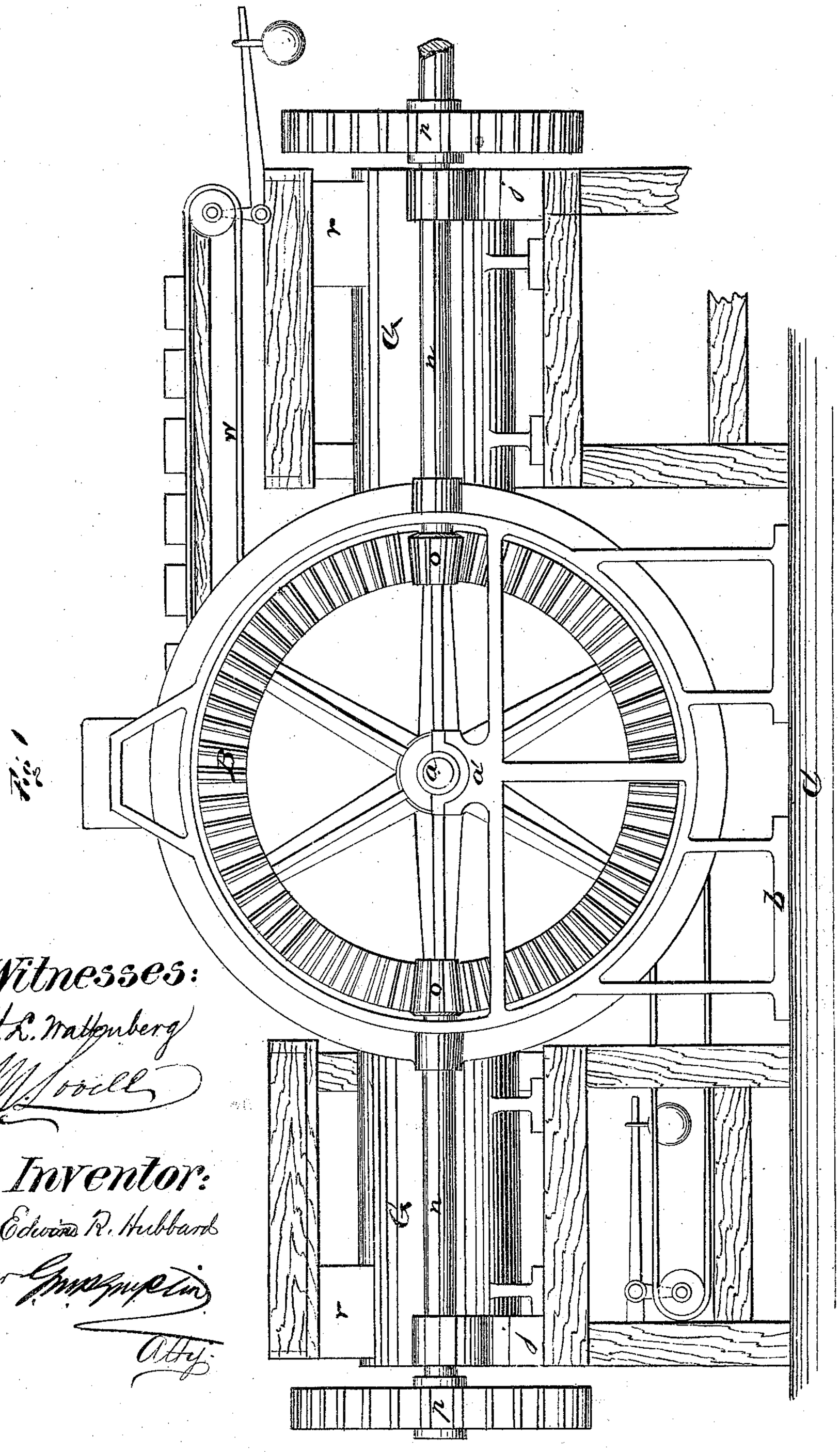
3 Sheets--Sheet 1.

E. R. HUBBARD.
Brick-Machines.

No. 134,672. Patented Jan. 7, 1873.



Witnesses:

H. L. Mattsonberg

W. Lovell

Inventor:

Edwin R. Hubbard

per Munn & Co

Attys.

No. 134,672.

