No. 799,941. PATENTED SEPT. 19, 1905.

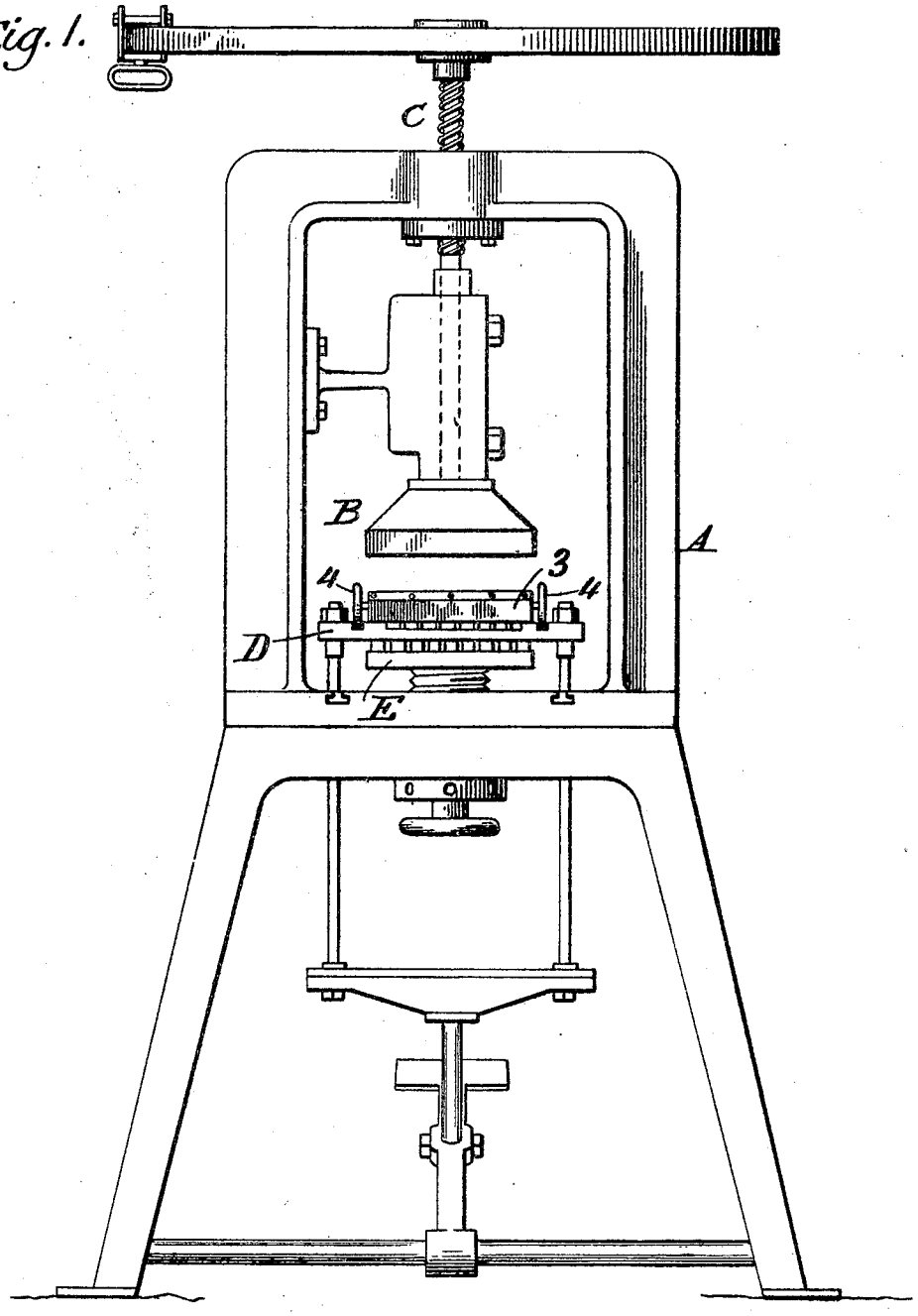
W. E. RIVERS.

MEANS FOR HANDLING UNBURNED TILES.

APPLICATION FILED APR. 21, 1905.

3 SHEETS—SHEET 1.

Fig. 1.




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Witnesses
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3 SHEETS—SHEET 2.

Fig. 2.

