Nov. 21, 1939. C. E. DOLL ET AL 2,180,895

MACHINE FOR MANUFACTURING CLAY PRODUCTS

Filed March 22, 1937

FIG.3.

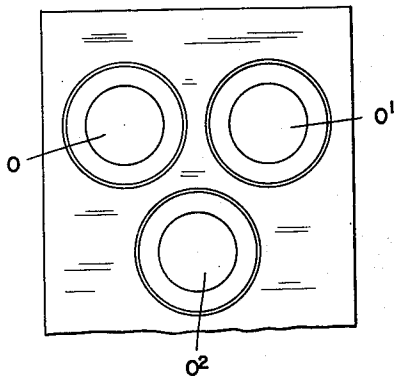
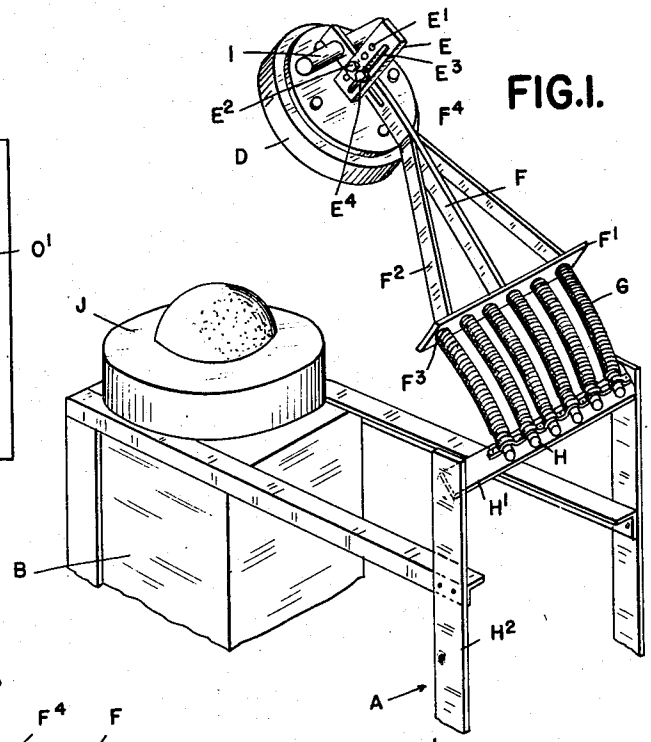


FIG.1.



