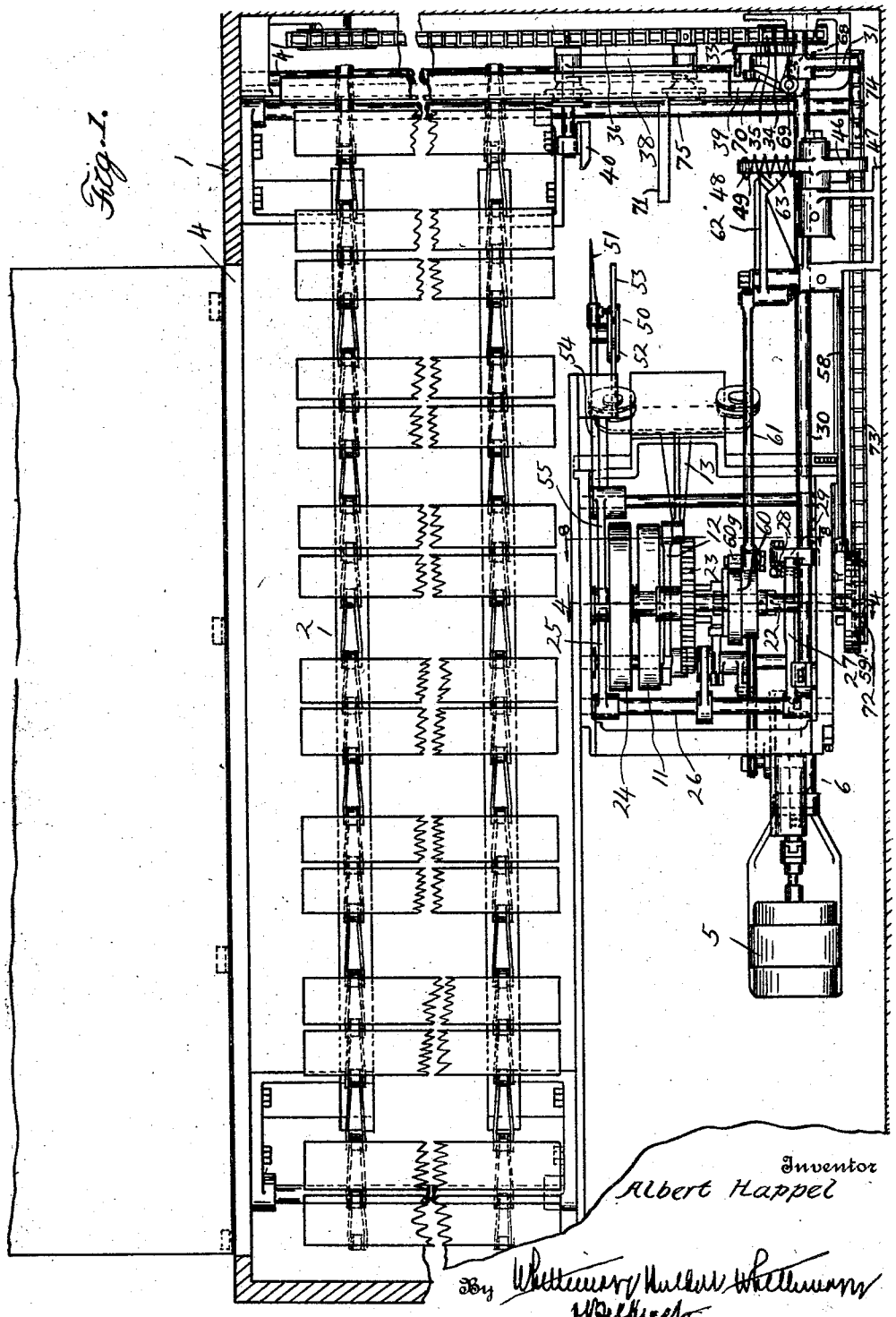
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ICE VENDING MACHINE

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Fig. 1.



