No. 846,482. PATENTED MAR. 12, 1907.

M. E. LAYNE.

METHOD OF FORMING PERFORATED TUBES AND SCREENS.

APPLICATION FILED JUNE 19, 1905.

Fig. 1.

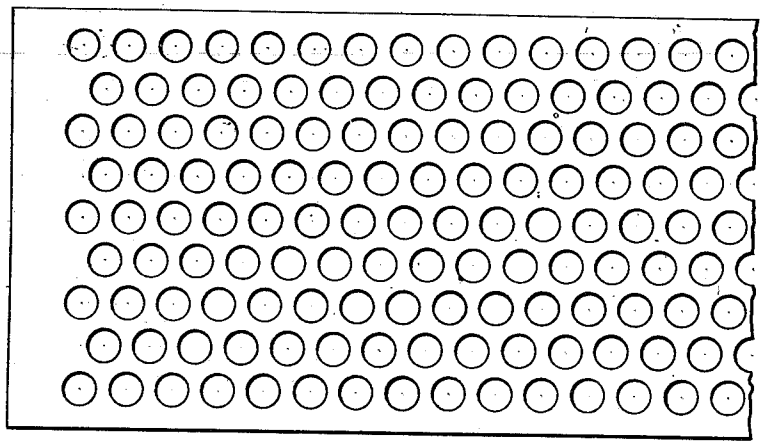


Fig. 2.



Fig. 3.

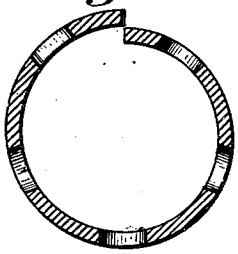


Fig. 4.

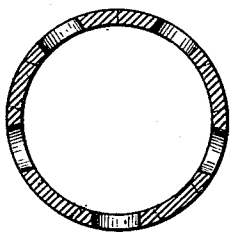


Fig. 5.

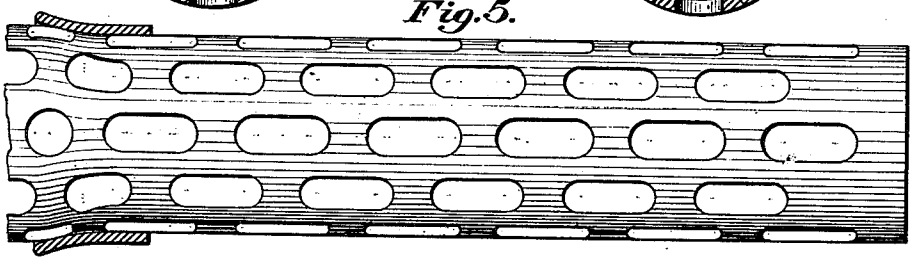
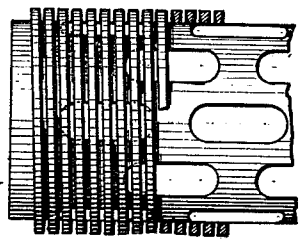


Fig. 6.



WITNESSES

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METHOD OF FORMING PERFORATED TUBES AND SCREENS.

No. 846,482. Specification of Letters Patent. Patented March 12, 1907.

Application filed June 19, 1905. Serial No. 265,972.

To all whom it may concern:

Be it known that I, MAHLON E. LAYNE, a citizen of the United States, residing at Houston, in the State of Texas, have invented a certain new and useful Method of Forming Perforated Tubes and Screens, of which the following is a specification.

My invention has reference to an improved method for forming tubes such as are used for tubular supports for well screens and the like, and the construction of improved screens by like operation, the perforated tube being provided as a kind of mandrel or support for a wire wound helically around the tube to form the screening part of the mechanism.

The process is illustrated in the accompanying drawing, in which—

Figure 1 is a plan view of a punched blank before forming into a tube;

Figure 2 is a transverse section through a portion of the punched blank;

Figure 3 is a transverse section showing the blank partially formed into a tube;

Figure 4 is a transverse section through the completed blank;

Figure 5 is a plan view of the tube after welding, and

Figure 6 is a plan view of the tube partially wound with the screening wire.

Heretofore it has been common in the construction of well screens to take wrought metal pipe of any diameter from one inch upward, as may be required, and to bore or punch the same in a drill press or punch of suitable character, with a large number of openings so as to allow the water to pass through after it has passed the screening surface which is formed preferably on the exterior surface of the supporting frame work or perforated tube, by winding the wire helically about the same.

In the process of my invention I first take a blank sheet of metal, or skelp as it is commonly called, and have the same perforated preferably by a gang of punches as indicated in Figure 1, the punching being done from one surface to the other so that the openings preferably all have the same tapered form as indicated in a sectional view in Figure 2, and such skelp is then rolled up into the shape shown in Figure 3, the rolling operation tending on account of the way in which the tapered shape of the holes is placed, to make the openings nearly straight through the tube, and then, as indicated in Figure 4, the two adjacent edges of the skelp may be, if desired, welded together either as a butt weld or as a lap weld, the usual welding process being used which consists essentially in drawing it through a welding bell or other welding device, such as is employed in the manufacture of tubing of various sizes, the drawing operation being indicated in Figure 5 where the skelp is drawn through a bell as would be done with smaller sizes, while rolls would probably do for larger sizes.

After the tubular supporting frame is formed the wire used for making the screening surface is wound helically around the same, thus producing a complete screen, as indicated in Figure 6.

In cases where the edges of the pipe are welded the openings punched or formed in the skelp before the same is put into tubular shape are somewhat elongated, as indicated in Figure 5, by the drawing operation and the elongated openings are more suitable really for well screen supports than the round openings, as the helically wound wire passes across them transversely and the perforated tube formed in this manner forms something of a kind of grid, reducing the distance between the points of support for the wire below what would be necessary if holes of the same carrying capacity were to be formed of a round shape.

The perforations should preferably be staggered and of such size as to overlap each other, as shown in Figures 1, 5 and 6 as by this arrangement a drainage is provided for each turn of the wire, at frequent intervals, irrespective of the angle at which it is wound upon the pipe.

One of the greatest advantages of my improvement is the large saving in the cost of manufacture, as it is a very expensive and slow process to take a welded pipe and drill or punch the same full of holes, and it is also a very difficult matter to so arrange a solid mandrel or support as to properly operate a punch of this character. By my method the skelp can be punched as indicated and then rolled up and welded into a tube and the wire wound helically thereon, with a minimum amount of time and trouble.

A further advantage of my improved method of manufacture is, that the surfaces of the openings or perforations will be exposed to the action of heat during the process of bending and welding, whereby a skin or scale will be formed on said surfaces and they will be hardened and better adapted to resist

erosion and the pipe will be much stiffer, than is the case when the openings are formed after the pipe is completed and the surfaces of such openings left raw.

Having thus described my invention and illustrated its use, what I claim as new, and desire to secure by Letters Patent, is the following:

The herein described method of forming tubular perforated screens which consists of perforating a sheet of metal, bending the same into tubular shape and draw welding the edges, substantially as described.

In testimony whereof I have hereunto signed my name in the presence of the two subscribed witnesses.

MAHLON E. LAYNE.

Witnesses:
E. H. MEYER,
J. H. BLANTON.