July 26, 1949. S. BERT 2,477,474

ICE SHAVING MACHINE

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Fig-1-

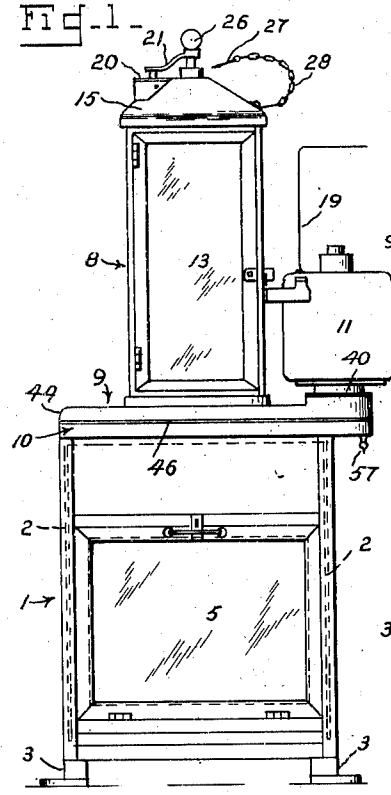


Fig-3-

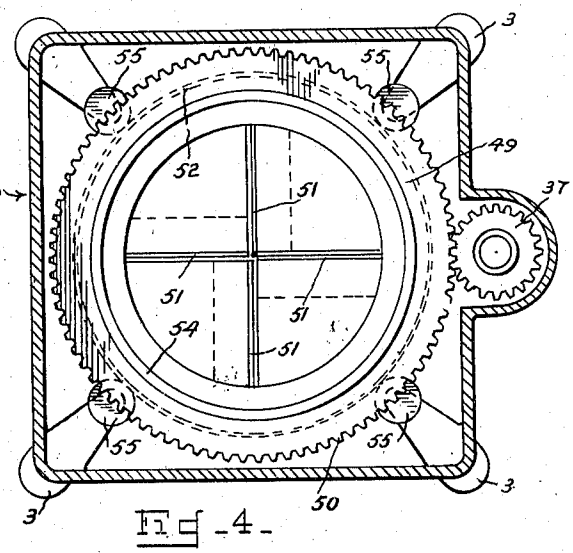


Fig-4-

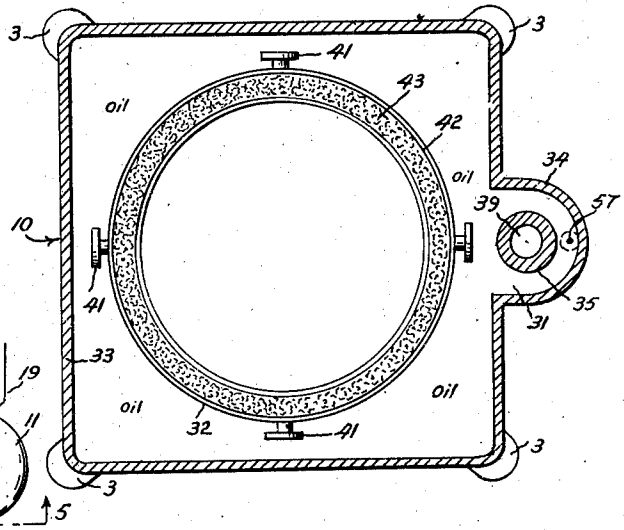


Fig-2-

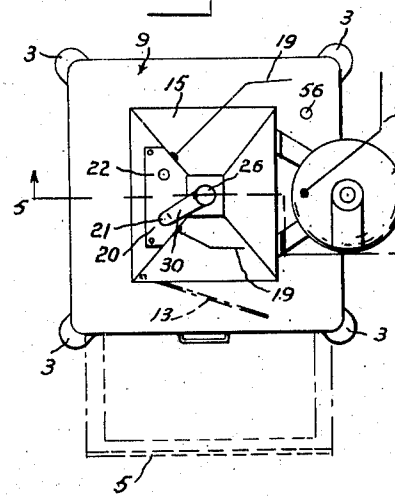
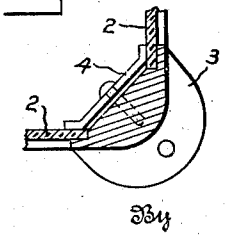


Fig-6-



Inventor:
Samuel Bert,

By

Attorney

July 26, 1949. S. BERT 2,477,474

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Fig. 5.

