

A. SMITH.
 PROCESS OF MAKING PLATES FOR WELL AND DRAINAGE CASINGS.
 APPLICATION FILED MAR. 26, 1912.

1,055,675.

Patented Mar. 11, 1913.
 2 SHEETS—SHEET 1.

Fig. 1.

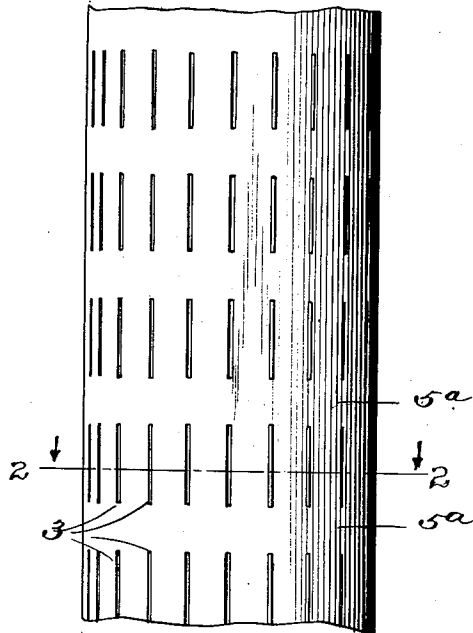


Fig. 2.

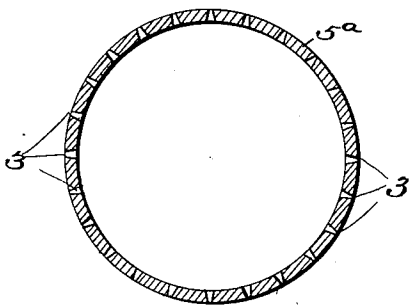


Fig. 3.

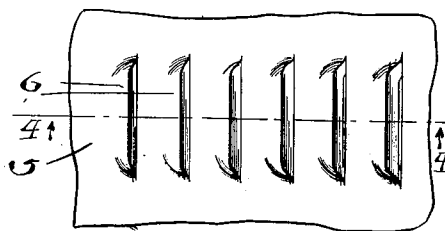


Fig. 4.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 5.

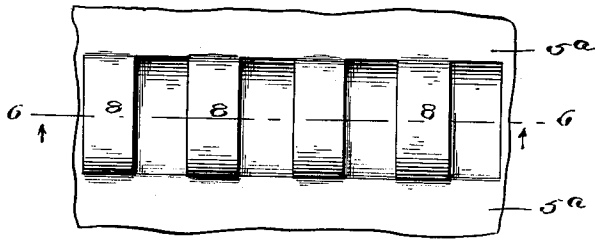


Fig. 6.



Fig. 7.

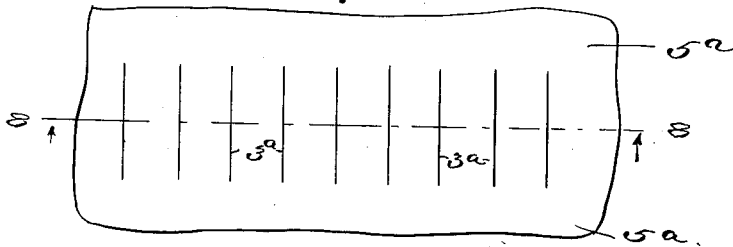


Fig. 8.

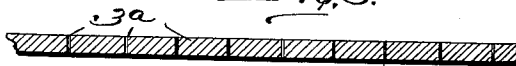


Fig. 9.

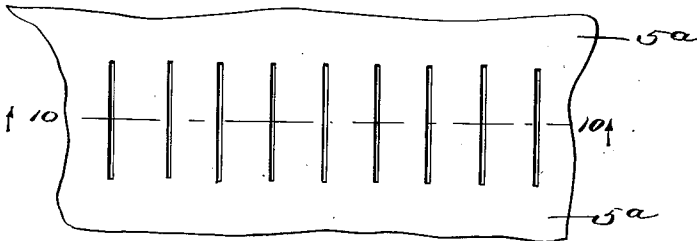


Fig. 10.



