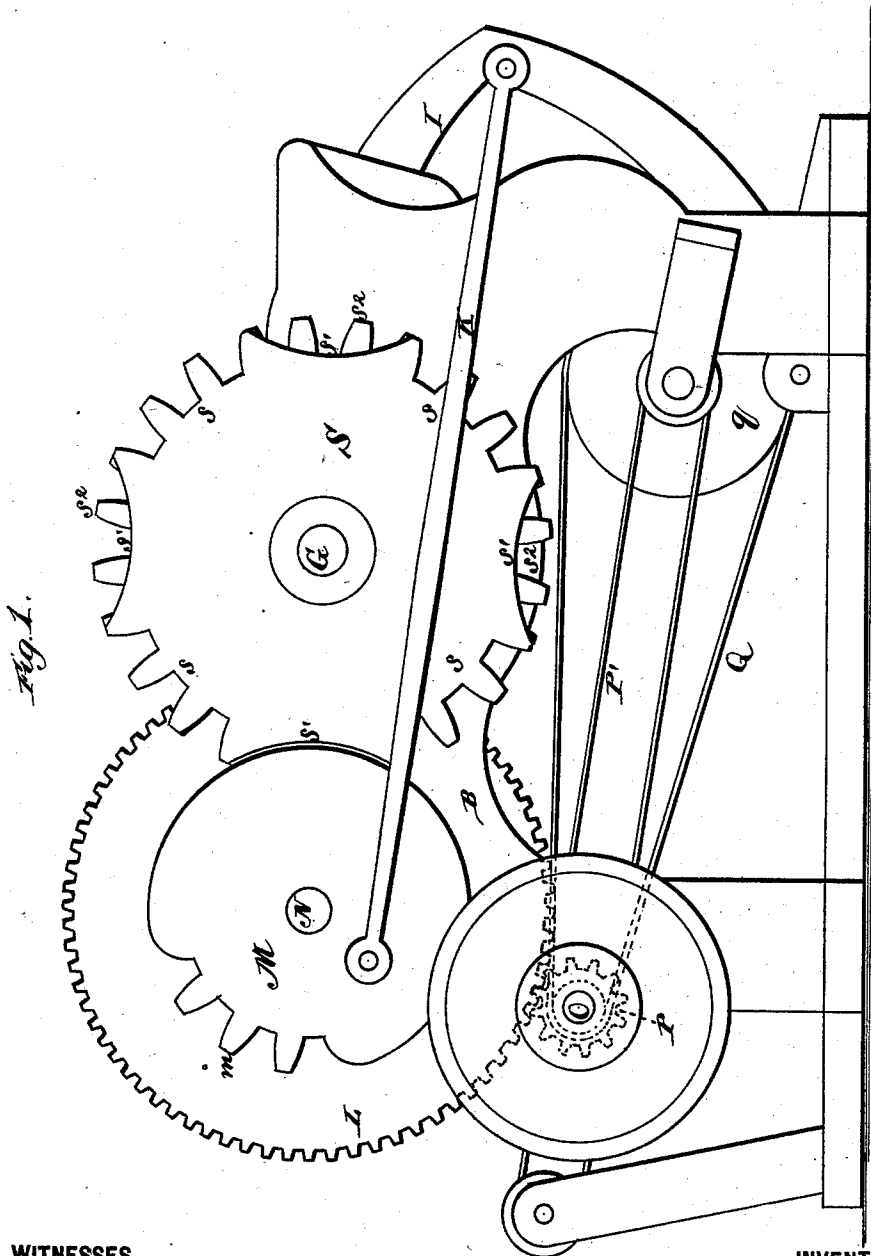


C. A. HEGE.  
Brick-Machine.

No. 222,902.

Patented Dec. 23, 1879.



