Aug. 8, 1939. J. A. BARR 2,169,133

ICE CUBE MAKING MACHINE

Filed Oct. 22, 1937 2 Sheets-Sheet 1

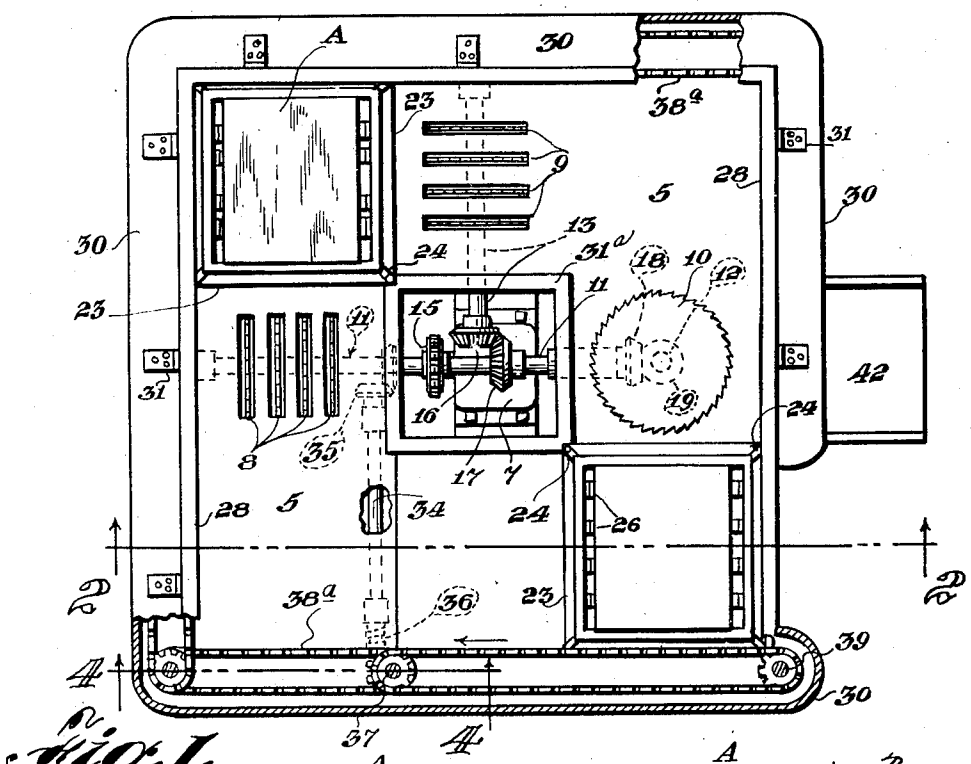


Fig. 1.

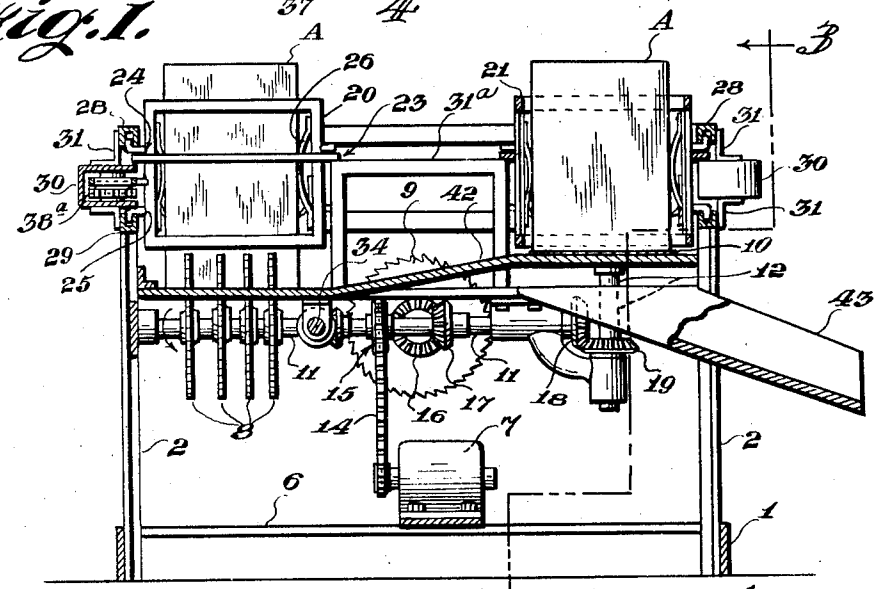


Fig. 2.

