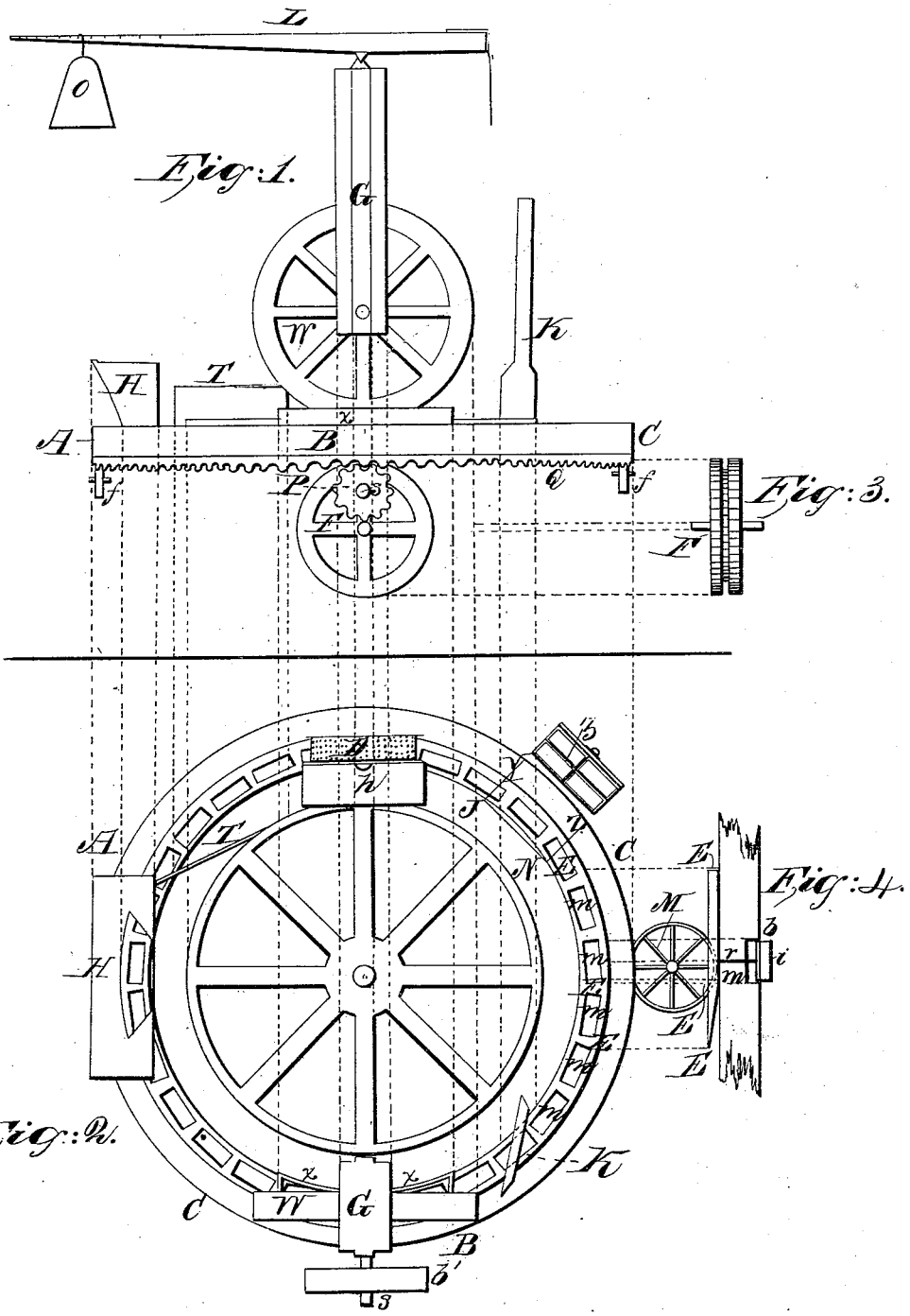
2 Sheets—Sheet 1.

J. P. OWEN.

Brick Machine.

No. 3,041.

Patented April 10, 1843.



2 Sheets—Sheet 2.

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Fig: 5.

