July 12, 1932. C. E. EVERETT 1,866,883

ICE SCORING MACHINE

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FIG. 1

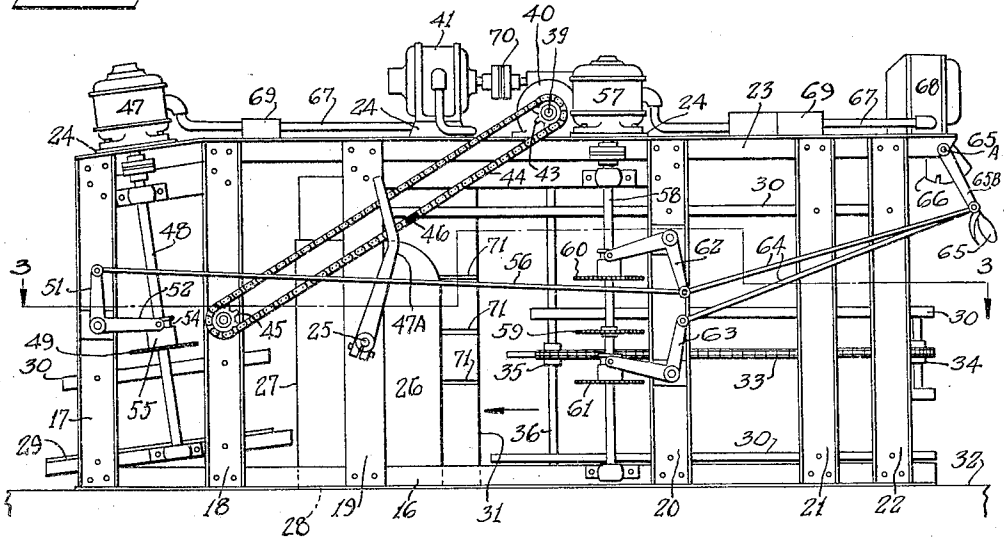
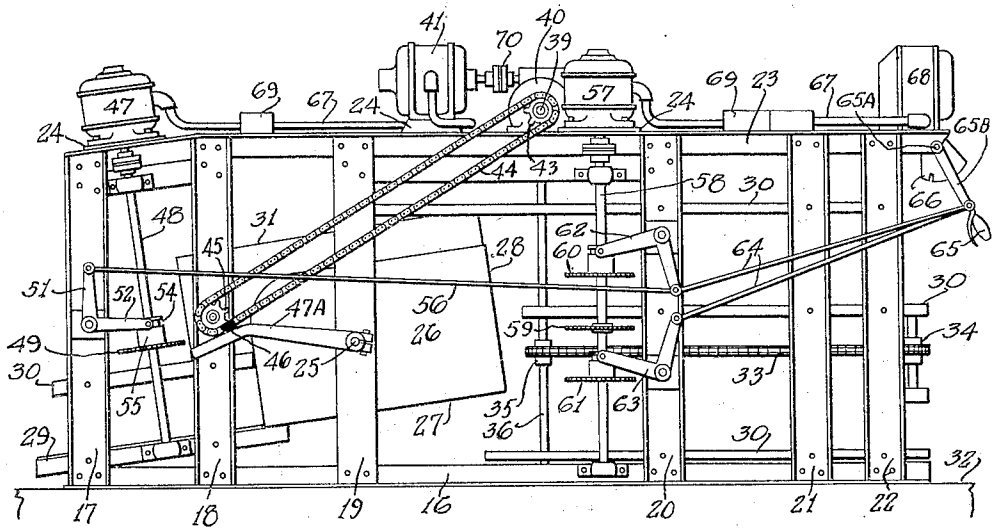