E. R. HUBBARD.
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Patented Jan. 7, 1873.

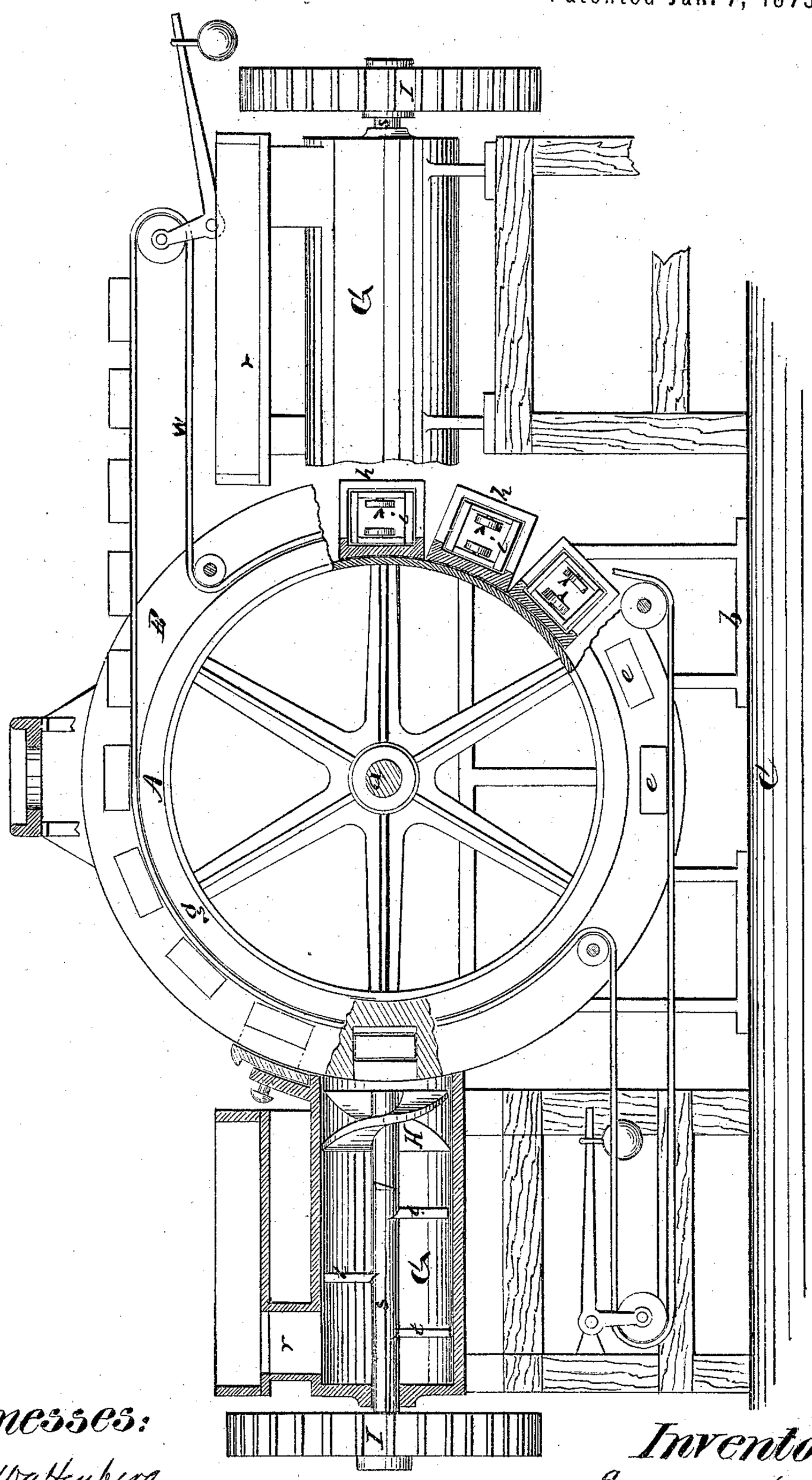

Fig 2.

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3 Sheets--Sheet 3.

