A. WOODWORTH.

BRICK MACHINE.

No. 3,074. Patented May 8, 1843.

Fig 1.

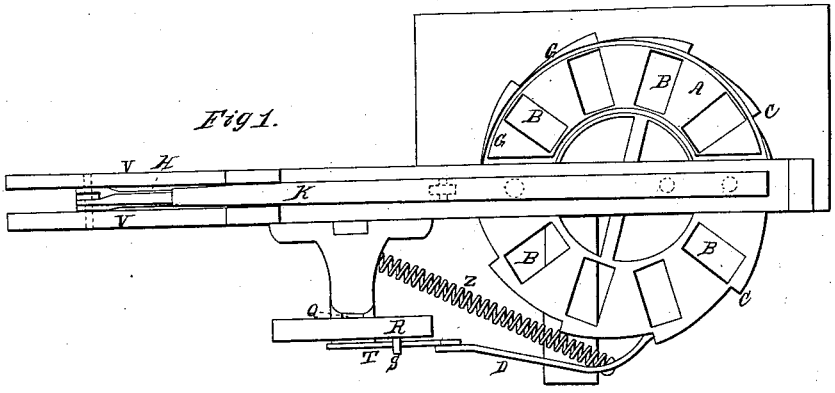


Fig 2.

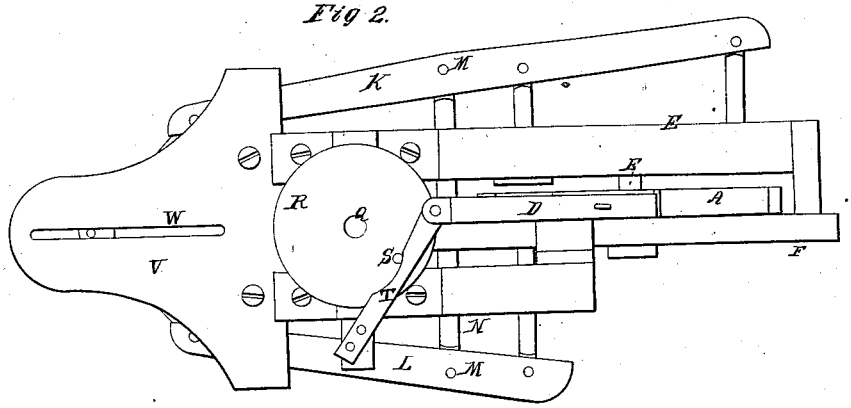
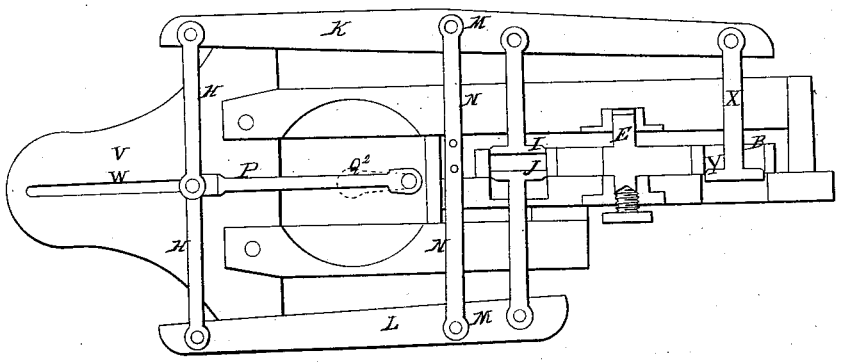


Fig 3.. Section.



UNITED STATES PATENT OFFICE.

ARAD WOODWORTH, OF WORCESTER, MASSACHUSETTS.

BRICK-PRESS.

Specification of Letters Patent No. 3,074, dated May 8, 1843.

To all whom it may concern:

Be it known that I, ARAD WOODWORTH, of Worcester, county of Worcester, and State of Massachusetts, have invented a new and useful Machine for Making Bricks, which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1 is a plan or top view of the machine. Fig. 2 is a side elevation showing the pistons withdrawn from the molds. Fig. 3 is a vertical section through the center of the machine showing the pistons in the act of compressing a brick and the third piston in the position of discharging a compressed brick.

This machine consists of a horizontal cast iron revolving wheel A, polygonal or many sided, of any required diameter, and in thickness about twice that of the brick to be pressed, perforated quite through with any convenient number of molds B of the length and breadth of the brick to be molded therein, their centers being on lines radiating from the center of the wheel, notched at the angles forming shoulders C on the periphery, against which a reaching arm D acts for turning the wheel at intervals the wheel revolving on an axle E fixed in a suitable frame F of the requisite size, strength, and material for containing and sustaining said wheel and the other several parts of the machine, hereafter to be described. Or the axle may be cast with, or fixed in the center of the wheel, and may turn in a suitable box and step, and the center of the wheel may be solid, or open, or spider web formed or other shaped as required having a segment hopper *b* with straight ends and no top or bottom covering about two thirds of the molds of the wheel fastened or suspended to the side of the frame with its lower edge just touching the upper face of the mold wheel without having its whole weight bearing upon it; into which hopper the clay is put in a pulverized damp state and from which it descends into the molds by its gravity, the front end of the hopper forming the striker for striking from the mold the surplus clay.

