April 2, 1929. H. A. EDEL 1,707,847

ICE SCORING MACHINE

Filed Jan. 3, 1928 5 Sheets-Sheet 1

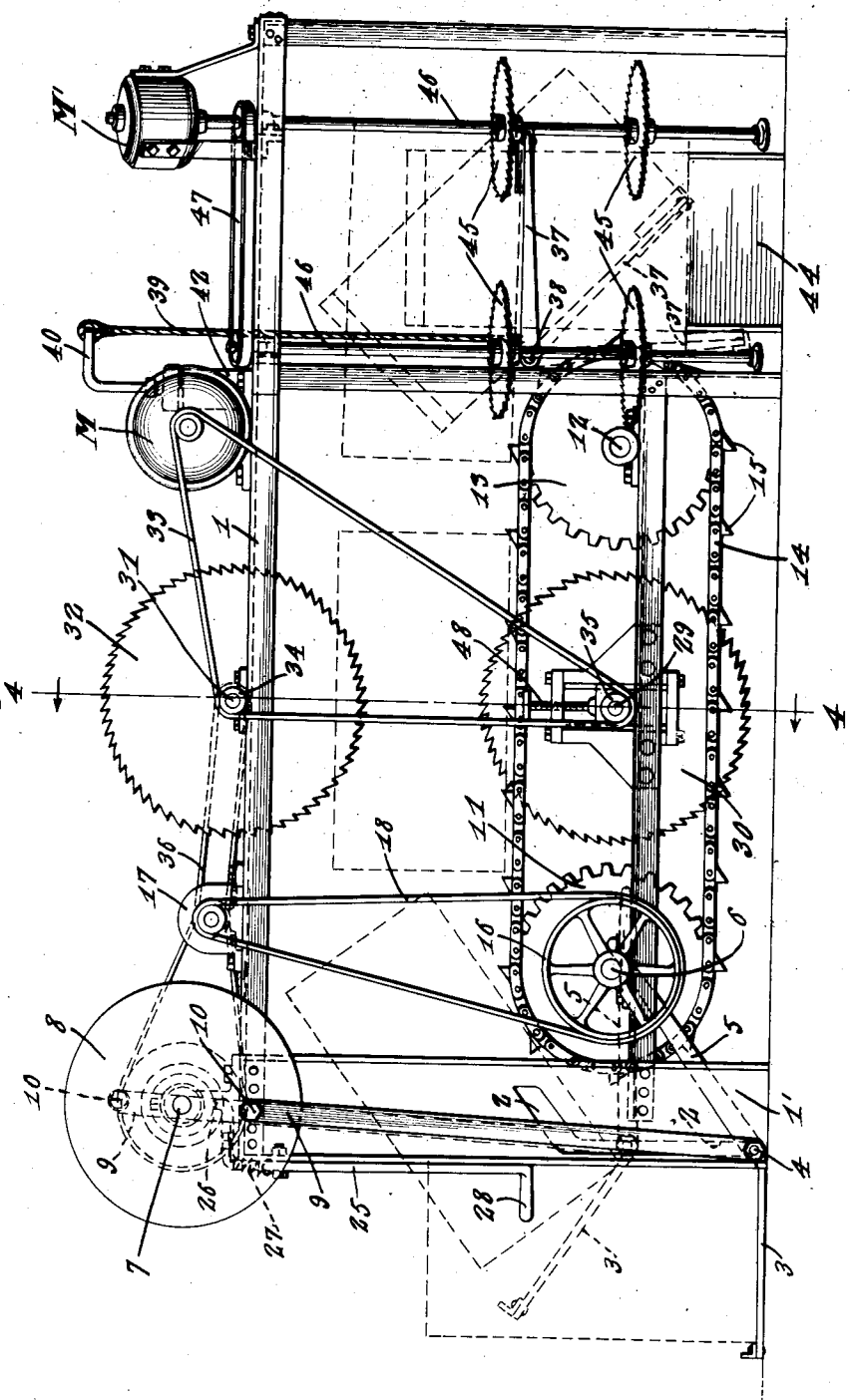


Fig. 1.

