3 Sheets—Sheet 1.

P. H. KELLS.

Brick and Tile Machine.

No. 202,948. Patented April 30, 1878.

Fig. 1.

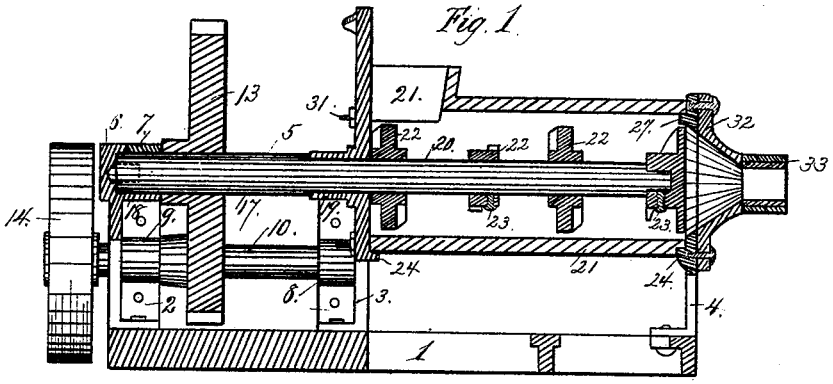

Fig. 2.

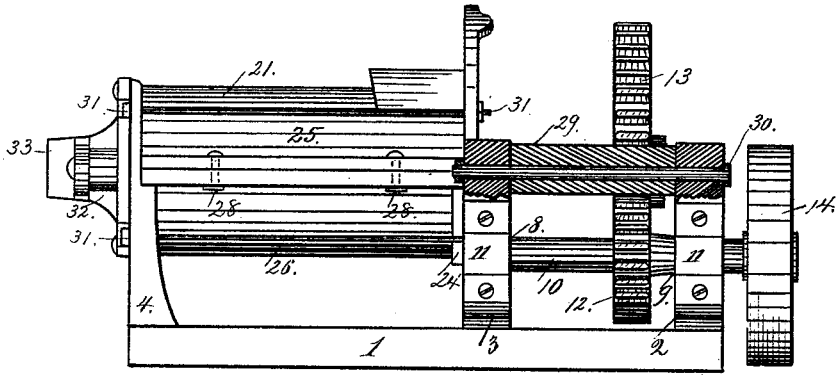

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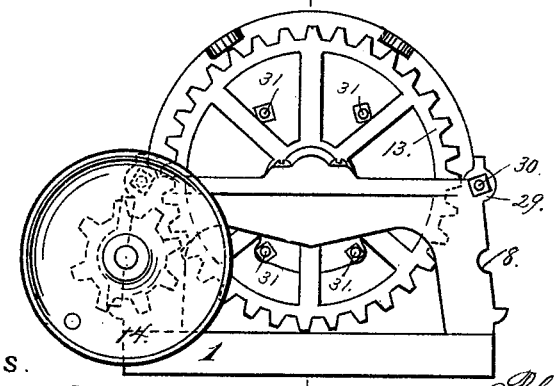
Fig. 3.



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3 Sheets—Sheet 2.

P. H. KELLS.

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Fig 4.

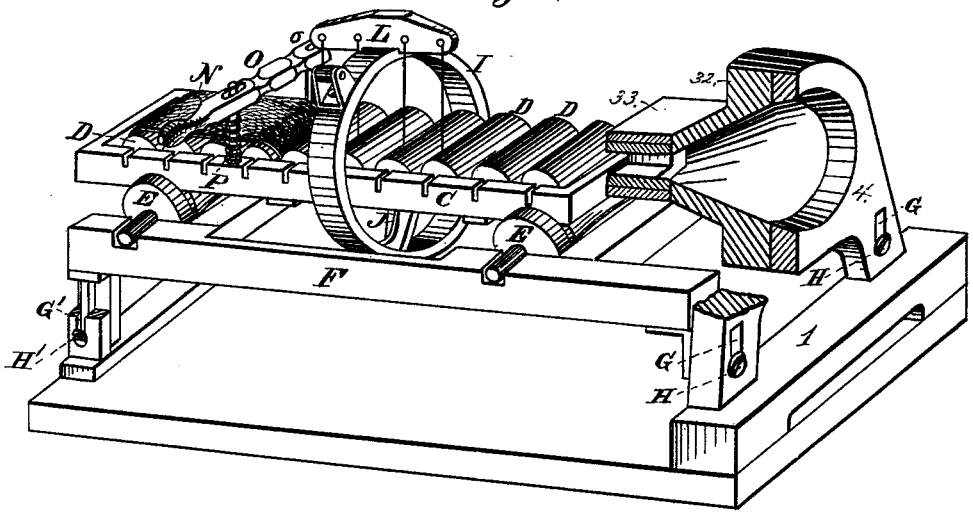


Fig 5.

