

G. BÄHR.

PRESS FOR THE MANUFACTURE OF STOVE TILES OR THE LIKE.

APPLICATION FILED SEPT. 18, 1902.

NO MODEL.

3 SHEETS—SHEET 1.

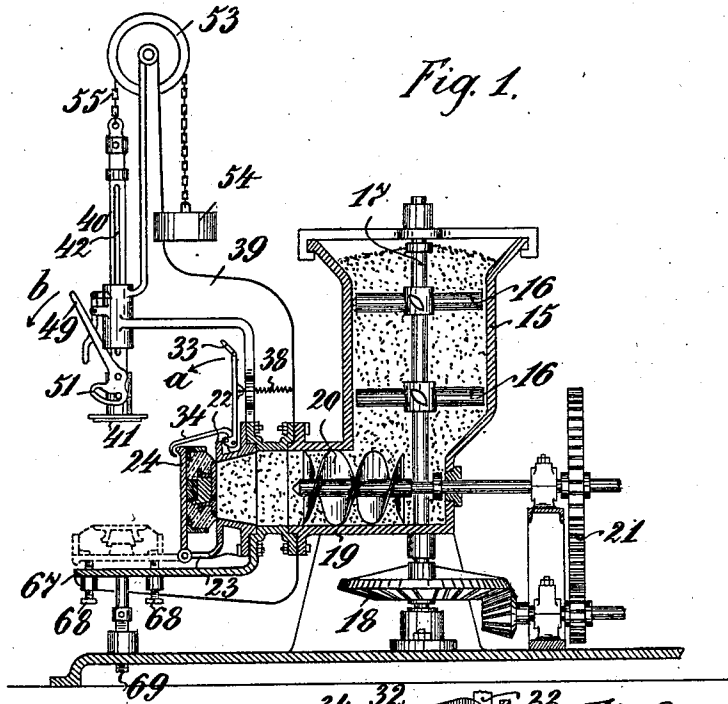


Fig. 1.

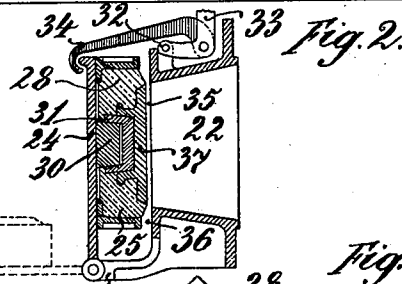


Fig. 2.

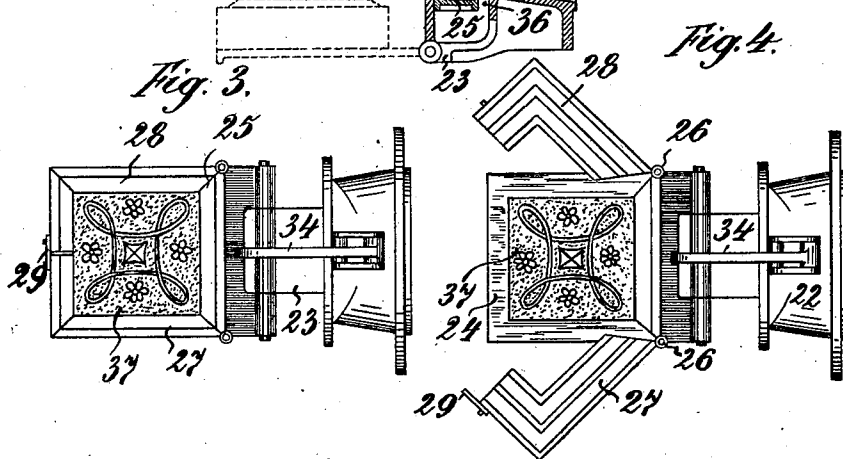


Fig. 3.

Fig. 4.

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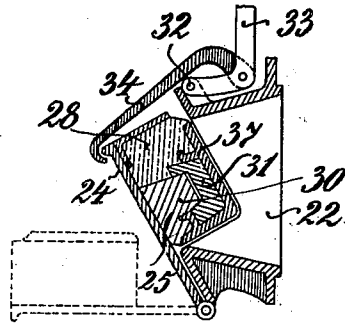


Fig. 5.

