

No. 813,014.

PATENTED FEB. 20, 1906.

C. W. MERRILL.
CONTAINER FOR FILTER PRESSES.

APPLICATION FILED MAY 3, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

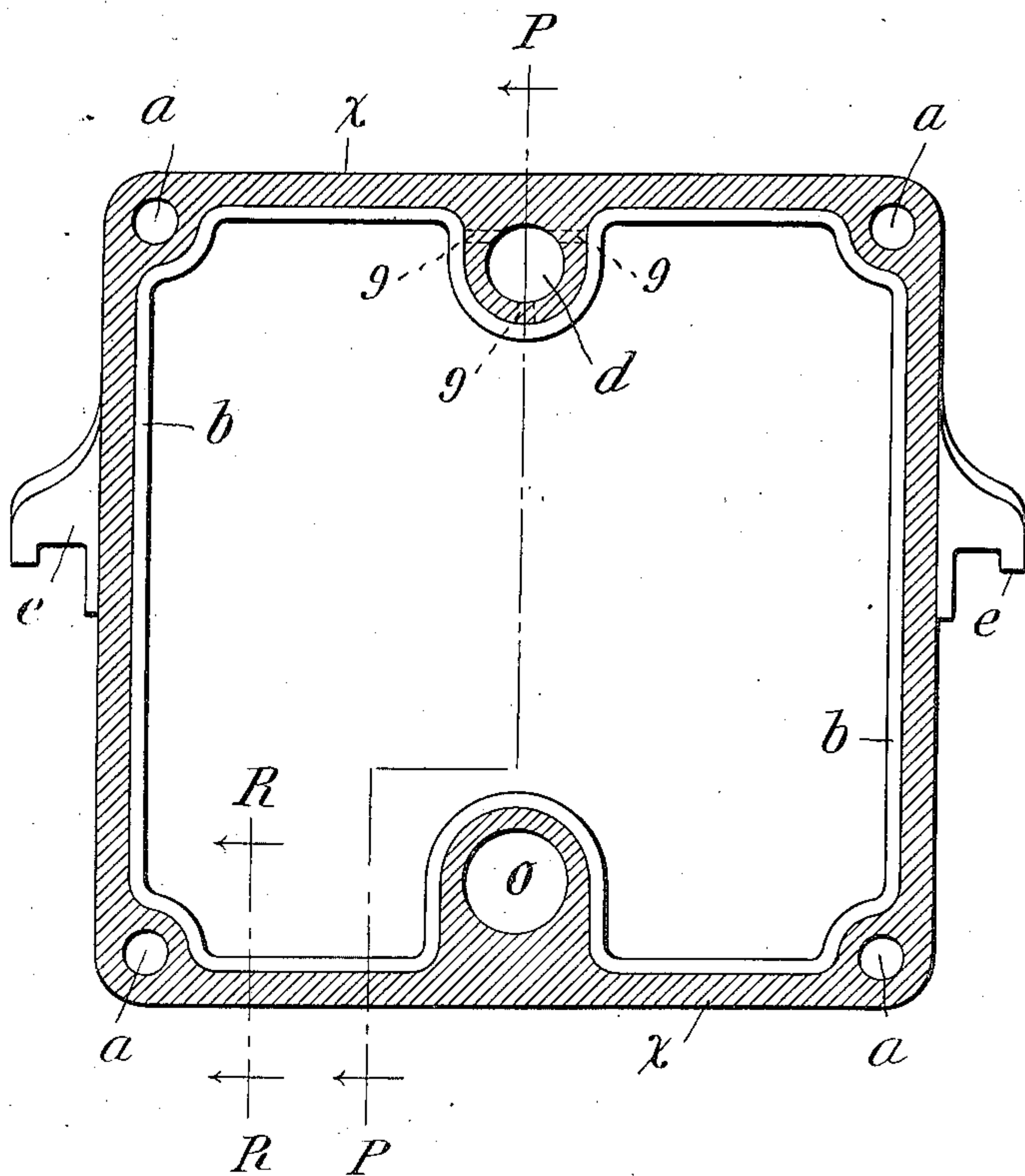


Fig. 2.

