

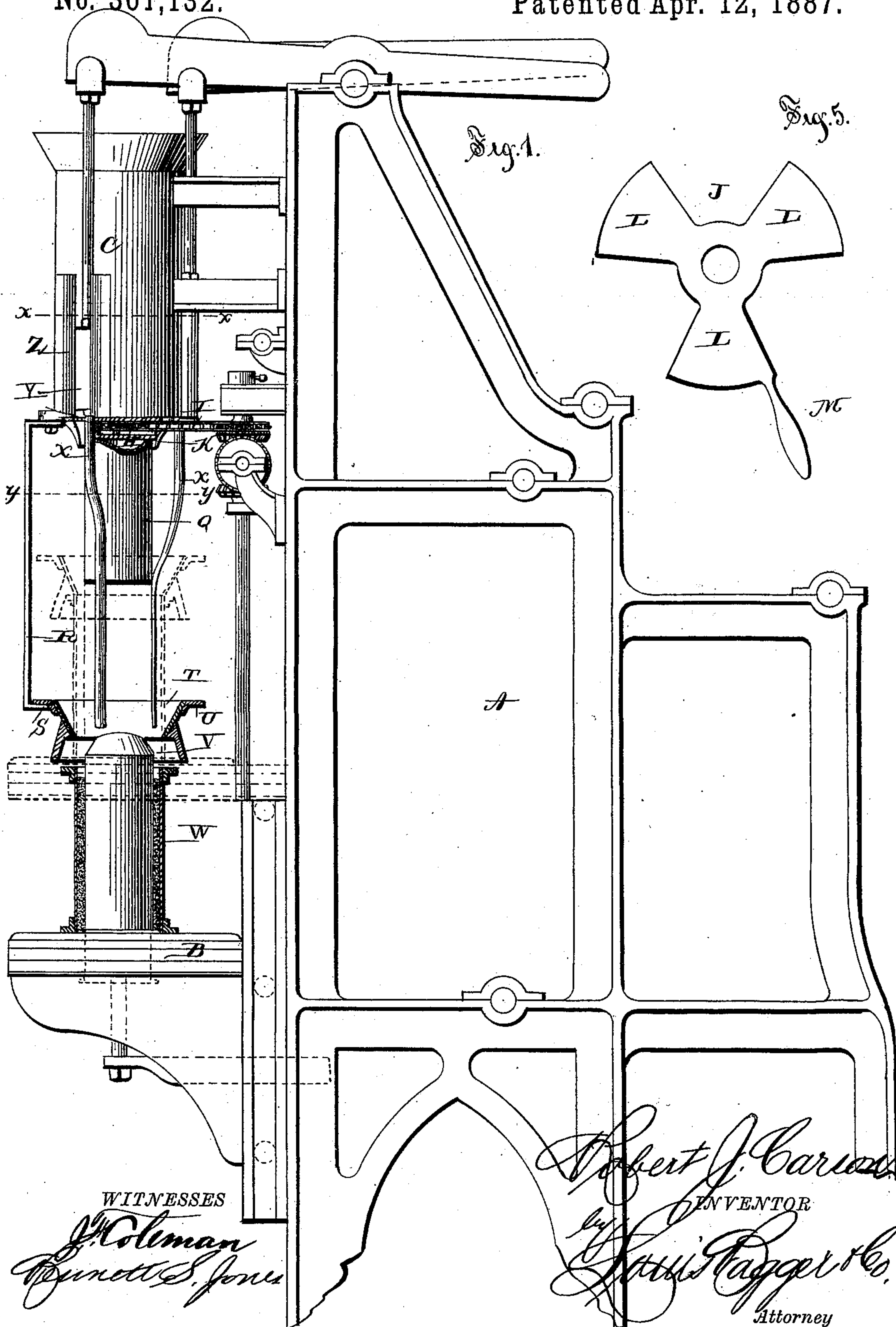
(No Model.)

