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Bible

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[54] **DEVICE FOR HOLDING STONES DURING CUTTING**

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[52] **U.S. Cl.** ..... **125/35,** 51/217 R, 51/289 S, 125/13, 269/87.2

[51] **Int. Cl.** **B28d 7/04**

[58] **Field of Search** ..... 125/13, 35; 51/73 R, 289 S, 51/217; 269/295, 87.2; 83/431, 437, 102.1

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[57] **ABSTRACT**

A device adapted to be fastened to slab saws or the like for holding stones or similar objects during cutting, said device comprising a generally vertical back plate, a pair of horizontal, spaced support arms extending outwardly from the back plate and adapted to cradle the object being cut, and a hold-down member pivotally connected to the back plate avove the support arms and including a pair of spaced fingers in biased engagement with the object to be cut to hold it firmly in place.

6 Claims, 6 Drawing Figures

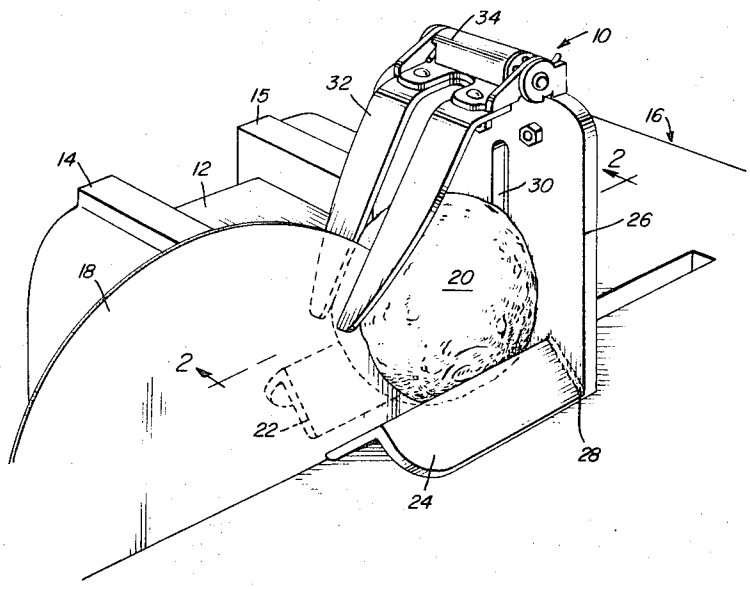


Fig. 1

