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WOOD CORE SAMPLE CUTTER

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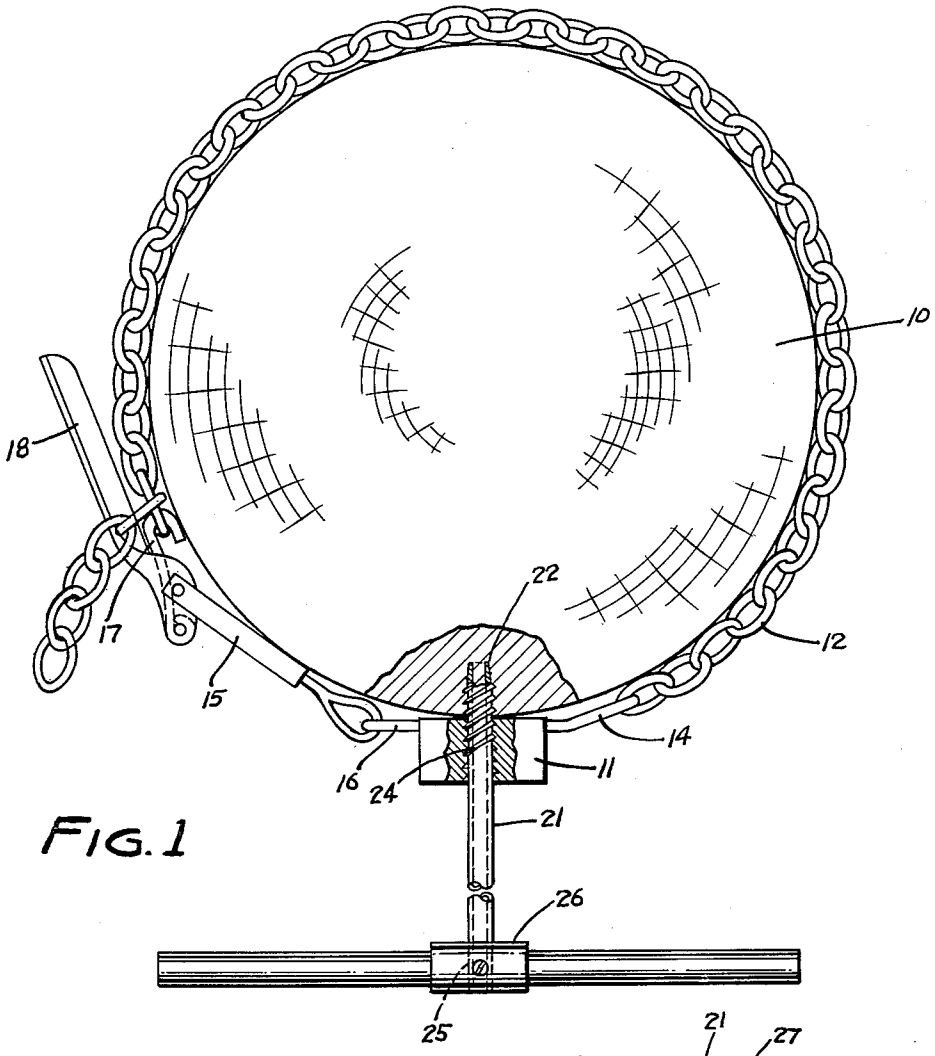