2 Sheets—Sheet 1,

R. J. CARSON.  
DRAIN TILE MACHINE.

No. 361,132.

Patented Apr. 12, 1887.



WITNESSES

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Fig. 2.

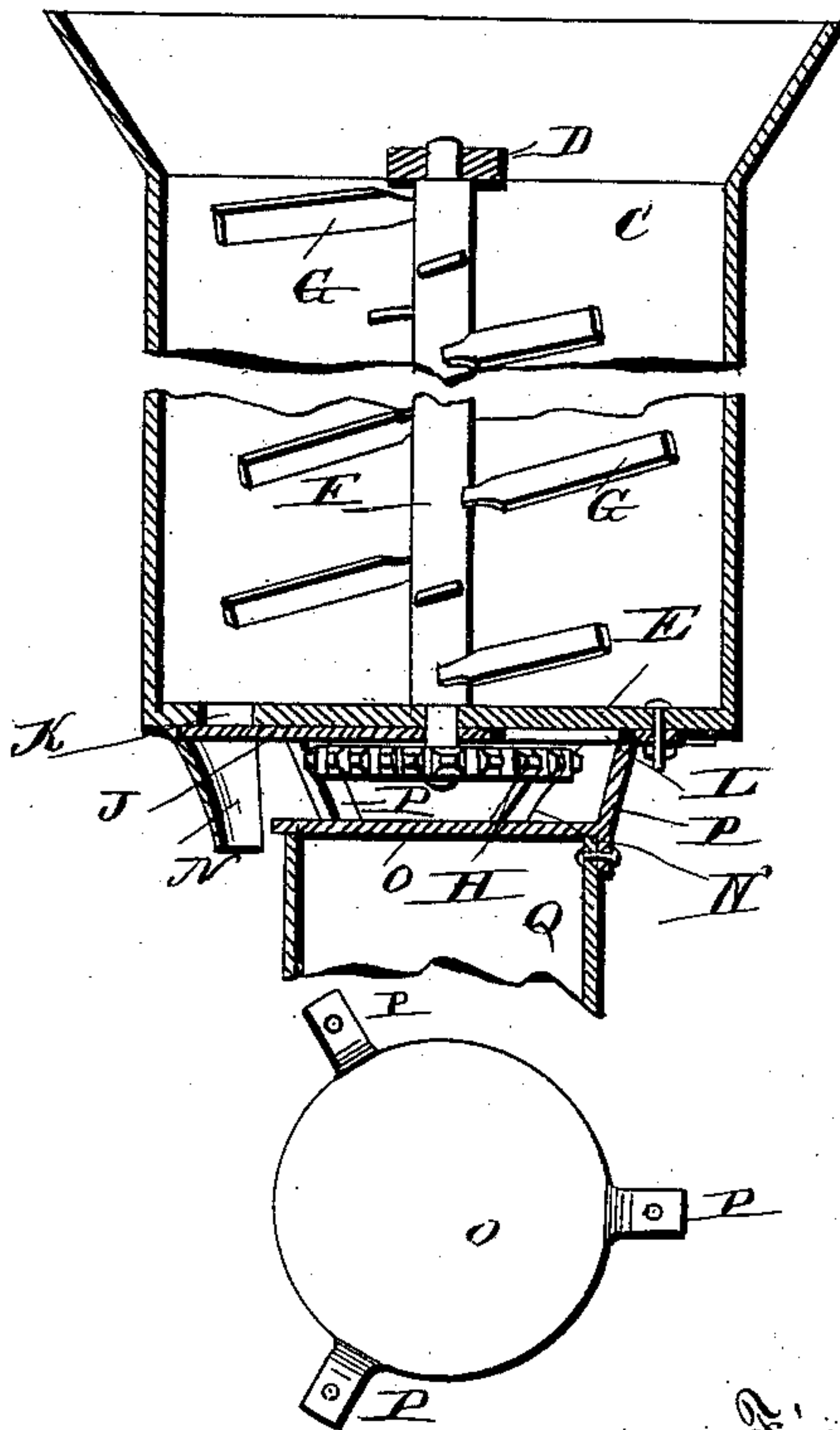


Fig. 3.

