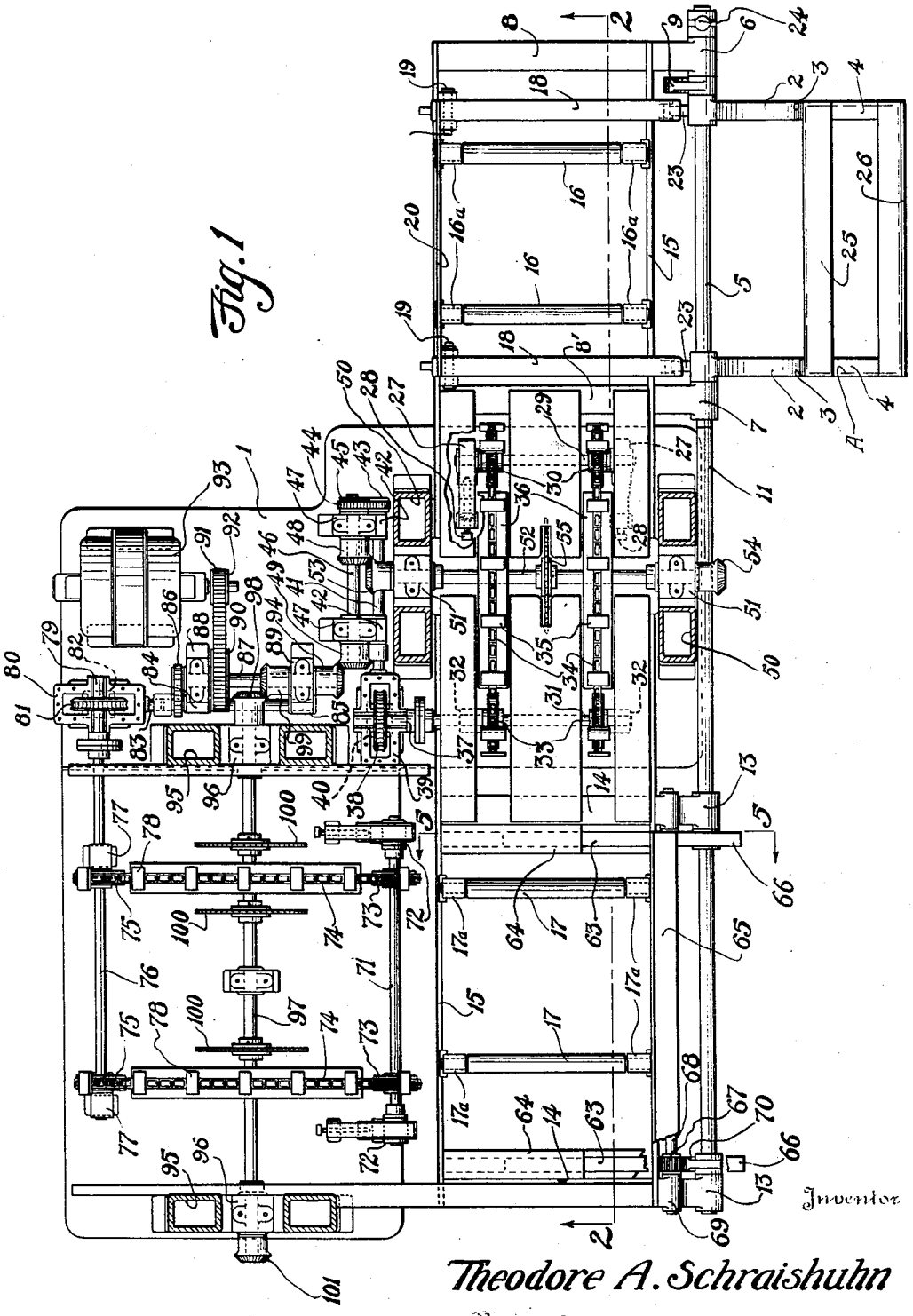
Sept. 2, 1924. 1,507,004

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ICE KERFING OR SCORING MACHINE