Harry A. Edel, INVENTOR

BY Victor J. Evans

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ICE SCORING MACHINE

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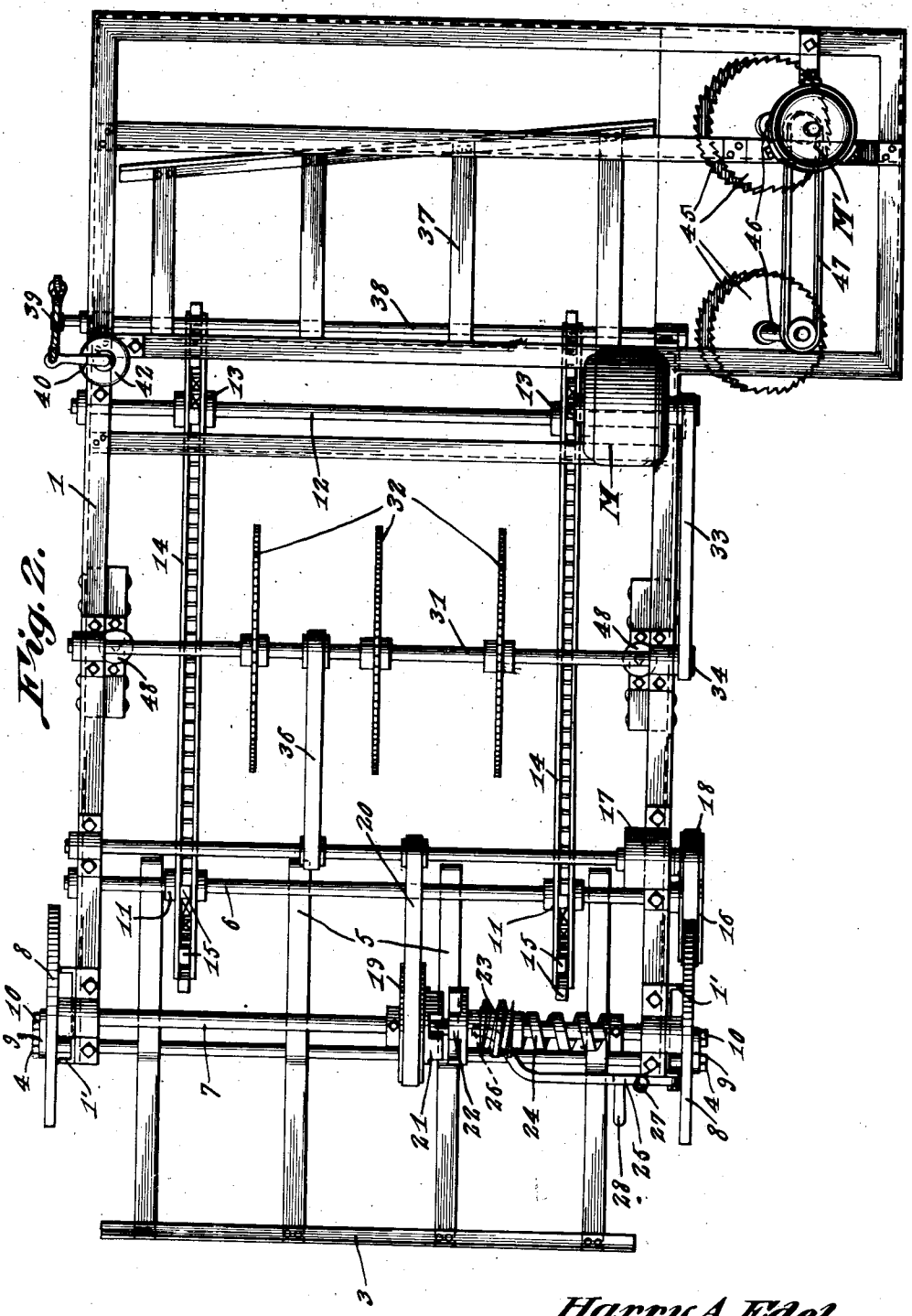


Fig. 2.

