

(No Model.)

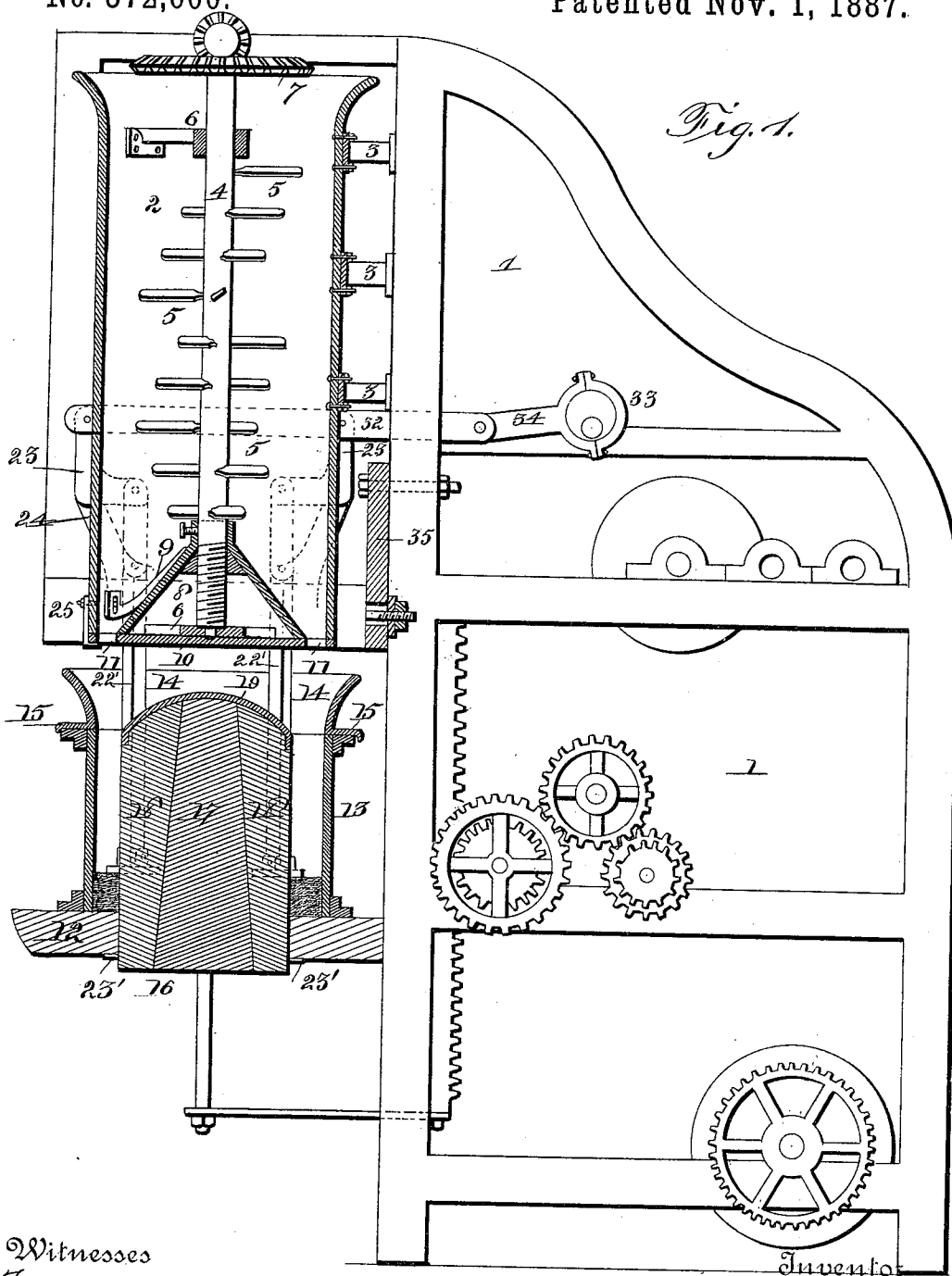
2 Sheets—Sheet 1.

R. J. CARSON.

TILE MACHINE.

No. 372,600.

Patented Nov. 1, 1887.



Witnesses
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J. F. Cleman

Inventor
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(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

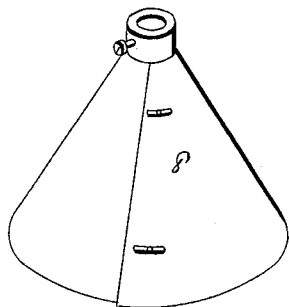


Fig. 2.

