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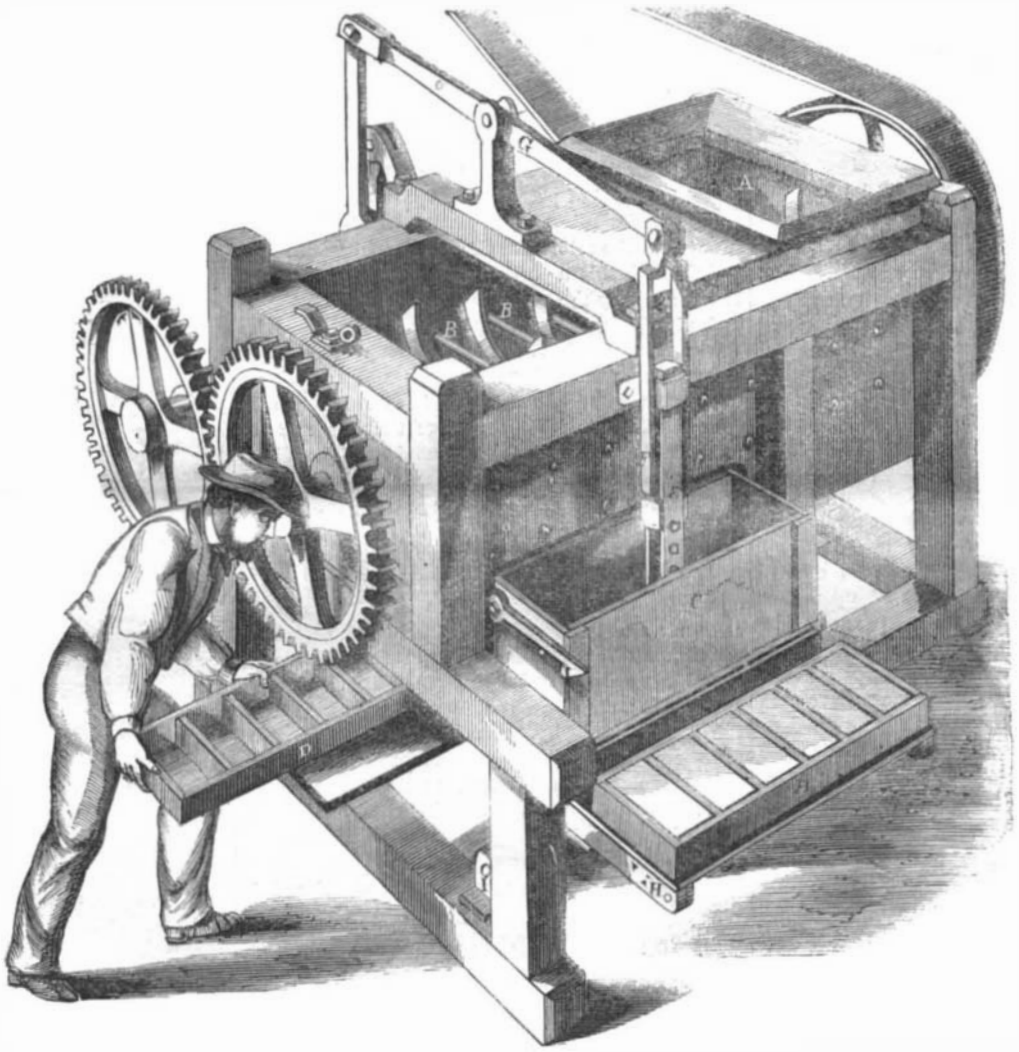
Improved Brick Machine.

Perhaps next to the indispensable pump, the brick-making machine has been the subject of as many patents as any other combination of mechanical movements. The engraving represents a very neat and compact, and apparently efficient machine, which is now extensively used, giving, we are told, excellent satisfaction.

The clay is fed into the mill at A, where it is ground by means of curved screw blades rotating between fixed horizontal arms, B, which serve to disintegrate the mass and to mix it thoroughly. The side curve of the blades gradually forces the mass to that portion of the mill in the rear of the mold box, C, where the blades are at right angles to the shaft, and not, as are the others, set spirally. The effect of this alteration in the set of the blades is to force the clay into the receiver, where it is compressed into the molds, D, by means of a plunger worked by the slide and arms, E and F, and the walking beam, G. The molds fed in at D traverse a bed, H, provided with rollers, the front part of which, under the receiver, C, is hinged and sustained by a spring which serves to keep the molds tightly against the bottom of the receiver, so that in the movement from under the receiver, they are "straked" off smoothly. The spring also gives if a stone or any other foreign substance offers resistance to the plunger. The stand, I, sustains one end of a shaft, bearing cams or eccentrics, by which the bed, H, can be raised or lowered to accommodate any size of bricks.