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Fig. 1



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Fig. 4

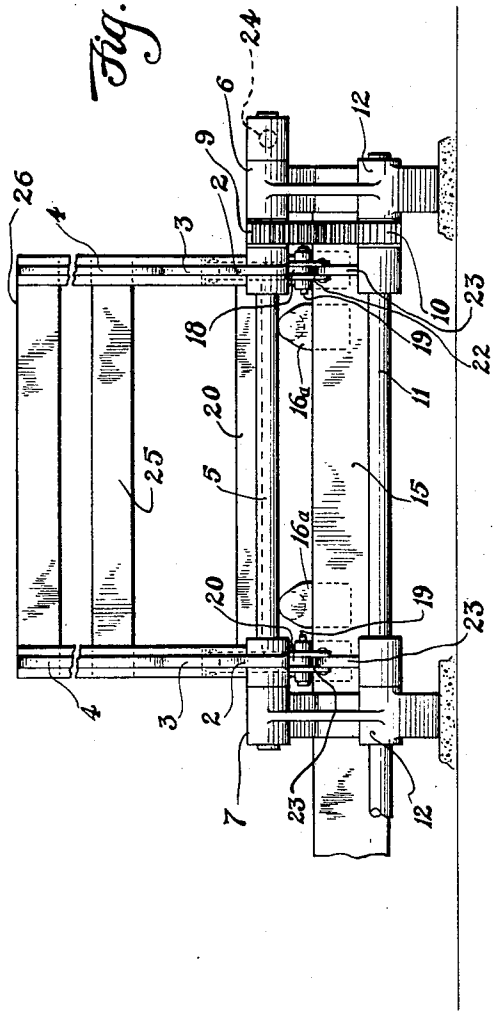
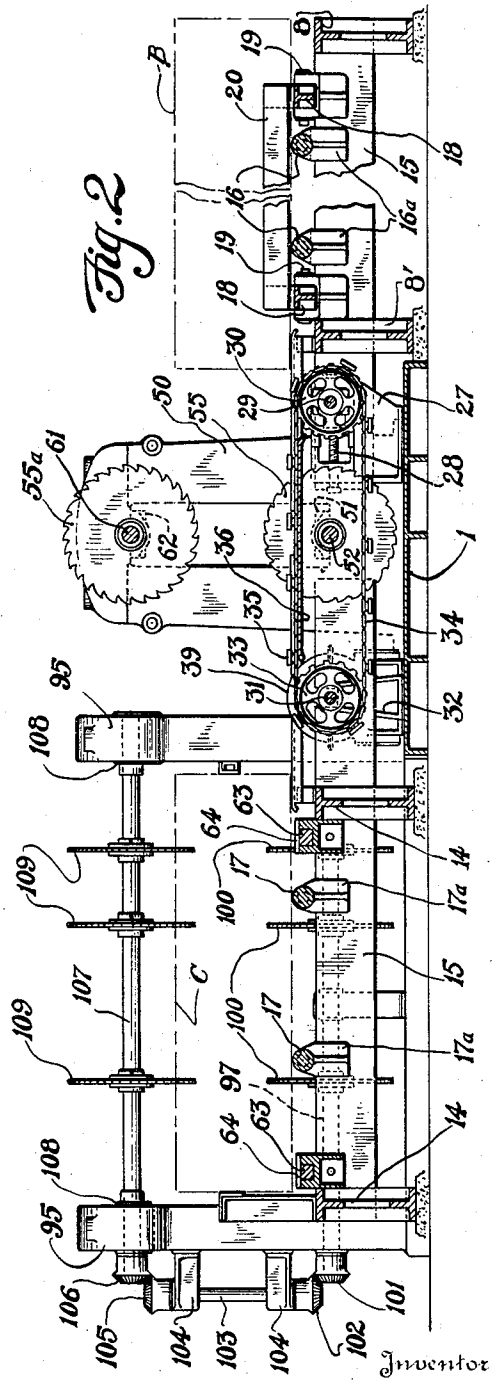