FIG. 2



INVENTOR
C. E. EVERETT
BY C. B. Birkenbuel.
ATTORNEY

July 12, 1932. C. E. EVERETT 1,866,883

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FIG. 3

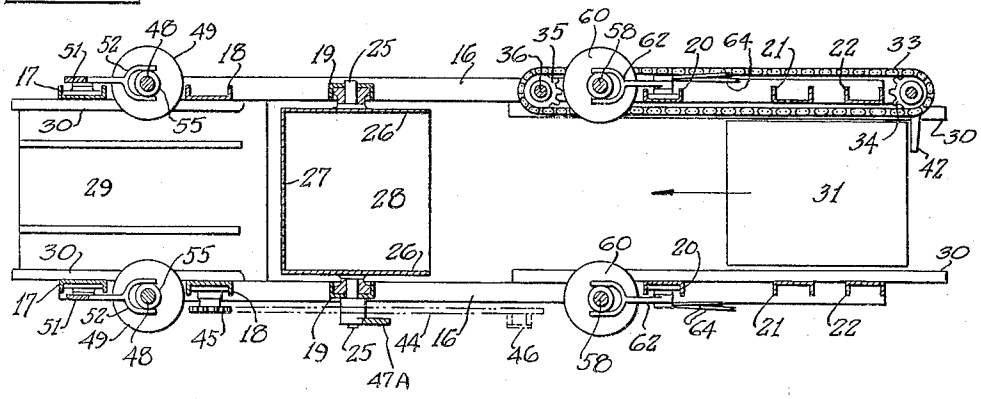


FIG. 4

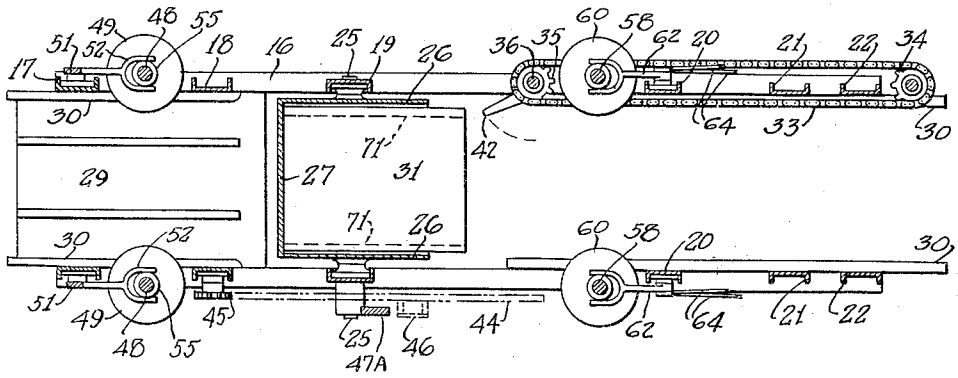


FIG. 5

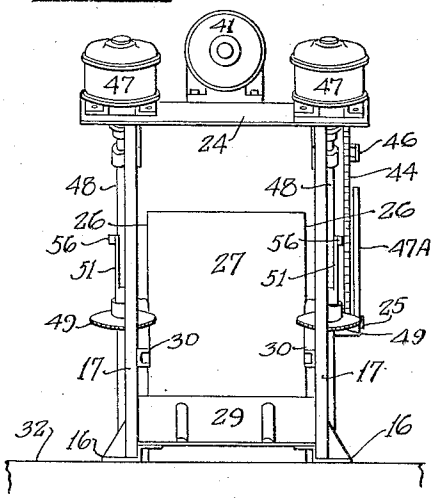
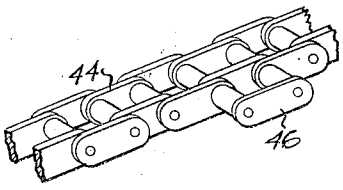


FIG. 6



INVENTOR
C. E. EVERETT

BY E. B. Birkenbeuel.

