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(54) **ICE AUGER SYSTEM**

(57)

**ABSTRACT**

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175/403

An ice auger system for drilling a bore within ice with significantly reduced ice shavings. The ice auger system includes an elongate tube having a lower end, an upper end, an outer wall, a lumen and a connector shaft attached to the upper end for connecting to a motor. A length of flighting is attached to the outer surface of the elongate tube in a coiled manner. At least one bit is attached to the lower end of the elongate tube for engaging and cutting the ice in a circular pattern to receive the elongate tube and flighting. As the elongate tube is manipulated through the ice, a core is created that is positioned within the lumen of the elongate tube. When the user has drilled completely through the ice, the user then removes the elongate tube from the ice leaving the core within the newly created bore within the ice. The user then either may remove the core from the bore, or may push the core downwardly through the bore underneath the ice.

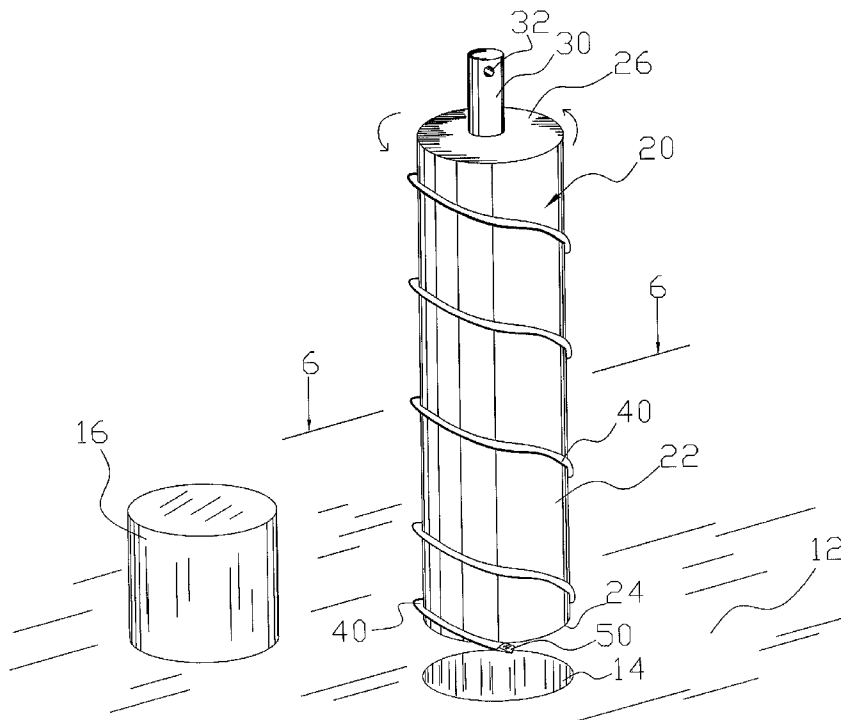


FIG. 1

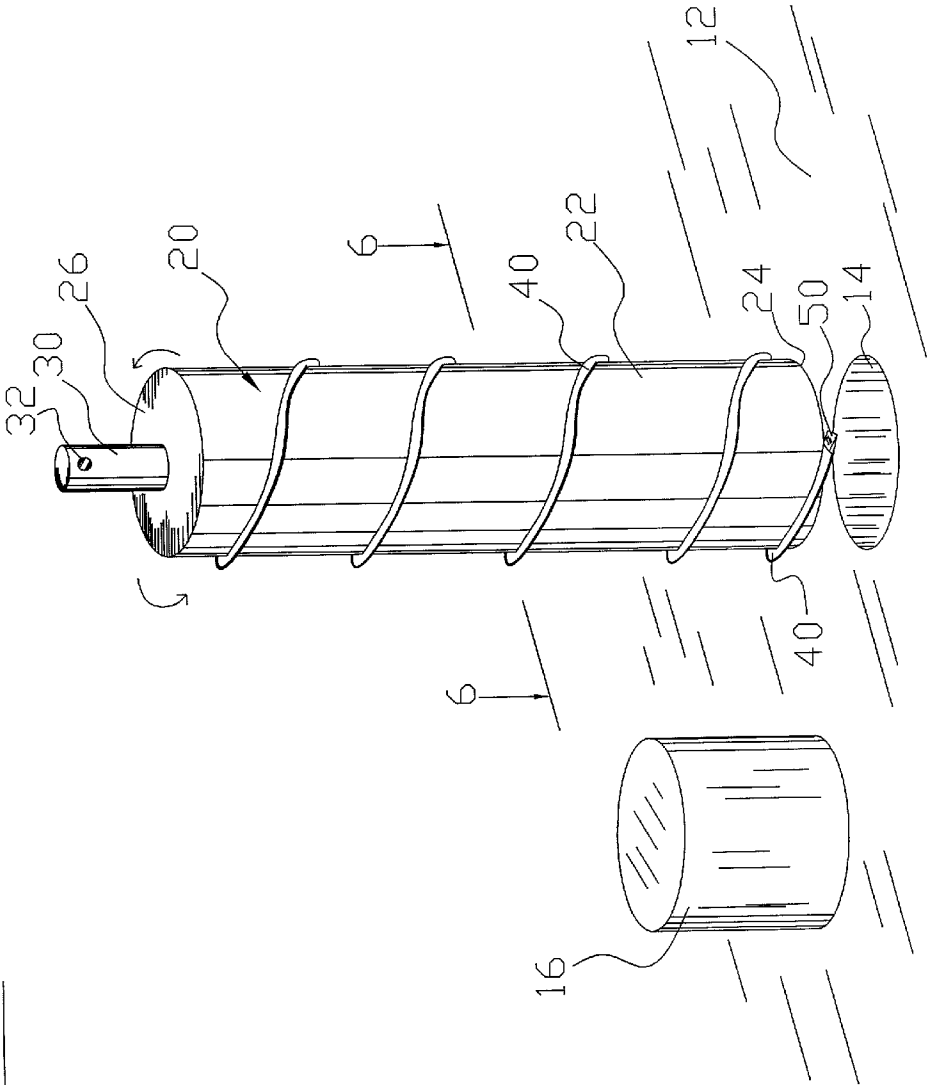
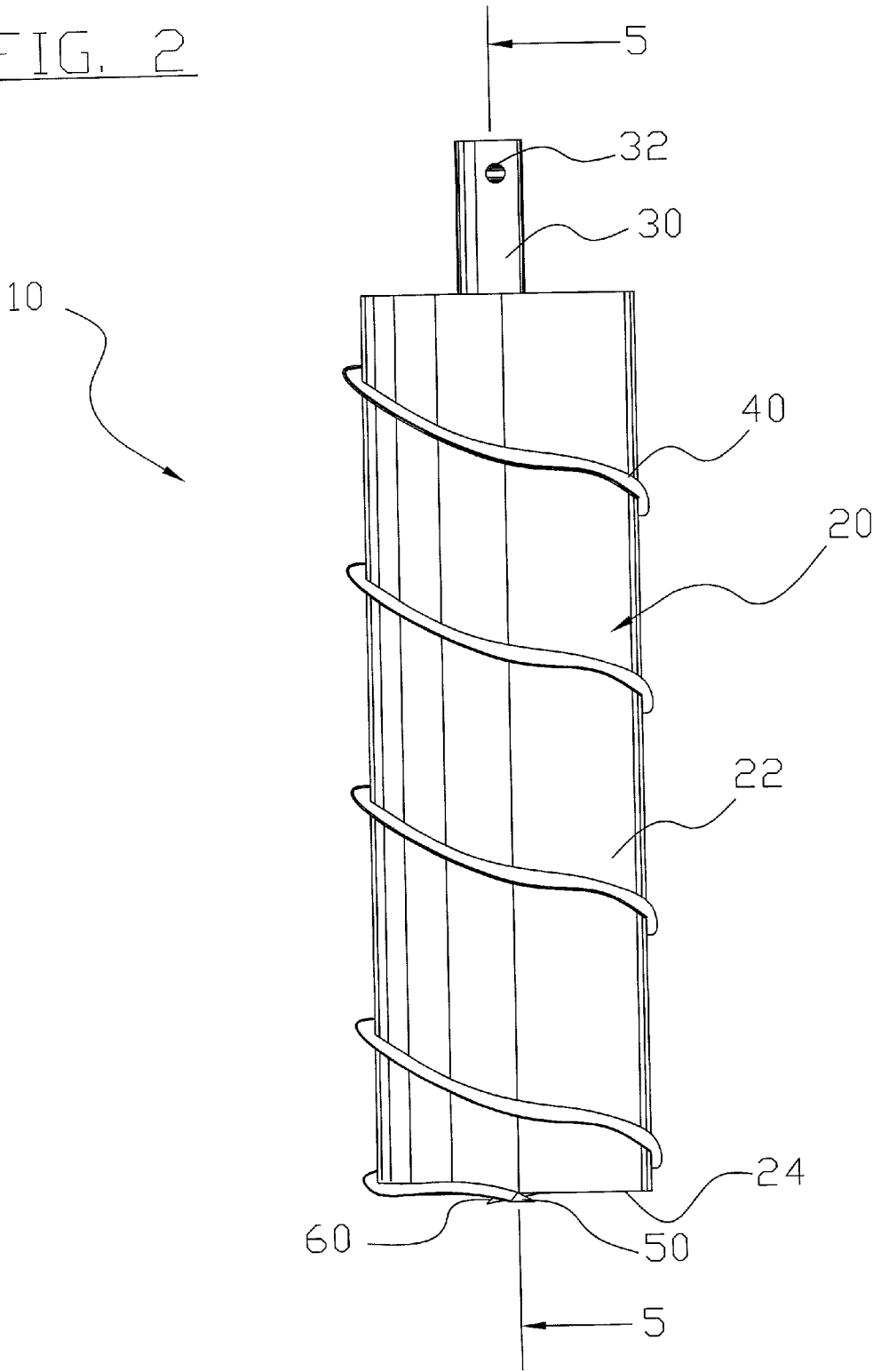