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ICE VENDING MACHINE

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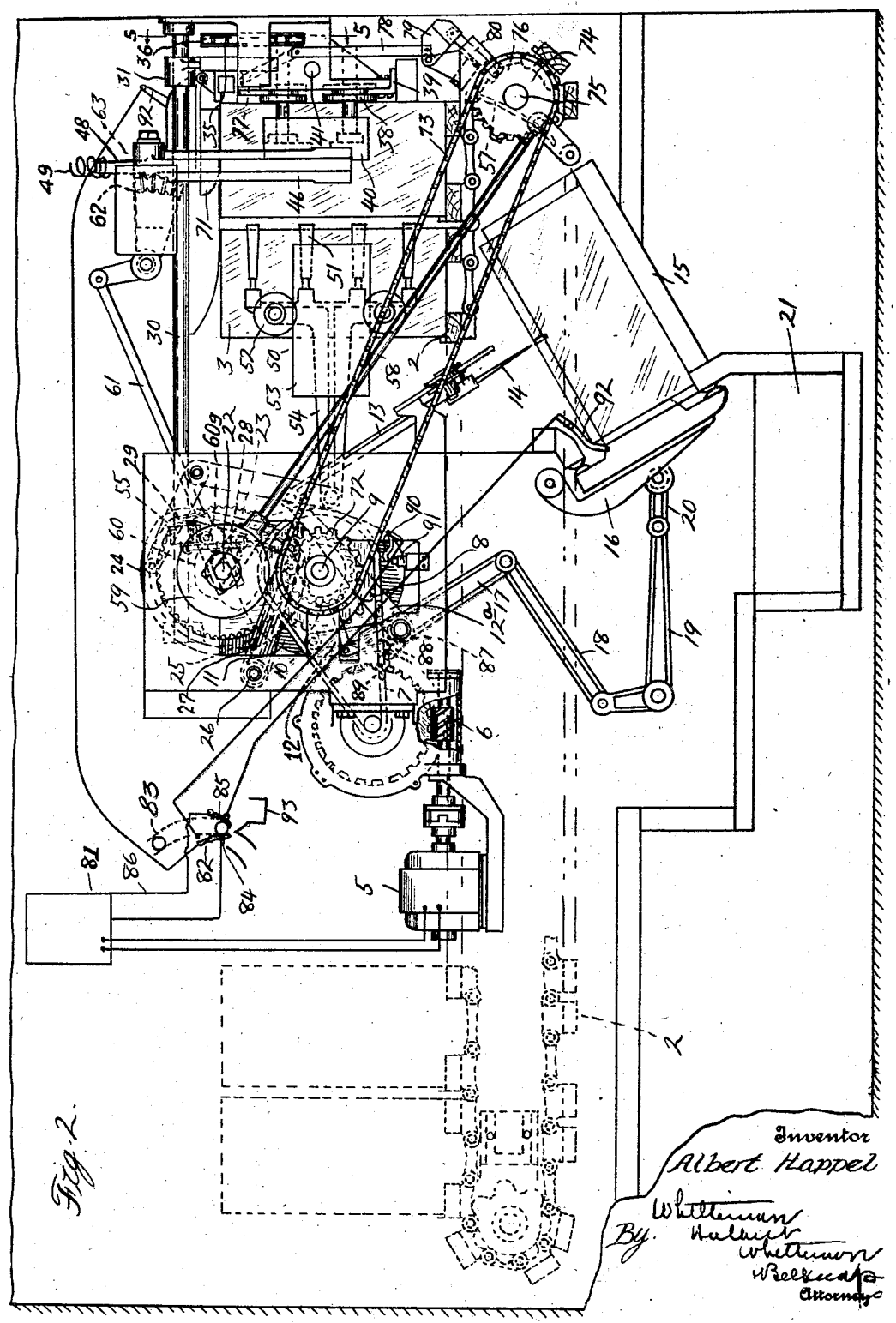


Fig. 2.

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ICE VENDING MACHINE

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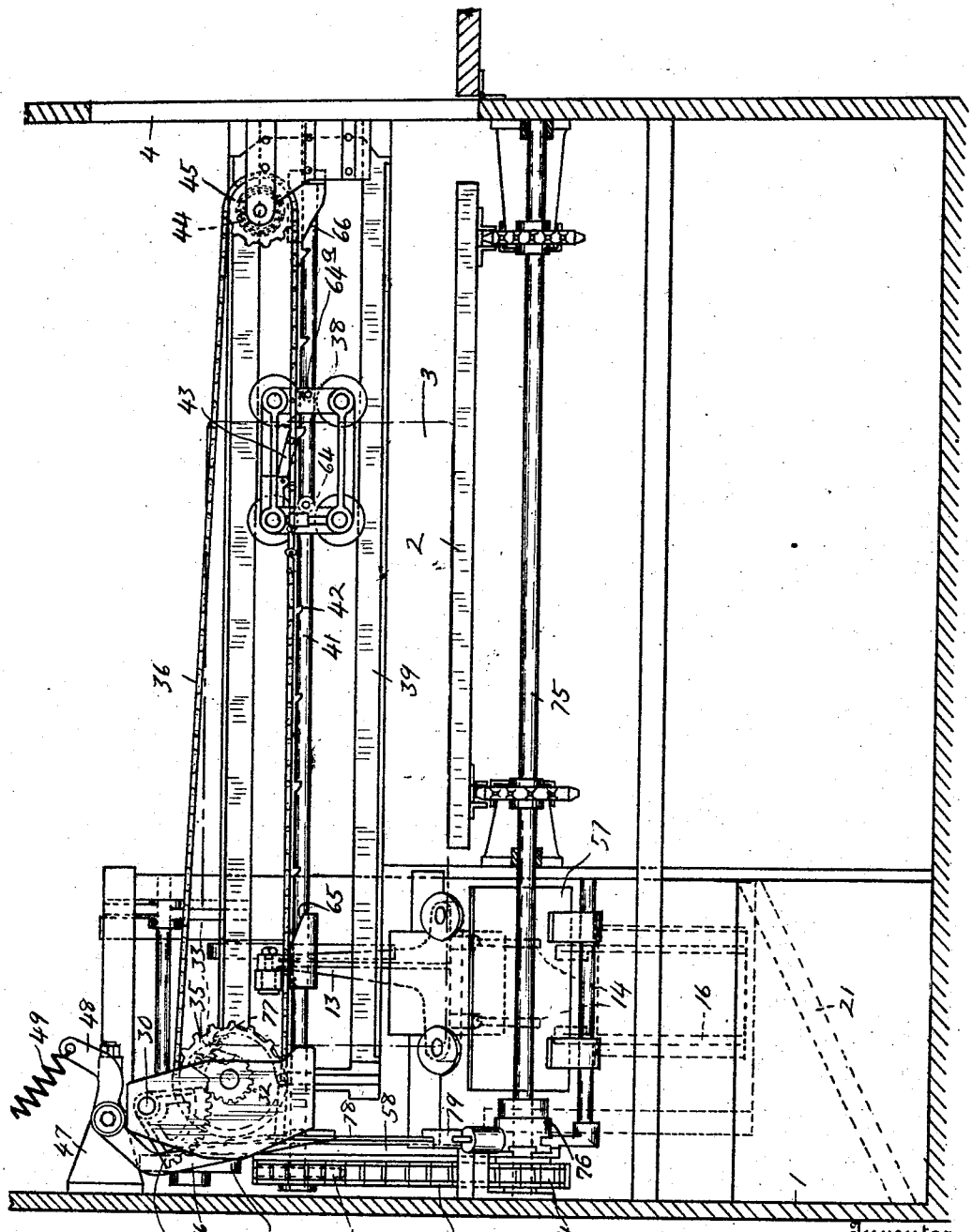


Fig. 3.