ATTORNEY

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ICE SCORING MACHINE

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FIG. 7

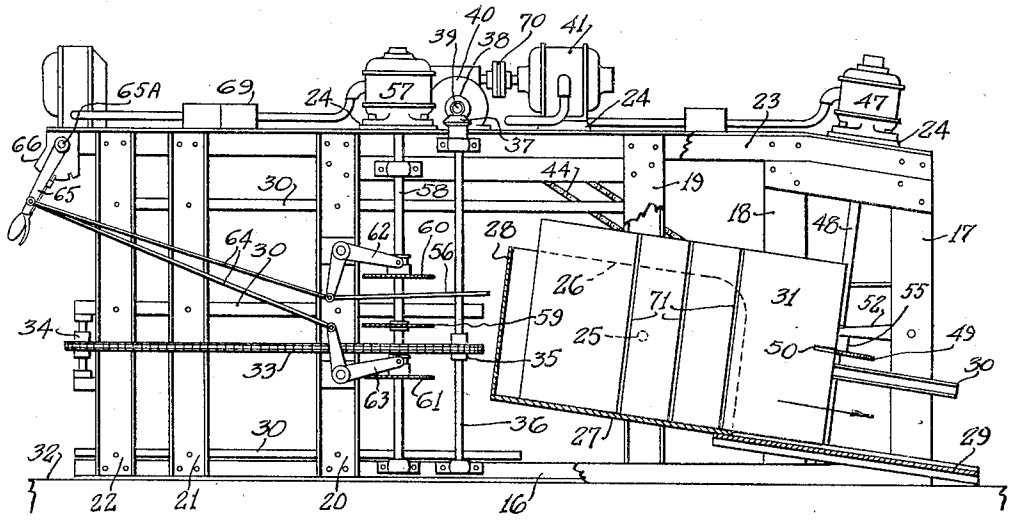


FIG. 10

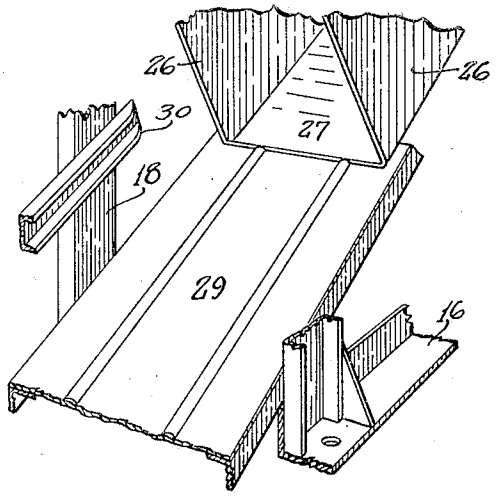


FIG. 8

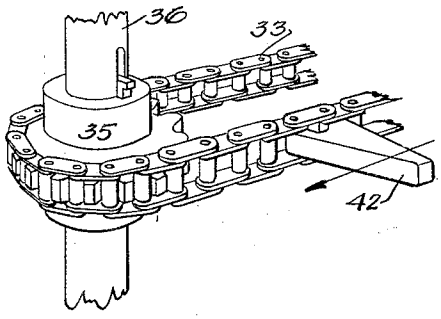
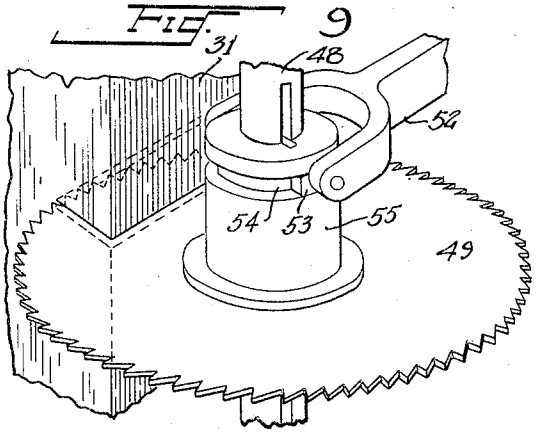