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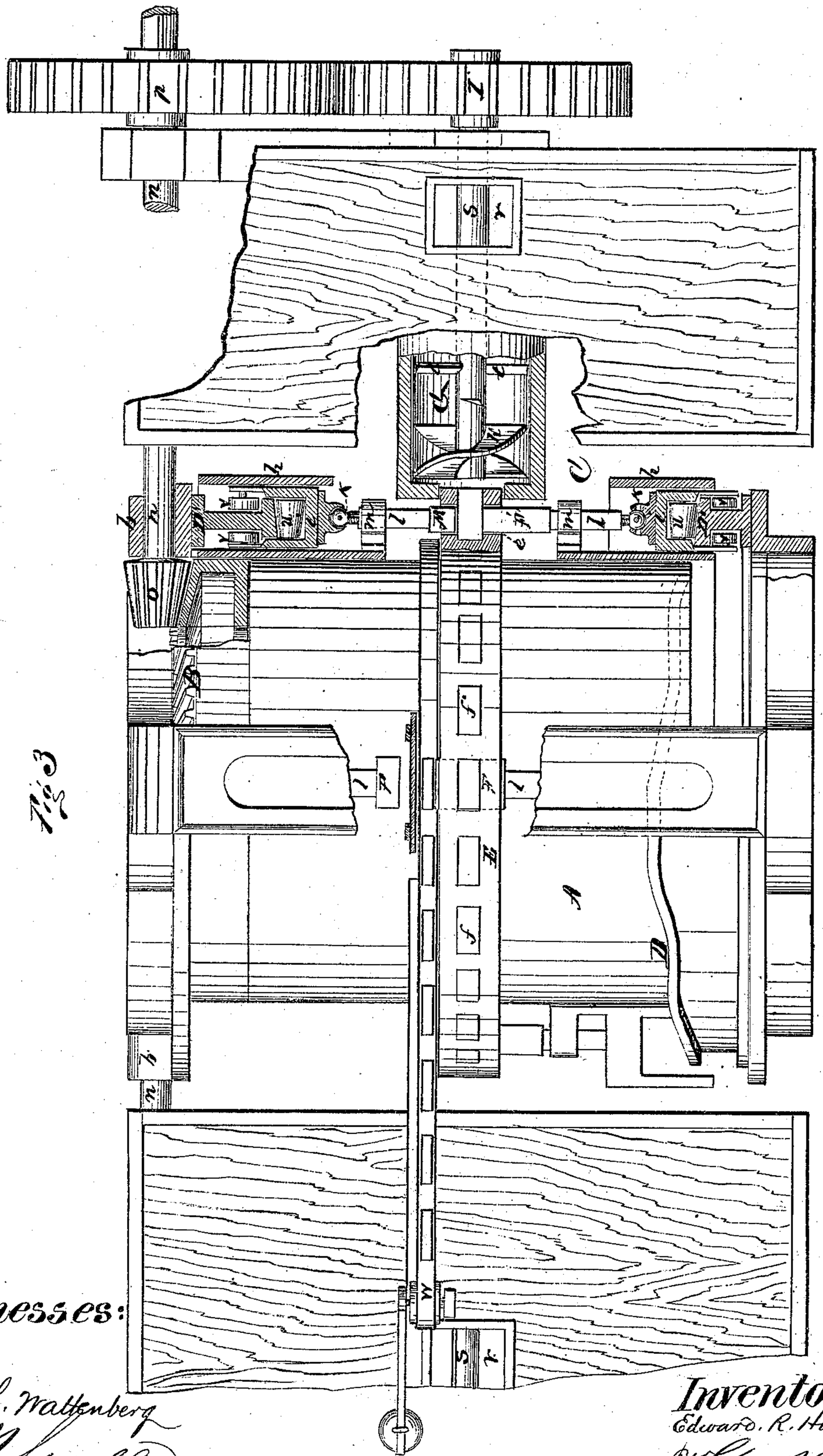

Fig 3

Witnesses:

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W. Lovell

Inventor:
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UNITED STATES PATENT OFFICE.

EDWARD R. HUBBARD, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND GEORGE FARR, OF SAME PLACE.

IMPROVEMENT IN BRICK-MACHINES.

Specification forming part of Letters Patent No. **134,672**, dated January 7, 1873.

To all whom it may concern:

Be it known that I, EDWARD R. HUBBARD, of the city, county, and State of New York, have invented a new and Improved Brick-Machine; and that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon making a part of this specification.

This invention is in the nature of an improvement in brick-machines; and the invention consists in a brick-machine constructed so as to form and press the brick between two movable plungers or compressors working from opposite sides of a revolving cylinder or drum, in the manner hereinafter described.

In many brick-machines heretofore constructed great difficulty has been experienced in pressing the brick to a uniform density, in consequence of which the brick, during the process of burning, will warp. This unequal density of the brick has, in most instances, been produced by the appliance which severs the molded brick from the mass of clay from which it has been formed. This operation is usually depended upon to finish one face of the brick, and, as will be readily understood from this operation, the brick is necessarily more dense on one side than the other, as the particles of clay are forced from one side to the other as the shearing device is passed through the yielding mass of clay. It is believed that my invention obviates the foregoing difficulties, as will be seen from the following description.

In the accompanying drawing, Figure 1 represents an end view of my brick-machine; Fig. 2, an end view of same with guides and pug-mill in section; and Fig. 3, a plan or top view of same.

Similar letters of reference indicate like parts in the drawing.

