March 3, 1942. C. A. WINGATE ET AL 2,275,121

ICE MACHINE

Filed July 26, 1940 2 Sheets-Sheet 1

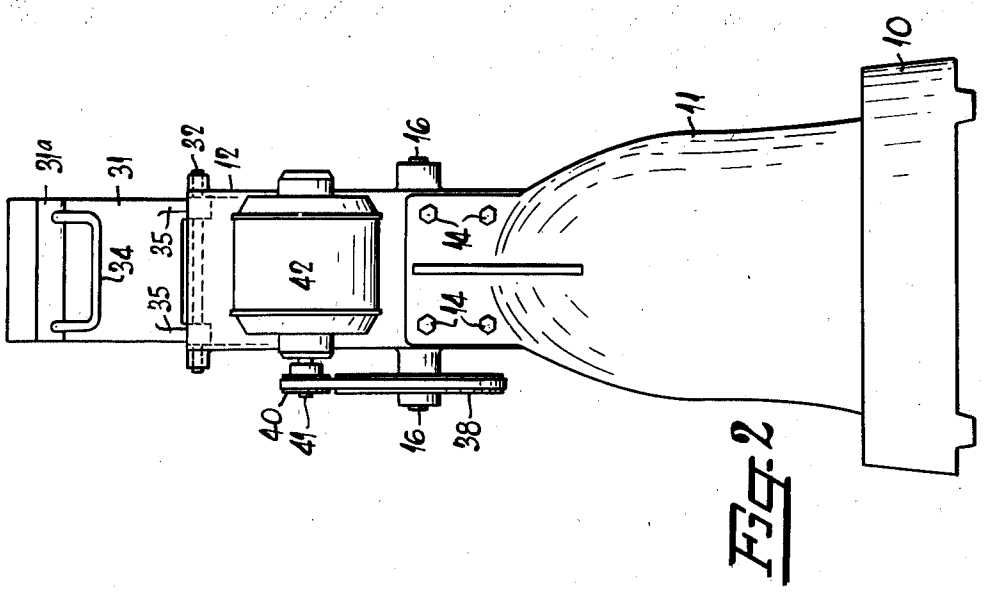


Fig. 2

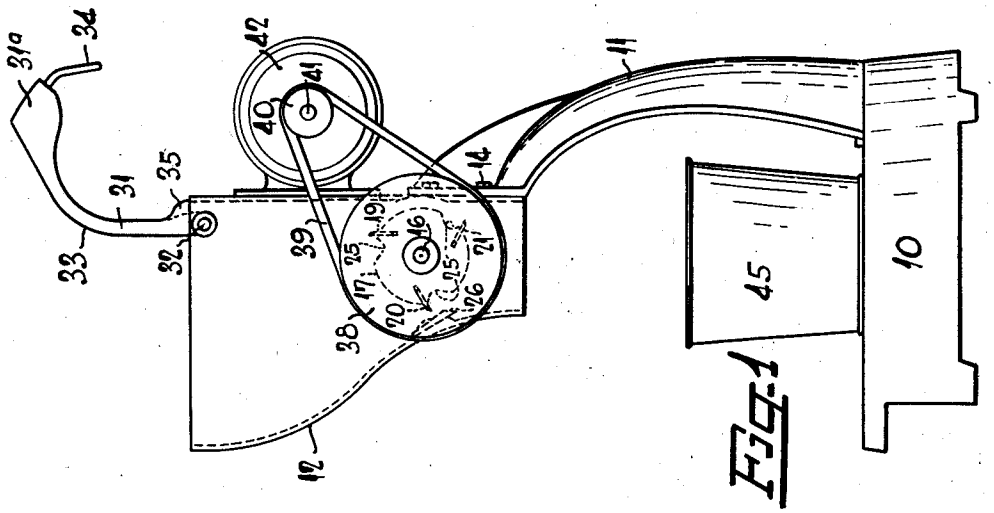


Fig. 1

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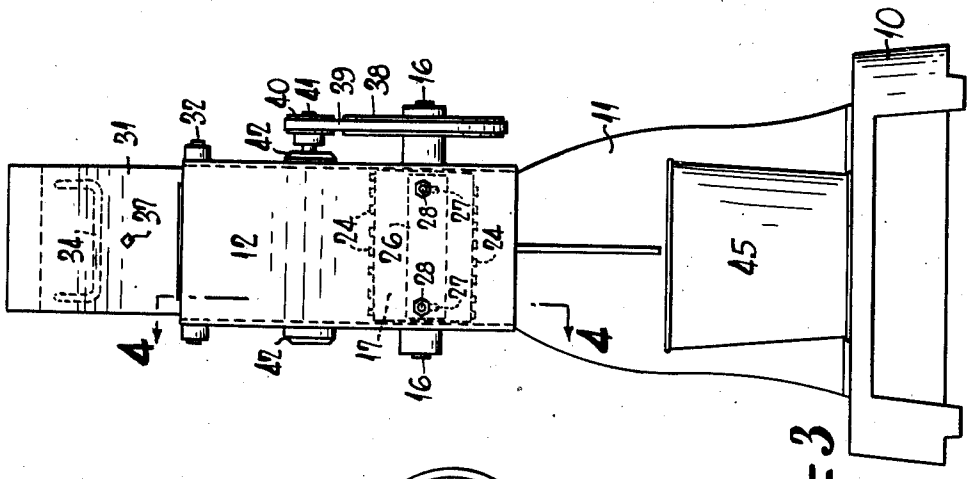


