April 5, 1932. E. W. PULLIAM 1,852,370

PORTABLE ICE SCORING MACHINE

Filed Sept. 14, 1928

Fig. 1.

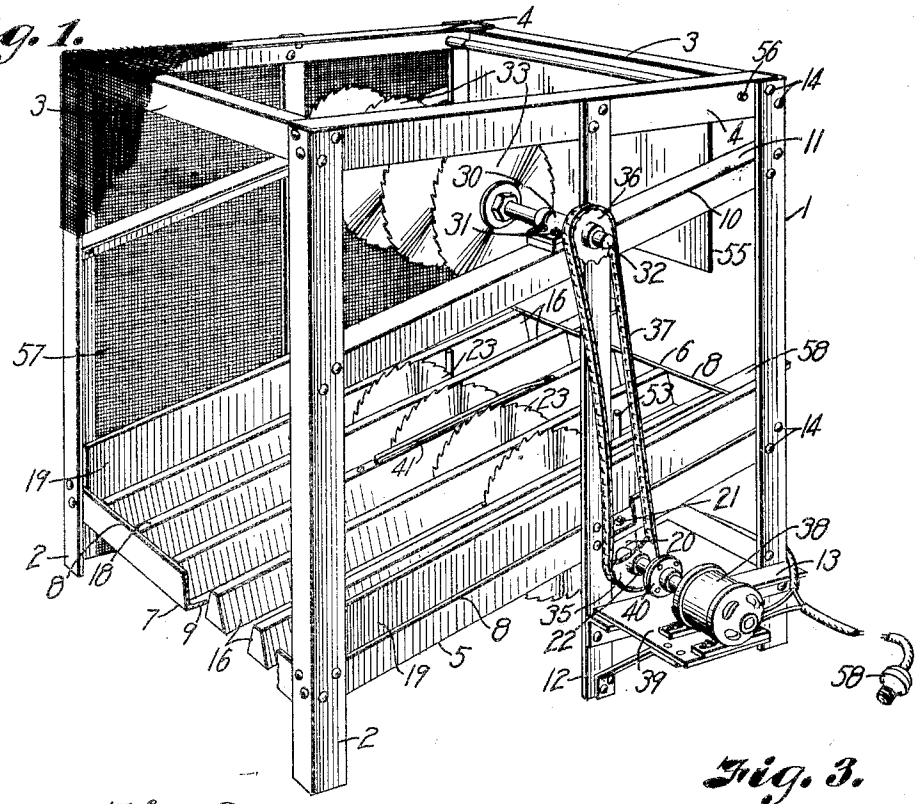


Fig. 3.

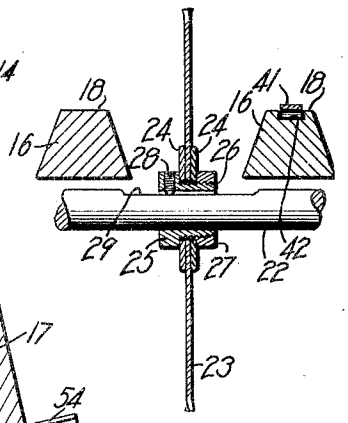
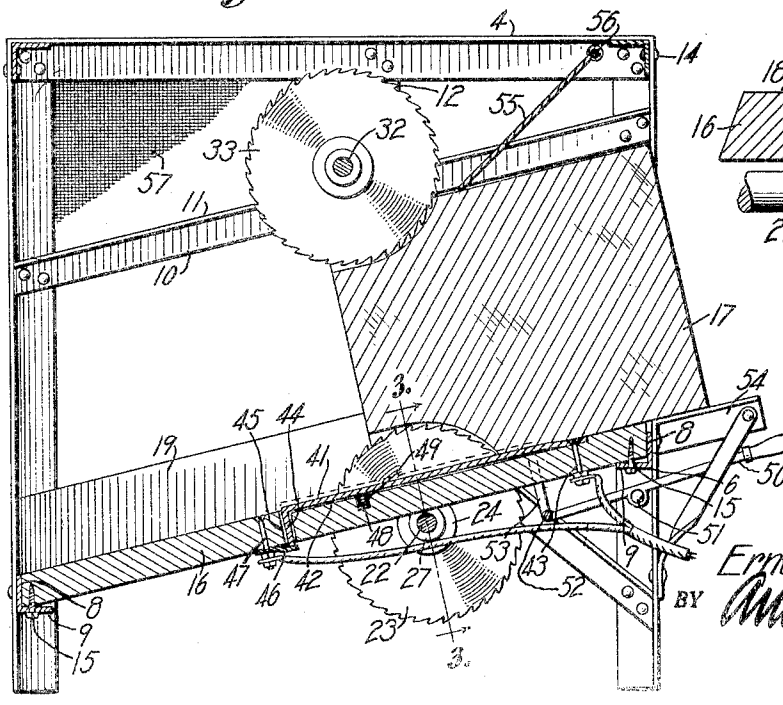


Fig. 2.



