Beach & Lukens,

Brick Machine.

No. 2,101. Patented May 22, 1841.

Fig. 4.

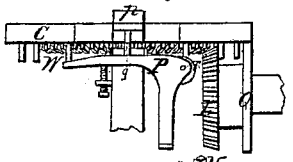


Fig. 5

Fig. 6.

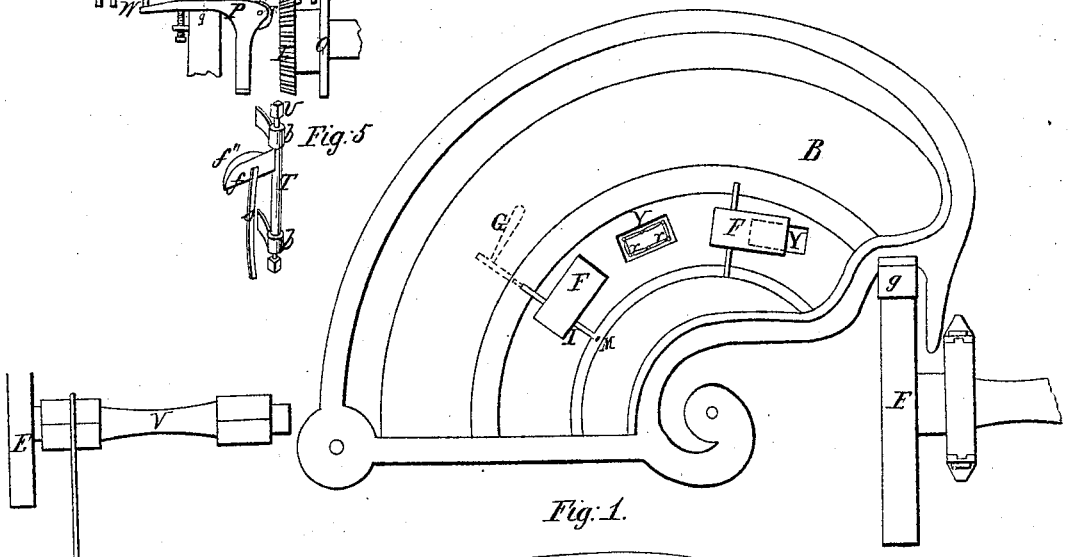


Fig. 1.

Fig. 3.

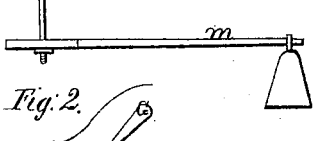
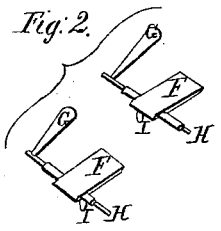
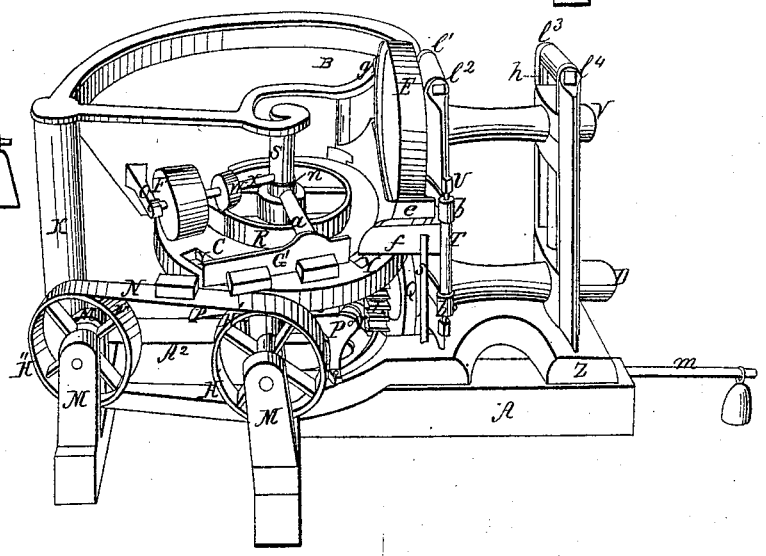


Fig. 2.





UNITED STATES PATENT OFFICE.

WALDREN BEACH AND EPHRAIM LUKENS, OF BALTIMORE, MARYLAND.

BRICK-MACHINE.

Specification of Letters Patent No. 2,101, dated May 22, 1841.

To all whom it may concern:

Be it known that we, WALDREN BEACH and EPHRAIM LUKENS, of the city of Baltimore and State of Maryland, have invented a new and useful Improvement in the Mode of Pressing Brick, which is described as follows, reference being had to the annexed drawings, making a part of the same.

Figure 1 is a perspective view of the machine. Fig. 2, the cams in the bottom of the hopper. Fig. 3, rod, lever, and weight to increase the pressure of the pressing wheel. Fig. 4, section of the molding wheel, pistons and way. Fig. 5, knife, hinge and spring. Fig. 6, top view of the hopper, showing the cams, and apertures in one of the molds.