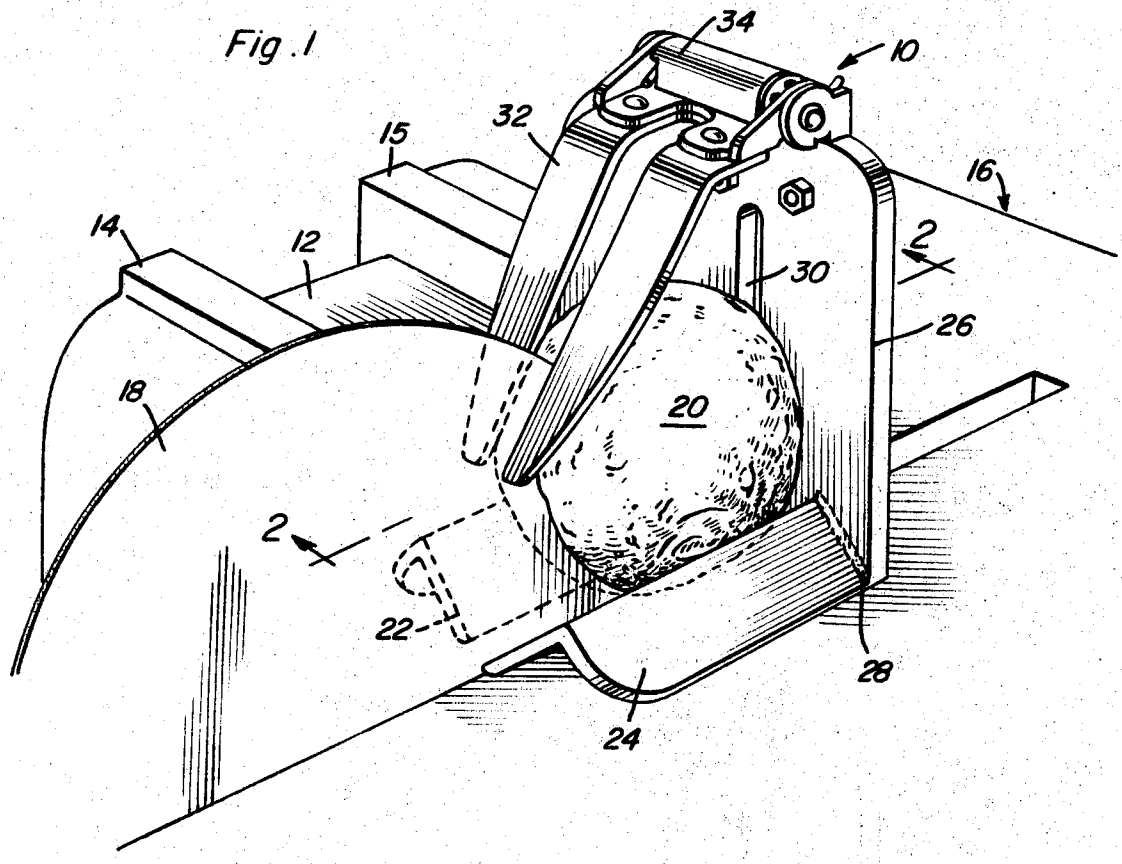


Fig. 2

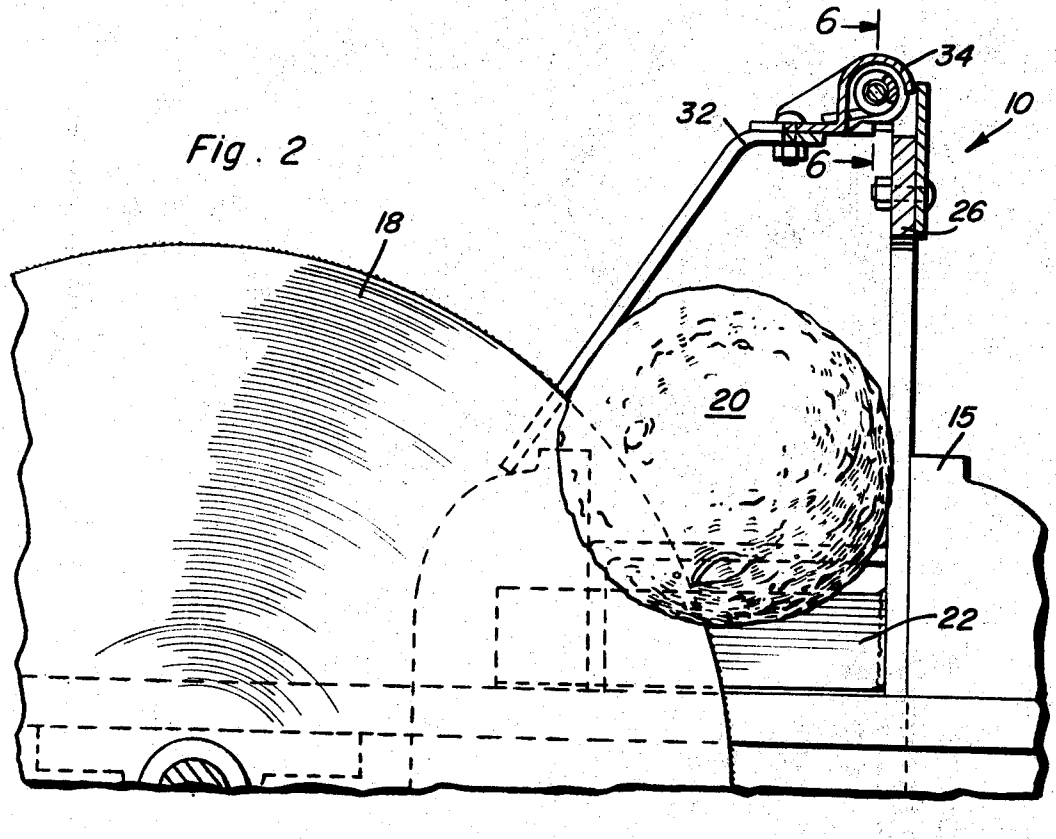


Fig. 3

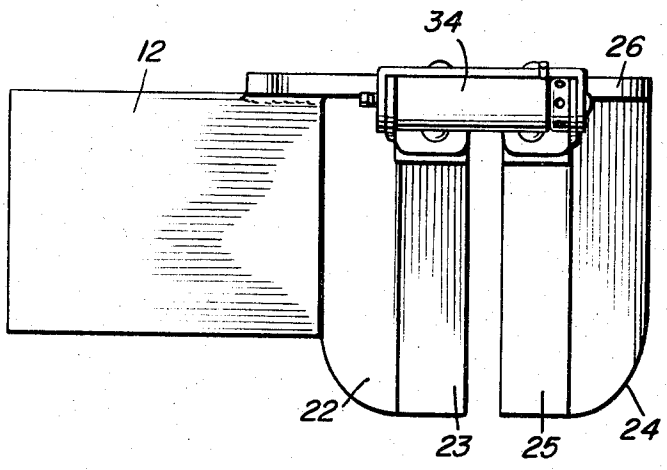


Fig. 4

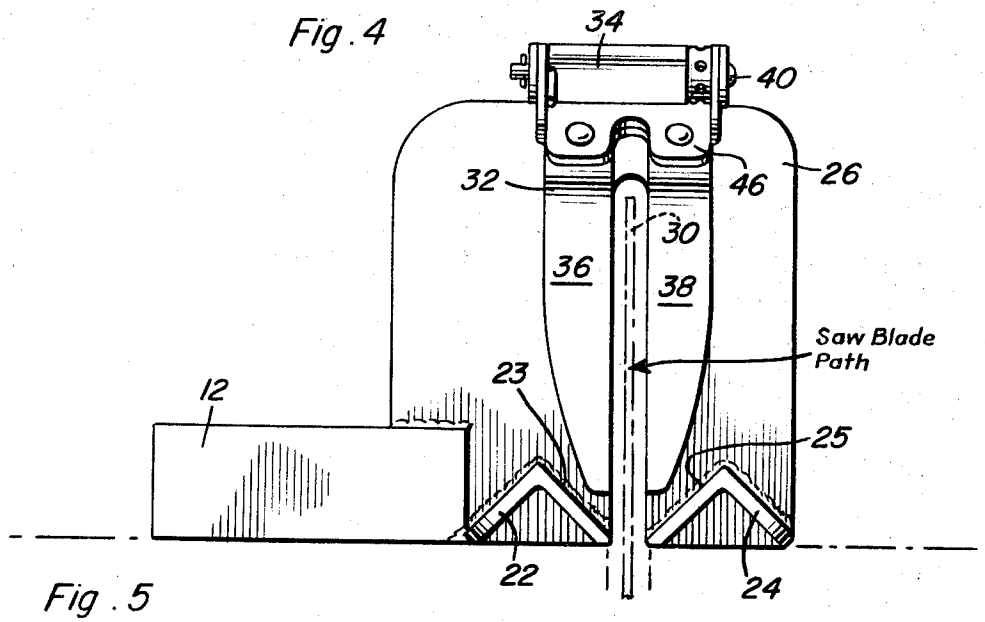


Fig. 5

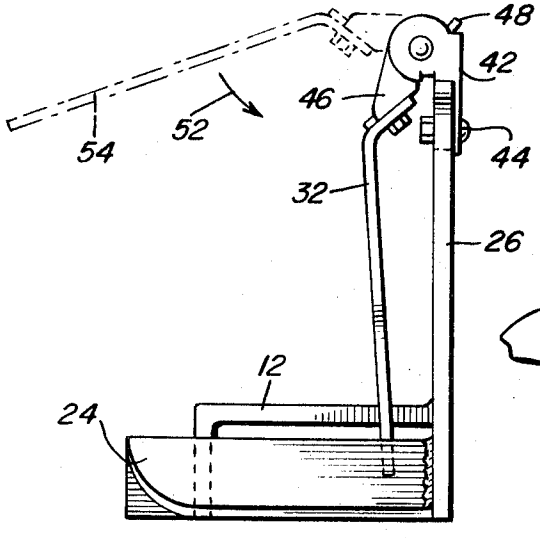
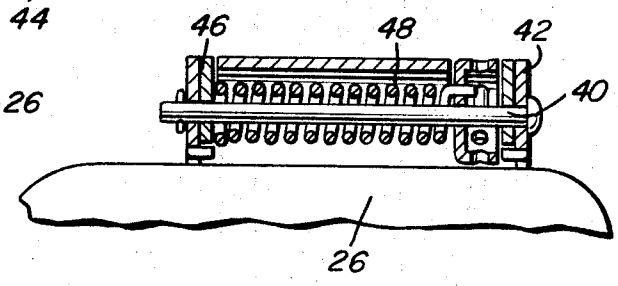


Fig. 6



DEVICE FOR HOLDING STONES DURING CUTTING

The present invention is generally related to cutting devices, and more particularly to a unique device for holding stones or other generally spherical objects firmly in place during cutting.