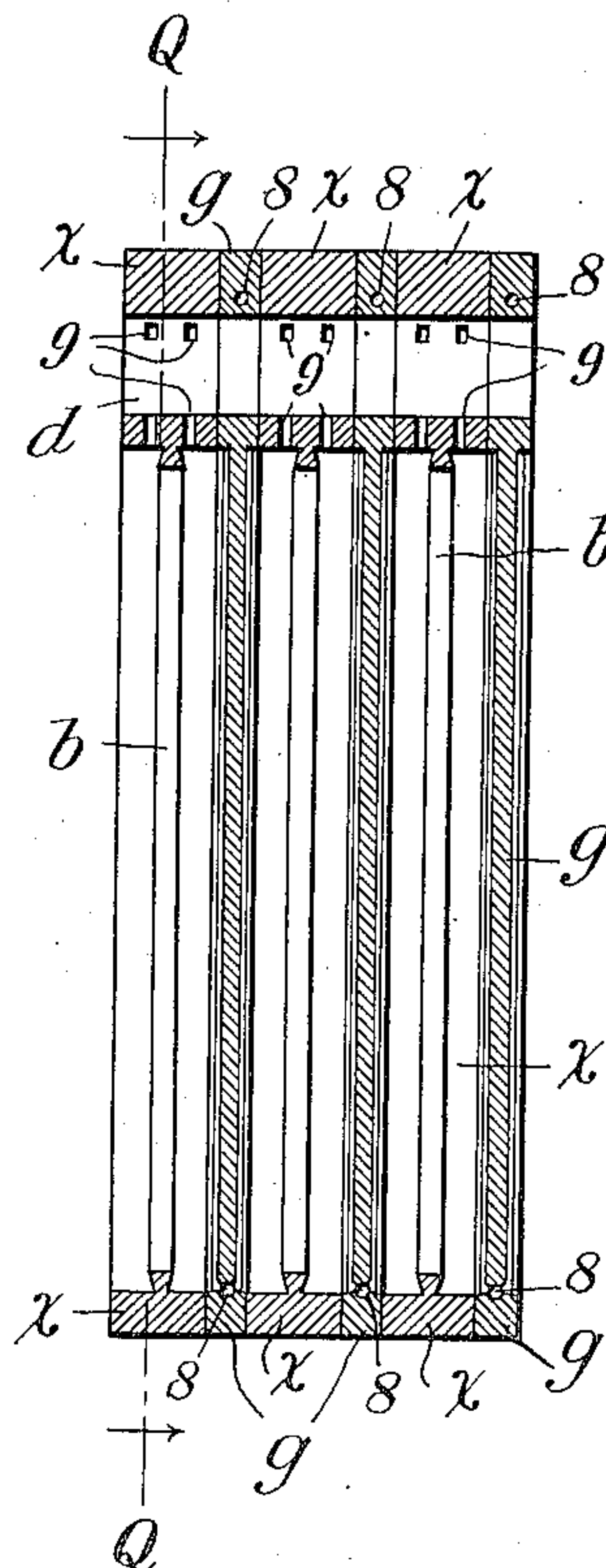


Fig. 4.

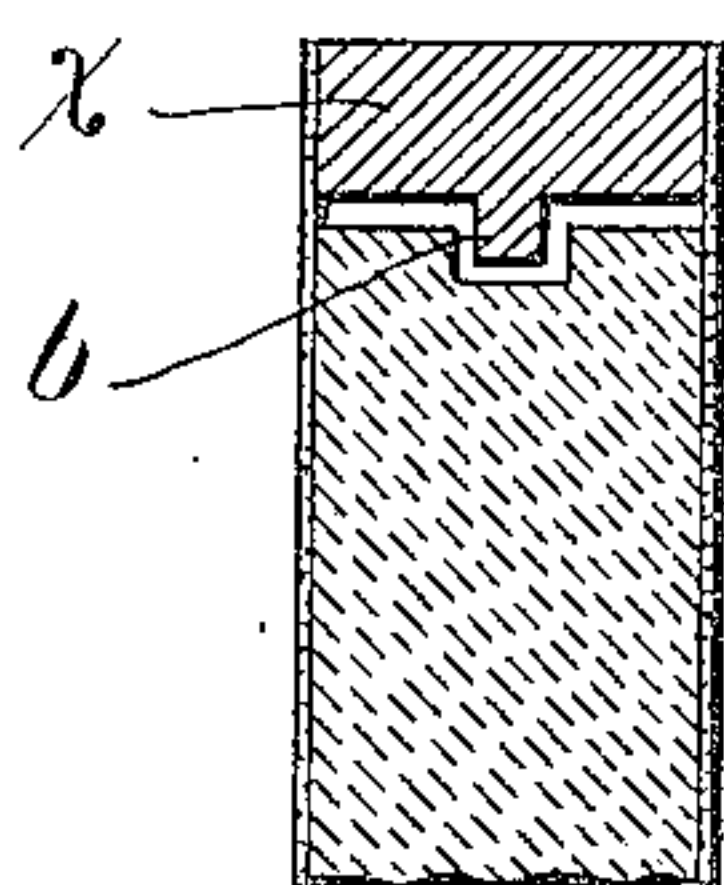


Fig. 3.