Harry A. Edel, INVENTOR

BY Victor J. Evans

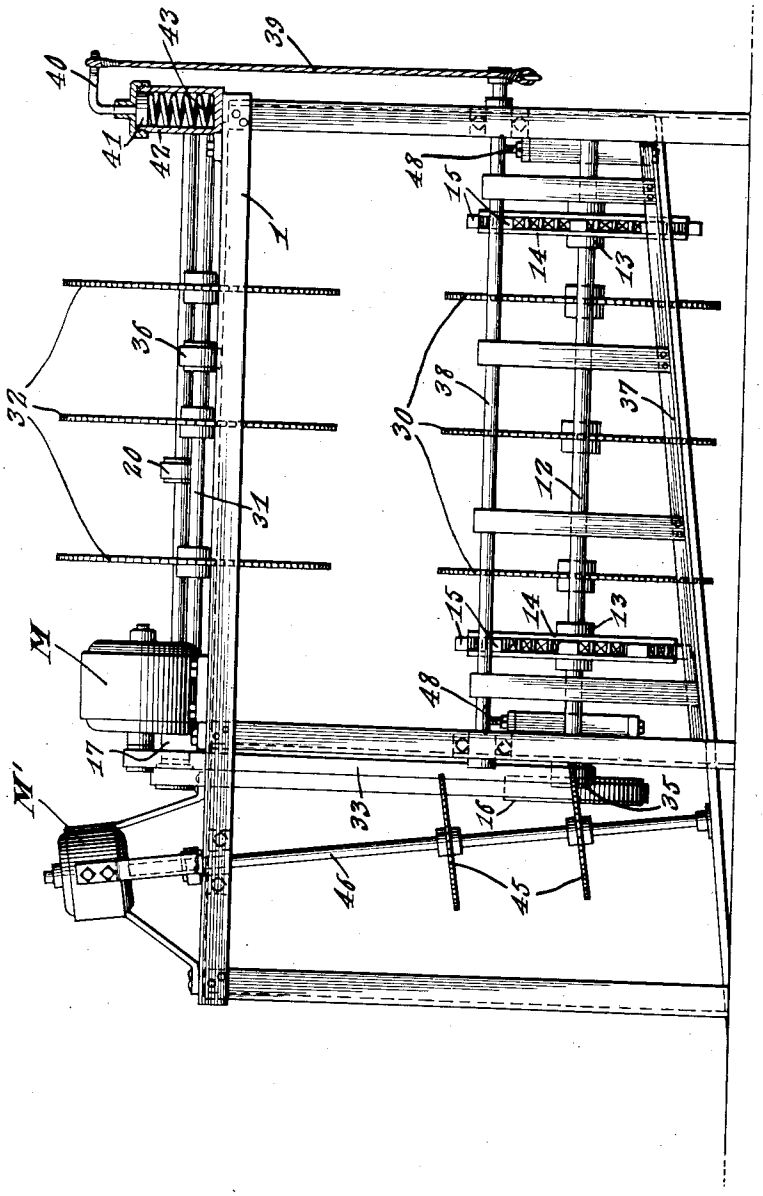
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ICE SCORING MACHINE

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Fig. 3.



Harry A. Edel, INVENTOR

BY Victor J. Evans

ATTORNEY

April 2, 1929. H. A. EDEL 1,707,847

ICE SCORING MACHINE

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Fig. 5.