Fig. 2



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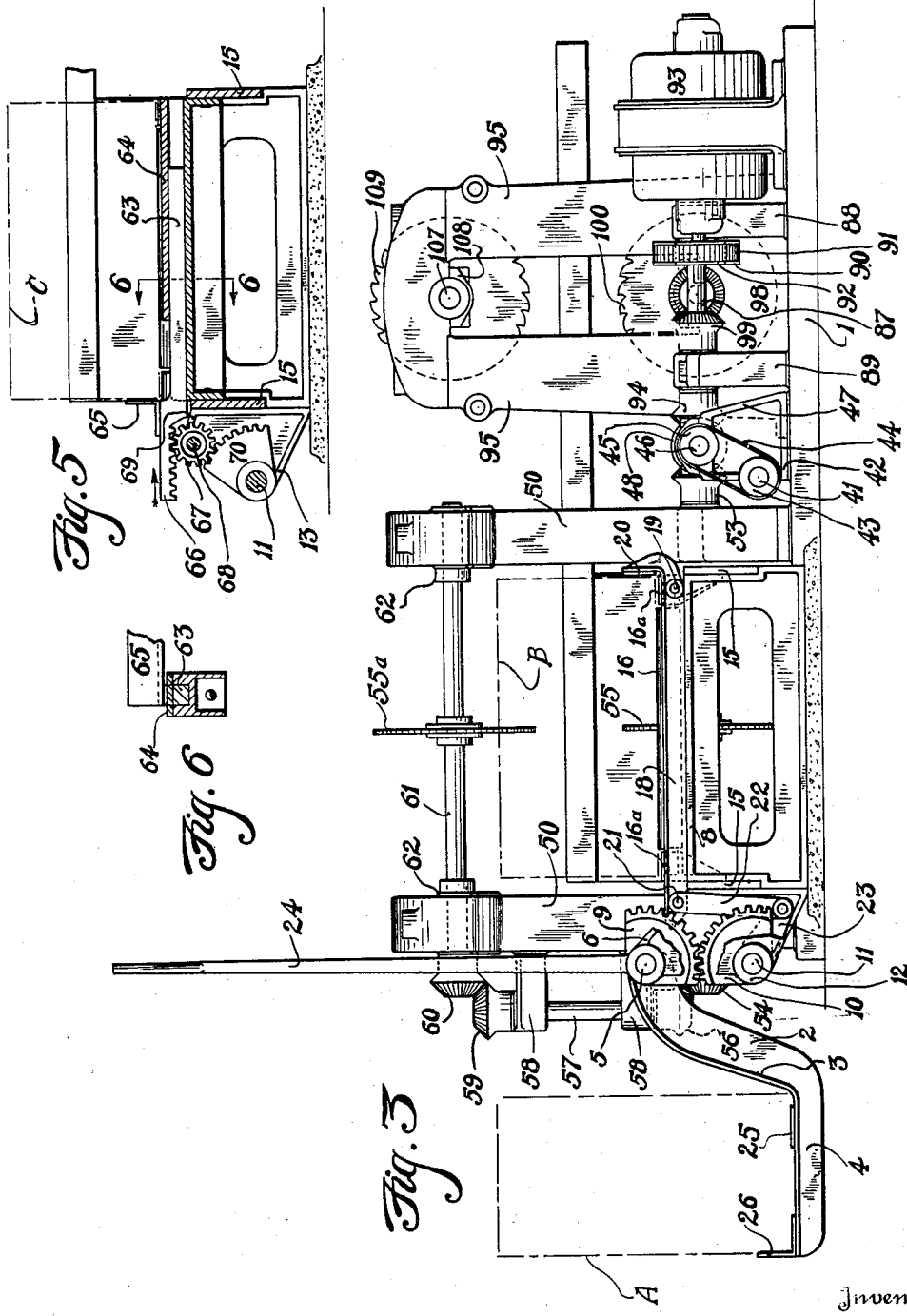


Fig. 5

Fig. 6

Fig. 3

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UNITED STATES PATENT OFFICE.

THEODORE A. SCHRAISHUHN, OF CANTON, OHIO.

ICE KERFING OR SCORING MACHINE.

Application filed January 19, 1922. Serial No. 530,383.

To all whom it may concern:

Be it known that I, THEODORE A. SCHRAISHUHN, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented a new and useful Ice Kerfing or Scoring Machine, of which the following is a specification.

This invention relates to ice kerfing machines especially adapted for kerfing or scoring large blocks of artificial ice in order that the same may be easily separated into smaller blocks of predetermined size.

The objects of the invention are to provide a machine of this character adapted to receive the blocks of ice in the standing position in which they are usually handled upon the floor and to place the same upon the machine in a flat position, means being provided for continuously carrying the block of ice through the machine and kerfing the same longitudinally and transversely upon the upper and lower flat sides.

Other objects are to provide a machine of this character which is compact and entirely above the floor, occupying a minimum amount of floor space, being only sufficiently high to provide means for kerfing the upper surface of the blocks of ice and to provide a single driving means for all of the mechanism.