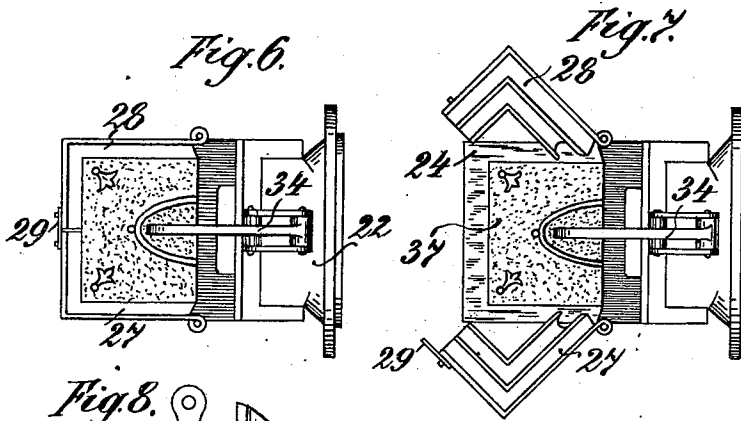


Fig. 6.

Fig. 7.

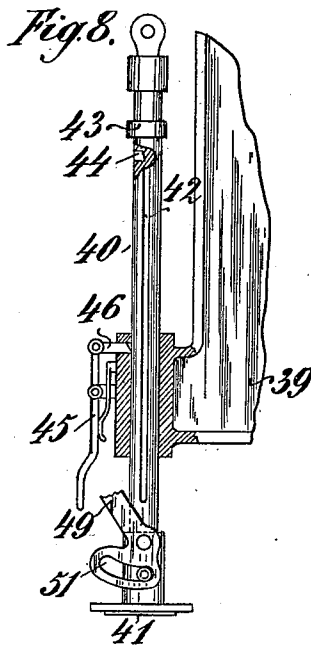


Fig. 8.

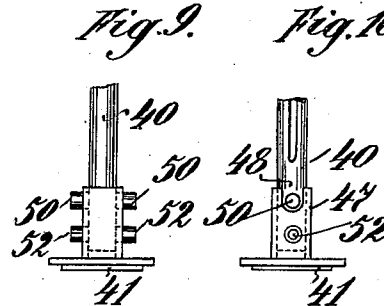


Fig. 9.

Fig. 10.

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Harold F. Ford

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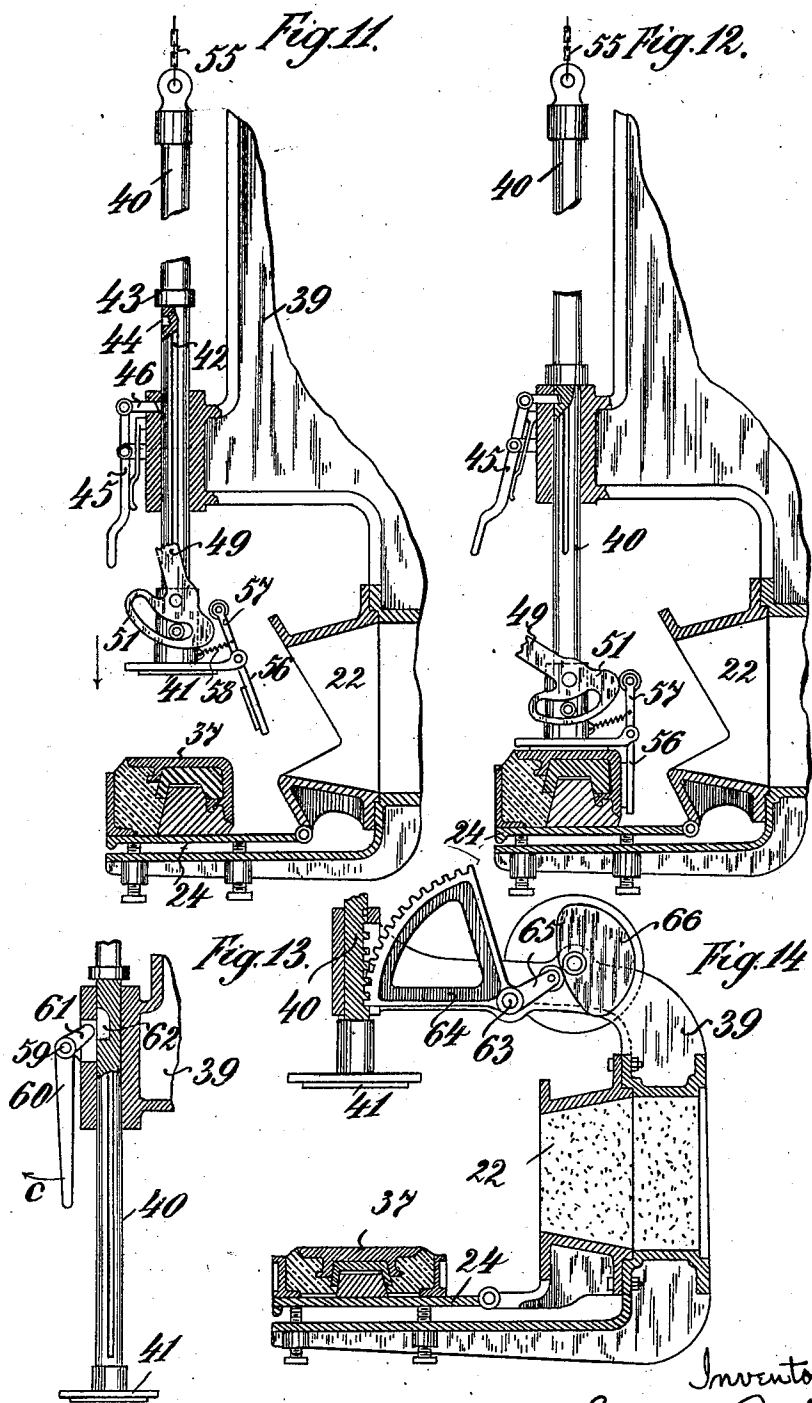
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3 SHEETS—SHEET 3.



