

(No Model.)

3 Sheets—Sheet 2.

H. J. BOND & L. HILLING.
PUG MILL FOR BRICK MILLS.

No. 495,389.

Patented Apr. 11, 1893.

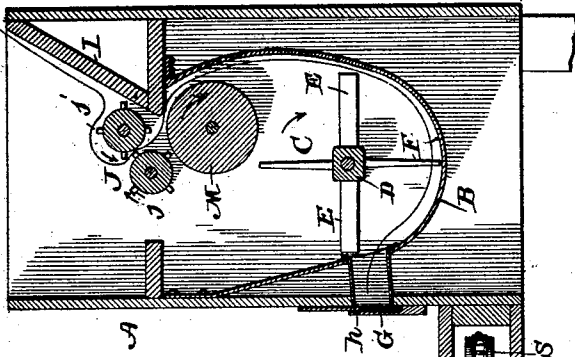


FIG. 3.

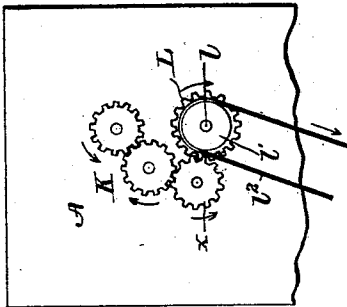


FIG. 7.

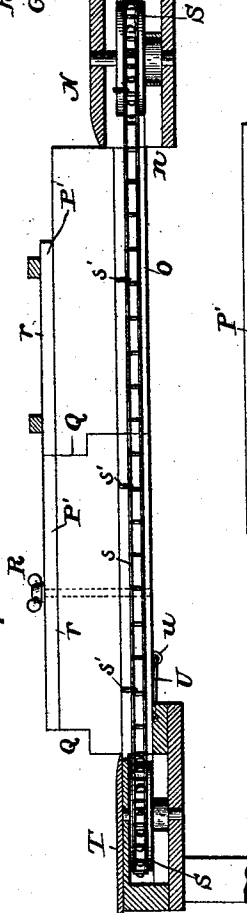


FIG. 4.

Witnesses

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FIG. 5.

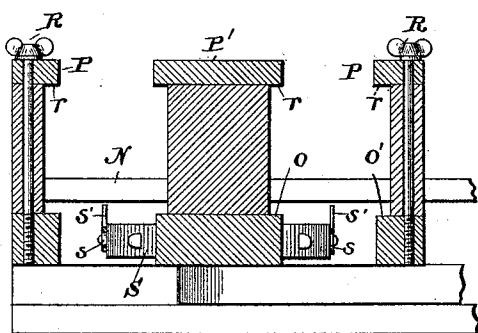
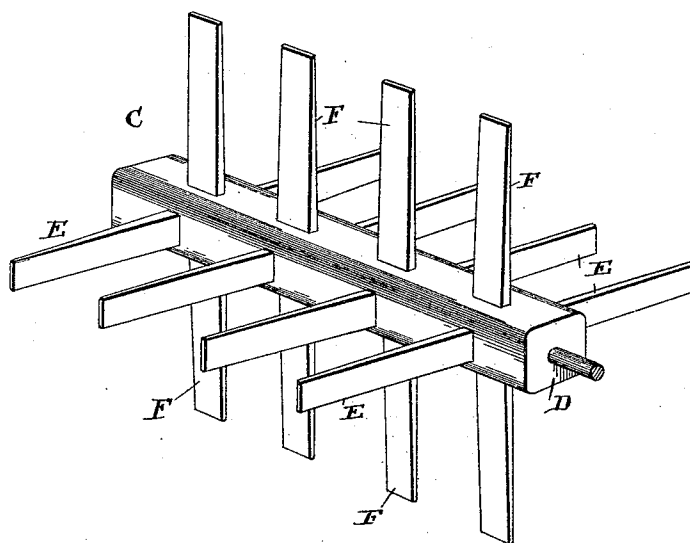


FIG. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

HENRY J. BOND AND LOUIS HILLING, OF SHAWNEE, OHIO.