FIG. 2



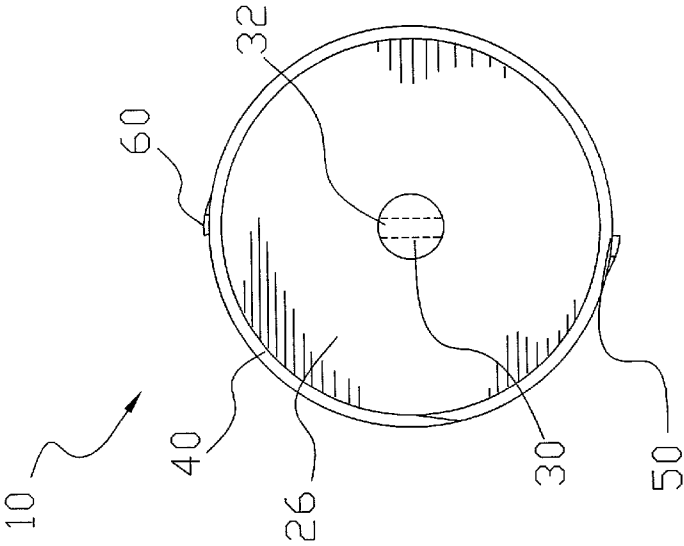


FIG. 3

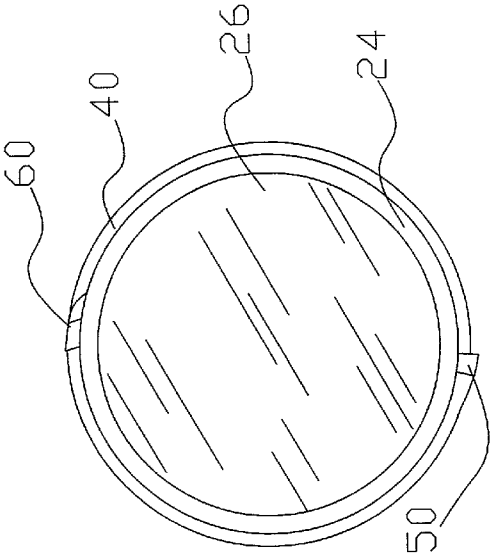


