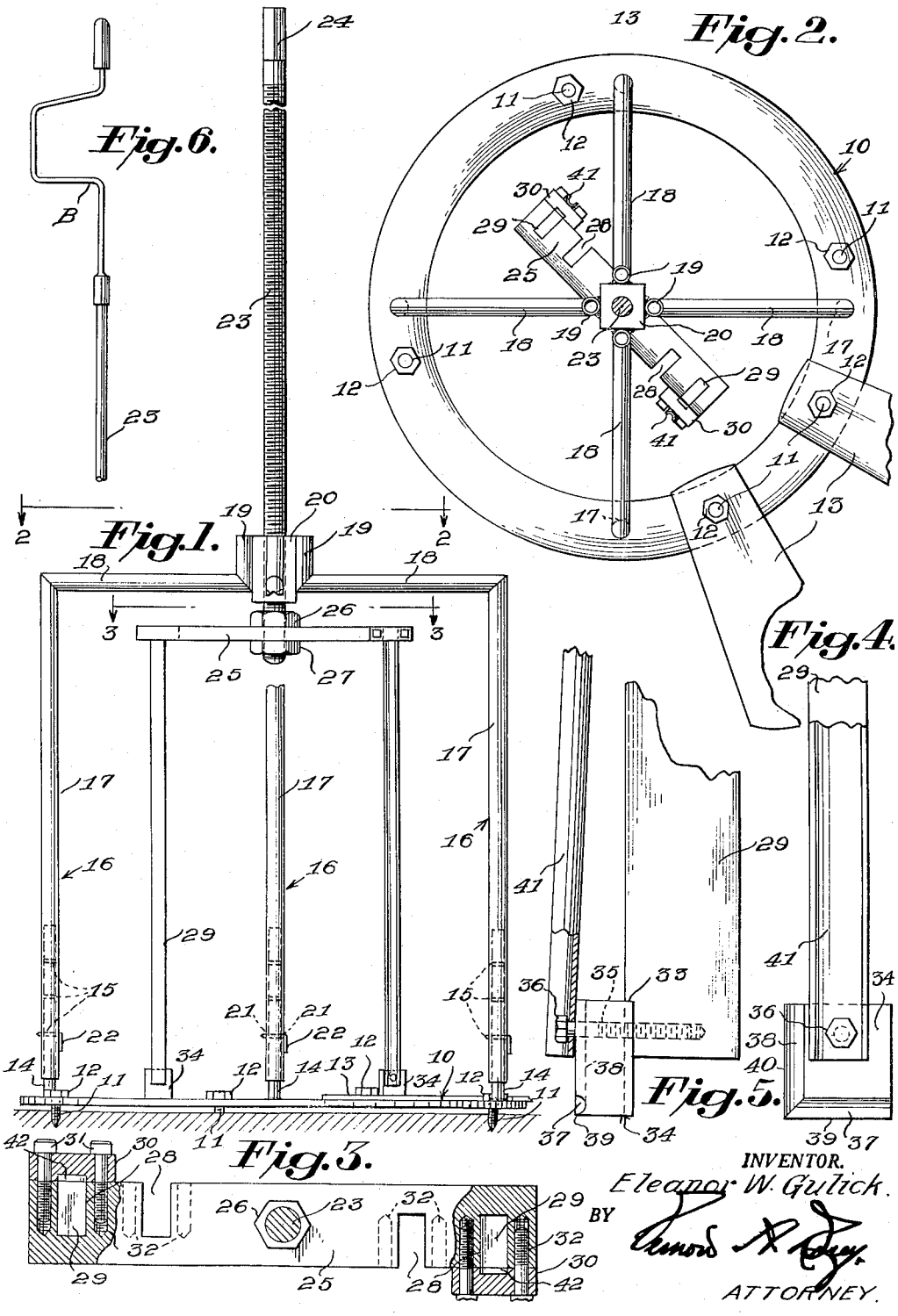
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ICE CUTTING DEVICE

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ICE CUTTING DEVICE

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This invention relates to an ice cutting device.

The invention is more particularly concerned with an ice cutting device of the type which in operation cuts a cylindrical groove in the ice with a resulting ice core which may be subsequently removed to provide a hole in the ice.

One object of the invention is the provision of an ice cutting device which is of relatively simple construction and which is capable of adjustment for cutting holes in ice of different diameters, as well as different depths.

