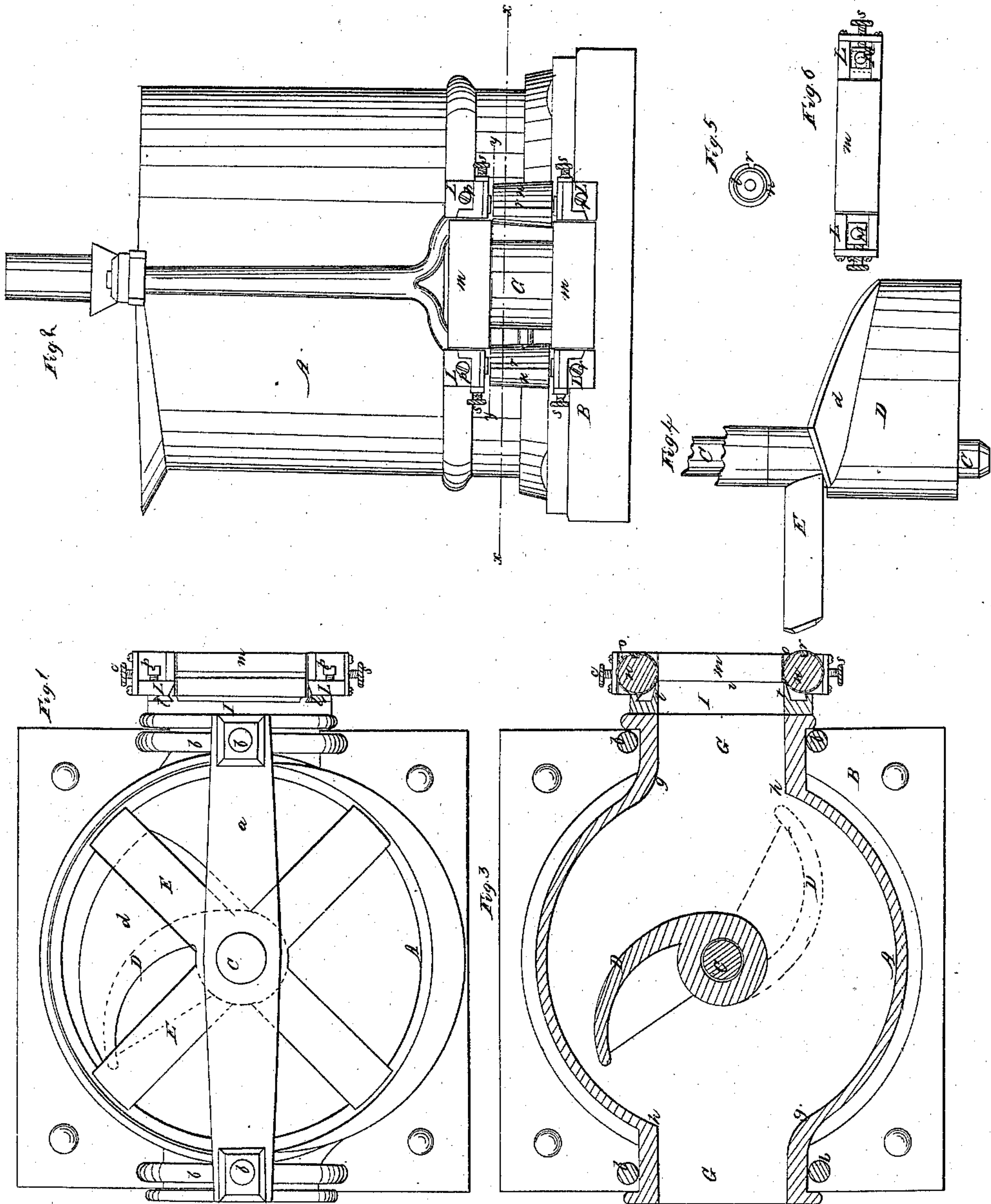


*W. G. Hyndman,*

*Brick Machine.*

*N<sup>o</sup> 67,879.*

*Patented Aug. 20, 1867.*



*Witnesses*  
*J. Brown,*  
*Thos. L. Parker*

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# United States Patent Office.

W. G. HYNDMAN, OF CINCINNATI, OHIO, ASSIGNOR TO HIMSELF AND HENRY MARTIN.

*Letters Patent No. 67,879, dated August 20, 1867.*

## IMPROVED BRICK MACHINE.

*The Schedule referred to in these Letters Patent and making part of the same.*

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, W. G. HYNDMAN, of Cincinnati, in the county of Hamilton, and State of Ohio, have invented an Improved Brick and Tile Machine; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification—

Figure 1 being a plan of the machine.

Figure 2 a side elevation thereof.

Figure 3 a horizontal section of the same in a plane indicated by the line  $x x$ , fig. 2.

Figure 4 a side view of my improved "wiper" on the pug-mill shaft.

Figure 5 an end view of one of the die rollers.

Figure 6 a view looking upward from a plane indicated by the line  $y y$ , fig. 2.

Like letters designate corresponding parts in all of the figures.

My improved machine is of the kind in which the clay is forced from the mill through a die, in a continuous web of the desired width and thickness, the bricks being then cut therefrom by some suitable device. In my machine I employ two outlets and dies, say on opposite sides of the mill, through which the clay of a certain quantity is forced alternately, so that each web is driven out and formed to the desired extent, and then remains stationary while the other web is forming, and the bricks are cut off while the web is not in motion. This enables me to use a very simple means of cutting off the bricks or tiles, consisting merely of wires stretched in a frame, which is swung across the web. I claim nothing new in the cutting-off apparatus, and therefore do not represent it.

