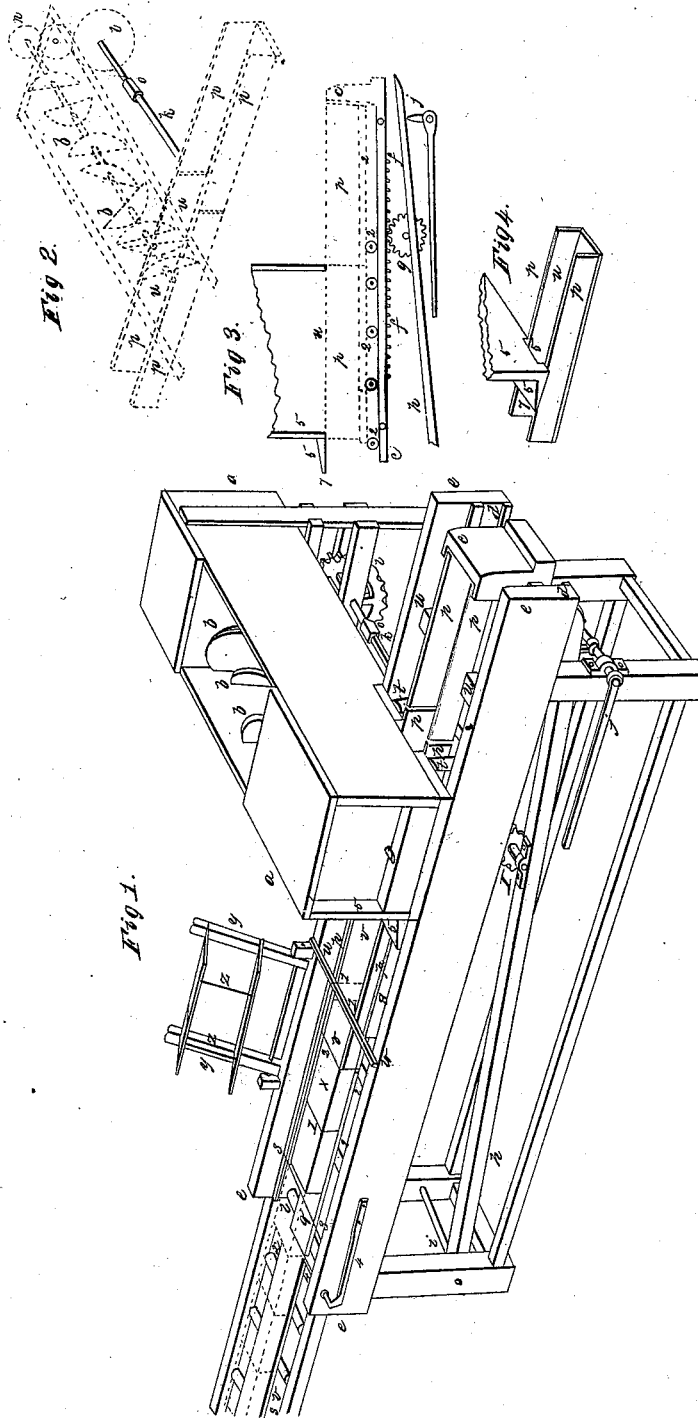


J. Willard,

Brick Machine.

N^o. 484.

Patented Jan. 29, 1840.



UNITED STATES PATENT OFFICE.

JULIUS WILLERD, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN BRICK-MACHINES.

Specification forming part of Letters Patent No. 1,484, dated January 29, 1840.

To all whom it may concern:

Be it known that I, JULIUS WILLERD, of Baltimore, Maryland, have invented a new and useful Improvement in Machines for Making Bricks; and I do hereby declare that the following is a full and exact description.

My machine tempers the clay, as well as aids in forming the bricks. The clay, being dug and soaked, is thrown into the tempering-box *a a*, Figure 1. This box is of an oblong form—say about six feet long, one and one-fourth foot wide, and one and one-fourth foot deep—in which by means of flanges or paddles *b b b* and *b b b*, Figs. 1 and 2, which are attached to a horizontal shaft and placed round it in a spiral position, so that they not only mix or temper the clay, but carry it toward or to the molding end of the box over the trough, which will be described hereinafter. This tempering-shaft lies horizontally in the oblong tempering-box. These paddles may be made like the screw of an auger; but I prefer them as represented in the drawings. Near the hopper end of the box and over the trough in which the molding is mostly or partly performed the paddles are more numerous or thickly placed on the shaft. The clay after having undergone a thorough tempering drops into the trough, which I shall now describe. It consists of one bottom and two side boards the length of three bricks and to contain when set up in a trough position a form as deep and wide as a brick. (*p p*, &c., in Figs. 1, 2, and 3 represent their position.) These boards consisting of the or constituting the trough are moved forward under the hopper by means of a carriage. (*c*, Fig. 1, is the end of the carriage, of which *cc*, Fig. 3, is a side view.) This carriage plays horizontally forward and back on tracks *d d*, Fig. 1, which tracks are on the inner sides of the side pieces *e e e e* of the frame of the machine. This frame may be eight feet long and one and one-fourth foot wide and two and one-fourth feet high. This carriage is forced up to the left or toward the tempering-box by means of a rack *ff*, Fig. 3, and pinion *g*, Fig. 3. This rack is on the under side in the middle of the carriage, the teeth downward. The rack is about three feet long, so as to move up the length of three bricks or the length of the trough or molding-boards. The pinion is on a horizon-

