

No. 886,384.

PATENTED MAY 5, 1908.

W. W. MARSH & T. W. MORGAN.  
LINER FOR CENTRIFUGAL CREAM SEPARATORS.  
APPLICATION FILED SEPT. 26, 1906.

Fig. 1.

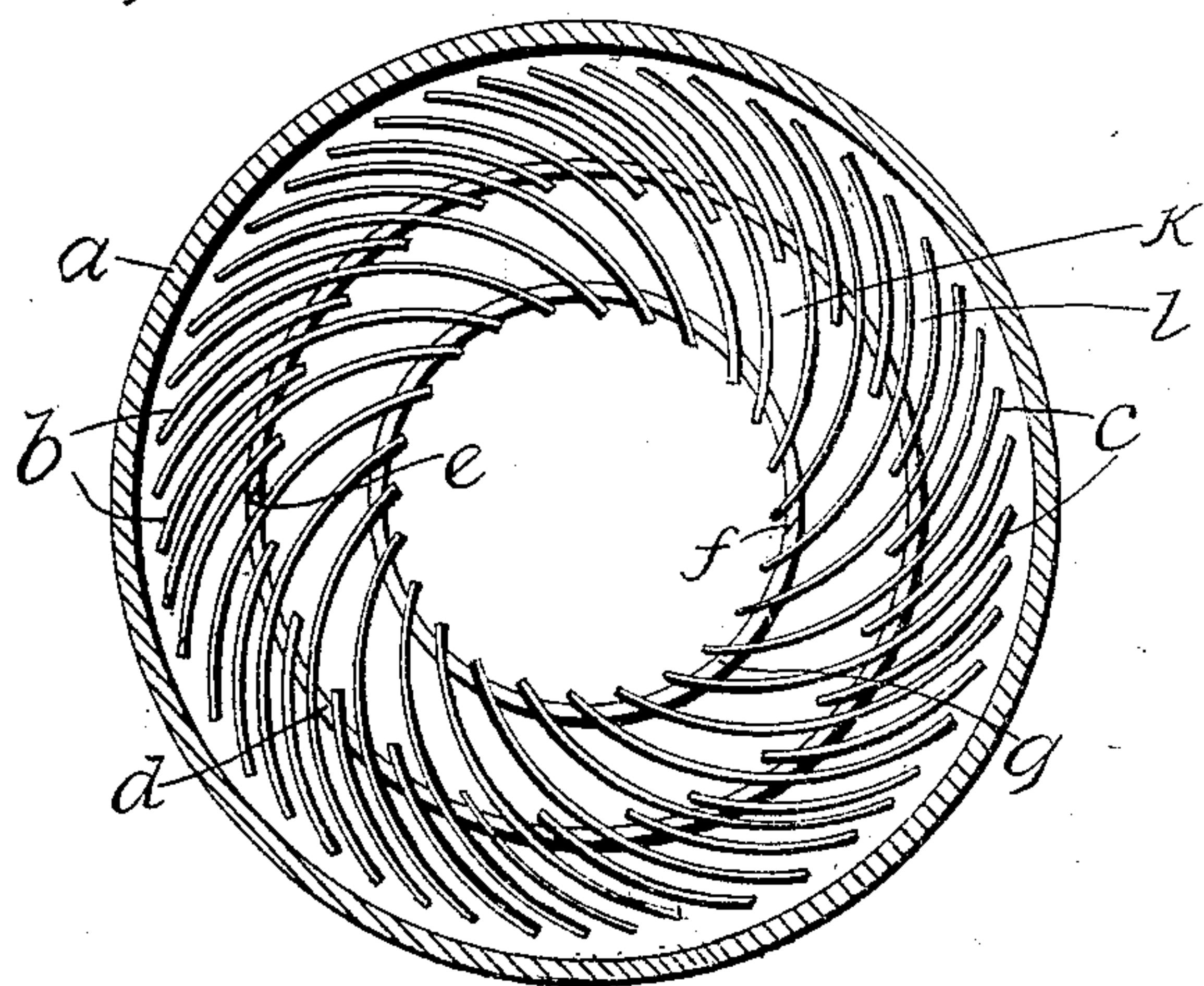


Fig. 2.

