

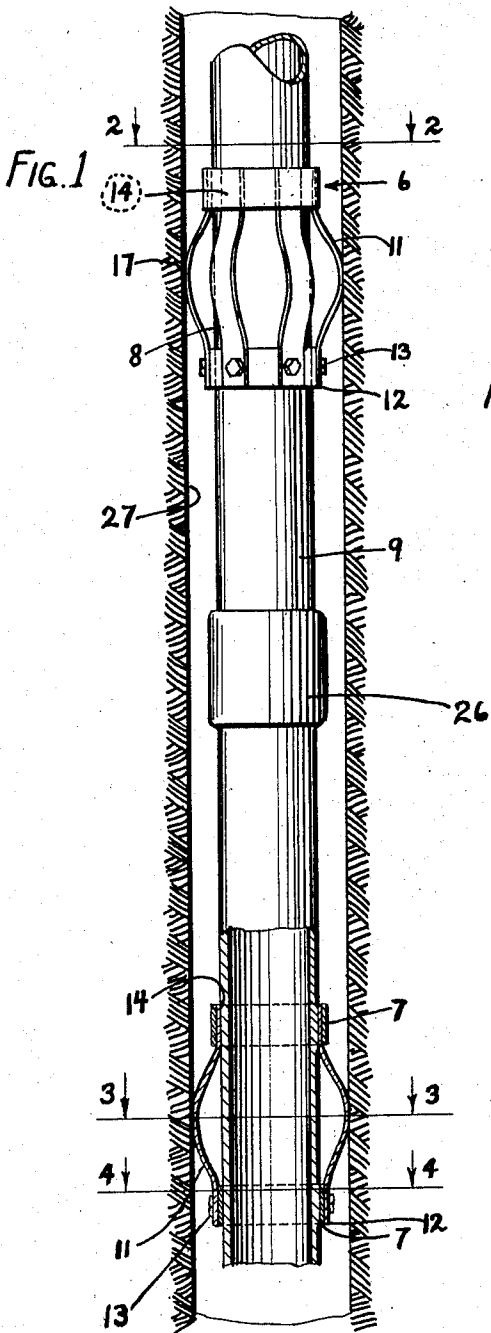
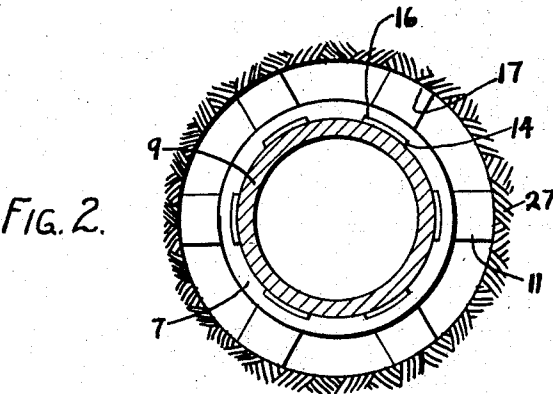
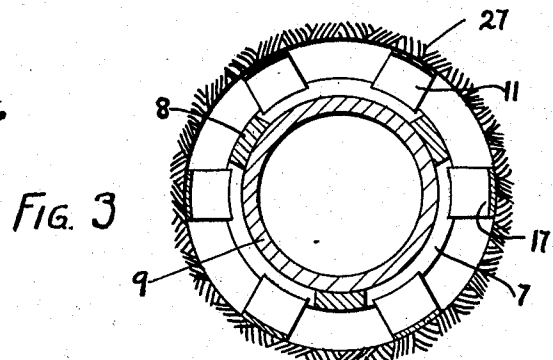
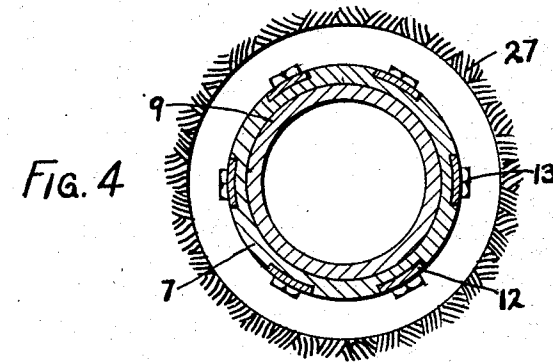
Aug. 19, 1930.

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1,773,398

CENTERING DEVICE FOR WELL CASINGS OR LINERS

Filed March 21, 1928



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CENTERING DEVICE FOR WELL CASINGS OR LINERS

Application filed March 21, 1928. Serial No. 263,339.

My invention is a device for aiding in the process of cementing off well casings or liners.

is well adapted to perform the services required of it.

In deep well drilling, and more especially when drilling for oil, it frequently becomes necessary after a certain depth of the hole has been attained, to cement off a portion or all of the well thus far drilled. Various conditions account for this necessity, among them being the fact that frequently before oil is reached, the well passes through what is called a "water stratum." It is readily apparent that in such a case, some step must be taken to prevent the flow of water into the well from this stratum, as it would otherwise tend to hamper the drilling operation and also contaminate the oil after pumping started.

