2 Sheets--Sheet 1.

I. GREGG, Jr.

Brick-Machine.

No. 162,058. Patented April 13, 1875.

Fig: 1

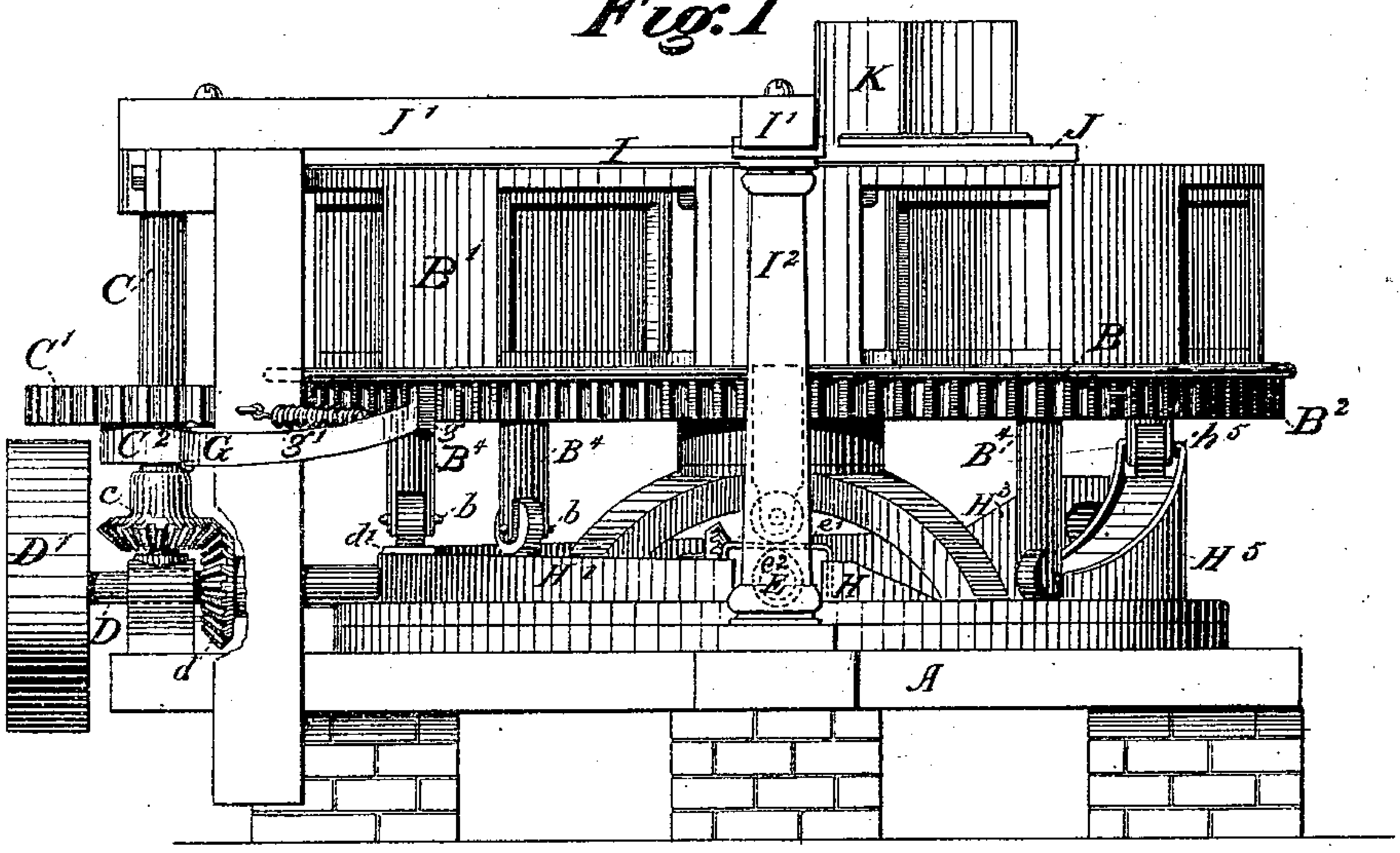