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ICE VENDING MACHINE

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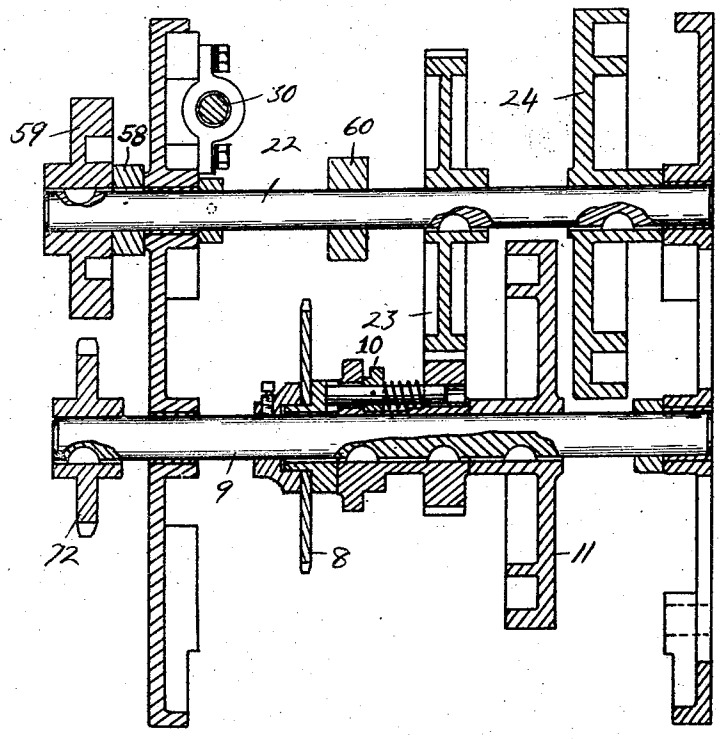


Fig. 4

Fig. 5.

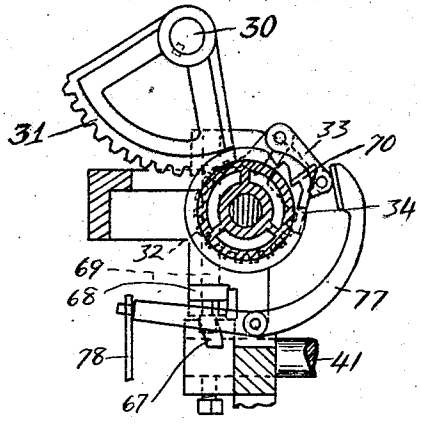
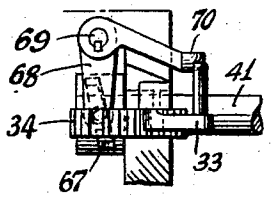


Fig. 5a



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ICE VENDING MACHINE

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Fig. 6.

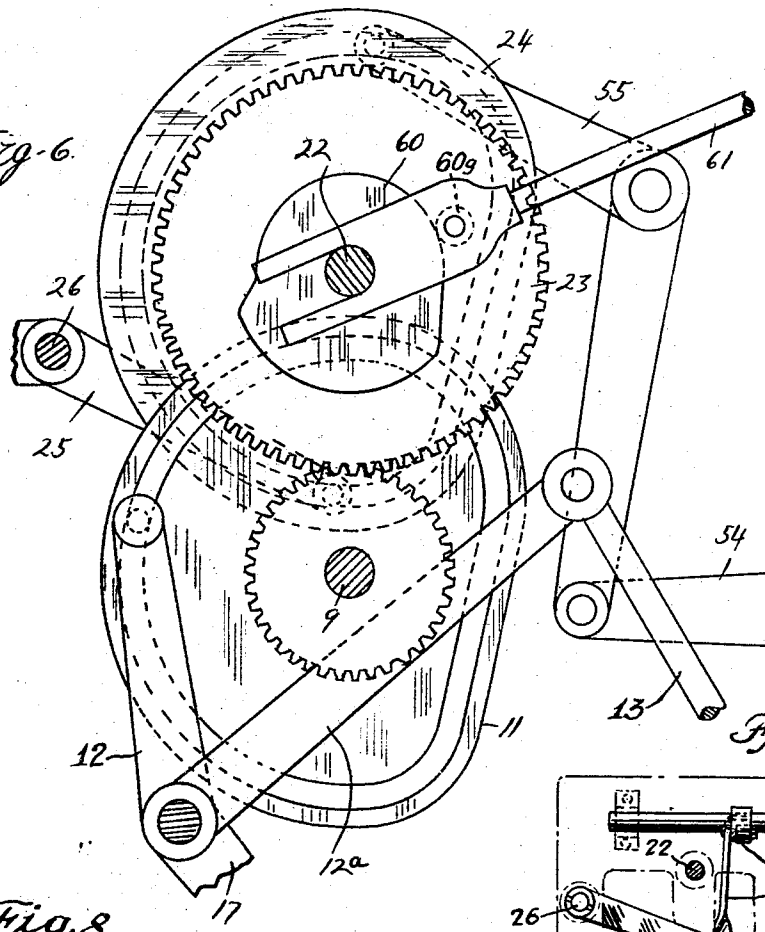


Fig. 9.

