

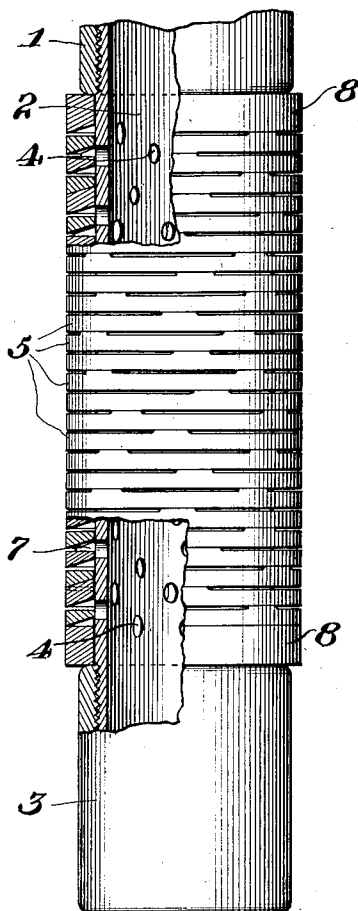
Jan. 26, 1926.

1,570,725

C. H. BENCKENSTEIN

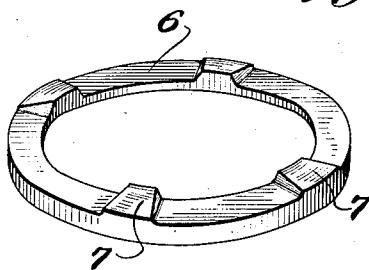
SCREEN FOR OIL WELLS

Filed Nov. 3, 1924

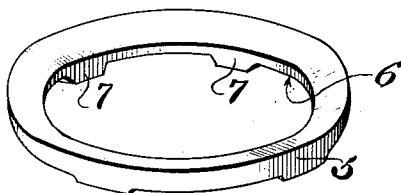


*Fig. 1.*

*Fig. 2.*



*Fig. 3.*



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# UNITED STATES PATENT OFFICE.

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## SCREEN FOR OIL WELLS.

Application filed November 3, 1924. Serial No. 747,651.

*To all whom it may concern:*

Be it known that I, CHARLES H. BENCKENSTEIN, a citizen of the United States, residing at Vinton, in the parish of Calcasieu and State of Louisiana, have invented certain new and useful Improvements in Screens for Oil Wells, of which the following is a full, clear, and exact description.

The invention relates to screens for oil wells or other deep wells, such as are commonly known and are in general use for the purpose of preventing the entrance of fine particles of sand or the like into the well tubing. The purpose of the present invention is to provide such a screen which possesses distinct and material improvements over prior screens of this nature as will appear hereinafter.

The type of screen which is commonly employed at the present time consists of a section of pipe provided with perforations, and around this pipe is wound a wire of various cross-sectional shapes. The turns of wire are spaced from each other and after being properly mounted on the perforated pipe are soldered thereto. Such a screen is subject to numerous disadvantages. In the first place, the screen must be handled with great care and must not be rotated, for the rotation thereof will destroy the wire wrapping. In the second place, the wire must be rather soft and pliable in order that it may be mounted on the pipe and because of the nature of the material the wire is often ruined or destroyed while the screen is being lowered into the hole. In the third place, because of the softness of the wire and because it is attached to the screen by solder it is very often affected by the different waters found in oil wells, and often rusts out rapidly. In the fourth place, the soft material forming the wire is frequently cut by fine particles of sand in the oil. These two last-mentioned troubles occur more frequently than the others, for the operators may be able to guard against rotating the screen and they may be able to guard against injuring the screen while it is being lowered into the hole, but there is no way in which they can guard against the action of the waters and sands on the wire and solder.

The purpose of the present invention is to provide a screen which will be free of the above and other objectionable features and which will be cheap in manufacture, simple

in construction, and durable and efficient in operation.

The specific construction of my improved screen will now be described reference being had to the accompanying drawings in which:

Figure 1 is an elevational view of the screen, the parts being broken away to more clearly show the construction;

Figure 2 is a detail perspective view of one of the rings; and,

Figure 3 is a detail perspective view of the reverse side of one of the rings.