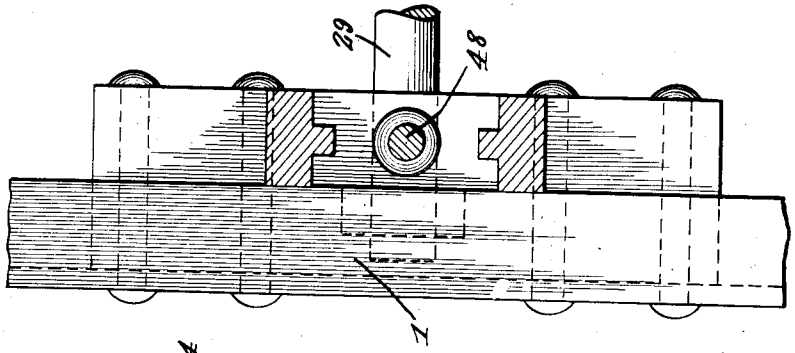
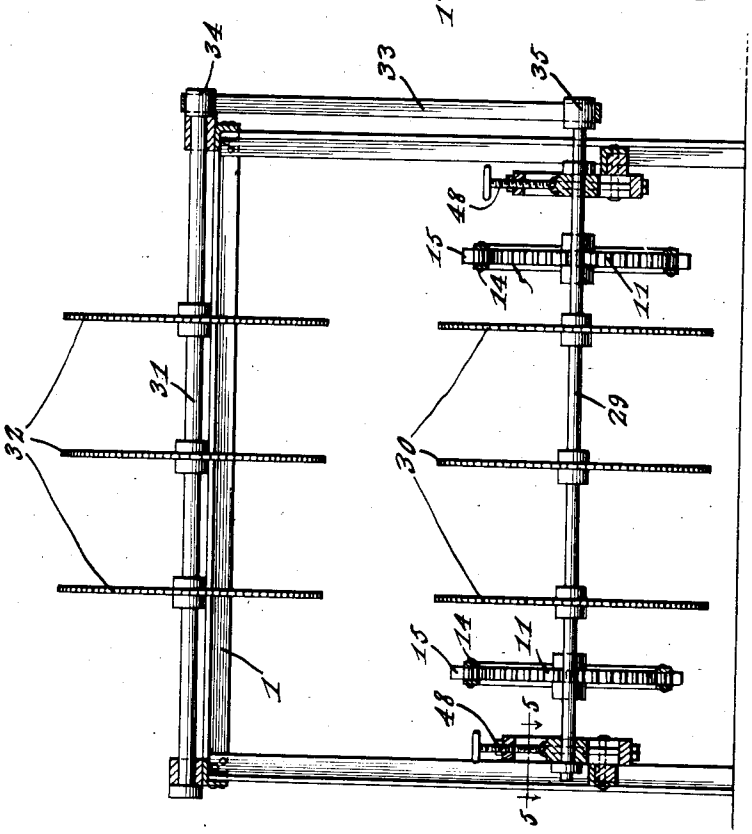


Fig. 4.