A represents a hollow cylinder or drum, of cast metal, and of any desired length and diameter. Cast with or otherwise secured to one end of said cylinder is a bevel-gear wheel, B. This cylinder has running through it a shaft, *a*, the ends of which are journals resting in pillow-blocks or bearings *a'* of the frames *b*, (which are firmly secured to the bed-plate C,) so that said cylinder may freely turn therein. Secured to the frames *b b* are cams D D', which project to some extent over the surface of the cylinder A. Around the outer surface of the cylinder A, midway from the ends thereof, is cast a rib, E, having formed therein vertical and lateral rectilinear openings *e* and *f*; and there is also cast on the surface of said cylinder a rib, *g*. Firmly secured to the surface of and around the cylinder A, immediately opposite the openings *f*, are a series of guide-boxes, *h*, within which are fitted corresponding-shaped pistons *i*, the upper and lower sides of said pistons extending back and receiving the edge of the cams D D' between them. To the inner faces of said pistons, by ball-and-socket joints *k*, are secured the plunger-stems *l*, which work through guides *m* and terminate at their outer ends into the plungers or compressors F F'. Passing through the frames *b b*, and supported by any suitable frame-work, as at *j*, are shafts *n*, having fitted to their inner ends bevel-wheels *o*, which mesh into the gears of the bevel-gear wheel B. Secured to the outer ends of said shafts are gear-wheels *p p*, to which motion may be communicated by any suitable power. Resting upon suitable frame-work, and abutting against the rib E on opposite sides of the cylinder A, are two horizontal pug-mills, G, into which the clay is put through the hoppers *r*, and within which it is intimately mixed as in other pug-mills. Through the pug-mills G pass shafts *s*, having secured to their inner ends helices or screws H, and to their diameters blades *t*, and to their outer ends gear-wheels I.

Having now described substantially the construction of my brick-machine, its mode of operation is as follows: Power is applied to one of the gear-wheels *p*, which causes it to revolve, and, through the bevel-wheels *o*, communicate a revolving motion to the cylinder A and the gear-wheels I, into which the gear-wheels *p* mesh. Clay is now fed into the pug-mills G through the hoppers *r*, and after its particles have become thoroughly commingled by the blades *t* passing through it, as in any pug-mill, the clay is forced out of the inner end of the mill (by the action of the helices or screws H) into the openings *f* of the rib E, and, as the cylinder revolves, the clay

in the opening is severed from the mass in the pug-mill, and the action of the cams on the pistons or the friction-rollers *u* and *v* forces the plungers or compressors F F′ into the opening *e* of the rib E, the plungers or compressors moving from opposite sides of the cylinder and compressing the clay between their two inner faces, the extent of their inward thrust being just equal to the thickness of a brick, the length and height of the brick being governed by the size of the opening *e*. The brick being now formed, the plunger or compressor F is withdrawn from the opening or mold *e* by the action of the cam D as the cylinder A revolves and brings the rollers of the piston-guides in contact with it; and the compressor or plunger F′, by similar action of the cam D′, is forced entirely through the openings *e* from one side to the other, by which action the brick formed therein, as just described, is forced out of said mold or opening onto an endless belt or apron, *w*, which has imparted to it a continuous motion as the cylinder A revolves since it passes around the rib *g*, and by this means the bricks are carried to any desirable place as fast as they are formed and pushed out of the molds *e*.

It will now be seen from the above description that, as the whole series of plungers or compressors around the cylinder A are continually forming, compressing, and delivering bricks as fast as the cylinder or drum revolves, a large number of bricks may be made in the shortest limit of time, and that each brick, as it is formed, is subjected to a uniform pressure of great power, which is the main object sought to be accomplished, together with speed and economy in manufacture.

Instead of having the cams D D′ act in a double capacity—that is, to force in and withdraw the plungers from the molds, the plungers may be so constructed that the cam will only force them inward, and they may be retracted by the action of a spring acting on a lever, or in any similar way. I therefore do not wish to limit myself to any particular means of operating the plungers by the cams.

The plungers or compressors are secured to their stems by means of a ball-and-socket joint, as before mentioned, so that an allowance for any unequal strain is made, which will in this way preserve the plunger-stem from fracture.

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

1. In combination with an annular mold-rim E provided with the vertical and horizontal apertures *f e*, the pug-mills G and double series of plungers working in the molds from opposite sides, substantially as described.

2. The combination and arrangement of the pug-mills G with the mold-rim E *e f* on the rotary cylinder A, and with the double series of plungers operated from opposite sides of the molds by means of the stationary cams D D′, substantially as described.

3. The combination, with the rotary cylinder A carrying the mold-rim E *e f*, of the rim *g* and the endless carrier, all arranged and operating substantially as described.

4. The connection of the plunger-stems with their slides by means of ball-and-socket joints, substantially as described.

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Witnesses:
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