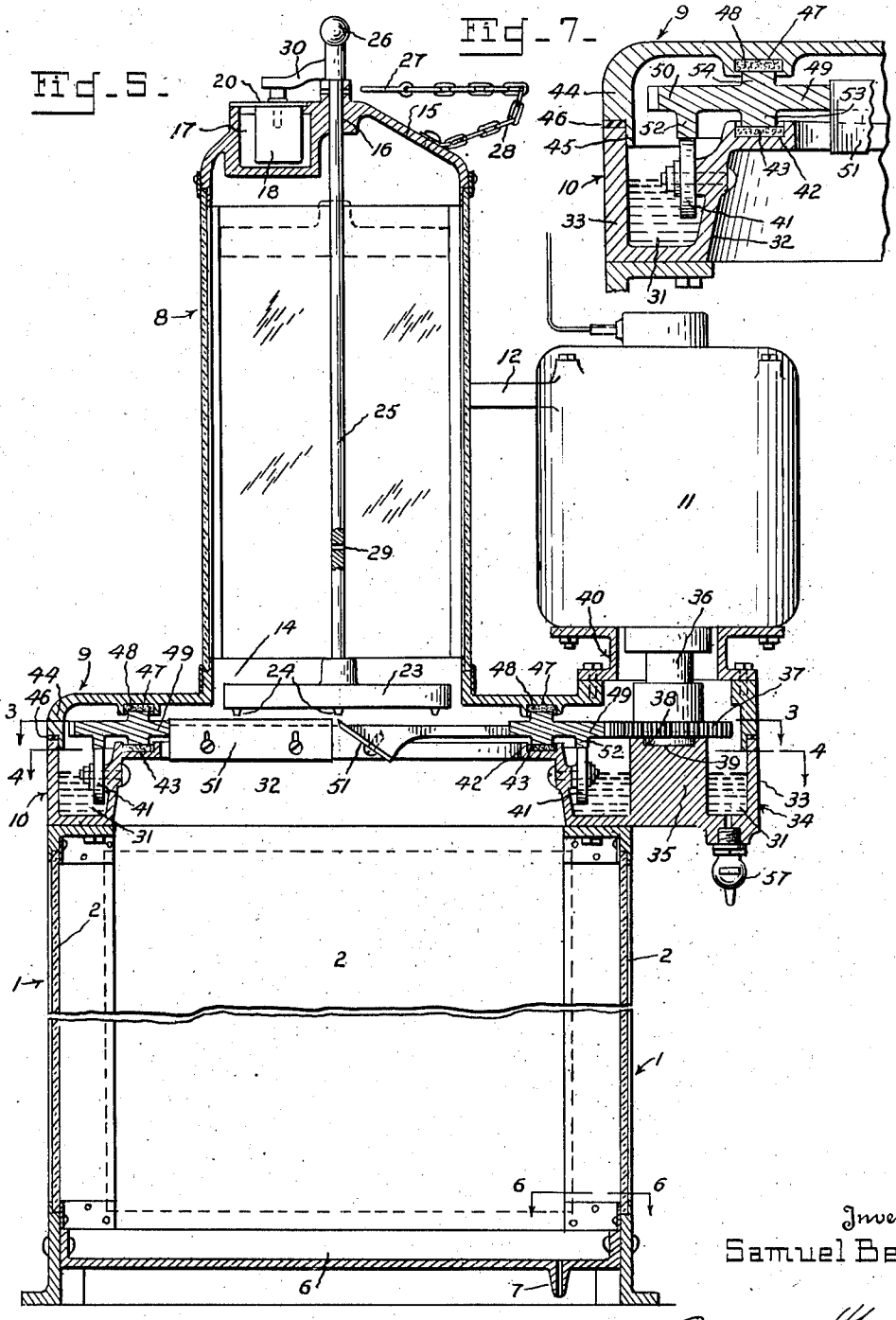


Fig. 7.

Inventor:
Samuel Bert,

By Marion Harris.

Attorney

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UNITED STATES PATENT OFFICE

2,477,474

ICE SHAVING MACHINE

Samuel Bert, Dallas, Tex.