Harry A. Edel, INVENTOR

BY Victor J. Evans

ATTORNEY

April 2, 1929. H. A. EDEL 1,707,847

ICE SCORING MACHINE

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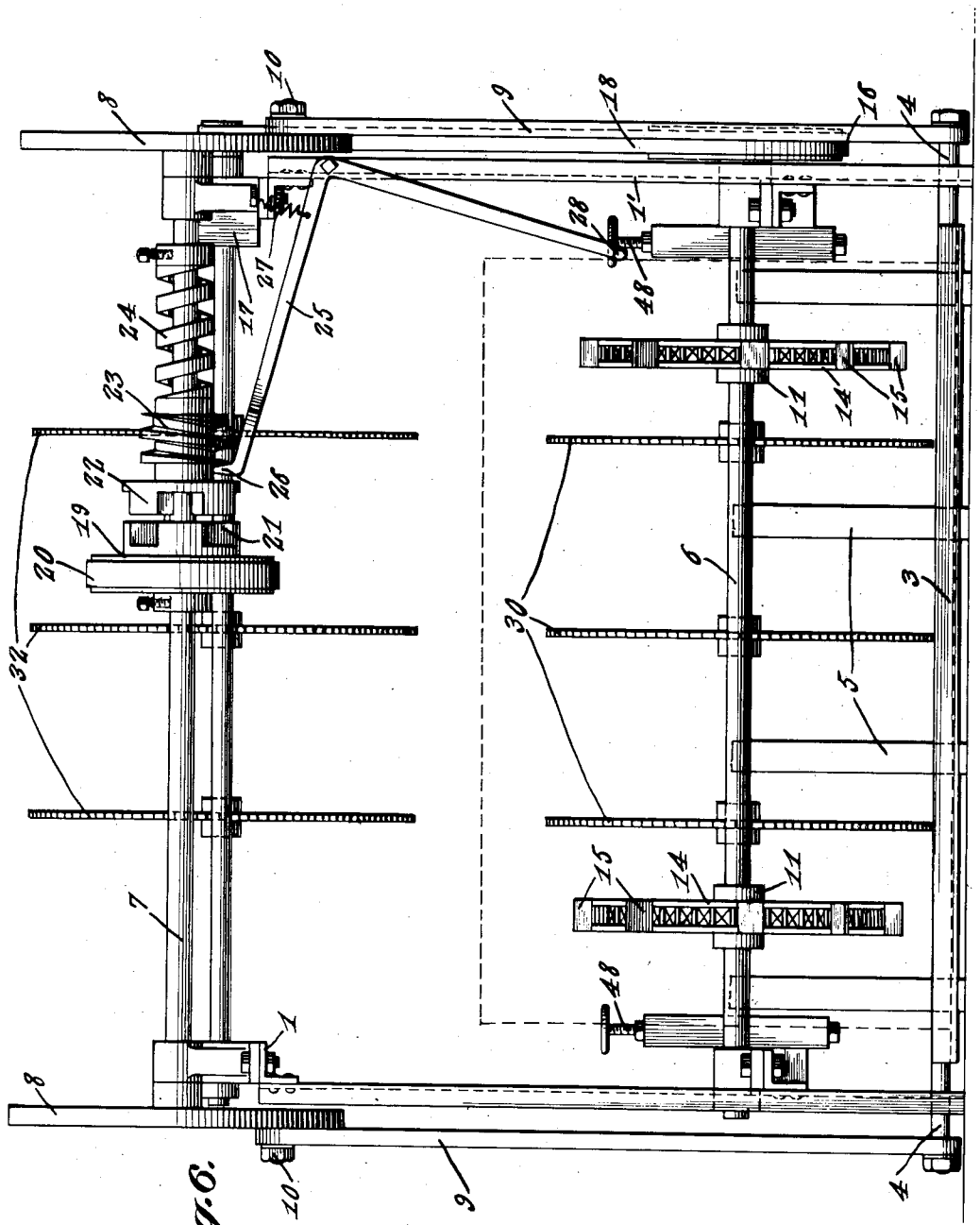


Fig. 6.

Harry A. Edel, INVENTOR

BY Victor J. Evans

ATTORNEY

Patented Apr. 2, 1929. 1,707,847

UNITED STATES PATENT OFFICE.

HARRY A. EDEL, OF SOUTH BROWNSVILLE, PENNSYLVANIA.

ICE-SCORING MACHINE.

Application filed January 3, 1928. Serial No. 244,300.

This invention relates to an apparatus for scoring blocks of ice, the general object of the invention being to provide means for lifting and simultaneously turning each block of ice from edge to side upon a conveyor which carries it between upper and lower rows of saws which score opposite sides of the block laterally, after which the block is automatically lowered upon a chute down which it passes by gravity, with vertically arranged saws for scoring the block longitudinally as it passes down the chute, the cuts made by the latter saws being arranged at right angles to the cuts made by the first saws.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claims.

In describing my invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is an elevation of the apparatus and showing the various positions of the block as it passes through the apparatus.

Figure 2 is a plan view of the apparatus.

Figure 3 is a view of the rear end of the apparatus.

