METHOD OF PRODUCING SCREEN PIPE

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Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

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My invention relates to a method of forming narrow slots in a pipe and is particularly useful for making strainer pipe which is used in the oil producing industry. In the oil producing industry, after the well has been drilled and the water casing set therein, an oil string is installed in the well, the lower end of the oil string having a strainer pipe attached thereto. This strainer pipe passes through the oil-bearing sands and has small openings therein through which oil passes into the interior of the oil string. These perforations in the strainer pipe are intended to be so narrow that only oil may pass into the oil string, and the sand and gravel being excluded since they are not small enough to pass through these perforations. It will be seen that it is quite essential that these slots be very narrow in order that fines may be excluded from the well. It is ordinarily considered a difficult job to form extremely narrow slots in strainer pipe.

It is an object of this invention to provide a method whereby quite narrow slots may be formed in a pipe with facility.

Other objects and advantages will appear in the following description taken in connection with the drawing, in which Fig. 1 is a perspective view illustrating the first step in the method.

Fig. 2 is a section taken on the line 2-2 of Fig. 1.

Fig. 3 is a diagrammatic view illustrating a second step in the method of the invention.

Fig. 4 is a perspective view showing the final product of the invention.

Fig. 5 is a section taken on the line 5-5 of Fig. 4.

Referring in detail to the drawing, and particularly to Fig. 1, the numeral 11 represents an oversize pipe having a very thick wall 12. The first step in the method is to provide the pipe 11 with slots 13. The slots 13 may be formed by means of a mill cutter as indicated at 14, or they may be provided by cutting the slots in the pipe using an oxy-acetylene cutting torch. The slots 13 are considerably wider than the desired width of slot for strainer pipe.

Referring to Fig. 3, the next step in the method is to reduce the size of the pipe to the proper diameter. In Fig. 3 I illustrate a mandrel 16 which is secured to a revolving shaft 17. This mandrel 16 is extended into the pipe 11 as shown. Operating against the outside of the pipe 11 is a pair of forming rollers 18. The pipe 11 is rotated in the direction indicated by the arrow 20 and the mandrel 16 is rotated in the same direction. The forming rollers 18 are rotated in directions indicated by arrows 21.

The operation of the mandrel and rollers, as is obvious from Fig. 3, reduces the diameter of the pipe 11 from that indicated at A in Fig. 3 to that indicated at B. The thickness of the wall 12 of the pipe 11 is reduced from the thickness indicated at C to the thickness indicated at D. When the pipe 11 is drawn to size the opposing walls of the slots 13 are moved together so that these slots are much narrower than their original width as indicated in Fig. 1.

In Figs. 4 and 5, I illustrate the pipe 11 after it has been drawn to size. It has been reduced in diameter and the thickness of the wall has also been reduced. The width of the slots 13 as is obvious is much less than before the sizing operation. It should be clearly understood that the sizing operation shown in Fig. 5 is purely diagrammatic and is representative of any means for drawing the pipe to size. Other means may be employed without departing from the spirit and scope of the invention.

As previously mentioned it is considered difficult to cut very narrow slots in pipe. In my invention it is unnecessary to cut very narrow slots. The slots 13 cut in the original oversize pipe 11 can be wide enough so that they may be conveniently cut, whether they be cut by a mill cutter, oxy-acetylene torch, or other means. The slots 13 are reduced in width by reducing the diameter of the pipe 11. Incidentally it is found advisable to also reduce the thickness of the wall, although this is not absolutely necessary. The final product shown in Figs. 4 and 5 has very narrow slots which are surprisingly accurate in shape and size. I have demonstrated that a screen pipe made according to this invention is better than the ordinary screen pipe because the slots are narrow and more accurate and is as economical as the ordinary screen pipe because of the ease with which the original slots 13 may be cut since they are quite wide.

The broad conception of the invention consists of a method for forming slots in pipe.
which consists of providing a pipe with oversize slots and then operating upon the pipe in such a manner as to reduce the width of the slots.

I claim as my invention:

1. A method of forming narrow slots in pipe comprising: forming a pipe; forming a slot in said pipe after said pipe has been formed; and reducing the width of said slot by reducing the cross section of said pipe.

2. A method of forming narrow slots in pipe comprising: forming a pipe; milling a slot in said pipe after said pipe has been formed; and reducing the width of said slot by reducing the cross section of said pipe and reducing the thickness of the wall of said pipe.

3. A method of forming narrow slots in pipe comprising: forming a pipe; mechanically forming a slot in said pipe after said pipe has been formed, said slot being wider than desired; and reducing the diameter of said pipe, the walls of said slot being moved together, thus narrowing said slot to the desired width.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 21st day of December, 1926.

CLARENCE J. COBERLY.