

April 24, 1934.

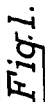
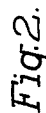
W. J. DONNELLY

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APPARATUS FOR DUMPING BRICKS AND MOLDS

Filed July 10, 1933

2 Sheets-Sheet 1



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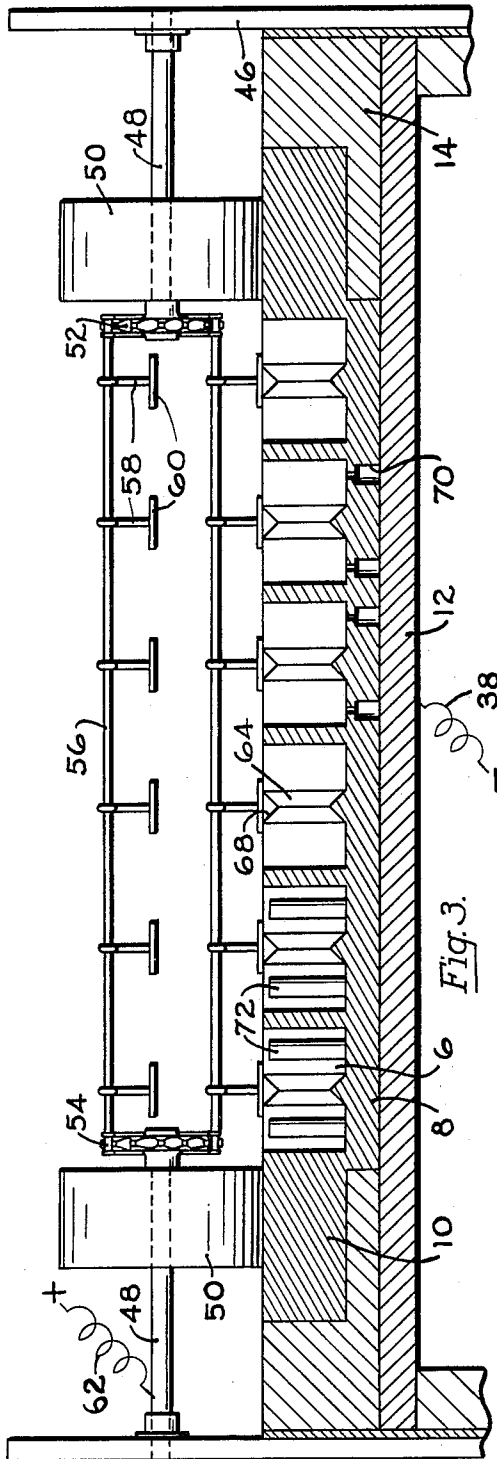
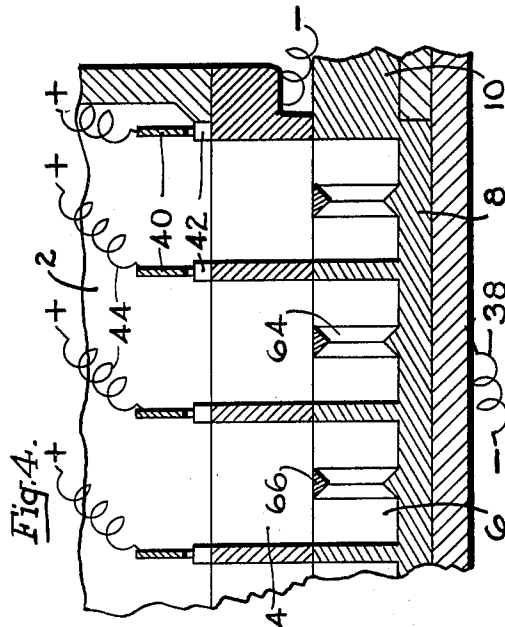
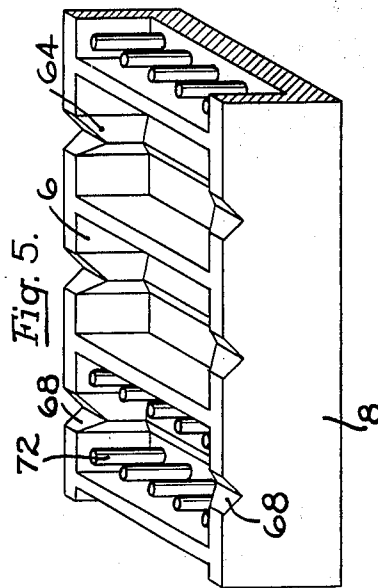
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APPARATUS FOR DUMPING BRICKS AND MOLDS