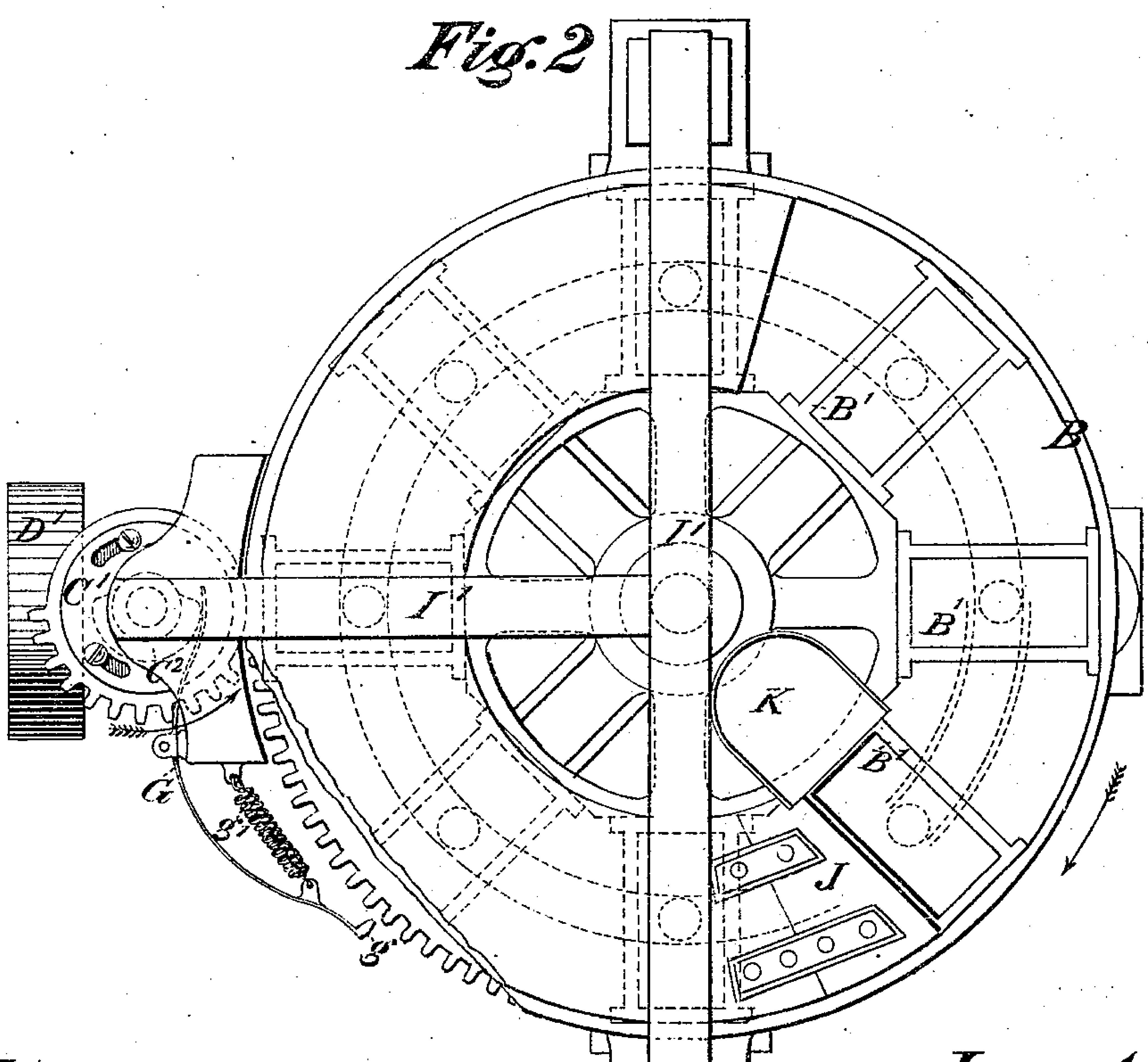


Fig: 2



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2 Sheets--Sheet 2.

I. GREGG. Jr.

Brick-Machine.