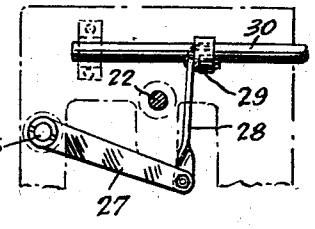


Fig. 8.

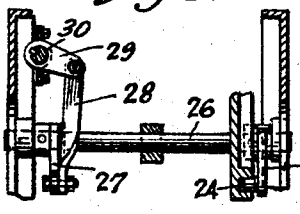


Fig. 7.

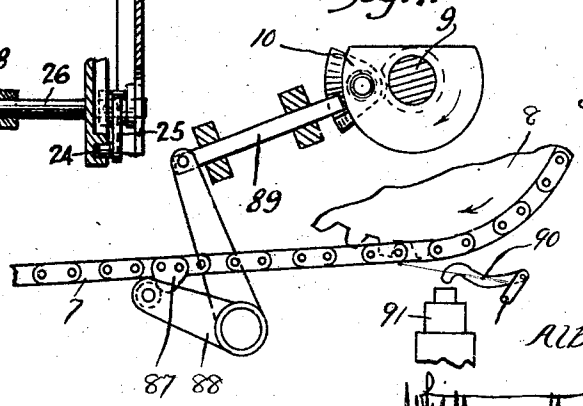
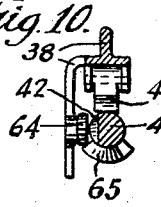


Fig. 10.



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UNITED STATES PATENT OFFICE

ALBERT HAPPEL, OF TOLEDO, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO GIFFORD-WOOD COMPANY, OF HUDSON, NEW YORK, A CORPORATION OF NEW YORK

ICE VENDING MACHINE

Application filed December 15, 1924. Serial No. 756,132.

In the present state of the art manufactured ice is generally distributed both by house-to-house deliveries and from "cash and carry" stations. With the latter it is necessary to maintain an attendant or salesman, and to suit the requirements of the public it is necessary that the station should be open at all hours. Also the demand is irregular, depending as it does largely upon the condition of the weather. Thus the average cost of sale is relatively high.

It is the primary object of the invention to dispense with the salesman by the provision of an automatic vending machine. On account, however, of the nature of the material dispensed, it cannot be handled as is usual with other types of vending machines, but requires special instrumentalities for that purpose. My invention therefore consists: first, in means for automatically discharging an ice cake of predetermined size and weight upon the insertion of the coin, slug or other controlling means; second, in the means for storing the ice to be vended in large cakes and for effecting the severance of the small cakes therefrom just in advance of delivery, and; third, in various features of construction as hereinafter set forth.

In the drawings:

Figure 1 is a plan view of the machine;

Figure 2 is a side elevation thereof;

Figure 3 is an end elevation;

Figure 4 is a vertical cross-section substantially on line 4—4 of Figure 1;

Figure 5 is a vertical cross section on line 5—5 of Figure 2;

Figure 5*a* is a fragmentary plan view of the mechanism illustrated in Figure 5;

Figure 6 is an enlarged elevation of a portion of the gearing and cams;

Figure 7 is a section showing the clutch trip mechanism.

Figure 8 is a sectional view substantially on the line 8—8 of Figure 1, parts being omitted;

Figure 9 is a fragmentary side elevation, partly in section, of the mechanism illustrated in Figure 8;

Figure 10 is a fragmentary transverse sectional view through the carrier mechanism illustrated in Figure 3.

1 is a suitable housing or storage chamber for the ice to be vended, which is preferably provided with suitable heat insulation (not shown), maintaining the temperature therein as low as possible without artificial refrigeration. Within the housing 1 is arranged a suitable carrier 2 on which are placed large cakes of ice 3, such as delivered from the freezing cans. These cakes have preferably been previously scored to divide the same into small sections of equal weight, such for instance as 25-lb. or 50-lb. cakes. The cakes are scored both longitudinally and transversely, each transverse score marking a 50-lb. section, while the central longitudinal score divides said section into smaller 25-lb. pieces.

For convenience in loading the carrier with ice, the housing is provided with a rear door 4, which when turned down will form a platform on the level of the carrier, which serves to first receive the ice cakes and from which they may be slid onto the carrier. At one end of the housing there is arranged a cross feeder for intermittently advancing one of the ice cakes longitudinally into engagement with the cut-off mechanism. This cut-off mechanism is actuated, as will be hereinafter described, to successively sever small cakes from the large cake in cooperation with delivery mechanism by which each small cake is deposited in a chute through which it passes to the outside.