Figure 4 is a section on line 4—4 of Figure 1.

Figure 5 is an enlarged section on line 5—5 of Figure 4.

Figure 6 is a view of the front end of the apparatus.

In these views, 1 indicates a frame formed mainly of angle iron or the like but having its front uprights 1′ formed of heavy channel iron. Each upright 1′ is formed with a slot 2 in its lower portion which comprises a vertical part and a top part which extends upwardly and inwardly, as shown. An elevator frame 3 has trunnions 4 at its ends engaging these slots and upwardly and inwardly extending arms 5 are connected with the inner frame and bear against the under part of a shaft 6 which is journaled in the frame adjacent the front end thereof. A shaft 7 is journaled in supports resting upon the uprights 1′ and a crank disc 8 is fastened to each end of this shaft 7, bars 9 being pivoted at their upper ends to the crank pins 10 and having their lower ends connected with the trunnions so that as the shaft 7 is rotated, the bars will move upwardly, thus lifting the elevator frame 3 and as the said frame moves upwardly, its arms 5, engaging the shaft 6, will cause the frame to tilt upwardly, and as the trunnions pass into the sloping ends of the slots, the frame will assume a vertical position or practically so and deposit the block of ice upon its side on the conveyor. The shaft 6 carries the sprockets 11 and a second shaft 12, journaled in the frame, carries the sprockets 13 and the endless chains 14 pass over these sprockets 11 and 13. Each of the chains is provided with pointed projections 15. As will be seen, a block of ice set on edge on the elevator frame 3 will be placed upon its side on the conveyor formed by the endless chains and the sprockets, as the elevator is raised, as before described, so that the block of ice will be moved by the conveyor while resting upon one side. The projection 15, engaging the ice, will prevent it from slipping on the chains. A pulley 16 is fastened to one end of the shaft 6 and a speed reducer 17, supported upon the top of the frame, has a pulley upon its shaft over which passes a belt 18, said belt also passing over a pulley 16 so that the conveyor is actuated from the speed reducer. This speed reducer is connected to a pulley 19 loosely mounted on shaft 7 through means of belt 20. This pulley 19 is provided with a clutch part 21 and a co-operating part 22 is slidably but non-rotatably connected with the shaft 7. A worm 23 forms part of the clutch 22 and a coil spring 24 on the shaft 7 tends to force the worm and the part 22 forwardly to place said part 22 in engagement with the part 21.

A bell crank lever 25 is pivoted to a part of the frame and has a hook 26 on its upper arm which normally engages the worm and holds the parts with the spring contracted and the clutch part 22 out of engagement with the clutch part 21. A spring 27 holds the bell crank in this position. The lower end of the bell crank is formed with a rightangular extension 28 which is in the path of a block of ice being slid on the elevator part 3 so that when the block strikes this projection, the bell crank will be tilted so that its hook 26 will move out of contact with the worm and thus the spring 24 can push the clutch part 22 in engagement with the clutch part 21. This will cause the shaft 7 to be turned by the actuating means and thus the elevator will be raised by the crank means before described. As soon as the bell crank is released from the

pressure of the block of ice, it will return to its normal position with the hook engaging the outer part of the worm so that as the worm revolves, the hook will pass through the grooves thereof, thus gradually drawing the worm and the clutch away from the clutch part 21 and thus stopping further rotation of the shaft 7. These parts are so formed that the elevator will be raised to place the block of ice upon the conveyor and then return to its normal position during one revolution of the shaft, when said shaft will cease to operate, due to the fact that the part of the bell crank engaging the worm will have moved the clutch 22 out of engagement with the clutch 21.

A shaft 29 is journaled in the frame midway between the shafts 6 and 12 and this shaft carries a plurality of saws 30. A second shaft 31 is journaled in the top of the frame directly above the shaft 29 and this shaft 31 carries a plurality of saws 32. These saws are adjustably arranged on their shafts so that they can be moved toward or away from each other and as will be seen, the block of ice traveling along with the conveyor will pass between the upper and lower sets of saws so that the upper and lower faces of the block will be scored by these means.