Fig. 3

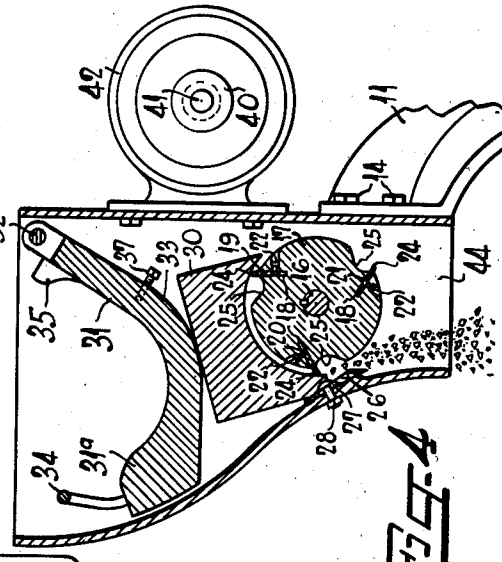


Fig. 4

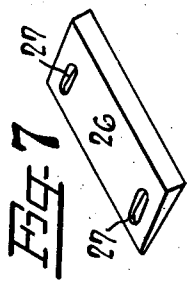


Fig. 7

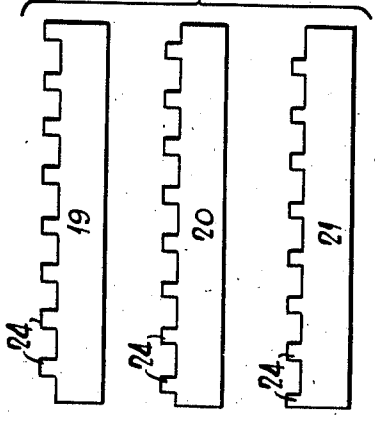


Fig. 5

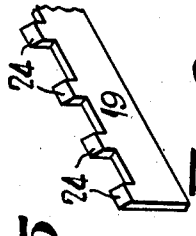


Fig. 6

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Patented Mar. 3, 1942 2,275,121

UNITED STATES PATENT OFFICE

2,275,121

ICE MACHINE

Clarence A. Wingate and William Jack Wingate,
Norfolk, Va.

Application July 26, 1940, Serial No. 347,646

1 Claim. (Cl. 83—62)

This invention relates to a machine for shaving, chipping or pulverizing a block of ice so that it will be suitable for use in drinks or as a refrigerating agent.

It is an object of this invention to provide an inexpensive, compact ice machine which can be carried from place to place as the occasion demands, and placed in operation without dismantling any of the parts. A compact portable machine is especially useful in soda fountains, clubs, hospitals and the like where there is a large demand for chipped ice. In many instances, it is more convenient to move the machine to the ice supply than to carry the ice in lump form to the machine. Therefore, it is highly advantageous to have a portable unit which can be easily moved.

It is another object of this invention to provide an ice machine having a novel feeder plate which automatically forces the lump ice into engagement with the teeth of a rotary cylinder to be chipped, shaved or pulverized. This plate is sufficiently weighted to force the lump of ice into engagement with the teeth without any additional pressure and is also constructed so that it will not contact the cylinder teeth when in lowermost position, and so that the operator's hand is at all times shielded from injury during the operation of the plate.

It is a further object of this invention to provide a machine of the class described having an improved cylinder which is so constructed that the lump ice will be uniformly cracked or pulverized into pieces of any desired size.

Some of the objects of the invention having been stated, other objects will appear as the description proceeds, when taken in connection with the accompanying drawings, in which—

Figure 1 is a side elevation of an improved ice chipping machine;

Figure 2 is an elevation looking at the right hand side of Figure 1;

Figure 3 is an elevation looking at the left-hand side of Figure 1;

Figure 4 is an enlarged vertical sectional view taken along the line 4—4 in Figure 3, showing the feeder plate in a lowered position, and engaging a piece of ice within the hopper;

Figure 5 is a view showing the three blades which are mounted in the rotary cylinder, said blades having their teeth occupying the same relative lateral position to each other as they occupy when installed in the cylinder;

Figure 6 is an isometric view of one of the blades shown in Figure 5;

Figure 7 is an isometric view of the adjustable throat plate which works in conjunction with the cylinder blades shown in Figure 5 when ice is chipped.