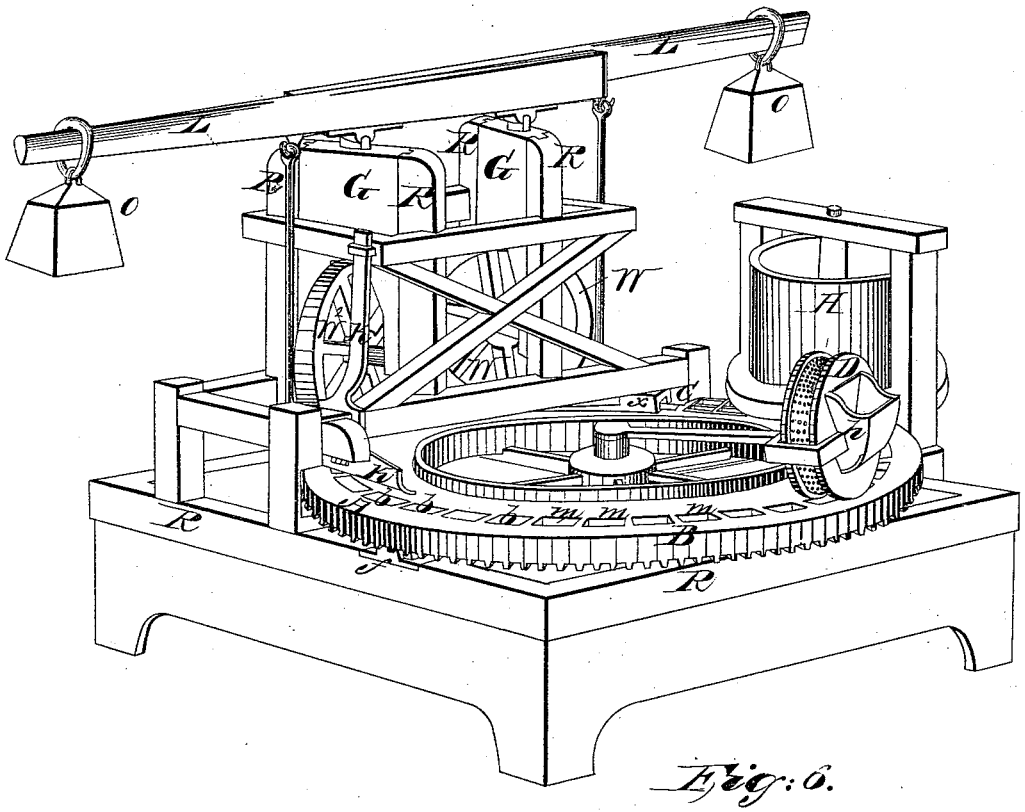
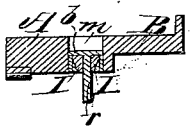


Fig: 6.



UNITED STATES PATENT OFFICE.

JOS. P. OWEN, OF UPPER ALTON, ILLINOIS.

MACHINE FOR MOLDING BRICK.

Specification of Letters Patent No. 3,041, dated April 10, 1843.

To all whom it may concern:

Be it known that I, J. PARSONS OWEN, of Upper Alton, Madison county, and State of Illinois, have invented a new and useful machine for molding pressed brick and also for making what is termed "slop" or "sand brick," which I shall denominate "Owen's press-brick molders;" and I do hereby declare that the following is a clear, full, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification.

Figure 1 is a vertical projection or elevation; Fig. 2, a horizontal projection; Figs. 3 and 4, elevations of parts not fully represented in Figs. 1 and 2; Fig. 5 a perspective view of the machine; Fig. 6, a section of one of the molds.

The frame R Fig. 5 of the machine is made of suitable strength and material.

A B C Figs. 1 and 2 is a horizontal wheel revolving on its center and supported by friction rollers *f* the rim of which being furnished with molds *m*, *m*, *m*, to be filled and discharged as hereinafter described. They (the molds) are constructed as represented in Fig. 4 with followers to rise and fall by means of the rod or stem *r* which is forced up by the elevating plate E E E Figs. 2 and 4 or by the wheel M which revolves and bears up the brick *i* so that the brick is ready to be borne off, and as each mold passes this plate or wheel the bottom falls to its place again by its own weight or may be driven down by a light wheel arranged for the purpose. The elevating plate is made of hard metal, an inclined plane about one third its length, and horizontal the remaining two thirds and may be elevated by screws as it wears and to compensate for the wear of the lower ends of the piston rods.

The machine is furnished with a revolving cylindrical sand sifter D with its hopper *h* Fig. 2 which sifter is a cylinder resting upon the mold wheel and made to revolve by the friction of its own weight upon it. This sand sifter is composed of a perforated cylinder with 2 round thin heads turning in a horizontal rectangular frame placed directly over the molds and sustained in that position by an arm extending from the head of the shaft to the mold wheel and an arm or brace extending from the frame of the hopper. The outer head of the sand sifter is made with an opening for the introduction of the lower end of the hopper *h* which conducts the sand to the inside of the revolving sifter.