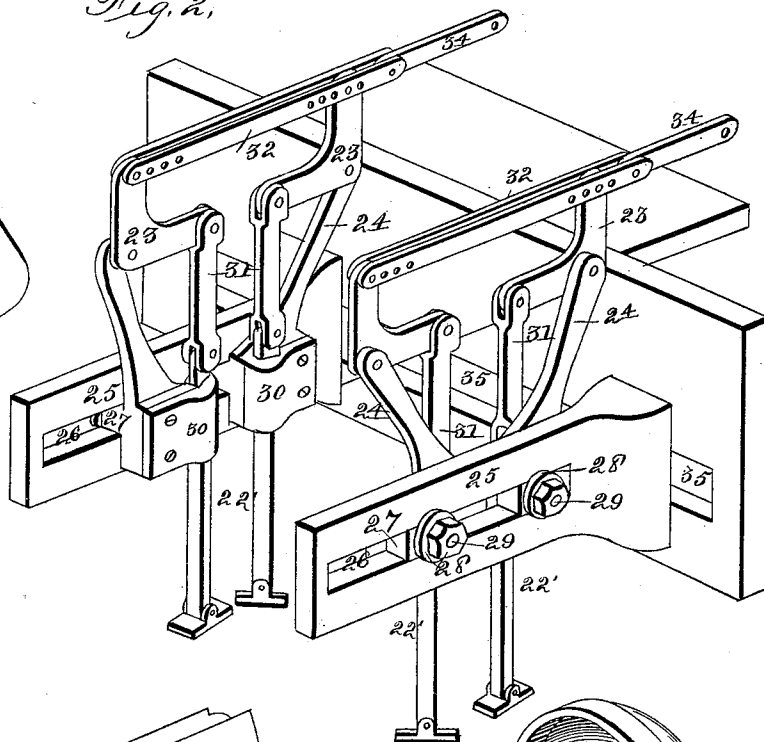
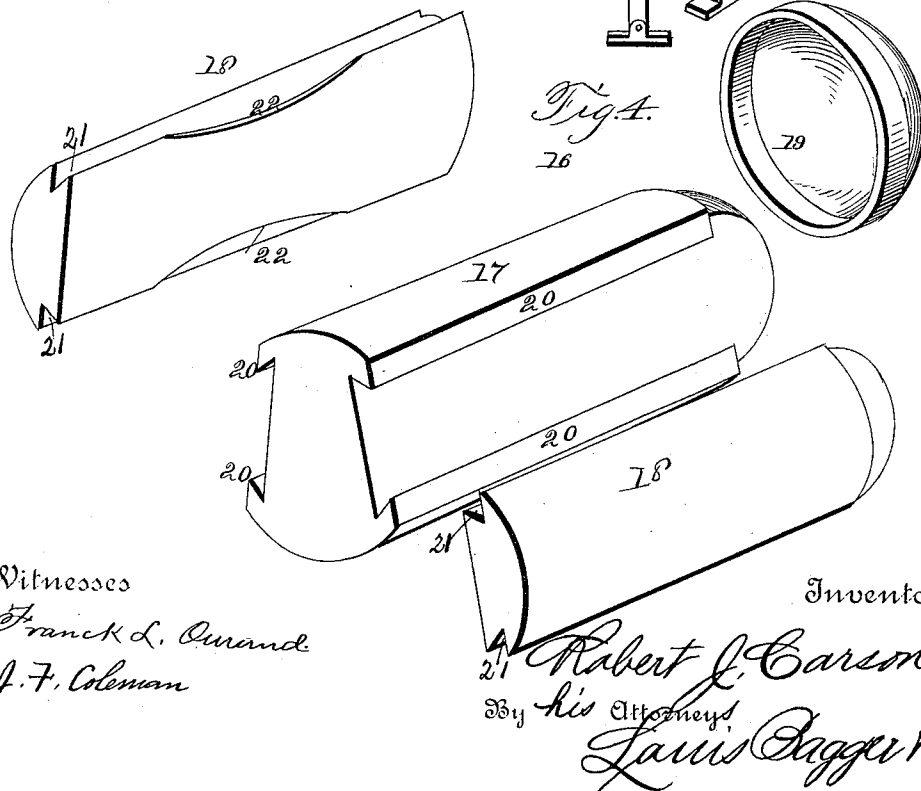


Fig. 4.



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UNITED STATES PATENT OFFICE.

ROBERT J. CARSON, OF OMAHA, NEBRASKA, ASSIGNOR TO THE UNION
HYDRAULIC DRAIN TILE COMPANY, OF SAME PLACE.

TILE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 372,600, dated November 1, 1887.