FIG. 9



INVENTOR
C. E. EVERETT
BY E. B. Birkenbuel
ATTORNEY

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ICE SCORING MACHINE

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Fig. 13

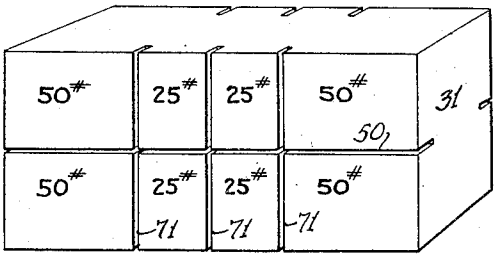


Fig. 12

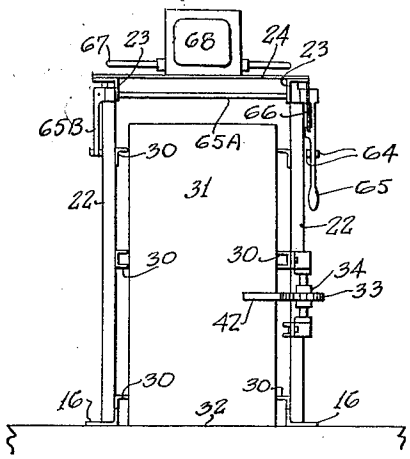


Fig. 14

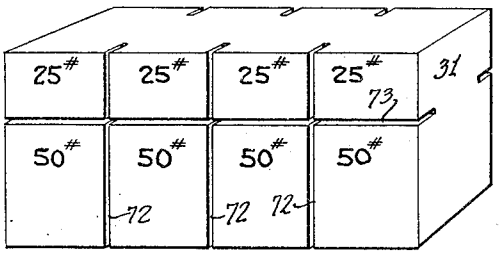
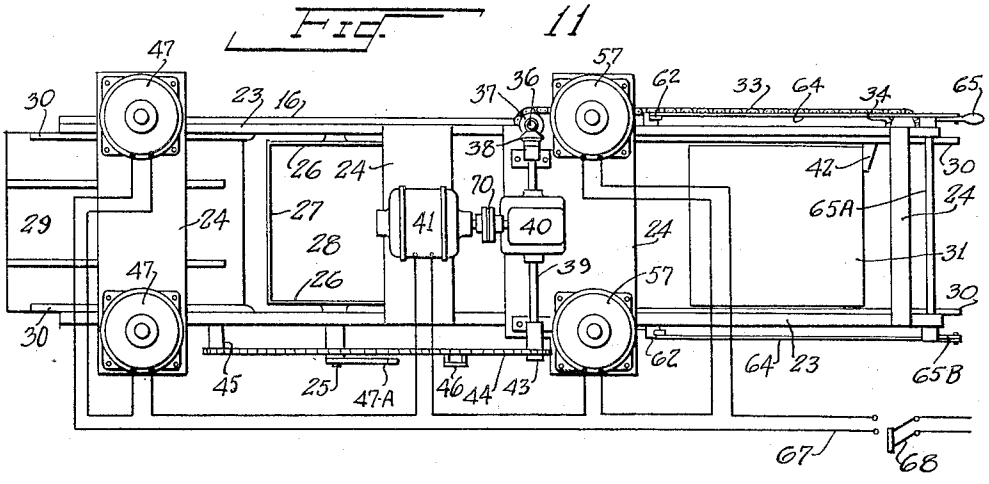


Fig. 11



INVENTOR
C. E. EVERETT

BY C. B. Birkenbeuel

ATTORNEY

Patented July 12, 1932

1,866,883

UNITED STATES PATENT OFFICE

CHARLES E. EVERETT, OF OREGON CITY, OREGON

ICE SCORING MACHINE

Application filed June 12, 1930. Serial No. 460,569.

This invention relates generally to the art of refrigeration, and particularly to means for scoring cakes of ice.

The main object of this invention is to provide a machine by means of which cakes of ice can be scored for the purpose of making same break along straight lines in a manner to divide a given cake up into small units, or multiples thereof.

This result is accomplished in the manner set forth in the following specification and illustrated in the accompanying drawings, in which:

Fig. 1 is a left side elevation of the machine showing the ice pushed into the cradle.

Fig. 2 is a view similar to Fig. 1 showing the cradle tilted and the ice starting past the second set of saws.

Fig. 3 is a section taken along the line 3—3 in Fig. 1.

Fig. 4 is similar to Fig. 3 but showing the ice pushed into the tilting cradle.

Fig. 5 is a front view of the discharge end of the machine.

Fig. 6 is a perspective view of the tilting cradle trip chain.

Fig. 7 is a right side elevation showing certain of the parts broken away.

Fig. 8 is a perspective view of the pusher chain and drive sprocket.

Fig. 9 is a perspective view of a saw.

Fig. 10 is a perspective view of the discharge end of the machine.

Fig. 11 is a plan view showing the ice going into the machine.

Fig. 12 is a rear elevation of the inlet end of the machine.

Fig. 13 is a perspective view of a cake of ice showing one form of scoring.

Fig. 14 is a similar view showing another form of scoring.

Similar numbers of reference refer to similar parts throughout the several views.

Referring in detail to the drawings, there is shown a base consisting of a pair of spaced parallel angle bars 16 to which are attached a plurality of upright channel bars 17, 18, 19, 20, 21 and 22 whose upper ends are joined by the angle bars 23. The angle bars 23 are joined at intervals by cross ties 24 upon which are mounted various operating and control mechanisms.