tal shaft, which runs under the tempering-box and is driven by the same gearing which drives the tempering-shaft. When this rack has run off toward the tempering-box, it naturally runs out of gear with the pinion. Then to bring the carriage back there is a beam *h*, Figs. 1 and 3, which show a section of it, and *h*, Fig. 1, which plays on a bolt at *i*, Fig. 1. This beam runs lengthwise under the frame or under the molding and tempering end of the box, and this beam is attached by means of a bolt to the back end of the frame. The front end of the beam will rise and fall. The pinion-journal rests on this beam, and by means of a cam-lever the beam with the pinion is lowered or raised to throw the pinion and rack out of gear. *j*, Fig. 1, *j*, Fig. 3, is the cam-lever. This cam-lever is worked by hand. *g*, Fig. 1, is the same pinion as *g*, Fig. 3, and *k*, Fig. 2, shows the shaft on which the pinion is fixed, and on this shaft the driving-wheel *l*, Fig. 1, and *l*, Fig. 2, is the same (driving) wheel, showing its position and gearing with *m*, an intermediate wheel to drive *n*, Fig. 2, which is on the end of the tempering-shaft. The shaft which leads to the rack and containing the pinion, is jointed with a coupling to accommodate its rise and fall to gear and ungear with the rack. *o*, Figs. 2 and 1, shows the coupling to permit the shaft to bend, it being separated here to accommodate the rise and fall of the pinion *g*. The object of the carriage is to carry and force the molding-boards through under the hopper of the molding-trough *p p*, &c., in each figure. *p p* represent the side molding-boards, and *q*, Fig. 1, and *q q*, Fig. 3, the position of three of the bottom molding-boards. These bottom boards lie on a series of horizontal rollers, as *r r r r*, Fig. 1, and *r r*, &c., Fig. 3, which rollers have their journals in the sides of the frame-pieces, as *e e e e*, Fig. 1. The carriage does not touch the rollers, nor does the molding-boards touch the carriage, except at the head of the carriage, as at *c*, Fig. 1, and *c*, Fig. 3, which is formed to hold the side molding-boards upright. There are side pieces, as *re*, *re*, and *s*, Fig. 1, attached to the frame to hold the side pieces *p p* in proper position. There are vertical rollers, as *t t*, Fig. 1, to guide the side molding-board. (In Fig. 1 there are now placed three lengths of molding-boards.) The clay

is now, we will suppose, dropping into the trough made by the molding-boards at *u u*, Fig. 2, *u*, Fig. 3, or *u*, Fig. 4. The carriage is moving up toward the left till the end, as *c*, Fig. 1, or *c*, Fig. 3, of the carriage comes up to the clay-box, as *a a*, Fig. 1. The carriage may then be moved back by hand to its original place or place of starting, and the molding-boards will remain under the box, as *a a*; but the carriage is to be supplied with spare or other molding-board, and it becomes again ready for moving up. The second move of the carriage will produce a form of clay, as at *v v*. There is now a device for loosening the clay from the side board, which consists of two vertical wires stretched downward from a timber which runs across the frame over the trough. *ww*, Fig. 1, is the timber, and the wires are *ll*. These wires as the boards and form of clay advance, and cut the clay loose or free from the inner sides of the side pieces or molding-boards. After the third move of the carriage the form of clay arrives onto the place of cutting the form into proper lengths of bricks, as at the place from *x* to *x*, Fig. 1, (the left end represented by the dots.) Here the side molding-boards are removed, as now represented, and by means of an apparatus *y y*, Fig. 1, containing two stretched wires, as *z z*, Fig. 1, the form or strip of clay is cut into proper lengths for bricks by pressing the wires down through to the bottom board, as seen at or by the lines 1 and 2, Fig. 1. This apparatus for cutting the bricks into lengths consists of a small square frame having the wires strained across. The one end of the frame is hinged to the side piece of the main frame and is pressed down through the strip or form by hand. As by the succeeding moves of the carriage, the bricks are carried onward on a continuation of rollers, as seen at *s v*, Fig. 1. There is another wire, as *3 3*, Fig. 1, stretched horizontally across the frame of the machine to cut the bottom of the bricks, after having been cut into lengths, loose from the top of the bottom board, which has now passed on three lengths or bricks from the form at the vertical or side wires. (*q*, Fig. 1, is the bottom board.) There is a gage-stop, as *4 4*, Fig. 1, to regulate the lengths of the moves of the

boards or molds, so that the form of clay and boards shall stop in the proper place to cut the bricks. This gage consists of a spring fastened on the outside of the side piece of the frame of the machine and passing through the frame, as *c*, by a bent point, the extreme inner point, as the boards are moving along the sides of the bottom boards, and when the joint between the boards arrives the point insinuates between them and the boards stop and are in the proper place for dividing the form or strip into proper lengths by the vertically-cutting wires. By drawing the stop outward from the joint (formed by the ends of the two bottom boards) the stop rubbing along against the edge of the bottom board till the next joint arrives, &c. The inside of the hopper, which wipes off the clay as the trough passes through, is sloping, having the front (with something like) from one-half to one inch large and terminating to a fit on the top of the side boards. Where it wipes the side boards, it is lined with steel or copper, as well as the tops of the sides of the trough. The throat form is to smooth off the top of the form or bricks as well as to condense the clay into the trough.

Fig. 4 is intended to show the form of the back or lower edge of the clay or tempering box where it wipes off the top of the trough made by the molding-board. *pp* are the same as *pp*, Fig. 3, or *pp* under the box *a a*, Fig. 1, and *5 5* is a section of the hind part of the box, as at *5 5*, Fig. 3, or *5 5*, Fig. 1. It will be seen that at *6*, Fig. 4, there is a small throat over and between the side boards *pp*. This throat terminates to nothing at *7 7*, Figs. 3 and 4.

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

The manner of forming the clay into long strips by means of the molding-trough constructed as described, and the combination of the same with the carriage and tempering apparatus, the whole being constructed and operating as above set forth.

JULIUS WILLERD.

Witnesses:

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S. H. REDGRAY.