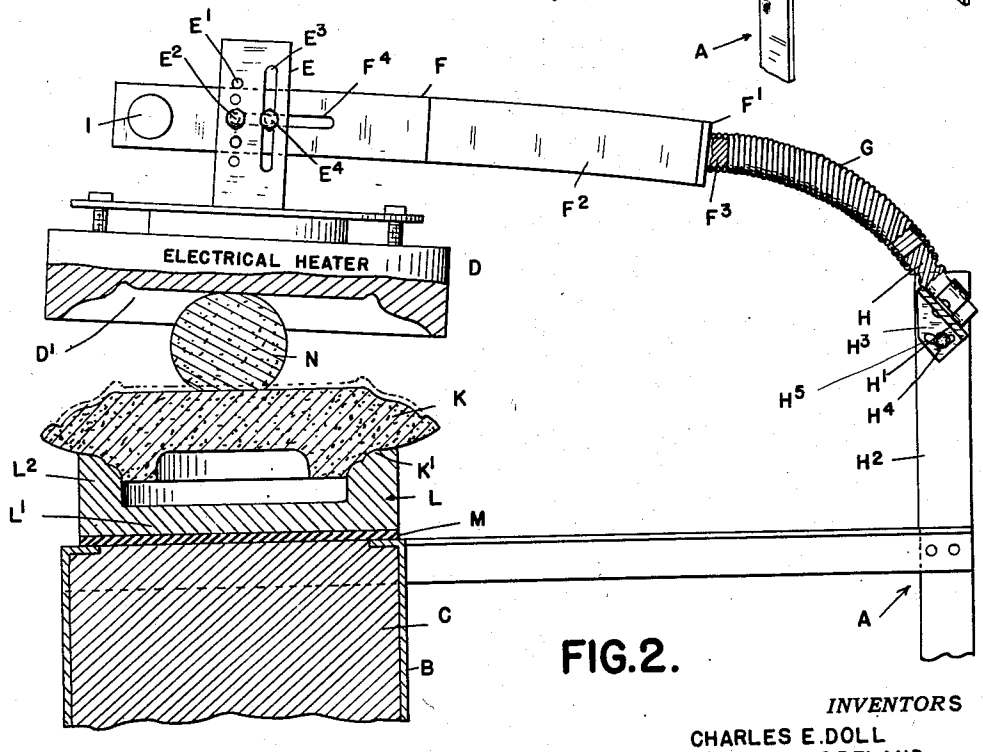


FIG.2.

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MACHINE FOR MANUFACTURING CLAY PRODUCTS

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2 Claims. (Cl. 25—22)

The invention relates to machines for manufacturing clay products and more particularly to that type known as batters with which a ball, lump or slice of clay is flattened into a disk preparatory to further fashioning the same into a plate or other article. In the present state of the art, batters are used for flattening the clay as above described, after which the flattened sheet must be transferred to a porous mold which imparts thereto the desired form and also extracts moisture from the clay. With our improved machine we may accomplish in a single operation both the flattening of the clay and the placing of the same in the fashioned porous mold. Our machine is, however, adapted for use solely as a batter where this function alone is desired.

With certain constructions of batters that have heretofore been used, the clay is placed upon a block and is flattened by the blow of a head mounted upon a pivoted lever and manually actuated. By reason of its pivotal mounting the path of movement of the head is through an arc, and therefore its striking surface is not parallel to that of the block until the completion of the movement. Furthermore, the inertia of the moving mass, though partly absorbed by the flattening of the clay, nevertheless, imparts a considerable shock to the block. Porous molds in which clay products are fashioned are formed of plaster of Paris or equivalent material and are of a quite fragile nature. Thus, if a mold of this character were to be substituted for the block there would be great danger of shattering through the force of the blow. With our improved construction we have overcome these difficulties and have devised a machine in which the clay may be flattened in contact with the porous mold without injury to the latter. This construction is illustrated in the drawing in which:

Figure 1 is a perspective view of the machine;

Figure 2 is a sectional side elevation showing the batter at an intermediate point in its movement where first contacting with the clay;

Figure 3 is a plan view showing a modified construction.

As illustrated, A is a suitable frame at one end of which is a box B containing a mass of concrete C or other suitable material for forming a solid foundation. D is a batter head having an upwardly extending shank E which is adjustably mounted on a laterally extending lever arm F. This lever arm instead of being pivotally attached to the frame A, is connected thereto by resiliently flexible means normally holding the lever in an upwardly inclined position, but permitting of swinging the same downward. As shown, this resilient connection comprises a series of helical springs G rigidly connected at their lower ends to the frame A and at their upper ends to the lever F. This lever is provided with a cross bar F′ and brace bars F^2. The cross bar F′ has welded or otherwise secured thereto a series of threaded studs F^3, and the springs G are screwed into engagement with these studs. At their lower ends the springs G are similarly engaged with threaded studs H which are mounted upon an inclined cross bar H′ on an upward extension H^2 of the frame A. The angle of inclination of this cross bar is such that the springs will normally support the head D some distance above the base C. However, by means of a handle I secured to the shank E, the operator is enabled to draw the head downward and impart thereto sufficient momentum to accomplish the flattening of the clay.

Where the machine is used solely as a batter a block J having a flat upper face is mounted on the base C and the head D is provided with a flat lower face, such construction being illustrated in Figure 1. If, however, the machine is used for placing the flattened clay on a mold, the construction is as illustrated in Figure 2. In this, a mold K formed of plaster of Paris has a suitably fashioned upper face while its lower face has an annular portion K′ for seating upon an annular supporting member L. This member is preferably formed of a material which will to some extent absorb shocks. A suitable material for this purpose is a fibrous body impregnated with a synthetic resin, such for instance as the material known as "Spauldite". In form it is provided with a flat bottom portion L′, and an annular portion L^2 forming a seat for the portion K′ of the mold K. The support is further cushioned by a sheet of rubber or equivalent elastic material M between the bottom face of the portion L′ and the base C. The head D has its lower face suitably fashioned as at D′ to be complementary to the fashioned face of the mold K and to prevent sticking of this head to the clay, it is electrically or otherwise heated to a suitable temperature.