A further object of the invention is the provision of an ice cutting device which is capable of being positively retained in desired position during a cutting operation and which is manually operable.

A still further object of the invention is the provision of a device for cutting a cylindrical groove through a body of ice and which is capable of removing ice chips from the groove during the cutting operation.

Other objects and advantages of the invention will become apparent in the course of the following detailed description, taken in connection with the accompanying drawing, wherein—

FIG. 1 is an elevational view of the improved ice cutting device, with certain elements thereof broken away.

FIG. 2 is a horizontal sectional view as observed in the plane of line 2—2 on FIG. 1 in the direction of the arrows, the cutter head being displaced at a 45° angle from that shown in FIG. 1.

FIG. 3 is an enlarged horizontal sectional view as observed in the plane of line 3—3 on FIG. 1 in the direction of the arrows, and showing the cutter head partly in section.

FIG. 4 is an enlarged fragmental elevational view of one of the cutter bars involved in the ice cutting device together with the corresponding cutter and ice ejector.

FIG. 5 is a fragmental elevational view as observed from the right hand side of FIG. 4, the view being partially in section.

FIG. 6 is an elevational view on a reduced scale of the upper end of an operating rod with a rod operating drill brace engaged therewith for manual operation of the device.

Referring now in detail to the drawing, by use of reference numerals, **10** designates a base ring which is provided with a plurality, preferably four, of ice penetrating pointed pins **11** and which are threaded into the base ring **10** and locked in any adjusted position by means of nuts **12**.

The base ring **10** is further provided with a pair of foot flaps **13** through each of which one of the pins **11** extends and the corresponding nuts **12** hold the foot flaps **13** in position on the base ring **10**.

The base ring **10** is provided with four upwardly projecting posts **14** which are disposed in 90° relation circumferentially of the base ring and whose lower ends are welded thereto. The posts **14** may be tubular or of solid rod formation and same are provided with equally spaced apertures **15**, preferably disposed in equally spaced relation.

The improved device further comprises four tubular legs **16**, each of which includes a vertical portion **17** of substantial length and which portions are disposed in 90° relation circumferentially of the base ring **10**. Unitary with the vertical portions **17** are horizontal portions **18** and relatively short vertical portions **19** in the planes of the vertical portions **17**.

A vertically elongated square nut **20** is disposed within the vertical portions **19** and is welded thereto, as indicated in FIG. 2.

As is indicated in FIG. 1, the lower ends of the vertical portions **17** of the legs **16** telescope over the posts **14** and each of the portions **17** is provided with a pair of diametrically opposed apertures **21** adapted for horizontal alignment with any of the vertically spaced apertures **15** in posts **14** and and pins **22** are removably disposed in aligned apertures **15** and **21** for relative axial adjustment of posts **14** and the vertical portions **17** of the legs **16**.

A rod **23** is provided at one end thereof with a square portion **24** for operative engagement therewith of a well known form of drill brace B for imparting manual rotation to the rod **23** about its axis.

As is shown in FIG. 1, the rod **23** is threaded from a point adjacent the square portion **24** to the opposite end thereof and the nut **20** is internally threaded for cooperation with the rod **23**.

A cutter head **25** of elongated rectangular form in plan is centrally apertured for extension of the lower end of the rod **23** therethrough and the rod is engaged by a pair of nuts **26** and **27** at the lower end thereof which engage the upper and lower faces of the cutter head **25** for retaining same in fixed position on the rod for rotation therewith.

As is indicated in FIG. 3, the cutter head **25** is provided with a pair of rectangular slots **28** adjacent each end thereof, with one pair of slots being disposed in one edge of the head and the other pair of slots disposed in the opposite edge thereof.

A cutter bar **29** has the upper end thereof disposed in a slot **28** of each pair thereof, which, as shown in FIG. 3, are the outermost slots, and the cutter bars **29** are retained in position by means of clamp blocks **30**, each of which is removably retained in position by means of a pair of bolts **31** which extend through the block and are threaded into tapped apertures **32** in the head **25**.

As is indicated in FIG. 3, a pair of tapped apertures **32** are provided for each of the innermost slots **28** whereby the cutter bars **29** may be disposed nearer the axis of the rod **23** for a purpose later to appear.

Each of the cutter bars **29** is provided with a rectangular recess **33** at the lower end thereof, as is indicated in FIG. 5, for reception of a corner portion of a cutter **34**, which is of rectangular block formation and which is apertured as at **35** for reception of a bolt **36** which extends through the aperture **35** and whose end portion is threaded into the bar **29** adjacent the lower end thereof for retaining the cutter in the recess **33**.