In the accompanying drawings, let A represent a pug-mill, situated on a suitable base, B, and C the driving-shaft, on which tempering-arms E E are located. The two die outlets G G at the bottom of the mill are represented in fig. 3. I have shown a complete die at only one outlet, but the other is of the same construction in all respects.

My first improvement consists in the employment of what I term a "wiper," D, attached to the driving-shaft C at or near the bottom of the pug-mill, being situated opposite to, and of a sufficient height to cover, the outlets G G. This "wiper" is of peculiar construction, its body or main part being of curved, eccentric form, so that as it revolves it will drive the clay forward and outward with great force or pressure. Its outer edge reaches nearly out to the sides of the pug-mill, and its lower edge runs close to the bottom thereof. At the upper edge of the main part or body is a spiral flange,  $d$ , projecting outward from the forward or convex side of the "wiper" nearly to the sides of the pug-mill, substantially as represented, so that it will have the action to continually gather and press downward additional clay to be pressed outward by the body of the "wiper." No exact construction of the wiper is essential, but any variation from the form shown may be employed which performs the double function of gathering and forcing down the clay and driving it outward by a nearly positive action.

My next improvement consists in the peculiar form or construction of the die outlets or apertures G G, as shown in fig. 3. The inner vertical edge  $g$  of each, toward which the wiper D first advances in its revolutions, is rounded or chamfered off substantially as shown, so as to offer free or unimpeded passage to the moving clay outward to the die, while the other succeeding edge  $h$  of each is left abrupt, substantially as shown, in order to offer a barrier to the further revolution of the clay and to direct it outward. This construction of the mouth of each outlet is of very great or essential importance, in connection with a revolving "wiper," or any other revolving presser or piston, otherwise the mass of clay would be carried round in the pug-mill, and comparatively little would be driven to the dies, and that with insufficient pressure. It will be seen that the "wiper" first acts to drive the clay to one die and then to the other, so as to produce the alternate motion and rest of the forming web, as above described. Soon after it passes one outlet, as indicated by black lines in fig. 3, it begins to operate against the other outlet, and continues to press therein until it passes by it, or to the position shown by red lines in the same figure. I employ rollers  $m m$  and  $n n$  at the mouth of each die, one for each side or face of the web, to diminish friction, and form and deliver the web with smooth and compact surfaces. The upper and lower dies  $m m$  are mounted in bearing-blocks L L, which are secured to the mouth I of the die, and have a



vertical sliding movement on ways *l l*, fig. 1; and they are held in position by set-screws *p p* or their equivalents, so that the rollers may be adjusted up or down to any position required. The side rollers *n n* are mounted in bearing-blocks *M M*, which slide transversely in ways or recesses in the bearing-blocks *L L* of the rollers *m m*, as most clearly shown in fig. 6. These bearing-blocks *M M* are adjusted out or in by set-screws *s s*, turning in the blocks *L L*, substantially as shown in the drawings. Thus the side rollers are adjustable out or in at pleasure, either both ends alike or independently and differently.

An important improvement of mine in these rollers is making the side dies *n n* somewhat conical, or of greater diameter at the bottom than at the top, as seen in fig. 2, so that the mouth of the die is narrowed a little at the bottom. The object of this is to compensate for the widening of the web by its plasticity as it issues from the dies, the bottom having all the weight of the clay above, being pressed outward and widened somewhat, which requires to be obviated. These rollers are made sufficiently conical to allow for the ordinary widening, as ascertained by observation, while the separate adjustment out and in of the ends of the rollers enables them to be set exactly as required to produce a square web. The whole purpose might be accomplished by mere adjustment, but not so perfectly as by the tapering form of the rollers, since the ends and journals of the rollers would not fit well and freely in their positions by so doing.

The die shown is of the form to make plain bricks. In making tiles, or bricks of ornamental or irregular form, the shape and position of the rollers should be such as to produce the forms required. It will be seen that the side rollers *n n* are adjustable out and in between the top and bottom rollers *m m*, their ends fitting squarely and being in close proximity thereto, so that clean, sharp, and perfect corners are formed on the web, however much the side rollers may be adjusted. The top and bottom rollers, after being set to the proper thickness of the web, need little or no further adjustment. The rollers *m m* and *n n* are covered with cloth, such as canton flannel, to prevent the clay's adhering thereto. I have an improved method or means of securing the cloth around the rollers, as shown. A longitudinal groove, *r*, is formed in the periphery of each roller, into which the edges of the cloth are brought, and fastened by a strip of wood or equivalent driven into, and so as to fill, the groove. A similar but annular groove, *t*, fig. 5, is formed in each end of the rollers, into which the ends of the cloth are inserted, and held by an annular strip of wood.

What I claim as my invention, and desire to secure by Letters Patent, is—

The "wiper" *D*, with its flange *d*, constructed and operating substantially as and for the purpose herein specified.

I also claim the construction of the outlets *G G*, with the rounded or chamfered corners *g g*, and abrupt corners *h h*, substantially as and for the purpose herein set forth.

I also claim the conical or tapering die rollers *n n*, for the purpose herein set forth.

I also claim the arrangement of the rollers *n n*, so as to be adjustable out and in between the rollers *m m*, substantially as and for the purpose herein specified.

I also claim the device for fastening the cloth covering around the die rollers, consisting of the longitudinal and annular grooves *r t t*, and fastening strips of wood or equivalent, substantially as set forth.

W. G. HYNDMAN.

Witnesses:

J. S. BROWN,

THOS. T. PARKER.