Before operation the machine is suitably adjusted so that the head D in its lowered position will have its fashioned surface in proper registration with the fashioned surface of the mold K. This adjustment can be accomplished by providing the shank E with a series of apertures E′ for engagement of a clamping bolt E^2 which also passes through a slot F^4 in the lever F. The

shank E is further provided with a slot E^3 extending transverse to the slot F^4 and a clamping bolt E^4 engages the intersecting slots. Thus, the head D may be adjusted either longitudinally of the lever F; vertically of the shank E, or angularly, thereby providing a universal adjustment.

In operation, the workman first places a ball, lump or disk of clay of the required amount centrally upon the mold K. He then grasps the handles I and draws the lever and head downward with a quick movement. This will impart to the head just the required amount of kinetic energy to accomplish the flattening out of the clay and the filling of the mold cavity between the mold K and the recessed surface of the head D. By reason of the cushioned support for the mold K, it is relieved from any shocks that might shatter it. At the completion of the operation, the head D is instantaneously lifted by the resiliency of the springs G, after which the workman removes the mold K with the fashioned clay thereon and places another mold in engagement with the support L ready for a succeeding operation. One important feature of our improvement is that the springs G permit the head D to properly find its seat on the mold K. Thus, these springs instead of compelling an exact arcuate movement of the head D, will permit the latter to move slightly in a lateral direction and will also permit the fashioned surface of the head to come into parallelism with the surface of the mold prior to the completion of the movement. In other words, when the head D contacts with the ball of clay N, which latter is centrally arranged on the mold K, the yielding of the springs G together with the resistance of the clay will produce a uniform fashioning of the latter on all sides of the mold. This would not be the case if the lever arm were attached to the frame by a pivot compelling an exact arcuate movement.

While we have described the forming of a single article at each operation of the machine, it is possible to use the machine with multiple molds so that a plurality of separate articles may be simultaneously fashioned. Thus, as shown in Figure 3, 0, 0′ and 0^2 are three molds which are placed on suitable supports on the base C, the head D being correspondingly fashioned for cooperation with these molds.

While we have illustrated and described one specific construction, it is obvious that the machine may be modified in various ways without departing from the spirit of the invention. Thus, instead of having the batter concave and the porous mold convex, these may be reversed using a concave porous mold and a convex batter. Also, instead of forming the annular supporting member L of "Spauldite" it might be made of a rubber composition or any other material having the desired properties. It may also be desirable in adjusting the machine to change the angle of the bar H′, thereby correspondingly changing the angle of the studs H which support the springs G. Means for accomplishing this is illustrated in Figure 2, in which a flange H^3 at the end of the bar H′ is adjustably secured to the upward extension H^2 of the frame by a clamping bolt H^4 engaging a slot H^5.

What we claim as our invention is:

1. In a machine for fashioning clay, the combination with a frame including a rigid base portion, of a clay-supporting member mounted on said base portion, a batter head, a lever of the second class on which said batter head is mounted, said lever comprising a rigid member supporting the head and helical springs attached to said rigid member, said springs connecting said rigid member to said frame and constituting the fulcrum end of the lever, said springs normally supporting said head in raised position above said clay supporting member but permitting downward movement thereof by actuation of said lever and substantially determining the path thereof.

2. In a machine for fashioning clay, the combination with a frame including a rigid base portion, of a clay-supporting member on said base portion, a batter head, a lever of the second class on which said batter head is mounted, said lever having a laterally extending cross member and a series of helical springs connected to said cross member and said frame for normally holding said lever with said head in raised position above said clay-supporting member but permitting downward movement under actuation of said lever and substantially determining the path thereof, said springs also forming a resilient cushion for said batter head.

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