Jan. 29, 1929.

1,700,565

W. ERNST ET AL

LAMINATED CURB

Filed Sept. 6, 1927

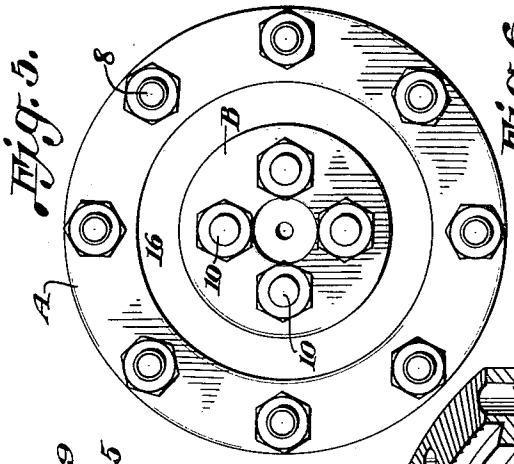

Fig. 5.

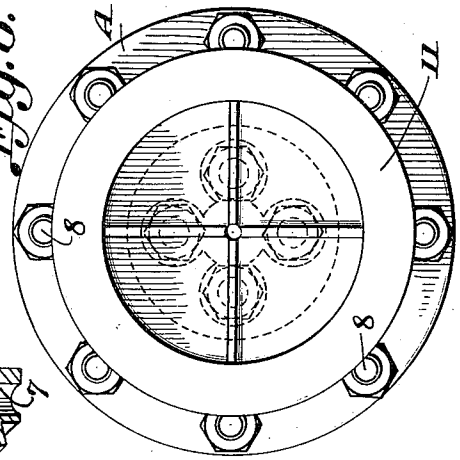

Fig. 6.

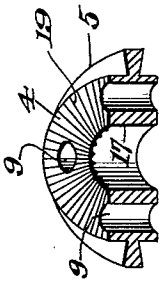

Fig. 2.

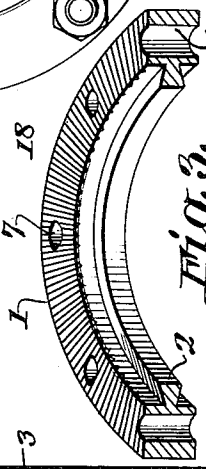

Fig. 3.

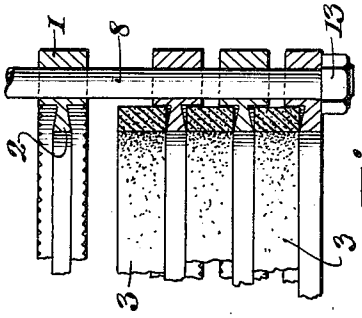

Fig. 4.

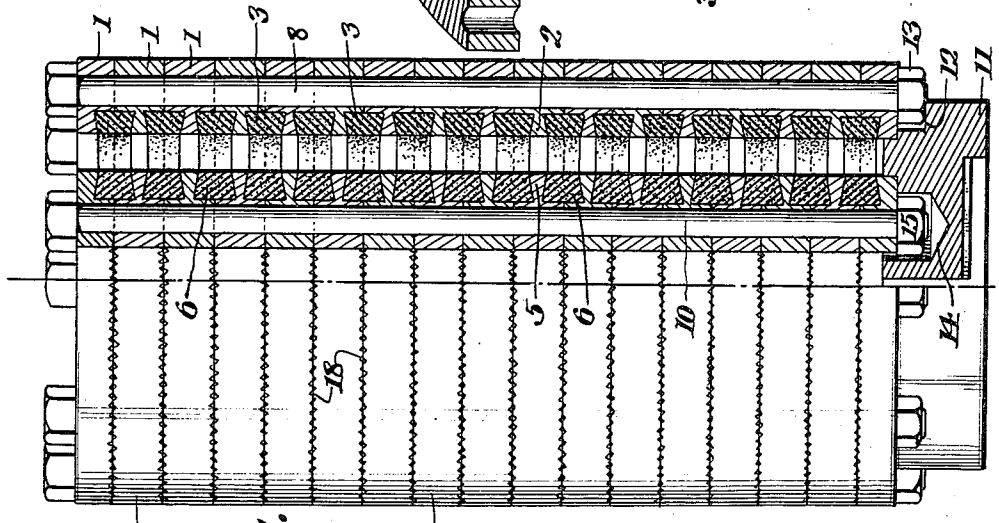

Fig. 1.