Referring to the drawings more in detail, numeral 1 indicates a pipe section or coupling to which is screw-threadedly attached the pipe 2, and on the lower end of this pipe I have shown screw-threadedly mounted a pipe coupling 3. The pipe section 2 is provided with a great number of spaced perforations 4. The apparatus thus far described is old and well-known in the art and per se forms no part of the present invention.

A plurality of rings 5 are mounted on the perforated pipe section, and the present invention relates to the construction of these rings and to the manner in which they are mounted on the perforated pipe.

Referring now to Figures 2 and 3, it will be seen that each ring has a flat surface 6 provided with a plurality of upwardly inclined spacing lugs 7. The other side of each of the rings is bevelled or has an inclined surface extending from the outer periphery to the inner periphery. When these rings are arranged one on top of the other on the perforated pipe section it will be apparent that the inclined spacing lugs of a lower ring will fit against the bevelled or inclined surface of the ring next above it, whereby all of the rings are properly spaced. It will also be apparent from an inspection of Figure 1 that the gauge of the screen increases from the outer periphery toward the inner periphery; in other words, in accordance with the structure disclosed herein there is a very narrow space between adjacent rings in their outer periphery and a relatively large space between them in their inner periphery.

It is not essential to the invention, but I preferably mount a relatively thick ring indicated by numeral 8 at the top and bottom of the series of relatively thin rings.

It is not my intention to limit the inven-

tion to the particular manner in which the rings are mounted on the perforated pipe, but I prefer to mount them in the following manner which has been found to produce highly advantageous results. The rings while hot are slipped on to the perforated pipe and are allowed to cool thereon, and the contraction of the material due to the cooling thereof will cause the rings to be securely attached to the pipe and they will at the same time function as a reinforcing means to strengthen the pipe.

It is believed that the construction of my improved screen will be clearly understood from the foregoing description, and the advantages of this screen over those previously known will be indicated briefly below.

The rings that are adapted to surround the perforated pipe may be made of brass, steel, or any other desired metal; and even glass might be employed, though it might not be very practical. As stated hereinbefore the wire which is commonly employed must be of very soft material, but the rings used in connection with my improved screen may be made of the hardest material and it is thus obvious that the possibility of their being worn out or cut by sand or acted on by the waters in the well is greatly reduced. It is also obvious that the screen may be rotated in the hole without danger of the slightest injury to the screen. It will also be apparent that this type of screen is much more easily made than the wired type of screen, for in the wired type of screen much care must be exercised in winding the wire about the perforated pipe and in properly spacing the numerous turns of wire, and in welding the turns of wire to the perforated pipe after they have been mounted in place. Further, the screen may be lowered into the

well or raised therefrom without the exercising of any great amount of care, for by the arrangement of rings as disclosed herein no damage will result by striking them against the wall of the well or the like. Further, the manufacture of the screen presents the greatest simplicity, for the rings may be simply stamped from sheet material or, if preferred, they may be cast; and after the rings have been formed it is only necessary to slip them on to the perforated pipe while they are in a heated condition, and allow them to cool whereby they will be shrunk on to the pipe and thus not only be held securely in position, but also reinforce and strengthen the perforated pipe.

In accordance with the patent statutes I have described what I now believe to be the best embodiment of the invention, but I do not wish to be understood thereby as limiting myself to the scope of the invention, as many changes and modifications may be made without departing from the spirit of the invention; all such I aim to include in the scope of the appended claims.

What I claim as new and desire to secure by Letters Patent is:

1. A screen for wells including a perforated pipe, a series of hard metal rings mounted on said pipe, each ring being of unbroken formation and means for spacing said rings, the rings being shrunk on the perforated pipe.

2. A well screen including a pipe having perforations therein, a series of hard metal rings mounted on said pipe, each ring being of unbroken formation, one side of said rings being flat and the other side being beveled, said rings being shrunk on the pipe.

CHARLES H. BENCKENSTEIN.