

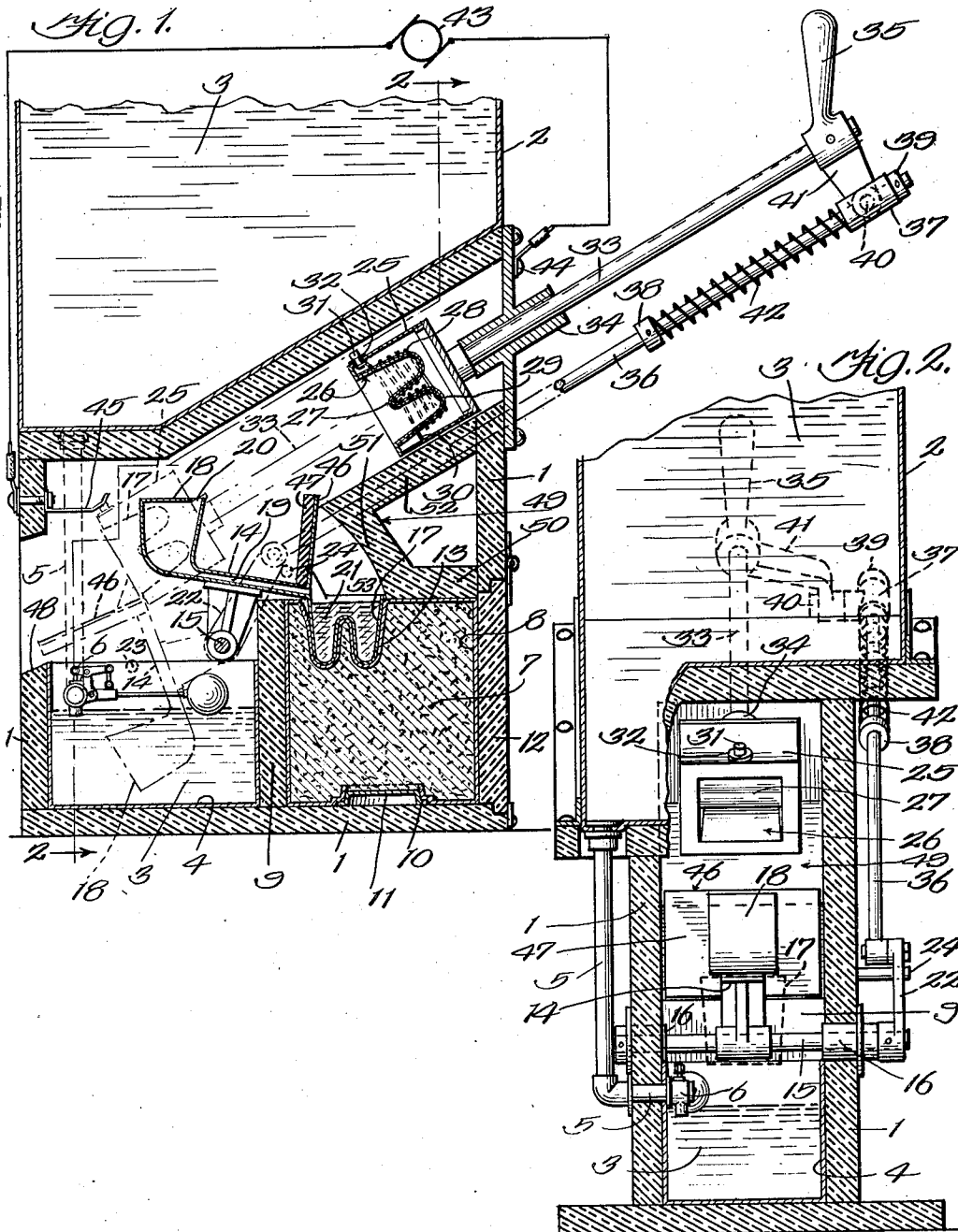
June 14, 1932.

F. F. BRADLEY

1,862,525

MOLDING DEVICE

Filed Sept. 17, 1931



Inventor:
 Franklin F. Bradley
 By John H. Nelson atty.

UNITED STATES PATENT OFFICE

FRANKLIN F. BRADLEY, OF CHICAGO, ILLINOIS

MOLDING DEVICE

Application filed September 17, 1931. Serial No. 563,298.

This invention relates to molding devices for molding congealable liquid into solidified blocks, and more particularly pertains to such a device for molding water into blocks of ice.

One of the objects of this invention is to provide a device which will produce small blocks of ice ready for table use and which can be easily operated.

Another object is to provide such a device with means for quickly freeing the block of ice from the mold.

Other objects and advantages will become apparent by reference to the specification claims, and the accompanying drawing, in which,—

Fig. 1 is a vertical section of the molding device with parts broken away.