The clay hopper H Figs. 1, 2 and 5 is for the introduction of the clay into the molds and is made in the usual manner and arranged so as to heave them over full to the amount requisite for a brick when pressed or in lieu of this hopper, a circular clay mill of the usual form and construction may be substituted to be worked by the same power as the mold wheel through its rack wheel and a pinion wheel for the said mill, this mill being so arranged as to discharge the kneaded materials direct into the molds as they pass under it.

The vertical shaft of the mixing hopper containing the mixing knives may have on its lower end a pinion for turning the same into which the cogs Q of the mold wheel mesh for causing the knives to revolve horizontally.

The wheel W Figs. 1 and 2 is for pressing the clay into the molds the rim of which is to have sufficient breadth to cover them. There may be one or more of these wheels to each machine. This wheel W is set in the slide or gate G Figs. 1 and 2 which is furnished with a tongue on each side to play in vertical grooves of the posts R of the frame which sustain it and allowing but a vertical movement or play of the wheel W. The pressure of this wheel is to be increased or diminished at pleasure by the lever power L Figs. 1, 2, 5 the fulcrum of which is the slide or gate G the short arm being connected to the stand by a rod or chain, and the long arm with the weight *o* to graduate the pressure as required. The wheel W may be of any suitable diameter and tread with or without spokes and plain on the circumference or tread for pressing the clay into the molds, having its axle which is horizontal turning in suitable boxes in the aforesaid weighted slide. The wheel W^2 Fig. 5 is made and hung and weighted in a similar manner to the one just described and is for a like purpose. The first described wheel W turns in a curb or box X made with segment sides and straight ends and without top or bottom forming the segment of the circle of the molding wheel over which it is suspended by the frame and as near to it as may be without the molds touching it. This segment box is for preventing the escape of the clay laterally as it is forced into

the molds by the pressing wheel W. The other pressing wheel W^2 is without the segment box for preventing the escape of the clay while subject to the action of the wheel.

The box X is for the wheel to play in and is constructed so as to prevent the escape of the clay while subject to the action of the wheel W. Under each press wheel W, is placed a counteracting or anti friction wheel F Fig. 1 for resisting the pressure of the press wheels upon the rim of the molding wheel in forcing the clay into the molds. They are constructed each with a double rim as is shown in Fig. 3 to give a full bearing under the molds and at the same time allow the stem *r* of the follower *b* to pass freely around in its tracks without impediment. K Figs. 1 and 2 is a planing knife with the edge turned toward the press wheel to plane off the clay even with the molds for the upper surface of the brick and is so arranged as to throw the surplus clay on to the inner part of the rim of the mold wheel where it rests till forced back again into the empty molds by means of the scraper T shown in the same figures.

The aforesaid knife K is of the form of a short plane iron with its lower or cutting edge curved toward the pressing wheel and is suspended to the frame by a stirrup or other suitable means over the top of the molding wheel and with the cutting edge of the knife so near the upper edges of the molds as to strike the clay without injuring them or the knife and having the edge of the knife standing oblique across the molds on a line tangential to the inner rim of the molding wheel.

The scraper T is simply a flat plate of metal standing in a vertical oblique position on the molds—between the duster and the mixer and secured to the frame of the latter so that as the mold wheel turns it brings the surplus clay on its surface in contact with said plate which arrests it and turns it off into the empty molds.

The molds are formed in a circular plate and are of the length and breadth of the required brick and as much deeper as the thickness of the follower or piston working therein which forms the bottom of the mold in the operation of pressing and which serves as the discharge for throwing the brick out of the mold when pressed as the piston passes over the inclined plane. Slots or openings I Fig. 6 are made in the permanent bottom of the mold below the piston or follower to permit any accumulated dust or dirt that might get below the follower to escape through said openings. These openings are made gradually wider as they approach the bottom of the plate for the purpose of discharging more freely. Or the mold wheel may be arranged for slop or sand brick by having the space of two molds chambered out as at J N Y Z Fig. 2 to receive detached hand molds *z* same figure for four or six bricks each setting even with the surface of the wheel of the form used in molding by hand which in operation are to be withdrawn from the periphery by the off bearers or other attendants: and if for slop bricks to be wet and replaced and for sand to be replaced and sanded by the sifter as in the first case. For these brick the wheel W must have a wider rim and may work under a lighter pressure than the above, the clay tempered as for hand molding. P is a vertical bevel pinion working in the circular rack which is under the periphery of the mold wheel and fixed thereto. It is set on the driving shaft S Fig. 2 together with the band wheel *b'* for the application of any convenient mechanical or animal power that may be used for propelling the mold wheel.

