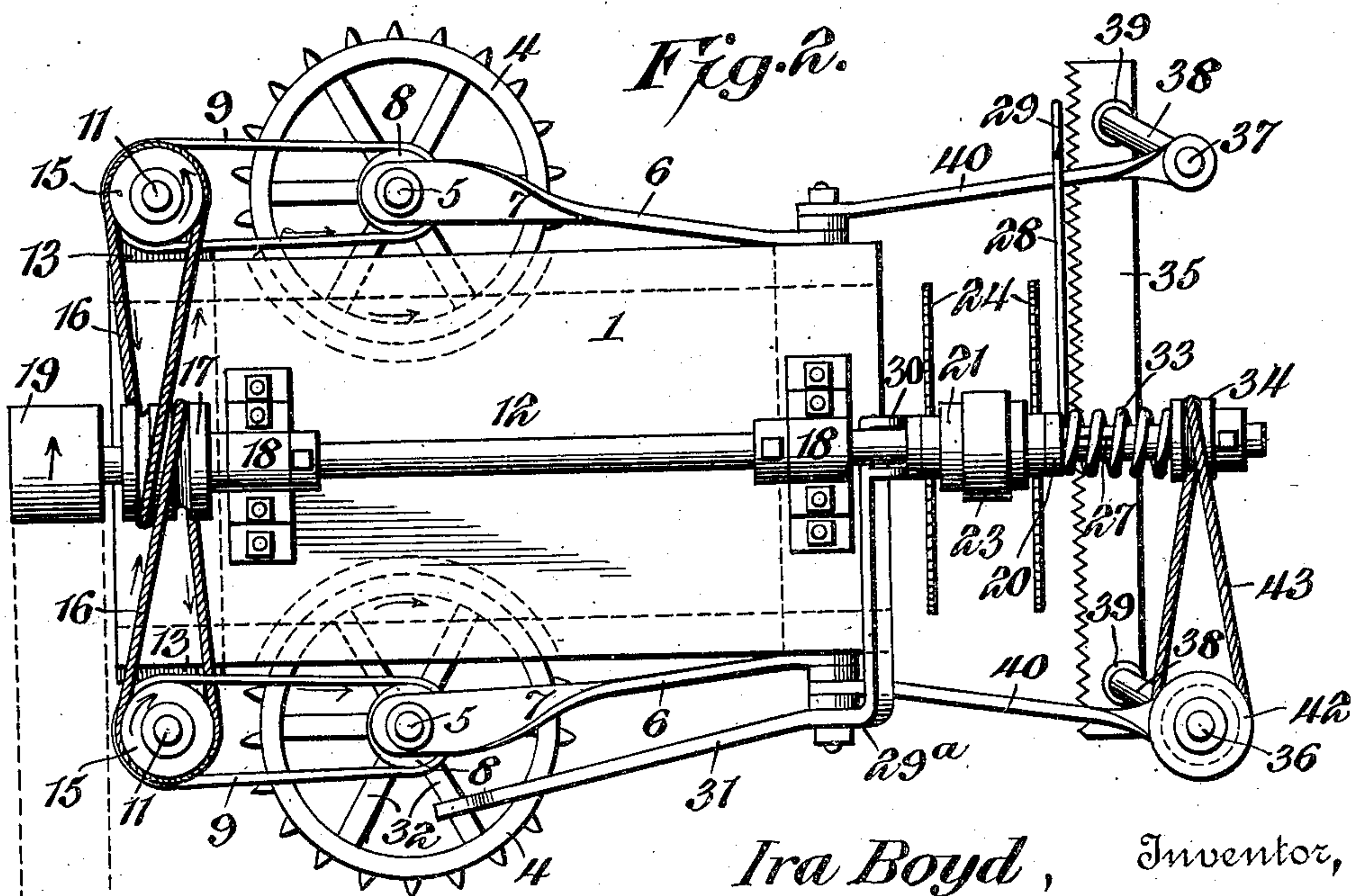


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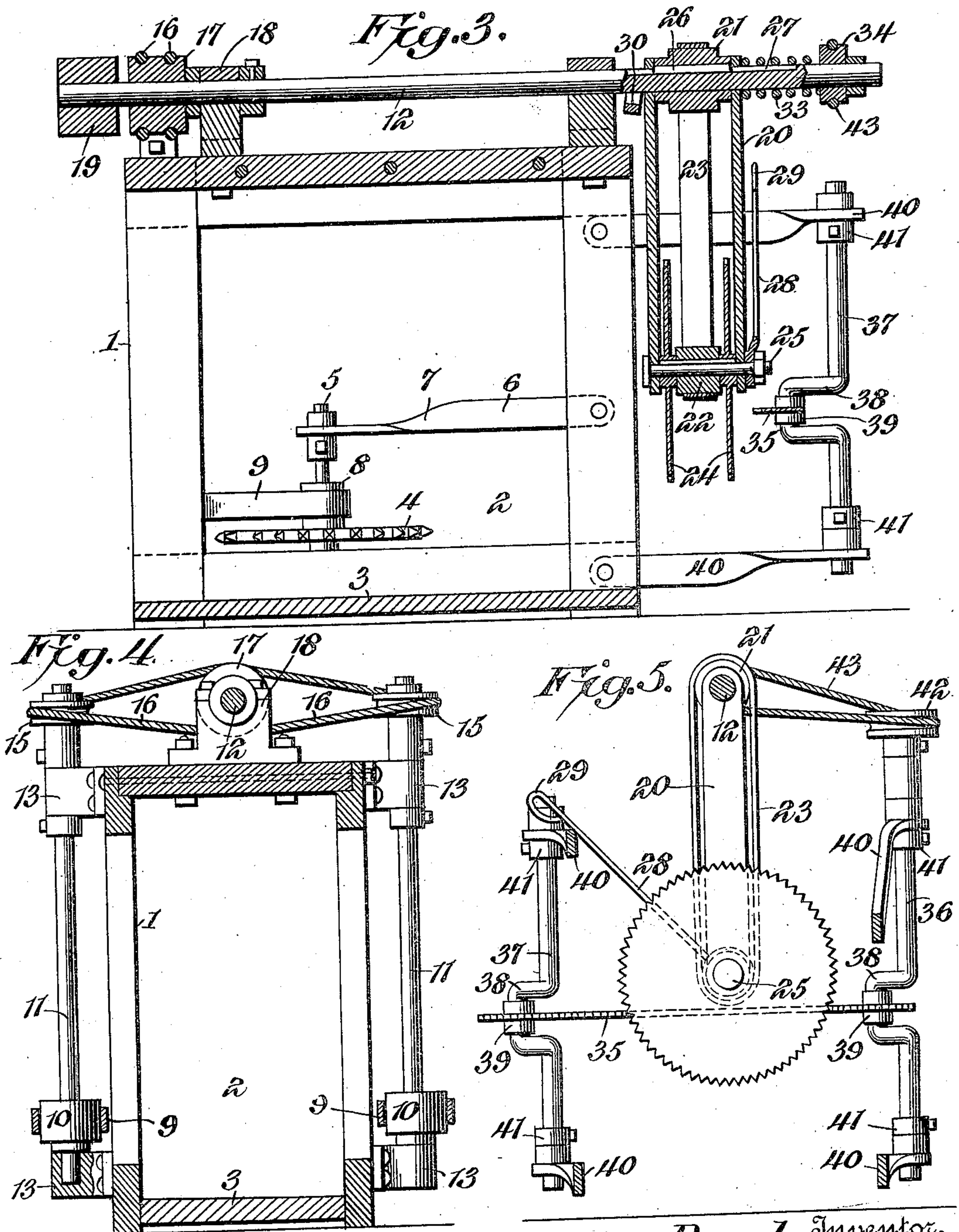
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I. BOYD.
ICE SHAPING MACHINE.
APPLICATION FILED JULY 16, 1907.