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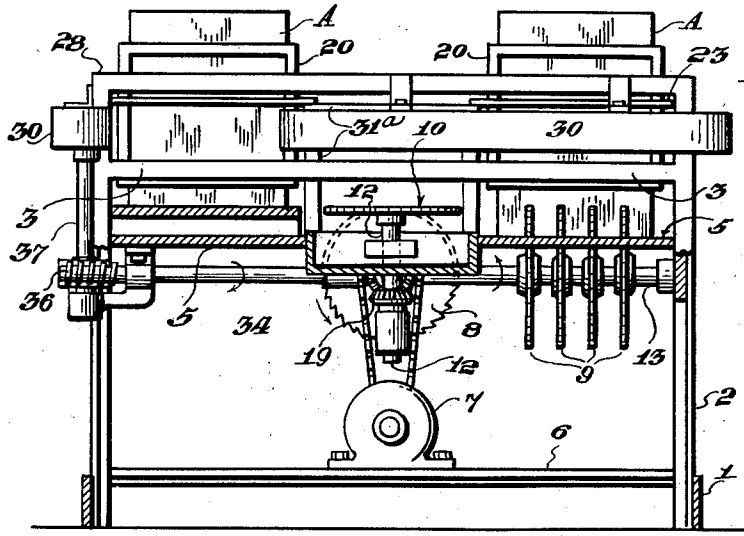


Fig. 3.

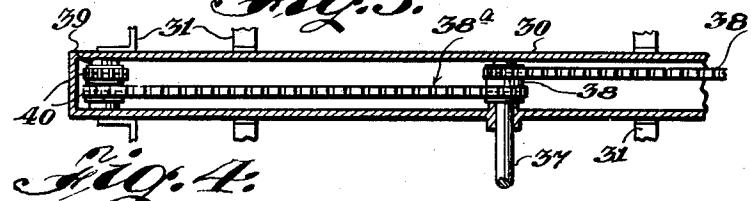


Fig. 4.

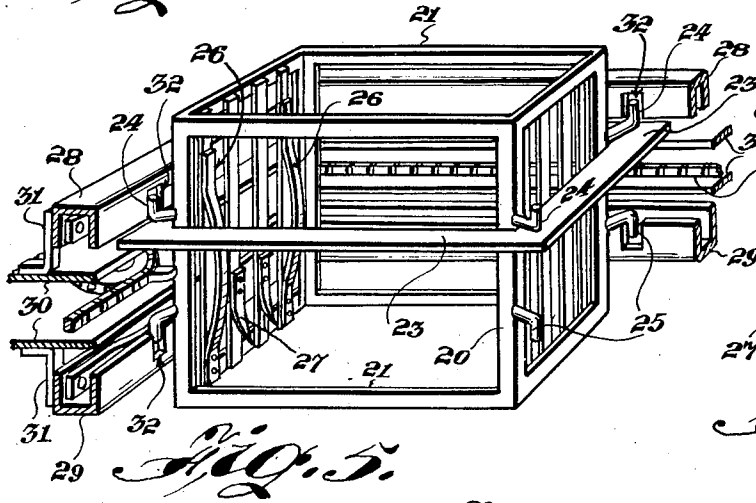


Fig. 5.



Fig. 6.

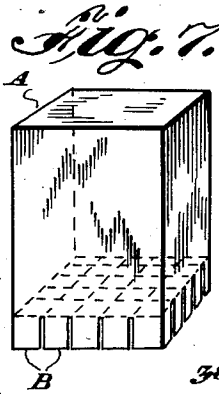


Fig. 7.

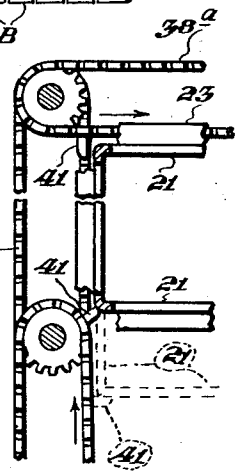


Fig. 8.

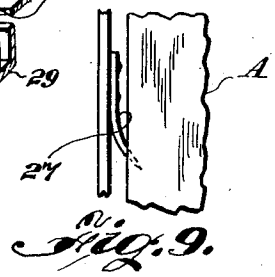


Fig. 9.

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UNITED STATES PATENT OFFICE

2,169,133

ICE CUBE MAKING MACHINE

James A. Barr, Dallas, Tex.

Application October 22, 1937, Serial No. 170,317

2 Claims. (Cl. 143—38)

This invention is related to machines for scoring ice blocks, and relates more particularly to improvements in machines for making ice cubes from blocks of ice.

One of the objects of the invention is to provide an ice-cubing machine whereby a block of ice from which the cubes are to be cut is fed into the machine at one point by hand and travels through the machine to a cube delivery point, without the necessity of handling the ice block but once.