As has been stated, the delivery of each ice cake is effected by the insertion of a coin or slug which controls the operating mechanism. Each coin or slug thus inserted accomplishes: first, the delivery of a small cake of ice, and in alternate operations, the severing of such small cake from the large cake and the feeding of the cakes so as to successively present the same to the cut-off delivery mechanism. Various specific forms of mechanism may be employed for accomplishing such functions, but as shown the construction is as follows:

Within the housing 1 and at one side of the carrier 2 is arranged a motor 5 driving, through the medium of the worm gearing 6 and sprocket chain 7, a sprocket 8 (Fig. 2)

on a shaft 9. The sprocket is normally freely revoluble on the shaft 9, but may be coupled therewith by a clutch 10, which when tripped will revolve the shaft through one revolution, then automatically releasing the same. Mounted on the shaft 9 is a grooved cam wheel 11, (see Fig. 6) which actuates a bell crank lever 12 having one arm 12*a* connected by a rod 13 with a severing blade 14. This blade is arranged in registration with the longitudinal score in an ice cake section, which has previously been severed from the main cake and deposited on an inclined way 15, being supported at its lower end by a hinged arm 16. See Fig. 2. This arm is also controlled by the cam 11 through the medium of a second arm 17 of the bell crank lever 12, link 18, bell crank lever 19 and link 20, the arrangement being such that the operation of the cam first severs the ice case section supported on the way 15 and then by swinging the arm 16, drops the lower severed piece onto the chute 21 through which it is delivered to the outside. The further operation of the cam 11 returns the swinging arm 16 and withdraws the blade 14 so that the upper half of the ice cake can slide down the way 15 into engagement with said arm 16. In this position it is ready to be delivered in a succeeding cycle.

For depositing an ice cake section on the inclined way 15 there is provided the transverse feed for the large ice cake, previously referred to, and means for intermittently severing said cake along one of the transverse scores and delivering the severed section to said inclined way 15. This mechanism is actuated from a shaft 22, which is driven at half the speed of the shaft 9 through the medium of a two to one gearing 23. (See Fig. 6.) Upon the shaft 22 is a grooved cam 24 which actuates a rock arm 25 on a rock shaft 26, which latter through the medium of a rock arm 27 and link 28, (see Fig. 1) actuates a rock arm 29 on a rock shaft 30 extending transverse to the shafts 9 and 22. On the right hand end of this shaft (Fig. 2) is mounted a sector gear 31 which engages a pinion 32 carrying a pawl 33 for operating a ratchet wheel 34 connected to a sprocket 35 (see Fig. 3). This sprocket drives a chain 36, which extends across the end of the housing in a plane transverse to that of the carrier 2. Connected to this chain is a roller carriage 38 which travels upon guideways 39 and is provided with a pusher arm 40 (Figs. 1 and 2) for engaging the rear end of one of the large ice cakes on the carrier 2. Thus whenever the cam 24 actuates the rock arm 25, the carriage 38 will be advanced along the ways 39, carrying the ice cake forward.

Artificial ice cakes are usually of a tapering form so as to be readily removable from the freezing cans so that in dividing such a cake into pieces of uniform weight, the spacing between transverse scores is not equal. Therefore, to successively register such scores with a severing blade in the fixed plane, it is necessary to differentially feed the ice cake. This I have accomplished by arranging parallel to the ways 39 a control bar 41, which is detachably mounted so that it may be exchanged for substitute bars where ice cakes of different size are placed in the machine. This control bar is provided with a series of notches 42 so spaced as to correspond with the divisions between the transverse scores on the tapered ice cake. The carriage 38 is provided with a dog 43 which rests upon the control bar so as to drop into the notches 42 and to thereby prevent return movement of the carriage. Such return movement would otherwise be automatically effected by a spiral spring 44 actuating the sprocket 45 for the rear end of the chain 36. Thus by proportioning the gears so as to actuate the carriage 38 in the forward direction an amount equal to the longest division between scores and then permitting it to be drawn backward by the spring 44, the dog 43 engaging the notch 42 will arrest movement in a predetermined position. The pawl 33 which is gravity actuated functions as a tension regulating means for the spring 44 and will not become operatively engaged with the teeth of the ratchet wheel 34 until the backward or return movement of the carriage 38 under the tension of the spring 44 has been arrested by the engagement of the latch 43 with the adjacent notch 42, whereupon the pawl 33 will drop into operative engagement with the teeth of the ratchet wheel. Inasmuch, however, as the ice cake will not be moved backward with the carriage 38, there is provided a resilient pad 46 which bears on the forward end of the cake and serves to press it rearward into contact with the pusher 40. This pad as shown consists of a rock arm fulcrumed upon the bracket 47 having an actuating arm 48 connected to the spring 49.

The mechanism just described is actuated by one-half revolution of the shaft 22, which corresponds to one cycle of the main shaft 9, and is idle during the other half revolution or alternate cycle due to the shape of the cam. During the latter cycle the forward section of the advanced ice cake is split off by means of the following mechanism: 50 is a reciprocating member carrying a series of severing blades 51, which exactly register with the transverse scores in the ice cake in different positions of advancement thereof. The member 50 is provided with rollers 52 engaging a guide-way 53 and a rearwardly extending arm 54 is connected to a bell crank lever 55 actuated by the cam 24 on the shaft 22. The timing is such that the severing blades 51 are advanced when the ice cake is stationary and will split off the end section. The

section thus split off is supported on a tilting shelf 57 (see Fig. 3) which is operated by a rod 58 engaging a cam groove 59 on the shaft 22. At the same time a cam 60 on the shaft 22 engaging a roller 60*g* actuates a rod 61 connected to a segment bevel gear 62, which in turn actuates a bevel gear 63 connected to the spring pad 46 so as to withdraw the clamping pressure of this pad, permitting the severed section of the ice cake to be dumped onto the inclined way 15. The spring 48 serves to keep the roller 60*g* in contact with the cam 60 as well as to normally maintain resilient pressure on the pad 46.