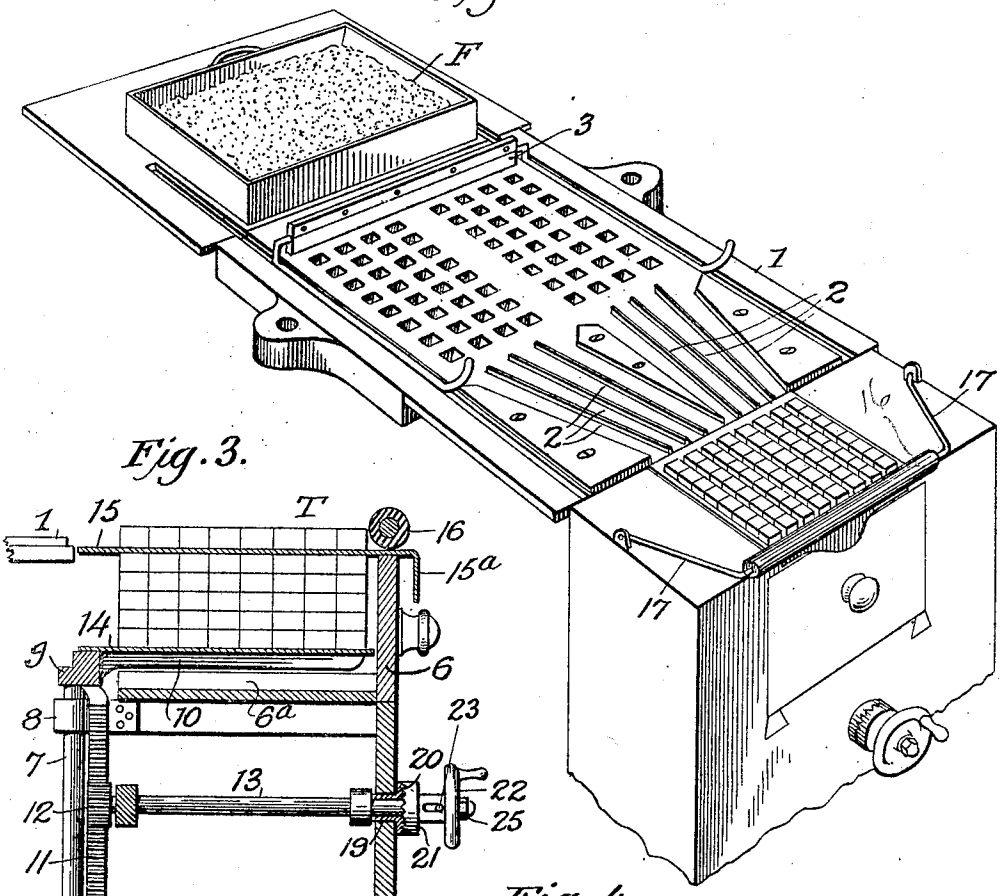
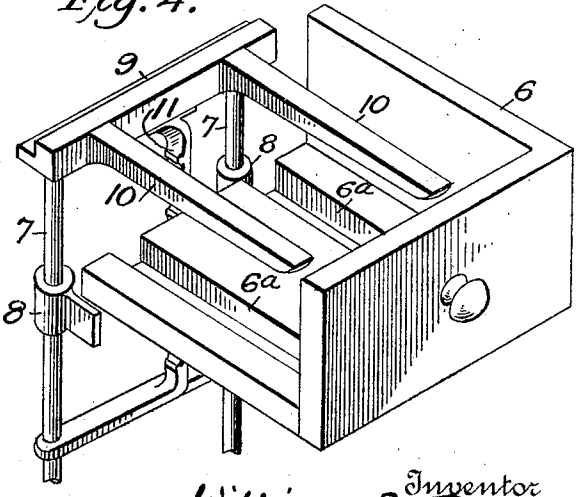



Fig. 3.




Fig. 4.




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3 SHEETS—SHEET 3.

Fig. 5.

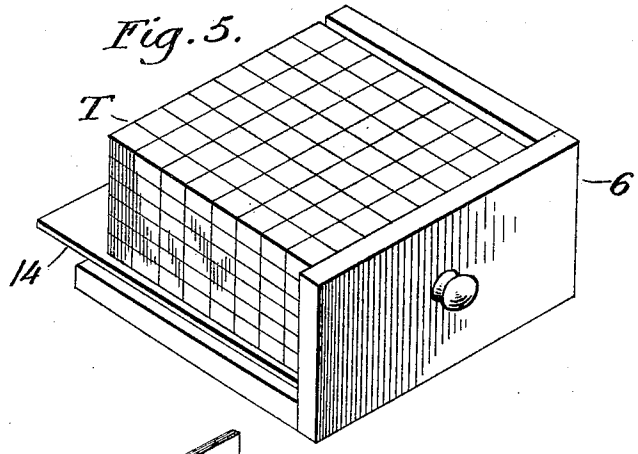



Fig. 6.