Application filed June 10, 1887. Serial No. 240,890. (No model.)

To all whom it may concern:

Be it known that I, ROBERT J. CARSON, a citizen of the United States, and a resident of Omaha, in the county of Douglas and State of Nebraska, have invented certain new and useful Improvements in Tile-Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a side view of my improved tile-machine, most of the operating mechanism being omitted, and the drum, table, and core being shown in vertical section. Fig. 2 is a perspective view of the mechanism for operating the tamping-bars. Fig. 3 is a view of the swell upon the lower end of the shaft at the bottom of the drum, and Fig. 4 is a detail view of the parts of the core detached.

My invention relates to machines for making tile; and it consists in the improved construction and combination of parts of such a machine, as will be hereinafter more fully described and claimed.

Referring to the accompanying drawings, in which the same letters of reference indicate corresponding parts in all the figures, 1 represents the frame of the mill, which in general construction is the same as that shown and described in the patent granted to me on November 9, 1886, No. 352,348, although I do not limit myself to that particular form. A receiving or tempering drum, 2, is suitably secured to the front of the frame by means of the arms or braces 3 3. A vertical shaft, 4, having arms 5, is journaled in the center of the drum by means of bearings in the end of a bracket, 6, at its upper end and in a similar bracket or spider at its lower end, said brackets being secured to the interior of the drum. The upper end of this shaft 4 is provided with a suitable gear-wheel, 7, which is operated from the driving mechanism of the mill, said driving mechanism being substantially the same as that shown and described in my said former patent, and not forming any part of the present invention, and therefore not being shown. Upon the lower end of this shaft is a swell, 8, which

may be made adjustable, if desired, so that it may be adapted to tile of different sizes, or swells of different sizes can be made and be adapted to be secured to the shaft as the machine is being used to form different-sized tiles. A scraper, 9, is secured to the interior of the drum at its lower end, so that it will bear against the swell as the shaft is revolved and prevent the material within the drum from sticking to it. The bottom 10 is secured to the lower end of the drum, having an aperture or annular recess, 11, through which the material passes to form the tile below. By having the swell and bottom of the drum made so as to be adjustable to the size of tile being formed the flow of material will not be in excess of the demand of that required to form the tile. Below the bottom of this drum is a movable table, 12, similar to that shown and described in my said former patent, upon which is placed the shell 13, within which the tile is to be formed, and upon the top of which shell is placed the hopper 14, having a flange or rim, 15, around its bottom, by means of which it is retained in position upon the top of the shell. Secured upon a suitable support, similar to that shown in my former patent, and projecting up through the table 12 and into the shell 13, is a core, 16. This core is made contractible, as it has been found a very difficult operation to remove an ordinary core from the interior of the tile, which has been hammered and packed around it as tight and compact as is necessary in making good tile. To thus render it contractible it is composed of three (or more) wedge-shaped pieces, 17 18 18, and a cap, 19. The middle piece, 17, is wedge-shaped in cross-section, and also tapers from the bottom to the top. Dovetailed flanges 20 are secured or formed along the edge of each of the flat sides of this middle piece, 17, by means of which the side pieces, 18 18, are secured in place, the edges of each of the side pieces being provided with a dovetailed channel or groove, 21, which engages with the flanges 20. As the core is circular or round in cross-section and the central piece thinner at its top than at the bottom, the distance between the flanges upon each side is greater at the top than at the bottom, which necessitates making the side pieces correspondingly taper-

ing or wider at the top than at the bottom. The intermediate portions of the inner edges of the grooved portion of the side pieces, 18, are cut away, as shown at 22, to facilitate the movement of the parts upon each other. To prevent the tile material from getting into these grooves as it falls from the hopper or drum above the core a cap, 19, is placed over its upper end, the cap and upper end of the core being preferably made rounding. The top of the core may also be cut away or recessed for the reception of the cap, so that the outer portion of the cap will be flush with the surface of the core, or, if preferred, the cap may be made smaller than the top of the core, which is recessed or cut away sufficiently to receive the cap. To prevent the parts of the core from falling entirely apart as it is being withdrawn from the tile, the pieces are provided with stops 23', which engage with each other and prevent the pieces moving upon each other only to a limited extent.

