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H. A. MERGES ETAL

3,339,731

SCREEN DRUM

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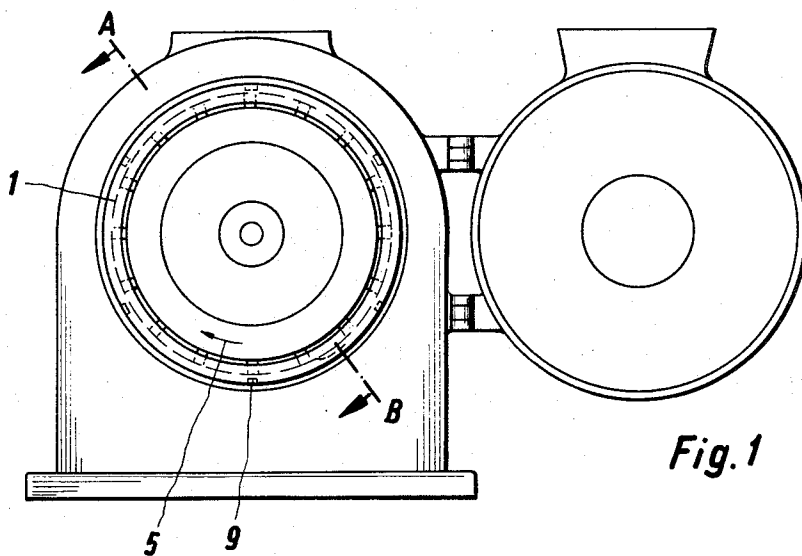


Fig. 1

Fig. 3

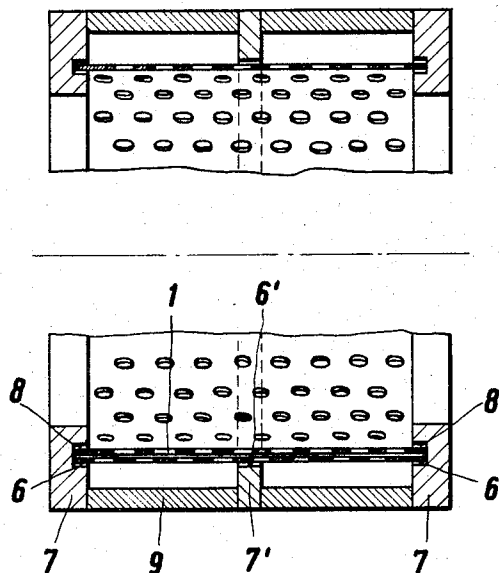
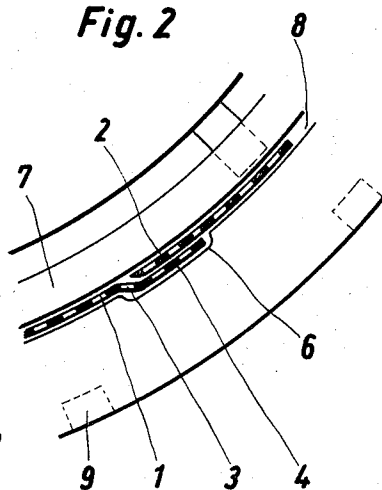


Fig. 2



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SCREEN DRUM

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C 29,771

3 Claims. (Cl. 209—406)

This invention relates to a screen drum. More specifically, this invention is directed to a cylindrically shaped screen which may be used particularly in conjunction with pulverizers.

Heretofore, cylindrical screens for pulverizers have been made by bending perforated sheetmetal plates to a cylinder and welding their adjoining ends together. Pulverizers and employing screens of the type described before, particularly hardened screens, have the disadvantage that their reliability in operation is often affected by cracks in the welded joints of the screen. Such cracks are caused by the high stresses to which the screens are exposed in operation. Experience has shown that such damages are mainly due to the detrimental welding effects on the material.

Accordingly, it is a primary object of this invention to provide a screen drum in which the detrimental welding effects on the adjoining ends of the drum are eliminated.

Another object of the invention is to construct the adjoining ends of a cylindrically shaped screen in such a manner that no oversize will enter the finished ground product.