FIG. 1

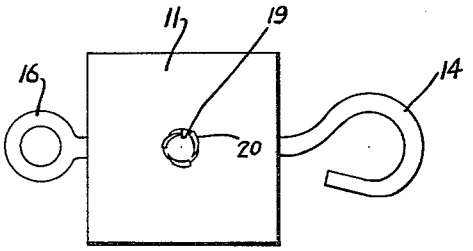



FIG. 2

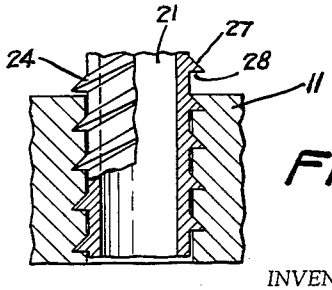



FIG. 3

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# WOOD CORE SAMPLE CUTTER

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This invention is directed to a wood core sampling structure which facilitates driving the sampling bit into the wood from which a sample is to be taken. Specifically the invention includes a guide comprising a metallic block having an internally threaded bore therein and capable of being secured snugly against the wood from which a sample is to be taken. The core sample cutting bit is then threaded into the guide and driven with precision into the wood by interaction between the threads on the bit and the threads in the bore of the guide until such time as the bit threads have sufficient purchase on the wood to continue driving the core bit as deeply as necessary.

Still further structural novelty resides in having a core cutting bit which has a smooth, uniform size shank with the exception of the wood engaging threads thereon near its cutting edge.

Heretofore, standard wood core sample cuttings as done with a core cutting bit consisting of a hollow shank and having threads on the outer end thereof, followed immediately by a small triangular enlargement of that portion of the shank immediately behind the threads. At the end of the bit adjacent the threads the hollow shank is brought to a sharpened cutting edge. This device was simply forced straight into the wood from which a sample is to be taken while at the same time rotating the shank with a T-handle or brace in order to allow the wood engaging threads to draw the bit down into the wood. Such wood core sample bits were intended originally and used principally in taking core samples from live wood in the course of forestry work. Such a bit may be driven into the relatively soft yielding wood of a live tree without great difficulty.

With the development in recent years of wood treating techniques, requiring some knowledge of the penetration and retention of subtances that has occurred in seasoned wood after treatment, in order to establish whether the treatment has been properly accomplished or not, these same wood core sampling bits have been used on seasoned or dried wood. Under such circumstances, it has been found difficult and at times impossible to take core samples with the ordinary core sampling bit used alone. Skilled operators have been known to spend the better part of a day in attempting to get a wood core sample from a seasoned piece of wood such as a power pole or the like. Part of the difficulty seems to flow from the triangular enlargement of the normal wood core sampling bit just behind the wood engaging threads. By removing this enlargement, some improvement is achieved. Still the major difficulty existed, however, that the seasoned wood was so hard as to make it difficult or impossible to get the bit started into the wood without breaking the sample before any reasonable depth of penetration had been achieved.

At the same time, it is highly desirable to be able to provide good wood core samples of seasoned wood such as is found in electric utility poles and telephone poles. These poles will last for a very long time if properly treated and re-treated if necessary. On the other hand, some of these poles are quickly and easily destroyed by rot or fire or lose their dimensional stability if the original treatment is inadequate or if the treatment which may have been barely adequate in the beginning is leeched out by rain and the like. Many companies that maintain lines supported by wooden poles regularly retreat the



poles at a cost of about four to five dollars a pole, whether the poles actually need such retreatment or not, simply because they have no easy way of determining whether or not these poles require treatment. Core samples can be checked relatively inexpensively to determine whether or not the concentration of treating materials in the pole is sufficient to continue protecting it. If, therefore, the companies that maintain lines on poles had some easy way of cutting core samples to be tested, the cost of maintenance of these poles might be substantially reduced by limiting the number that actually need to be retreated, periodically. It is reliably estimated that something less than 50% of the total actually need treatment at the periodic intervals at which they are normally given retreatment under existing conditions.

Accordingly, it is a main object of this invention to provide improved means for cutting wood core samples.

It is a further object of this invention to provide improved means for cutting wood core samples quickly and easily by providing a guide block that is stabilized by being drawn and held into close asociattion with the wood to be sampled.

It is a further object of this invention to provide a guide for wood core sampling bits that will aid both in guiding and driving the bit into the wood.

A still further object of this invention resides in providing a wood core sampling bit guiding device having a bore in a metallic block provided with internal threads that match the threads of the core sampling bit together with means for securing the guide tightly against the wood from which a sample is to be taken, whereby the core sampling bit may be driven straight and accurately into the wood with relatively small chance of breaking either the bit or the core sample.

