(No Model.) 2 Sheets—Sheet 1.

M. NOLAN.

TILE MACHINE.

No. 300,278. Patented June 10, 1884.

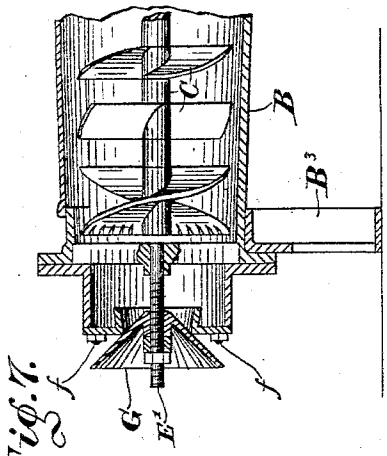


Fig. 7.

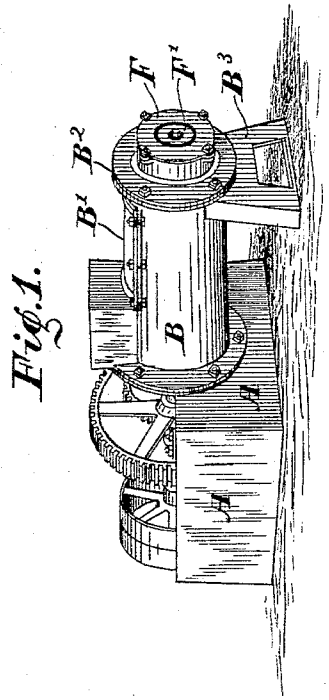


Fig. 1.

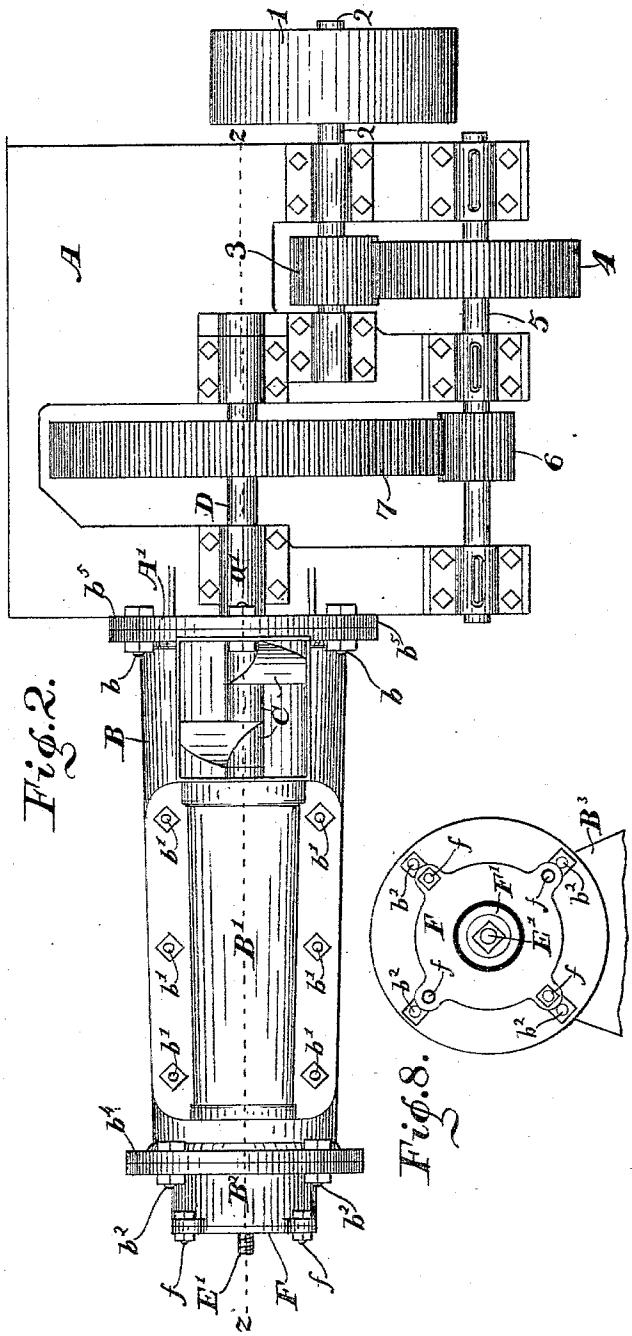


Fig. 2.