Fig. 2 is a vertical section taken substantially on line 2—2 of Fig. 1.

The molding device includes a box like housing 1, of insulating material, within which molding apparatus is contained, which will be later described. Mounted upon the housing is a hopper 2, which contains a source of congealable liquid supply 3 in the form of water. Mounted within the lower left hand corner of the housing, as seen in Fig. 1, is a water supply tank 4 which is in supply communication with the source of supply hopper 2 by means of a pipe connection 5. A predetermined water level is maintained in the tank 4 by means of a well known float controlled valve 6 at the end of pipe connection in the tank.

Molding apparatus is provided for taking a predetermined amount of water from the tank 4, congealing or freezing the water into a block of ice and then directing said block from the device ready for use. Said apparatus includes refrigerator means which comprises a refrigerant 7 such as carbon dioxide contained in a closed tank 8 which is mounted within the lower right hand corner of the housing, as seen in Fig. 1, and which is separated from the water supply tank 4

by a partition 9 of insulating material to prevent the water in said tank from freezing.

The tank 8 has a supply opening 10 in its bottom provided with a cover 11. A door 12 is provided in the wall of the housing for removal of the tank to replace the refrigerant when it becomes deteriorated.

Located immediately above the tank 4 is a rocker arm 14, which is mounted at its central portion on a horizontally disposed shaft 15 which is rotatably mounted in bearings 16 in the housing. The rocker arm assumes one position with one end thereof extending over the water supply tank 4 and its other end extending over the refrigerant tank 8. A mold 17 is provided at the end of the rocker arm extendable of the tank 8. Said mold is in the form of an outwardly flared cup of thin wall construction which is brought into cooperative relation with the refrigerator means in an upright position during oscillation of the arm.

The tank 8 has a cupped formation 13 which conforms to the shape of the mold, within which the mold is received in an upright position in its cooperative relation therewith. A mold supply receptacle 18 is provided at the end of the arm 14 extendable of the water tank and has duct communication with the mold to supply same by means of the passage 19 in the rocker arm. The volume of the receptacle being a trifle less than the mold.

The range of oscillation of the rocker arm is such as to bring the mold and the receptacle alternately into raised and lowered positions with one above the other, whereby the supply receptacle is submerged into the water in the tank 4 to receive a supply through a small opening 20 at the top thereof, which is transferred to the mold when it is in its lowered position by force of gravity through the passage 19 at which time the receptacle is in its raised position.

When the mold is in its lowered position it

is received within the cupped formation 13 of the refrigerant tank whereby the water therein is quickly frozen into a block of ice 21.

The rocker arm is confined to be oscillable 5 within an arc of about 120 degrees, which is controlled by a lever 22 mounted on the end of the shaft 15 and which is engageable with stops 23 and 24. During oscillation of the arm the mold assumes an upright and vertical 10 position when lowered and assumes a slanted and inverted position when raised, as is indicated in dotted lines in Fig. 1.

Means for freeing the block of ice from the mold and the directing means will now be 15 described.

Mounted to move into cooperative relation with and situated back of the mold, when the mold is in its raised and slanted position, is a heater element in the form of a box shaped 20 head 25 having a thin cup shaped wall 26 facing the mold whose inner surface 27 conforms to the outer surface formation of the mold. Wrapped about the cupped wall 26 and within the head 25 is an electric heating coil 28 for 25 heating the cup. The coil is electrically insulated from the cup by means of a thin sheet of mica 29. One end of the coil is grounded to the head at 30 and the other end is connected to a terminal post 31 mounted on the 30 head and insulated therefrom by means of the fiber eyelet 32. The head 25 is secured to the inner end of a shaft 33, which extends outside of the housing 1 in a direction parallel to the 35 slant of the mold and is reciprocally mounted in a bearing 34 in the wall of the housing 1.

By the provision of driving means the rocker arm 14 is oscillated and the heater head is reciprocated, whereby the mold becomes embraced by the cupped wall 26 of the 40 heater head when the mold is in its raised and inverted position so as to free the ice block therefrom by slightly melting the block of ice. The driving means includes a handle 35 secured to the outer end of the shaft 33 45 for the manual operation thereof. The shaft is in driving connection to the rocker arm 14 by means of a connecting rod 36, which is pivoted to the rocker arm lever 22 at one end and is resiliently connected to the shaft 33 at 50 its other end through the intermediation of a bearing 37, which is slidably mounted on the rod between spaced collars 38 and 39 and said bearing being pivoted at 40 to an extension 41 of the handle. A compression coil spring 55 42 is interposed between the collar 38, at the inner portion of the rod, and the bearing 37 for urging the bearing against the collar 39 at the outer end of the shaft.