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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APPARATUS FOR DUMPING BRICKS AND
MOLDS

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Application July 10, 1933, Serial No. 679,792

8 Claims. (Cl. 25—1)

My invention relates to a method and apparatus for dumping bricks in a molding process and to a mold for use in this process.

The present practice in molding bricks is to press the clay into a wooden mold which has previously been lined with sand in an effort to prevent the bricks from sticking to the mold. This mold is inverted and the sand is supposed to act as a lubricant and permit the bricks to slide out onto the pallets or conveyor which carry them on for further treatment. As a matter of fact, however, it is almost always necessary to "bump" or strike the molds in order to force out the bricks. This bumping has a tendency to destroy the structure of and weaken the bricks even when it does not actually break them.

The primary object of the present invention is to provide a method and apparatus for dumping bricks from molds which so treats the bricks that they will slide readily from the inverted molds and will not require any bumping or other form of force to produce this result.

I have made the surprising discovery that I can do away with any need for such bumping if I subject the bricks as they are traveling from the dies to the inverter to the action of an electric current, as by passing such a current through the bricks. This results in the formation of a slimy film at the surfaces of contact between the bricks and the molds, this film acting as a lubricating medium and allowing the bricks to slip easily out of the molds without bumping.

As regards the apparatus, I provide a simple and efficient arrangement for use with the usual molding and dumping devices for carrying out the method described. Such apparatus includes traveling contact elements moving with the brick molds from the die to the inverter, these members being preferably driven by the movement of the molds.

A further feature of my invention resides in the molds themselves. These molds are preferably made of aluminum, or some aluminum alloy. Each mold is provided with a ridge extending across three of its walls which will form a groove around the finished brick. In addition, the bottom wall of the mold has upstanding therefrom a plurality of posts or plugs of metal which extend to a point close to but slightly spaced from the tops of the molds. These posts form in the finished brick recesses which lighten the brick considerably without seriously decreasing its strength. In addition, the posts aid in the action of the electric current on the brick.

Moreover, the holes formed in the bricks accelerate the burning and drying processes.

Further objects and advantages of the invention will appear more fully from the following description when taken in conjunction with the accompanying drawings which form a part thereof.

In the drawings:

Fig. 1 shows in side elevation a molding and dumping arrangement embodying my invention.

Fig. 2 is a detail cross section through a portion of the same.

Fig. 3 and 4 are cross sections on the lines 3—3 and 4—4 respectively of Fig. 2.

Fig. 5 is a perspective view of a portion of one of the mold groups.

I will first describe the general molding and dumping arrangement which is well known in the art. This comprises a container 2 for the clay having in its bottom die openings 4 through which the clay is pressed into molds 6 which form parts of mold blocks 8. These mold blocks consist of a row of molds arranged side by side as a unitary whole and provided with extensions 10 at each end to assist in guiding and handling the mold blocks. When the molds have been filled they are pushed in any suitable manner in the direction of the arrow (Fig. 1) across a table 12, each block being forced along in its movement by the following blocks. The end portions 10 are guided by tracks 14 so that the mold blocks move in the proper direction.

At the end of the table 12 is the inverter or dumper proper. This consists of a frame 18 pivoted on a shaft 20, and turned in synchronism with the movement of the mold blocks. Just before the blocks enter the molds pallets 22 are deposited across their tops. The mold blocks then enter recesses 24 in the frame 18, resting on a spring pressed plate 26 which holds the pallet tightly against the rolls 28.