PUG-MILL FOR BRICK-MILLS.

SPECIFICATION forming part of Letters Patent No. 495,889, dated April 11, 1893.

Application filed August 12, 1892. Serial No. 442,854. (No model.)

To all whom it may concern:

Be it known that we, HENRY J. BOND and LOUIS HILLING, citizens of the United States, residing at Shawnee, in the county of Perry and State of Ohio, have invented a new and useful Brick-Mill, of which the following is a specification.

This invention relates to brick mills; and it has for its object to provide certain improvements in brick mills in which the clay is thoroughly prepared and mixed before molding, and also to provide means in connection with the cutting and mixing devices of the mill whereby the molded bricks can be carried therefrom to the drying shed and the molds returned from the drying shed to the mill, at the same time without the laboriousness attendant upon carrying the molded bricks manually to the sheds.

With these and many other objects in view which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

In the accompanying drawings;—Figure 1 is a top plan view of a brick mill constructed in accordance with this invention. Fig. 2 is a similar view illustrating a section of the track sides removed and the receiving table arranged one section nearer the mill proper. Fig. 3 is a vertical longitudinal sectional view of the entire apparatus. Fig. 4 is a vertical transverse sectional view on the line 4—4 of Fig. 1. Fig. 5 is a similar view on the line 5—5 of Fig. 1. Fig. 6 is a detail in perspective of the mixing agitator. Fig. 7 is a side view of the mixing box showing the gear wheels that drive the rolls.

Referring to the accompanying drawings;—A represents a mixing tub or box into which the clay employed to form the brick is dumped and prepared before molding the same. The said mixing tub or box is provided with a concaved bottom B extending partly up both sides of the box and forms a bottom concaved chamber inclosing the mixing agitator C. The agitator C comprises a hub or shaft D journaled in opposite sides of the box A, and a series of alternately disposed cutting knives E, and agitating blades or paddles F extending radially from said hub or shaft. The knives E have their cutting edges disposed at

right angles to the blades or paddles F, and in such a position as to cut through the clay falling into the tub formed by the concaved bottom B, while the paddles or blades thoroughly mix and beat the clay in said tub and also force the same through the discharge opening G located in the front end of the box A. The discharge of the clay through said opening is regulated by means of the sliding door or gate working thereover and in the guides h arranged on each side of said opening. The said mixing box A is further provided in the upper open end of the same with the inclined feed board I, which directs the clay onto the toothed grinding rollers J, journaled in opposite sides of the box at the inner end of said feed board. The said grinding rollers are provided with the grinding teeth j, preferably cast integral therewith, and said rollers, while closely adjacent to each other, are in different horizontal planes so that the higher roller nearest the feed board will act as a feed roller to the other roller, both of said rollers working in opposite directions and therefore cutting the clay into small pieces. To each end of the grinding rollers J upon the outside of the box are connected the gear wheels K geared together, to turn the rollers toward each other, and one of said gear wheels K, meshes with an intermediate idler cog wheel X, in turn meshing with an adjacent gear wheel L, mounted upon the shaft l, which also carries the band wheel l', which is connected with the belting from suitable machinery to drive said shaft. A belt l² passes from the pulley l' to the pulley l³ at one end of the agitator shaft to transmit motion thereto.

The shaft l carries the smooth crushing roller M, arranged directly under the grinding rollers J and the lower end of the board I and working in close proximity to one side of the tub, which is narrowed in at that point as shown, so that as the ground clay leaves the toothed grinding rollers, the same will be crushed fine between said crushing roller and said side of the tub before it passes onto the combined agitator and cutter, which after thoroughly mixing the same forces it through the discharge opening G as already described.

