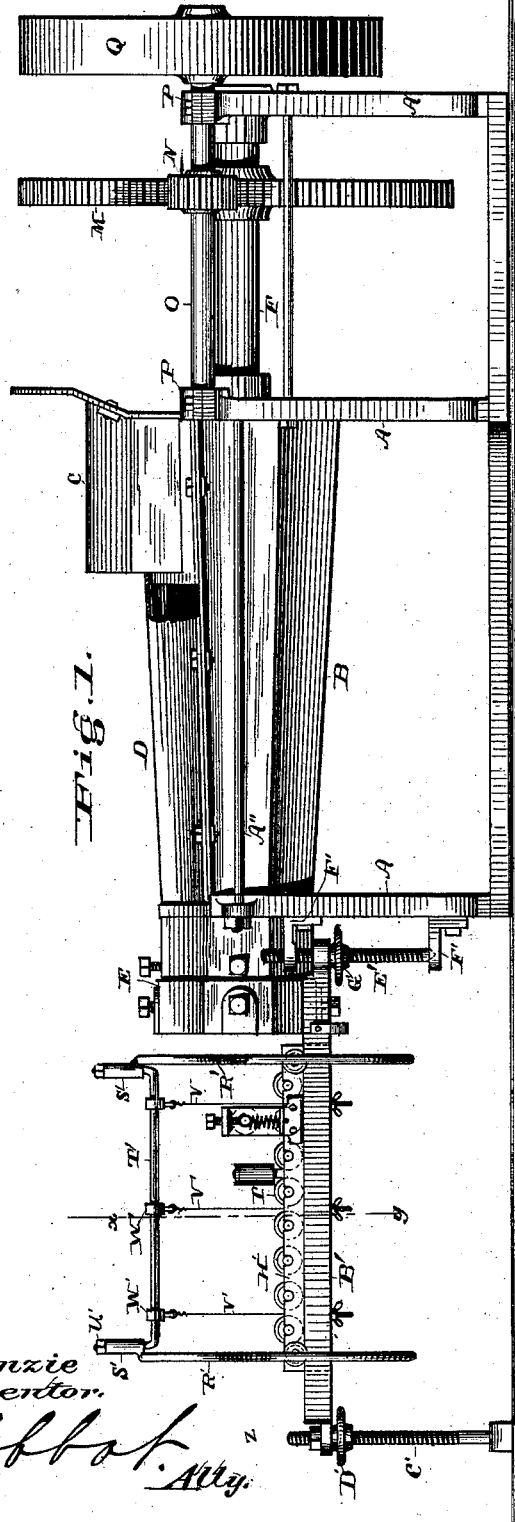


J. C. McKENZIE Brick and Tile Machine.

No. 203,284.

Patented May 7, 1878.