Referring more specifically to the drawings, the numeral 10 denotes a base having secured thereto an upstanding bracket 11, said bracket having a hopper 12 mounted on the upper end thereof, by any suitable means such as bolts 14. The hopper 12 has a shaft 16 rotatably mounted in its side walls and near its lower end. This shaft has keyed thereon a rotor 17, and this rotor has a plurality of slots 18 in its periphery in which blades 19, 20 and 21 are removably mounted by any suitable means such as set screws 22. Each of the blades 19, 20 and 21 has a set of teeth 24 therein. It will be noted that the teeth 24 are so positioned in each plate that neither of the teeth in one plate will travel in the same path of a tooth in another plate during the rotation of the rotor 17. Instead the teeth are staggered so that all of the teeth in the three plates combined will be of sufficient width to extend the width of the hopper; consequently when a block of ice 30 is thrown into the upper portion of the hopper, the entire bottom surface thereof will be subjected to the scarifying effect of the teeth of the three blades 19, 20 and 21.

The rotor 17 may have a concave groove 25 in its periphery adjacent each of the blades 19, 20 and 21, into which the ice passes after being shaved or chipped from block 30. These grooves are so shaped that the ice will readily clear the blades after being chipped, thereby preventing the clogging of the blades by shaved ice.

Adjustably secured within the hopper and in parallel spaced relation to the rotor 17 is a throat plate 26, said plate being wedge-shaped in cross section and having suitable slots 27 therein which slots are penetrated by bolts 28. The bolts 28 also penetrate the hopper housing to secure the plate 26 in place in spaced relation to the rotating blades 19, 20 and 21. When it is desired to cut down the distance between the extremities of the teeth 24, and the throat plate 26, it is only necessary to loosen the bolts 28 and to move the throat plate 26 downwardly. This movement will lessen the clearance and as a result the ice from the ice block 30 will be chipped or shaved to a finer degree.

It is sometimes necessary to provide a suitable means for increasing the pressure between the lower surface of the ice block 30 and the blades, 19, 20 and 21, in the rotor cylinder 17. In other words, the gravity or weight of the block of ice

30 may not be sufficient to cause the teeth 24 in the blades to properly engage the same. In order to provide a suitable means which can be used to apply this pressure, a suitable plate 31 is pivoted as at 32 near one edge of the upper opening of the hopper. This plate has a curved bottom surface 33 which is adapted to engage the top of the ice block 30 and it also has an enlarged weighted free end 31*a*. The free end of plate 31 has a U-shaped bolt 34 secured therein, and this bolt serves as a handle whereby the free end of plate 31 can be lowered downwardly into the hopper as shown in Figure 4 or raised out of the hopper to the position shown in Figures 1, 2 and 3. When the plate is in raised position, suitable lugs 35 are adapted to rest upon the upper edge of the hopper and prevent further clockwise rotation due to the weight of the free end of the plate.

When a block of ice 30 is placed in the hopper the plate 31 is rotated in a counter-clockwise manner from the position shown in Figure 1, to the position shown in Figure 4. Then the weighted free end 31*a* applies the necessary pressure to the top of ice block 30 to press it against the blades 19, 20 and 21. The plate 31 is sufficiently wide to protect the operator's hand from the teeth 24 when pressure is applied manually.

When the block of ice 30 has passed through the machine the plate 31 will have been lowered sufficiently to allow the head of a set screw 37 to engage the inside wall of hopper 12. This screw is adjustably mounted in plate 31 and serves to prevent the free end of plate 31 from contacting blades 19, 20 and 21.

The rotor shaft 16 extends beyond the hopper housing and has a pulley 38 fixed thereon, said pulley having a belt 39 mounted thereon which belt also is mounted upon another pulley 40 on a motor shaft 41, of a motor 42, which in turn, is secured to the back side of the hopper housing. It is therefore seen that the motor 42 drives the rotor 17 and its associated plates 19, 20 and 21 at a relatively high speed to thereby cause the bottom portion of the ice 30 to be shaved, cracked or pulverized into small particles. These particles are allowed to drop downwardly through the lower opening 44 of the hopper housing and then into a suitable container 45 which is adapted to be placed upon the base member 10.

This unit can be manufactured cheaply and is designed so as to occupy very little space, thereby making it possible to place it in an inconspicuous place in drug stores, or other establishments where pulverized or cracked ice is in demand. The device is also portable which enables one to move it from place to place to a supply of ice rather than bring the ice to the machine.

In the drawings and specification there has been set forth a preferred embodiment of the invention and although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being set forth in the appended claim.

We claim:

Apparatus for chipping ice comprising a hopper, a rotary cylinder mounted in the hopper and having a plurality of longitudinally spaced cavities in the periphery of the cylinder, a toothed blade adjustably mounted in the rear edge of each cavity, the teeth of each blade projecting beyond the periphery of the cylinder, a throat plate adjustably mounted in the hopper and past which the teeth rotate, the teeth in the blades each being staggered longitudinally of the cylinder so that each blade cuts its own path in the ice and does not follow the path of any other blade, a weighted member pivoted in the hopper for pressing a block of ice against the teeth of the blades in the cylinder and means for adjusting the limit of downward movement of the weighted member.

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