Another object of the invention is the provision of a driving means whereby the saws cut the ice block vertically in two positions at right angles and horizontally to form a cube, said driving means being derived from a single source of power.

Another object of the ice-cubing machine is the provision of means for causing the ice block to travel in the path of a square, including mechanisms for maintaining the ice block in its path against slippage.

A further object of the improved machine is the means for holding the ice block in position for cutting both against lateral or sidewise slippage and vertical movement.

With the above and further objects in view, the invention will be clearly understood from a perusal of the following detailed description, taken in connection with the accompanying drawings, and in the drawings:

Figure 1 is a top view of the ice-cubing machine involving the invention, with parts broken away for convenience of illustration,

Figure 2 is a cross-sectional view of the machine the view being had along the line 2—2 of Figure 1,

Figure 3 is a transverse sectional view taken on the line 3—3 of Figure 2,

Figure 4 is a sectional detailed view of Figure 1, the view being had along the line 4—4 of said figure,

Figure 5 represents a view of one of the ice carrying cages taken in perspective, with adjacent parts shown in section,

Figure 6 is a detailed sectional view of the means for preventing the ice holding cages from a tendency to being turned out of their paths at the end of each path,

Figure 7 represents in perspective a block of ice with the cubes shown in broken and full lines as when cut in one circuit of the machine,

Figure 8 is a detail view in fragmentary section of the chain drive for moving the cages along the paths of the ice block travel, and

Figure 9 represents a fragmentary view of the means for holding the ice blocks in the cages against vertical movement.

Referring more in detail to the drawings, and wherein like parts bear corresponding indicating characters: the machine consists of a framework, square in horizontal section or approximately so, the frame consisting of the base 1, secured to the uprights 2 with the cross-supports as at 3. A platform 5 supports the ice blocks A, and a motor 7 is secured to a seat 6.

The blocks of ice A are caused to travel through the machine in the path of a lineal square so that the saws first cut the ice a certain depth on and through one side and then cut the block the same depth on and through the opposite side or at right angles to the other cut, and finally the block is cut horizontally to complete the cubes. For bringing this about there are provided a series of saws 8 and a series of saws 9 and finally a single saw 10.

These saws 8 and the horizontally-disposed saw 10 are mounted on a shaft 11 and a shaft 12 respectively, while the series of saws 9 are mounted on a shaft 13. The motor 7 has its shaft connected by a chain 14 to a gear 15 on the shaft 11 and through means of the bevel gears 16 and 17 drives the shaft 13 carrying the saws 9. On the shaft 11 is also carried a bevel gear 18 and on the vertical shaft 12 is mounted a bevel gear 19 and by this connection the shaft carrying the saw 10 is rotated. By this arrangement all the saws are rotated in the cube cutting and, similarly as will be pointed out, the same motive power carries the ice blocks through the machine.

In the machine shown two ice blocks A are carried in a cage as shown more clearly in Figure 5. This cage consists of the frame composed of the upright and cross pieces 20 and 21 respectively and including the strips or flange members 23. Each cage also includes at each corner two hooks 24 and 25, the flange members 23 and the hooks 24 and 25 being for the purpose of maintaining the cages in a positive guilding position as the latter travel along the paths. Each cage also is provided with spring bars 26 for holding the ice blocks against lateral movement in the cages and with the pointed bars 27, shown more clearly in Figure 9, to prevent the ice block from vertical movement.

Connected to the uprights 2 of the frame at the top thereof are channel irons 28 and 29 and also a U-shaped member 30, the channel irons 28 and 29 being secured to the U-shaped member

by the angle braces **31**. These channel irons and U-shaped members provide a railing or guide and direct the cages along the sides of the frame as the ice blocks are being cut. In this arrangement and construction and as depicted in Figures 2 and 5, it will be observed that the flange members **23** slide along the top edge of the U-shaped member **30** as the cages are carried through the machine, as clearly shown in Figures 2 and 5. In this connection and centrally of the framework is a center guide frame **31***a* rigidly set in the floor of the frame, and the flange members **23** also slide along the top edge of this guide frame. The construction also provides for the nonslippage of the cages as they pass the corners of the guide frame and machine frame. For this purpose the channel irons **28** and **29** are provided with openings at spaced intervals such as at **32** and into these openings the hooks **24** and **25** pass as the cages travel along. Inside these channel irons is a leaf spring **33**. As illustrated in Figure 8, as the cages are carried along by the chains and gears (as will be explained hereinafter) the cage, as indicated by the top thereof at **21**, after it has completed one of its paths of travel along the inside of the frame of the machine, tends to be pulled slightly out of its next line of travel along the next succeeding path and thereby be caught or jammed on the corner of the center guide frame **31***a* and prevent its clearance at this point. To prevent this the springs **33** bear against the hooks **24** and **25** and thus overcome this tendency.