The above and other objects may be attained by providing a machine as illustrated in the accompanying drawings, in which means are provided for receiving the cakes of ice in an upright position and depositing them upon a conveyer in a flat position, means being provided for kerfing the upper and lower sides of the cake as it is carried through the machine upon the conveyer, means being provided at the delivery end of the conveyer for delivering the ice upon a second conveyer traveling at right angles to the first conveyer, kerfing means being located adjacent to the second conveyer for kerfing the upper and lower sides of the block of ice at right angles to the kerfs first provided therein, the block of ice being delivered from the machine and deposited upon the floor in the upright position as before placing on the machine.

The invention thus set forth in general terms is illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of a machine embodying the invention, the upper portion of the machine being removed for the purpose of illustration;

Fig. 2, a section on the line 2—2, Fig. 1;

Fig. 3, an end elevation of the loading end of the machine;

Fig. 4, a side elevation of the loading end;

Fig. 5, a section on the line 5—5, Fig. 1; and

Fig. 6, a section on the line 6—6, Fig. 5.

Similar numerals of reference indicate corresponding parts throughout the drawings.

The usual block of artificial ice is proportioned as illustrated in the drawings, being comparatively narrow and for the purpose of convenience in handling, the blocks are generally placed in an upright position upon the floor in order that they may be easily slid over the floor of the ice house.

The machine embodying this invention is designed to receive the blocks of ice in this upright position and deposit them upon the conveyer in a flat position in which position they are carried through the machine, being kerfed both longitudinally and transversely upon the upper and lower flat sides and delivered from the machine in an upright position upon the floor.

Referring to the construction illustrated in the drawings, the entire machine is carried upon a base plate 1 which may be formed of one or more sections, as desired, and which is mounted directly upon the floor and entirely above floor level. At the loading end of the machine is provided a tilting frame comprising a pair of arms 2, each having the depending, outwardly inclined portion 3 terminating in the horizontal portion 4, these arms being spaced and mounted upon the rocking shaft 5.

Suitable bearings 6 and 7 are provided for the shaft 5, the bearing 6 being carried by the end frame 8 which is spaced from the adjacent end of the base plate, the bearing 7 being carried by a similar frame 8′ located adjacent to the base plate, a gear segment 9 is fixed upon the shaft 5 and meshes with a similar segment 10 mounted upon the shaft 11 which is journaled in bearings 12 carried by the frames 8 and 8′ and which extends to the forward end of the machine where it is journaled in the bearings 13 carried upon the frame members 14, duplicates of frames 8, located at the other side of the base plate.

The frame members 8, 8′ and 14 are connected upon opposite sides of the longitudinally extending side members 15. Rollers 16 are mounted between said side members at the loading end of the machine and similar rollers 17 at the opposite end of the machine mounted in bearings 16A and 17A respectively. A pair of arms 18 are pivoted to the side piece 15 farthest from the shaft 5 as indicated at 19, each of said arms having an upturned extremity 20 forming a stop for the block of ice as the same is deposited upon the machine.

The free end of each of these arms is pivoted as shown at 21 to the link 22, connected at its lower extremity to the rocking arm 23 mounted on the shaft 11. A lever 24 or other suitable operating means is provided upon the shaft 5 for rocking the same. The horizontal portions 4 of the arms 2 are connected by one or more flat strips 25, an upturned flange 26 being formed at the outer side thereof providing a suitable platform or shelf to receive the block of ice from the floor in the upright position as indicated at A in Figs. 1 and 3.

Mounted upon the base plate, adjacent to the loading end of the machine, is a pair of take-up stands, and bearings 27 arranged to be adjusted as by the screws 28, a shaft 29 being journaled in said bearings and provided with a pair of spaced sprockets 30, a similar shaft 31 being mounted in fixed bearings 32 at the opposite end of the base plate and carrying a pair of sprockets 33. Conveyer chains 34 are located around adjacent pairs of sprockets 30 and 33, said chains being provided at intervals with blocks 35 preferably of wood and arranged to frictionally engage the block of ice. The upper span of each conveyer chain travels upon a supporting plate 36.

The shaft 31 extends inwardly and is coupled to the shaft 37 which carries a worm wheel 38 located within the housing 39 and meshing with the worm 40 upon the shaft 41 journaled in bearings 42 and provided with a sprocket or gear 43 connected as by the silent drive chain 44 with the sprocket 45 mounted upon the shaft 46, said shaft being journaled through the bearings 47 and provided with the bevel gears 48 and 49.