Other objects reside in the specific structure shown and described herein.

To the accomplishment of the foregoing and related ends, this invention then comprises the features hereinafter fully described and particularly pointed out in the claims, the following description setting forth in detail certain illustrative embodiments of the invention, these being indicative, however, of but a few of the various ways in which the principles of the invention may be employed.

The invention will be described with reference to the drawings in which corresponding numerals refer to the same parts, and in which:

FIGURE 1 is a partial plan, partial sectional view of the device of this invention being used to take a sample; portions of the structure are broken away to illustrate its construction more fully, and other portions eliminated to conserve space;

FIGURE 2 is an enlarged front elevation of the block portion of the guide; and

FIGURE 3 is an enlarged fragmentary section of the block and sample cutting bit to illustrate their interaction more fully.

Referring to the drawings, and specifically to FIGURE 1, a device of this invention is illustrated as being used to take a core sample from a cylindrical piece of wood such as a telegraph pole, or the like, **10**. The guide block **11** of the invention is seen secured against the pole **10** by a suitable flexible means such as chain **12**, which is secured to the block by suitable means such as eye **14**. A toggle latch **15** is similarly secured to the other side of the block by a suitable means such as the eye **16**. The block is secured in place against the wood from which a sample is to be taken by extending the flexible element **12** around the wood to be sampled. The hook **17** of toggle latch **15** is then engaged with an appropriate link of the chain and the toggle handle **18** swung around to the position shown

in FIGURE 1 to secure the block tightly against the wood.

The metallic guide block itself is provided with a central bore 19 having the internal threads 20 therein. It will be noted in FIGURE 2 that threads 20 start at three separate places around bore 19 and the reason for this is simply to accommodate the threads of the bore to the threads of a commonly used sample cutting bit.

Eye 14 in FIGURE 2 is seen to be open and this is merely to illustrate the form of the eye prior to the engagement therewith of the end length of chain 12. As soon as the chain is in the eye, it is closed up and if necessary secured as by welding or the like.

The wood core sample cutting bit which is used with the guide block in order to cut samples is shown in FIGURE 1 at 21. It is a hollow steel tube having a sharpened cutting edge at 22 and provided with external threads 24. The shank of the cutting bit 21, except for the external threads 24, is of substantially the same size throughout its length with the further exception of its reduced portion where the sharpened cutting edge 22 is provided and its other end which is a squared portion 25 (not shown in detail). A socket in T-handle 26 receives the squared portion 25 of the bit 21 and may be held thereon appropriately as by set screw 23. The T-handle may be slipped onto or removed from the bit by a sliding motion when set 23 is loosened.

The threads of the bit are shown in enlarged form in FIGURE 3 and are the usual threads provided on these sample core cutting bits. They have a peculiar configuration in that the threads slant from the front toward their apex as shown at 27 and then extend straight into the shank of the bit as at 28 to leave a flat surface against which the material being cut can press to force the bit into it. Actually there are three separate thread structures extending around the bit and interweaving with each other to give the impression of a rather low pitch thread. Actually the pitch is quite steep, only two revolutions producing an inch of forward motion. This is the reason why block 11 is provided with the triple thread starting points shown at 20 in bore 19. The threads formed in block 11 of course are the female matching or corresponding threads to those external threads 24 on the outside of the bit.

Once the block 11 is held snugly against the wood from which the sample is to be taken, the bit is simply threaded into the block and forced to rotate by means of the T-handle 26. The block serves two functions: it maintains the bit at right angle to the wood surface (or to a tangent at the point of penetration in the case of round surfaces) from which a sample is being taken in order to assure a straight cut into the wood. It also provides a leverage point against which the threads 24 can react to drive the bit into the wood. By the time threads 24 have been threaded entirely through the threads provided in block 11, the bit threads beginning near the cutting edge 22 have acquired sufficient purchase in the wood to thereafter draw the bit down into the wood as deeply as necessary in order to produce the desired core sample.