The means for moving the cages along the paths defined by the space between the inside of the frame and the outside of the frame guide is provided for by chain drive shown in detail in Figures 2, 4 and 8. Thus there is provided a shaft **34** having a bevel gear **35** on one end and a worm gear **36** on its opposite end, the bevel gear meshing with a similar gear on the shaft **11**. The worm gear is, in turn, in mesh with a gear on a shaft **37** which projects inside the U-shaped member **30**. Sprockets **38** are provided on the shaft **37** and to these are connected the chains **38***a*. Stub shafts **39** and sprockets **40** are disposed at each corner of the frame which sprockets and shafts act as idlers to guide the chains around the corners of the frame. On each of these chains are lugs **41** and which as shown in Figure 8 engage with the cages and force them along to the next chain drive past each corner.

The machine is provided with an incline or slide **42** upon which an ice block moves from a feeding point in one corner of the machine or at any point in advance of the saw series **8** and in line with the cutting edges of the saws. An ice cube delivery chute is shown at **43**.

In the operation of the machine, the ice blocks are placed upon the horizontal portion of the chute or slide **42**, the machine having been set in operation, and according to the previous explanation and description of the working parts, the block or blocks A are carried through the machine without further handling. The first cut is vertically of each block on one side thereof, then the side of the block at right angles to the first cut is moved against the saws **9**, and the block, continuing its travel comes into contact with the horizontally-disposed saw **10**, where the block is cut horizontally, resulting in the cubes B, as shown in Figure 7.

While the disclosure and description recite a practical working embodiment of the invention, it is evident that modifications, changes and alterations might be made therein, such as would be said to fall fairly within the scope and meaning of the appended claims.

What is claimed as new is:

1. A machine for cutting ice cubes from an ice block, comprising a framework having a construction which provides different angular paths of travel for the passage of an ice block therethrough, a series of vertically disposed saws in one of said angular paths, a second series of vertically disposed saws disposed in another of said angular paths and so positioned as to cut the ice block in a direction at right angles to the cut produced by the first series of saws, and a saw arranged in another of said angular paths and on a horizontal plane to complete the cutting operation in producing ice cubes, said machine including a cage for carrying the block of ice; the said framework having rails and the rails comprising upper and lower channel members in connection with a U-shaped member, the upper and lower channel members having spaced apertures at the intersection of the angular paths, a spring associated with the said apertures, a centrally disposed guide means for maintaining the cage in a straight line of travel through the machine, said travel being in a closed rectangular path, the said cage having flange members spaced around the outside thereof, and the flange members adapted to ride on the upper side of the U-shaped member and on the centrally disposed guide means for guiding the cage through the machine, a single drive arrangement of shafts, gears and chains for driving said saws and for propelling said cage through the machine, the said cage including spaced upper and lower projecting hook elements on each corner thereof, and the hook elements adapted to be received and ejected from the spring controlled apertures in the upper and lower channel members when the cage reaches the intersection of each angular path with another of the angular paths so that the cage will be smoothly guided from each of the angular paths to another of said angular paths during its travel through the machine.

2. A machine for cutting ice cubes from an ice block, comprising a framework having a construction which provides different angular paths of travel for the passage of an ice block therethrough, a series of vertically disposed saws in one of said angular paths, a second series of vertically disposed saws disposed in another of said angular paths and so positioned as to cut the ice block in a direction at right angles to the cut produced by the first series of saws, and a saw arranged in another of said angular paths and on a horizontal plane to complete the cutting operation in producing ice cubes, said machine including a cage for carrying the block of ice; the said framework having rails and the rails comprising upper and lower channel members and an intermediate member spaced between and connecting the upper and lower channel members together, the upper and lower channel members having spaced spring controlled apertures at the intersection of the angular paths, a centrally disposed guide means for maintaining the cage in a straight line of travel through the machine, said travel being in a closed rectangular path, the said cage having flange members spaced around the outside thereof, and the flange members adapted to ride on the said intermediate member and on the centrally disposed guide means for guiding the cage through the machine, a single drive arrangement of shafts, gears and

chains for driving the said saws and for propelling said cage through the machine, the said cage including a hook element spaced above and a hook element spaced below the said flange member at each corner thereof, and the hook elements adapted to be received and ejected from the spring controlled apertures in the upper and lower channel members when the cage reaches the intersection of each angular path with another of the angular paths so that the cage will be smoothly guided from each of the angular paths to another of said angular paths during its travel through the machine.

JAMES A. BARR.