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UNITED STATES PATENT OFFICE.

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PROCESS OF MAKING PLATES FOR WELL AND DRAINAGE CASINGS.

1,055,675.

Specification of Letters Patent.

Patented Mar. 11, 1913.

Continuation of application Serial No. 489,642, filed April 13, 1909. This application filed March 26, 1912. Serial No. 686,359.

To all whom it may concern:

Be it known that I, ANDREW SMITH, a citizen of the United States, residing at San Mateo, in the county of San Mateo and State of California, have invented certain new and useful Improvements in Processes of Making Plates for Well and Drainage Casings, of which the following is a specification.

10 This invention relates to a process of making slitted plates, and is especially intended for making plates for drainage and well casings.

The main object of my invention is to produce slits in metal plates adapted for use in the production of well casings, drainage tiling, drainage culverts, etc., in which the slits shall have smooth walls and be very narrow, so that they may exclude sand, except the finer particles, and yet permit the entrance of water, oil, silt, and finely divided particles, thus adapting it to be used as a strainer for various purposes.

It will be understood by those skilled in this art that it is not possible by the ordinary punching operations to produce openings in a metal plate of the harder metals with a punch whose smallest diameter is less than the thickness of the plate, since such punches are unable to withstand the repeated punching operations.

It is the purpose of my invention, therefore, to provide a process of producing slits which may be narrower than the thickness of the plate by shearing the metal with tools which will withstand the heaviest usage, thereby distorting the metal at one side or upon both sides of the sheared slit, and then stretch the metal of the plate upon either side of the series of slits, thereby opening the slits to the desired width. I may either force the projections, produced by the shearing operations, back into the plane of the plate, or leave them in the distorted position, before the stretching operation. By shearing the metal to produce the slits, the edges of the metal forming the walls of the slit will be smooth and the finished plate may be afterward galvanized without danger of closing the slots.

My invention will be understood from the following description in connection with the

accompanying drawings, and was disclosed in my prior application, Serial Number 489,642, of which this is a continuation.

Figure 1 is a side elevation of a drainage casing, made in accordance with my invention; Fig. 2 is a cross-section on the line 2—2 of Fig. 1; Fig. 3 is a plan view of a metal plate sheared to form smooth walled slits and with the metal upon one side of each slit distorted or forced outwardly to form projections; Fig. 4 is a cross-section on the line 4—4 of Fig. 3; Fig. 5 is a plan view of a metal plate having the slits formed by punching adjacent portions of the metal in opposite directions, forming projections which lie in planes parallel with the body of the plate or sheet; Fig. 6 is a cross-section on the line 6—6 of Fig. 5; Fig. 7 is a plan view of a plate or sheet sheared to form slits as in Figs. 3 or 5, and then rolled to force the projections into the plane of the sheet; Fig. 8 is a cross-section on the line 8—8 of Fig. 7; Fig. 9 is a plan view of the plate shown in Fig. 7, after the metal upon either side of the slitted portion has been stretched, thereby opening the slits; and Fig. 10 is a longitudinal cross-section of a plate which has been slitted and stretched as in Fig. 9, and the slots then slightly spread or punched upon one side of the plate to form tapering openings.

The cylindrical perforated casing shown in Fig. 1, is constructed by first forming a plurality of series of slots 3, by my process disclosed herein, and then rolling the plate into cylindrical or tubular form and welding the meeting edges, which is preferably done by electric welding or the oxyacetylene process.

I have illustrated in Figs. 3 and 4, a metal plate 5, which has been sheared by a series of punches or a gang-punch, to form a series of smooth-walled slits and projections 6. The projections may be forced only partly beyond the plane of the plate, as at 6^a, or they may be forced beyond the plane of the sheet, as indicated at 6^b, 6^c.