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Fig: 3

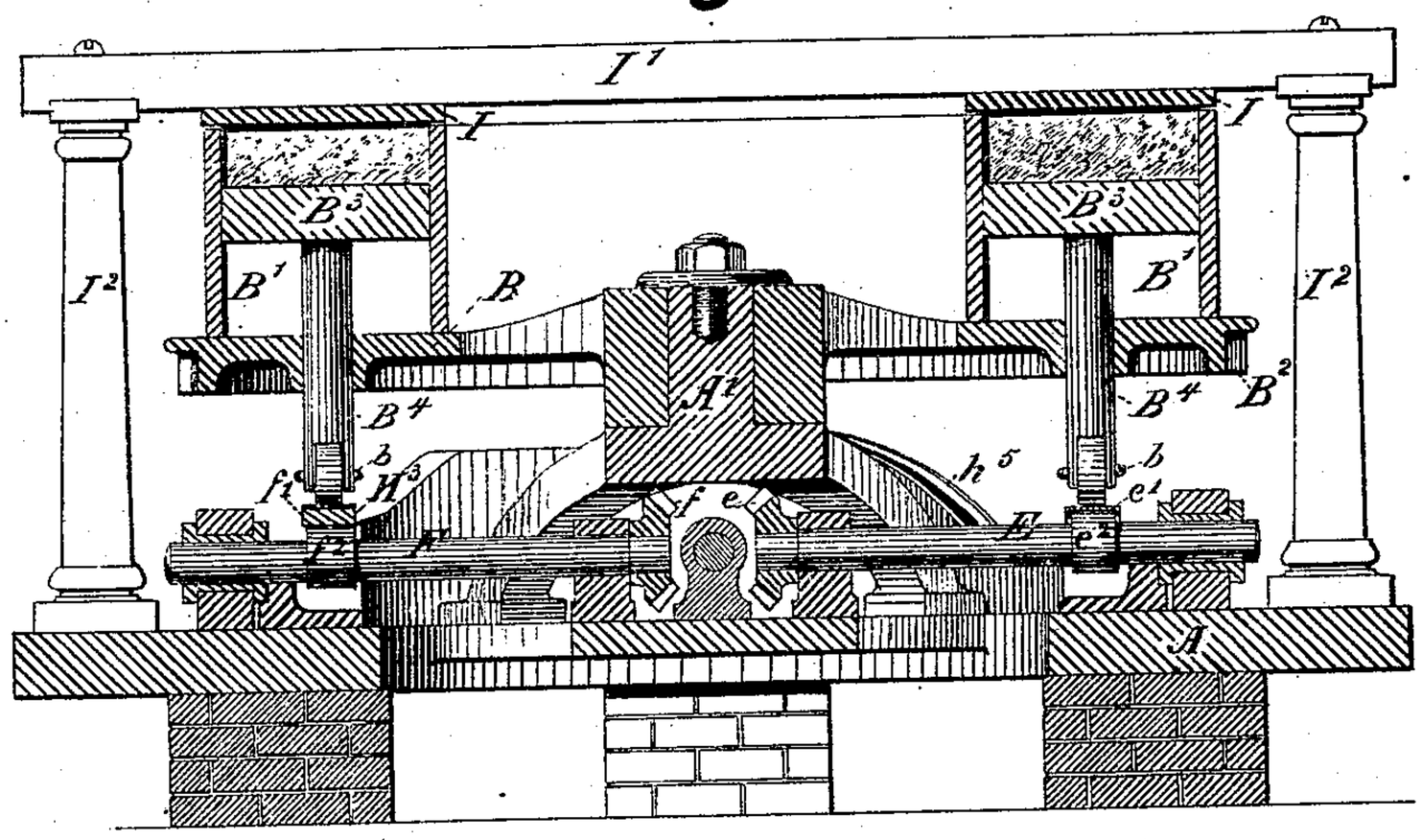
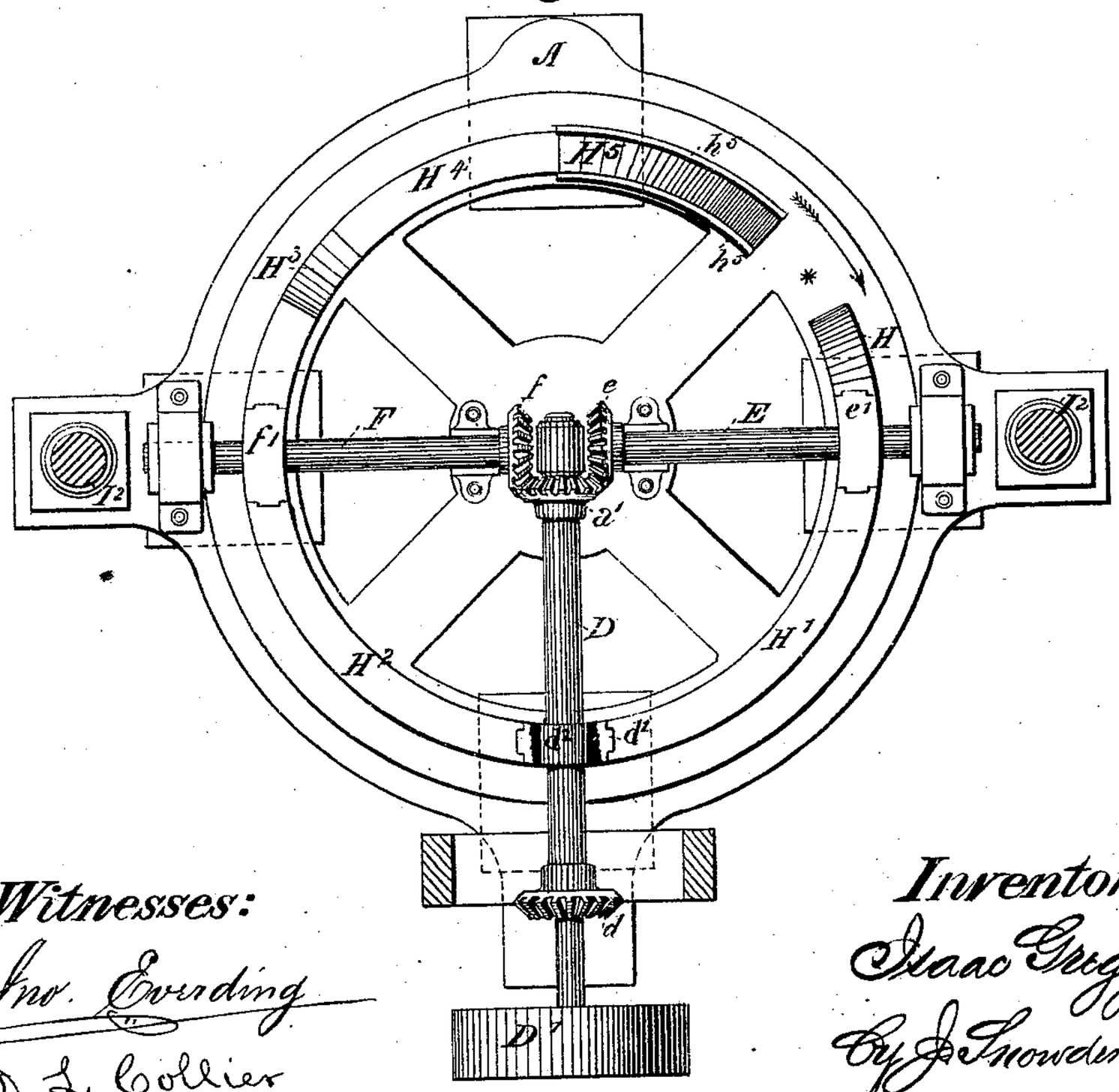