The frame 18 now turns and the mold block is carried to the left side. At this point the wheels 28 are driven and force the mold block out onto a movable support 30 mounted on a pivoted arm 32 and controlled by a cam 34. The mold block is then held by suspended grippers 36 while the cam turns and permits the pallet 22 and the bricks thereon to move downwardly to the broken line position in Fig. 1. The bricks or pallets are then transferred to any suitable conveyor for further treatment while the mold may be returned to the die.

According to the present invention, the table 12 and mold blocks 8 are made of metal, pref-

erably aluminum. The table is connected, as is indicated diagrammatically at 38, to the negative side of a suitable source of electricity. Within the container 2 and between and just above the level of the die openings 4 are arranged metal plates 40 which are mounted on blocks 42 of insulating material and connected as at 44 to the positive side of the current source.

On each side of the table 12 and insulated therefrom are pairs of uprights 46, each upright supporting a metal stub shaft 48. Rigidly mounted on shafts 48 are wheels 50 of insulating material which rest frictionally on the extensions 10 of the mold blocks. The free ends of the shafts carry sprocket wheels 52 on which run two endless chains 54, one on each side of the table. These chains are connected by rods 56 arranged at intervals equal to the lengths of the molds. Pivoted on the rods 56 at points spaced longitudinally of the rods by distances equal to the widths of the molds are rods 58. To the lower ends of the rods 58 plates 60 are attached, the length of rods 58 being so chosen that the plates 60 supported from the lower reaches of the chains will just rest on the upper surfaces of the bricks in the molds.

The chains, rods and plates are all made of metal or other conductive material. The plates are supplied with electrical energy by a connection indicated at 62 between one of the shafts 48 and the source of current.

The molds are provided on three of their inner faces with triangular ridges 64 which will form similarly shaped grooves in three sides of the finished bricks. The groove in the fourth side is formed by a triangular bar 66 secured at the bottom of the die openings. The molds 6 are provided in the top edges of their end walls with notches 68 so that they can pass under the die 4, the notches receiving the bars 66. I may also provide air vents 70 in the bottom of the molds.

Within the molds are posts or plugs 72 extending from the bottom of the molds to points slightly spaced from the plane of the top. These posts are of metal and preferably integral with the material of the mold.

The operation of my device should be fairly evident from the description. The mold blocks are passed under the container 2 and clay is forced in until the molds are filled. A current is passing between the plates 40 and the die and molds, this current preventing the clay from sticking and, as it enters the molds, beginning the formation of a film along the walls of the mold. The mold is now pushed out on the table by the next succeeding mold block.

The top surfaces of the bricks in the molds on the table are engaged by the plates 60. These plates are obviously so spaced and proportioned that they contact with each brick but never with the metallic molds. As the molds are moved they drive the wheels 50 and thus the plates are moved in synchronism therewith. The endless chains 54 will operate to bring a plate into position on each mold block as soon as the block clears the die 4. The clay completes the circuit and a current flows through the bricks. This current forms the slimy film which permits the bricks to slide out of the molds when they are inverted.

The posts 72 form recesses in the finished brick and make it considerably lighter. These posts also aid considerably in the passage of the current through the brick and are therefore impor-

tant, though not essential, in my apparatus as a whole. Obviously, the posts must end a short distance below the surfaces of the bricks so as to avoid contact with the plates 60.

Obviously, the exact current flowing through the bricks is not important, as almost any current would produce the desired result. I prefer to use direct current, but alternating current is also satisfactory. Preferably, however, I use voltages of 85 to 220 with a current of from 2 to 8 amperes. The most effective current depends partly on the material being used, as dense clays require a more intense electrical effect than lighter ones. The plates 60 may be considered as electrodes which are applied to the top surfaces of the bricks in the molds.

While I have described herein one embodiment of my invention, I wish it to be understood that I do not intend to limit myself thereby except within the scope of the appended claims.

I claim:

1. In a brick forming apparatus including a plurality of metallic molds, means for filling said molds, means for dumping said molds, and means to support said molds for movement from said filling means to said dumping means, means for passing an electric current through the bricks in the molds during such movement, and means operated by movement of the molds to move said last means in synchronism with the molds.

