

Dec. 27, 1955

L. KLUCK

2,728,399

FLOATING SPRING TYPE CASING CENTRALIZER

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Fig. 1

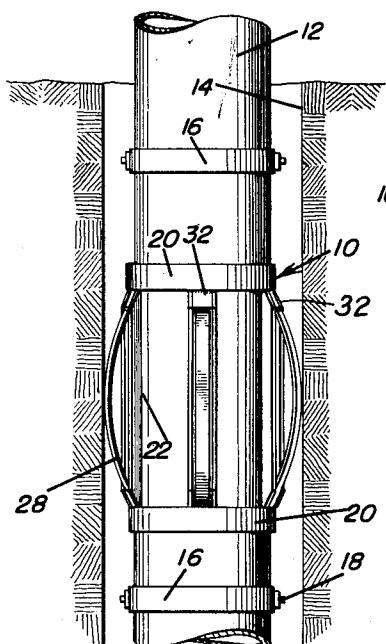


Fig. 2

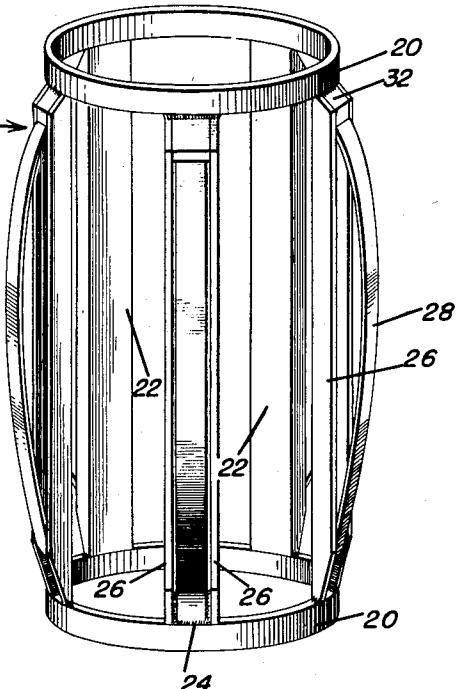


Fig. 3

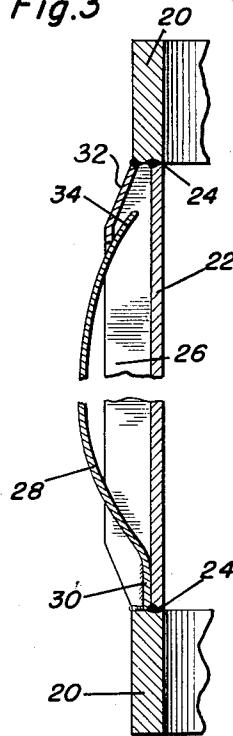


Fig. 4

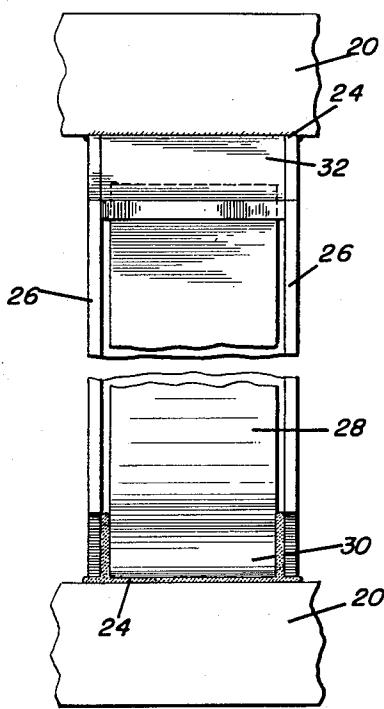
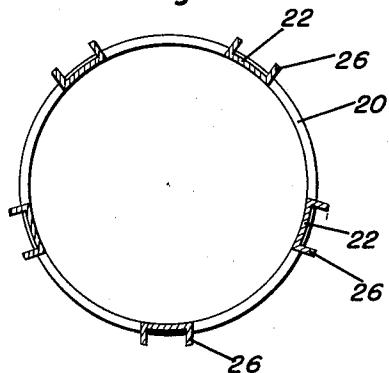


Fig. 5



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FLOATING SPRING TYPE CASING CENTRALIZER

Louis Kluck, Odessa, Tex.

