elevators, storage warehouses and granaries, new means of transportation—notably light, portable farm railroads—will all be called for. Such inventions will be needed at home. From abroad will come the demand for new firearms, torpedoes, cannon, accoutrements, camp equipage, field telegraphs, new signal systems, new projectiles, new adaptations of recently investigated explosives, and so on through the immense category of inventions so prolifically produced by American inventors

during our own war. The merchants are already watching their opportunities; the farmers will do likewise.

HOTEL FIRES.

The Southern Hotel, one of the largest and finest hotels in St. Louis, Mo., was recently burned. The fire broke out at a little after midnight. The house was filled with guests, many of whom were roused from sleep only to find all avenue of escape cut off. About a score of people, it is estimated, have lost their lives, and the building is wholly destroyed.

So long as the law permits the construction of edifices which are not fireproof, the public have a right to insist that such structures shall contain ample means for preventing fires and for the safety of the inmates. The recent Brooklyn Theatre conflagration has been the means of directing attention to the condition of auditoriums all over the world; and it has probably resulted in a great many precautions being taken which otherwise would not have been suggested. Hotels are nearly as inflammable as theaters, and they should be as carefully protected. The St. Louis building, although it is reported to have had an elaborate fire alarm system, with hose and taps on every floor, proved, by the rapidity with which it was consumed, that means supposed to be adequate were not so; and further showed that, for such edifices, not merely ordinary but extraordinary safeguards are required. Lofty hotels should have a fire escape at every window, besides bridges, wherever possible, leading from both roof and windows to adjacent buildings. It would cost very little also to place in every room about 60 feet of stout chain, firmly attached to the wall near the window. There should be huge tanks of water on the roofs, holding a supply sufficient to drench the building. The gas pipes also should have a water connection, so that every gas burner could be transformed into a fountain at will. Again, both in theatres and hotels, it has been found that shortly after the outbreak of the fire the gas has gone out, probably owing to the products of combustion cutting off the necessary supply of oxygen, or a pressure being generated which forces the gas back in the pipes. The remedy for this is the provision of separate lights, such as candles inclosed in tight glass lanterns connected with a ventilating tube or flue—or electric illumination might be used. There are few large hotels in the long halls of which a stranger might not easily mistake his way, and so, in case of danger, waste precious time. A hand balustrade along the wall leading to the stairways would in this respect be of the greatest use, even in the dark; and the walls besides might have directions painted on them in prominent characters for daytime use.

We have illustrated and described a number of simple fire alarms which give warning automatically. We published one quite recently, which was especially invented for hotels, it taking the place of the ordinary electric bell press button. This can be set to any temperature; and when the dangerous degree of heat is attained in the apartment, electric connection is instantly established, and an alarm, situated in any prominent locality, is sounded. It might be a good plan, also, in constructing hotels, to follow the compartment system, that is, to carry two or three principal partitions of solid brick clear through the house; and wherever there are openings, to provide them with heavy fireproof doors. In this way, one part of a building might be sufficiently isolated from the adjoining portion to allow of the prevention of the spread of fire to the whole structure. Mr. R. G. Hatfield, a well known architect of this city, says that iron beams and ties in flooring are not to be commended. The experience of Chicago and Boston shows that these beams are not to be trusted, since a moderate degree of heat deprives the metal of its power of resistance; and softened by heat, they yield by bending, and fall. Instead of iron beams and intervening brick arches, it is proposed to use wooden beams laid close, thus forming a solid floor of timber. Wooden beams are ordinarily set apart with spaces between them, and thus constitute, with the flooring and ceiling, an excellent arrangement for kindling or extending a fire. Setting the beams in contact with each other fills up the air-spaces and prevents the fire acting upon the beams, except in charring the surface to a small depth. There is reason for believing that a floor of this construction would resist fire better than one of iron beams and brick arches, while its cost at present prices would be but four sevenths of the cost of the latter.

If travelers and others who patronize hotels would take a few simple precautions for their own safety, there would be less of the loss of life that is now common. Hotel keepers will run their edifices skyward, as high as can be made to pay; but people should realize the risk incurred in accepting such quarters. By the aid of the elevator, the most aerial garret is perfectly easy of access; but it is well to remember that that elevator shaft in time of fire becomes a chimney to create draft, and generates a column of flame, which speedily attacks the lighter-built upper portion of the edifice. We know several cautious people with whom a coil of rope is as much a part of their luggage as their satchels. The rope takes up little room, and it may save life. A light wire ladder, which can be compactly folded, is even better. Some inventions of this kind are already in the market; but there is plenty of room for improvements. A wire gauze respirator, which can be tied over the nose and mouth, is another convenient article to have at hand when it becomes necessary to venture through smoke; or a wet towel similarly applied is equally good—especially if the wearer will keep on his hands and knees, close to the floor, where the least smoke is present. There is an excellent opportunity for inventors