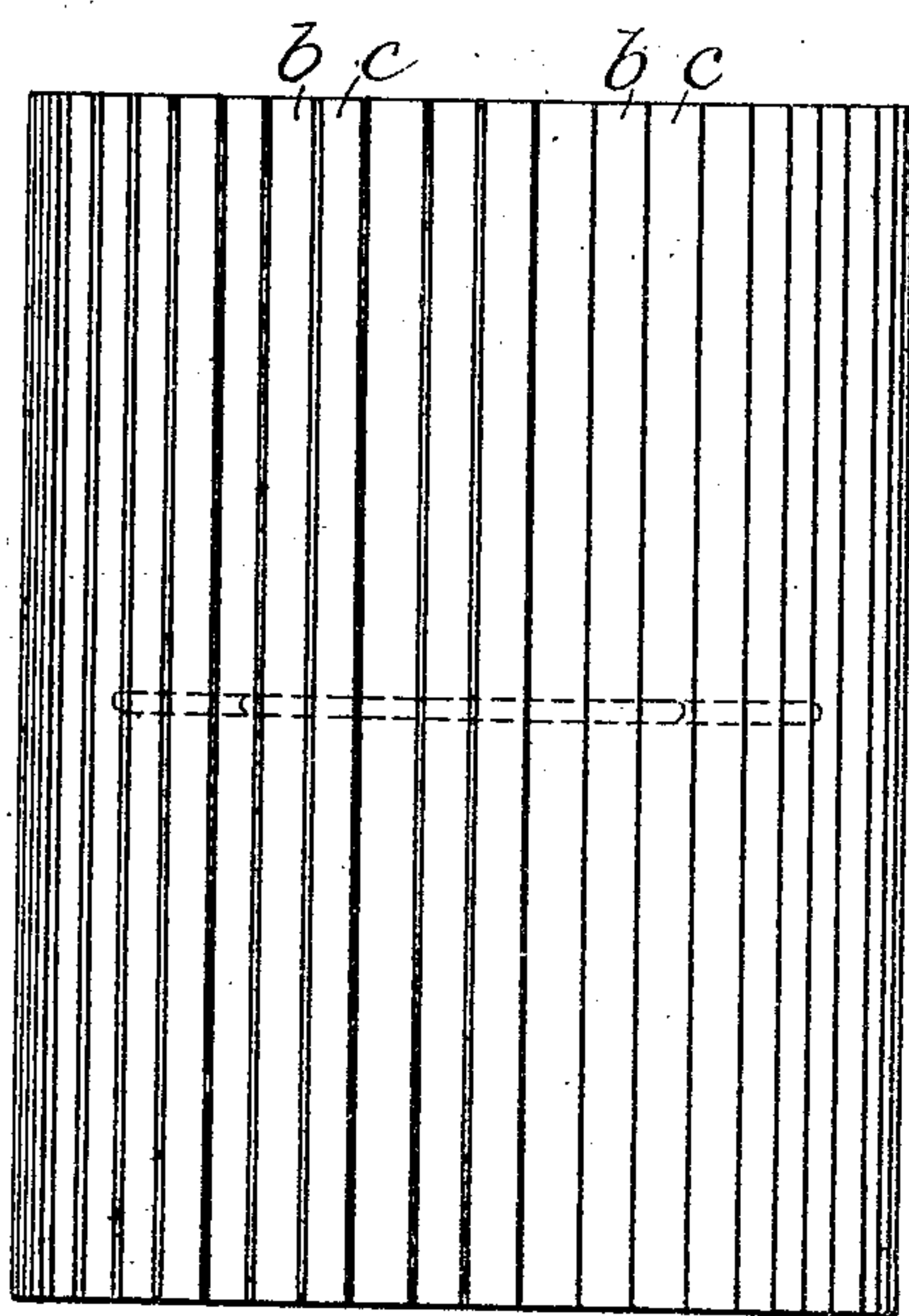