WITNESSES  
*Robert Everett*  
*Chas. G. Page.*

INVENTOR  
*Constantin A. Hege*  
*Wilson Smith* ATTORNEY

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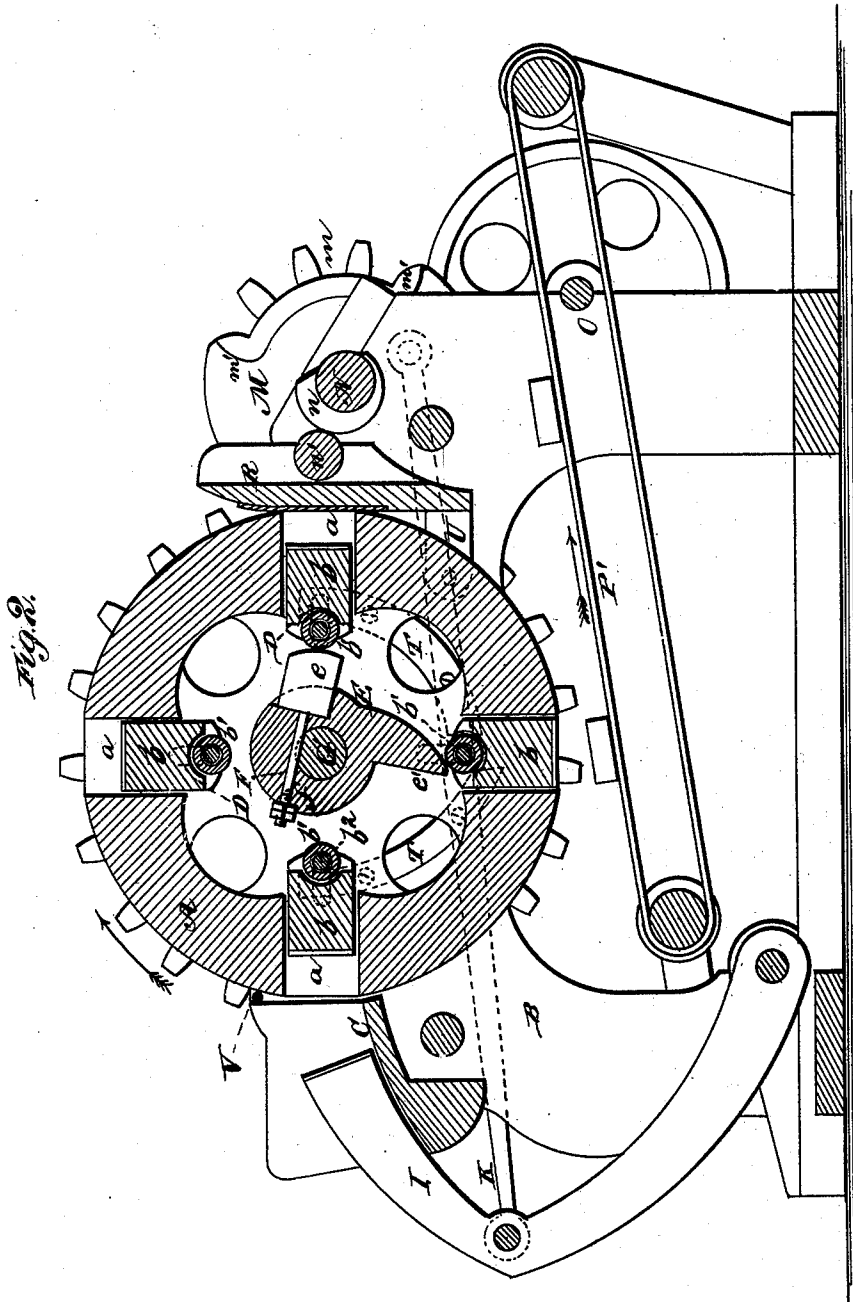


Fig. 2.