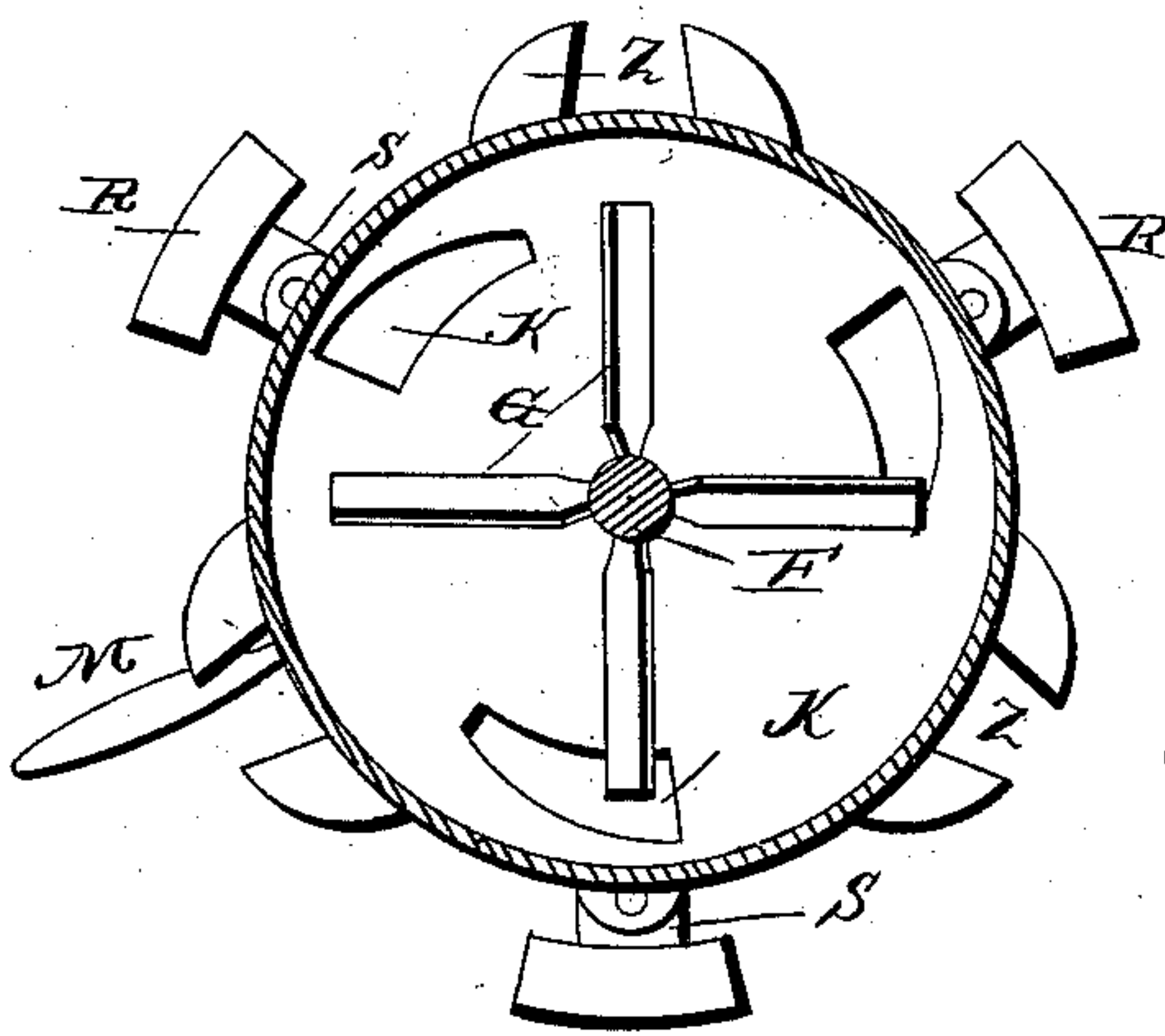