Application April 12, 1948, Serial No. 20,521

5 Claims. (Cl. 241—92)

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This invention relates to improvements in ice shaving, cutting or chipping machines of the general type shown in my prior patents, No. 1,700,819, dated February 5, 1929, and No. 1,722,031, dated July 23, 1929, wherein the machine comprises a bottom housing to receive the shaved ice, and an upper receptacle to hold a block of ice to be shaved, in which is a weighted follower to press the block of ice downward, between which housing and receptacle is arranged a rotary gear carrying ice shaving knives, said gear being mounted within a platform forming a cover for the housing and a support for an electric motor which drives the gear.

The main object of the present invention is to provide an improved construction of machine which is sharper, easier running, more durable, and embodies novel means for supporting the motor and drive gearing to reduce vibration and wear and tear on the machine.

A further object of the invention is to provide a novel construction and arrangement of gear casing to enclose and lubricate the gearing and seal the lubricant and gear containing means against the access of shaved ice and water thereto.

With these and other objects in view, the invention consists in the novel construction, arrangement and combination of features hereinafter fully described and claimed, and shown in the accompanying drawings, in which:

Fig. 1 is a front elevation of the machine;

Fig. 2 is a top plan view thereof;

Fig. 3 is a sectional plan view taken on line 3—3 of Fig. 5;

Fig. 4 is a similar view taken on line 4—4 of Fig. 5;

Fig. 5 is a vertical transverse section taken on line 5—5 of Fig. 2;

Fig. 6 is a detail section on line 6—6 of Fig. 5; and

Fig. 7 is an enlarged detail section through a portion of the gear chamber.

Referring now more particularly to the drawings, 1 represents the base of the machine, which comprises a housing to receive the shaved ice and which is preferably formed of a cast frame normally open at bottom and top and having its sides open and closed except at the front by panels 2 of "Plexiglas" clamped to corner posts 3 of the frame by brackets 4. At the front the housing is provided with a door 5 of suitable type, which closes the front opening, through which, when the door is opened, the shaved ice may be removed. A shaved ice supporting pan or tray 6

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closes the bottom of the housing and is provided with a water drain outlet 7.

At its top the machine is provided with a cabinet or receptacle 8 to hold a block of ice from which the ice is to be shaved. This rests and is supported at its base on the top or cover 9 of a gear casing including said cover and a base section 10, the construction of which casing will be more fully hereinafter described. The gear casing also forms a support for an electric motor 11. A suitable bracing means 12 is provided to mutually brace the receptacle 8 and the motor against vibration and other strains, and to maintain them in proper alignment.

The receptacle 8 is open at its bottom and is provided with an access door 13 and is suitably secured at its bottom to the cover 9 in line with an opening 14 therein. At its top the receptacle is closed by a cover 15, which may be either fixed or removable, and which is formed with a guide passage 16 and a chamber 17 in which is arranged a switch box 18 which in practice is suitably connected with a source of current supply and the motor through conductors 19. The top or cover 20 of this switch box supports a starting switch button 21 and a stopping switch button 22.

Arranged for vertical movement in the receptacle 8 is a follower disk 23 which is adapted to rest upon the block of ice and keep it pressed downward against the cutting blades, hereinafter described. This disk may be positively guided against rotation in its up and down movements and is provided with teeth 24 to engage the block of ice. A rod 25 is attached at its lower end to the disk and extends at its upper end outwardly through the guide passage 16 in the cover 15 and is provided with a knob 26 whereby the rod and disk may be raised and lowered. The rod is adapted to be raised to bring the disk to the dotted line position shown in Fig. 5, so that it will rest on a block of ice inserted in the receptacle through its doorway. A pin 27, attached to the cover 15 by a chain 28 or the like, is adapted to be passed through a hole 29 in the rod to hold it and the disk in raised position while the block of ice is being inserted. Mounted on the upper end of the rod is a fingerpiece 30. This fingerpiece is adapted to engage the button 22 at the end of the downward movement of disk 23, when the shaving of an ice block is completed, to stop the operation of the motor. At the start of a cutting operation the operator presses the starting button 21, after which the operation is automatic to the end of the shaving of the block, when the fingerpiece presses the button 22, or sooner by

manual pressure of the button 22, if the operator desires to stop the operation at any time before the shaving of the block is completed.