The mechanism thus far described serves to transversely feed one of the large ice cakes step-by-step, registering the transverse scores with the severing mechanism, transferring the severed section to the inclined way 15, again severing this section while in engagement with said way and delivering one of the small sections to the chute 21. Such operations continue until the last section of the large cake has been delivered, after which the carriage 38 is returned to its initial position and another ice cake on the carrier 2 is moved into engagement with the pusher 40. The return of the carriage is accomplished by the partial rotation of the control bar 41, which disengages the dog 43 from the notches 42 and permits the carriage to be drawn backward by the tension of the spring 44 actuating the sprocket 48 and chain 36. However, it is necessary to release the pawl 33 from the ratchet 34 before such movement of the chain is possible. The rotation of the control bar 41 is effected by a roller 64 on the carriage 38, which at the forward limit of movement of the latter engages a cam 65 on said bar and effects the desired rotation. A similar cam 66 at the rear end of the bar 41 engages the pin 64*a* upon the return movement of the carriage and rotates the bar in the reverse direction. The rotation of the bar by the cam 65 causes a cam 67 on the forward end of said bar to actuate a rock arm 68 on a vertical rock shaft 69, which at its upper end has a finger 70 which is moved into the path of the pawl 33. This finger will thus disengage the pawl from the ratchet wheel and permit the spring 44 to return the chain and carriage (see Fig. 5). During this return movement the last section of the ice block is held from displacement by an arm 71 (see Fig. 2), which was previously resting upon the top of the cake, but drops in rear thereof after the last forward feeding movement. The arm 71 has a cammed face which will cause the same to ride over the forward end of the succeeding ice cake as it is brought into position by movement of the transverse carrier mechanism 38.

To place another ice cake in engagement with the transverse feeder, the carriage 2 is periodically operated by the following mechanism: Upon the main shaft 9, is a sprocket 72 connected by a chain 73 with a sprocket 74 revolubly mounted on a shaft 75 which extends to the driving sprockets for the conveyor 2. The sprocket 74 is normally declutched from this shaft, but may be coupled thereto by a clutch 76 adapted when tripped to impart to said shaft one-half revolution. The tripping of the clutch is accomplished by a lever 77 (see Fig. 5) which is actuated by the pawl 33 when the latter is disengaged from the ratchet wheel by the finger 70. This lever is connected by a link 78 with a lever 79 which withdraws the trip pin 80 of the clutch 76. Thus after the return of the carriage 38 the next cycle of operation will cause the movement of the carrier 2 a sufficient distance to place another ice cake in engagement with the transverse feeder.

It is pointed out that while the finger 70 is moved to operate the clutch for the conveyor 2 virtually simultaneously with the arrival of the carriage 38 at the front of the machine, the carriage will be returned to its starting position before another ice cake is moved into position by the conveyor 2 since the chain 36 is under the constant tension of the spring 44 and will return the carriage to the rear of the machine practically instantaneous with the release of the latch 43 and the pawl 33. The operating mechanism for the conveyor 2 is much slower in action than the spring controlled carriage return mechanism, as this conveyor is operated through the medium of a number of relatively slow moving parts.

As has been stated the shaft 9 makes one complete revolution each time the clutch 10 is tripped, thus effecting the delivery of one small cake of ice. The clutch is controlled by any suitable mechanism which may be operated by the proper coin or slug, but I have illustrated diagrammatically mechanism of the following construction: The motor 5 is controlled by a relay switch 81, which in turn is controlled by a coin or slug operated switch 82. As indicated the coin inserted through the chute 83 will pass between a stationary contact 84 and a movable contact lever 85, thereby closing an electric circuit 86 which operates the switch 81. This will start the motor 5, communicating motion through the worm gearing 6 and chain 7 to the shaft 9. Upon the chain 7 is a projecting link 87 which engages a rock arm 88 for operating the trip pin 89 of the clutch 10 (see Fig. 7). The clutch 10 is the type of clutch which is normally disengaged but is thrown into operation when tripped, continuing to operate for one revolution at which time it is swung out again by the pin 89. Thus after the starting of the motor the movement of the chain 7 will trip the clutch 10 causing one cycle of operation. The motor, however, continues to run until in the movement of

the chain 7 the link 87 engages a lever 90, which operates a circuit opening switch 91 controlling the motor circuit. In the meanwhile, the delivery of the ice cake off from the way 15 will cause it to operate a rock arm 92, which is connected to operate the contact lever 85, releasing the coin and permitting it to drop into a container 93. Thus the insertion of the proper coin or slug will start the motor, causing one cycle of operation, at the end of which the motor is again stopped.

Obviously the present invention is not restricted to the particular embodiment thereof herein shown and described. Moreover, it is not indispensable that all the features of the invention be used conjointly, since they may be employed advantageously in various combinations and sub-combinations.

What I claim as my invention is:

1. In an ice vending machine, the combination with means for intermittently advancing an ice cake having a longitudinal score and a series of transverse scores, cam operated severing means registering with the advanced transverse score for severing a section from said ice cake, means substantially registering with the longitudinal score of the severed section and actuated after the first severing operation for dividing the severed section into smaller sections, and means for delivering successively the smaller sections.

2. In an ice vending machine, the combination with means for advancing a series of scored ice cakes, of mechanism intermittently operating on the first cake of the series for severing successive sections therefrom, a cam operated blade in the path of the severed sections and actuated after the first severing operation to split each section, a chute to deliver the split sections in succession.