With the foregoing and other objects in view which will be made manifest in the following detailed description and specifically pointed out in the appended claims, reference is had to the accompanying drawings for an illustrative embodiment of the invention, wherein:

This process of cementing is necessarily carried out by lowering a sufficient length of casing into the well to reach that portion requiring the waterproofing, and then depositing plastic concrete through the pipe. Various devices are in use for accomplishing this purpose; but an inherent disadvantage with this process, is the fact that the casing more frequently than not, works to one side of the bore, resulting in a deposit of concrete which is thicker on one side of the well than upon the other, oftentimes to such an extent that the deposited concrete on one side of the well is so thin that it cracks and falls away and thus offers little or no protection against the flow of water therethrough.

Figure 1 is a vertical, sectional view through a well, showing a string of casing with one of my cementing devices in elevation thereupon, and another shown in vertical section.

It is an object of my invention to provide a device for holding the casing through which the concrete is to be deposited, centrally of the bore of the well.

Fig. 2 is a top plan view of one of the cementing devices, and a transverse, sectional view of the casing upon which it is positioned; the plane of section being taken upon the line 2—2 of Fig. 1, and the direction of view indicated by the arrows.

It is another object to provide a device of the character described, which is possessed of a certain degree of resiliency, making it adaptable to wells of different and varying diameter.

Fig. 3 is a transverse, sectional view of one of the cementing devices and the associated casing; the plane of section being taken upon the line 3—3 of Fig. 1, and the direction of view indicated by the arrows.

It is a further object of the invention to produce a device for positioning a casing centrally of the bore of a well, which may be easily and quickly applied to and removed from the casing, and which is of such rigid construction that it is unlikely to be rendered unserviceable through hard usage, and which

Fig. 4 is a transverse, sectional view; the plane of section being taken upon the line 4—4 of Fig. 1, and the direction of view being indicated by the arrows.

In terms of broad inclusion, the device of the present invention comprises a housing adapted to be slidably received upon a length of casing and provided with a cage of resiliently variable diameter capable of engaging the sides of the bore of a well, to position the casing centrally thereof.

The preferred embodiment of my device comprises a housing indicated in its entirety by the reference character 6, preferably formed of a pair of spaced rings 7 of equal diameter, and a plurality of rigid webs 8, integral with and retaining the rings 7 in axial alignment. The rings 7 are of equal diameter, and are of such size as to permit them to be slipped over a length of casing 9.

A plurality of resilient brackets 11 are rigidly secured at one end 12 to the outer surface of one of the rings 7; any convenient fastening means being employed, such as the

screws 13. It is to be understood however, that the same results will be accomplished if the brackets 11 are secured to the ring 7 by welding, or in any other manner. The other end 14 of each of the brackets 11, is arranged inside the other ring 7; and the natural resiliency of the metal of which the brackets are formed, urges the end 14 outwards to press against the ring 7, which is provided with a recess 16 within which each of the free ends 14 seats.

The center portion 17 of each of the brackets 11, is bowed outwards so that the assembly presents a cage of increased diameter intermediate its ends. Due to the fact that the brackets 11 are rigidly mounted at one end 12 of each, the other ends 14 being slidable within the associated recesses 16, this cage is of resiliently variable diameter.

The manner of operating my cementing device is substantially as follows: The string of casing is made up by connecting the required number of lengths 9, by means of the conventional sleeves 26. However, before so connecting the lengths 9, one or more of my cementing devices is positioned upon as many of the lengths 9 as is deemed expedient. It is to be observed that the diameter of the housing 6 is such that it may be slipped neatly over the length 9 of casing, but is prevented from slipping from one length of casing to another because of the interference of the sleeves 26.

The length of casing is then lowered into the well, and it will be found that the brackets 11, owing to the fact that their center portions 17 are bowed outwards, will engage the sides 27 of the bore. The natural resiliency of the brackets permits the cage to conform itself to the shape and size of the bore, with the result that the lengths 9 of casing upon which the devices are positioned, are held centrally therein.

Arranging the brackets 11 with their free ends 14 on the inside of the ring 7, results in their pressing against the casing 9 instead of against the housing 6 as would be the case if the free ends 14 were arranged on the outside of the associated ring 7. The advantage of this construction lies in the fact that the casing 9 will be held centrally of the bore, regardless of whether or not the rings 7 fit the casing perfectly.

Various changes in the details of construction may be made without departing from the spirit and scope of the invention as defined by the appended claims.

I claim:

1. In a device of the character described, a housing comprising a pair of spaced rings and a plurality of webs retaining the rings in axial alignment, said housing being adapted to slidably fit upon a length of casing; and a plurality of leaf springs rigidly secured at one end of each to one of said

rings, the other of said rings having recesses in the inner face thereof, and the other end of each of said springs pressing outwards within one of said recesses, and the center portion of each of said springs being bowed outwards to present a cage of increased diameter intermediate its ends.

2. In a device of the character described, a housing comprising a pair of spaced rings and a plurality of webs retaining the rings in axial alignment, said housing being adapted to slidably fit upon a length of casing; and a plurality of leaf springs rigidly secured at one end of each to one of said rings, the other end of each of said springs pressing outwards against the inner face of the other ring, and the center portion of each of said springs being bowed outwards to present a cage of increased diameter intermediate its ends.

In testimony whereof I have signed my name to this specification.

M. A. LA VELLE.