(No Model.) 3 Sheets—Sheet 1.

R. NIEDERGESAESS.

LUBRICATING DIE FOR BRICK AND TILE MACHINES.

No. 385,317. Patented June 26, 1888.

Fig 1

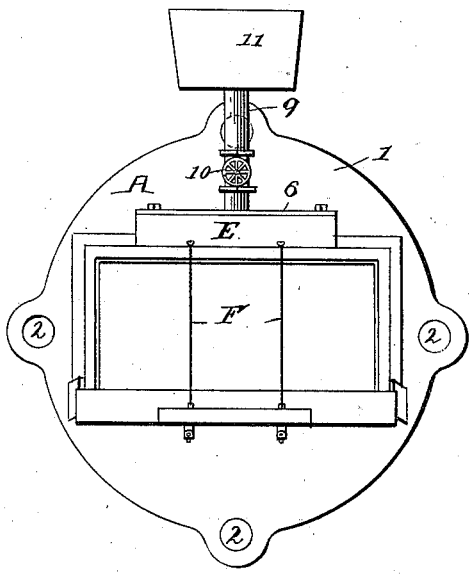


Fig 2

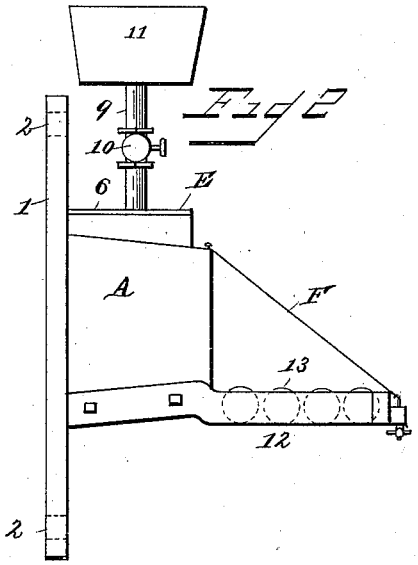
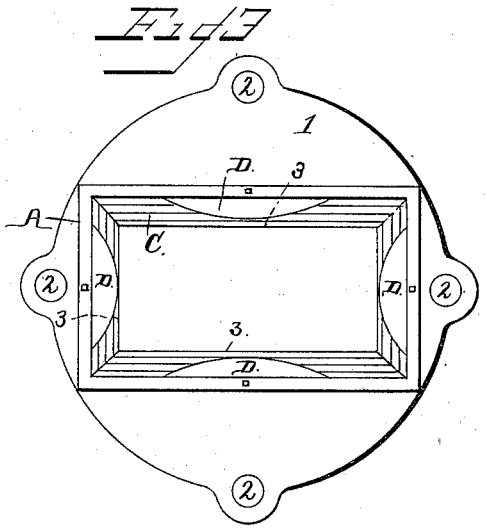


Fig 3



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R. NIEDERGESAESS.

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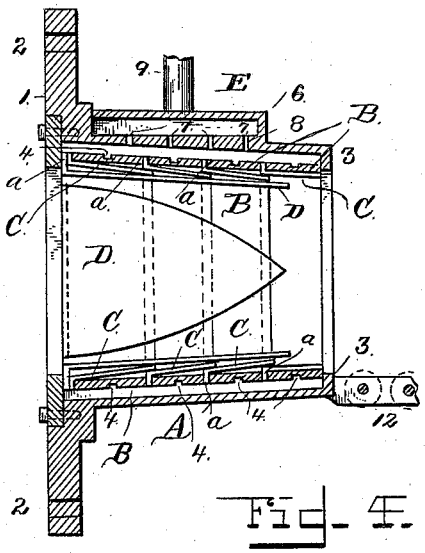

Fig. 4.

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(No Model.) 3 Sheets—Sheet 3.

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LUBRICATING DIE FOR BRICK AND TILE MACHINES.

