To all whom it may concern:

Be it known that I, F. R. A. R. T. U. R. N. E. R., a subject of the King of Great Britain, residing at Detroit, in the county of Wayne and 5 State of Michigan, have invented certain new and useful Improvements in Ice-Cubing Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to ice-cubing machines and has special reference to that class of machines adapted for sawing, cutting, or otherwise operating on a block of ice to divide the same into cubes or small pieces for table use, such machines evenly cubing the block of ice with a minimum waste.

The primary object of my invention is to provide a machine of the above class in which a block of ice may be economically 20 and expeditiously operated upon to produce cubes or small pieces of ice, the machine including saws for vertically and laterally cutting the block of ice, and novel means for shifting the block of ice so that it may be operated upon by the saws without being manually handled.

A further object of my invention is to provide a machine of the above class embodying a turn table for a block of ice, a carriage or frame for shifting the block of ice, and a novel holding device by which a block of ice can be supported in an elevated position while being shifted.

The above and other objects are attained by a machine wherein the parts are constructed with a view of reducing the cost of manufacture and at the same time retain those features by which durability and ease of operation are secured. The construction of the machine will be hereinafter described and then claimed and reference will now be had to the drawings, wherein

Figure 1 is a plan of the ice-cubing machine;

Fig. 2 is a vertical cross sectional view of a portion of the same;

Fig. 3 is a longitudinal sectional view of the same;

Fig. 4 is a side elevation of a portion of the same;

Fig. 5 is a perspective view of a block of ice having its lower face provided with kerfs, and

Fig. 6 is a vertical sectional view of a portion of the turn table of the machine.

The machine framework comprises side H frames 1 and 2 connected by I-beams 3 and 4, and on said framework is a table top 5.

The lower face of the table top has transversely slining bearings 6 and 7 for a power shaft 8 which has one end thereof protruding at the side of the frame 1 so that it may be power operated by a belt trained over a pulley 9 on the end of the shaft or hand operated. Fixed on the shaft 8 for rotation therewith are a plurality of parallel equally spaced circular saws 10 extending through slots 11 in the table 5, and on the inner end of the shaft 8, adjacent the bearing 5, is a beveled gear wheel 12.

Supported from the lower face of the table 5 is a bearing 13 for a vertically disposed shaft 14 having a beveled gear wheel 15 meshing with the beveled gear wheel 12, and the upper end of the shaft 14 extends through an opening 16 in the table 5 and is provided with a horizontally disposed circular saw 17. The saws 10 are adapted to produce vertical kerfs of a depth corresponding to one dimension of a cube and after vertical right angular intersecting kerfs are produced in the lower face of the block of ice, the saw 17 is adapted to laterally cut the block of ice and liberate cubes therefrom.

In order that a block of ice 18 may be conveniently manipulated in a prescribed manner relative to the saws 10 and 17, the table 5 is provided with a shifttable carriage frame 19, said frame having wheels or rollers 20 at one end thereof rollable on the table and supporting this end of the carriage frame elevated relative to the table. The opposite end of the carriage frame 19 is supported in an elevated position by grooved or flanged wheels or rollers 21 on a rail 22 suitably connected to the side of the table 5, and in order that there will be sufficient room at this side of the carriage frame for other mechanism or devices, one of the wheels or rollers 21 is supported by an extension 23 of the table frame with the rail 22 protruding from the table a sufficient distance to at all times support the extension wheel or roller.

A longitudinal side of the carriage frame 19 has a handle 24 and this side of the carriage frame may be considered as being at the front side of the machine, so that an
operator may shift the carriage frame back and forth on the table 5 with the block of ice 18 in one end of the carriage frame, whereby the block of ice will encounter the circular saws 10 and first have its lower face provided with parallel vertically disposed kerfs 25.

The L-beam 4, as best shown in Fig. 3, has a bracket bearing 26 extending under the table 5, and in this bracket bearing is a rotatable and reciprocable vertically disposed turn table shaft 27 which has its upper end loose in a depressed or countersunk portion 28 of the table 5. On the upper end of the shaft 27 is a head or turn table 29 normally seated in the depressed or countersunk portion 26 of the table 5 with the upper face of the head 29 flush with the top of the table 5, so that when the head is in such position the block of ice 18 may be easily moved on the table 5 within the carriage frame 19.

Pivotedly connected to the bracket bearing 26, as at 30, is a treadle 31 having its outer end protruding from the front side of the machine and its inner end extending under the lower end of the turn table shaft 27. Pressure on the outer end of the treadle 31 will elevate the shaft 27 and place the head 29 in a plane above the carriage frame, so that when the block of ice 18 is on the head 29, said block of ice may be turned a quarter of a revolution, which can be accomplished when the lower face of the block of ice is supported in a plane above the carriage frame.