WITNESSES

*Robert Sweett*  
*Chas. J. Bage.*

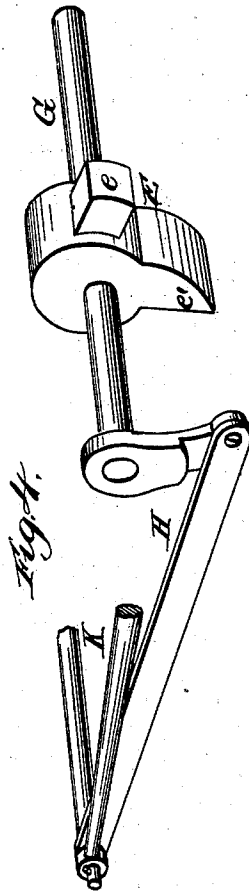
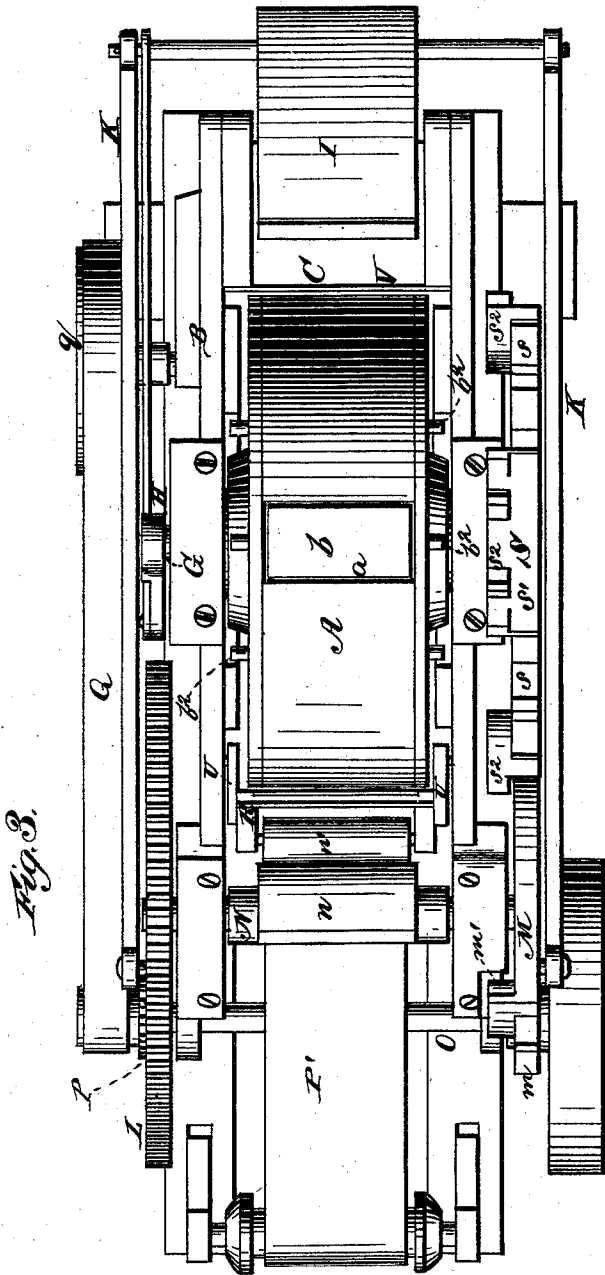
INVENTOR

*Constantine A. Hege*  
*Gilman Smith & Co* ATTORNEY

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*Robert Everett*  
 Chas. G. Page

INVENTOR  
*Constantin A. Hege*  
*Milner Smith & Co.* ATTORNEY

# UNITED STATES PATENT OFFICE

CONSTANTINE A. HEGE, OF SALEM, ASSIGNOR OF TWO-THIRDS OF HIS RIGHT TO PATRICK FRANCIS DUFFY AND JAMES EDWARD ALLEN, OF GREENSBOROUGH, NORTH CAROLINA.

## IMPROVEMENT IN BRICK-MACHINES.

Specification forming part of Letters Patent No. 222,902, dated December 23, 1879; application filed November 4, 1879.

*To all whom it may concern:*

Be it known that I, CONSTANTINE ALEXANDER HEGE, of Salem, in the county of Forsythe and State of North Carolina, have invented certain new and useful Improvements in Brick-Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a side elevation of our improved brick-machine. Fig. 2 is a central longitudinal section thereof, taken on a vertical plane. Fig. 3 is a top or plan view; and Fig. 4, a perspective view of the double adjustable cam.

My present invention relates to brick-machines, and is mainly designed as an improvement upon a machine of this class secured to me by Letters Patent of July 2, 1878.

My improvement consists in a duplex intermittent mutilated gearing, a rocking plunger for forcing and pressing the clay into the molds, and an adjustable double cam for re-pressing the brick and forcing the same out of the molds, all as hereinafter set forth.

Having thus briefly enumerated the distinctive features in my invention, I will proceed to describe the construction and operation of my machine, with reference by letter to the accompanying drawings, so as to enable those skilled in the art to make and use the same.