Fig. 8.

WITNESSES.

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N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

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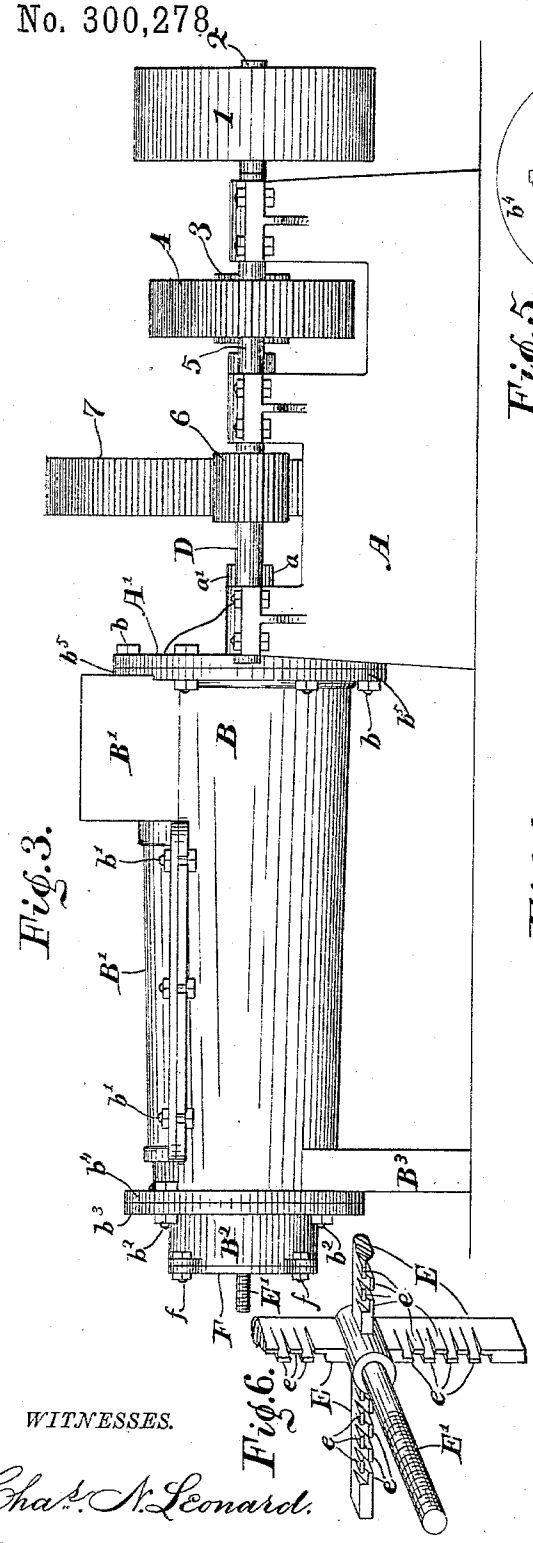


Fig. 3.