Arranged at the front end of the mixing box or tub A and directly under the discharge opening G therein, is the molding table N, upon which the mixed clay falls and is molded

in the ordinary molds by means of the usual lever presses, which is well understood to those skilled in the art. The table N is mounted upon a suitable frame *n* from which
 5 lead the central and opposite side track-rails O and O' respectively. The track-rails O and O' are extended from the molding table into the drying shed for the bricks as far as may be deemed necessary, and are therefore constructed in any suitable length desired. Removably secured to the central track rail portion O and the side rails O' are the opposite rail-sides P and the intermediate division side P'. The intermediate division-sides and the
 15 opposite rail-sides are cut or at least constructed into a number of sections, which when in line with each other extend from end to end of the entire stationary track rails, and are each provided with notched ends Q overlapping each other, as illustrated, to form a continuous line of track while at the same time allowing for the ready removal of any section as is clearly shown in Fig. 2 of the drawings. The division-sides, strips or blocks, and the opposite rail-sides P are removably secured to the flat track rails by means of the screw pins R, passing therethrough and into such rails, and are arranged sufficiently in from the edges of the rails so as to form opposite inclosed tracks or ways through which the molds pass when loaded with bricks and when emptied. The central division strips P' and the opposite sides P therefore form the inclosing sides of opposite inclosed tracks and are each provided with the upper inwardly projecting retaining flanges *r*, corresponding to the exposed portions or ledges of the rails and providing a construction which prevents the displacement of the molds from the tracks when leaving the table or returning thereto.

Journalled at opposite ends of the tracks and below the same are the opposite sprocket wheels S, over which passes the endless sprocket belt or chain *s* traveling between each track and provided at regular intervals with the upwardly projecting carrying pins *s'*. After the clay has been molded into bricks within the molds, the molds with the bricks therein are placed upon one of the tracks, and the carrying pin *s'* of the endless chain engaging behind the same will carry such molds to the receiving table T, removably secured to the track at the end of the last section of the inclosing sides thereof. When the bricks have been piled in the drying shed adjacent to the receiving table, the molds are placed in the other track and returned to the molding table by the same means, and ready to be used again. Now it will be understood that when the bricks have been piled sufficiently high and in a sufficient number in the drying shed adjacent to the receiving table T, it becomes necessary to place such table in another position. In order to do this the last section of track sides is removed by means of the screw pins R,

and the table T is then moved up to the end of the next section of sides. The table T is provided with the extended arms *t*, embracing the opposite side rails and has connected therewith the securing hooks U, which are designed to removably engage the securing eyes *u* under the opposite side rails near the end of each of the side-sections thereon. The bricks are now delivered to the table in this position and piled adjacent thereto in the drying shed, and the said table can be moved nearer and nearer the molding table without disturbing the track rails or the endless chain until the drying shed has been filled as desired. The entire conveying apparatus just described as connected with the mixing machine may be covered by an inclosing shed as will be readily understood. Suitable pulleys and belting connect the sprocket wheel under the molding table with the driving devices already described, in order that the entire apparatus may be operated simultaneously.

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

1. In a brick mill, the combination of the mixing box or tub having a concaved bottom chamber and a discharge opening leading from the front side of said chamber, a mixing agitator mounted within said concaved bottom chamber, a smooth crushing roller mounted within said box or tub above the agitator, and working in close proximity to one side of the tub, and adjacent oppositely rotating toothed grinding rollers arranged over said crushing roller in different planes, substantially as set forth.

2. In an apparatus of the class described, the combination of a mixing tub or box having a concaved bottom chamber, a discharge opening leading from the front end of said box and an upper inclined feed board, an agitator mounted within said concaved bottom chamber and provided with a series of alternately disposed cutting knives and agitating blades or paddles, a smooth crushing roller mounted within said box below the inner end of said feed board and working in close proximity to one side of the box, oppositely moving toothed grinding rollers adjacently mounted to each other directly over said smooth crushing roller, and in different horizontal planes, a sliding door working over said discharge opening, and a molding table and conveying devices leading from said discharge opening, substantially as set forth.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

HENRY J. BOND.
LOUIS HILLING.

Witnesses:
CHARLES RUSK,
WM. ZARTMAN.