FIG. 4

FIG. 5

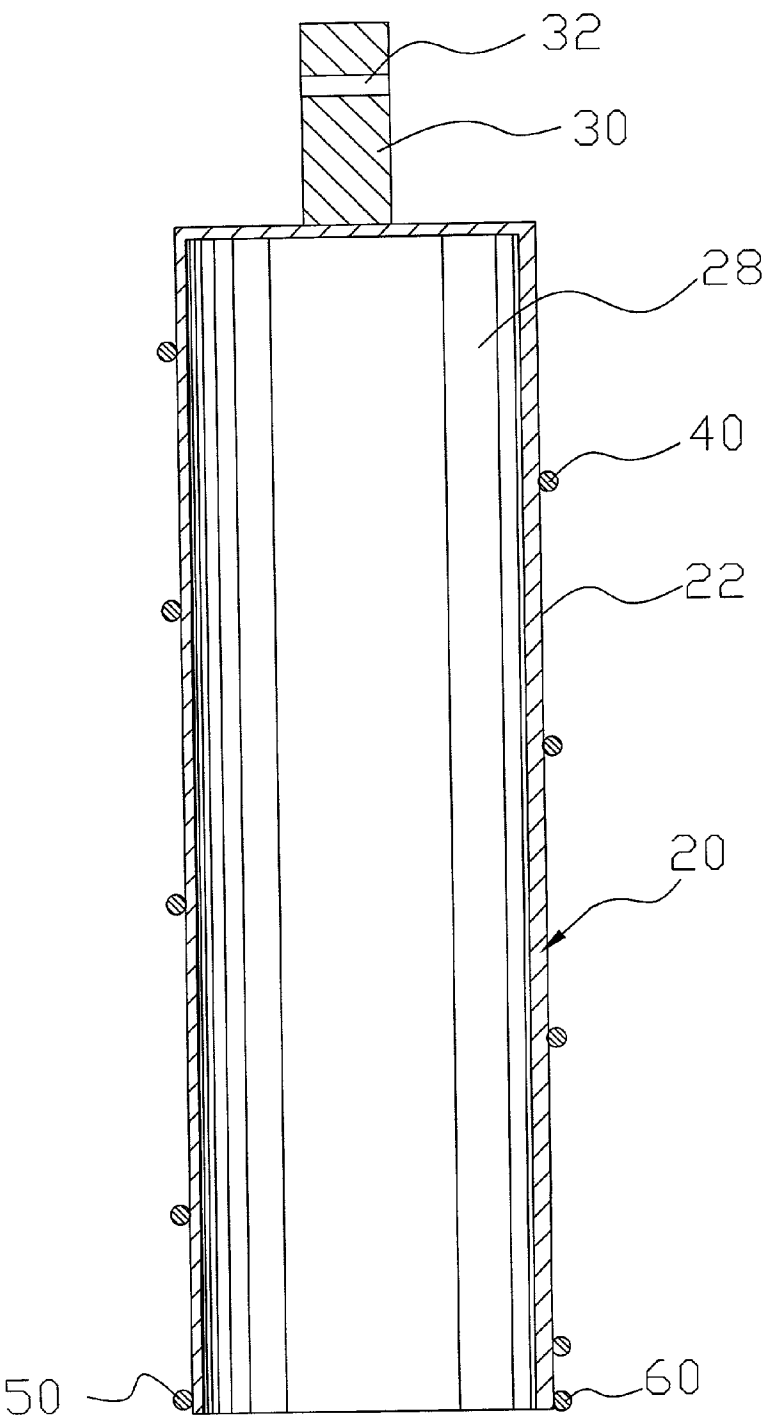
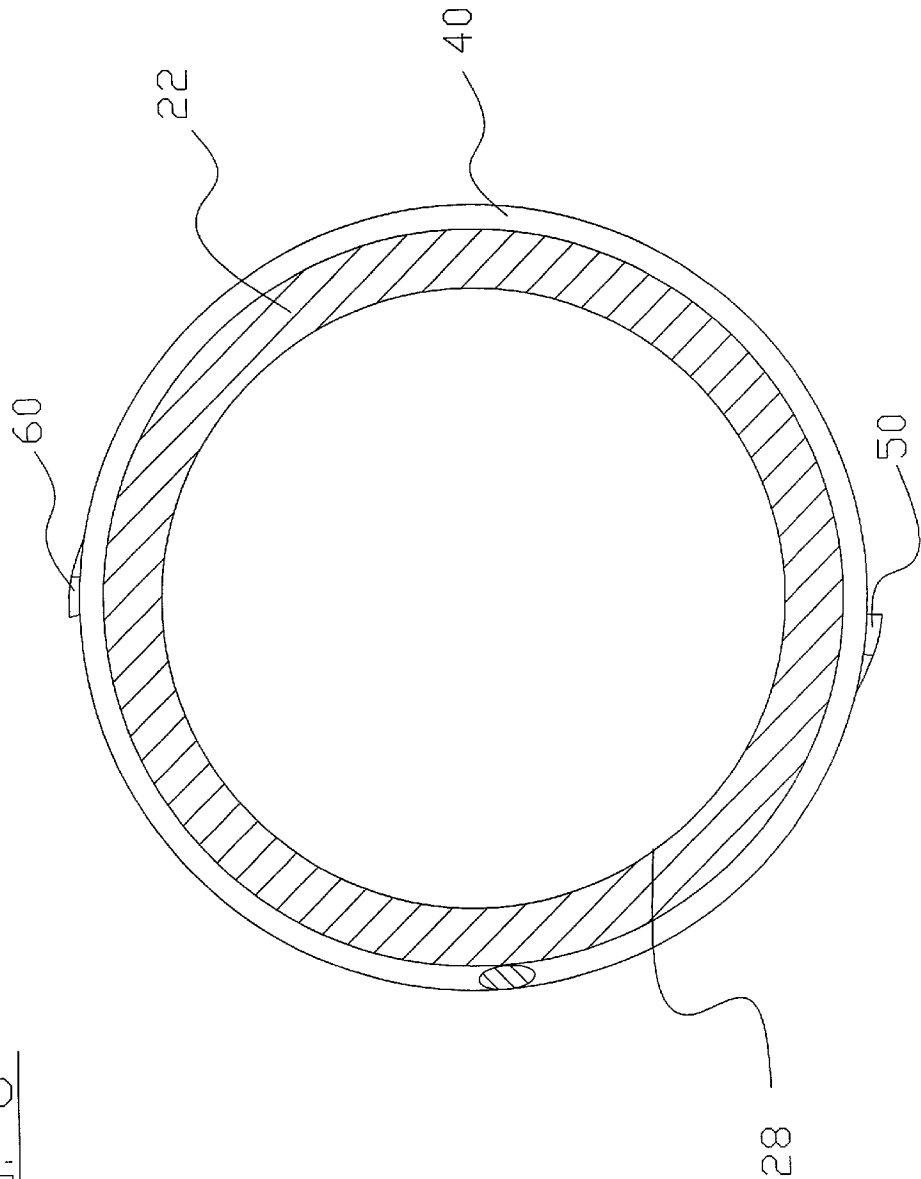


