A. SMITH.

PROCESS FOR MAKING WELL CASING.

APPLICATION FILED JUNE 2, 1911.

1,028,066.

Patented May 28, 1912.

Fig 1

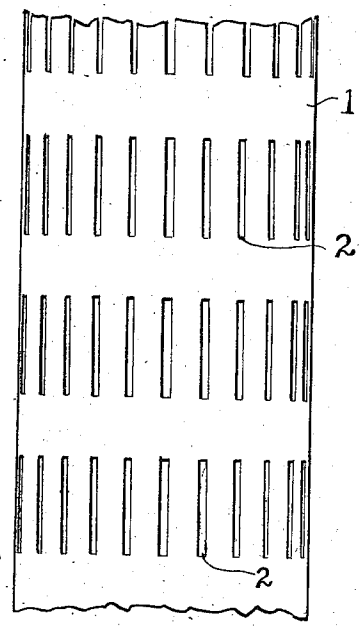


Fig 3

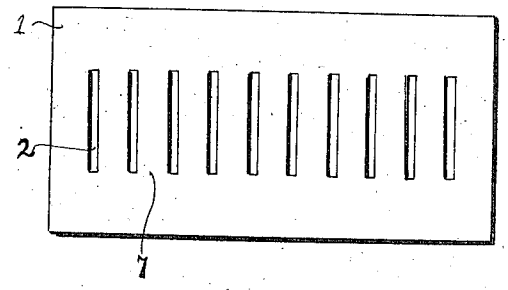


Fig 4

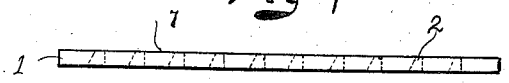


Fig 5

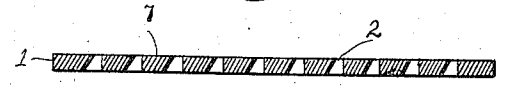


Fig 2

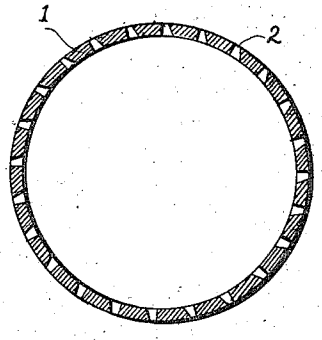


Fig 6

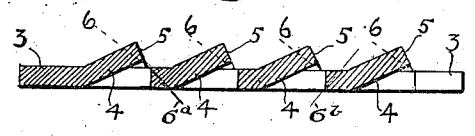


Fig 7

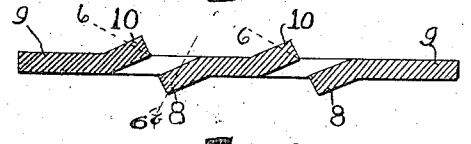
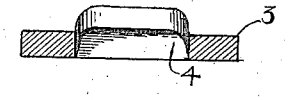


Fig 8



WITNESSES

H. B. Clark

B. M. Freund

INVENTOR

A. Smith

BY

Carlos P. Griffin

ATTORNEY

UNITED STATES PATENT OFFICE.

ANDREW SMITH, OF SAN MATEO, CALIFORNIA, ASSIGNOR TO SMITH METAL PERFORATING COMPANY, OF SAN MATEO COUNTY, CALIFORNIA.

PROCESS FOR MAKING WELL-CASING.

1,028,066. Specification of Letters Patent. Patented May 28, 1912.

Original application filed April 13, 1909, Serial No. 489,642. Divided and this application filed June 2, 1911. Serial No. 630,886.

To all whom it may concern:

Be it known that I, ANDREW SMITH, citizen of the United States, residing at San Mateo, in the county of San Mateo and State of California, have invented a new and useful Process for Making Well-Casings, of which the following is a specification in such full and clear terms as will enable those skilled in the art to construct and use the same.

This invention relates to a process of manufacturing perforated well casing, and the object is to produce perforated metal sheets to be formed into pipe or to be otherwise used, wherein the perforations therein are of less width than the thickness of the metal sheets.

Another object of this invention is to produce perforated metal plates for well casing and for other similar uses, in which there will be a multitude of small openings of less width than the thickness of the pipe, and which openings are wider on one side of the plate than on the other side thereof, whereby fine materials will be prevented from clogging said openings where the narrowest side of the slit is placed on the side against which the fine materials bear.

Another object of the invention is to produce a pipe which will have its outer surfaces as smooth as possible considering the large number of inlet openings to be produced therein.

Other objects of the invention will appear as the description proceeds.

This invention is a divisional application of application Ser. No. 489,642, filed April 13, 1909.

The drawings in which the same numeral of reference is applied to the same portion throughout the several views, illustrate several forms of plates formed by this process.