After the lower face of the block of ice 18 has been provided with the kerfs 25, the block of ice may be again subjected to the action of the saws 10 to provide the lower face of the block of ice 18 with kerfs 32 of the same depth as the kerfs 25, but disposed at a right angle thereto, as best shown in Fig. 5.

Pivotedly mounted on the carriage frame 19, adjacent the extension 23, is a block holding device comprising a long off-set arm 33 and a short bifurcated arm 34. The long offset arm 33 has a toothed or serrated head 35 that may swing into an offset portion 36 of the frame 19, and the head 35 is adapted to engage the front face of the block of ice 18 and hold the rear face of the block of ice against pins or projections 37, carried by the carriage frame 19 opposite the offset portion 36 thereof.

The short bifurcated arm 34 of the block holding device engages a cam 38 pivotally mounted on a bracket 39 at the end of the carriage frame 19, and said cam has a handle 40 so that it may be conveniently swung to actuate the block holding device. Pivotedly connected to the short bifurcated arm 34 is a rod 41 slideable in a lug 42 mounted on the end of the carriage frame 19, and encircling the rod 41 and bearing against the lug 42 is a coiled expansion spring 43. The expansive force of this spring insures a positive contact of the short arm 34 with the cam 38, so that there will be no lost motion and the cam may be depended on for shifting the block holding device.

Preventing vertical displacement of the carriage frame 19 relative to the table 5 is an angular hanger 44 extending under the rail 22 with an adjustable screw 45 below said rail. This screw may be set or adjusted so that it will prevent the wheels or rollers 21 from derailment. The rail 22 may be provided with stop pins 46 to limit reciprocation of the carriage frame 19 on the table 5, said stop pins being engaged by the hanger 44.

The table 5, below the front edge of the saw 17, has an opening 47 through which cubes of ice may fall on to a channel shaped chute or trough 48 having its upper end suitably connected to the lower face of the table 5 and its lower end supported by the L-beam 4, as best shown in Fig. 3.

In operation, the block or cake of ice 18 is placed in the carriage frame 19, over the head 29 of the turn table. The carriage frame 19 is then pushed outward and the lower face of the block of ice operated upon by the saws 10 to produce the kerfs 25. The carriage frame 19 is then retracted until the sawed block of ice is on the head 29, at which time the treadle 31 is depressed to elevate the block of ice above the plane of the carriage frame. The block of ice is then turned a quarter of a revolution with the lower end of the shaft 27 turning on the end of the treadle 31. The treadle 31 is then released permitting the block of ice to again enter the carriage frame 19, at which time the carriage frame is again shifted outwardly and the kerfs 32 produced. Next, the carriage frame is retracted and the block of ice shifted off of the turn table into the opposite end of the carriage frame. In order that the block of ice may enter this end of the carriage frame the holding device is retracted and released permitting the head 35 and the projections 37 to clamp the block of ice in the carriage frame, which is now shifted outward and the block of ice subjected to a lateral cut. The sawed lower face of the block of ice will be removed and the cubes will fall through the opening 47 on to the chute 48 and into a receptacle placed at the lower end of the chute. The block of ice will remain clamped in the end of the carriage frame 19 thus permitting of the carriage frame being retracted without any danger of the ice encountering the saw 17. After the carriage frame is retracted the block of ice may be released to fall on to the table 5, and when shifted to the opposite end of the car-
riage frame it is in position for the above recited operation to be repeated, such operations being continued until as much of the block of ice has been cubed as is possible.

It is thought that utility of the machine will be apparent without further description, and while in the drawings there is illustrated a preferred embodiment of this invention, it is to be understood that the structural elements are susceptible to such variations and modifications as fall within the scope of the appended claims.

What I claim is:

1. In an ice cubing machine wherein blocks of ice are adapted to be operated upon by sawing to provide kerfs by which cubes are released from the block of ice;—

means adapted for manipulating the block of ice relative to said saws, said means comprising a shiftable frame, and a reciprocable turn table permitting of a block of ice being elevated and turned relative to said frame so that said frame may subject different faces of the block of ice to some of said saws.

2. An ice cubing machine, as in claim 1, wherein said turn table includes a vertical shaft, a treadle adapted for elevating said shaft, and a head on said shaft and on which head the block of ice may rest.

3. An ice cubing machine comprising a table, vertical saws extending above said table adapted for providing vertical kerfs in a block of ice, a horizontally disposed saw above said table adapted to release cubes from said block of ice, a shiftable frame adapted to move the block of ice into engagement with said saws, and means carried by said table adapted for elevating and turning the block of ice above the plane of said frame.

4. An ice cubing machine, as in claim 3, wherein said means includes treadle elevated shaft which may turn on the treadle.

In testimony whereof I affix my signature in presence of two witnesses.

FREAR TURNER.

Witnesses:

Otto F. Barthel,
Raymond J. Petz.