Witnesses.
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UNITED STATES PATENT OFFICE.

GUSTAV BÄHR, OF CHARLOTTENBURG, GERMANY.

PRESS FOR THE MANUFACTURE OF STOVE-TILES OR THE LIKE.

SPECIFICATION forming part of Letters Patent No. 722,661, dated March 17, 1903.

Application filed September 18, 1902. Serial No. 123,930. (No model.)

To all whom it may concern:

Be it known that I, GUSTAV BÄHR, architect, a subject of the King of Prussia, and a resident of Charlottenburg, Bleibtreustrasse 54, in the Kingdom of Prussia and Empire of Germany, have invented certain new and useful Improvements in Presses for the Manufacture of Stove-Tiles or the Like, of which the following is a specification.

10 This invention relates to a press for the manufacture of stove-tiles and the like. The principle of the invention lies, on the one hand, in the special construction and arrangement of the tile-mold and, on the other hand, in the arrangement of a relief-press for the purpose of providing the manufactured tile with a suitable pattern. The manner in which the relief-press is operated does not affect the principle of the invention, and various means for operating it will be described.

In the annexed drawings, Figure 1 illustrates one form of the tile-press, partly in longitudinal section and partly in elevation. Fig. 2 shows, in longitudinal section and on a larger scale, the mouthpiece of the press and also the mold for a flat tile. Figs. 3 and 4 are plan views of the mouthpiece shown in Fig. 2 with the tile-mold folded down, the latter being shown closed in Fig. 3 and open in Fig. 4. Fig. 5 is a longitudinal section of the mouthpiece of the press with a mold for corner-tiles, Figs. 6 and 7 being plan views of Fig. 5 with the mold folded down, the latter being closed in Fig. 6 and open in Fig. 7. Fig. 8 shows the relief-press of Fig. 1 on a larger scale, partly in elevation and partly in section. Figs. 9 and 10 are two elevations of the relief-stamp at right angles to each other. Figs. 11 and 12 show the relief-press arranged for corner-tiles in two different working positions, partly in elevation and partly in plan view. Figs. 13 and 14 illustrate two further forms of apparatus for working the relief-stamp.

15 The tile-press comprises the kneading and pressing apparatus and the mouth of the press, the tile-mold, and the relief-press itself. The kneading and pressing apparatus can be of any of the known constructions.