In the past, various devices have been provided for holding work-pieces during cutting. Most such conventional devices were designed to handle workpieces of flat-sided configuration and could not adequately accommodate spherical or randomly shaped objects. While devices have been proposed for handling spherically shaped workpieces, such have been relatively complex, time-consuming to operate and expensive to manufacture.

It is an object of the present invention to provide a novel device for firmly holding stones, geodes or other generally spherical objects in place during cutting by a rotary blade or the like.

Another object of the present invention is to provide a unique stone holding device readily adaptable for use with slab saws or similar cutting devices.

It is a further object of the present invention to provide a versatile hold-down device for stones and the like which is of relatively simple construction and which may be loaded and unloaded with a minimum amount of time and effort.

Still another object of the present invention is to provide a unique device for holding objects of generally spherical configuration and which automatically centers the object relative to a cutting blade and holds it firmly in place during cutting.

It is yet another object of the present invention to provide a versatile holding device for stones and the like comprised of a minimum number of parts and which is compact, durable, heavy duty, and long lasting, yet, relatively inexpensive to manufacture.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout.

FIG. 1 is a partial perspective view of the holding device of the present invention mounted to a typical cutting saw mechanism and embracing a geode during cutting.

FIG. 2 is a sectional view taken substantially along section 2—2 of FIG. 1.

FIG. 3 is a plan view of the holding device of the present invention.

FIG. 4 is a front elevation of the holding device illustrated in FIG. 1.

FIG. 5 is a side elevation of the device shown in FIG. 4, with a phantom view of the hold-down member in a raised position.

FIG. 6 is a sectional view taken along section 6—6 of FIG. 2.

Referring now, more particularly to FIGS. 1 and 2 of the drawings, the device of the present invention is generally indicated by the numeral 10 and is provided with a rigid mounting member 12 of generally rectangular configuration held between a pair of vice jaws 14 and 15 associated with a slab saw mechanism generally indicated by the numeral 16. Of course, it is not intended to limit the device of the present invention to use with the illustrated saw mechanism, as the device may be utilized with various cutting devices, as deemed appropriate. The slab saw mechanism illustrated includes a rotary cutting blade 18 capable of cutting through stones, such as the geode indicated at 20. A pair of spaced, oppositely disposed support arms 22 and 24 are attached to a rigid back plate 26 by way of welds, as indicated at 28, or other fastening means. Preferably, the back plate is of generally planar configuration and is provided with a vertical slot 30 which is coextensive with the space separating support arms 22 and 24. The slot and space are in general alignment with the path of the rotary cutting blade 18. The geode is cradled upon support arms 22 and 24 and is held firmly in place by way of a hold-down member 32 pivotally connected to back plate 26 by way of hinge type connection at 34.

With reference to FIGS. 3–6, the structure of the device of the present invention may be seen in more detail. It will be appreciated that support arms 22 and 24 are formed from angle irons which are oriented to provide a pair of oppositely inclined support surfaces 23 and 25, best illustrated in FIGS. 3 and 4. These surfaces cradle and prevent transverse movement of the rock or other object during cutting. It will also be appreciated, that the oppositely inclined surfaces tend to center the object to be cut when it is loaded on the device. Objects of generally spherical configuration will be at least approximately centered, while objects which are more truly spherical will be more accurately centered with respect to the cutting blade path.

With particular reference to FIG. 4, it will be observed that hold-down member 32 is of bifurcated configuration defining a pair of hold-down fingers 36 and 38 which engage the object to be cut, holding the latter firmly in position and pressing such against support arms 22 and 24 and back plate 26. It will also be observed that the space between fingers 36 and 38 of the hold-down member is in general alignment with slot 30 in back plate 26 and the space separating support arms 22 and 24, whereby the hold-down fingers will not interfere with operation of the cutting blade, as illustrated in FIG. 4.