In Figs. 5 and 6, I have shown the metal sheared, and the metal portions 8 between the slits punched alternately in opposite directions, but not entirely beyond the plane of the metal. The punching operation in

this case forms projections which are parallel with the plane of the metal and does not unequally stretch the metal and, in fact, practically does not stretch the metal at all.

5 After slitting the metal by the shearing operation, and forcing the intermediate portions outwardly as indicated in Figs. 3 or 5, the projections may be rolled back into the plane of the sheet or plate, entirely closing the openings and leaving a smooth plate with sheared slits extending through the body of the metal, as indicated in Figs. 7 and 8.

15 For the purpose of spreading the slits and forming the openings 3, as illustrated in Fig. 9, I subject the plate to a rolling operation upon the intermediate portions between the series of slits, that is, longitudinally along the solid unslitted metal portions 5^a, but not along the slitted portions. The metal 5^a upon either side of the slitted portions is thereby elongated or stretched, causing the walls of the slits to separate and forming openings or slots 3. While the plate will thus be formed with a smooth unbroken exterior surface, yet under some conditions, I may subject the plate to the rolling or stretching operation without first rolling the projections back into the plane of the plate.

30 For some purposes, the slotted plate, as illustrated in Fig. 9, may be employed, but it is frequently desirable to have the slots of tapering form as shown in Figs. 2 and 10, so that the openings will be wider upon the inside of the strainer or drainage casing than upon the outer side. I, therefore, subject the slotted plate shown in Fig. 9, to a further operation by spreading the walls of the slots upon one side of the plate. This may be done by means of wedge-shaped punches, the upsetting of the metal being very slight.

45 The slitted metal plates or sheets produced in accordance with the foregoing process are especially adapted for strainers, and for making drainage casings for wells, or for tilings or culverts.

50 While I have described in detail the several operations illustrated in the accompanying drawings, I am aware that changes may be made therein without departing from the spirit of my invention or the essential features of my process.

55 I claim:—

1. The process of making plates for strainers and drainage casings, comprising forming a series of slits in a plate by a shearing operation, and elongating or stretching the metal upon both sides of the slitted portion, thereby separating the adjacent edges

of each slit to form openings or slots in the plate.

2. The process of making plates for strainers and drainage casings, comprising forming a series of slits in a plate by a shearing operation thus laterally displacing the metal upon one side of each slit, and elongating or stretching the metal upon both sides of the slitted portion, thereby separating the adjacent edges of each slit to form openings or slots in the plate.

3. The process of making plates for strainers and drainage casings, comprising forming a series of slits in a plate by a shearing operation thus displacing the metal upon opposite sides of each slit in opposite directions, and elongating or stretching the metal upon both sides of the slitted portion, thereby separating the adjacent edges of each slit to form openings or slots in the plate.

4. The process of making plates for strainers and drainage casings, comprising forming a series of slits in a plate by a shearing operation thus laterally displacing the metal upon one side of each slit, pressing the displaced metal back into the general plane of the sheet or plate, and elongating or stretching the metal upon both sides of the slitted portion, thereby separating the adjacent edges of each slit to form openings or slots in the plate.

5. The process of making plates for strainers and drainage casings, comprising forming a series of slits in a plate by a shearing operation thus displacing the metal upon opposite sides of each slit in opposite directions, pressing the displaced metal back into the general plane of the sheet or plate, and elongating or stretching the metal upon both sides of the slitted portion, thereby separating the adjacent edges of each slit to form openings or slots in the plate.

6. The process of making plates for strainers and drainage casings, comprising forming a series of slits in a plate by a shearing operation, elongating or stretching the metal upon both sides of the slitted portion, thereby separating the adjacent edges of each slit to form openings or slots in the plate, and pressing the edges of the slots upon one side of the plate to thereby upset the metal and form tapering or wedge-shaped openings.

In testimony whereof I affix my signature in presence of two witnesses.

ANDREW SMITH.

Witnesses:

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JAMES M. SPEAR.