Each of the cutters **34** is hollow grooved horizontally adjacent the lower end thereof, as indicated at **37**, and vertically as indicated at **38** with the provision of sharp cutting horizontal and vertical edges **39** and **40**.

As is indicated in FIG. 4, the cutters are of greater width than the cutter bars **29** and the cutters extend substantially one-half their lengths below the cutter bars.

Each of the cutter bars **29** is provided with an ice chip ejector which comprises a substantially semi-tubular member **41** having the concave side thereof disposed in the direction of rotation of the cutter bars **29**, the lower end of the ejector being retained in engagement with the cutter **34** by the bolt **36** and being of substantially the same length as the cutter bar **29**.

The upper ends of the members **41** are provided with tongues **42** which are disposed between the cutter bars **29** and the clamp blocks **30** for retention thereby.

In operation of the device, same is positioned on a body of ice in a desired location for the cutting of a hole therein.

In the positioning of the device, the pointed pins **11**

will be forced into the ice under weight of an operator whose feet rest upon the flaps **13** and who engages the bit B which has been engaged with rod **23** and imparts rotation to the rod **23** with a resulting downward movement of the cutter bars **29** and the cutters **34** which, in their rotation about the axis of rod **23**, cut a cylindrical groove in the ice and during the cutting operation the members **41** deflect ice chips from the groove for maximum efficiency in the cutting operation.

While the members **41** are somewhat narrower than the cutters **34**, the angularity of such members relative to the cutter bars **29** will cause ice chips to move upwardly therein upon rotation of the cutters and due to centrifugal action such chips will be thrown laterally outwardly of the groove being cut.

The resulting ice core may be removed from the hole by lifting same upwardly by any desired means or same may be pushed under the body of ice.

If desired, a cylindrical groove may be cut only partially through the ice making provision for disposing the lower end of a cylindrical container therein.

Should it be desired to cut a hole in the ice at a less diameter, it is necessary only to remove the cutter bars **29** from the outermost slots **28**, as shown, and dispose same within the innermost slots **28** with corresponding displacement of the clamp blocks **30**.

Furthermore, if it becomes necessary to cut a hole in thicker ice, an adjustment of the posts **14** and legs **16** may be effected together with cutter bars **29** of greater length.

Having set forth the invention in accordance with a preferred structural embodiment thereof, what is claimed and desired to be secured by U.S. Letters Patent is:

1. An ice cutting device comprising a flat base ring, ice penetrating means supported by said ring for maintaining same in fixed horizontal position on a body of ice from which a circular piece of ice is to be cut, leg members extending upwardly from said base ring and being secured thereto, an internally threaded rectangular nut disposed centrally of the upper ends of said leg members and being rigidly secured thereto, an elongated manually operable threaded rod extending vertically through said nut, an elongated horizontally disposed cutter head supported centrally thereof by the lower end of said rod, a vertically elongated cutter bar supported

by said head adjacent each end thereof and depending therefrom, and an ice cutter of generally rectangular block form supported on the lower end of each cutter bar for circular movement within said base ring.

2. An ice cutting device according to claim 1, wherein said leg members each comprise an outer elongated vertical portion, an upper horizontal inner portion of less length than said vertical portion and a second vertical portion of less length than said horizontal portion and in spaced relation to said first vertical portion, and said second vertical portions being secured to the respective outer faces of said nut in surrounding relation to said threaded rod and parallel thereto.

3. An ice cutting device according to claim 1, wherein said leg members are of tubular formation and said base ring being provided with a plurality of posts telescopically engaged within the lower ends of said leg members, and means for effecting adjustment between said posts and said leg members for the cutting of holes of different depths.

4. An ice cutting device according to claim 1, wherein each of said cutters comprises a vertically elongated rectangular block, means for supporting said block at the lower end of a corresponding cutter bar with substantially one-half the length of the cutter block projecting below the cutter bar and cutting edges at the lower end of said cutting bar and at one side thereof.

5. An ice cutting device according to claim 4, together with an ice chip ejector of semi-tubular formation cooperating with each of said cutter bars and having the upper end thereof secured to said cutter head and the lower end thereof secured to the corresponding cutter block and said ice ejector having the convex surface thereof opposed to the cutter bar but at an angle thereto.

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