FIG. 6



## ICE AUGER SYSTEM

### BACKGROUND OF THE INVENTION

#### [0001] 1. Field of the Invention

[0002] The present invention relates generally to ice augers and more specifically it relates to an ice auger system for drilling a bore within ice with significantly reduced ice shavings.

#### [0003] 2. Description of the Prior Art

[0004] Ice auger devices have been in use for years. A conventional ice auger is comprised of a motor device and a drill bit extending from the motor device wherein the drill bit is comprised of an elongate shaft with a broad flighting extending from the elongate shaft and an ice cutting blade for cutting a bore through the ice of a body of water. As the cutting blade shaves portions of the ice the flighting distributes the severed shavings upwardly out of the created bore creating a significant mess.

[0005] The main problem with conventional ice auger devices is that they create a significant mess comprised of ice shavings. The user must utilize an ice scoop to remove the ice shavings from within the bore and from outside of the bore. When utilizing a fish house, the user must transport the ice shavings outside of the fish house.

[0006] While these devices may be suitable for the particular purpose to which they address, they are not as suitable for drilling a bore within ice with significantly reduced ice shavings. Conventional ice augers do not provide a clean system of drilling a bore within ice and require significant cleaning efforts to remove the ice shavings from within the bore.

[0007] In these respects, the ice auger system according to the present invention substantially departs from the conventional concepts and designs of the prior art, and in so doing provides an apparatus primarily developed for the purpose of drilling a bore within ice with significantly reduced ice shavings.

### SUMMARY OF THE INVENTION

[0008] In view of the foregoing disadvantages inherent in the known types of ice augers now present in the prior art, the present invention provides a new ice auger system construction wherein the same can be utilized for drilling a bore within ice with significantly reduced ice shavings.

[0009] The general purpose of the present invention, which will be described subsequently in greater detail, is to provide a new ice auger system that has many of the advantages of the ice augers mentioned heretofore and many novel features that result in a new ice auger system which is not anticipated, rendered obvious, suggested, or even implied by any of the prior art ice augers, either alone or in any combination thereof.