A designates the drum, which is mounted in a suitable frame, B, and C refers to the table upon which the tempered clay is discharged from the pug-mill previously to being forced by the plunger into the molds of the drum. This drum contains four molds, *a*, with movable bottoms *b*, which may be thrown out even with the circumference of the drum, or drawn back within the molds to a depth more than equal to the thickness of a brick.

The mold-bottoms have rollers *b'* on their inner sides toward the center of the drum, and they are also provided with gudgeons or guide-pins *b''*, which are arranged to move in slots D, formed in the sides of the drum. The rollers

of these movable mold-bottoms are acted upon just at the proper time and to the proper degree by means of a double cam, E, for the purpose of re-pressing the brick and forcing them out of the molds.

The double cam comprises a short sleeve secured upon a shaft, G, having the two cam-projections *e e'*, the upper one, *e*, of which operates, in conjunction with an exterior platen, for re-pressing the brick, while the lower cam-faced projection, *e'*, is arranged to force outward the movable bottoms for the purpose of discharging the pressed brick from the molds upon an endless belt or apron, which is located beneath the drum.

In order to compensate for the wear of the cam-face *e*, which will necessarily occur by reason of the great pressure and friction sustained, I make this part of the cam adjustable by means of a rod, F, which passes both through the sleeve and through an axis, G, upon which the said sleeve is secured, and also into the cam-projection *e*, which fits within a socket of the sleeve, so that by adjusting the rod in its screw-threaded bearing *f* the cam can be extended out from the sleeve in proportion to the wear incurred, and washers employed to fill up the space between the end of the socket and the cam-piece.

The shaft G extends through the center or axis of the drum, and is given a reciprocating movement independent of the drum by means of a crank-shaft, H, which connects with a cross-bar of the plunger I. The plunger receives its motion from two pitmen, K, one on each side, which connect with wrist-pins upon the gear-wheels L and M. These gear-wheels are mounted upon a common main shaft, N, and are driven by a driving-shaft, O, which is provided with a cog-wheel, P, arranged to intermesh with the gear-wheel L. The shaft O also imparts a continuous motion to an endless belt, P', arranged upon rollers below the drum, by means of a driving-belt, Q, which passes around the said shaft, and also around a pulley-wheel, *q*, upon an axis of one of the rollers. During the operation of the machine the said endless belt or apron P' has a steady continuous movement, for the purpose of carry-

ing off the brick as they are discharged from the mold, while the remaining operative parts of the machine have the intermittent motions hereinafter more particularly described.

The main shaft N carries a cam, *n*, which acts at intervals upon a roller, *n'*, in the back of a platen, R, and this, at the proper time, presses the platen against the face of the mold, to prevent the escape of the clay while being re-pressed from the bottom of the molds.

The drum has an intermittent motion, and makes one-fourth of a revolution at a time. When not in motion it is held rigidly in the right position while receiving the clay pressed into the molds by the plunger, re-pressing the bricks in the mold on the opposite side, and forcing them out of the mold underneath. This motion of the drum and holding it in position is effected by means of two peculiarly-constructed cog-wheels gearing into each other, one of the said wheels being secured to one end of the journal on which the drum revolves, and the remaining wheel being secured on the end of the main shaft N. These two wheels constitute a duplex intermittent mutilated gearing, the construction of which is as follows:

The wheel S, which is secured upon one of the journals of the drum, is formed with its gear-teeth in four sections, *s*, and with the concaved faces *s'* between the said sections of teeth. It is also provided with gear sections or segments *s*<sup>2</sup> alongside of its concaved faces *s'*, the rims of the said segments being made to correspond with the concavity of the adjacent concaved faces.

The wheel M, which is mounted upon the main shaft, is formed with a single section, *m*, of gear-teeth, which intermesh with the teeth upon the above-described wheel S, the remaining portion of the periphery of the wheel M being formed of a plain face, so that the wheel S will have but one-quarter of a revolution by the engagement of the teeth upon wheel M with one of its sections of gearing, and will remain stationary so long as the plain face of the actuating-wheel and one of its own concaved faces are opposed to each other. The wheel M is also provided with two teeth, *m'*, alongside of its section of gear *m*, these teeth being arranged one at each end of said section, so as to engage with the teeth of the segments of gear upon the wheel S, both for the purpose of starting said wheel in order to bring the gear *s* into mesh with the gear *m*, and also to bring the concaved faces of the wheel in opposition to the plain rim of the driving-gear wheel M.