Fig: 4



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UNITED STATES PATENT OFFICE.

ISAAC GREGG, JR., OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN BRICK-MACHINES.

Specification forming part of Letters Patent No. **162,058**, dated April 13, 1875; application filed March 12, 1875.

To all whom it may concern:

Be it known that I, ISAAC GREGG, Jr., of the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Brick-Machines, of which the following is a specification:

My improvements relate to that class of brick-making machines which operate upon tempered clay—*i. e.*, clay which is in a moist or plastic state; and the object of my invention is to provide simple and convenient means for feeding the clay to the molds, pressing it into bricks of proper form and consistency, and expelling the finished bricks from the molds, these several operations being continuously and automatically performed.

To this end my improvements consist in combining a mold-table having an intermittent revolving movement, and provided with a series of mold-boxes and followers, with a scraper to remove superfluous clay from the mold-boxes, and mechanism for imparting two or more successive pressures to the clay within the mold-boxes during intervals in which the mold-table is stationary, all as hereinafter more fully set forth.

My invention is designed to obviate the objections above stated, as well as to greatly simplify the construction of a brick-machine, without either reducing its capacity of production or deteriorating from the excellence of its product.

In the accompanying drawings, Figure 1 is a view in elevation of a brick-machine embodying my improvements; Fig. 2, a plan or top view of the same; Fig. 3, a vertical central section; and Fig. 4, a plan or top view of the bed-plate and cam-shafts.

The machine is mounted upon an annular bed-plate, A, which is substantially secured to any suitable foundation. A circular mold-table, B, provided with a series of mold-boxes, B^1, is mounted upon an upright stationary shaft, A′, secured to the bed-plate A, and is free to rotate around said shaft. A spur-wheel, B^2, is formed upon or secured to the periphery of the mold-table, to which an intermittent rotary movement is imparted by a mutilated spur-pinion, C^1, meshing into the spur-wheel B^2. The pinion C^1 is mounted upon an upright shaft, C, which is rotated by the driving-shaft D, through the intermediation of the miter-gears *c* and *d*. The mold-boxes B^1 are respectively provided with pistons or followers B^3, each of which is secured upon an upright stem, B^4. The stems B^4 pass through openings in the mold-table, and are provided with pins *b* in their lower ends, to enable them to be drawn downward to the lowest extremity of their vertical traverse when the mold-boxes are in position to be filled, as presently to be described. Friction-rollers may with advantage be fitted to the lower ends of the stems to facilitate their circular traverse.

The driving-shaft D carries a pulley, D′, to which power may be applied from any suitable prime mover, and is provided at its end nearest the center of the machine with a bevel-gear, *a*′, which meshes into corresponding gears *e f*, respectively secured upon the horizontal shafts E F, which rotate in bearings upon the bed-plate, and are set, preferably, at right angles to the shaft D. A double-armed stop-lever, G, is pivoted to one of the uprights which support the upper bearing of the shaft C. One of the arms of this lever has upon its end a detent, *g*, and is connected by a spring, *g*′, with the upright to which the lever is attached. The other arm is curved in such position as to be acted upon by a cam, C^2, upon the shaft C. When the teeth of the mutilated spur-pinion C^1 are in gear with the spur-wheel B^2, the cam holds the detent out of gear with said spur-wheel, so as to admit of the rotation of the mold-table; but as soon as the latter ceases to rotate, by reason of the presentation of the plain surface of the pinion C^1 to the spur-wheel B^2, the spring *g*′ causes the detent *g* to engage with the teeth of the spur-wheel, and the mold-table is thereby held stationary.

In the rotation of the mold-table, which is in the direction of the arrows, Figs. 2 and 4, the lower ends of the follower-stems B^4 traverse a series of segmental inclines, bearing-pieces, and cam-yokes, the relative arrangement of which is as follows: Beginning at the point marked * on Fig. 4, the follower-stems first ascend the incline H, from which they pass to and over the cam-yoke e^1. This