Mounted transversely across the upright 19 are the horizontal trunnions 25 which tiltably support the cradle consisting of the sides 26, the front 27 and the bottom 28. This cradle is adapted to swing to a vertical position (as shown in Fig. 1) in one extreme or to an inclined position (as shown in Fig. 7) to the opposite extreme. The tilting of the cradle provides the transfer of an ice cake from one battery of saws to another and changes the position of the cake during the transfer.

Between the upright 17 is mounted a sloping runway 29 on which the scored cake of ice slides as it emerges from the machine. The horizontal and inclined members 30 guide the cake 31 before and after it has emerged from the cradle.

The cake 31 enters the machine riding on the floor 32 along which it is moved by a conveyor chain 33 mounted on the sprockets 34 and 35, the latter of which is secured on a vertical drive shaft 36 whose upper end carries a bevel gear 37 which meshes with a similar gear 38 on the shaft 39 which projects through a speed reducing mechanism 40 to which power is supplied by means of a motor 41.

The chain 33 is provided with a pusher arm 42 by means of which the cakes 31 are moved into the machine. The shaft 39 is also provided with a sprocket 43 which drives a chain 44 passing around an idler sprocket 45. The chain 44 is provided with a trip lug 46 adapted to engage the lever 47—A which is fastened on the trunnion 25 of the ice cake cradle. The function of the trip lug 46 is to periodically tip the cradle and on its return movement to prevent the cradle from returning to its position of rest with undue force.

At the discharge end of the machine—that is over the runway 29 and at each side of the top thereof—is mounted a saw motor 47. Each motor 47 drives a shaft 48 which is normal to the runway 29, and slidably carries a saw 49 which produces the score 50 in the cake 31. It is slidable in order to permit the score 50 to be made as shown in Fig. 13 or in Fig. 14. Each saw 49 is positioned by means of a bell crank lever 51 whose forked end 52

is provided with shoes 53 which engage a groove 54 in the mandrel 55. The bell crank lever 51 is positioned by means of a connecting rod 56.

Near the middle of the machine and at opposite sides thereof is mounted a second pair of saw motors 57, each of which drives a vertical shaft 58, and each shaft 58 carries one saw 59 which is incapable of sliding or rotating with relation to its shaft. On each side of the saw 59 and slidably mounted on the shaft 58 are the saws 60 and 61 whose positions on the shaft 58 are determined by the bell crank levers 62 and 63. One end of the bell crank lever 62 is joined to the connecting rod 56. The levers 62 and 63 are joined by means of the connecting rods 64 to a hand lever 65 which can be held in one of two positions by means of a quadrant 66.

Power is supplied to all of the motors from a power line 67 under the control of the switch 68. A terminal box 69 from which the various motor leads are run is also indicated. It is desirable to provide a clutch 70 on the shaft of the motor 41 to prevent the overloading of same.

The operation of the device is as follows: A cake of ice 31 is moved into the machine either by gravity, by means of a conveyor or manually, and is caught by the pusher 42 which moves same along between the six saws 59, 60 and 61, there being three saws on each side for the purpose of forming the cuts 71 when in the position shown in Fig. 2. Obviously, if the lever 65 is moved to its opposite extreme position the saw 59 will remain where it is and the saws 60 and 61 will be moved away from same, causing the scoring marks 72 to be formed farther apart than they are in Fig. 13, that is, as shown in Fig. 14.

Depending upon the position of the lever 65 either the scoring marks 71 or 72 are formed in the cake 31, which now travels under the influence of the pusher arm 42, immediately after which it is tilted by means of the trip lug 46 acting against the lever 47—A. The cradle is now held in the position shown in Fig. 2 which permits the cake 31 to slide downwardly along the inclined runway 29 between the saws 49 whose positions have been determined with relation to the saws 59, 60 and 61 by virtue of the connecting rod 56 which co-relates the movements of the saws 49 and 60 as well as 61. In other words, when the scores 71 are made close together (as shown in Fig. 13) the score 50 which is made by the saw 49, is in the middle of the height of the cake, whereas when the scores 72, which divide the length of the cake into quarters, are formed then the saw 49 must be moved to form the score 73.

An inspection of Figs. 13 and 14 discloses the fact that the cake has now been scored into twenty-five pound pieces, or multiples thereof, which can be broken apart to suit the convenience of the ice man. In Fig. 13 a break along the cut 71 will produce either fifty or one hundred pound cakes, which can be halved along the line 50; whereas in Fig. 14 a break along the line 72 will produce a seventy-five pound cake which, when divided along the line 73 will produce one twenty-five and one fifty pound pieces.