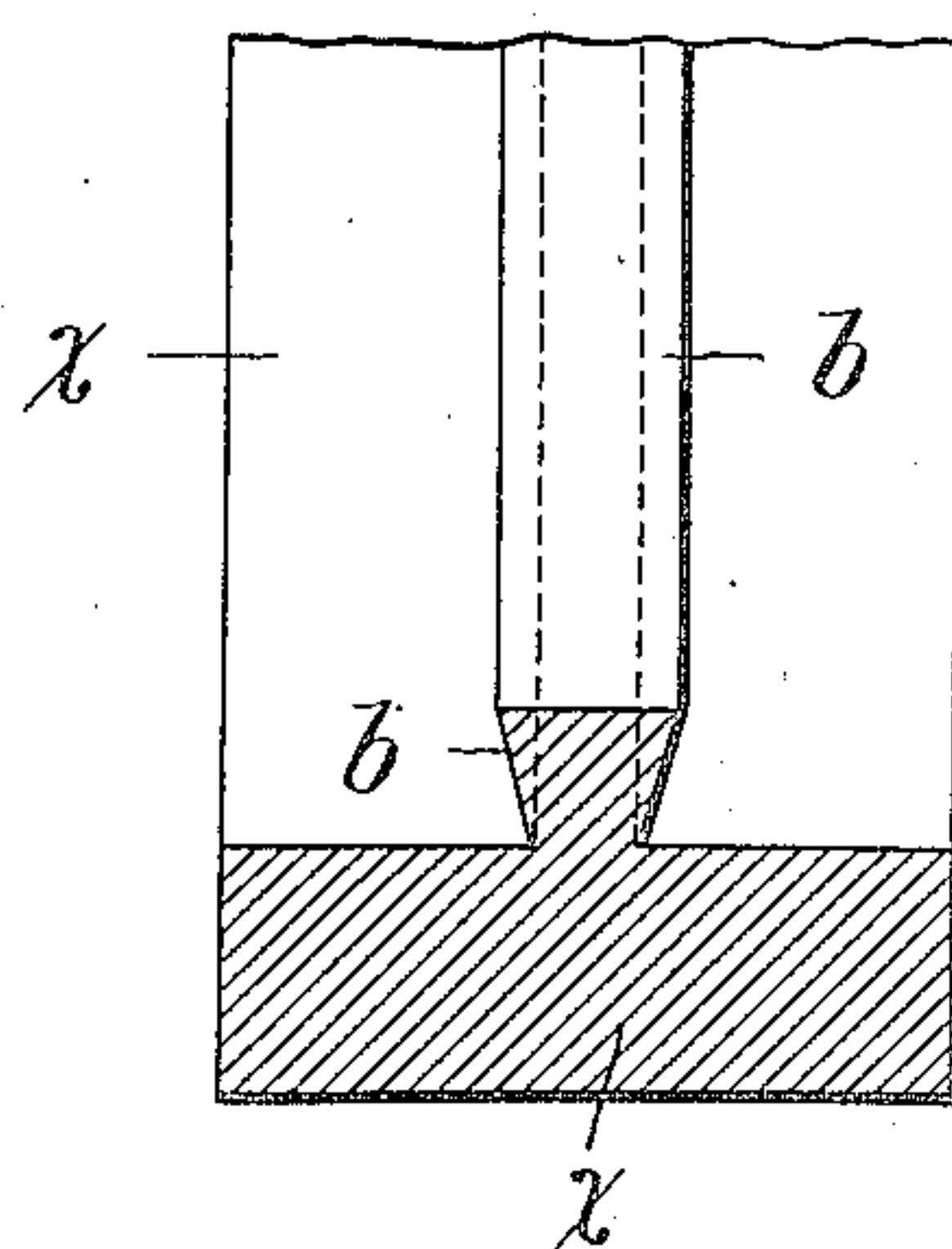
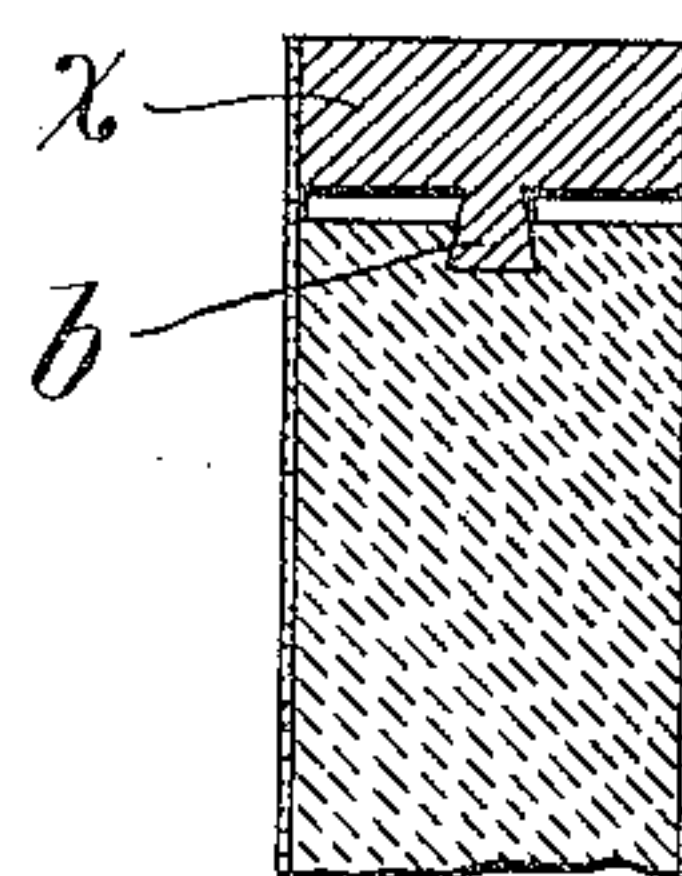