20 In the form of construction shown in Fig. 1 the kneading apparatus consists of a cylinder 15, a shaft 17, with bearings in the said

cylinder, and arms 16 on the said shaft, the latter being driven by means of the bevel-gear 18. The pressing apparatus consists of the cylinder 19, which communicates with the cylinder 15 and a worm 20 in the former, said worm being driven by means of the toothed gear 21. The mouthpiece 22 is connected to the cylinder 19 and can be provided at its lower part with an arm 23, adapted to receive the oscillatable tile-mold. The tile-mold itself comprises a base-plate 24, which for flat tiles is provided with a fixed frame part 25 and two folding frame parts 27 and 28, pivoted to the latter by means of pins 26, as shown in Figs. 2 to 4. The folding frame parts can be held in their closed positions by means of any suitable device—for instance, a bolt or hook 29. On the base-plate a block 30 is fastened, upon which the core 31 is placed to form the hollow part of the tile. The tile-mold can be held fast in the working position (shown in Fig. 2) by means of any locking or holding device. In the form of construction illustrated this locking device is formed by an angle-lever 33, pivoted at 32, and by a hook 34, pivoted to the said angle-lever, the said hook engaging the base-plate 24, as illustrated, in the closed position. Of course the mold must not be pressed tightly against the mouthpiece 22. A space 35 must remain through which after the filling of the tile-mold a suitable cutting instrument, preferably a tensioned wire 36, can be passed for the purpose of separating the tile 37 from the superfluous material. To prevent the locking device 32 to 34 from folding down by itself, the lever 33 can, if necessary, be held in its upper position by a spring 38.

When corner-tiles are to be produced in the press, the arrangement and position of the tile-mold are modified in the manner shown in Fig. 5. The fixed frame part 25 and the block 30, which is fastened to the base-plate 24 and receives the core 31, are then made in one piece. The two frame parts 27 and 28, however, are pivoted and arranged to fold in the same manner as before. The position of the tile-mold relative to the mouthpiece must, of course, be such that the material coming out of the mouthpiece can form the two legs of the corner-tile 37.

The action of the tile-press is as follows:

When the tile-mold has been placed against the mouthpiece 22 of the press in the manner shown in Figs. 1, 2, and 5, respectively, and the worm 20 is revolved, the plastic material which has entered the cylinder 19—for instance, clay or the like—is forced forward—that is to say—toward the mouthpiece 22, from which it enters the hollow spaces in the tile-mold. When the latter is full, the manufactured tile 37 is cut away from the superfluous material in the mouthpiece 22—for instance, by means of the wire 36, as already stated. The lever 33 is moved in the direction of the arrow *a*, the hook 34 slightly lifted, and the mold swung into the position indicated in Figs. 1, 2, and 5 by dotted lines. Thereupon the fastening device 29 is disengaged and the frame parts 27 and 28 are moved into the position shown in Fig. 4, and the tile is removed with the core 31 and passed on for drying. When this has been done, a new core 31 is placed in position, the frame parts 27 and 28 are moved into the positions shown in Fig. 3, the fastening device 29 is closed, and the entire mold is moved into the position shown in Figs. 1, 2, and 5.

If the outer surface of the tile is to be provided with a relief-pattern, it is treated with the relief-stamp shown in the drawings before the frame parts are opened. For this purpose a standard or bracket 39 is connected to the cylinder 19 and supports the spindle 40 and press-plate 41. To prevent twisting of the spindle and plate in the standard 39 if the spindle is of circular section, a guide 42 can be provided.

After the tile-mold has been folded down into the position indicated by dotted lines the spindle 40 and press-plate 41 are lowered into the tile for the purpose of relief-pressing, and pressure is exerted on said plate 41 by suitable means. Several apparatus can be used for this purpose. In the example represented in Figs. 1 and 8 to 10 the spindle 40 is provided at its upper end with an adjustable regulating-ring 43 and adjacent thereto with an indent 44, into which a pin 46, guided in the bracket 39 and connected with a pivoted lever 45, engages for the purpose of preventing backward movement of the lowered press-spindle. The adjustable ring 43 is for the purpose of limiting downward movement of the press-spindle. The plate 41 is provided with a sleeve 47, in which the bottom end of press-spindle 40 is guided. In order to prevent a twisting of the pressure-plate on the spindle, the sleeve 47 is provided with slots 48, in which slide pins or rollers 50, arranged on the press-spindle for receiving the lever 49. The lever 49 has eccentric tapering slots 51, into which engage the guide-rollers or the like 52 on sleeve 47. If lever 49 is moved into the position shown in Figs. 1 and 8 in the direction of the arrow *b*, a displacement of the press-plate 41 with regard to the spindle 40 takes place—that is to say, if the latter is brought to its lowest position, so that