A motor M is supported upon the top of the frame and a belt 33 passes over a pulley on the motor shaft and over pulleys 34 and 35 on the shafts 29 and 31 so that the saw shafts are rotated from the motor. The shaft 31 is belted to the shaft of the speed reducer 17, as shown at 36, so that the conveyor and the elevator are actuated from the motor.

A frame 37 is fastened to a shaft 38 journaled in the rear part of the main frame so that the frame 37 is tiltably supported and a cable 39, fastened to an arm on the shaft, passes upwardly to an L-shaped member 40 which is connected to a piston 41 arranged in cylinder 42 on the top of the main frame. A coil spring 43 in the cylinder normally holds the piston at the top of the cylinder so that the cable 39 normally holds the frame 37 in horizontal position so that this frame 37 will receive the block of ice passing from the conveyor. As the weight of the block comes upon the frame 37, it will tilt downwardly, thus turning the block upon its edge and at the end of the downward movement, the frame will deposit the block upon an inclined chute 44 which extends transversely of the main frame at the rear end thereof. The block, resting on its edge will slide down the chute and it will pass between the two sets of saws 45 which are adjustably fastened to the shaft 46, one of which is driven by the motor M′ and the other of which is belted to the motor driven shaft, as shown at 47. These shafts are arranged at an angle to the vertical so that the saws 45 are arranged in planes which are parallel to the chute 44 so that these saws will make parallel longitudinal cuts in the sides of the block as it passes between them, these cuts being at right angles to the cuts made by the other saws. Thus the large block can be easily divided into smaller blocks. As soon as the block passes from the frame 37, the spring and the parts associated therewith will return said frame to its normal position.

From the foregoing it will be seen that I have provided means for lifting and simultaneously turning a block of ice from edge to side upon a conveyor, cutters or saws for laterally scoring the upper and lower faces of the block as it travels along with the conveyor, means for again turning the block on its edge as it leaves the conveyor and depositing it on a chute and means for scoring the faces of the block longitudinally as it passes down the chute, it simply being necessary to slide the block on edge on the elevator with sufficient energy that its contact with the bell crank extension part 28 will allow the clutch parts to engage after which no attention is required from the attendant until the block leaves the apparatus.

The bearings for the shaft 29 can be adjusted vertically by the screw 48 so that the lower saws can be raised to make deeper lateral cuts on one side of the block and if desired, two large saws may be used with the other saws 30 and 32 so that rough edge may be trimmed from the block and make it uniform.

It is thought from the foregoing description that the advantages and novel features of my invention will be readily apparent.

It is to be understood that I may make changes in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

What I claim is:—

1. A device for scoring blocks of ice comprising a frame, a conveyor therein, an elevator for placing blocks of ice upon the conveyor, upper and lower sets of cutters for scoring the block as it travels along with the conveyor, means at the rear of the conveyor and operated by the weight of the block for turning the block upon its edge, a chute for receiving the block from the turning means and cutters for scoring the block as it passes down the chute.

2. An apparatus for scoring blocks of ice comprising a frame, a horizontally arranged conveyor in the frame, an elevator for placing blocks of ice upon the conveyor, upper and lower sets of cutters for scoring the block as it travels along with the conveyor, power means for operating the conveyor, the elevator and the cutters, a tiltable frame actuated by the weight of the block for receiving the block of ice from the conveyor and turning it upon

its edge, an inclined chute receiving the block from the tiltable frame, means for returning the frame to raised position after the block has left the same, a pair of shafts arranged one on each side of the chute, each shaft being inclined to the vertical, cutters on each shaft for scoring the block as it passes down the chute and power means for driving the shafts of said cutters.