[0010] To attain this, the present invention generally comprises an elongate tube having a lower end, an upper end, an outer wall, a lumen and a connector shaft attached to the upper end for connecting to a motor. A length of flighting is attached to the outer surface of the elongate tube in a coiled manner. At least one bit is attached to the lower end of the elongate tube for engaging and cutting the ice in a circular

pattern to receive the elongate tube and flighting. As the elongate tube is manipulated through the ice, a core is created that is positioned within the lumen of the elongate tube. When the user has drilled completely through the ice, the user then removes the elongate tube from the ice leaving the core within the newly created bore within the ice. The user then either may remove the core from the bore, or may push the core downwardly through the bore underneath the ice.

[0011] There has thus been outlined, rather broadly, the more important features of the invention in order that the detailed description thereof may be better understood, and in order that the present contribution to the art may be better appreciated. There are additional features of the invention that will be described hereinafter and that will form the subject matter of the claims appended hereto.

[0012] In this respect, before explaining at least one embodiment of the invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and to the arrangements of the components set forth in the following description or illustrated in the drawings. The invention is capable of other embodiments and of being practiced and carried out in various ways. Also, it is to be understood that the phraseology and terminology employed herein are for the purpose of the description and should not be regarded as limiting.

[0013] A primary object of the present invention is to provide an ice auger system that will overcome the shortcomings of the prior art devices.

[0014] A second object is to provide an ice auger system for drilling a bore within ice with significantly reduced ice shavings.

[0015] Another object is to provide an ice auger system that is capable of drilling a new bore or creating a bore within a pre-drilled hole iced over.

[0016] An additional object is to provide an ice auger system that reduces the amount of time and labor required to clean an ice hole out.

[0017] A further object is to provide an ice auger system that is attachable to most ice auger motors.

[0018] Another object is to provide an ice auger system that is easily utilized within a fish house.

[0019] Other objects and advantages of the present invention will become obvious to the reader and it is intended that these objects and advantages are within the scope of the present invention.

[0020] To the accomplishment of the above and related objects, this invention may be embodied in the form illustrated in the accompanying drawings, attention being called to the fact, however, that the drawings are illustrative only, and that changes may be made in the specific construction illustrated and described within the scope of the appended claims.

### BRIEF DESCRIPTION OF THE DRAWINGS

[0021] Various other objects, features and attendant advantages of the present invention will become fully appreciated as the same becomes better understood when considered in conjunction with the accompanying drawings, in

which like reference characters designate the same or similar parts throughout the several views, and wherein:

[0022] FIG. 1 is an upper perspective view of the present invention positioned above a bore within the ice.

[0023] FIG. 2 is a side view of the present invention.

[0024] FIG. 3 is a top view of the present invention.

[0025] FIG. 4 is a bottom view of the present invention.

[0026] FIG. 5 is a cross sectional view taken along line 5-5 of FIG. 2.

[0027] FIG. 6 is a cross sectional view taken along line 6-6 of FIG. 1.

#### DESCRIPTION OF THE PREFERRED EMBODIMENT

[0028] Turning now descriptively to the drawings, in which similar reference characters denote similar elements throughout the several views, FIGS. 1 through 6 illustrate an ice auger system 10, which comprises an elongate tube 20 having a lower end 24, an upper end 26, an outer wall 22, a lumen 28 and a connector shaft 30 attached to the upper end 26 for connecting to a motor. A length of flighting 40 is attached to the outer surface of the elongate tube 20 in a coiled manner. At least one bit is attached to the lower end 24 of the elongate tube 20 for engaging and cutting the ice 12 in a circular pattern to receive the elongate tube 20 and flighting 40. As the elongate tube 20 is manipulated through the ice 12, a core 16 is created that is positioned within the lumen 28 of the elongate tube 20. When the user has drilled completely through the ice 12, the user then removes the elongate tube 20 from the ice 12 leaving the core 16 within the newly created bore 14 within the ice 12. The user then either may remove the core 16 from the bore 14, or may push the core 16 downwardly through the bore 14 underneath the ice 12.