Patented Sept. 14, 1909.
2 SHEETS—SHEET 2.

934,135.



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UNITED STATES PATENT OFFICE.

IRA BOYD, OF POND HILL, PENNSYLVANIA.

ICE-SHAPING MACHINE.

934,135.

Specification of Letters Patent. Patented Sept. 14, 1909.

Application filed July 16, 1907. Serial No. 384,284.

To all whom it may concern:

Be it known that I, IRA BOYD, a citizen of the United States, residing at Pond Hill, in the county of Luzerne and State of Pennsylvania, have invented a new and useful Ice-Shaping Machine, of which the following is a specification.

The invention relates to an ice shaping machine.

10 The object of the present invention is to provide a simple, inexpensive and efficient ice shaping machine of great strength and durability, adapted to cut pieces of ice into cakes of the desired size, and thereby avoid
15 the waste resulting from carrying up in an elevator the broken ice, which is afterward thrown out at the ice house.

With these and other objects in view, the invention consists in the construction and
20 novel combination of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size
25 and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

30 In the drawings:—Figure 1 is a side elevation of an ice shaping machine, constructed in accordance with this invention. Fig. 2 is a plan view of the same. Fig. 3 is a central longitudinal sectional view. Fig.
35 4 is a transverse sectional view, taken substantially on the line $x-x$ of Fig. 1. Fig. 5 is a similar view, taken substantially on the line $y-y$ of Fig. 1.

40 Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates the frame of the machine, designed to be constructed of any suitable material and provided with a longitudinal
45 opening or passage-way 2 for the pieces of ice to be cut into cakes of the desired size. The frame is provided with a horizontal bottom 3, and the piece of ice to be cut into cakes is moved along the same by means of
50 rotary feeding devices, which may consist of spur wheels 4 or other suitable means. The spur wheels 4, which are located at opposite sides of the frame, extend into the same to engage a cake of ice at opposite
55 sides thereof, and they are mounted on vertical shafts 5, which are journaled in suit-

able bearings of upper and lower resilient arms 6, arranged in pairs at opposite sides of the machine and secured at one end to the same. The arms 6, which are constructed of suitable resilient material, are
60 provided between their ends with quarter bends 7 to arrange their attached ends in vertical planes and their free ends in horizontal planes, the attached ends being fitted
65 flatwise against the frame, as shown.

The short vertical shafts 5 carry pulleys 8, which are connected by belts 9 with pulleys 10 of the vertical shafts 11, extending
70 from the top to the bottom of the frame and connected with a horizontal line shaft 12. Instead, however, of employing a belt and pulley for communicating motion from the long vertical shafts 11 to the short vertical
75 shaft 5, sprocket, or any other form of gearing, which will not interfere with the lateral movement of the feed wheels, may be employed. The yieldably mounted laterally
adjustable feed wheels are adapted to move inwardly and outwardly in a direction
80 transversely of the frame to yield to the inequalities of the side faces or edges of a piece of ice.

The frame of the machine is provided at opposite sides with upper and lower bearings 13 for the vertical shafts 11, and the
85 latter extend above the frame of the machine and have grooved pulleys 15 fixed to them. The grooved pulleys receive transverse belts 16, which consist of cables and which are
90 also arranged upon a double pulley 17, having a pair of grooves to receive the belts 16. The line shaft, which is journaled in suitable bearings 18 of the frame of the machine, is located above the frame and extends
95 along the same being centrally arranged, as clearly illustrated in Fig. 2 of the drawings. Instead of employing belts and pulleys for communicating motion from the longitudinal shaft 12 to the vertical
100 shafts 11, any other form of gearing may be substituted for the belts and pulleys to communicate motion from the longitudinal shaft to the vertical shafts 11. The longitudinal shaft is provided with a driven pulley 19, and when it is rotated in the direction
105 of the arrow in Fig. 2 of the drawings, the transverse belts will move in the direction of the arrows, and both of the feed wheels will be rotated to feed a block of ice
110 forwardly through the machine. The driven pulley 19 may be connected by a belt with