The gear casing, as before stated, comprises the cover section 9 and the base section 10, and provides a gear housing, with enclosed gearing, which is interposed between the bottom housing and top ice receptacle, and which closes the top of the bottom housing and supports the receptacle and the motor. As shown, the base section 9 is formed to provide an annular oil receiving channel 31 to hold oil to a certain high level below the level of its inner wall 32, the outer wall 33 of which extends to a slightly higher level than the inner wall. At one side said section has an offset 34 in which is an upstanding boss 35 and which underlies the motor concentric with its shaft 36. This shaft carries a drive pinion 37 and is provided with a reduced end 38 having a stepped bearing in a recess 39 formed in the boss 35. An annular flanged pedestal 40 is in communication with the offset portion 34 and is flanged for attachment to said offset portion and motor and forms a support for the motor. The inner wall 32 of the channeled section 10 supports a plurality of vertically disposed bearing rollers 41 which are arranged within the oil channel, and at its upper edge said wall 32 is provided with an inwardly extending annular horizontal flange 42 recessed to receive a sealing ring 43 of felt or other suitable absorbent sealing material. The cover section 9, which may be suitably secured to the base section 10, forms a closure for the top of said base section and its offset portion and a support for the ice receptacle and the motor. This cover has a downturned peripheral edge 44 formed with a sealing flange 45 to lap the inner surface of the wall 33, and a sealing gasket 46 is disposed between the edge 44 outside of and about the flange 45 to seal the joint against the escape of oil and entrance of dirt or other foreign materials. On its under side the cover 9 is also formed with a recess 47 in which is a packing ring 48 similar to the ring 43.

Arranged within the cover section of the gear casing is a gear wheel 49 having a toothed rim 50, the teeth of which mesh with the pinion 37, whereby when the motor is operating said gear wheel will be driven. This wheel is provided with four radially arranged openings through which project the cutting edges of knives 51 to engage and shave a block of ice disposed in the ice receptacle and supported on the edges of the knives. The construction of these parts may be similar to that shown in my prior patents. As shown, the rim portion of this gear is provided with a bearing flange 52 which rests on the rollers 41, whereby the gear is adapted to be easily rotated and whereby the downthrust or weight of the ice block is sustained. The gear is also provided with sealing flanges 53 and 54 which bear against the gaskets 43 and 48 which close communication between the center of the gear casing and the oil channel to prevent any lubricant from finding its way into the ice-containing space and to prevent water or ice from passing from the ice-containing space into the oil channel. This object is effectually obtained, although the bearing rollers 41 and flange 52 provide for the supply of lubricant to their surfaces and to the gear teeth of the drive pinion and cutter gear. In addition to the rollers 41, a set of horizontally disposed bearing rollers 55 may be provided within the cover 9 for contact with flange 52 to sustain the side thrust falling on the cutter gear during a cutting operation.

From the foregoing description, taken in connection with the drawings, the operation of the machine will be readily understood without a further and extended description. A block of ice is introduced into the ice receptacle above the raised follower, which is then released from its holding pin to adapt the follower to exert downward pressure on and travel downward with the ice block. The operator thereupon presses button 21 which starts the motor into operation to drive the cutter gear, the knives of which shave ice from the block. The shaved ice passes through the openings in the cutter gear into the housing below, from which the shaved ice may be removed as and when desired. In the operation above described the working parts are sustained against the working thrusts and lubricated so that an easy working action is obtained and wear and tear on the working parts reduced, thus providing a strong and durable machine the working parts of which are protected and not liable to be easily injured or rendered unserviceable. The construction of the machine also adapts the gear mechanism to be applied and removed as a unit, and the knives to be removed for resharpening whenever required by lifting off the cover of the gear casing. A plug closed inlet 56 in the cover 9 and a drain valve 57 at the bottom of the oil channel may be provided respectively for the introduction and removal of oil when required.