To make a good tile requires that after the material has been thoroughly tempered, and while it is being gradually filled in between the core and the shell, it be subjected to as much compression as possible, which I have found is best accomplished by a stroke or blow, as from a hammer. This stroke is given by securing the upper ends of the tamping-bars 22' 22' to one arm of the bell-crank levers 23, which are pivotally secured to the upper end of a knee, 24, the lower end or body of the knee being adjustably secured to a bracket, 25. This bracket is provided with a longitudinal slot, 26, within which are secured two of the knees 24, one at each end, the body of each knee being provided with a fin or feather, 27, which fits within this slot and holds the knee in its upright position. The knees are clamped to the inner side of the bracket by means of the washer 28 and bolt 29. The inner side of each of these knees is further provided with a bearing, 30, within which the upper ends of the tamping-bars are secured and moved up and down by the levers 23, links 31 being interposed between the ends of the bars and the ends of the levers, which permit of the bars being moved in a vertical direction, although the ends of the levers move in the arc of a circle. These levers 23 are operated by means of bars or rods 32, to which they are pivotally secured, and which are moved back and forth longitudinally by means of a crank-shaft or eccentric, 33, the end of each of the bars being preferably connected to this crank by means of the ordinary pitman, 34, the crank-shaft being operated from the driving mechanism of the mill. The brackets 25, of which there are two, are adjustably secured to a slotted plate, 35, by means of bolts and washers similar to that described for the knees, there being a bracket at each end of the slot in the plate. This plate 35 is bolted to the frame at or near the bottom of the drum, so that one of the brackets 25 projects

forward from the plate at each side of the drum, and each bracket supports two tamping-bars.

In operation the clay or material of which the tile is to be formed is fed into the drum, where it is kept alive and tempered until finally it is gradually forced out between the swell upon the lower end of the shaft and the outer part of the hopper by means of the tempering blades or arms upon the shaft. As the material passes out of the bottom of the drum, it falls into the mold for it on the table formed of the core and shell, and which is given a rotary motion and is moved up and down, as is described in my former patent. This material is thus passed under the tamping-bars, which are preferably square and provided with feet or pounders. As the tile increases in length, the table and shell are gradually forced downward until the tile is completed. The mechanism for operating the tamping-bars and table is then stopped, and that for removing the core, as described in my former patent, is put in motion. The middle piece of the core is then drawn down, which loosens the side pieces, and the entire core is easily removed, when the tile and shell can be removed from the table and separated, as described in said patent. The core is then reconstructed or put into its completed form, the shell replaced around it, and the mill is ready for another tile.

To make tile of any particular size the requisite core and shell are placed upon the table and the tamping-bars arranged to move vertically between them by moving the brackets upon the plate toward or away from the drum, and also by moving the knees upon each bracket toward or away from each other, where they are then firmly secured by the washers and bolts, and the bottom of the drum and the swell on the lower end of the shaft are changed accordingly. To preserve the same relative positions between the upper arms of the levers for operating the tamping-bars, the bar to which they are secured may be provided with a series of holes or other means of adjustment.

Having thus described my invention, I claim—

1. In a core for tile-machines, the combination of a middle piece having dovetailed flanges upon its sides and two side pieces, each side piece being provided with a groove upon its edges and having a notch or cut-away portion upon the inner edge of each of the grooved portions.

2. In a tile-machine, the combination of a frame, a drum secured thereto, a shaft, an adjustable swell, a mold, and tamping-bars.

3. In a tile-machine, the combination of a frame, a drum secured thereto, a shaft, a swell, a scraper, a mold, and tamping-bars.

4. In a tile-machine, the combination of a frame, a drum, a shaft, a mold, two brackets, one upon each side of said drum, bearings adjustably secured upon said brackets, tamping-

bars, the upper ends of which are secured in said bearings, and means, substantially as described, for operating said bars.

5 In a tile-machine, the combination of a frame, a drum, a shaft, a mold, two brackets, one upon each side of said drum, two knees adjustably secured upon each of said brackets, having a bearing upon one side, a bell-crank lever pivotally secured to the upper end of
10 each of said knees, tamping-bars, links, and means, substantially as described, for operating said levers.

6. In a tile-machine, the combination of a frame, a drum, a shaft, a mold, two slotted
15 brackets, one upon each side of said drum, two knees secured to each of said brackets, the body of each knee being provided with a fin upon one side and a bearing upon the other, a bolt and a washer for each knee, a bell-crank lever, a

tamping-bar in each of said bearings connected 20 to one arm of each of said levers, and means, substantially as described, for operating said levers.

7. In a tile-machine, the combination of a frame, a drum, a shaft, a mold, two brackets, two 25 knees upon each of said brackets, bell-crank levers, tamping-bars, a bar secured to two of the arms of the levers upon each side of said drum, a crank-shaft, and a pitman connecting each of said bars with said shaft. 30

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

ROBERT J. CARSON.

Witnesses:

JEFF. W. BEDFORD,
FRED J. BORTHWICK.