any suitable motive power, and the latter may be also connected with the machine in any other preferred manner. The line shaft is extended in advance of the front end of the frame, and hung therefrom is an oscillatory saw-carrying frame 20, which swings transversely of the machine and which is also slidable longitudinally of the same along the line shaft to cut the ice as the same is fed forwardly by the mechanism heretofore described. The oscillatory saw-carrying frame, which is located in advance of the frame of the machine, is provided with parallel sides between which are mounted upper and lower pulleys 21 and 22, which are connected by a belt 23, but any other preferred form of gearing may be employed for communicating motion from the line shaft 12 to a pair of spaced circular saws 24, which are mounted at the lower end of the oscillatory frame upon a shaft 25. The circular saws 24 are located between the sides of the frame and are keyed to the shaft 25 to which the lower pulley 22 is also keyed. The upper pulley 21 is provided with a key 26, which slides in a groove 27 of the line shaft, whereby the pulley is continuously rotated by the line shaft during the movement of the oscillatory frame along such shaft.

The saw-carrying frame is adapted to swing across the path of the ice, and it is provided with a rod 28, having a suitable handle 29 and adapted to enable the operator to push or pull the saw-carrying frame to secure the desired rapidity of the cutting operation and to complete the same. When the oscillatory saw-carrying frame is swung to either side of the machine, it is adapted to swing automatically therefrom to the center, and during such movement, the cutting operation will be entirely automatic. The saw-carrying frame is moved longitudinally of the line shaft by means of a lever 29^a, fulcrumed at an intermediate point on the frame of the machine at one side thereof and having upper and lower arms, the upper arm being provided with a forked head 30 to straddle the line shaft and engage the inner or rear side of the oscillatory frame. The upper arm is also bent laterally and extends inwardly to arrange the forked head centrally of the machine. The lower arm 31 of the lever 29 is inclined and is arranged to be engaged by the right hand feed wheel, which is provided with spokes 32 and arranged to engage the lower arm 31 of the lever, whereby as the ice is fed forwardly, the oscillatory frame will be moved outwardly. This will relieve the circular saws of strain and enable them to cut freely and rapidly. The lower arm of the lever is released by the spokes 32 at the completion of the cutting operation, and the oscillatory frame is moved rearwardly by a coiled spring 33. The spaced circular saws are

adapted to make two cuts into a block or piece of ice, and they may be spaced apart a sufficient distance to cut the ice into cakes of the desired size. A single saw, however, can be employed, and the oscillatory frame may be held to one side while the ice is being fed forwardly to arrange the desired cut of the ice in advance of the saw. The saws may be of sufficient diameter to cut entirely through the ice, or a kerf may be made of sufficient depth to enable the ice to be readily broken. The coiled spring 33, which is disposed on the outer portion of the longitudinal shaft, is interposed between the front or outer side of the oscillatory frame and a pulley 34. The top of the ice is trimmed by a horizontally arranged reciprocable saw 35, extending across the machine at the front thereof and carried by a pair of vertical crank shafts 36 and 37, having intermediate crank bends 38, arranged in suitable eyes 39 of the saw. The vertical crank shafts are journaled in suitable bearings of the forwardly extending arms 40, and they are provided adjacent to the arms with adjustable collars 41, adapted to permit the crank shafts to be raised and lowered to position the horizontal reciprocable saw properly with relation to the ice for trimming the cakes to the desired size. The crank shaft 37 is extended at the top and is provided with a pulley 42, which is connected by a belt 43 with the pulley 34, whereby motion is communicated from the line shaft to the crank shaft 37. When the crank shaft 37 is rotated, the saw will be reciprocated by the cranks, which will move in unison. The crank shafts may, however, be connected by a suitable gearing, and any other form of gearing may be employed for connecting the crank shaft 37 with the line shaft.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In an ice shaping machine, the combination with a frame having a passage-way for the ice, and cutting mechanism, of horizontally disposed resilient arms located at opposite sides of the passage-way and arranged to yield horizontally, horizontal feed wheels mounted on and supported by the said arms and movable inwardly and outwardly with relation to the said passage-way to engage the ice at opposite sides thereof, and gearing for rotating the feed wheels.

