E. E. JOHNSON

METHOD OF MAKING WELL SCREENS

Filed Nov. 25, 1927

Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Inventor
E.E. Johnson

By Whitley and
Reckman

Attorneys
My invention relates to methods of making well screens and an object is to provide for making a well screen from a strip of sheet metal such as brass or other metallic substance not liable to corrosion by first perforating the strip at a multiplicity of places along its length, winding the perforated strip spirally into tubular form and securing together the edges of the strip which are juxtaposed during the winding operation. I am aware of the fact that it is old in the art to make a well screen from a strip of metal having a groove adjacent one edge thereof with perforations through the material forming the back of the groove, the strip having a flange adjacent its other edge and the strip being wound up spirally into tubular form with the edges overlapping in such manner that the groove at one edge and the flange at the other edge are interlocked with each other. Such method is disclosed in my Patents No. 380,654 dated September 25, 1868, and No. 1,287,581 dated December 10, 1918. I am also aware of the fact that it is old in the art to make a well screen by providing a perforated metal pipe which constitutes an inner shell and then winding thereon spirally, a metal ribbon composed of a number of strands or wires secured together in parallel relation with crevices between the individual strands so related to the perforations that passageways are produced through the composite structure. Such method is disclosed in my Patent No. 1,040,842 dated October 8, 1912. However, so far as I am aware, it is new to make a well screen by perforating a flat strip of sheet metal at a multiplicity of places along its length, winding the perforated strip spirally into tubular form with its edges juxtaposed and non-overlapping and securing the juxtaposed edges together with application of heat to produce a well screen which is in effect integral throughout so as to be self-sustained and not require any supporting inner shell or rods.

The full objects and advantages of my invention will appear in connection with the detailed description thereof, and the novel features of my inventive idea will be particularly pointed out in the claims.

In the accompanying drawings which illustrate successive stages in the manufacture of my well screen,—Fig. 1 is a plan view showing a blank piece of sheet metal from which the well screen is made. Fig. 2 is a plan view showing the piece of sheet metal after it has been provided with a multiplicity of perforations. Fig. 3 is a side elevational view showing the tube produced by winding the strip spirally and securing together the juxtaposed edges. Fig. 4 is a side elevational view showing the tube after it has been finished by cutting off the ends to make them square. Fig. 5 is a fragmentary view in section on the line 5—5 of Fig. 4 on an enlarged scale.

In carrying out my invention, blanks of the desired width and length are cut from sheet metal, one of these blanks being indicated by the numeral 10 in Fig. 1. This blank while still in flat condition is then provided with a multiplicity of perforations 12 by a cutting or punching operation. In the embodiment shown, the perforations 12 are arranged in groups of five transverse to the strip but it will be understood that the number of perforations transversely may be varied as desired. The perforations are preferably of elongated form to constitute slots and are preferably beveled as shown in Fig. 5 so that when the tube is formed, the perforations will be enlarged inwardly whereby any particles that may pass in with the liquid will not be retained in the perforations but will escape at the inside, thus preventing liability of the perforations becoming clogged. Imperforate spaces indicated at 14 are left between successive groups of perforations in order to give adequate strength to the finished article and imperfect spaces 16 are left at the sides of the strip in order that the side edges may be secured firmly to each other after the strip has been wound up spirally as shown in Fig. 3. The strip after being perforated is wound up spirally in tubular form in any suitable manner as by wrapping it spirally around a mandrel with the edges close together but not overlapping each other. As shown in Fig. 5, a slight space may be left between the juxtaposed edges for receiv-
ing a flux. After the perforated strip has been wound up, the juxtaposed edges are secured together by welding or soldering with the application of heat so that in effect they are integrally united. Unperforated spaces 18 are left at the ends of the strip so that after the strip has been wound up and its edges secured together in the manner just stated, portions 20 may be cut off as indicated on the dotted line 22 in Fig. 3 to provide square ends for the finished tubular screen. The carrying out of my process as above set forth results in the production from a flat strip of sheet metal of a well screen which is in effect integral throughout and is self-sustained so as not to require the addition of any sustaining or supporting means to hold it in the proper tubular shape. My process is particularly applicable for use in making well screens constructed from comparatively thick sheet metal for making screens having heavy walls. With such material, it is not practicable to produce the perforations after the strip has been wound up spirally. The sequence of steps is, therefore, an important feature of the invention in regard to the fact that the flat strip should be perforated before it is wound up. Perforations which slant from one side of the metal to the other side can be shaped to much better advantage while the strip is flat. While I may employ either electric welding or acetylene welding, I have found in practice that the latter manner of welding in which an acetylene torch is employed in very efficient.

I claim:

1. The process of making well screens which consists in providing a single strip of sheet metal of sufficient thickness to form a self-sustaining well screen, providing said strip while in flat condition with a multiplicity of perforations of the size desired for the finished article, winding said perforated strip spirally into tubular form with its edges juxtaposed and non-overlapping, and welding said juxtaposed edges together to produce a well screen in which said edges are in effect integrally united.

2. The process of making well screens which consists in providing a single strip of sheet metal of sufficient thickness to form a self-sustaining well screen, providing said strip while in flat condition with a multiplicity of perforations of the size desired for the finished article, winding said perforated strip spirally into tubular form with its edges juxtaposed and separated by a slight space adapted to receive a flux, applying the flux, and welding said juxtaposed edges together to produce a well screen in which said edges are in effect integrally united.

3. The process of making well screens which consists in providing a single strip of sheet metal of sufficient thickness to form a self-sustaining well screen, providing said