It may be driven by a belt, or, by the extension of the main shaft and the interposition of bevel gears, it may be worked by horse-power. The mechanical movements, which give motion to the plunger and the device for feeding in the molds, are compact, simple, and not liable to derangement. They are all absolute, so that there can be no failure of reciprocal action. The plunger can be stopped in its action at any time, if the clay is not sufficiently mixed for the production of bricks or tile, by the removal of a pin from the shank of the plunger, which will allow the vertical movement of the plunger connection, while the plunger itself is at rest. The plunger stroke can, by similar means, be graduated to any point desired.

Standing only four feet high, while others rise seven, eight, and nine feet, it is handy and can be easily fed. As the power can be applied at a distance from the machine, a team is never in the way, if animal power is used, as is the case where the machine forms the center of the sweep. If steam power is employed, the driving pulley can be placed at the geared end of the machine, and not be in the way of the feeder. This machine makes three revolutions of the cutters or grinding shaft to one operation of the plungers, thus insuring the thorough grinding of the clay. As the power that drives it is not necessarily applied directly to the machine, it can be worked close to the clay bank. It is now used also for the manufacture of peat, and is said to be efficient for this work. At the New York State Fair and the Albany County Fair it received the first premium.



SEELEY'S BRICK MACHINE.

The inventor modestly claims that it makes 3,000 bricks per hour with the power of a span of horses.

It was patented May 8, 1866, by D. W. Seeley, Albany, N. Y., whom address for rights to manufacture or vend.

HOMOGENEOUSNESS OF STEEL---TIRES, AXLES, AND RAILS.

The application of steel to many of the purposes for which iron had been, and is now, generally used, is not, as commonly supposed, of very recent origin. Many patents have been issued for its application in large masses, or for its employment in situations where iron proved to be inconveniently weighty and bulky. As long ago as 1828 a suspension bridge at Vienna, over the Danube, was built, which was supported by steel chains. If our memory serves us right, built wheels for railway cars were imported into this country by one of our oldest railroad companies, when the road was first opened, which had welded steel tires. It is some years ago when this metal was first employed as the material for boilers.

But the difficulty in producing steel in sufficiently large masses, at a comparatively low cost, and free from flaws, with a perfect homogeneousness of material, seemed to present almost insuperable objections to its general employment in place of iron. Cast steel made by cementation, while possessing superior hardness, lacked tenacity. If tough, it was soft. If hard, it was brittle. In 1851, however, Krupp, of Essen, Prussia, showed in the London Exhibition an ingot of cast steel weighing 4,500 lbs., the heaviest then ever known. In 1862 he exhibited another one weighing 20 tuns, in the form of a solid cylinder, nine feet high and three feet eight inches in diameter. It had been broken across to show its fracture. Under a good microscope it would not exhibit a single flaw. Since then he has produced repeatedly masses of 40 tuns weight. For this purpose M. Krupp has a number of furnaces capable of melting 50 tuns each; but his great engine is the immense steam hammer, costing for construction and working about $600,000. It is rated as a 48-tun hammer, no other in the world being above 20 tuns. This hammer, or the movable part, is over twelve feet long, five wide and four thick, and is driven by a steam cylinder six feet in diameter.

The ingot of steel is heated, after casting, in a furnace, the bottom of which is a truck mounted on wheels. The sole is of fire-brick laid on an iron platform. The ingot is placed upon it by means of a crane, and, by steam power, run with the truck under the furnace. The doors being closed, it is heated, and, when brought to the proper temperature, is drawn out and lifted by the cranes to the *gros marteau*, or great hammer, turned and worked until it is perfectly homogeneous throughout, and brought to the form required.

Steel tires for locomotives are made from a slice cut from an ingot about ten inches diameter, which has been subjected to the hammer. The quantity cut off varies from 300 to 900 lbs. This section is raised to a red heat and a thin wedge is driven through its center, leaving an oval opening three-quarters of an inch in width. This is further opened by larger wedges, until the mass acquires a lozenge shape, when it is brought to a rough square, and a large mandrel introduced through the opening. By means of the hammer and this mandrel the ring is formed, and when circular is sub-

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