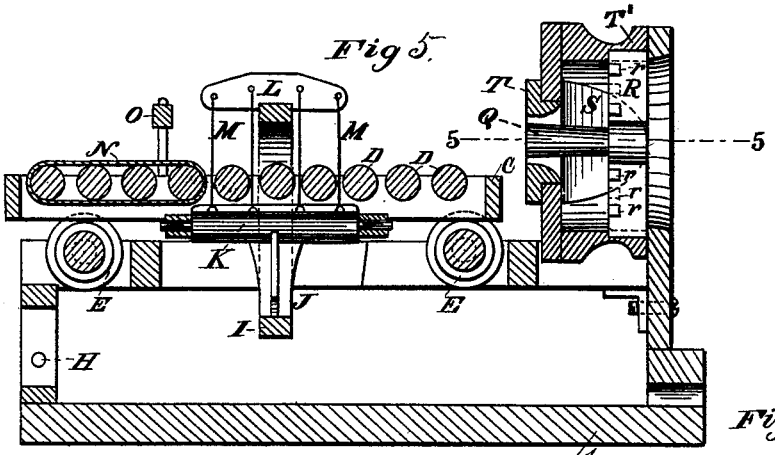


Fig. 7.

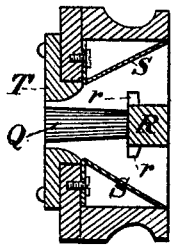


Fig. 8.

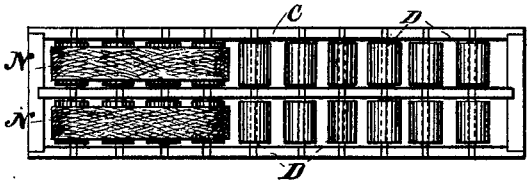
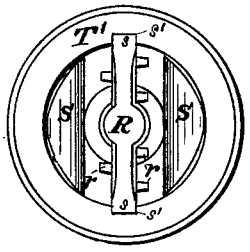


Fig. 6.



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3 Sheets—Sheet 3.

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Brick and Tile Machine.

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Fig. 9.

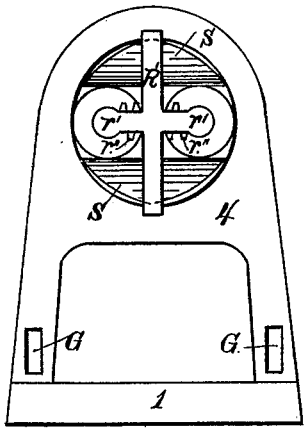


Fig. 10.

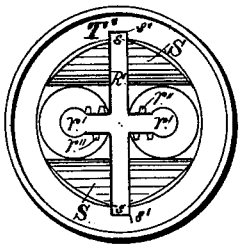


Fig. 11.

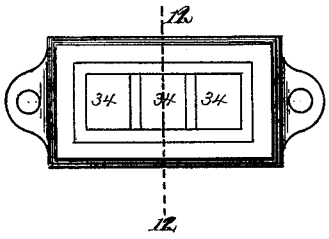
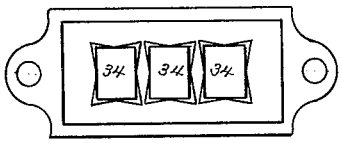


Fig. 12.

Fig. 13.



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UNITED STATES PATENT OFFICE.

PHILIP H. KELLS, OF ADRIAN, MICHIGAN.

IMPROVEMENT IN BRICK AND TILE MACHINES.

Specification forming part of Letters Patent No. **202,948**, dated April 30, 1878; application filed February 18, 1878.

To all whom it may concern:

Be it known that I, PHILIP H. KELLS, of Adrian, in the county of Lenawee and State of Michigan, have invented new and useful Improvements in Brick and Tile Machines, of which the following is a specification:

My invention relates to that class of brick and tile machines in which the clay is forced out of a tempering or feeding cylinder through a suitable forming die or dies, and is received on a frame of rollers, where it is cut off to the requisite lengths by wires, the roller-frame being capable of reciprocating motion, so that it may be moved with the clay during the cutting-off operation.

My improvement consists, first, in a clamp consisting of a lever fulcrumed at one end and thrown up by a spring at the other.

My improvement consists, further, in providing both ends of the carrying-frame with slots and clamp-screws or their equivalent, so as to permit the frame to be adjusted vertically while securely holding it against lateral movement.

My improvement consists, further, in a core-bar for the tile-die provided with projecting teeth, and whose ends are inserted in recesses in the die.

My improvement consists, further, in providing the core-bar with arms, as hereinafter described.

In the accompanying drawings, Figure 1 is a vertical longitudinal section of my improved brick and tile machine on the line 1 1, Fig. 3. Fig. 2 is a side view. Fig. 3 is a rear end view. Fig. 4 is a perspective view of the receiving-table and front leg of the machine. Fig. 5 is a vertical longitudinal section of the same portion. Fig. 6 is a rear view of the tile-die. Fig. 7 is a horizontal section of the same. Fig. 8 is a plan of the double roller-frame. Fig. 9 is a rear view of a front leg provided with a tile-bar, employed when running two columns of clay. Fig. 10 shows the bar as applied to the nose-piece. Fig. 11 is a front view; Fig. 12, a vertical transverse section on the line 12 12, Fig. 11; and Fig. 13 a rear view of a three-column die.