2. In a brick forming apparatus including a plurality of metallic molds, means for filling said molds, means for dumping said molds, and means to support said molds for movement from said filling means to said dumping means, means to connect said molds to one side of a source of electric current, said molds being open at the top, a plurality of electrodes, means to support said electrodes in contact with the top surfaces of the bricks within the molds, means to move said electrodes in synchronism with the movement of the molds, and means to connect said electrodes to the other side of said source of current.

3. In a brick forming apparatus including a plurality of metallic molds, means for filling said molds, means for dumping said molds, and means to support said molds for movement from said filling means to said dumping means, means to connect said molds at one side of a source of electric current, said molds being open at the top, a plurality of electrodes, means to support said electrodes in contact with the top surfaces of the bricks within the molds, means operated by movement of the molds to move said electrodes in synchronism with the movement of the molds, and means to connect said electrodes to the other side of said source of current.

4. In a brick forming apparatus including a plurality of metallic molds, means for filling said molds, means for dumping said molds, and means to support said molds for movement from said filling means to said dumping means, means to connect said molds to one side of a source of electric current, said molds being open at the top, a pair of endless chains above and running in the direction of movement of said molds, cross bars connecting said chains, a plurality of electrodes, means supporting said electrodes on said bars at such a height that those electrodes suspended from the lower reaches of the chains contact with the top surfaces of the bricks in the molds, means to drive said chains to move said electrodes in synchronism with the movement of the molds, and means to connect said elec-

trodes to the other side of said source of current.

5 5. In a brick forming apparatus including a plurality of metallic molds, means for filling said molds, means for dumping said molds, and means to support said molds for movement from said filling means to said dumping means, means to connect said molds to one side of a source of electric current, said molds being open at the top, a plurality of shafts extending transversely to the direction of movement of the molds, sprockets mounted on said shafts, a pair of endless chains mounted on said sprockets running in the direction of movement of said molds, cross bars connecting said chains, a plurality of electrodes, means supporting said electrodes on said bars at such a height that those electrodes suspended from the lower reaches of the chains contact with the top surfaces of the bricks in the molds, means to drive said shafts to move said electrodes in synchronism with the movement of the molds, and means to connect said shafts to the other side of said source of current.

10 6. In a brick forming apparatus including a plurality of metallic molds, means for filling said molds, means for dumping said molds, and means to support said molds for movement from said filling means to said dumping means, means to connect said molds to one side of a source of electric current, said molds being open at the top, a plurality of shafts extending transversely to the direction of movement of the molds, sprockets mounted on said shafts, a pair of endless chains mounted on said sprockets running in the direction of movement of said molds, cross bars connecting said chains, a plurality of electrodes, means supporting said electrodes on said bars at such a height that those electrodes sus-

pended from the lower reaches of the chains contact with the top surfaces of the bricks in the molds, means to drive said shafts to move said electrodes in synchronism with the movement of the molds, and means to connect said shafts to the other side of said source of current, said shaft driving means comprising wheels of insulating material fixed on said shafts and frictionally engaging said molds.

7. In a brick forming apparatus including a plurality of metallic molds, means for filling said molds, means for dumping said molds, and means to support said molds for movement from said filling means to said dumping means, means for passing an electric current through the bricks in the molds during such movement, and means operated by movement of the molds to move said last means in synchronism with the molds, said molds having bottom walls and a plurality of posts of conductive material extending from said bottom wall upwardly to points below the upper edges of the side walls of the molds.

8. In a brick forming apparatus including a plurality of metallic molds, means for filling said molds, means for dumping said molds, and means to support said molds for movement from said filling means to said dumping means, means for passing an electric current through the bricks in the molds during such movement, and means operated by movement of the molds to move said last means in synchronism with the molds, said molds having bottom walls and a plurality of posts of conductive material extending from said bottom wall upwardly to points close to but spaced slightly below the upper edges of the side walls of the molds.

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