3. In a machine for vending pieces of ice of predetermined weight from an ice cake which has been previously scored both transversely and longitudinally, a carrier for the scored cake, power operated severing means arranged to reciprocate in the path of the scored cake, mechanism to stop the cake with the forward transverse score in the path of the severing means whereby the forward section is severed, a chute into which the severed section is delivered, and a severing blade actuated after the first severing operation to split said section longitudinally for delivery.

4. In a machine for vending pieces of ice of predetermined weight from an ice cake which has been previously scored both transversely and longitudinally, a carrier for the scored cake, power operated severing means arranged to reciprocate in the path of the scored cake, mechanism to stop the cake with the forward transverse score in the path of the severing means whereby the forward section is severed, a chute into which the severed section is delivered, a severing blade actuated after the first severing operation to split said section longitudinally for delivery, and means to deliver a split section from the chute.

5. An automatic vending machine for severing and delivering pieces of ice from a cake previously scored both transversely and longitudinally comprising an intermittently operated carrier, power-operated severing means successively to split the cake on the transverse scores, a delivering chute, mechanism automatically to deliver the severed sections successively to the chute; and a severing blade arranged to split the sections in the chute.

6. In an ice vending machine, an intermittently operated carrier adapted to convey cakes of ice through the machine, reciprocating severing devices to act successively on the cake, one severing device being arranged to sever the cake transversely and the other severing device being arranged to split the severed section, and means to deliver the split sections from the machine.

7. An ice vending machine comprising, in combination, a motor driven shaft means to effect intermittent rotation of said shaft as the motor is driven; a severing blade actuated by said shaft when rotated; an inclined way supporting ice cakes beneath said blade; and an arm supporting each cake on the inclined way by engagement with its lower end, said arm being lifted out of the way immediately after the severing blade severs the cake, so as to permit gravity movement of the pieces.

8. An ice vending machine comprising, in combination, a motor driven shaft; means to effect intermittent rotation of said shaft as the motor is driven; ice cake severing means actuated by said shaft when rotated; an inclined way supporting ice cakes beneath said severing means; an arm supporting each cake on the inclined way by engagement with its lower end; and mechanical connections between said shaft, said severing means and said arm and acting to effect, first, severing of the cake into two pieces, then movement of said arm out of the way of the lower piece with the upper piece held against movement by said severing means, and then withdrawal of said severing means and return of the arm to its initial position to hold the upper piece when it moves down the inclined way.

9. An ice vending machine comprising, in combination, a power driven shaft; an intermittently driven shaft; a severing blade actuated by said intermittently driven shaft when rotated; an inclined way supporting ice cakes beneath said blade; and an arm supporting each cake on the inclined way by engagement with its lower end, said arm being lifted out of the way immediately after the severing blade severs the cake, so as to permit gravity movement of the pieces.

10. An ice vending machine having means for intermittently severing a piece from a

scored cake along one of the score lines thereof comprising, in combination, a power driven shaft; a chain driven by the shaft; a roller carriage connected to the chain and traveling along guideways; and a pusher arm on the carriage for engaging one end of one of the scored cakes to carry said cake forward.

11. An ice vending machine having means for intermittently severing a piece from a scored cake along one of the score lines thereof comprising, in combination, a power driven shaft; a cam on the shaft; a rock arm actuated by the cam; a sector gear operated by the rock arm; a pinion actuated by the sector gear; a pawl carried by the pinion; a ratchet wheel operated by the pawl; a sprocket operated by the ratchet wheel; a chain driven by the sprocket; a roller carriage connected to the chain and traveling along guideways; and a pusher arm on the carriage for engaging one end of one of the scored cakes to carry said cake forward.

12. An ice vending machine comprising, in combination, a power driven shaft; a chain driven by said shaft; means on the chain for engaging ice cakes at one end; a conveyor delivering ice cakes to a point adjacent said chain; the chain extending at right angles to the conveyor and moving ice cakes at right angles to their positions on the conveyor; means for dividing each cake into two pieces while at rest at the discharge end of the conveyor; and connections between said shaft and chain to effect step by step movement of the chain after each piece is severed from the cake, and return of said ice cake engaging means to its initial position to engage one end of the succeeding cake on the conveyor.

13. An ice vending machine comprising, in combination, a power driven shaft; a chain driven by said shaft; means on the chain for engaging ice cakes at one end; a conveyor delivering ice cakes to a point adjacent said chain; the chain extending at right angles to the conveyor and moving ice cakes at right angles to their positions on the conveyor; means for dividing each cake into two pieces while at rest at the discharge end of the conveyor; a tilting shelf for receiving each piece severed from the cake; means for holding the severed piece momentarily on said tilting shelf; means for moving said tilting shelf downwardly to effect gravity movement of the severed piece; and means effecting release of the severed piece simultaneously with downward movement of the tilting shelf.

14. An ice vending machine comprising, in combination, a power driven shaft; a chain driven by said shaft; means on the chain for engaging ice cakes at one end; a conveyor delivering ice cakes to a point adjacent said chain; the chain extending at right angles to the conveyor and moving ice cakes at right angles to their positions on the conveyor; means for dividing each cake into two pieces while at rest at the discharge end of the conveyor; means for moving said ice cakes varying distances according to the spacing between transverse scores thereof; means for receiving each severed piece; means for dividing each such piece along the longitudinal score line; and discharge means for feeding one by one the pieces of ice resulting from the subdivision last mentioned.