the press-plate 41 nearly touches the finished tile 37, and the lever 49 is moved in the direction of arrow *b*, the press-plate is forced into the tile. If the relief-press is to be returned to its original position, lever 49 is moved in the opposite direction, the pin 46 released by pressure on lever 45 thus allowing the press-spindle to be moved upward again, when the tile-mold can be opened in the manner described and the tile, with its core 31, removed.

In order to secure an easy up-and-down motion of the relief-press, the latter can be counterbalanced by connecting the upper end of the spindle 40 with a chain or rope 55, provided with a weight 54 and guided over a pulley 53.

If corner-tiles are to be provided with a relief-pattern, two pressure-plates have of course to be used. Figs. 11 and 12 show a modification of the relief-press suitable for this purpose. In this construction the second press-plate 56 is arranged to oscillate on pressure-plate 41 and is provided with a counter-arm 57, against which the slotted part of lever 49 bears as soon as the plate 41 has reached its lowest position. If desired, a spring 58 can be arranged, by means of which the plate 56 is normally kept in the retracted position, so as to prevent injury to the tile on lowering the relief-press. Fig. 12 shows this position of the whole relief-press in which the plate 41 has pressed the tile and lever 49 has acted on the plate 56. The arrangement and working of the pressure-plate 56 can of course also be modified.

In the construction shown in Fig. 13 the spindle 40 is rigidly connected with the pressure-plate 41. A lever 60, pivoted at 59 to bracket 39, is provided with a nose or projection 61, adapted to engage a recess 62 in the spindle when the lever 60 is moved in the direction of arrow *c*. The desired pressure is thus effected.

In the construction shown in Fig. 14 the spindle 40 is provided with rack-teeth, with which gears a tooth-segment 64, pivoted at 63 to bracket 39. This segment is provided with an arm 65, acted upon, for example, by a cam 66 in such a manner that an up-and-down movement of the spindle 40 and pressure-plate 41 is produced.

In order to regulate the height of mold when folded down, adjustment-screws 68 can be provided, for example, on the molding-table 67, attached to cylinder 19, which extend under the mold. The molding-table itself can, if necessary, be supported by a screw-spindle 69. These are, however, only minor details of the invention. It is obvious that similar objects to tiles can be made with such a press.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. A tile-press provided with a tile-mold pivoted in front of the mouth of the press,

the tile-mold comprising a base-plate a fixed frame part on the said base-plate and two side frame parts pivoted to the base-plate, the said frame parts forming the profile of the tile.

2. A tile-press in which a tile-mold is pivoted in front of the mouth of the press and an upwardly and downwardly movable relief-press stamp or die arranged above the tile-mold.

3. A tile-press provided with a tile-mold pivoted in front of the mouth of the press, an upwardly and downwardly movable relief-press stamp or die arranged above the tile-mold, and a lateral press-plate provided on the relief-press stamp or die.

4. A tile-press provided with a tile-mold pivoted in front of the mouth of the press, an upwardly and downwardly movable relief-press stamp or die arranged above the

tile-mold, a weight balancing the same, and a lateral press-plate pivoted to the said relief-press stamp.

5. A tile-press provided with a tile-mold pivoted in front of the mouth of the press, an upwardly and downwardly movable relief-press stamp or die arranged above the tile-mold, a weight balancing the same, a lateral press-plate pivoted to the said relief-press stamp, means locking the spindle of the relief-press stamp in its lowest position, and means pressing the lateral press-plate of the relief-press stamp on the tile simultaneously with the relief-press stamp.

In witness whereof I have hereunto set my hand in presence of two witnesses.

GUSTAV BÄHR.

Witnesses:

WOLDEMAR HAUPT,
HENRY HASPER.