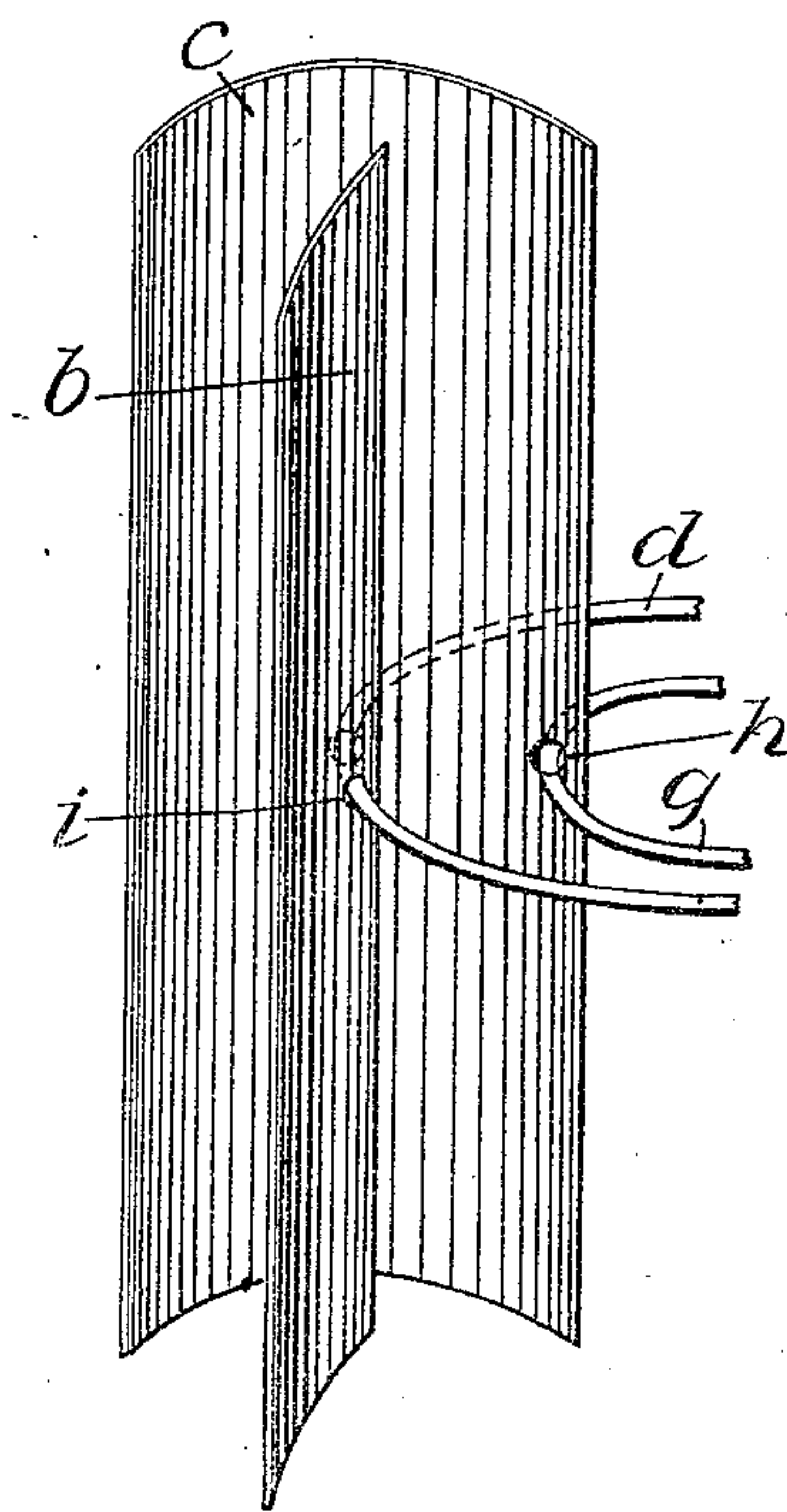