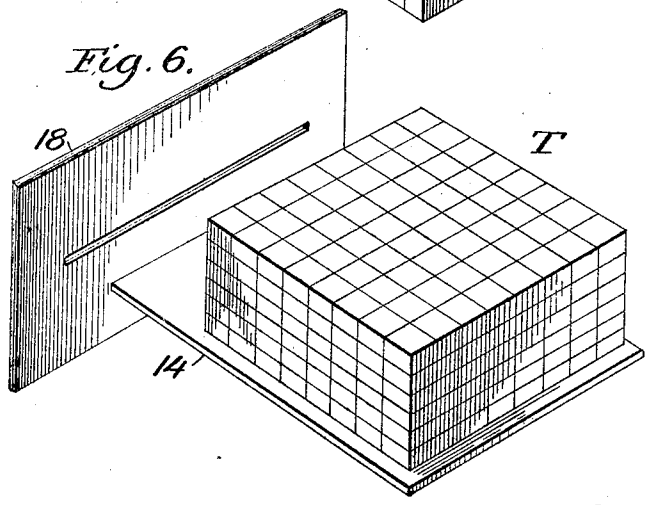



Fig. 7.

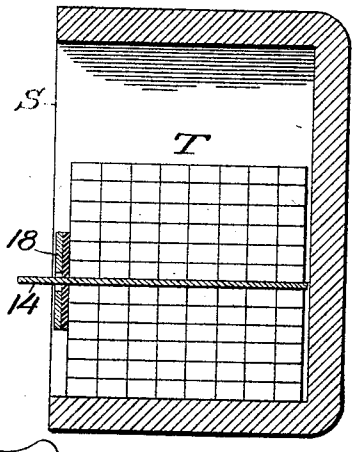



Fig. 8.

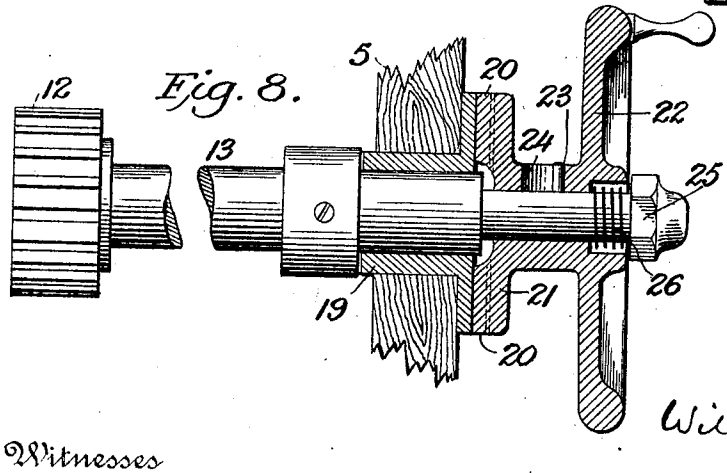
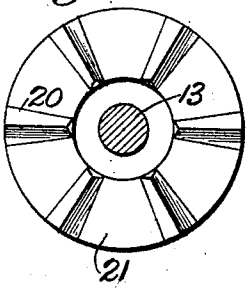



Fig. 9.




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# UNITED STATES PATENT OFFICE.

WILLIAM E. RIVERS, OF OLDBRIDGE, NEW JERSEY.

## MEANS FOR HANDLING UNBURNED TILES.

No. 799,941. Specification of Letters Patent. Patented Sept. 19, 1905.

Application filed April 21, 1905. Serial No. 256,744.

*To all whom it may concern:*

Be it known that I, WILLIAM E. RIVERS, a subject of the King of Great Britain, residing at Oldbridge, in the county of Middlesex and State of New Jersey, have invented certain new and useful Improvements in Means for Handling Unburned Tiles, of which the following is a specification.

This invention relates to means for handling tiles as produced by the press and before they have been burned; and the object is to provide a means for collecting the tiles as delivered by the press and placing them in the saggar for transfer to the furnace without the necessity of touching them with the hands.

It may be briefly explained for the better understanding of this invention that tiles are molded under a heavy pressure from slightly-moist clay in powder and that when the press-plungers lift the pressed tiles from the molds for removal they are very fragile and liable to injury from handling. These freshly-molded tiles must be removed from the press and carefully placed in the saggar, when the latter, with its contents, is removed to the kiln. The present invention, now to be described with reference to the accompanying drawings, provides a means for collecting the tiles in mass from the press and placing them in the saggar very expeditiously and without the necessity of touching them at all with the hands.