While the construction of the machine as herein disclosed is preferred, it will be understood that changes in the form, construction and arrangement of parts, falling within the scope of the appended claims, may be made without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described my invention, I claim:

1. An ice shaving machine including in combination a lower receptacle for shaved ice, an upper receptacle for holding a block of ice to be shaved, a gear casing secured to and arranged between the receptacles and provided with a central opening and an annular oil holding channel arranged outside of and bounding the central opening, a motor driven pinion supported by the casing, a gear wheel arranged in the casing and having a toothed rim meshing with the pinion, the pinion and rim of the gear being arranged directly above said channel, an annular track flange on the rim of the gear also disposed above said channel, supporting rollers within the channel and adapted to rotatably support the gear by means of said track flange and to pick up and convey oil from the channel to the meshing portions of the pinion and gear, and means provided on the gear for shaving ice from the block in the upper receptacle and delivering the ice particles to the lower receptacle.

2. An ice shaving machine including in combination a lower receptacle for shaved ice, an upper receptacle for holding a block of ice to be shaved, a gear casing secured to and arranged between the receptacles and comprising a bottom section and a top or cover section, said bottom section being provided with a central opening and an annular oil holding channel arranged outside of and bounding the central opening, a motor driven pinion supported by the casing, a gear wheel arranged in the casing and having a toothed rim meshing with the pinion, the pinion and rim of the gear being arranged above said channel, an annular track flange on

the underside of the rim of the gear also disposed above said channel, supporting rollers within the channel in rolling contact with said track flange and adapted to rotatably support the gear and sustain the down thrust thereon and one of said rollers being adapted to pick up and convey oil from the channel to the meshing portions of the pinion and gear, and means provided on the gear for shaving ice from the block in the upper receptacle and delivering the ice particles to the lower receptacle.

3. An ice shaving machine including in combination a lower receptacle for shaved ice, an upper receptacle for holding a block of ice to be shaved, a gear casing secured to and arranged between the receptacles and provided with a central opening and an annular oil holding channel arranged outside of and separated from and bounding the central opening, a motor driven pinion supported by the casing, a gear wheel arranged in the casing and having a toothed rim meshing with the pinion, the pinion and rim of the gear being arranged above said channel, an annular track flange on the rim of the gear also disposed above said channel, supporting rollers within the channel engaged by said track flange and adapted to rotatably support the gear and sustain the down thrust thereon and one of said rollers being adapted to pick up and convey oil from the channel to the meshing portions of the pinion and gear, means provided on the gear for shaving ice from the block in the upper receptacle and delivering the ice particles to the bottom receptacle, and means arranged between the channel and said shaving and delivering means on the gear for sealing the same from the passage of oil and water and ice particles from one to the other.

4. An ice shaving machine including in combination a lower receptacle for shaved ice, an upper receptacle for holding a block of ice to be shaved, a gear casing secured to and arranged between the receptacles and comprising a bottom section and a top or cover section, said bottom section being provided with a central opening and an annular oil holding channel arranged outside of and separated from and bounding the central opening, a motor driven pinion supported by the casing, a gear wheel arranged in the casing and having a toothed rim meshing with the pinion, the pinion and rim of the gear being arranged above said channel, an annular

track flange on the rim of the gear also disposed above said channel, supporting rollers within the channel engaged by said track flange and adapted to rotatably support the gear and sustain the down thrust thereon and one of said rollers being adapted to pick up and convey oil from the channel to the meshing portions of the pinion and gear, means provided on the gear for shaving ice from the block in the upper receptacle and delivering the ice particles to the bottom receptacle, and means arranged between the channel and said shaving and delivering means on the gear for sealing the same from the passage of oil and water and ice particles from one to the other.

5. An ice shaving machine including in combination a lower receptacle for shaved ice, an upper receptacle for holding a block of ice to be shaved, a gear casing secured to and arranged between the receptacles and provided with a central opening and an annular oil holding channel arranged outside of and separated from and bounding the central opening, a motor driven pinion supported by the casing, a gear wheel arranged in the casing and having a toothed rim meshing with the pinion, the pinion and rim of the gear being arranged above said channel, an annular track flange on the rim of the gear also disposed above said channel, supporting rollers within the channel engaged by said track flange and adapted to rotatably support the gear and sustain the down thrust thereon and one of said rollers being adapted to pick up and convey oil from the channel to the meshing portions of the pinion and gear, supporting rollers on the casing for sustaining lateral thrust on the gear, and means provided on the gear for shaving ice from the block in the upper receptacle and delivering the ice particles by gravity to the bottom receptacle.

SAMUEL BERT.

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The following references are of record in the file of this patent:

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