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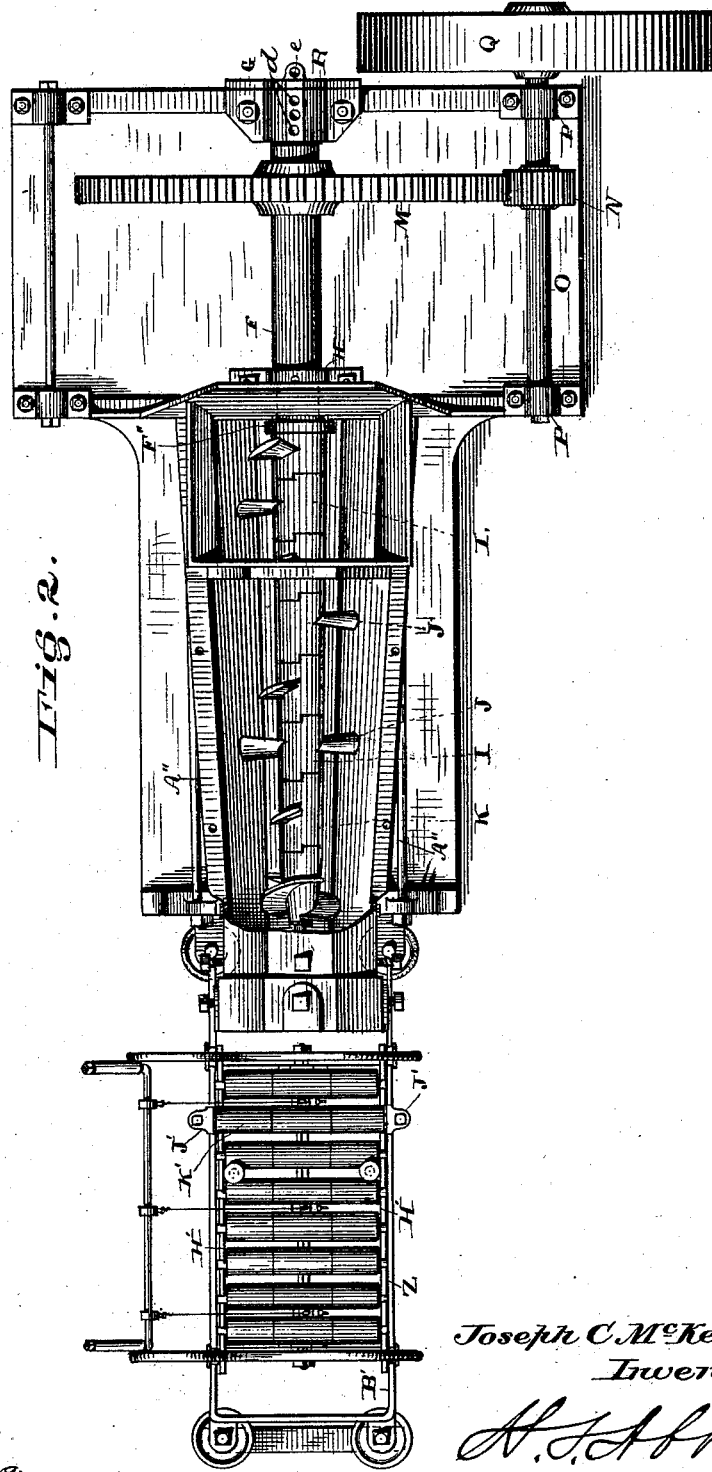


Fig. 2.

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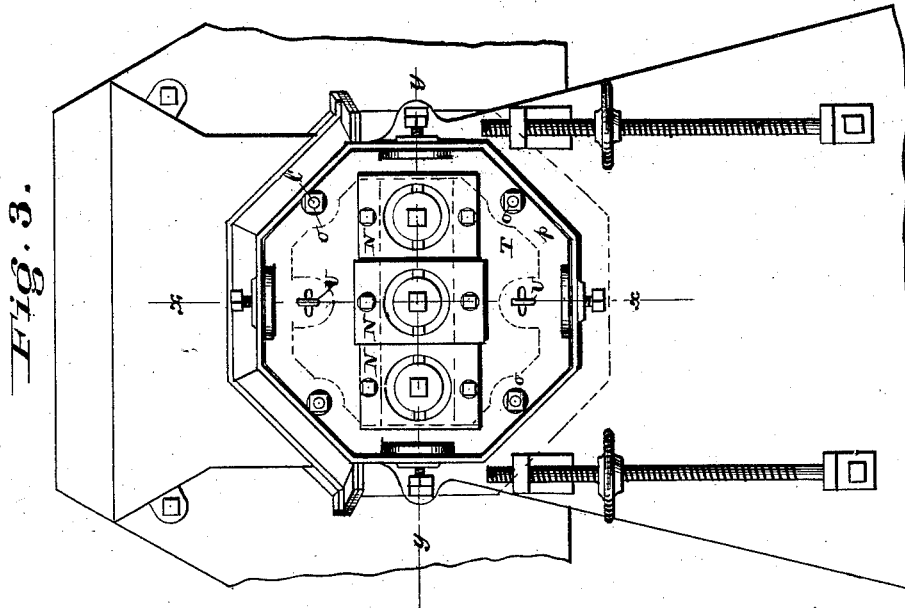
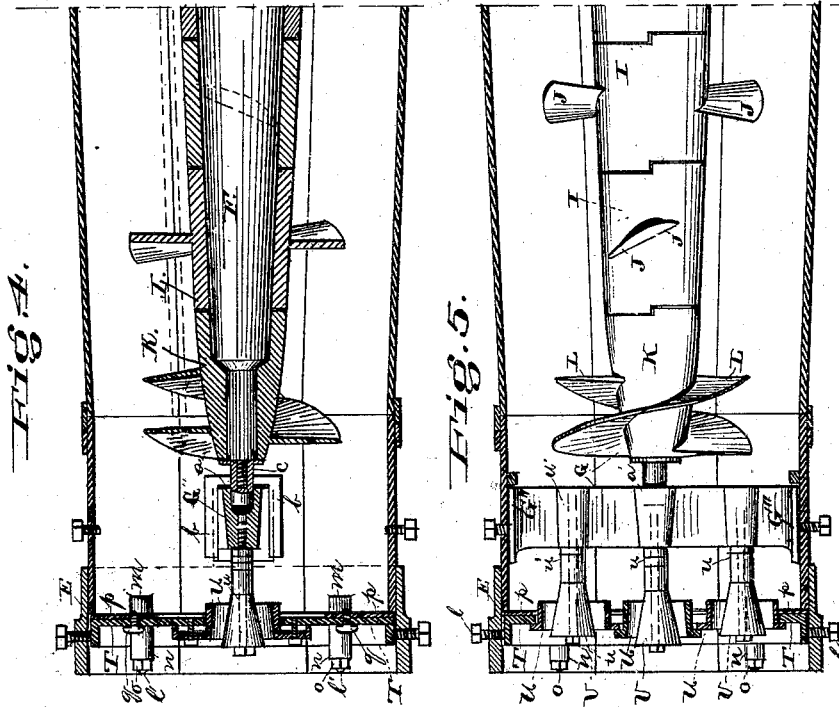
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FIG. 10.