The pressure for pressing the clay in the mold into a space half the size of the mold or that of the full size of the required brick is produced by a toggle joint H acting on two pistons I J which move in contrary directions in the molds, the upper one I descending and the lower one J ascending compressing the brick between them to the required size, the motions of the pistons being reversed in withdrawing the pistons from the mold after the maximum of pressure has been obtained and while the wheel is stationary. The rods of the pistons are attached to levers K L whose fulcra are horizontal bolts M passed through the levers and through a vertical bar of metal N extending through the frame and attached thereto by horizontal bolts or other suitable fastenings, the attachment of the piston rods to the levers being strengthened by means of iron stirrups, straps or other suitable fixtures. The upper lever K is placed above the frame and to this lever the upper piston rod is attached. The lower lever L is placed below the frame and to this lever the lower piston rod is attached. The two branches of the toggle joint are attached to the longer arms of the aforesaid levers. The toggle joint is straightened and bent by a connecting rod P attached to the middle of the toggle joint and to the wrist of a crank of a horizontal revolving shaft Q turning in suitable boxes in the frame having on the outer extremity of said crank shaft a wheel R with a pin S projecting from its face which strikes against a vibrating arm T to whose upper end is attached by a pin a reaching arm D for turning the mold wheel. The extremities of the levers and the toggle joint attached thereto move or operate between two cheeks V fastened to the frame perforated with horizontal slots W on the same horizontal plane with the center of the toggle joint and in which slots the extremities of the bolt move that connects the rod and toggle joint.

The upper lever is extended beyond the upper piston rod equal to the diameter of the mold wheel having attached to the outer extremity thereof a vertical rod X to which is attached a third piston Y called the discharging piston as it is used for discharging the pressed brick from the mold. It works in a round aperture in the cap of the frame the diameter of said piston rod. A spring Z for holding the reaching arm against the mold wheel is attached to the inner face of said arm and to a part of the frame in such manner as to allow the arm to recede from the crank shaft and for draw-

ing it back as it slips over the before mentioned shoulders on the periphery of the mold wheel as it revolves.

The mold wheel may be made with separate plates bolted together having the molds also in separate castings and placed in rectangular openings in the aforesaid plates which are to be bolted together for confining the molds in a permanent manner leaving spaces between the molds; which form of construction is preferable to the solid wheel as it is much lighter and cheaper and is almost as strong and is more easily managed.

The operation of this machine is as follows: The clay is put into the hopper G and descends into the molds B. The machine being put in motion by any convenient power applied to the crank shaft Q the pin S in the face of the wheel R on the crank shaft strikes the vibrating arm T and pushes it forward and with it the reaching arm D and the latter striking against a shoulder C on the periphery of the mold wheel A causes it to move around on its center horizontally until the filled mold is directly under the upper piston I and over the under piston J which takes place when the outer extremity of the reaching arm D has been extended as far as it will reach at the moment the pin leaves the vibrating arm—at which moment the spring attached to the reaching arm D and frame F previously extended by the aforesaid operation in contracting draws back the reaching arm to its former position for a new hold leaving the mold wheel in a stationary position. The pistons now commence to approach each other by the action of the toggle joint H which is now straightened by the revolving cranks Q^2 and connecting rod P at the same time causing the third piston Y to descend and push from the mold which it enters the pressed brick therein which is received upon a revolving apron, table or other apparatus for bearing it away. When the arms of the toggle joint are in a straight line, vertically, which will take place when the crank is horizontal and the wrist is nearest the mold wheel, the greatest pressure will have been obtained. The crank shaft continuing to revolve the toggle joint is bent and the motion of the pistons reversed leaving the brick in a compressed state in the center of the mold. The pistons being entirely withdrawn from the molds the reaching arm begins to act and cause the mold wheel to revolve into the molds B. The machine being put in motion by any convenient power applied to the crank shaft Q the pin S in the face of the wheel R on the crank shaft strikes the vibrating arm T and pushes it forward and with it the reaching arm D and the latter striking against a shoulder C on the periphery of the mold wheel A causes it to move around on its center horizontally until the filled mold is directly under the upper piston I and over the under piston J which takes place when the outer extremity of the reaching arm D has been extended as far as it will reach at the moment the pin leaves the vibrating arm—at which moment the spring attached to the reaching arm D and frame F previously extended by the aforesaid operation in contracting draws back the reaching arm to its former position for a new hold, carrying a mold with a compressed brick to the discharging piston and bringing forward a mold just filled from the hopper which are treated in the same manner as those just described and in this manner the operation is continued.

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

The arrangement of the upper and lower pistons I J operated by the toggle joint H in combination with the horizontal mold wheel A for pressing and compressing bricks and in combination therewith the piston Y for discharging them—in the manner herein set forth.

ARAD WOODWORTH.

Witnesses:
EDMUND MAHER,
V. H. GODDARD.