2. In an ice shaping machine, the combination with a frame having a passage-way for the ice, and cutting mechanism, of horizontally disposed resilient arms arranged in pairs and mounted at opposite sides of the passage-way and secured at one end to the frame, said arms being provided at their free ends with bearings, shafts journaled in the bearings, feed wheels mounted on the

shafts and supported by the resilient arms and movable inwardly and outwardly with relation to the said passage-way, pulleys connected with the feed wheels, and driving mechanism including separate belts arranged on the said pulleys.

3. In an ice shaping machine, the combination of an oscillatory frame arranged to swing across the machine, a circular saw carried by the frame for cutting ice into cakes, and a horizontally reciprocable saw operating simultaneously with the circular saw and arranged to trim the top of the ice.

4. In an ice shaping machine, the combination of a longitudinal rotary shaft, an oscillatory frame arranged to swing transversely of the machine and hung from the shaft, a vertical saw carried by the frame for cutting the ice into cakes, a horizontal saw arranged in a plane intersecting the plane of the vertical saw for trimming the ice, and means actuated by the rotary shaft for simultaneously operating the vertical and horizontal saws.

5. In an ice shaping machine, the combination of a frame having a passage-way for the ice, a horizontal rotary shaft, an oscillatory saw carrying frame hung from the shaft and arranged to swing transversely of the passage-way to cut the ice into cakes, a circular saw mounted on the oscillatory frame, a horizontal reciprocable saw for trimming the top of the ice, and means connected with the rotary shaft for simultaneously operating the vertical and horizontal saws.

6. In an ice shaping machine, the combination of a frame having a passage-way, a rotary shaft located above and extending longitudinally of the passage-way, an oscillatory frame hung from the shaft and arranged to swing transversely of the passage-way, spaced circular saws mounted in the frame for cutting the ice into cakes, a horizontal saw extending transversely of the passage-way and arranged to trim the top of the ice, and means connected with the shaft for simultaneously operating the vertical and horizontal saws.

7. In an ice shaping machine, the combination of a frame provided with a passage-way for the ice, a horizontal saw extending across the passage-way for trimming the top of the ice, an oscillatory frame arranged to swing transversely of the passage-way, a circular saw carried by the oscillatory frame for cutting the ice into cakes, a handle connected with the oscillatory frame for swinging the same across the said passage-way, and means for simultaneously operating the said saws.

8. In an ice shaping machine, the combination of a frame having a passage-way for the ice, an oscillatory frame arranged to swing transversely of the passage-way and

provided with a saw, and a reciprocable saw operating simultaneously with the said saws and extending across the passage-way for trimming the top of the ice.

9. In an ice shaping machine, the combination of a frame having a passage-way for the ice, a line shaft, an oscillatory frame hung from the line shaft, a saw mounted on the oscillatory frame, means for communicating motion from the shaft to the saw, vertical crank shafts, a horizontally reciprocable saw carried by the crank shafts, and means for communicating motion from the line shaft to the crank shafts for operating the horizontal saw simultaneously with the vertical saw.

10. In an ice shaping machine, the combination of a frame, feeding mechanism for moving the ice through the machine, an oscillatory frame, a saw carried by the oscillatory frame, and means operated by the said feeding means for moving the oscillatory frame in the same direction as the ice, whereby the ice is cut without interrupting the forward feed of the same.

11. In an ice shaping machine, the combination of a frame having a passage-way for the ice, a line shaft extending longitudinally of the passage-way, an oscillatory frame hung from the line shaft, a saw carried by the oscillatory frame, means for feeding the ice through the said passage-way, and means operated by the said feeding means for engaging the oscillatory frame to move the same along the line shaft as the ice is fed forward.