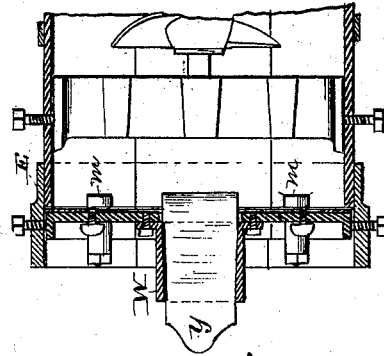
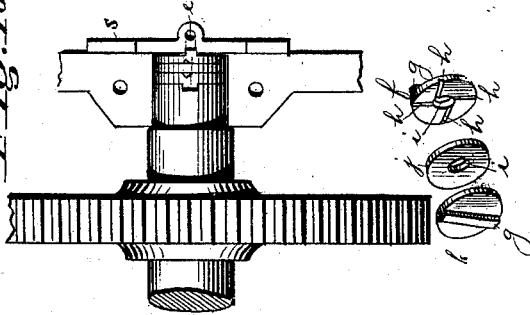


FIG. 9.

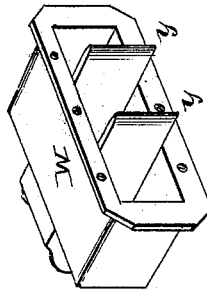


FIG. 8.

FIG. 7.

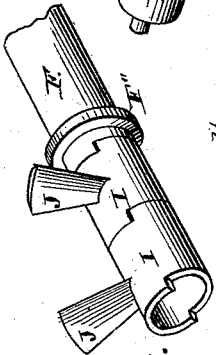
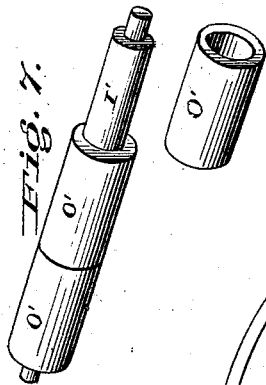
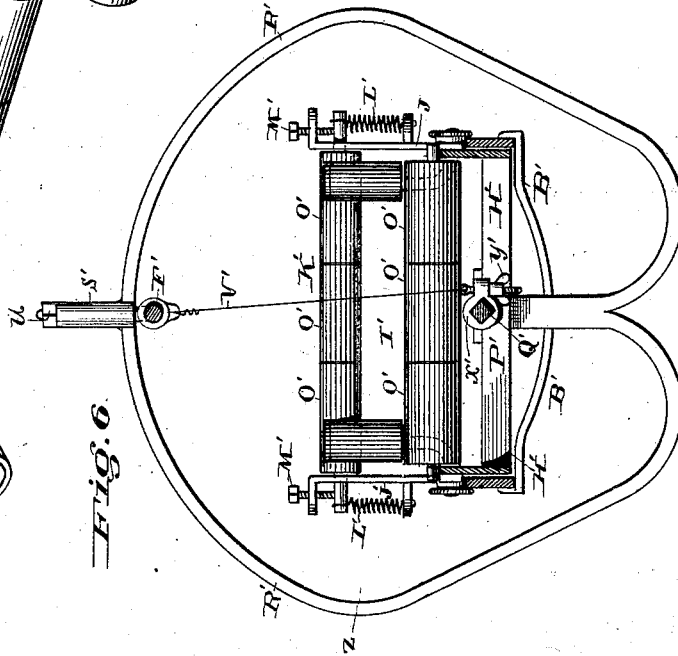


FIG. 11.