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Fig 5

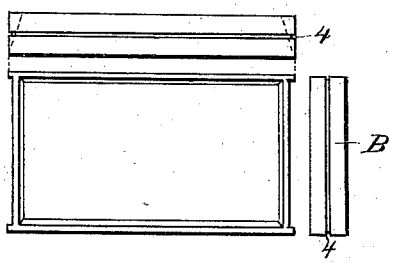


Fig 6

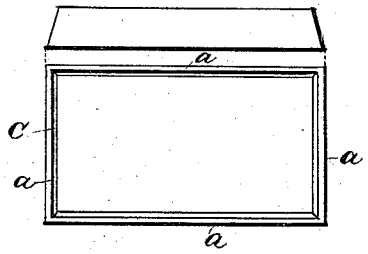


Fig 7

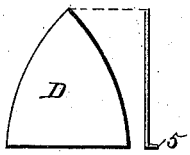


Fig 8

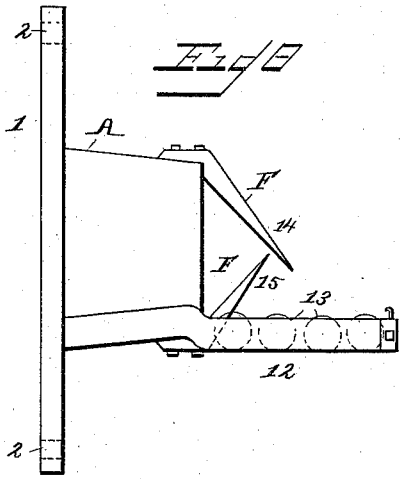


Fig 9

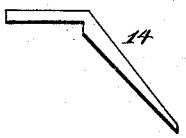
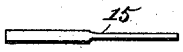


Fig 10



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UNITED STATES PATENT OFFICE.

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LUBRICATING-DIE FOR BRICK AND TILE MACHINES.

SPECIFICATION forming part of Letters Patent No. 385,317, dated June 26, 1888.

Application filed September 22, 1887. Serial No. 250,915. (No model.)

To all whom it may concern:

Be it known that I, ROBERT NIEDERGESAESS, a subject of the Queen of England, residing in the United States of America, at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Means for Lubricating Dies or Molds for Tile and Brick Machines, of which the following is a specification.

My invention relates to improvements in dies, molds, or formers attached to the delivery end of tile and brick machines for the purpose of forming or shaping the column of clay in its progress through the die; and the object is to construct a die or former which will lubricate the column of clay in the essential parts of its area, so that the clay shall be lubricated at the proper places and retarded and impeded in its parts not so lubricated.

The improvements are adapted to all clay-working machines which force the clay through an orifice to give it desired shape by means of a screw-propeller or otherwise. In machines of this character the clay in its progress often adheres in the corners of the dies, or is so impeded by such frictional contact that the middle or central part of the column or slab will move faster than the exterior and angular portions, making shapes or wares having a tendency to warp and crack, or to lose its shape, to the ultimate damage of the finished form. Aside from these uncertain and irregular results, the frictional contact is so strong as to take up much of the power which impels the machine, so that lubrication is an essential; but if generally distributed over the slab the same variances of movement and formation exist; hence it is requisite that means be employed which will eventuate in the slab or column being discharged evenly at all parts, and this it is the purpose of my improvements to accomplish. I attain this desired result by means of the constructions illustrated in the accompanying drawings, wherein—

Figure 1 is an end view, in elevation, of a die arranged to make three slabs of clay adapted to make three end-cut bricks. Fig. 2 is a side elevation of the same, showing the shearing-wires and table. Fig. 3 is a rear view of same where bolted on the machine. Fig. 4 is a longitudinal central vertical section, shown on a larger scale than the other figures. Fig. 5 is a view of one of the lining-frames. Fig. 6 is a view of one of the sheet-metal linings for covering the frames. Fig. 7 is a detail view of one of the frictional aprons. Fig. 8 is a side elevation of the end-cut brick-die with severing-knives substituted for shearing-wires, and Figs. 9 and 10 are detail views of the severing-knives.

The same letters of reference of the specification are used in the different figures of the drawings to designate the same parts.

Reference being had to the drawings, A designates the casing of the die or former, which preferably is a metal shell formed with a broad flange, 1, provided with bolt-holes 2, through which bolts are passed to attach the die-casing to the end of the machine. The delivery-opening of the casing is formed with an inwardly-projecting flange, 3, which serves to keep the frames in the casing.

B designates one of a number of rectangular frames, which are arranged in the casing in a series of from four to eight. They are made to fit loosely in the casing, so that a lubricator can be distributed between their frames and the interior of the casing, and to facilitate and direct the flow of the lubricant the frames are formed with shallow grooves 4 in their edges, which lead the lubricant around the exterior. These frames are generally arranged in their positions with packing between their faces to control the lubricant, so that it does not all flow to the front and be discharged there more than at the area covered by those frames at the rear.