INVENTOR.
Ernest W. Pulliam
BY Munn & Brown
ATTORNEY

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# UNITED STATES PATENT OFFICE

ERNEST W. PULLIAM, OF CUSHING, OKLAHOMA

## PORTABLE ICE SCORING MACHINE

Application filed September 14, 1928. Serial No. 305,985.

My invention relates to scoring apparatus and more particularly to machines of that character for use in scoring blocks of ice for determining the lines along which the block is to be broken into smaller parts.

The principal object of my invention is to provide a machine of this type especially adapted for scoring relatively small blocks of ice into portions such as are commonly used for household purposes, and to embody in a device of this kind automatic safety features for preventing accidental injury to the operator.

In accomplishing these and other objects of my invention I have provided improved details of structure, the preferred forms of which are illustrated in the accompanying drawings, wherein:

Fig. 1 is a perspective view of a scoring machine embodying my invention, parts being broken away to more clearly disclose other parts.

Fig. 2 is a central longitudinal sectional view of the machine, illustrating an automatic switch depressed in to closed position by a block of ice undergoing the scoring process.

Fig. 3 is a cross-sectional view on the line 3—3, Fig. 2, illustrating the manner of adjustably mounting a saw on a mandrel or shaft.

Referring more in detail to the drawings:

1 and 2 designate front and rear pairs of legs preferably constructed of angle irons, and connected at their upper ends by side members 3 and end members 4. Lower side members 5 also of angle irons are fixed to the legs at an incline of approximately fifteen degrees, resulting in a gradual decline of the members 5 from the front to the rear of the machine. Lower end members 6 and 7 are further attached to the legs and align with the front and rear ends, respectively, of the members 5, the members 5, 6 and 7 constituting a peripheral girdle having an upstanding outer flange 8 and an inwardly directed lower flange 9. Intermediate side members 10 are fixed to the legs parallel to the angles 5, with the inwardly directed flanges 11 projecting from the top of the members. Intermediate vertical reinforcing bars 12 are fixed to the side members 3, 5 and 10 and braces, such as 13, are attached to the front legs 1 and lower side members 5. The several members may be secured together by rivets such as 14, thereby providing a frame of simple yet rigid construction.

Abutting the flanges 8 of the members 6 and 7 and fixedly supported on the lower flanges 9 thereof by screws 15, are spaced bars 16, serving as slides for blocks of ice 17, the bars having relatively narrow upper surfaces 18 for reducing frictional resistance to the sliding ice. Guide bars 19, adjacent the members 5 and extending above them, are tapered outwardly toward their lower ends so that a block of ice will be guided yet not restricted thereby, in its downward travel.

Journaled in bearings 20 attached to the lower faces of the flanges 9 on the side members 5 by bolts 21 is a shaft 22, carrying a series of spaced circular saw blades 23, each saw being positioned between a pair of slide bars 16 and projecting above the upper surfaces thereof for engaging the lower edges of passing blocks of ice.

The mounting of a saw blade on the shaft 22 includes an apertured disk 24 on each side of the blade, and a collar 25, slidable on the shaft and having a reduced, threaded portion 26 extending through the disks and blade, receives a binding nut 27, for securely supporting the blade between the disks. A set screw 28 threaded radially into the collar 25 engages a flattened portion 29 of the shaft for adjustably fixing the blade thereon.

Journaled in bearings 30 fixed on the flanges 11 of the side members 10, as by bolts 31, is a shaft 32 parallel to the shaft 22, carrying a series of saw blades 33, equal in number to and aligning with the blades 23. The shaft 32 is positioned on a perpendicular line above the shaft 22 relative to the incline of the bars 16, so that both sets of blades 23 and 33 will coincidentally encounter the upper and lower edges of an ice block for scoring purposes.