FIG. 6.



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UNITED STATES PATENT OFFICE.

JOSEPH C. MCKENZIE, OF ADRIAN, MICHIGAN.

IMPROVEMENT IN BRICK AND TILE MACHINES.

Specification forming part of Letters Patent No. 203,284, dated May 7, 1878; application filed March 14, 1878.

To all whom it may concern:

Be it known that I, JOSEPH C. MCKENZIE, of Adrian, in the county of Lenawee and State of Michigan, have invented certain new and useful Improvements in Brick and Tile Machines; and I do hereby declare that the following is a full, clear, and exact description thereof.

This invention relates to certain improvements in brick and tile machines; and consists in mechanism of peculiar construction and the novel arrangement of parts, all of which will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a side elevation of my machine. Fig. 2 is a view with the top of the tempering-chamber removed, showing the radial knives and screw. Fig. 3 is a front view with the cutting-table removed. Fig. 4 is a section taken on line *xx* of Fig. 3. Fig. 5 is a section taken on line *yy* of Fig. 3. Fig. 6 is an enlarged section, taken on line *xy* of Fig. 1 transversely through the cutting-table. Fig. 7 is a perspective view, showing one of the dissecting-table rollers with one of the sleeves removed. Fig. 8 is a central vertical section through the pulverizing-chamber, showing the brick-molds in position, which is also in section. Fig. 9 is a perspective view of the brick-molds; and Fig. 10 is a view with the bearing-cap removed, showing the slotted and perforated washers at the end of the grinding-shaft. Fig. 11 is a perspective view of the sleeve.

This invention belongs to that class of machines in which the tempered clay is forced from the tempering-chamber in the form of a cylinder or slab, which is afterward cut into lengths forming tile or bricks.

A denotes a metal frame, constructed and arranged in any suitable manner, provided with an additional frame, A'. Upon the frame A is placed an octagonal or other suitably-shaped tempering-chamber, B, provided with a hopper, C, and a detachable cover, D, secured to the tempering-chamber in any desired manner. The tempering-chamber B is also provided with an extension, E, as shown.

Into the chamber B extends a tapering shaft, F. The outer end of this shaft is supported in boxes G and H. The inner end rests in a suitable socket, *a*, in an adjustable core-bar, G". The ends of the core-bar rest and are adjustable in bearings *b b* on the inner opposite sides of the chamber B. This shaft F is provided with any desired number of sleeves I, locking into each other by means of a projecting lug entering a suitable recess of the adjoining sleeve, as shown, which are provided with radial knives J, set at an angle to work and mix as well as press the clay forward. The forward end of the shaft F is provided with a sleeve, K, which locks with the sleeve I, as shown, constructed with one or more spiral blades, L, forming a screw to force the clay through the dies.

On the shaft F, under the back plate of the hopper, is arranged a collar, F". This collar is rigidly attached to the shaft, and locks with the sleeves to prevent them from turning on the shaft when the machine is set in motion.

The sleeve K is held rigidly in place by means of a square end upon the shaft F, upon which the sleeve is closely fitted. The sleeves I, being locked to the sleeve K, are also made to revolve with the shaft. The sleeves I and K are held in position and prevented from working forward by a cap, *c*, secured to the end of the shaft F. This cap passes into the socket *a*, forming a skein to protect the screw-thread, and a spindle for supporting this end of the shaft.

The outer end of the shaft F, between the vertical standards of the frame A and A', is provided with a cog-wheel, M, with which meshes a pinion, N, keyed on a counter-shaft, O, arranged on a plane a little above the top of the shaft F. The bearings P for supporting this shaft may be made adjustable by a screw, wedge, or other suitable device, in order that it may be lowered or raised in front of the cog-wheel M, and a large or small pinion, N, used, the object being to diminish the speed and give increased power to the grinding-shaft, as may be desired. This counter-shaft O is also provided with a pulley, Q, with which connects a band extending from any suitable power for running the machine.