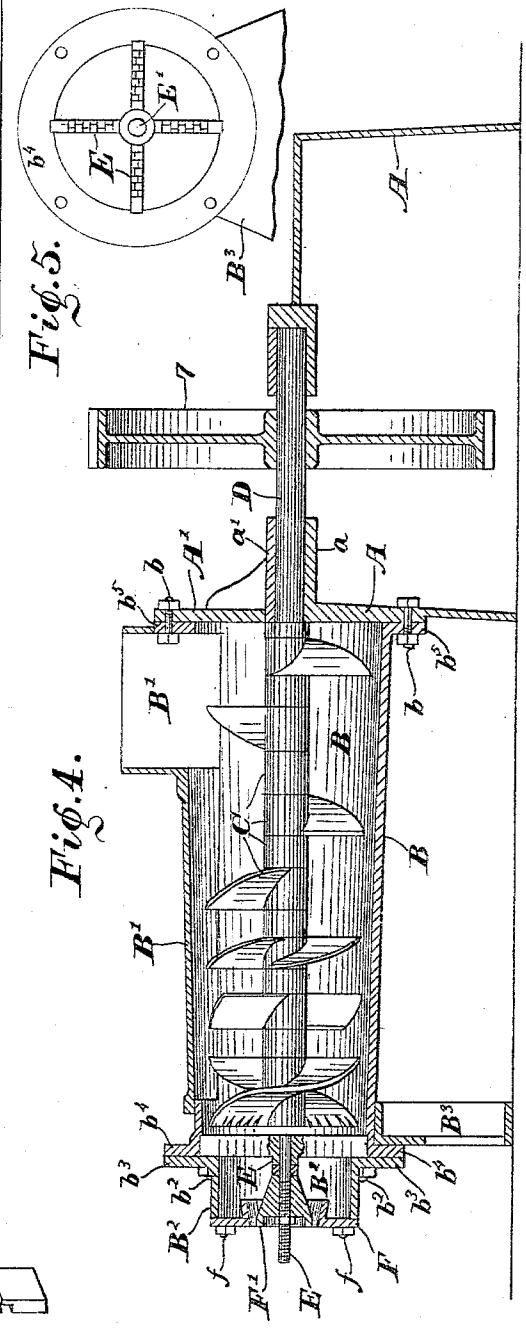


Fig. 4.

Fig. 5.

Fig. 6.

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UNITED STATES PATENT OFFICE.

MICHAEL NOLAN, OF RUSHVILLE, INDIANA.

TILE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 300,278, dated June 10, 1884.

Application filed September 27, 1883. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL NOLAN, of the town of Rushville, county of Rush, and State of Indiana, have invented certain new and useful Improvements in Tile-Mills, of which the following is a specification.

My said invention consists in certain improvements in the construction and mode of adjustment of various parts of tile-mills, whereby a more perfect and effective machine is produced, as will be hereinafter more fully described and claimed.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts, Figure 1 is a perspective view of a tile-mill embodying my said invention; Fig. 2, a top or plan view of the same on an enlarged scale; Fig. 3, a side elevation of the same; Fig. 4, a longitudinal section, looking upwardly from the dotted line *z z;* Fig. 5, an end elevation of the machine, the die and mouth-piece being removed; Fig. 6, a perspective view of the support for the inside die; Fig. 7, a detail section of the discharge end of the machine, showing my improved conical centering device; Fig. 8, an elevation of the front end of Fig. 2.

In said drawings, the portions marked A represent the frame-work on which the driving-gear is mounted; B, the tub; C, the auger for mixing the clay and forcing it through the die; D, the shaft on which the auger-blades and the driving-gear wheel are mounted; E, the support for the inside die; F F′, the outside and inside dies; G, a conical device for centering the outside die, and 1, 2, 3, 4, 5, 6, and 7 wheels and shafts composing the driving-gear of the machine.

The frame-work A is provided with the usual bearings for the shafts of the driving-gear, and is preferably of cast-iron. It has a circular disk or head, A′, which is cast integrally therewith, and in which are suitable holes for bolting the tub thereto. When the mill is in condition for use, this disk also forms the rear end of said tub. The shaft D passes through this disk or head and rests in a suitable bearing, the pillow *a* of which is cast in piece with said head, and the cap *a′* of which is bolted on by bolts passing through its flanges, in the usual manner. The cap *a′* extends through the head A′ flush with its inner face, the flanges of said cap being cut back from the front end far enough to permit this to be done.

The tub B is of a well-known form. It is secured to the disk A′ by means of bolts *b*, which pass through holes in a flange, b^5, on said tub and in the outer edge of said disk. By this means the tub is firmly secured to and supported by the frame, and the use of the long rods extending from the front to the rear of the mill, which are commonly employed, is avoided. The upper side of the tub is cast open, and a cover, B′, which also includes the hopper, is provided therefor. This cover is secured to the tub by the bolts *b′*, and can be removed and replaced at pleasure without disturbing the machine in any other particular. The mouth-piece B^2 is secured to the tub by bolts b^2, which pass through holes in the flange b^3 thereon, and in the flange b^4 on the tub. The front end of the tub is supported by the leg B^3.

The auger C, with the exception of the blade on the extreme front end, is of a well-known form. This blade is of a well-known form, except that its front end is formed into fingers or serrated. This formation is for the same purpose as a similar formation on the arms of the die-support E, which is hereinafter fully described.