Fig. 5.



WITNESSES:
C. E. Ashley
Charles Engw.

INVENTOR:
Charles W. Merrill
By his Attorney
Willard Parker Butler

No. 813,014.

PATENTED FEB. 20, 1906.

C. W. MERRILL.
CONTAINER FOR FILTER PRESSES.

APPLICATION FILED MAY 3, 1905.

2 SHEETS—SHEET 2.

Fig. 6.

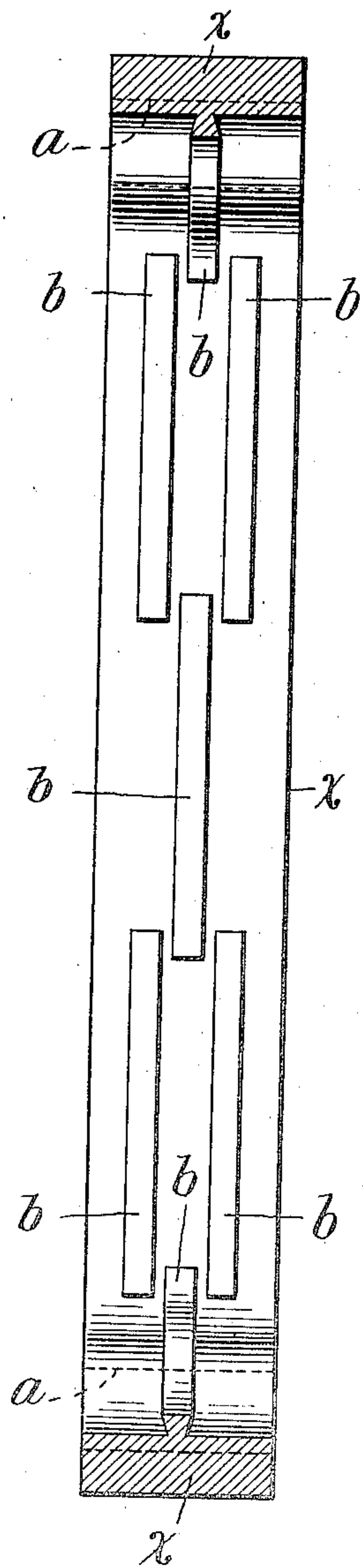
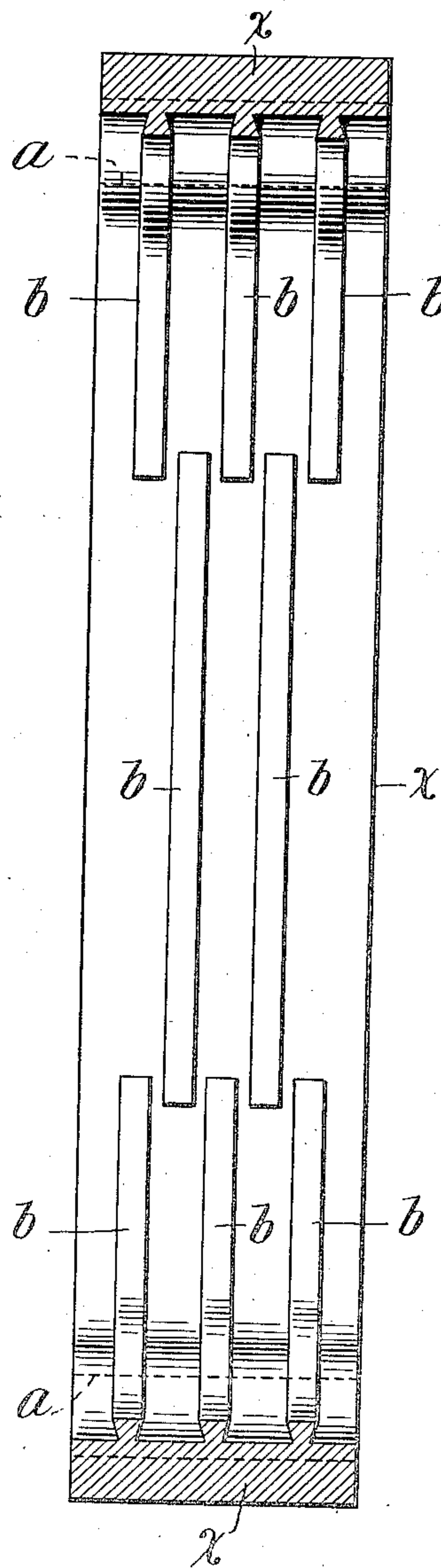


Fig. 7.



WITNESSES:

C. E. Ashley
Charles Engel

INVENTOR

Charles W. Merrill
By his Attorney,
Wm. H. Keeney

UNITED STATES PATENT OFFICE.

CHARLES W. MERRILL, OF LEAD, SOUTH DAKOTA.

CONTAINER FOR FILTER-PRESSES.

No. 813,014.

Specification of Letter's Patent.

Patented Feb. 20, 1906.

Application filed May 3, 1905. Serial No. 258,650.

To all whom it may concern:

Be it known that I, CHARLES W. MERRILL, a citizen of the United States, and a resident of Lead, county of Lawrence, State of South Dakota, have invented a new and useful Improvement in Containers for Filter-Presses, of which the following is a specification.

My invention relates to improvements in the containers of pressure-filters; and the object of the same is to facilitate the removal of gases or liquids from the interstitial spaces of the solid or semisolid contents of said containers.

In the operation of filter-presses or similar pressure-filters and the treatment of the contents thereof it is frequently advisable to remove the liquid or gas from the interstitial spaces of the solid or semisolid contents of the containers. Containers which have heretofore been used in the ordinary forms of filter-presses have generally been constructed with unbroken or continuous inside surfaces, which are parallel to the main or longitudinal axis of the filter-press. In all such containers the attempt to remove or replace the liquid or gas from the interstitial spaces of the solid or semisolid contents by the application of any gas or liquid under pressure results in the so-called "replacing gas or liquid" following the unbroken or continuous inner surface of the containers, because such continuous surfaces offer to it the lines of least resistance. As a result thereof the removal or replacement of the liquid or gas is imperfect, even when the solid or semisolid contents are in contact with the whole of the inner surface of the container, and an undesirable mixing of the contained gas or liquid with the replacing gas or liquid results. Moreover, it frequently happens that after filling the containers with solid or semisolid material a certain amount of settling occurs, particularly when containers of large dimensions are used. As a result there is a loss of contact between the solid or semisolid material and the inner surface of the container, as a result of which the replacing gas or liquid passes through the space so formed instead of through the solid contents itself. To obviate this difficulty containers have been provided with ribs or corrugations on their inner surfaces, as shown in the form described in the United States patent issued to Montgomerie, No. 620,716, dated March 7, 1899; but with containers so formed a shrinkage of the cake