A further object of the invention is to accomplish the objects set forth before without requiring techniques that are more complicated than those required in making conventional screen drums.

According to the invention, a cylindrically shaped screen is provided, one end portion of which is offset so as to overlap the other end portion about $1\frac{3}{16}$ in. If desired, the non-offset end portion of the two overlapping end portions can be bevelled at its front edge so as to correspond to the offset end portion, thereby insuring a smooth transition between the inner surface of the end portions of the screen. With this arrangement no joining of the end portions by welding is required, if, according to the invention, the cylindrical screen plate is inserted at its edges into slots in the inner lateral screen supporting ring surfaces. These rings are spaced apart and secured in place by transverse connecting members. In this manner the offset end portion, which extends slightly from the periphery of the screen drum, can be advantageously used to secure the screen plate in place, thereby preventing it from being displaced relative to the drum. For this purpose, the slots in the screen supporting rings have wider sections to receive the offset overlapping end portion of the cylindrical screen plate.

Preferably, the screen drum of the invention is inserted into a mill in such a manner that the grinding elements rotate in the direction of the non-offset end portion of the screen plate. The screen arrangement of the invention has given excellent results when used in conjunction with perforated plates of the type employed in mills and pulverizers.

A preferred embodiment of the invention is described, by way of example, in the following specification, reference being had to the accompanying drawings, in which

FIGURE 1 is a vertical cross-section through a screen drum of the invention, the drum being disposed in a mill housing;

FIGURE 2 is an enlarged detail view, and

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FIGURE 3 is a cross-sectional view of the enlarged drum portion of FIG. 2.

Referring now more particularly to the drawings, there is shown at 1, a perforated cylinder whose one end 2 is unbent and bevelled at its front edge. The other end of the perforated cylinder 1 is offset as at 3 so as to overlap the one end 2 as at 4. The arrow (FIG. 1) indicates the direction of rotation of the grinding elements, which governs the direction in which the perforated cylinder is counted. Assuming the grinding elements to rotate as indicated by arrow 5 (FIG. 1), the perforated cylinder is mounted as shown in FIGS. 2 and 3.

The holding rings 7 of the drum have annular slots 8 and recesses 6 in their lateral surfaces to receive the screen plate and the offset, overlapping portion 4, respectively, of the cylindrical screen plate. Furthermore, a supporting ring 7' is provided to increase the rigidity of the entire structure. Ring 7' has also a recess 6' similar to recess 6.

As has been stated previously, the offset end portion overlapping the other end portion of the perforated cylinder, in conjunction with the corresponding recesses in the holding rings 7, also serves the purpose of securing the cylinder in place thereby preventing it from being displaced. Rings 7, 7' are coupled together by means of transverse connecting members 9. Of course the drum can be provided with a plurality of intermediate rings 7'.

While the novel features of the invention as applied to a preferred embodiment have been shown and described, it will be obvious that modifications of the screen drum illustrated may be made without departing from the spirit and the scope of the invention. Accordingly, the scope of this invention is to be governed by the language of the following claims constructed in the light of the foregoing description of this invention.

What is claimed is:

1. A screen drum, particularly for use in pulverizers or mills, said drum comprising:

a cylindrical screen plate; overlapping end portions of said plate extending axially along said drum to form a seam;

one of said end portions of said cylindrical screen plate being radially peripherally offset at said seam so as smoothly to overlap the other non-offset end portion;

outer axially spaced screen supporting rings; a transverse axial connecting member between said rings, securing said rings in position;

inner lateral plate retaining slot recesses in said supporting rings; and

the offset end portions of said screen plate engaging into said slot recesses in said supporting rings.

2. A screen drum as claimed in claim 1, which comprises at least one intermediate screen supporting ring between the outer screen supporting rings, said intermediate ring being provided with a plate retaining slot recess for engagement with said screen plate.

3. The screen drum as claimed in claim 1 wherein the non-offset end portion of the cylindrical screen plate is bevelled at its front edge so as to permit said front edge to engage said offset portion of the other screen-plate end.

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