Similar letters in the separate figures refer to similar parts.

The foundation timbers of our machine are composed of one cross timber A and two other timbers of like dimensions, at right angles thereto, supporting a bed piece *h*, of the uprights *l*, *l*, *l*, *l*, and another horizontal timber A^2 between the last two but extended in an opposite direction. On the outer end of this last timber rises one of the pillars K which supports the hopper B mentioned. On the outer end of the timber A is raised another pillar (which is hidden from view in the drawing it being behind the hopper) similar in height to the former mentioned, for the same purpose, and about midway of the said timber A rises the stationary shaft S. From this timber A rise two small uprights M. They are each under the periphery of the horizontal wheel to be mentioned and resting on the bed piece, at an equal distance from the said stationary shaft S. The hinder upright (which is hidden from view in the drawing) has a roller attached to its upper end, on which rests the horizontal wheel, and moves over it during its operation. The nearest upright M acts as a support to the shaft of the band wheel to be mentioned. The hopper B resembles in its outward appearance, a segment of a circle, is made of wood or metal as may be desired, and is placed on one side, and over the horizontal wheel C, to be mentioned, and supported on the before mentioned pillar K as well as on the top of the stationary shaft S, near the bottom of this described hopper we have placed one, two, or more cams F, Fig. 2, attached to a shaft H, Fig. 2, the same revolving in the sides of the hopper. See Fig. 6. One end of each of the shafts extends outside of the hopper sufficiently to have a lever G, Fig. 2 (and 6) with a weight attached thereto for the purpose of giving efficiency to the cams aforesaid. Passing through each shaft by the side of the cam there is a knife I, Fig. 2, pointing downward to cut off the clay to give the brick a proper width as it passes to the pressing roller.

The horizontal wheel C for molding brick is to be made of iron, or any other suitable materials, to be four feet in diameter, having therein twelve molds more or less, each of the said molds Y, Fig. 1, having at the bottom thereof a discharging piston *p*, Fig. 4 (which also serves as a bottom for the brick to rest on) with a rod *q*, Fig. 4, which projects below the said wheel a suitable distance for purposes hereinafter mentioned. The molds Y, Figs. 1 and 6, are about the size of the brick to be molded. From the bottom of each of the said molds below the said piston *p*, six or more apertures *r*, see Fig. 6, are pierced through downward into the atmosphere to allow air to escape, and to carry off any waste clay. To assist these operations we cut grooves from each hole to the other. The depth of these grooves is about one-fourth of an inch, more or less. See Fig. 6, where is shown a plan of the bottom of the mold as aforesaid. On the under side of this horizontal wheel, between the molds and the stationary shaft S, is a mitered cogwheel W, Fig. 4, attached to and revolving with said wheel. Between this wheel and the stationary shaft and concentric with the circumference of the horizontal wheel rises the rim R to a suitable height for purposes hereinafter mentioned. The horizontal wheel C with its rim R aforesaid moves freely around the stationary shaft S. It is moved by means of the driving shaft D, having on the end thereof a mitered wheel, meshing into the mitered wheel of the horizontal wheel. Close to the mitered wheel on the driving shaft D is a pulley wheel Q which is plain, and moves independently of the other wheel, around the said shaft and acts as a support to the pressure of the horizontal wheel. This driving shaft D can be set in operation by any well known means, either steam, or horse power. The said shaft, revolves in proper journals placed in boxes in the uprights *l*, *l*, *l*, *l*, over this shaft, and placed in boxes in a similar

manner, between the uprights aforesaid is another shaft V of the same dimensions (more or less) on the end of this shaft over the horizontal wheel aforesaid, is attached the stationary pressing roller E. This roller, is made of metal or other suitable material, about 3 feet in diameter more or less and can be geared by any desired arrangement at the outer end of the shaft V. To keep the boxes belonging to each shaft a suitable distance apart, uprights are placed between them.

The uprights l^1, l^2, l^3, l^4 are to be of metal, or other suitable material about 5 feet in height more or less. They are placed in pairs, and far enough from each other to contain the boxes of the shafts aforesaid. On the inside of each upright, a square groove is cut from the top to the bottom (one of which issues at l^3, marked h in Fig. 1). The pressing roller is kept in its position by means of an iron rod or strap, k shown in the end view, Fig. 3, which passes over the top of the box belonging to it, nearest to the roller aforesaid, and is extended down each groove l^1, l^2 to a lever m below the floor. This arrangement allows the pressing roller to rise or fall according to circumstances during the operation of the machine. The other boxes of each shaft are prevented from changing their places by any desired arrangement. Attached to one of the uprights l^2, is a knife f, to be described hereafter, moving as a hinge T between two boxes b b one above and the other below. These boxes are fixed to the said upright l^2. A screw U in the upper box lowers the hinge T and brings the knife close to the horizontal wheel C when required, and when it is necessary to raise the knife f, the screw in the lower box, is used which turns upward. Should any stones or gravel be in the clay when it comes in the way of the knife, the knife is arranged with a spring s, so that it can give way to it and be drawn back after the obstruction is passed.