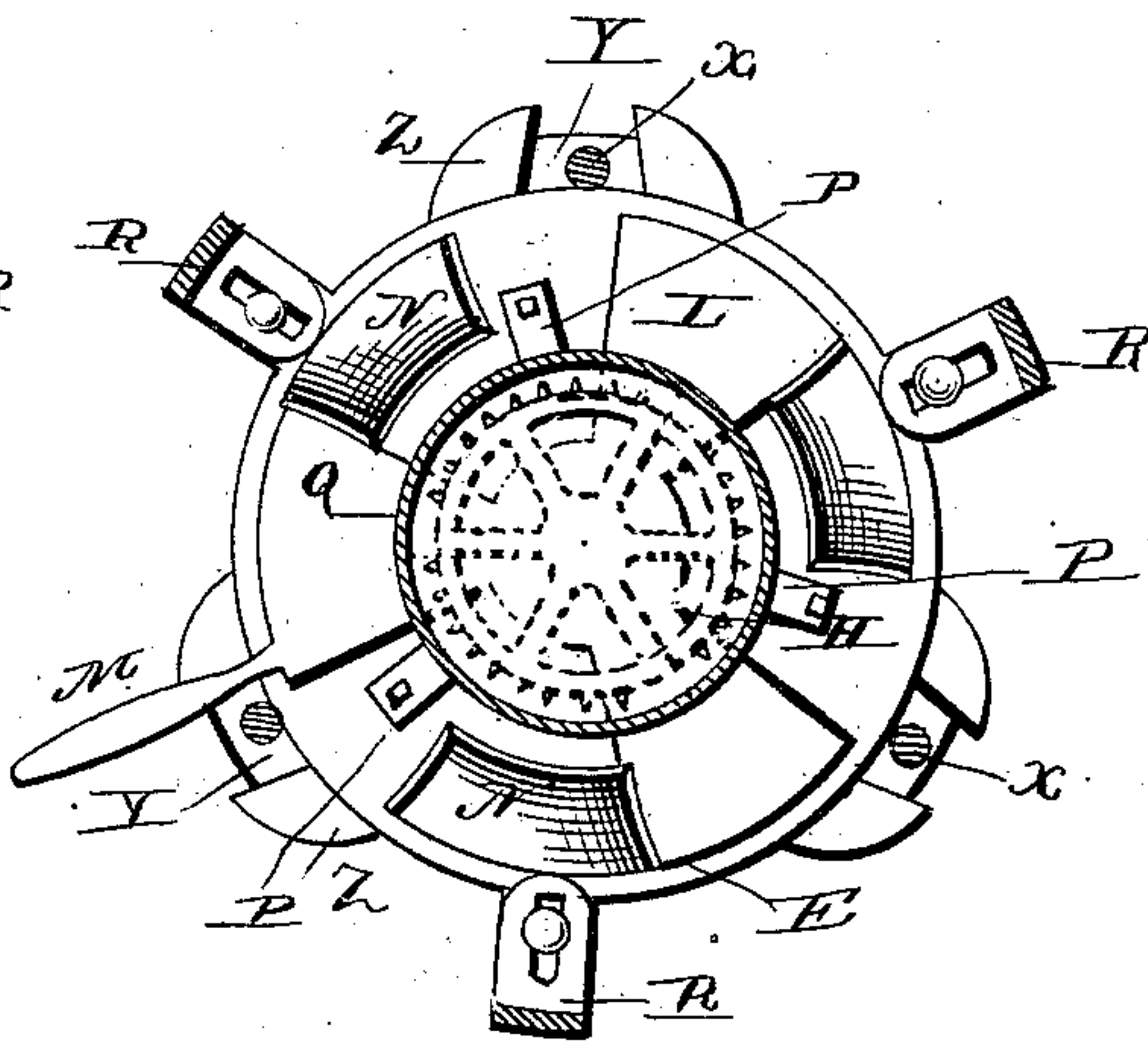