The heater head is positioned with respect 60 to the rocker arm, to allow the mold to be raised to its inverted position before embracing the mold, therefore, assuming the mold is in its lowered position, and the heater head is caused to move inwardly, the rocker 65 arm and the heater head move together until

the mold is stopped by the lever 22 engaging the stop 23 and thereby the mold assumes its raised and inverted position, at which time the head continues on to embrace the mold 70 which is effected by the spring 42 on the rod being compressed. The spring also allows the heater head to be moved away from the mold until the head is out of range of the rocker arm at which time the bearing 37 engages the collar 39 at the end of the rod. 75

Means are provided for electrically energizing the heating coil 28 of the heater head when its cupped wall 26 embraces the mold whereby the mold is heated and the ice block therein is sufficiently melted to be freed there- 80 from. Said means includes a source of electric current or generator 43, diagrammatically illustrated, which is in circuit connection with the coil by one side of the circuit being grounded at 44 to the bearing 33 and 85 the other side of the circuit terminating in a switch element 45 in the form of a leaf spring mounted on the housing 1 and positioned above the mold in its raised position so as to contact with the terminal post 31 of the coil 90 28 thereby closing the circuit when the heater head embraces the mold. By this means the heater head is prevented from generating heat during the freezing operation which 95 would otherwise interfere with the refrigerator means.

When the block of ice has sufficiently melted it is freed or falls from the inverted mold by force of gravity and is directed or guided 100 from the device, ready for use, by a chute 46 formed integral with the arm 14 and provided with a sheet of insulating material 47 on the back thereof, and which extends from the inner wall of the mold toward an opening 48 in the housing 1 which forms an outlet 105 for the block of ice.

Means are provided for expediting the freezing operation when the mold is in cooperative relation with the refrigerator means, by covering the mold, to seal it from the outside air when it is in cooperative relation with the refrigerator. Said means includes an irregular walled formation 49 of 110 insulating material secured within the housing 1, and which comprises a horizontal portion 50 extending over the tank 8 between the wall of the housing, at the right, see Fig. 1, and the outer edge of the mold and continues from the mold upwardly into an arcuate wall portion 51 positioned coaxial with the 115 shaft 15, then continuing upwardly away from the chute into a slanted wall portion 52, which extends below the heater head 25 to the wall of the housing. A dead air space 53 is thus formed over the mold which seals it 120 from the outside atmosphere, whereby the freezing operation is expedited. 125

One of the advantages of the molding device just described is that it can be used at 130 restaurants, soda fountains and the like to

produce small blocks of ice ready for table use when wanted. Another advantage of the device is that each block of ice produced is of a predetermined size.

5 Although the device is shown and described as being manually operated it will be understood that it could be constructed to be power operated instead, in an automatic manner as well.

10 The structure described constitutes only one embodiment of the invention and changes or alterations may be made without departing from the spirit of the invention, which is defined in the following claims.

15 What I claim is:—

1. In a device for molding congealable liquid into blocks including a source of congealable liquid supply, refrigerator means, a pivotally mounted mold, a mold supply receptacle secured to and in spaced relation to the mold and having duct communication therewith, the mold and receptacle being adapted to oscillate into raised and lowered positions with one alternately above the other, the receptacle being adapted to be brought into cooperative relation with the source of supply in its lowered position to receive a supply of liquid and to fill the mold by gravity through its duct communication when in its raised position, and the mold being in cooperative relation with the refrigerator means in its lowered position to congeal the liquid therein into a solidified block.

2. In a device for molding water into blocks of ice including a source of water supply, refrigerator means, a pivotally mounted mold adapted to be moved into upright and inverted positions, means for filling the mold from the source of water supply, the mold being in cooperative relation with the refrigerator means when in its upright position to congeal the water therein into a block of ice, and a movably mounted heater element adapted to be moved into cooperative relation with the mold when in its inverted position to heat the mold, thereby sufficiently melting the block of ice to free it from the mold.

3. The combination with a device of the class described, of a pivotally mounted mold adapted to be moved into upright and inverted positions, a movably mounted heater element, and driving means associated with the mold and the heater element to bring the heater element into cooperative relation with the mold when in its inverted position.

4. The combination with a device of the class described, of a centrally pivoted rocker arm, a receptacle at one end of the arm, a mold at the other end of the arm and in duct communication with the receptacle, a tank containing a supply of congealable liquid positioned cooperably with respect to the receptacle, a refrigerator element positioned cooperably with respect to the mold and said arm adapted to oscillate so that the receptacle is

lowered into cooperative relation with the supply tank to be submerged into the liquid supply to fill the receptacle and the mold is lowered to receive a supply of liquid from the receptacle through its duct communication therewith and to be brought into cooperative relation with the refrigerator element to congeal the liquid into a solidified block.

Signed at Chicago, Illinois, this 2nd day of June, 1931.

FRANKLIN F. BRADLEY.

70

75

80

85

90

95

100

105

110

115

120

125

130