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Patented Jan. 29, 1929. 1,700,565

UNITED STATES PATENT OFFICE.

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LAMINATED CURB.

Application filed September 6, 1927. Serial No. 217,694.

In extracting liquids from solids, it is necessary that a large area of the material be exposed when the solids are subjected to pressure in relation to the volume of material employed. Practical experiments have shown that little or no drainage can be obtained through the material itself, which seems to have a tendency to confine the liquid and keep it from draining even under enormous pressures. The first requisite therefore of a successful curb to be used in extracting liquids from solids is that it shall be so designed that the area of material exposed to the pressure shall be as large as possible in relation to the volume of material employed.

It is also desirable that the drainage be arranged in such manner that the material cannot clog the openings through which the drainage takes place. In previous constructions, materials have been separated at right angles to the application of force, and the material has been wrapped in press cloth in order to keep it from clogging the drainage openings. Such constructions are cumbersome and uneconomical because they render continuous operation impossible and necessitate the use of press cloth, which is an important item in the running expense.

The object of the present invention is to provide a construction in which both of the necessary features for obtaining successful drainage shall be embodied in a simple construction.

In the drawings:

Figure 1 is a side elevation of a curb with part in vertical section.

Figure 2 is a perspective view of one-half of one of the inner ring members divided on a vertical plane.

Figure 3 is a similar view of one-half of an outer ring member.

Figure 4 is a side elevation with parts in section showing the manner of assembling the elements of the curb.

Figure 5 is a top plan view of the construction shown in Figure 1.

Figure 6 is a bottom plan view of the same.

The curb as illustrated consists of an outer shell A and an inner shell B. It is to be understood, however, that the invention is not limited to two shells, as there may be employed any desired number of concentric shells.

These shells are shown as being cylindrical, but this is not an essential feature of the invention, since the curb may be oblong or square, or have any desired regular shape.

The outer shell is built up by the plurality of metal rings 1, each of which has an inner projecting rib 2 of the form shown in Figure 3, so that when two rings are placed one upon another the space between two projecting ribs 2 will be dovetailed in form, as clearly shown in the drawings.

These dovetailed grooves form seats in which are placed felt rings 3 which are preferably oversized, and which are compressed as hereinafter set forth.

The inner shell B is built up of a plurality of similar rings 4, each of which has a rib 5 extending around its outer periphery of a shape similar to the rib 2. When two plates are pressed together a dovetailed seat is formed on the outside of the inner shell, and felt rings 6 are placed in these seats. If a plurality of rings greater than 2 is employed, it is obvious that all except the inner and outer will have ribs on both the inner and outer surfaces.

Metal rings 1 are provided with a plurality of bolt openings 7 therethrough, through which are adapted to pass bolts 8, which may be provided at both ends with nuts whereby the rings are drawn together, and the felt rings 3 are placed under the desired pressure. The rings 4 of the inner shell are provided with similar openings 9 through which pass bolts 10.

A bottom plate 11 is provided, having cutouts around its edge, in which fit a part of the nuts 13 of the bolts 8, and also having depressions 14 to receive the nuts 15 on the lower ends of the bolts 10. This bottom plate may be held in any desired manner, and may be rigid, semi-rigid, or floating. When the inner and outer shells are positioned upon the base plate 11, there will be an annular space 16 forming a pressing chamber between the same which will receive the material to be pressed. There will also be a central cylindrical space within the inner shell. Both the upper and lower surfaces of the rings 1 are provided with radial drainage grooves or outlets 18 which are about one thirty-second of an inch deep. Both surfaces of the rings 4 are provided with similar drainage grooves 19.

The curb constructed as above and held

in any desired manner has the annular pressing chamber 16 filled with material to be pressed, and a plunger is forced into said space in close contact with the inner and outer rings. The liquid extracted from the material will be forced through the felt rings and pass along the drainage grooves 18 and 19 into appropriate receptacles. It is to be noted that, since the dovetailed seats conjointly formed by the ribs on adjacent rings are comparatively narrow at their open sides, the felt packing will be more highly compressed at its working surface than elsewhere. This renders the packing more dense at its working surface than elsewhere, and, due to the progressively receding walls of the dovetail seat, the packing is rendered less dense, progressively, from its working surface. Though liquid may pass through the more highly compressed working surface of the packing, the pores of said packing are sufficiently closed to prevent their being clogged by small particles of solid material, and the flow of the liquids through the remainder of the packing is facilitated by means of the progressively more open condition of the packing. It is immaterial for the purpose of this invention how the plunger is operated, and therefore it has not been illustrated.