Fig. 3.



WITNESSES:

J. F. Albright  
C. M. Jensen

INVENTORS  
Wilbur W. Marsh, and  
Thomas W. Morgan.

BY

G. C. Kennedy.  
ATTORNEY



# UNITED STATES PATENT OFFICE.

WILBUR W. MARSH AND THOMAS W. MORGAN, OF WATERLOO, IOWA; SAID MORGAN ASSIGNOR  
TO SAID MARSH.

## LINER FOR CENTRIFUGAL CREAM-SEPARATORS.

No. 886,384.

Specification of Letters Patent.

Patented May 5, 1908.

Application filed September 26, 1906. Serial No. 336,221.

*To all whom it may concern:*

Be it known that we, WILBUR W. MARSH and THOMAS W. MORGAN, citizens of the United States of America, and residents of Waterloo, Blackhawk county, Iowa, have invented certain new and useful Improvements in Liners for Centrifugal Cream-Separators, of which the following is a specification.

Our invention relates to improvements in liners for centrifugal cream separators, and the object of our improvements is to form such liner of radiating partitions curved and arranged in the separator bowl in such a manner as to promote more efficient separation of the cream from the milk, said partitions when removed from the bowl being so slidably connected as to allow them to be readily cleansed. This object we have accomplished by the means which are herein-  
after described and claimed, and which are illustrated by the following drawings, in which—

Figure 1 is a horizontal section of a separator bowl, showing our improved liner in an upper plan view, Fig. 2 is a side elevation of our said liner, and Fig. 3 is a detail view, showing the manner of slidably connecting the plates of the liner so that they may be readily separated when taken out of the bowl.

Similar reference characters refer to similar parts throughout the several views.

The said liner consists principally of a plurality of curved plates of rectangular projection, their curvature being alike. These plates, however, are of different widths, the plates *b*, for instance, being narrower than the plates *c*, the former preferably being one half the width of the latter. There are an equal number of plates of each width, and they are arranged alternately within the separator bowl *a* as shown in Fig. 1. The plates *c*, of the greater width, are provided near their inner edges with perforations *h*, and the plates *b*, of the lesser width, are provided near their inner edges with perforations *i*. Similar perforations *i* are also placed near the middle of the plates *c*.

*g* is a split ring whose separable ends *f* may be passed through perforations *h* in the plates *c*, and *d* is another split ring whose separable ends *e* may be passed through the perforations *i* in both series of plates *b* and *c*, the functions of said rings being to slidably

connect said plates together and keep them in a certain alinement within the bowl *a*. The curvature of all of said plates is such, that when introduced within the bowl they will lie therein at all points at approximately equal distances from each other. In other words, the plates *c* are equally spaced apart, and the plates *b* are equally spaced apart, while the widths of spaces between the plates *b* and *c* are always the same. The lesser width of the plates *b*, however, imparts a new function to the liner, that of narrowing the spaces *k* by dividing them to form two narrower spaces *l*. The object of thus narrowing the interspaces between the plates, is to interpose additional frictional surfaces near the inner periphery of the bowl. The larger amount of separation of the large globules of cream from the whole milk takes place within the spaces *k*, but it is necessary for the proper and efficient separation of the minute globules of cream to somewhat obstruct the movement outward of the milk under centrifugal stress and furnish additional frictional surfaces of narrower plates *b* to which such small globules may be drawn and directed inward. The greater resistance to outward movement experienced in the spaces *l* by these means thus more efficiently strips the minute particles of cream from the partly skimmed milk, and such cream flows toward the axis of the bowl along the surfaces of the interposed plates *b*.

As will be seen by referring to Fig. 3, when the liner has been removed from the bowl, the plates *b* and *c* may be readily moved along the rings *d* and *g*, and widely separated for the purpose of cleansing. The plates may also be easily removed or replaced on the rings when desired.

Having described our invention, what we claim as new and desire to secure by Letters Patent, is—

1. A liner for a centrifugal cream separator, composed of a plurality of vertical plates spaced apart and intersecting both the neutral and skimmed milk zones of the bowl, and a plurality of narrower vertical plates intersecting the skimmed milk zone of the bowl, each narrower plate being located between two of the broader plates and spaced apart therefrom on each side.

2. A liner for a centrifugal cream separator, composed of a plurality of vertical

plates spaced apart and intersecting both the neutral and skimmed milk zones of the bowl, and a plurality of narrower vertical plates intersecting the skimmed milk zone of the bowl, each narrower plate being located between two broader plates and spaced apart therefrom on each side, and means for slidably linking said plates together.

Signed at Waterloo, Iowa, this 5th day of Sept., 1906.

WILBUR W. MARSH.  
THOMAS W. MORGAN.

Witnesses:

M. E. KENNEDY,  
G. C. KENNEDY.