results in an open space, as shown in Fig. 4. A further difficulty presents itself, as the effect of any shrinkage of the cake of precipitated mass in the container which generally occurs is to leave a channel or space of least resistance through which the liquid or gas used in treating the material will pass, for the reason that the shrinkage will separate the cake from the inner surface of the container and leave an open channel through which the air or gas when used in the operation conducted in the filter-press will rush instead of slowly permeating the cake and forcing the water out ahead of it, which is always desirable. Where, however, a rib is made of the inverted-keystone form shown in the drawings, the cake will form solidly around it, and as the large end of the keystone projects into the container the effect will be to prevent the cake from shrinking away from the inner surface of the container or rib, and in this way to form a tight joint between the wedge-shaped rib and the cake.

The invention will be best understood by reference to the accompanying sheet of drawings, in which—

Figure 1 is a vertical section of a container of a filtering-press of the usual form on the line Q Q of Fig. 2. Fig. 2 is a vertical cross-section of a series of containers put together, taken on the line P P of Fig. 1. Fig. 3 is a detail view, on an enlarged scale, of the inner face of the container. Fig. 4 shows the way in which the shrinkage of cake takes place in the ordinary ribbed form of container; Fig. 5, the way in which it takes place in the present of container. Fig. 6 is a sectional view of a container, showing a single rib used in connection with two ribs at certain points; and Fig. 7 is a similar view showing two ribs used in the center of the container and three ribs at top and bottom.

Similar characters refer to similar parts throughout the several views.

In the drawings, *x* represents the walls of the container.

b represents a wedge or keystone shaped rib formed, preferably, in the center of the container, as shown in Figs. 2 and 3.

g represents the filter-plates.

o is an opening or outlet through which the solid, semisolid, or unfilterable material, called for convenience the "precipitate," is removed from the containers and which when a series of containers is put together in a filter-

press makes a continuous opening through the press, which is closed at the end in any convenient manner and discharges into a suitable receptacle. *a* is a corresponding inlet for treating the precipitate in place with liquids, vapors, or gases, which is preferably placed at either or all of the corners of the container and in like manner forms a continuous opening or openings when the containers are placed together in the filter-press. *d* is an inlet through which the material to be filtered is introduced, which inlet is of the same general character and becomes continuous when the containers are put together in a filter-press and is provided with the openings 9 9 9, through which the material is introduced into the chambers. Outlets 8 8 are provided for the effluent liquids, vapors, or gases from the filter-plates, which form no part of the present invention, but is shown here merely for the purposes of describing the operative container.

In the drawings a single rib is shown only on the inner surface of the container; but two or more may be used, if desired, according to the size of the container or the character of the cake, or one may be used along a portion of the inner surface and two or more along the remainder of the surface, the number and grouping of the ribs varying from time to time as may be found expedient.

The material to be filtered enters the press through the channels *d*, which may be located in any point of the inner periphery of the container *x*. The unfilterable material is contained in the containers by cloths which cover the filtering-plate *g*. The filtrate passes through these cloths, whence it is conducted by suitable cores, which may be located along any line of the filtering-plate, either to cocks

provided for each plate or through the outlets 8 into any suitable receptacle.

I claim as my invention—

1. In a filter-press, a container provided with a wedge-shaped element along its inner surface.

2. In a filter-press, a container having an inner surface in the form of a keystone, with the large end extending outward into the interior substantially as described.

3. In a filter-press, a container provided with a keystone-rib along the entire inner surface of said container.

4. In a filter-press, a container provided with a series of keystone-shaped ribs along the entire inner surface of said container.

5. In a filter-press, a container provided with a keystone-shaped rib along a portion of the inner surface of said container.

6. In a filter-press, a container provided with a series of keystone-shaped ribs, along a portion of the inner surface of said container.

7. In a filter-press, a container provided with a series of keystone-shaped ribs along a portion of the inner surface, and a single keystone-shaped rib along the remainder of the inner surface.

8. In a filter-press, a container provided with a certain number of keystone-shaped ribs along a portion of the inner surface, and a varying number of similar ribs along the remainder of the inner surface.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two witnesses.

CHARLES W. MERRILL.

Witnesses:

WM. FRACKELTON;
G. D. FOGLESONG.