3. An apparatus for scoring blocks of ice comprising a frame, a horizontally arranged conveyor in the frame, an elevator for placing blocks of ice upon the conveyor, upper and lower sets of cutters for scoring the block as it travels along with the conveyor, power means for operating the conveyor, the elevator and cutters, a tiltable frame for receiving the block of ice from the conveyor and turning it upon its edge, an inclined chute receiving the block from the tiltable frame, means for returning the frame to raised position after the block has left the same, a pair of shafts arranged one on each side of the chute, each shaft being inclined to the vertical, cutters on each shaft for scoring the block as it passes down the chute, power means for driving the shafts of said cutters, and means for throwing the elevator into operation by the sliding of a block of ice thereon.

4. An apparatus for scoring blocks of ice comprising a frame, a horizontally arranged conveyor in the frame, an elevator for placing blocks of ice upon the conveyor, upper and lower sets of cutters for scoring the block as it travels along with the conveyor, power means for operating the conveyor, the elevator and the cutters, a horizontal frame having one end pivoted to the main frame adjacent the rear end of the conveyor for receiving the block of ice from the conveyor said frame tilting downwardly under the weight of the block of ice and turning said block upon its edge, an inclined chute receiving the block from the tiltable frame, means for returning the frame to raised position after the block has left the same, a pair of shafts arranged one on each side of the chute, each shaft being inclined to the vertical, cutters on each shaft for scoring the block as it passes down the chute, power means for driving the shafts of said cutters, and means for adjusting the lower set of the first named cutters vertically.

5. An apparatus for scoring blocks of ice comprising a frame including a pair of end posts have vertically arranged slots therein, the upper ends of the slots sloping upwardly and inwardly, an elevator frame having trunnions engaging the slots, a shaft journaled on the frame, cranks at the ends of the shaft, rods connecting the cranks with the trunnions, means for causing the elevator frame to tilt inwardly as it is being raised, a conveyor in the frame for receiving a block of ice from the elevator frame, said frame in its tilting movement, turning the block so that it will be deposited upon the conveyor upon its side, means for scoring the block as it travels along with the conveyor, and means for rotating the crank shaft and operating the scoring means and conveyor.

6. An apparatus for scoring blocks of ice comprising a frame including a pair of end posts having vertically arranged slots therein, the upper ends of the slots sloping upwardly and inwardly, an elevator frame having trunnions engaging the slots, a shaft journaled on the frame, cranks at the ends of the shaft, rods connecting the cranks with the trunnions, means for causing the elevator frame to tilt inwardly as it is being raised, a conveyor in the frame for receiving a block of ice from the elevator frame, said frame, in its tilting movement, turning the block so that it will be deposited upon the conveyor upon its side, means for scoring the block as it travels along with the conveyor, means for rotating the crank shaft and operating the scoring means and conveyor, clutch means on the crank shaft, means for moving the clutch means into operative position by the sliding of a block of ice on the elevator and means for releasing the clutch means after the elevator has deposited a block upon the conveyor and returned to its normal position.

7. An apparatus for scoring blocks of ice comprising a frame including a pair of end posts having vertically arranged slots therein, the upper ends of the slots sloping upwardly and inwardly, an elevator frame having trunnions engaging the slots, a shaft journaled on the frame, cranks at the ends of the shaft, rods connecting the cranks with the trunnions, means for causing the elevator frame to tilt inwardly as it is being raised, a conveyor in the frame for receiving the block of ice from the elevator frame, said frame, in its tilting movement, turning the block so that it will be deposited upon the conveyor upon its side, means for scoring the block as it travels along with the conveyor, means for rotating the crank shaft and operating the scoring means and conveyor, clutch means on the crank shaft, means for moving the clutch means into operative position by the sliding of a block of ice on the elevator, means for releasing the clutch means after the elevator has deposited a block upon the conveyor and returned to its normal position, a tiltable frame for receiving the block of ice from the conveyor, said frame turning the ice upon its edge, an inclined chute for receiving the block from the frame, means for returning the frame to its raised position and means for scoring the block as it passes down the chute.

In testimony whereof I affix my signature.

HARRY A. EDEL.