The shaft D is the usual auger-shaft, and is mounted in the bearings in the head A′, and on the frame-work A, and is driven by the gearing in the manner which will be readily understood from the drawings.

The die-support E is secured in the front end of the tub, directly in front of the auger. It is substantially a four-armed spider, with a spindle or stud-shaft, E′, for the die extending therefrom in line with the auger-shaft, as is usual. Heretofore the arms of this die-support have been smooth, and the clay has been divided thereby into smooth-sided columns. Sometimes these smooth sides have not united perfectly, and the result has been that seams were produced in the tile. I have formed fingers *e* on the front side of these arms, one side of each of which is inclined, and each of which inclines in the opposite direction from those next it, thus causing the clay to issue in columns with serrated instead of smooth sides, the serrations wherein will interlock and knit together and

produce a homogeneous mass from which tile can be produced which will be free from all seams and the consequent liability to crack.

The outside die, F, is secured to the mouth-piece B^2 by bolts *f*, which pass through bolt-holes in ears on said die and on said mouth-piece. Said bolt-holes are somewhat larger than the bolts, (see Fig. 8,) so that the die can be accurately adjusted, as will be presently described. The inside die, F′, is secured upon the spindle E′ in the ordinary manner.

The conical centering device G is used in the following manner: When the mill is in readiness therefor, the die F is placed in position and the bolts *f* inserted in the bolt-holes. The device G is then placed on the spindle E′, and forced up tightly against the die, as shown in Fig. 7, which centers it exactly. The bolts *f* are then screwed up tightly, which holds the die firmly in position, and the centering device G is removed, after which the die F′ is placed in position, and the mill, so far as the dies are concerned, is ready for use. It will be readily seen that by the above-described means the dies are brought into such relation to each other that the annular throat is of exactly the same width of opening on all sides, and that therefore the tile will be produced of uniform thickness throughout.

The operation of the wheels and shafts 1, 2, 3, 4, 5, 6, and 7, composing the driving-gear of the machine, will be readily understood from an examination of the drawings, and, as they do not form any part of this present invention, will not be further described herein.

The operation of this mill being similar to that of other well-known mills, any further description thereof is not deemed necessary, the purpose of my improvements being to form a tile more even and regular in thickness, and one more strong and durable than is produced by the machine without the said improvements.

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

1. In a tile-mill, a frame-work for supporting the shafting and driving-gear of the mill, on the front end of which is formed integrally therewith a disk or head to which the tub is adapted to be secured, substantially as set forth.

2. The combination, in a tile-mill, of the frame-work A, having a disk or head, A′, cast integrally therewith, said head being provided with a pillow, *a*, of the journal-bearing formed in piece therewith, and the cap *a′* to said journal-bearing, the flanges through which it is bolted to the pillow being shorter than the cap proper, to allow said cap to extend through the head flush with its inner face, substantially as set forth.

3. In a tile-mill, the die-support E, the arms whereof are provided on their front edges with fingers *e*, one side of each of which is tapered from the rear to the point in the opposite direction from that in which each of those immediately next it is tapered, whereby the sides of the column of clay as it passes said arms in its regular course to the die is serrated, substantially as described, and for the purposes specified.

4. In a tile-machine, the combination of the frame A, the tub B, the screw C, with means for operating the same, the die-support E, and the dies F and F′, said several parts being arranged and operated substantially as set forth.

5. The combination, in a tile-mill, with the spindle E′, of the conical centering device G, whereby the outer die, F, is adjusted to an equal distance from all sides from the inner die, substantially as set forth.

6. The combination, in a tile-mill, of the frame-work A, having a flange or head, A′, cast in piece therewith, the tub B, adapted to be bolted to said flange or head, the auger C, mounted in suitable bearings in the frame-work, with means of operating the same, the die-support E, located in the mouth of the tub, and the dies F and F′, substantially as shown and specified.

7. The combination of the frame A, provided with the disk A′, and the tub B, secured by short bolts *b* to said disk, said disk also forming one head of said tub, substantially as set forth.

8. In a tile-mill, an auger, C, the forward wings whereof are serrated on their front edges, substantially as described, and for the purposes specified.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 24th day of September, A. D. 1883.

MICHAEL NOLAN. [L. S.]

Witnesses:

C. BRADFORD,

CHAS. L. THURBER.