Fig. 4.



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# UNITED STATES PATENT OFFICE.

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

## DRAIN-TILE MACHINE.

SPECIFICATION forming part of Letters Patent No. 361,132, dated April 12, 1887.

Application filed October 16, 1886. Serial No. 216,415. (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 Drain-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 elevation of my improved drain-tile machine, partly in section, and without the operating mechanism. Fig. 2 is an enlarged sectional detail view of the lower end of the drum and the upper end of the core-protector. Fig. 3 is a horizontal sectional view taken on the line *x x*. Fig. 4 is a similar view through the line *y y*, looking in an upward direction; and Fig. 5 is a detail view of the cut-off valve or gate.

This invention relates to drain-tile machines; and it consists in certain improvements upon a machine of the same class for which I filed an application on December 11, 1885, Serial No. 185,352, said improvements relating more particularly to the construction and combination of the parts of the drum, core-protector, tamping-bars, and hopper, as will be hereinafter more fully set forth.

In the accompanying drawings, in which the same letters of reference indicate corresponding parts in all the figures, A represents the frame of the machine, having a table, B, secured to its front side and means for operating the same and the other parts of the machine, as is shown and described in my former application, to which I refer for a more detailed description. Secured to the upper portion of the frame A, by means of suitable brackets, is a drum, C, having a cross-piece, D, at its upper end and a bottom, E. A shaft, F, having a series of radiating blades or paddles, G, is journaled in the bottom E and cross-piece D, the lower end of said shaft projecting through the bottom. Keyed to the lower end of the shaft, below the drum C, is a sprocket-wheel, H, which receives motion from the operating mechanism through a

sprocket-chain, I. A cut-off valve or gate, J, is loosely journaled upon the shaft F, between the sprocket-wheel H and the bottom of the drum, for the purpose of covering a series of openings or apertures, K, in the bottom E. This valve consists of a flat disk having wings or projections L, one of said wings being further provided with a handle, M, for turning the disk when opening or closing the apertures in the bottom of the drum, there being one wing for each aperture. The outer portions of these wings are kept against the bottom of the drum by means of a groove or recess in downwardly-projecting chutes N, which are secured to the bottom, at the outside of each of the openings K. These chutes are inwardly-inclined, so as to cause the material to fall into a hopper beneath without scattering.

A plate, O, is suspended from the under side of the bottom of the drum C, below the sprocket-wheel H, by means of the lugs or brackets P, and a core-protector, Q, is secured to said plate or to the lower portions of the brackets. A set of downwardly-projecting arms, R, are adjustably secured to the under side of the bottom of the drum C, and are provided at their lower ends with inwardly-projecting fingers S. Within these arms is placed a hopper, T, having a flange, U, around its upper portion, said flange resting upon the fingers S when the tile is complete, and keeping the hopper in position, as it is moved up and down, by bearing against the arms R. The upper portion of this hopper consists of an outwardly-flaring mouth, which receives the material from the openings in the drum C, and its lower portion is provided with a recess, V, the lower part of which is larger in diameter than the upper part.

A shell, W, is placed upon the revolving portion of the table B, as described in my former application, and around a core which projects up through the table. The upper end of this shell enters the recess V in the lower portion of the hopper T, and carries it up with it as the shell is raised by the table to be filled with sand or cement. As the lower portion of the recess is larger than the upper portion, the top of the shell will enter it, even though it be placed on the table a little to one side of the center, and as it passes into the recess the



inclined walls will cause it to move into its proper position, thus always having the shell at the same distance from the core at all points, and consequently a tile of an equal thickness throughout is made.