The shafts 22 and 32 extend sufficiently beyond one side of the frame to receive sprockets 35 and 36 respectively, carrying a chain

belt 37, and a motor 38 mounted on a platform 39 is operably connected with the shaft 22 by a flexible coupling 40 for actuating the shafts.

Means for automatically controlling current to the motor and consequent rotation of the saw blades includes a flexible switch arm 41, mounted in a cooperative groove 42, preferably provided in the central slide bar 16, the upper end of the arm being fixed to the bar by a contact screw 43. A depending finger 44 on the arm extends through an aperture 45 and is adapted, when depressed, to engage a contact plate 46 fixed to the bar 16 by a contact screw 47. Normally however, the arm 41 is urged upwardly to contact-breaking position by an expansion spring 48 seated in a socket 49 in the bar and engaging the lower face of the arm.

In order to prevent a block of ice from reaching the saws until they have attained their maximum speed, I provide a safety arm 50 pivotally supported from a leg, as at 51, and having a laterally extending bar 52 carrying upwardly directed fingers 53, normally extending between the slide bars and sufficiently above the same to engage the lower front edge of an ice block.

Extension brackets such as 54 aligning with the slide bars may be fixed to the front legs to provide additional support for the ice when fed into the machine.

A safety curtain 55 positioned in front of the saws and pivotally mounted on a transverse rod 56 in the upper members 4 is swung upwardly by ice entering the machine and returns by gravity to normal position when the ice has passed the saws.

For additional safety a screen 57 may be used to cover the apparatus excepting for portions where it would interfere with operation of the machine.

Assuming an ice scoring machine to be constructed as described, operation thereof would be as follows:

With a plug 58 connected to a source of electrical energy, a block of ice is placed on the brackets 54 and moved downwardly, depressing the contact arm 41, closing the contacts, and establishing a circuit through the motor. Before the ice reaches the saws it engages the projecting fingers 53, and is thereby detained until the saws have reached their full speed, whereupon the operator, exerting an upward pull on the lever 50, releases the ice, so that it slides into contact with the upper and lower saw blades. As will be readily apparent from the drawings the upper and lower saws are so mounted and rotated that they will respectively assist and resist the travel of the block through the machine. The purpose for this opposed action is to eliminate vibration and chattering. After the ice has passed the saws, the contact arm urged upwardly by the spring 48 breaks contact with the plate 46, stopping the motor and saws, and the block having equally spaced scores or grooves in both its upper and lower faces continues to slide and moves from the machine. With a pick or other instrument the scored block may then be readily broken into the number of smaller uniform portions determined by the scores.

What I claim and desire to secure by Letters Patent is:

1. In ice-scoring apparatus, an inclined chute, a series of upper and lower vertically aligned saws adjustably mounted and rotatable in the same direction for simultaneously scoring upper and lower faces of an ice block passing by gravity through the chute, means for rotating the saws at a predetermined speed, a switch in the chute closed in response to pressure of an ice block moving through the chute for effecting operation of the rotating means, said switch opening after said ice block has passed, and manually-releasable means for detaining the ice block after the switch has been closed to permit the saws to attain said predetermined speed.

2. In ice-scoring apparatus, an inclined chute including a plurality of spaced slide bars, one of said bars having an opening, a plurality of upper and lower saws arranged for simultaneously scoring upper and lower faces of an ice block passing by gravity through the chute, said lower saws being arranged alternately between the slide bars and projecting above the bars for engaging a block of ice in the chute, a normally open electric circuit including a motor for rotating the saws, and a switch for closing said circuit including a contact plate and an arm mounted on one of said bars and having a depending finger extending through said opening in the bar for engaging said plate when depressed by a block of ice.

3. In ice scoring apparatus, an inclined chute, a shaft mounted below and transversely of said chute, a second shaft mounted above said chute and parallel to said first mentioned shaft, a plurality of saws adjustable to and from each other mounted on each of said shafts, said saws being vertically aligned and having a portion thereof projecting into said chute, a driving means for placing said saws in operation simultaneously, means located in said chute and operable by an oncoming cake of ice for placing said driving means in operation, said means also placing said driving means out of operation when said cake of ice has passed a predetermined point, means for halting movement of the oncoming cake of ice as soon as the driving means has been started, and a lever for releasing said halting means when said saws have reached a desired speed of rotation.

In testimony whereof I affix my signature.

ERNEST W. PULLIAM.