The pivotal connection provided by hinge 34 permits pivotal movement of hold-down member 32 about a generally horizontal axis defined by hinge pin 40. A stationary hinge member 42 is fastened to the top of back plate 26 by way of bolts 44, or other appropriate fastening means. A movable hinge member 46 is similarly fastened to the upper end of hold-down member 32. A coil spring 48, or other biasing means is connected between the stationary and movable hinge members in a conventional manner to provide a downward biasing force acting upon hold-down member 32. More particularly, this force acts in a counterclockwise direction, as indicated by arrow 52 in FIG. 5.

Since hold-down arm 32 is pivotally mounted, loading and unloading of the device may be achieved quickly and with a minimum amount of effort. For loading, hold-down member 32 is merely swung upwardly to a position such as that indicated in phantom at 54 in FIG. 5 and the stone or other object to be cut is placed in position on the support arms. Hold-down member 32 is then released and presses firmly against the object under the influence of spring 48. It will be appreciated that the orientation of the hold-down member is such that the biasing forces acting upon the

object to be cut influence the object against both the support arms and back plate. This prevents movement of the object either vertically or horizontally along the cutting path. Since transverse movement of the object is prevented by the above-described inclined surfaces **23** and **25,** the object is prevented from moving in all three directions.

From the foregoing description, it will be appreciated that the device of the present invention provides a versatile means of holding stones and other generally spherical objects firmly in place during cutting. Furthermore, loading and unloading of the device requires a minimum amount of time and effort, and the orientation of the support legs provides automatic centering of the object relative to the cutting blade path upon loading. Preferably, the holding device of the present invention is fabricated from steel or other high strength metals. Of course, other materials may be utilized, if so desired. The device of the present invention may be utilized with various cutting devices other than slab saws and the mounting member may be appropriately modified for fastening to the cutting device. It will also be appreciated that the device is comprised of a relatively small number of parts, is compact, durable, and relatively inexpensive to manufacture.

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.

What is claimed as new is as follows:

1. For use with a cutting saw or the like, a device for holding generally spherical objects for cutting, said device comprising a relatively rigid, generally vertical back plate with a slot formed therein for the passage of a cutting blade, a pair of spaced, oppositely disposed support arms attached to and extending outwardly from said back plate on opposite sides of said slot such that the space between said support arms is coextensive with said slot, said support arms extending codirectionally and being perpendicular to said back plate, and including oppositely inclined surfaces which cradle the object to be cut, and means connected to said back plate for holding the object to be cut against said inclined surfaces, the holding means comprising an element pivotally connected to said back plate and means acting on the element for biasing same toward the support arms, said element being bifurcated to define a pair of hold-down fingers adapted to engage the upper regions of the object to be cut while bracketing a cutting blade, the fingers both being arranged adjacent the cutting blade and defining a space between the fingers substantially in alignment with said slot, each of the fingers being arranged opposite a respective one of the support arms.

2. The structure set forth in claim **1** wherein said biasing means influences the object to be cut in a direction against both said back plate and said support surfaces.

3. The structure set forth in claim **2** wherein each of said inclined surfaces comprises a generally planar surface perpendicular to said back plate, and each of said arms is comprised of an angle iron welded to said back plate.

4. The structure set forth in claim **1,** wherein the holding means further includes a stationary hinge member and a movable hinge member, the stationary member affixed to the back plate, and a hinge pin pivotally mounting the movable hinge member on the stationary hinge member, and the element being substantially rigid and pivotally mounted on the movable hinge member for movement toward and away from the support arms, and arranged for accommodating objects of different size and configuration, and wherein the biasing means includes a coil spring connected between the hinge members and arranged for biasing the element toward the support arms.

5. The structure set forth in claim **3,** wherein the holding means further includes a stationary hinge member and a movable hinge member, the stationary member affixed to the back plate, and a hinge pin pivotally mounting the movable hinge member on the stationary hinge member, and the element being substantially rigid and pivotally mounted on the movable hinge member for movement toward and away from the support arms, and arranged for accommodating objects of different size and configuration, and wherein the biasing means includes a coil spring connected between the hinge members and arranged for biasing the element toward the support arms.

6. The structure set forth in claim **5,** further including means connected to the back for being clamped in a vise.

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