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1 Claim. (Cl. 166—241)

This invention relates to new and useful improvements in casing centralizers and the primary object of the present invention is to provide a casing centralizer having novel and improved features over that disclosed in my Patent No. 2,636,564, issued April 28, 1953.

Another important object of the present invention is to provide a floating spring type casing centralizer, including a plurality of circumferentially spaced leaf springs having central bowed portions that will yieldingly engage the wall of a hole to retain a casing centered within the hole.

Another object of this invention is to provide a casing centralizer having a plurality of outwardly facing channel ribs and centrally bowed leaf springs positioned in the channel shaped ribs for guiding the movement of the free end of the leaf springs.

Still another object of the present invention is to provide a floating spring type casing centralizer that is quickly and easily applied to a casing, simple and practical in construction, strong and reliable in use and relatively inexpensive to manufacture and install.

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, and in which:

Figure 1 is a sectional view of a well and showing the casing centralizer of this invention in use;

Figure 2 is a perspective view of the floating spring-type casing centralizer of the present invention;

Figure 3 is an enlarged detail section taken substantially along the center line of one of the ribs, showing the construction and relationship of the rib and leaf spring employed in this invention;

Figure 4 is an enlarged front elevational view of the construction of Figure 3; and

Figure 5 is a transverse plan section showing the specific shape of the reinforcing ribs.

Referring now specifically to the drawings, it will be seen that the numeral 10 generally designates the floating spring-type casing centralizer for centrally positioning a casing 12 in a hole 14 such as that used in wells or the like. A pair of locating rings 16 are positioned on the casing 12 in spaced relation to each end of the casing centralizer 10. The rings 16 are secured in adjusted position by suitable set screws 18 wherein the casing 10 is limited in its sliding movement on the casing 12.

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The casing centralizer 10 includes upper and lower ring elements 20 surrounding the casing 12. The ring elements 20 are secured in rigidly spaced relation by a plurality of circumferentially spaced ribs 22 which are welded to the inner edges of the rings 20 as indicated by the numeral 24. Each of the ribs 22 is generally channel shaped and includes outwardly extending flanges 26. A leaf spring 28 having a flattened end portion 30 is secured to the rib 22 between the flanges 26 by suitable welding with the flattened portion 30 engaging the web of the channel shaped rib 22. The central bowed portion of the leaf spring 28 extends outwardly past the flanges 26 for engaging the side walls of the hole 14. The upper end of the leaf spring 28 is free for sliding movement thereby permitting the bowed portion of the spring to move inwardly and outwardly relative to the rib 22. The upper end of each of the channel shaped ribs is provided with a transversely extending plate 32 welded to the upper ring 20 which forms an open ended socket for receiving the free end 34 of the leaf spring 28 thereby guiding the sliding movement of the free end portion 34 of the spring 28.

The operation of the device will appear obvious from the foregoing construction and the device may be constructed of readily obtainable and rugged materials thereby enhancing the economic feasibility of the device. The number of circumferentially spaced ribs and springs may be determined for each individual circumstance and the device may be easily and quickly assembled on the casing 12 for centrally positioning the casing 12 within the well hole 14.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, 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 shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claim.

40 40 What is claimed as new is as follows:

A floating spring type casing centralizer comprising upper and lower rings, a plurality of circumferentially spaced ribs terminally fixed to the rings thereby spacing said rings, each of said ribs comprising an outwardly facing channel, a leaf spring positioned in each channel and having a lower end secured in the lower end of said channel, said spring having a central bowed portion and a free upper end, and a closure plate extending across the upper end of said channel thereby forming a socket for slidably guidingly receiving said free end, said ribs being secured to and extending between the adjacent opposed edges of said rings and lying flush with the inner surfaces of said rings, and the lower end of said spring includes a flattened portion for attachment to the web of said channel.

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