15. An ice vending machine comprising, in combination, a power driven shaft; a chain driven by said shaft; means on the chain for engaging ice cakes at one end; a conveyor delivering ice cakes to a point adjacent said chain; the chain extending at right angles to the conveyor and moving ice cakes at right angles to their positions on the conveyor; means for dividing each cake into two pieces while at rest at the discharge end of the conveyor; means for moving said ice cakes varying distances according to the spacing between transverse scores thereof; a tilting shelf for receiving each piece severed from the cake; means for holding the severed piece momentarily on said tilting shelf; means for tilting said shelf downwardly to effect gravity movement of the severed piece; means effecting release of the severed piece simultaneously with downward movement of the tilting shelf; means for receiving each severed piece; means for dividing each such piece along the longitudinal score line; and discharge means for feeding one by one the pieces of ice resulting from the last mentioned subdivision.

16. An ice vending machine having means to differentially feed the ice cakes, said means comprising, in combination, a readily removable control bar having a series of notches so spaced as to correspond with the divisions between the transverse scores on the tapered ice cake; a reciprocating carriage; a dog on the carriage which rests on the control bar so as to engage the notches to prevent return movement of the carriage; a chain connected to the carriage; means tending to retract the chain and the carriage; the carriage being moved forwardly an amount equal to the longest division between scores of the ice cake and being drawn back by said means until the dog engages one of the notches to arrest retraction of the carriage.

17. An ice vending machine comprising, in combination, a reciprocatory member carrying a series of severing blades; means for guiding said reciprocatory member; a tilting shelf for supporting the section split off by said reciprocatory member; and an inclined way for receiving the severed section.

18. An ice vending machine comprising, in combination, a reciprocatory member carrying a series of severing blades; means for

guiding said reciprocatory member; a tilting shelf for supporting the section split off by said reciprocatory member; means for moving said tilting shelf downwardly and back again to separate the severed piece from the remainder of the cake; an inclined way for receiving the severed section; and means for dividing the severed section whch is supported on said inclined way.

19. An ice vending machine comprising, in combination, a reciprocatory member carrying a series of severing blades; means for guiding said reciprocatory member; a tilting shelf for supporting the section split off by said reciprocatory member; means for moving said tilting shelf downwardly and back again to separate the severed piece from the remainder of the cake; an inclined way for receiving the severed section; means for dividing the severed section which is supported on said inclined way; an arm supporting each piece of ice on the inclined way by engagement with its lower end; the parts being mechanically connected so that, after the piece is divided on the inclined way, the arm is moved out of the way of the lower piece while the upper piece is held by said severing means, and the severing means is then withdrawn and simultaneously the arm moves down to hold the aforesaid upper piece at the lower end of the inclined way.

20. An ice vending machine comprising, in combination, a conveyor to hold a number of large scored ice cakes extending transversely and on edge; means for actuating said conveyor step-by-step; severing mechanism; means for moving the ice cakes longitudinally to register their transverse scores with said severing mechanism; means for transferring the severed section to a support; means for severing this section while on the support in a plane longitudinal of the section; and means for conducting the severed pieces away.

21. An ice vending machine comprising, in combination, means for conveying large cakes of ice; means for severing sections one at a time, from each of the large cakes of ice; means for holding stationary said severed sections; means for subdividing each severed section while stationary; discharge means; a motor; mechanical connections between the motor and said conveyor, said severing means and said subdiving means; a coin-controlled switch; means for closing the motor circuit to effect discharge of a single piece of ice from the machine upon insertion of a coin in said switch; the connections between the motor and the conveyor being such that the ice cakes are fed to the severing means as rapidly as needed to maintain a continuous supply of ice pieces at the discharge end of the machine.

22. An ice vending machine comprising, in combination, means for conveying large cakes of ice; means for severing pieces one at a time, from each of the large cakes of ice; means receiving the pieces from the conveyor and holding them stationary; means for subdividing each severed piece while stationary; discharge means for the pieces of ice released by said holding means; a motor; mechanical connections between the motor and said conveyor, said severing means and said subdividing means; a coin-controlled switch; means for closing the motor circuit to effect discharge of a single piece of ice from the machine upon insertion of a coin in said switch; the connections between the motor and the conveyor being such that the ice cakes are fed to the severing means as rapidly as needed to maintain a continuous supply of ice pieces at the discharge end of the machine; and means actuated by delivery of each piece from the discharge end to release the coin, thus effecting opening of the motor circuit and stoppage of the motor and the conveyor.

23. An ice vending machine comprising, in combination, means for conveying pieces of ice; means receiving the pieces from the conveyor and holding them stationary; discharge means for the pieces of ice released by said holding means; a motor; mechanical connections between the motor and said conveyor; a coin-controlled switch; means for closing the motor circuit to effect discharge of a single piece of ice from the machine upon insertion of a coin in said switch; and means actuated by delivery of each piece from the discharge end to release the coin, thus effecting opening of the motor circuit and stoppage of the motor and the conveyor.

24. An ice vending machine comprising, in combination, means for conveying pieces of ice; means receiving the pieces from the conveyor and holding them stationary; discharge means for the pieces of ice released by said holding means; a motor; mechanical connections between the motor and said conveyor; a coin-controlled switch; and means for closing the motor circuit to effect discharge of a single piece of ice from the machine upon insertion of a coin in said switch.

In testimony whereof I affix my signature.

ALBERT HAPPEL.