[0029] As shown in FIGS. 1, 2 and 5 of the drawings, the elongate tube 20 has an upper end 26 and a lower end 24. The elongate tube 20 has a circular cross sectional shape as best shown in FIGS. 3, 4 and 6 of the drawings. The elongate includes an outer wall 22 having a lumen 28 extending within. The outer wall 22 is preferably comprised of a relatively thin structure for minimizing the amounting of cutting into the ice 12 required. The lumen 28 of the elongate tube 20 is consistent throughout for receiving the core 16 created by cutting into the ice 12.

[0030] The lower end 24 of the elongate tube 20 is open as shown in FIG. 4 of the drawings. The upper end 26 of the elongate tube 20 is preferably enclosed as shown in FIGS. 1, 3 and 5 of the drawings. A connecting shaft 30 having an aperture 32 is attached to the upper end 26 of the elongate tube 20 for allowing attachment to a motor for rotating the elongate tube 20.

[0031] A length of flighting 40 is attached to the outside of the elongate tube 20 as shown in FIGS. 1 through 6 of the drawings. The flighting 40 forms a coiled structure about the outside of the elongate tube 20 as illustrated in FIGS. 1 and 2 of the drawings. The flighting 40 is preferably comprised of a solid rod material as illustrated within FIGS. 1, 2 and 5 of the drawings. The flighting 40 may have various pitches as can be appreciated. The flighting 40 may also have

various cross sectional shapes such as but not limited to triangular, circular, rectangular, square and oval.

[0032] As shown in FIGS. 2 and 4 of the drawings, a first bit 50 is attached to the lower end 24 of the elongate tube 20 adjacent to the distal end of the flighting 40. The first bit 50 is comprised of any conventional material and design commonly utilized within cutting bit devices. The first bit 50 is broad enough to cut a circular groove into the ice 12 sufficient to receive both the elongate tube 20 and the flighting 40 as shown in FIG. 4 of the drawings. More specifically, the first bit 50 extends from the lumen 28 of the elongate tube 20 to outside of the elongate tube 20 to a point representing the outside edge of the flighting 40.

[0033] As shown in FIGS. 2 and 4 of the drawings, a second bit 60 is attached to the lower end 24 of the elongate tube 20 opposite of the first bit 50. The second bit 60 is comprised of any conventional material and design commonly utilized within cutting bit devices. The second bit 60 is broad enough to cut a circular groove into the ice 12 sufficient to receive both the elongate tube 20 and the flighting 40 similar to the first bit 50 as shown in FIG. 4 of the drawings. More specifically, the second bit 60 extends from the lumen 28 of the elongate tube 20 to outside of the elongate tube 20 to a point representing the outside edge of the flighting 40.

[0034] In use, the user attaches the connecting shaft 30 to the ice 12 auger motor. Upon operating the motor, the elongate tube 20 is rotated so that the bits 50, 60 cut into the ice 12 forming a circular groove. The elongate tube 20 is leveraged downwardly during operation of the motor with the bits 50, 60 cutting through the ice 12. The freshly cut ice 12 is removed via the flighting 40 which elevates the cuttings from the bore 14. Once the lower end 24 of the elongate tube 20 is completely through the ice 12 and engaging water, the elongate tube 20 is removed with a core 16 left within the newly created bore 14 within the ice 12. The user then may either remove the core 16 from the bore 14 or push the core 16 downwardly underneath the ice 12 surface so as to not interfere with usage of the bore 14 for fishing. The same process is utilized to clean out pre-drilled holes that have partially frozen over.

[0035] As to a further discussion of the manner of usage and operation of the present invention, the same should be apparent from the above description. Accordingly, no further discussion relating to the manner of usage and operation will be provided.

[0036] With respect to the above description then, it is to be realized that the optimum dimensional relationships for the parts of the invention, to include variations in size, materials, shape, form, function and manner of operation, assembly and use, are deemed to be within the expertise of those skilled in the art, and all equivalent structural variations and relationships to those illustrated in the drawings and described in the specification are intended to be encompassed by the present invention.

[0037] Therefore, the foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and



equivalents may be resorted to, falling within the scope of the invention.