T designates cams upon the main frame of the machine and at the sides of the drum, which cams are so arranged that during the revolution of the drum and after the brick have been forced out of the molds the gudgeons of the mold-bottoms will strike against the said cams, thus forcing the bottoms back to their normal positions.

The platen is pivoted to blocks U, which

are arranged alongside of the drum in such position that they will materially aid in keeping the brick within the molds during the process of re-pressing the same.

In practice we face the mold-bottoms, the platen, and the end of the plunger with felt, cloth, or some other porous or fibrous substance so close in texture as to prevent the pores being filled with the clay, yet open enough to permit the air to circulate through, and at the same time to serve to some extent as a reservoir for oil. The felt being non-adhesive, the clay does not adhere to it, and when the brick is pushed from the mold the felt lining prevents it from adhering to the bottom. This facing or lining of felt or the like will be secured in place by fastening it upon a primary facing of wood, which in turn can be secured upon a metal bed; or, if preferred, the felt or wool can be secured directly upon a metal surface.

It will be evident that one or two rollers can be journaled upon the double cam, which is within the drum, and that in such case the rollers upon the mold-bottoms may be dispensed with, the same result being obtained as by the arrangement before described.

In operating our machine, the clay, just as it is dug from the bank or pit, is delivered in a pile near by, and if too dry a sufficient quantity of water is thrown over it, so as to properly moisten the same. It is then shoveled into the hopper of a pug-mill, (which we have not deemed it necessary to illustrate,) where it is thoroughly pulverized, tempered, and discharged by the action of the cast-iron knives placed spirally upon a revolving shaft extending horizontally through the pug-mill.

The tempered clay, when discharged from the pug-mill, falls in such position that it is readily pressed into the mold by the plunger with a very heavy pressure.

After the plunger is withdrawn from contact with the clay in the mold the drum makes one-fourth of a revolution by means of the intermittent mutilated gear, which brings the next mold in position to be filled; and in revolving the full mold passes under a strong wire, V, tightly drawn against the face of the drum, which wire may be tightened and held taut by spring-pressure, and which serves to cut off the superfluous clay from the face of the mold. The next mold being filled, the drum again revolves, bringing another mold in position to be filled, and stopping the mold first filled opposite the platen, which is now firmly pressed against the mold by the cam upon the main shaft coming in contact with the roller in the back of the platen, while the cam on the shaft through the center of the drum, coming in contact with the roller in the back of the mold-bottom, drives the bottom toward the platen with great force, thus pressing the clay into the corners of the mold and powerfully compressing it. The pressure is then released, and the drum again revolves, bringing another mold into position

for filling, also another to the platen, when the brick that has just been re-pressed is forced out of the mold by the action of the lower projecting face of the double cam upon the movable mold-bottom, the brick thus ejected falling upon the belt underneath the drum.

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

1. The herein-described duplex intermittent mutilated gear, consisting of a wheel with sections of gear and concaved faces alternately arranged in line upon its periphery, and with sections of gear arranged alongside of the concaved faces, in combination with an actuating-wheel provided with a section of gear corresponding to a section of the other said wheel, a plain-faced portion in line with its gear-section, and teeth alongside of the ends of its line of teeth, all adapted to co-operate for the purpose of imparting an intermittent motion, substantially as set forth.

2. The herein-described double cam, ar-

ranged upon a shaft within the drum, and adapted to act against the mold-bottoms for the purposes of re-pressing the brick and forcing the same, when re-pressed, out of the molds, the said cam having an adjustable face, substantially as and for the purpose set forth.

3. The rotary drum provided with molds in which the brick are pressed, in combination with the herein-described duplex intermittent mutilated gear, which causes its rotation at stated intervals, and a rocking plunger which reciprocates so as to compress the clay into the mold during each period in which the drum remains stationary, substantially as herein shown and specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

C. A. HEGE.

Witnesses:

THOMAS J. WILSON,  
W. A. LEMLY.