

IMPROVEMENT IN FURNACES.

It is well known that when bituminous coal is burned in ordinary furnaces a considerable portion of the combustible matter passes off without being ignited, in consequence either of an insufficient supply of air or of that which is supplied being too cool to effect the combustion. The plan of furnace here illustrated is designed to remedy this waste of fuel by an ample supply of hot air.

The front of the furnace is made of a plate, A', perforated with a number of holes and placed a short distance within the outer casing, B, leaving a narrow air space which is kept hot by the fire. As the air enters into the space, A, under the grate, a portion of it passes at once into the fire in the usual manner, while another portion moves along into the air-space in front of the furnace where it becomes heated, so that, when it passes through the perforations, C, in the plate, A', and mixes with the vapors rising from the fire, its oxygen is in a proper state to enter into combination with the combustible matters which these vapors contain. The opening from the outer air is closed by the damper, G, and the opening into the hot air space is closed by the damper, H; both dampers being under the control of the engineer, who is thus able to regulate the fire with great precision.

It is calculated that coal contains from 5,000,000 to 10,000,000 foot-pounds of power to the pound, varying with the quality, and as no steam engine has yet yielded a horse-power for every pound of coal consumed in an hour, which would be equivalent to 1,980,000 foot-pounds, it would follow that at least three-fifths of the coal used with steam engines are wasted. This shows the wide room for improvement in this most important field.

As the furnace here described may be almost wholly enclosed with water, and as it has in addition an air jacket on two sides, it seems to us that, while it is admirably calculated to insure perfect combustion of the fuel, this object is effected without any counterbalancing loss of heat.

The patent for this invention was granted June 28, 1859, and further information in relation to it may be obtained by addressing the inventor, John H. Duhme, at No. 432 Main-street, Cincinnati, Ohio.

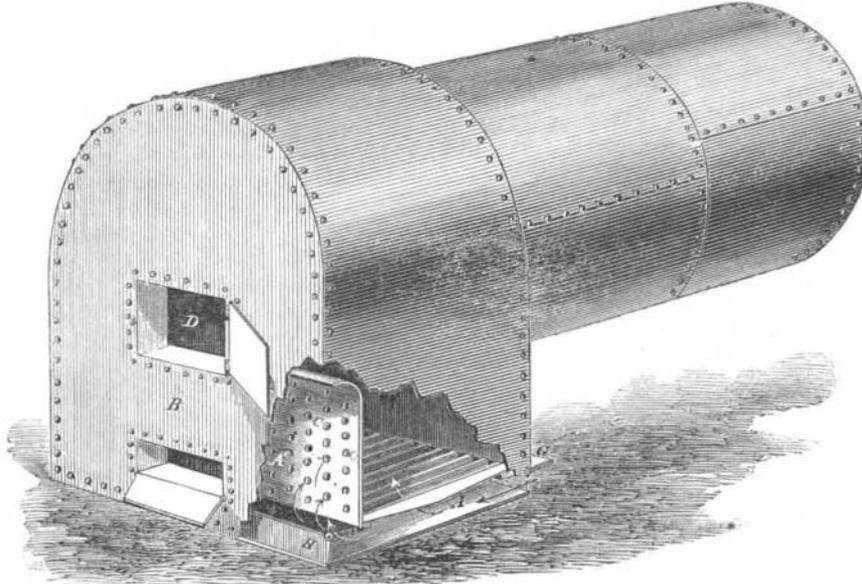
AMERICAN WASHING MACHINES IN ENGLAND.—The Board of Guardians of the parish of Hampstead have recently made a series of experiments for testing the qualities of various washing machines, in order that they might adopt the best one among the number for doing the washing of the workhouse. The one which they have chosen is an

American invention; and the *London Mechanics' Magazine* states that it was introduced into England only about a month prior to the trial. The editor had visited the workhouse to see the experiments, and he states that the powers of the American machine were "somewhat extraordinary, as compared with others." It has been used every week since the fifth of March last, and has operated with entire satisfaction; no hand-rubbing, whatever, being necessary. The medical officer of the establishment states that it is calculated to promote cleanliness and health. Upwards of 1,000 articles have

been washed by it, weekly, in 24 hours, and the cost of fuel and soap has not exceeded 5s. sterling (about \$1.25), while every article washed has been improved in whiteness. Our cotemporary says:—"It is certainly somewhat curious that the two most successful washing machines, of late years, have come from America." It can wash blankets and coarse articles; also, muslins and delicate cambrics with equal facility, and without injury. All persons of a scientific turn of mind in Lon-

don have been invited to witness this machine in operation; its ingenuity and superior method of acting upon the clothes are highly applauded. The name of the inventor is not given, but our country receives the honor of enabling Uncle John to keep his linen clean.

DUHME'S IMPROVEMENT IN FURNACES.