The duster F is of cylindrical form, is made of two circular pieces of wood placed a foot more or less from each other and gauze or any other suitable material stretched between them, thus arranged is attached to a shaft x which moves in the stationary shaft S, aforesaid. The outer end of the said shaft rests in a support O, projecting from the outside of the hopper. The duster F is placed adjacent the hopper, and over the horizontal wheel C before mentioned. Attached to the shaft of the duster is a small roller or pulley W which is placed on the rim R before mentioned, and as the horizontal wheel moves around the rim R moves the said roller or pulley, and thus put in use the duster.

The guide G resembles a letter ⊥; the upright leg (or shank a,) of the ⊥ has a ring (n Fig. 1,) which moves round the shaft S by hand when required. The part a is extended in an opposite direction till it meets the hopper, where it is secured by any desired arrangement, after being fixed in a proper position by the operator. The object of this guide is to conduct the brick after it is finished pressing from the outside of the mold, off the horizontal wheel on to the band of the band wheels H′ H″. The whole is to be made of metal or any other suitable material. The horizontal wheel C in its operation, moves by means of its cog wheel on its under side, a mitered wheel attached to a shaft belonging to the band wheel H′. This shaft is supported on one of the short uprights M, before mentioned, and also by another upright M, outside of the said band wheel. The band wheels H′ H″ are placed in a line tangent to the circumference of the horizontal wheel C and the band is arranged near the molding wheel C to receive the brick, so as to carry it off where desired. They may be placed at any distance required from one another.

Under the pressing roller as above described, and rising on each side thereof a suitable distance we place a box e which is supported in its place upon the uprights l', l^2 adjacent, and on the end next the hopper on a small projection coming from the bottom of the side of the hopper, the object of this box is to prevent the clay from spreading; and keeps therein clay, and gives an opportunity for the pressing roller, to fill the molds more completely, should the molds pass from under the hopper without being so. The knife f before mentioned is placed on the outside of this case and cuts off from the top of the mold all superfluities.

Rising from the rim, on the hopper, and adjacent to the pressing roller is a scraper g, (seen at the end in Fig. 1) reaching over to the pressing roller aforesaid, so that should any clay be sticking to the periphery of the roller, this scraper frees it, and causes the clay to fall over into the hopper. The movable pistons are of metal or other suitable material, they are in size the area of the mold and have a rod attached to them, which projects downward through and below the horizontal wheel C and are each acted upon by the cam or rail road P described hereafter, so as to raise up and throw out the brick from the molds. The cam or railroad P is made of any metal required, it is placed under the horizontal wheel C adjacent to the first band wheel H′.

The railroad is shaped like a segment the summit of which is nearest the horizontal wheel C, one end of the said segment is supported by an upright resting on the bed plate L where this upright and segment unite, it is rounded off, and a roller r is there

placed in a mortise prepared for it—the object of this roller is to ease the ascent of the piston, where the rod of which comes in contact with the railroad. The other end of the railroad can be brought as near as we please to the horizontal wheel by a set screw under it, which screw is supported on the upright adjacent. The knife *f* is composed of two parts, one vertical as *f*, the other horizontal as *f''* Fig. 5.—at right angles to one another and made of suitable material—the horizontal part *f''* is placed over the wheel C. The whole is attached to the hinge T before described in Figs. 1 and 5. Should the clay choke up the apertures mentioned in the bottom of the molds the clay can be removed by a rod.

Operation: The clay being well tempered is put into the hopper B, the driving shaft D is put in motion by any sort of power whether horse or steam, and gives a motion to the horizontal wheel C, the molds under the hopper are filled with clay by the superincumbent weight of clay above and by the aid of the cams F the molds thus filled are carried forward and the clay pressed home by means of the stationary pressing roller E under which they pass, the knife *f* cuts off any superfluous clay on the top of the mold, after which the piston rod comes in contact with the railroad P below, and starts the brick from the mold, and when it arrives at the summit of the road is entirely set free from the mold and the guide G directs it on the band N of the band wheels, to where it may be wanted, and before the empty mold can be refitted, it passes under the duster F to be cleaned.

What we claim as our invention and improvement and which we desire to secure by Letters Patent, is—

1. The rotary horizontal wheel C, in combination with the duster F.

2. The box or casing, around the bottom of the pressing wheel in combination with the horizontal wheel C, and hopper B, in the manner set forth.

3. The combination of the horizontal wheel C with the cams F F in the bottom of the hopper B, the said cams having attached to them a knife I, inside the hopper, and a weight or lever G outside of the same.

4. We claim also the manner of combining the pressing roller with the hopper B in the manner described viz., by arranging said roller on the outside of the hopper and connecting it with the same by means of the casing surrounding said roller as set forth.

WALDREN BEACH.
EPHRAIM LUKENS.

Witnesses:
JAS. S. WHITE,
WILLIAM EICHELBERGER.