Tamping-bars X are secured at their upper ends to slides Y, which are moved up and down in guideways Z upon the outside of the drum C by the levers at the top of the machine, as described in my former application. The lower ends of these bars are slightly curved, as shown in the drawings, and move up and down between the core and the shell W. The upper ends of the rods connecting the slides Y with the levers at the top of the machine are curved around the flaring portion or mouth of the drum A, or they can be made straight and the flaring portion be cut away.

In operation the shell W is placed upon the revolving portion of the table B and the table raised until it is nearly up to the lower ends of the tamping-bars X, the hopper T being carried up with the shell. The cut-off valve J is then opened and material thrown into the drum C. The rotation of the shaft F causes the blades G to thoroughly mix the material as it is thrown into the drum and force it out through the openings K, whence it is guided into the hopper T by the chutes N, and from the hopper it falls into the shell W, where it is firmly packed by the tamping-bars X. As the shell is constantly revolved around the core, every particle of material that falls into it is brought under the tamping-bars and the tile made of the same density throughout. As the material gradually fills the shell, it and the table are forced down until the tile is complete, and at which time the flange U rests upon the fingers S. The table B is then lowered sufficiently to permit the shell to be removed after the core has been withdrawn, as described in my former application. As the tile does not quite fill the shell in length, it is easily removed from the shell by inverting and dropping the shell upon the floor, the weight of the tile causing it to slip down in the shell, which will so loosen it that the shell can be lifted off and the tile left to dry. Before the tile is removed from the table the cut-off valve J is turned so as to close the openings K in the bottom of the drum C, which prevents any material dropping upon the table, the rotation of the shaft also being stopped. A new shell is now placed upon the table, raised into position, the valve opened, and the shaft rotated until another tile has been formed, the drum being supplied with fresh material as its contents are forced out through the openings at the bottom.

Having thus described my invention, I claim—

1. In a tile-machine having a movable table, shell, and core, the combination of a drum having a series of vertical guideways upon its outside, slides within said guideways, tamp-

ing-bars secured to said slides, and means for operating said bars and for mixing the material within said drum.

2. In a tile-machine having a movable table, shell, and core, the combination of a drum the bottom of which is provided with a series of holes or apertures, a chute upon the underside of the bottom of said drum and at the outer portion of each of said apertures, a rotary shaft within said drum, having radiating blades, tamping-bars, and means for operating said shaft and said bars.

3. In a tile-machine having a movable table, shell, and core, the combination of a drum having a series of holes or apertures in its bottom, a vertical shaft journaled within said drum, having radiating blades, the lower end of said shaft projecting through the bottom of the drum, a gate or cut-off valve near the lower end of said shaft, below the bottom of said drum, said valve being provided with wings, one of which is provided with a handle, a sprocket-wheel upon the end of said shaft, tamping-bars, and means for operating said sprocket-wheel and said tamping-bars.

4. In a tile-machine having a movable table, shell, and core, the combination of a drum having perforations in its bottom, a rotary shaft within said drum, having radiating blades, a set of downwardly-projecting arms adjustably secured to the bottom of said drum, having inwardly-projecting fingers at their lower ends, a hopper within said arms, a set of tamping-bars, and means for operating said shaft and said bars.

5. In a tile-machine having a movable table, shell, and core, the combination of a drum provided with a rotary shaft having radiating blades and having a series of holes or apertures in its bottom, a plate having lugs or brackets at its edge secured to the under side of the bottom of said drum, a core-protector secured to said plate and lugs, a set of tamping-bars, and means for operating said shaft and said bars.

6. In a tile-machine having a movable table, shell, and core, the combination of a drum having downwardly-projecting arms secured to its bottom, said arms having inwardly-projecting fingers at their lower ends, and a hopper within said arms, having a flange around its upper portion, said upper portion being formed into an outwardly-flaring mouth, the lower portion of said hopper being provided with an outwardly-flaring recess, said recess being adapted to engage with the top of said shell.

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:

MATHEW S. MARTINOVICH,  
FRED. J. BORTHWICK.