Figure 1 is a side elevation of a length of pipe having slots therein formed by this method. Fig. 2 is a cross section plan view of such a length of pipe. Fig. 3 is a plan view of a small plate having slots formed therein by the method herein described. Fig. 4 is a side elevation of a plate having slots formed therein as described herein, said slots being indicated by dotted lines. Fig. 5 is a side sectional view of the plates shown in Fig. 3. Fig. 6 is a sectional view illustrating the manner of forming the opening in the plate and cutting off a portion of the same, and Fig. 7 is a sectional view of the plate showing the lips formed therein bent in opposite directions, whereby the total movement of any given lip is reduced one-half over that necessary in Fig. 6. Fig. 8 is an end view of Fig. 6.

The numeral 1 represents a formed tube in which there are a plurality of series of slits 2, said slits extending around the tube in several annular series, their long dimension extending longitudinally of the tube. It is obvious that the slits may extend transversely of the tube or sheet or in any other direction that is desired. These slits are formed in the metal by pressing up such a body of metal 3 (see Fig. 6) as is illustrated at 4, the amount of metal to be formed up into the lip 4 to be determined by the capability of the punch forming the same. That is to say, it has been found by experience that the smallest hole that can be produced in any given plate of the harder metals by the ordinary punching process is not less than the thickness of the plate, punches or dies having one dimension smaller than the thickness of the plate being unable to stand the work of punching. In this case the lip thus produced is smoothly sheared along the edge 5 and the length of the metal distorted to produce the cut is about twice the thickness of the plate, thus enabling a very strong punch to be used. After the projection has been punched up as shown at 4, the outer end of the projecting portion is cut off along the line 6, by any suitable cutting or shearing means. I have shown this cut at an acute angle to the plane of the metal sheet, but it is obvious that it may be cut or sheared at other angles depending upon the shape of the resulting slot which is desired. The casing may then be used in that form, should it be so desired, but to produce a very smooth casing the projection 4 is then rolled back into the plane of the plate as shown at 7 in Figs. 3 to 5 inclusive. It will be obvious that instead of cutting a portion from the projecting portion or lip 4, the cut may be made along the line 6^a from the adjacent metal upon the opposite side of the slit, and when the projecting lip is pressed back into the plane of the sheet, a tapering slot will result as

before. In case the metal is cut from the projection along the line 6, and also from the adjacent metal upon the opposite side of the slit along the line 6^b, a V-shaped slot will result when the projection is pressed back into the plane of the sheet. It will of course be understood that in forming tiling or well casing from plates that have been treated in this manner, it is necessary to place the narrow side of the slot outwardly so that it will retain the particles outside the casing, any particles passing through the smallest opening not being detained therein owing to the fact that the slot gets larger as it goes in.

It will be noted that such a method as is here carried out produces slits with substantially smooth walls, since the die and punch forming the lip or projection fit closely together. It will also be noted that the minimum amount of the edge 5 in the form of the invention disclosed in Fig. 6 is something slightly greater than the thickness of the metal of the plate in order that the edge 5 may be free from the body of the plate 3 to permit the removal therefrom of the portion sheared along the line 6. However, its total amount may be reduced by moving the metal on opposite sides of the slit to be produced a small amount more than one-half the thickness of the plate as illustrated in Fig. 7, in which the lips or projections 8 are each moved downwardly slightly more than one-half the thickness of the plate 9, while the projections 10 are moved upwardly slightly more than one-half the thickness of the plate thus producing an opening which enables the cutters or shears to cut off the requisite amount from the end of either of the projections. It will be obvious that the metal may be sheared from the projections without the necessity of forcing the projections out beyond the plane of the sheet, that is, an amount equal to the thickness of the sheet. This metal may then be used in that form or it may be rolled back into the plane of the main sheet as desired. It will be clear that this metal may be used in any place where metal having a considerable number of slots of less width than the thickness of the metal is desired.

Having thus described my invention what I claim as new and desire to secure by Letters Patent of the United States, modifications within the scope of the claims being reserved, is as follows:

1. In a process of producing perforated metal plates, slitting the same to form openings, forcing the edges of the metal adjacent the slit outward to form projecting portions, and cutting the terminal portions therefrom, thereby forming open passages regardless of the position of the said edges.

2. In a process of producing perforated metal plates, slitting the same to form openings, forcing the edges of the metal adjacent the slit outward to form projecting portions, cutting the terminal portions therefrom, and bending the projecting portions backward toward the plane of the plate.

3. In a process of producing perforated metal plates, slitting the same to form openings, forcing the edges of the metal adjacent the slit outward to form projecting portions, cutting the terminal portions therefrom, and bending the projecting portions backward into the plane of the plate.

In testimony whereof I have hereunto set my hand this 23d day of May, A. D. 1911, in the presence of the two subscribed witnesses.

ANDREW SMITH.

Witnesses:
C. P. GRIFFIN,
HENRY B. LISTER.