12. In an ice shaping machine, the combination of a frame having a passage-way for the ice, a line shaft extending longitudinally of the passage-way, an oscillatory frame hung from the line shaft, a saw carried by the oscillatory frame, means for feeding the ice through the said passage-way, and a lever operated by the said feeding means and arranged to move the oscillatory frame along the shafts with the ice.

13. In an ice shaping machine, the combination of a frame having a passage-way for the ice, a wheel having spokes and arranged to feed the ice through the passage-way, a line shaft, an oscillatory frame hung from the line shaft, a saw carried by the oscillatory frame, and a lever engaging the oscillatory frame and arranged to be actuated by the spokes of the said wheel for moving the oscillatory frame along the line shaft.

14. In an ice shaping machine, the combination of a frame having a passage-way for the ice, a wheel having spokes and arranged to feed the ice through the passage-way, a line shaft, an oscillatory frame hung from the line shaft, a saw carried by the oscillatory frame, a lever engaging the oscillatory frame and arranged to be actuated by the spokes of the said wheel for moving the os-

cillatory frame outward on the shaft, and a spring for moving the oscillatory frame inwardly.

15. In an ice shaping machine, the combination of a frame, a line shaft, an oscillatory frame hung from the line shaft, a saw mounted on the oscillatory frame, vertical crank shafts, a horizontal saw carried by the crank shafts, means for communicating motion from the line shaft to the said saw, feeding means for moving the ice through the machine, and means for communicating motion from the line shaft to the feeding means.

16. In an ice shaping machine, the combination of a frame having a passage-way for the ice, a line shaft extending longitudinally of the passage-way, an oscillatory frame hung from the line shaft and movable along the same, feeding means located at opposite sides of the passage-way, and a lever actuated by the feeding means and having a forked head straddling the feeding means and engaging the oscillatory frame for moving the same along the shaft.

17. In an ice shaping machine, the combination of a frame having a passage-way for the ice, means for cutting the ice transversely into cakes, vertically adjustable crank shafts, a horizontally reciprocable saw operating simultaneously with the said cutting means and carried by the crank shafts for trimming the top of the ice, and means for operating the crank shafts.

18. A machine for cutting ice into cakes comprising mechanism for positively feeding the ice through the machine, cutting mechanism movable transversely of the ice for cutting the same into cakes, and means actuated by the feeding mechanism and positively engaging the cutting mechanism for moving the latter in the same direction as the ice, whereby the ice is cut without interrupting the continuous feed of the same through the machine.

19. A machine for cutting ice into cakes comprising mechanism for positively feeding the ice through the machine, cutting mechanism movable transversely of the ice

for cutting the same into cakes, means actuated by the feeding mechanism and positively engaging the cutting mechanism for moving the latter in the same direction as the ice, whereby the ice is cut without interrupting the continuous feed of the same through the machine, and means for automatically moving the cutting mechanism backward after each cutting operation.

20. A machine for cutting ice into cakes comprising mechanism for positively feeding the ice through the machine, cutting mechanism movable transversely of the ice for cutting the same into cakes, an oscillatory device actuated by the feeding mechanism and positively moving the cutting mechanism in the same direction as the ice, whereby the ice is cut without interrupting the continuous feed of the same through the machine.

21. A machine for cutting ice into cakes comprising mechanism for positively feeding the ice through the machine, cutting mechanism movable transversely of the ice for cutting the same into cakes, an oscillatory device actuated by the feeding mechanism and positively moving the cutting mechanism in the same direction as the ice, whereby the ice is cut without interrupting the continuous feed of the same through the machine, and a spring for automatically moving the cutting mechanism backward after each cutting operation.

22. An ice shaping machine including a vertically arranged saw movable transversely of the ice shaping machine for cutting the ice into cakes, a horizontal saw arranged to trim the tops of the cakes, and means for simultaneously operating both of the saws.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

IRA BOYD.

Witnesses:

J. HENRY ROCKEL,
H. R. ROCKEL.