Standards 50 are located upon opposite sides of the conveyer chains 34 and are provided in their lower portions with bearings 51 within which is journaled the shaft 52 provided at its inner end with a bevel gear 53 meshing with the bevel gear 48 and at its outer end with a similar bevel gear 54. A circular saw 55 is fixed upon the shaft at a point between the conveyer chains 34. As shown in the drawings, this saw is centrally located between said chains in position to cut a longitudinal groove through the under surface in the cake of ice indicated at B as best shown in Fig. 3.

The bevel gear 54 meshes with a bevel gear 56 upon the vertical shaft 57 journaled in the bearings 58 supported upon the adjacent standard 50, a bevel pinion 59 being fixed upon the upper end of said shaft and meshing with a similar pinion 60 upon the shaft 61 which is journaled in bearings 62 carried in the capped portions of the standards 50.

A circular saw 55a is carried upon the intermediate portion of the shaft 61 above the saw 55 in position to cut a longitudinal kerf through the upper surface of the block of ice, as shown in Fig. 3.

Pusher bars 63 are mounted upon opposite sides of the rollers 17 and arranged to slide within the guides 64 carried between the side members 15, an angle iron 65 connecting said pusher rods near their outer extremities. Each of said rods is provided at its outer extremity with a rack portion 66 meshing with the adjacent pinion 67, said pinions being mounted upon shorter shaft 68 carried in the bearings 69, said pinions meshing with the gear segments 70 fixed upon the shaft 11.

A shaft 71 is located at right angles to the rollers 17 and journaled in take-up stands carrying adjustable bearings 72 the take-up stand being located upon the adjacent portion of the base plate. Sprockets 73 are located near opposite ends of the shaft 71 and are connected by means of the conveyer chains 74 with similar sprockets 75 fixed upon the shaft 76 which is journaled in bearings 77 fixed upon the base plate. The chains 74 are of the same construction as the chains 34, being provided with the wooden blocks 78.

The shaft 76 extends inwardly and is connected to the worm wheel shaft 79 located in the housing 80 and provided with the worm wheel 81 which meshes with the worm 82 fixed upon the shaft 83 journaled in suitable bearings 84 and 85 carried upon the base plate.

The shaft 83 is connected as by the silent drive chain 86 with the shaft 87 journaled in bearings 88 and 89, mounted upon the base plate. A sprocket or gear 90 is carried by the shaft 87 and is connected as by the silent drive chain 91 or gearing with the sprocket or gear 92 mounted upon the shaft of the motor 93 which is located upon the base plate. A bevel pinion 94 upon the shaft 87 meshes with the pinion 49 upon the shaft 46.

Standards 95, similar to the standards 50, are mounted upon the base plate upon opposite sides of the conveyer chains 74. Bearings 96 are carried in the lower portions of these standards and journaled therein is a shaft 97 provided at its inner extremity with a bevel pinion 98 meshing with

the pinion 99 upon the shaft 87. Circular saws 100 are adjustably mounted upon the shaft 97 and arranged to cut transverse kerfs in the under surface of the block of ice as indicated at C in Fig. 2.

The shaft 97 is provided at its outer end with a bevel pinion 101 meshing with a pinion 102 upon the vertical shaft 103, said shaft being journaled in bearings 104 mounted upon the adjacent standard 95. A bevel pinion 105 is fixed at the upper end of the shaft 103 and meshes with the pinion 106 upon the saw shaft 107 which is journaled in bearings 108 provided in the capped portions of the standards 95. Circular saws 109 are adjustably mounted upon the shaft 107 and arranged to cut transverse kerfs in the upper surface of the block of ice shown at C in Fig. 2.

The operation of the machine is as follows: referring to Fig. 3, a block of ice as indicated at A is placed upon the rocking frame 4 in an upright position. This frame being located close to the floor, it will be seen that the block may be easily placed thereon in this position, as it is customary to handle the block in an upright position upon the floor.

The frame 4 is then rocked upon the shaft 5 by means of the lever 24, the arms 18 being thus raised at their free ends and the block of ice is received thereon from the frame 4, the block being deposited upon the arms 18 in the flat position. The stops 20 will be engaged by the block as it is slid upon the inclined arms 18 and when the lever 24 is returned to the normal position, the arms 18 will be lowered to the position shown in Fig. 3, and the block will rest thereon in the position shown at B in Fig. 3.

As the arms 18 are lowered to the normal position, the block B will rest upon the rollers 16 as best shown in Fig. 2, the forward end of the block being in proximity to the conveyer 34. The block of ice may be easily moved forward upon the rollers 16 until the forward portion thereof is engaged by the conveyer 34, the wooden blocks 35 thereon frictionally engaging the under surface of the block of ice and carrying the same forwardly through the machine and between the saws 55 and 55ª, kerfing the block of ice longitudinally to a depth of about two and one-half or three inches.