The cap R of the bearing G is provided with

a series of perforations, *d*, for the admission of oil to the shaft-spindle. The end plate S is constructed with an oil-passage, *e*, for feeding oil to the shaft-spindle, and a series of washers. The latter are arranged between the end of said spindle and the end of plate S, and in this instance consist of three washers, *f j k*, as shown in Fig. 10 of drawings. The washer *f* has a rib, *g*, on one side, that fits into a suitable recess in the end plate S, as shown. The other side is provided with a series of grooves, *h*, radiating from the center and extending to the periphery, and an opening, *i*, is cut through the center, and serves as an extension of the oil-passage *e*. The washer *j* has also a perforated center, but plain sides. The washer *k* is constructed with a rib on one side, which fits into a recess in the end of the spindle. The other side is provided with a series of grooves similar to the washer *f*, but has a solid center. By this arrangement the oil is conducted to the center of each of the three washers, and distributed to the peripheries, from whence it finds its way to the shaft-spindle and lubricates its bearing-surface.

When the machine is in motion the washer *k* revolves with the grinding-shaft and the washer *f* remains stationary. The washer *j* serves to prevent friction or wearing of the end of the shaft-spindle. The grooves *h* and perforations *i* keep the washers supplied with oil, and prevent them from being worn by the backward pressure of the grinding-shaft, which is caused by the radial grinding-knives and screw.

In the extension E of the tempering-chamber B a dod-plate, T, extending over the end of the tempering-chamber, is held by rods *u*, attached to the inner surface of the tempering-chamber at M, and extending through the lugs of the follower or guard-plate *p*, and through the dod-plate near the outer edge, as shown in Figs. 3 and 4 of drawing. One or more washers, *n*, are placed upon the rods, between the plate and the nuts *o*, so as to permit of the adjustment of the dod-plate to or from the screw, as the quality of the clay may require. Four set-screws, *l*, pass through the sides of the end E, and bear upon the flanged rim of the dod-plate, and serve as a means for adjusting the dod-plate with reference to the cores V.

A follower or guard-plate, *p*, fitting the end E snugly, is inserted between the dod-plate and the end of the tempering-chamber, for the purpose of preventing the escape of tempered clay through any opening caused by the adjustment of the dod-plate. This guard-plate extends but a short distance inward from the edge of the dod-plate, and is provided with lugs that travel and fit upon the rods *u*, as shown in Fig. 4 and dotted line of Fig. 3 of drawings. The guard is also secured to the dod-plate by means of screws *q* passing through a slot in that plate.

The dod-plate T is constructed with an elon-

gated opening, (shown in dotted lines in Fig. 3 and in section in Figs. 4 and 5,) in which is placed the dod for molding tile and brick.

In Figs. 3, 4, and 5 I have shown three dods, U, placed in the plate, for molding pipe. These dods are provided with cores V, extending out from the core-bar G". These cores are made adjustable by means of washers *u* placed upon the screw-bolts *w*, between the core and core-bar, as indicated by dotted lines in Figs. 4 and 5, or in any other suitable manner.

The screw-bolts *w* pass from the outer end through the center of the cores and washers into the core-bar, into which a thread is cut, permitting of the adjustment of the core to or from the screw by taking off or putting on washers and tightening the screw-bolt.

When it is desired to run off slabs of clay to be cut into bricks, the mold W (shown in Fig. 9) is used in place of the dods U and cores V. This mold is provided with a smaller mold, made by the partitions Y, which project a suitable distance on each side of the mold, and, being inserted in the center, as shown in Fig. 9, divide the clay into three parts or sections, each of which forms a slab when the machine is in operation.

The object of inserting the partitions Y and extending the ends of their sides beyond the mold both back and front is to provide additional friction to obviate or prevent the middle slab of clay from running faster than the side slabs, which it will do if the molds are all of equal dimensions.

As the slabs of clay pass through the molds they are received on a cutting-table, Z, where they are cut up into bricks. This table consists of a frame, B', having one end secured to the tempering-chamber B and the other supported by legs *c'* provided with screw-thread, upon which are placed nuts D'. This end of the frame properly rests on the nuts D', which may be screwed up or down to adjust the frame B' to any required height. The end of the frame B' secured to the tempering-chamber B is also adjustably supported by screws E' held in arm F', upon which are placed nuts G' for elevating or depressing the frame B'.