Once the bit has been driven as deeply as desired into the wood to provide the requisite core sample length, the bit may be backed out of the wood by turning it in the reverse direction to that used in driving it. In the event that the bit does not seem to be rethreading into the block readily when backing the bit out, it is possible to remove the guide block by simply releasing the toggle latch 15 and sliding the block rearwardly off the bit. The handle 26 may be removed momentarily to allow the block to be taken off the end of the bit. The handle 26 is then replaced on the bit to finish removing it from the wood that has been core sampled.

This core cutting device including both the guide and the bit was developed principally in order to make it possible to take core samples from seasoned wood such as railroad ties, lumber, poles, posts and piling. On the other hand, it is obvious that it may be used with green wood which is so dense or frozen as to make it difficult or impossible to start the core sampling bit without the assistance of the guide. In all cases of cutting core samples, the guide is an advantage in that it assures a straight approach of the bit into the wood from which the sample is being cut thereby providing a good straight core sample cut and secondary minimizing chances of getting the bit started poorly and thereby placing excessive strains on it perhaps even to the extent of causing it to break.



It is apparent that many modifications and variations of this invention as hereinbefore set forth may be made without departing from the spirit and scope thereof. The specific embodiments described are given by way of example only and the invention is limited only by the terms of the appended claims.

What is claimed is:

1. A guide for a wood core sample bit having external wood gripping threads, said guide comprising a block having a bore therethrough and a wood engaging surface, internal threads formed in said block adapted to mate with the wood gripping threads of a wood core sample bit; said threads having two surfaces one of which is normal to the axis of said bore and the other of which slants relative to said axis, and with reference to corresponding portions of said thread surfaces, the slanting one is closer to said wood engaging surface than the one which is normal to said axis and means secured to said block for embracing a piece of wood to be sampled and adapted to pull said block to and hold said wood engaging surface firmly in contact with said piece of wood.

2. The guide of claim 1 in which said internal threads of said bore are multiple threads.

3. The guide of claim 2 combined with a tubular wood sampling bit that has no portion of the shank thereof larger than the internal diameter of said block bore except the threads of said bit which threads project from the outside surface of the tube of said bit.

4. The guide of claim 1 combined with a tubular wood sampling bit that has no portion of the shank thereof larger than the internal diameter of said block bore except the threads of said bit which threads project from the ouside surface of the tube of said bit.

5. The wood bore core sample device of claim 1 in which said securing means comprises a flexible element long enough to reach around wood from which samples are to be taken and an extensible and retractible latch mechanism interconnecting said flexible element and one side of said block, an end of said flexible element being connected to the other side of said block.

6. A guide for a wood core sample bit having external threads, said guide comprising a block having a wood engaging surface and a bore therethrough, internal threads formed in said block adapted to mate with the threads of a wood core sample bit, and means secured to said block for embracing a piece of wood to be sampled and adapted to pull said wood engaging surface of said block to and hold it firmly in contact with said piece of wood.

7. A wood core sample cutting device comprising a block, a bore extending through said block perpendicularly to one face thereof, internal threads in said bore, an eye secured to one side of said block, a flexible means secured to said eye, an eye secured to the other side of said block, a toggle latch secured to said other eye, and means for selectively connecting and disconnting said flexible element and the free end of said toggle latch, a bit comprising a tube having a circular sharpened edge, threads formed on and projecting from the outside of said tube, and means formed at the end remote from said sharpened end of said bit for engaging a bit rotating means, said bit threads mating with the threads of said bore.

8. A wood core sample cutting device according to

claim 7 in which the threads of said bit and bore are multiple.

9. A wood core sample cutting device according to claim 7 in which each of the threads of said bit have a surface that extends normal to the tube of said bit and another surface that slants relative to the bit tube.



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