The block of ice will be deposited upon the rollers 17 as it passes from the conveyer 34 and will be stopped by engagement with the guide 111, assuming the position indicated at C in Figs. 2 and 5.

As each new block of ice is placed upon the receiving end of the machine, the operation of the rocking frame 4 will, through the shaft 11 and the pinion and segment best illustrated in Fig. 5, move the pusher rods 63 in the direction of the arrow upon Fig. 5, the angle 65 carried by said pusher rods moving the block of ice transversely across the machine and into engagement with the conveyer 74 which carries the block between the saws 100 and 109, kerfing the block transversely upon its upper and lower surfaces. The block will then be deposited at the delivery end of the machine in the upright position upon the floor as it passes off of the conveyer 74.

The block of ice will then be ready for severing into smaller blocks by the use of the usual ice hatchet or pick without danger of splitting in uneven sizes.

It will be understood, of course, that any desired arrangement of saws may be provided for kerfing the blocks of ice at different places upon the surfaces thereof in order to cut the same into various sizes of smaller blocks.

I claim:—

1. An ice kerfing machine including means for conveying a block of ice longitudinally through the machine, means for kerfing the upper and lower surfaces of the ice, a pusher for changing the direction of movement of the block of ice at right angles and means for kerfing the upper and lower surfaces of the block transversely.

2. An ice kerfing machine including means for conveying a block of ice longitudinally through the machine, means for kerfing the block longitudinally as it is conveyed through the machine, means for moving the block of ice transversely through the machine, means for kerfing the block transversely and means for automatically changing the direction of movement of each block as a new block is placed in the machine.

3. An ice kerfing machine including means for conveying a block of ice longitudinally through the machine, means for kerfing the block longitudinally as it is conveyed through the machine, a pusher for changing the direction of movement of the block, means for moving the block transversely through the machine, means for kerfing the block transversely, and means for automatically operating the pusher as each new block is placed upon the machine.

4. An ice kerfing machine including means for receiving a block of ice in an upright position, means for placing the block in a flat position, means for conveying the block of ice through the machine and means for kerfing the block longitudinally and transversely upon opposite sides.

5. An ice kerfing machine including means for receiving a block of ice in an upright position, means for placing the block in a flat position, means for conveying the block of ice through the machine and means for kerfing the block longitudinally and transversely upon opposite sides, and means

for delivering the block of ice from the machine in an upright position.

6. An ice kerfing machine including a conveyer for carrying a block of ice longitudinally through the machine, circular saws for kerfing the ice longitudinally as it is carried through the machine, a second conveyer at right angles to the first named conveyer for carrying the block of ice transversely through the machine, a mechanical pusher for moving the block of ice from the first conveyer to the second conveyer, and a second set of saws for kerfing the block transversely upon opposite sides as it is carried through the second conveyer.

7. An ice kerfing machine including means for conveying a block of ice longitudinally through the machine, means for longitudinally kerfing the upper and lower surfaces of the ice, pusher means for moving the block of ice transversely after it is longitudinally kerfed, means for kerfing the upper and lower surfaces of the block transversely and a single drive unit for operating all of the conveying and kerfing means.

8. An ice kerfing machine including means for conveying a block if ice longitudinally through the machine, means for kerfing the upper and lower surfaces of the block as it is conveyed longitudinally, means for changing the direction of movement of the block of ice at right angles as each new block is placed upon the machine, means for kerfing the upper and lower surfaces of the block transversely.

9. An ice kerfing machine including a loading frame for placing a block of ice upon the machine, means for conveying the block of ice longitudinally through the machine, means for kerfing the block of ice longitudinally as it is conveyed through the machine, a pusher at the opposite end of the machine for changing the direction of movement of the block of ice, means for moving the block of ice transversely through the machine, means for kerfing the block transversely, and means for operating the pusher as the loading frame is operated.

10. An ice kerfing machine including a loading frame for placing a block of ice upon the machine, means for conveying the block longitudinally through the machine, means for kerfing the block longitudinally as it is conveyed through the machine, a pusher at the opopsite end of the machine for changing the direction of movement of the block, and means for automatically operating the pusher as the loading frame is operated.

THEODORE A. SCHRAISHUHN.