Index of Elements for Ice Auger System	
<input type="checkbox"/> ENVIRONMENTAL ELEMENTS	<input type="checkbox"/> 40. Flighting
<input type="checkbox"/>	<input type="checkbox"/> 41.
<input type="checkbox"/>	<input type="checkbox"/> 42.
<input type="checkbox"/>	<input type="checkbox"/> 43.
<input type="checkbox"/>	<input type="checkbox"/> 44.
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<input type="checkbox"/>	<input type="checkbox"/> 46.
<input type="checkbox"/>	<input type="checkbox"/> 47.
<input type="checkbox"/>	<input type="checkbox"/> 48.
<input type="checkbox"/>	<input type="checkbox"/> 49.
<input type="checkbox"/> 10. Ice Auger System	<input type="checkbox"/> 50. First Bit
<input type="checkbox"/> 11.	<input type="checkbox"/> 51.
<input type="checkbox"/> 12. Ice	<input type="checkbox"/> 52.
<input type="checkbox"/> 13.	<input type="checkbox"/> 53.
<input type="checkbox"/> 14. Bore	<input type="checkbox"/> 54.
<input type="checkbox"/> 15.	<input type="checkbox"/> 55.
<input type="checkbox"/> 16. Core	<input type="checkbox"/> 56.
<input type="checkbox"/> 17.	<input type="checkbox"/> 57.
<input type="checkbox"/> 18.	<input type="checkbox"/> 58.
<input type="checkbox"/> 19.	<input type="checkbox"/> 59.
<input type="checkbox"/> 20. Elongate Tube	<input type="checkbox"/> 60. Second Bit
<input type="checkbox"/> 21.	<input type="checkbox"/> 61.
<input type="checkbox"/> 22. Outer Wall	<input type="checkbox"/> 62.
<input type="checkbox"/> 23.	<input type="checkbox"/> 63.
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<input type="checkbox"/> 25.	<input type="checkbox"/> 65.
<input type="checkbox"/> 26. Upper End	<input type="checkbox"/> 66.
<input type="checkbox"/> 27.	<input type="checkbox"/> 67.
<input type="checkbox"/> 28. Lumen	<input type="checkbox"/> 68.
<input type="checkbox"/> 29.	<input type="checkbox"/> 69.
<input type="checkbox"/> 30. Shaft	<input type="checkbox"/> 70.
<input type="checkbox"/> 31.	<input type="checkbox"/> 71.
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<input type="checkbox"/> 38.	<input type="checkbox"/> 78.
<input type="checkbox"/> 39.	<input type="checkbox"/> 79.

I claim:

1. An ice auger system, comprising:  
  
an elongate tube having a wall, a lower end, an upper end, a lumen and a connecting shaft, wherein said lower end is open exposing said lumen and wherein said upper end is at least partially enclosed;  
  
a length of flighting attached to an exterior surface of said wall in a coiled manner; and

- at least one cutting bit attached to said lower end of said elongate tube.  
2. The ice auger system of claim 1, wherein said at least one cutting bit is comprised of a structure having a width at least equal to a width of said wall and said flighting combined.  
3. The ice auger system of claim 2, wherein said flighting is comprised of a rod material.  
4. The ice auger system of claim 3, wherein said at least one cutting bit is comprised of a first bit and a second bit.  
5. The ice auger system of claim 4, wherein said first bit is attached to said lower end of said elongate tube adjacent a lower distal end of said flighting.  
6. The ice auger system of claim 5, wherein said second bit is attached to said lower end of said elongate tube opposite of said first bit.  
7. The ice auger system of claim 6, wherein said lumen has a constant inner diameter.  
8. A method of operating an ice auger system, said ice auger system having an elongate tube having a lumen, a connecting shaft attached to an upper end of said elongate tube, a length of flighting attached to an outer surface of said elongate tube, and at least one cutting bit attached to a lower end of said elongate tube, comprising the steps of:  
  
(a) positioning said lower end of said elongate tube adjacent a cutting location upon ice;  
  
(b) rotating said elongate tube thereby manipulating said at least one cutting bit to cut a circular groove into said ice;  
  
(c) terminating step (b) upon said elongate tube extending completely through said ice creating a free floating core within a bore of said ice; and  
  
(d) removing said elongate tube from said ice.  
9. The method of operating said ice auger system of claim 8, further including the following step:  
  
(e) removing said core from said bore within said ice.  
10. The method of operating said ice auger system of claim 8, further including the following steps:  
  
(e) pushing said core downwardly into said bore within said ice; and  
  
(f) manipulating said core to the side of said bore to be positioned underneath said ice and away from said bore.

\* \* \* \* \*