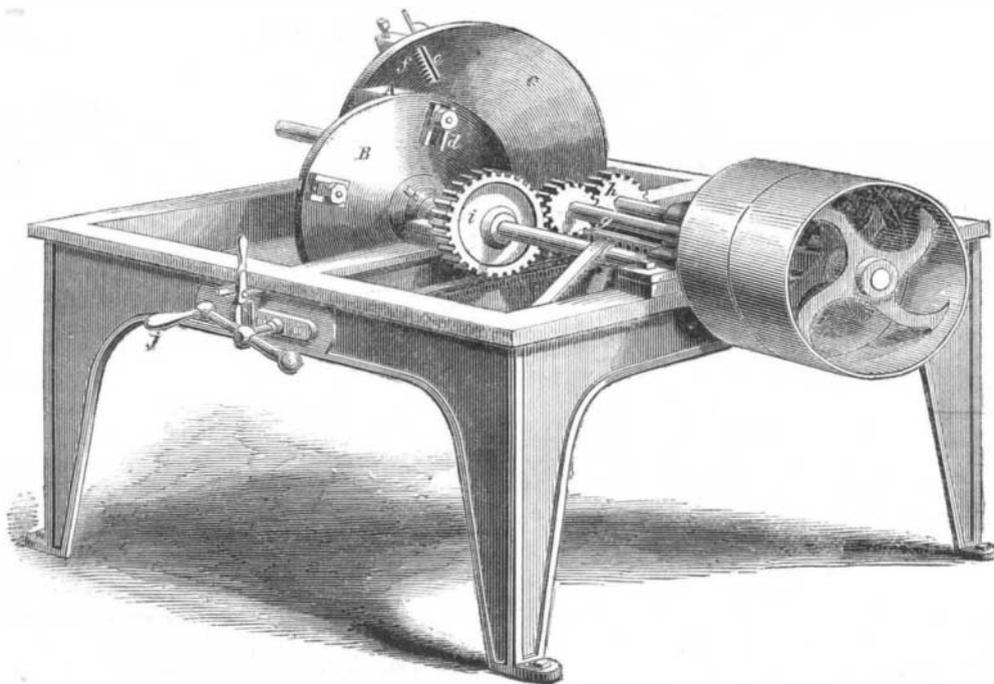
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IMPROVED SHAVING-MAKING MACHINE.

"The soft side of a plank" has not generally been regarded as a very luxurious bed, but when an inventive

is made to perform two revolutions while B is performing one, then will the end of the cutter, e, be carried along the middle of the block, A, from one end to the other, exactly in a straight line. To effect this motion the driving shaft, g, is placed between the shafts of the two wheels, and the spur, h, has just half as many teeth as the spur, i. The cutter, e, is made, practically, three inches in length, and cuts a shaving from one-half the face of the block at each revolution; the half revolution of the wheel, B, presenting the opposite end of the block to the cutter at its succeeding revolution, which then takes a shaving from the other half of the face. The shaft of the wheel, C, has a sliding motion in its bearings, by which the knife is fed to its work as the block is cut away, and when the knife is brought sufficiently near the dogs which hold the block, this feed motion is automatically thrown out of gear. For securing the succeeding block, the wheel, C, is carried back by turning the feed motion backward, by means of the crank, j, and after the block is placed, the wheel is brought up to commence cutting, when the feed motion is again thrown into gear and the machine started.

The shavings are cut from 1-8th to 1-32d of an inch in width, and from 1-120th to 1-150th of an inch in thickness. They are sold at about 3 cents per pound, and many tons of them are used annually by carriage and furniture manufacturers, and by makers of mattresses. The inventor says:—"The machine can be run



SKINNER'S IMPROVED SHAVING-MAKING MACHINE.

Yankee finds even this substance the cheapest for the purpose, he will fashion from it a mattress which, in cleanliness, healthfulness and comfort, will sustain a creditable comparison with curled hair, goose feathers, or eider down. Instead of wasting his time in vain repinings at his hard lot, he appeals to his own cunning brain and skilled right hand to give him a more comfortable couch. Combining a knowledge of the properties of matter and of mechanical motions with the most condite relations of curves to lines which have been discovered in geometry, he constructs a machine which will

up to a speed of some 600 to 700 revolutions per minute, and with good seasoned wood will cut 800 pounds per day, which is double the quantity any other machine invented for this purpose will do. The advantages possessed by this machine over the machine made on the reciprocating plan, are the high speed, less power for a given amount of work, compactness (it being only 4 feet square), and the arrangement whereby a block of wood double the width of the cutters can be worked, the cutters being only 3 inches wide and the block 6 inches."

The patent for this invention was issued Jan. 10, 1860, and persons desiring further information in relation to it will please address the inventor, Franklin Skinner, at New Haven, Conn.