It is obvious that other material may be used instead of the felt described, since it is only necessary that the rings permit the passage of liquid and obstruct the passage of the material itself. While bolts have been shown for the purpose of placing the various rings forming the two shells under desired pressure, it is obvious that other means of holding the parts together may be employed. If the plunger is operated by hydraulic pressure, it may be desirable to have the rings themselves held together by hydraulic pressure, in which case the pressure which holds together the rings may increase simultaneously with the increase of pressure upon the plunger. It is then apparent that I have provided a curb for use in extracting liquids from solid materials comprising a plurality of concentric shells A and B having opposed faces, said faces being spaced to form a pressing chamber, the shells including a plurality of superposed rings 1 and 4 respectively and provided with drainage outlets 18 and 19, adjacent rings being conjointly formed on their opposed faces with annular seats communicating with said drainage outlets, and an annular filtering packing located in each of said seats and having one face thereof completely exposed to material being worked within said chamber.

Other minor changes may be made without in any way departing from the spirit of the invention. It is obvious that the above arrangement provides a construction which conforms with the two main principles necessary for a successful curb to be employed in connection with presses for extracting liquids from solids. It provides a construction in which the use of press cloth or similar material is avoided, since the felt rings or their equivalents will require replacement only at long intervals. There is no possibility of clogging the drainage openings, and there is a very large exposed surface relative to the small volume of material under pressure. In general it is to be understood that the invention is to be regarded as limited only by the scope of the appended claims.

We claim as our invention:

1. A curb for use in extracting liquids from solid materials comprising a plurality of concentric shells having opposed faces, said faces being spaced to form a pressing chamber, each shell including a plurality of superposed rings provided with drainage outlets, adjacent rings being conjointly formed on their opposed faces with annular seats communicating with said drainage outlets, and an annular filtering packing located in each of said seats and having one face thereof completely exposed to material being worked within said chamber.

2. A curb for use in extracting liquids from solid materials comprising a plurality of concentric shells having opposed faces, said faces being spaced to form a pressing chamber, each shell including a plurality of superposed rings provided with drainage outlets, adjacent rings being conjointly formed on their opposed faces with annular seats communicating with said drainage outlets, and an annular filtering packing located in each of said seats and having one face thereof completely exposed to material being worked within said chamber, the combined working surface of said packing being greater than the combined working surface of the opposed faces of said rings.

3. A curb for use in extracting liquids from solid materials comprising a plurality of concentric shells having opposed faces, said faces being spaced to form a pressing chamber, each shell including a plurality of superposed rings provided with drainage outlets, adjacent rings being conjointly formed on their opposed faces with annular seats communicating with said drainage outlets, an annular filtering packing located in each of said seats and having one face thereof completely exposed to material being worked within said chamber, and means associated with each shell for drawing said rings together to clamp said packing in the seats.

4. A curb for use in extracting liquids from solid materials comprising a plurality of concentric shells having opposed faces, said faces being spaced to form a pressing chamber, each shell including a plurality of

superposed rings provided with drainage outlets, adjacent rings being conjointly formed on their opposed faces with annular seats of substantially dovetailed form communicating with said drainage outlets, an annular filtering packing located in each of said seats and having one face thereof completely exposed to material being worked within said chamber, and means associated with each shell for drawing said rings together to clamp said packing in the seats, whereby the packing is more highly compressed at its exposed surface than at other parts thereof.

5. A curb for use in extracting liquids from solid materials comprising a plurality of concentric shells having opposed faces, said faces being spaced to form a pressing chamber, one of the shells including a plurality of superposed rings provided with drainage outlets, adjacent rings being conjointly formed on their opposed faces with annular seats communicating with said drainage outlets, and an annular filtering packing located in each of said seats and having one face thereof completely exposed to material being worked within said chamber.

6. A curb for use in extracting liquids from solid materials comprising a plurality of concentric shells having opposed faces, said faces being spaced to form a pressing chamber, one of the shells including a plurality of superposed rings provided with drainage outlets, adjacent rings being conjointly formed on their opposed faces with annular seats of substantially dovetailed form communicating with said drainage outlets, and annular filtering packing located in each of said seats and having one face thereof completely exposed to material being worked within said chamber, and means associated with each shell for drawing said rings together to clamp said packing in the seats, whereby the packing is more highly compressed at its exposed surface than at other parts thereof.

In testimony whereof, we have hereunto subscribed our names.

WALTER ERNST.
HOWARD F. MacMILLIN.