C designates sheet-metal frames made to fit the interior of the frames B, and of such width that when inserted in the die their outer edges lap the edge of the next in advance. These sheet-metal frames, which are called "liners" in the trade, are formed with flanges *a*, which fit between the edge faces of two contiguous lubricating-frames, and are held in position by the flanges so arranged between the frames. The lubricant finds its way between the interstices of the lapped edges.

D designates sheet-metal plates or auxiliary liners arranged equidistant in the frames over the main liners and laid flat on them. These plates D have their bases held in place by

flanges 5, arranged between the innermost frame and the edges of the casing. I have shown these plates of a semi-elliptical form; but they may have tapering sides instead of curvilinear boundaries. The purpose is to preserve the frictional contact of the clay at these parts in order that the corners shall be lubricated and move with less friction than the middle portions, thus equalizing the movements of the slabs and bringing them from the die uniform in shape and compression.

On the top of the casing is placed a reservoir, E, for holding the lubricant. It is covered by a close-fitting lid, 6, which may be secured by bolts or other means. The bottom of this reservoir is provided with small grooves 7, leading into drip-holes 8 through the bottom of the reservoir and opening into the grooves in the edges of the frames. On the reservoir is a stand-pipe, 9, opening into the reservoir, and provided with a valve or way-cock, 10, to regulate the flow of the lubricant from the tank 11, with which the pipe 9 has communication. The bottom of the casing has extending from it two supports, 12, between which are journaled carrying-rolls 13, to assist in carrying the forms after they are discharged from the dies.

F designates the cutting means. These, preferably, are knives 14 and 15, the shanks of which are bolted to the casing with the blades projecting outward in opposite directions. The blade of knife 14 is made the longest and projects on an incline outward and downward, overhanging and reaching beyond the point of the lower knife, 15, the blade of which projects upward and outward, the point terminating short of the other blade, leaving a space between them, but the two blades covering the whole height of the die. This arrangement gives the knives a shearing cut in the clay, which is much better than if arranged to give a vertical cut. In some soft and clean clays the cutting means may be cutting-wires arranged at an incline and secured substantially as shown in Fig. 2.

In case of the knives, the space between their points permits roots and fibers, &c., to work out and off between them; but in case of the wires such substances are pushed to the lower end, from where they are removed by hand. In the older constructions of dies of this character the liners have been placed directly in contact with the face of the casing, or the casing has been made in sections and the liners held between the sections; but I am not aware that frames with lubricating-grooves in their edges have been adapted to a plane-tapering casing and liners having flanges fitted to the frames and held in them by the flanges have heretofore been used. The advantage of my arrangement and construction is the increased facility with which the frames and liners may be removed and replaced.

The operation of my improvements is: When the clay is forced into the die, a small quantity of lubricant is let in the reservoir by means of the valve in the stand-pipe, which percolates through the drip-holes and thence is distributed through the grooves in the frames and between the liners into the interior over the surface of the clay, excepting those areas covered by the impervious plates or aprons. The result is that the clay is lubricated only on those surfaces where lubrication is essential—that is, in the angles and on the surfaces adjacent thereto—and the column of clay is pushed out uniform in all its parts without the usual greater flow in the center. In order to maintain and secure this uniformity in the forms, I prefer to have the clay discharged in a single large slab or column and then split or cut it into the desired sizes by the cutting means described.

What I claim is—

1. The combination, with the former-casing of a brick-machine having lubricating-ducts through the casing, of a number of detachable frames formed with grooves in their edges and arranged in succession within the casing, a number of metal plates or liners fitted within and held by the said frames, and the impervious plates or aprons arranged to cover the middle parts of the liners, substantially as described, and for the purpose set forth.

2. The combination, with the casing of a brick-machine die having lubricating-ducts, of metal lining-frames arranged within the casing to discharge the lubricant at one of the edges, and impervious plates or aprons D, arranged equidistant in the casing over the main liners, substantially as described, and for the purpose stated.

3. The combination, with the former-casing of a brick-machine, of liners adapted to admit a lubricant between their lapped edges, and impervious plates arranged equidistant from the corners of said liners and laid flat thereon to prevent the flow of the lubricant on the clay, substantially as described, and for the purpose stated.

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

ROBERT NIEDERGESAESS.

Attest:

OTTO C. BUTZ,

MAJOR MCGREGOR.