The saws on the two sides of the machine are operated through the single hand lever 65 which is mounted on a shaft 65—A on whose opposite end is a lever 65—B which transmits motion to the parts on its side of the machine in the same manner as does the hand lever 65 to its respective parts.

I claim:

1. An ice scoring machine having in combination a frame, said frame having a passageway through which a cake of ice can be passed, a vertical saw shaft on each side of said frame each of which has a plurality of saws thereon adapted to score a cake of ice passing through said frame, means for tilting said cake of ice after passing said saws, a second set of saws disposed on opposite sides of said frame between which said cake of ice can travel for the purpose of forming score marks on said cake normal to the first formed marks, means for feeding a cake of ice through said frame, and interconnected lever means for adjustably positioning the longitudinal scoring saws and for adjustably spacing the transverse scoring saws in a predetermined relation.

2. An ice scoring machine having in combination an upright frame through which a cake of ice can be passed, a conveyor for moving said cake of ice into said machine, batteries of saws disposed on opposite sides of said frame for scoring a cake of ice in one direction as it enters said frame, a battery of saws for scoring said cake of ice after it has been scored by said first mentioned saws and in a direction normal thereto, the shaft of each saw having a motor for driving same, and interconnected lever means for adjustably positioning the longitudinal scoring saws and adjustably spacing the transverse scoring saws in a pre-determined relation.

3. In an ice scoring machine the combination of an upright longitudinal frame member having a passageway formed therethrough through which a cake of ice can be conveyed, a conveyor for moving a cake of ice along said passageway, a motor for driving said conveyor, a cake tipping cradle within said passageway into which a cake of ice can be deposited by said conveyor, means for actuating said tipping cradle driven by said conveyor motor, a clutch between said conveyor motor and its driven elements, independent motor driven gang saws on opposite sides of said passageway for scoring a cake of ice before it enters said cradle, a second set of saws for again scoring

said cake of ice after it has left said cradle in a direction normal to the first mentioned scoring, and interconnected lever means for adjustably positioning the longitudinal scoring saws and adjustably spacing the outermost transverse scoring saws with relation to the innermost transverse scoring saw.

4. An ice scoring machine having in combination an upright frame provided with a longitudinal passageway therethrough, the inlet end of said passageway having a guide for ice cakes formed therein, a conveyor mounted on said apparatus having a pusher arm thereon for moving cakes of ice along said guide, a tiltable cradle at the opposite end of said guide adapted to tip the cake of ice approximately normal to its original position, a second guide for receiving a cake of ice from said cradle, independent motor driven saws for scoring an ice cake while in each of said guides in directions normal to each other, and interconnected means for selectively positioning the longitudinal scoring saws with relation to the width of the cake and spacing the outermost transverse scoring saws with relation to the innermost transverse saw to provide a predetermined relationship for the position of said saws whereby groups of multiples of units of different sizes may be selectively obtained by a single setting of interconnected means.

5. In an ice scoring machine the combination of a longitudinal frame having a passageway formed throughout the length thereof, an inlet guide at one end of said passageway, an outlet guide at the opposite end of said passageway, a tilting cradle between said guides, saws for scoring a cake of ice while on each of said guides, means for selectively positioning the saws of each set with relation to each other to the saws of the opposite set through a single interconnected mechanism.

6. An ice scoring machine, having in combination two sets of scoring saws whereby a cake of ice may be scored in two directions normal to each other, and interconnected means for adjustably positioning said saws in a pre-determined relation.

7. In an ice scoring machine, the combination of a set of saws for scoring a cake of ice longitudinally, a second set of saws for scoring said cake transversely, and interconnected means for adjusting the relationship between all of said saws whereby various pre-determined combinations of sizes may be scored on a cake by a single adjustment of said saws.

8. An ice scoring machine, having in combination a set of saws arranged to score opposite sides of an ice cake longitudinally, a second set arranged to score said cake transversely, and interconnected means for selectively arranging the two sets of saws in a pre-determined relationship with a single setting whereby said cake may be divided into different multiples of unit sizes.

9. An ice scoring machine, having in combination groups of saws for scoring a cake longitudinally and transversely, and interconnected means for adjusting the relationship between the saws in each set and their relation with the saws of the opposite set.

CHARLES E. EVERETT.