yoke is located immediately above, and periodically elevated by, a cam, e^2, secured upon the shaft E. From the cam-yoke e^1 the stems pass to and over the segmental bearing-piece H^1, the upper surface of which is slightly inclined upward in the direction of the rotation of the mold-table. The stems next pass to and over another cam-yoke, d^1, located above and operated by a cam, d^2, on the shaft D, the throw of the cam d^2 being greater than that of the cam e^2; thence to and over another upwardly-inclining segmental bearing-piece, H^2; thence to and over a third cam-yoke, f^1, operated by a cam, f^2, on the shaft F, the throw of the cam f^2 being again greater than that of the cam d^2; thence up an ascending incline, H^3, to a bearing-piece, H^4, the upper surface of which is horizontal, and thence down a descending incline, H^5, to the point of starting. Flanges h^5 upon the incline H^5 engage the pins b of the follower-stems, and thereby maintain the ends of the latter in contact with the incline H^5 during their descent. A pressure-plate, I, extends over the tops of the mold-boxes B^1, with the exception of such a number thereof as may be deemed necessary to have uncovered for the feeding of the clay and removal of the finished bricks. The pressure-plate is held in position and strengthened by braces I^1, secured by posts I^2 to the bed-plate. A gage or scraper, J, is secured to the pressure-plate in such position as to remove the superfluous clay from the mold-boxes as they pass beneath the pressure-plate, and a chute or spout, K, is provided, from which the clay is fed to the mold-boxes by an attendant.

The operation of the machine is as follows: The clay, having been properly tempered, is fed to the mold-boxes as they in turn pass the chute K, only a sufficient quantity to form one brick being supplied to each box, and any superfluous clay being removed by the gage or scraper J. When the follower-stem of a filled mold-box rests upon the cam-yoke e^1, the mutilated spur-pinion C^1 will be out of gear with the spur-wheel B^2 of the mold-table, and the latter will be held stationary by the stop-lever G and detent g. While in this position the clay in the mold-box receives a preliminary pressure, being compressed between the follower and the pressure-plate I by the elevation of the follower by the cam e^2. The cam C^2 then withdraws the detent from the teeth of the spur-wheel B^2, and the latter being again engaged by the pinion C^1, the mold-table continues its movement until the follower-stem rests upon the cam-yoke d^1, when the mold-table is arrested and held stationary, and a second and increased pressure given to the clay in the mold-box by the cam d^2. The mold-table is then again rotated until the follower-stem rests upon the cam-yoke f^2, when the table is again arrested and held, and a third and final pressure, of increased force, given to the clay by the cam f^2, after which the follower is elevated by the incline H^3, and the finished brick, being thereby protruded from the mold-box, is removed by an attendant. The follower is then depressed by the flanges of the incline H^5, and the mold-box is ready for another charge of clay.

In the continuous operation of the machine, it will be obvious that while the clay is being fed to one mold-box, the clay in another box is undergoing the preliminary pressure, that in a third box is receiving the second pressure, that in a fourth box the final pressure, and that in a fifth box is being discharged. The number of boxes can, of course, be proportionally increased, at the discretion of the constructer.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The mode, substantially as described, of manufacturing bricks, the same consisting in supplying the clay to the mold, removing the surplus portion, then automatically subjecting the clay within the molds to a series of successive increasing pressures, and finally discharging the finished brick from the mold, the various steps being effected in connected progressive movements of the mold, in the manner substantially as described.

2. The combination, in a brick-machine, of an intermittently-revolving mold-table, a stationary pressure-plate, and a series of intermittently-rotating pressure-cams, substantially as set forth.

3. The combination, with the mold-carrying table and its gear-wheel of a brick-machine, of a series of shafts carrying gear-wheels and cams, substantially as described, whereby motion is imparted to the mold-table, and successive increasing pressure exerted upon the clay in the mold as the follower of the mold is successively acted upon by the cams, as specified.

4. The combination, in a brick-machine, of the intermittently-revolving mold-table, the mold-boxes and their followers, the inclined segmental bearing-pieces, the cam-yokes interposed between the bearing-pieces, and a series of rotating cams for operating the cam-yokes, substantially as set forth.

5. The combination, in a brick-machine, of a driving-shaft, which communicates an intermittent rotating movement to the mold-table, with a series of continuously-rotating cam-shafts, which impart successive increasing pressure to the clay in the molds during the intervals of rest of the mold-table, substantially as set forth.

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