1 represents the bed-plate of the machine, and 2, 3, and 4 vertical supports for the tub, shaft, and operating mechanism. 5 is the shaft, having bearings on the supports 2 and 3. The support 2 is constructed with a vertical portion or plate, 6, adapted to receive the endwise pressure of the shaft, the rear end of said shaft being confined by a cap-plate, 7. The support 3 forms the rear end of the tub, and the support 4 the front end thereof. The rear supports 2 and 3 are formed with bearings 8 8 and 9 9, so as to permit a shaft, 10, to be secured to either side thereof by suitable straps 11 11. This shaft is provided with a pinion, 12, gearing with a master-wheel, 13, on the main shaft, and carrying a pulley, 14, or other connection, driven by any suitable motor. 5 is the main shaft, constructed with an enlarged portion, 17, between its bearings 18 19. The portion 20 of the shaft, located within the tub 21, carries spiral blades 22, secured by set-screws 23. The tub 21 is horizontally divided between its end supports 3 4, so as to admit of the upper half, 25, being removed without disturbing the supports, the lower half, 26, resting on ledges 24, and the upper half or cap on ledges 27. The tub may be secured together by bolts 28. 29 29 are removable girts between the rear supports 2 3, secured by bolts 30 30. The front support 4 is braced to the support 3 by tie rods or bolts 31 31 31 31, which also hold the tub to said supports. The middle support 3 is horizontally divided so as to permit of the upper half being removed when desired. To the front support 4 is secured the nose 32, and to the nose the die 33, of the necessary shape to impart the required form in transverse section to the body of the clay which is forced through it. In Fig. 4 this die is shown in section and of the proper shape to impart the necessary rectangular section to a column of clay to be cut into bricks.

C is a carrying-frame, in which are journaled a number of rollers, D D, and which frame itself rests on supporting-rollers E journaled in a frame, F, which is adjustable in height at each end by means of slots G G′ and clamp-screws H H′, said slots being formed in legs or supports on which the frame is supported, and said clamp-screws working in suitable brackets attached to the adjustable frame.

I represents a rim or band constructed with a single rigid arm or spoke, J, which connects

it to a shaft, K, and with a beam, L, attached to its periphery, at the upper part, from which beam L to the central shaft K cut-off wires M M are stretched, said wires being located in the spaces between the rollers, as shown in Figs. 4 and 5, so that the cut-off wheel may receive sufficient oscillation to completely sever the clay.

The clamping device, by which the column or columns of clay are held stationary with relation to the carrying-frame, so that the said frame is compelled to move with them during the act of cutting, consists of a lever, O, fulcrumed at one end, *o*, and pressed upward by a spring, P, near the other end. This clamp I prefer to locate directly in the rear of the cut-off; but it may be placed in front of the cut-off, if desired.

The parts above described, with the exception of the forming-die, are similar for making either bricks or tiles.

When a double die is used I employ two separate sets of carrying-rollers, as illustrated in Fig. 8, the clay being delivered from the machine in two separate columns through dies arranged side by side.

Fig. 5 represents a vertical section of the machine, taken from the center of one of the tile-dies. The tile-die shown is furnished with the customary central core Q to form the bore of the tile, which core in my invention is rigidly secured to a transverse bar, R, placed across the delivery-mouth of the cylinder, and whose ends *s* enter recesses *s'* in the tile-die T'. The bars are furnished with any desirable number of teeth, *r*, for use in tempering the clay. The delivery-mouth is further provided with a pair of converging plates, S, serving to press the clay directly before it passes through the forming-die. T represents the annular die proper.

In the double arrangement of rollers shown in Fig. 8 those in the rear of the cut-off are preferably provided with off-bearing aprons *n n*. The double arrangement of rollers may be applied to the brick-machine in the same manner as that arranged for making tiles whenever it is desired to work two columns of clay at once for bricks.

For working two or more columns of clay when making tile, I employ with the bar R' arms *r' r'*, provided with teeth *r'' r''*.

By constructing the core-arms in this manner, I am enabled to dispense with a joint in each column of clay.

In Figs. 11, 12, and 13, I show my three-column die 33, constructed with rectangular apertures 34, placed side by side in such a manner as to deliver the columns of clay on "edge."

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

1. The lever-clamp O, fulcrumed at one end, and thrown up by a spring, P, at the other end, operating, substantially as described, in combination with the reciprocating frame or table C.

2. The slots and clamp-screws G H, substantially as described, to permit the separate and relative adjustment of the two ends of the carrying-frame while preventing lateral motion.

3. The bar R, employed to hold the core Q, and provided with projecting teeth *r r*, as set forth.

4. The combination of tile-die T', having recesses *s'*, and core-bar R, having ends *s* inserted in said recesses, as set forth.

5. The bar R', having arms *r' r'*, as and for the purpose set forth.

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