Upon the frame B' is placed a carriage, H', which is provided with any desired number of rollers, I'. Near the front of the carriage is supported, by two vertical arms, J', a roller, K', provided with springs L', which may be depressed by thumb-screws M', to adjust the roller K' as desired. These rollers are provided with one or more sleeves, O'. The rollers serve as an axle, upon which said sleeves have an independent movement. Under the rollers I', and supported by two cross-pieces, P', of the carriage H', is a bar, Q', having secured to each end a frame, R', of peculiar shape, constructed of any suitable material.

The peculiar formation of these frames, when constructed as shown in Figs. 1 and 6 of drawings, greatly improves their efficiency and the

rapidity of their movement by an increased ratio of weight when swung from their normal position.

These frames R' are each provided with a hollow handle, S', up through which pass vertical ends of a horizontally-arranged bar, T'. The vertical ends of this bar T' are provided with screw-thread and nuts U', by which it may be adjusted to tighten the cutting-wire V'. The upper ends of these wires are secured to collars W' adjustably arranged on the bar T', and the lower ends are secured to a lug upon the adjustable collars X' on the bar Q' by means of thumb-nut and screw-bolt Y'. The bar Q' should be made square, in order to prevent the collars X' from turning, and hold the collars X' in such position as to allow of their manipulation.

The adjustment necessary to cut tile of varying lengths, and to enable this device to be used for ordinary brick, is effected by removing the rollers from the frame, loosening the thumb-nut, and moving the collars W' and X' to the desired point upon the bars T' and Q'.

The tempering-chamber is securely held in position by rods A'' extending from the two vertical uprights of the frame A, as shown in Figs. 1 and 2 of drawings.

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

1. In a brick or tile machine, the combination of the extension E and an adjustable dod-plate, substantially as described.

2. The combination of the guard *p* and dod-plate, said guard being constructed and arranged to prevent clay from passing around the sides of the dod-plate, substantially as described.

3. The core-bar G, adjustable and removable, which also serves as a bearing for the front end of the grinding-shaft, substantially as shown and described.

4. In a brick and tile machine, a tapering shaft, F, substantially as described, provided with an angular end, and gradually enlarging in its diameter as the point is receded from, so as to facilitate the removal of the sleeves.

5. The combination of a tapering grinding-shaft having a flattened or angular end, substantially as described, with the sleeve K, constructed with spiral blades L, as shown, and for the purpose set forth.

6. The collar F'', rigidly attached to the shaft, and provided with an interlocking lug, in combination with the sleeve I, substantially as shown and described.

7. The combination of the carriage H', vertical arms J', roller K', and spring L', substantially as shown and described.

8. The combination of a tapering grinding-shaft having a flat end, and provided with detachable radial grinding-knives, and a forcing-screw with the cap *c*, for holding the sleeves in place, and serving as a spindle for supporting this end of the grinding-shaft, substantially as described.

9. The combination of the washers *f*, *j*, and *k*, constructed substantially as described, with the shaft F and bearing G, provided with a perforated cap, R, as and for the purpose set forth.

10. The combination of the grinding-shaft, in a brick or tile machine, with the counter-shaft O, supported by bearings and arranged a suitable distance above the grinding-shaft, substantially as shown, and for the purpose set forth.

11. In a brick or tile machine, a tapering grinding-chamber, provided with a hopper, C, extension E, and detachable back D, all constructed and arranged substantially as shown and described.

12. A brick-mold provided with partitions Y, extending out of the mold, substantially as described, for the purpose set forth.

13. The combination of the screw-posts O' and E', provided with nuts D' and G', for adjustably supporting the cutting-table, as set forth.

14. The combination of the table-frame B' with the carriage H' and rollers I', provided with one or more sleeves, O', substantially as described.

15. The combination of the carriage H' with the bar Q and frame R', substantially as shown and described.

16. The combination of the frame R', handle S', adjustable bar T', and movable collars W' with the table-frame B', carriage H', bar Q', collars X', thumb-screws Y', and wires V', all constructed, arranged, and operating substantially as shown, and for the purpose set forth.

17. In a brick or tile machine, a tempering-chamber, B, provided with a removable top, D, substantially as described.

18. The brick-molds W, having the center mold constructed with projecting sides, and of a smaller size than the section on either side, substantially as described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JOSEPH C. MCKENZIE.

Witnesses:

ORSAMUS LAMB,
JESSE CHAMBERLIN.