Operation: The operation of the machine is effected by giving motion to the mold wheel through the rack and pinion work P Q Fig. 1 as above described. The molds are sanded by means of the cylinder or sifter and then pass under the clay hopper or mill to receive their supply of clay and having received or being filled from the hopper the molds proceed under or between the pressure and mold wheel W where they are subject to the proper degree of pressure for the required density of the brick. They then pass the planing knife which smooths off the surface and clears away the surplus clay, they then arrive at the elevating plate on which the stems strike and force out the brick so that they can be removed by hand in the horizontal machine and thrown upon a revolving band which will convey them wherever they are required. The clay used may be fresh from the earth pulverized or kneaded wet and dried to the temper of brick when in a state for compressing.

Another modification of my principle of making brick is by the use of two vertical wheels situated in the same plane one with molds to open outward from the periphery and the other or press wheel to work against it as hereafter described in connection with drawings Figs. 9 and 10 Sheet R No. 3 herewith annexed which drawing as well as that of No. 1 is divested of the stand or frame for its support. Fig. 9 a vertical and Fig. 10 a horizontal projection W^4 W^4 represent the mold wheel supplied with deep flanges and thickness of rim for the mold *m m* &c. to be received between them and clear of said flanges. The periphery of this wheel may be a regular polygon with sides of proper length for each mold. The mold furnished with the followers f^2 f^2 &c. attached to stems t^2 t^2 &c. which are constructed with T^2 heads within the rim whose arms extend transversely with the plane of the wheel and beyond the

rim so as to reach over the eccentric plates E^2 e^2. These eccentric plates E^2 e^2 &c. placed immovable on both sides of the mold wheel so that the arms of the heads of the stems T^2 T^2 &c. shall strike on them, the first at E^2 to drive out the brick from the mold which has been changed as hereinafter described and the latter at C^2 to elevate the follower as the molds are cleared from the sand hopper A. This wheel may be of metal or of wood and constructed in segments or entire at the option of the builder as is also the case with the horizontal wheel above described. It may be furnished with a rack wheel R^2 that is worked by the driving pinion wheel D^2, P^2 the press wheel in the same plan with the mold wheel W^4 and rests against its periphery within its flanges. It is held in the frame L^2 L^2 and resting upon the moving stanchions S^2 S^2 and supported aside from the requisite framework by the stay braces S b^2 S b^2 which have their hold upon the supporting frame of the mold wheel near its axis and the end of the frame L^2 H^2 is a weight such as may be required with the leverage L^2 i^2 acting on the fulcrum S for the power of the pressure wheel to exert against the mold. This arrangement of the pressure wheel is for the purpose, and secures the object, of a freer motion backward and forward for the rise over the angles of the polygon of the mold wheel and any surcharge of clay or mortar the molds may receive. The mold wheel W^4 is furnished with a valve to play against the polygonal surface of it so as to prevent the escape of the sand. There is a scraper made to rise and fall to withhold the sand from being carried over on the wheel. C is a mortar or clay hopper for the supply of the molds; or at this place may be arranged a clay grinder in the manner indicated in the horizontal machine heretofore described. K^2 is a planing knife constructed so as to follow the surface of the mold after passing the pressure wheel and cutting off the surplus clay carried through; it is supported on a pivot v, and is furnished with a blade d and set by screws w, w. The machine may be further supplied with a traveling band n^2 n^2 which passes directly under the mold wheel to receive the bricks as they are discharged from the molds as hereinbefore described and carries them along to the hands of the off-bearers. It is supported by the wheels o^1 o^2 and is driven by the band wheels B^2 B^2 from the main driving shaft H^2 through the shaft i. The motive power to the same or similar to that of the horizontal machine heretofore described.

The last described modification of my principles of constructing machines for making bricks I do not intend to claim in this application, therefore I have not been particular in the description of the same. I shall reserve this for a separate patent.

What I claim as my invention and which I desire to secure by Letters Patent is—

1. The arrangement of the levers, weights and slides or gates of the pressing wheels in combination with the revolving molding wheel in the manner and for the purpose set forth in the foregoing specification. Also the construction of the anti friction wheels having grooves in the periphery of the same to allow the stems of the followers to work freely in said grooves in the manner set forth.

2. Likewise I claim the mode of supplying the revolving cylindrical sand sifter or duster in the manner set forth in combination with the mold wheel.

3. I also claim constructing the bottoms of the molds with side apertures for allowing of the discharge or escape of accumulated sand or dust which might obstruct the operation of the followers as described.

J. PARSONS OWEN.

Witnesses:
WM. P. ELLIOT,
A. E. JOHNSON.