In the said drawings, Figure 1 is an elevation of a tile-press such as may be used in conjunction with the present invention; Fig. 2, a perspective view showing the mold-plate or die of the press and some of the features of the present invention connected operatively therewith. Fig. 3 is a vertical section of the receiving drawer and elevator of the device. Fig. 4 is a perspective view of the same parts. Fig. 5 is a perspective view of one of the drawers full of tiles. Figs. 6 and 7 are views illustrating the transfer of the mass of tiles to the saggar. Figs. 8 and 9 are detail views, on a large scale, illustrating the means for letting down the elevator step by step.

A brief description of the tile-press as seen in Fig. 1 will suffice, as it forms no essential part of the present invention.

A is the frame of the press. B is the platen or follower, driven down by a screw C. D is the die or mold-plate, (seen best in Fig. 2,) and E is the plunger-bed carrying the plungers, one for each mold in the die or mold-plate. This mold-plate is movable up and down to a limited extent, and when elevated the plungers form bottoms for the molds. The molds are then filled with the clay from a tray F (seen in Fig. 2) and the platen B driven down. This drives down the mold-plate, and the contents of the molds are compressed between the follower and the plungers. The follower is then lifted and the mold-plate further depressed until the tiles are pressed upward by the plungers until the ends of the latter are flush with the upper surface of the mold-plate. The compressed tiles are then removed. The plate D, usually called the "die," will have in it for the smaller tiles a considerable number of molds arranged in rows. As herein shown, there are sixty-four of these molds; but the number is not important to the present invention. It may be stated also that the tiles can be of any shape, size, and thickness so far as this invention is concerned. In some of the figures the tiles are represented as rather thicker than they are usually made; but this is only for convenience of illustration of the mechanism herein claimed.

So far as above described the description relates to the press which is used in connection with the tile-removing means, but which forms no essential part of the invention herein claimed. The means for removing the tiles from the press and placing them in the saggar will now be described.

Attached to or forming a rear extension of the die D is a gathering table or plate 1, provided with converging channels 2, and 3 is a rubber pusher, provided with handles 4 4 for pushing the tiles T from the die through the channels 2 onto a receiver or receiving device called an "elevator." Established in front of the gathering-plate is a structure which will now be described with especial reference to Figs. 2, 3, and 4.

In a box-like frame 5 is mounted slidably a box-like holder 6, called a "drawer." This drawer has a bottom, one side or front, and one end, and it slides into the frame on suitable bearers forming a part of the frame. The device called the "elevator" has uprights 7, slidable in guides 8 on the frame 5, a cross-bar 9 on the top of the uprights, bracket-arms 10 on said bar, and a pendent rack 11. To move the elevator up and down, a pinion 12 on a shaft 13 gears with the rack. This shaft is rotatively mounted in the frame and has a detent device which will be hereinafter described. Resting loosely on the bracket-arms

10 is a thin plate 14, preferably of steel, which projects out at the back, as seen in Fig. 3, and there is another plate 15, which projects out at the front and may have a pendent lip 15[a] for handling it. The bracket-arms 10 are disposed over the bottom of the drawer 6, and when the elevator is lowered to its full extent these arms descend into recesses 6[a] in the bottom of the drawer, while the plate 14 rests on the said bottom.

So far as has been described the operation is as follows: The pusher 3 is driven forward by the attendant toward the gathering-plate, so as to permit the pressman to fill the molds. It is then pushed over to the position seen in Fig. 2 and a batch of tiles pressed and lifted out of the molds. The attendant now draws the tiles from the die or mold-plate with the pusher 3 and through the channels of the gathering-plate onto the upper plate 15, which at this time rests directly on the lower plate 14, the elevator being raised to its highest point Having placed the tiles, the attendant draws out the upper plate 15, thus leaving the tiles resting on the plate 14. It may be explained here that when the tiles are moved onto the plate 15 by the pusher their position is gaged by a rubber-covered bar 16 in a hinged frame 17, and when the plate 15 is drawn out this bar serves to hold the tiles in place. The bar 16 may be lifted for convenience in replacing the plate 15. The tiles now rest on the elevator-plate 14, and the attendant lowers the elevator one step or the thickness of this layer of tiles by means of the rack 11 and pinion 12 and replaces the plate 15. This operation is repeated until the bracket-arms which support the stack of tiles have descended into the recesses or ways 6[a] in the drawer, and the plate 14 rests on the bottom of the drawer. The attendant then pulls out the drawer (which will present the appearance seen in Fig. 5) and proceeds to transfer the stack of tiles therefrom to the saggar S. (Seen in Fig. 7.) This is done by lifting the mass of tiles out of the drawer on the plate 14 and transferring it to the saggar, as seen in Fig. 7. The attendant then slips over the projecting end of the plate a slotted rubber-faced shield 18 and pressing this against the mass of tiles in the saggar withdraws the plate 14, thus leaving the mass of tiles in place. When the saggar is full, it is taken to the furnace, where the tiles are burned in the usual way.

The detent device (illustrated in Figs. 8 and 9) for gaging the descent of the elevator to an extent equal to the thickness of the tiles and for holding the elevator at the proper level will now be described, premising that Fig. 8 is an axial section and Fig. 9 a face view of the locking-disk on the hand wheel or crank. The shaft 13 is collared to prevent endwise movement and has a bearing in a flanged bushing 19, fixed on the frame 5. In the outer face of the flange on this bushing are radial grooves adapted to be engaged by radial ribs 20 on the face of a flange 21 on a hand wheel or crank 22, splined by a pin 23 and slot 24 on the outer end of the shaft 13. On the outer screw-threaded extremity of the shaft 13 is a nut 25, and between said nut and the crank-wheel is a spring 26, which tends to press the ribs 20 into locking engagement with the radial grooves in the flange of the bushing 19. Now if the interlocking ribs and grooves are properly spaced the attendant has merely to disengage the crank-wheel and turn it until the ribs and grooves again interlock or engage, when he will have lowered the elevator to the proper extent to receive another layer of tiles.

Obviously the invention is not limited to the exact construction and materials herein set forth. For example, other soft material may be substituted for the rubber parts described, and other means may be employed for lowering the elevator step by step. In the construction shown the elevator is lifted after a full drawer has been taken out and replaced by an empty one by drawing out the crank until it is disengaged and turning it in the proper direction.

The receiver or receiving device for the tiles that have been moved from the press over the gathering-table by the pusher has been herein called an "elevator;" but this is merely the factory name of the device. Any box-like holder may be employed in which to stack the tiles coming from the receiver. This device is herein shown as a drawer.

The handles 4 of the pusher 3 lie (see Fig. 2) below the level of the die or mold-plate, so that the platen may act while the pusher is in the position seen in Fig. 2.

Having thus described my invention, I claim—

1. Means for handling unburned tiles, having a gathering-table provided with converging channels for the tiles, a pusher for moving the tiles from the press over said gathering-plate to the receiver, a receiver for the gathered tiles, a removable holder or drawer below the receiver, and means for lowering the receiver into said drawer for depositing the tiles therein.

2. Means for handling unburned tiles, having a gathering-table provided with converging channels and connected with the mold-plate of the press, a pusher of soft material for moving the tiles from the press over the gathering-table to the receiver, a receiver for the gathered tiles, a removable holder or drawer below the receiver, and means for lowering the receiver step by step into the drawer for depositing the tiles therein.

3. Means for handling unburned tiles, having a channeled gathering-table, a vertically-movable receiving device adjacent to the gathering-table, means for moving the tiles from the press over said gathering-table and onto

the receiver, means for lowering the receiver step by step, a drawer below said receiver to receive the tiles, and a removable plate on said receiver to support the tiles.

4. Means for handling unburned tiles, having a vertically-movable receiver or elevator situated adjacent to the press, removable plates 14 and 15 operating in conjunction with said receiver, means for shifting the tiles from the press onto the plate 15 of the receiver, a removable drawer 6 disposed below the receiver, and means for lowering the receiver into said drawer for depositing the tiles and their supporting-plate 14, therein.

5. In means for the purpose specified, the combination with the receiver or elevator, consisting of the cross-piece 9, the guided uprights 7, the bracket-arms 10, and the rack 11 thereon, of the removable supporting-plate 14 on said bracket-arms, means for moving said elevator up and down and detaining it at the desired level and the removable drawer below said bracket-arms and provided with recesses to receive the same.

6. In means for the purpose specified, the combination with the mold-plate or die of the press, of the channeled gathering-table 1 connected therewith, the rubber pusher 3, for removing the tiles, the handles 4 thereof, and means for receiving the tiles from said pusher.

7. Means for the purpose specified, having a drawer into which the tiles are stacked, the removable plate 14 upon which the tiles are supported in the drawer, and the shield 18, having soft material on its face and a slot through which the plate 14 may pass.

In witness whereof I have hereunto signed my name, this 17th day of April, 1905, in the presence of two subscribing witnesses.

WILLIAM E. RIVERS.

Witnesses:

WILLIAM J. FIRTH,

HENRY G. HOSE.