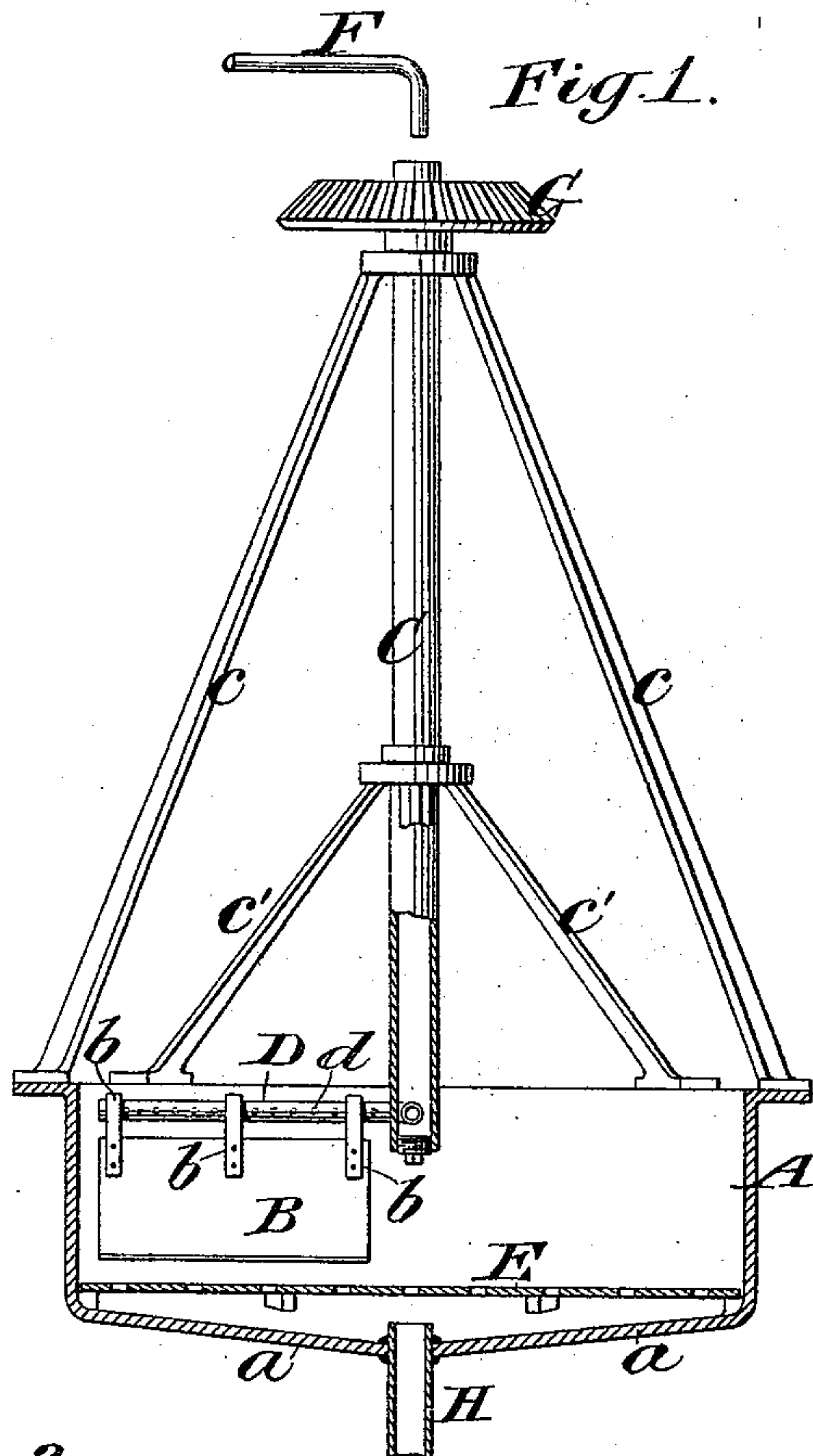


(No Model.)

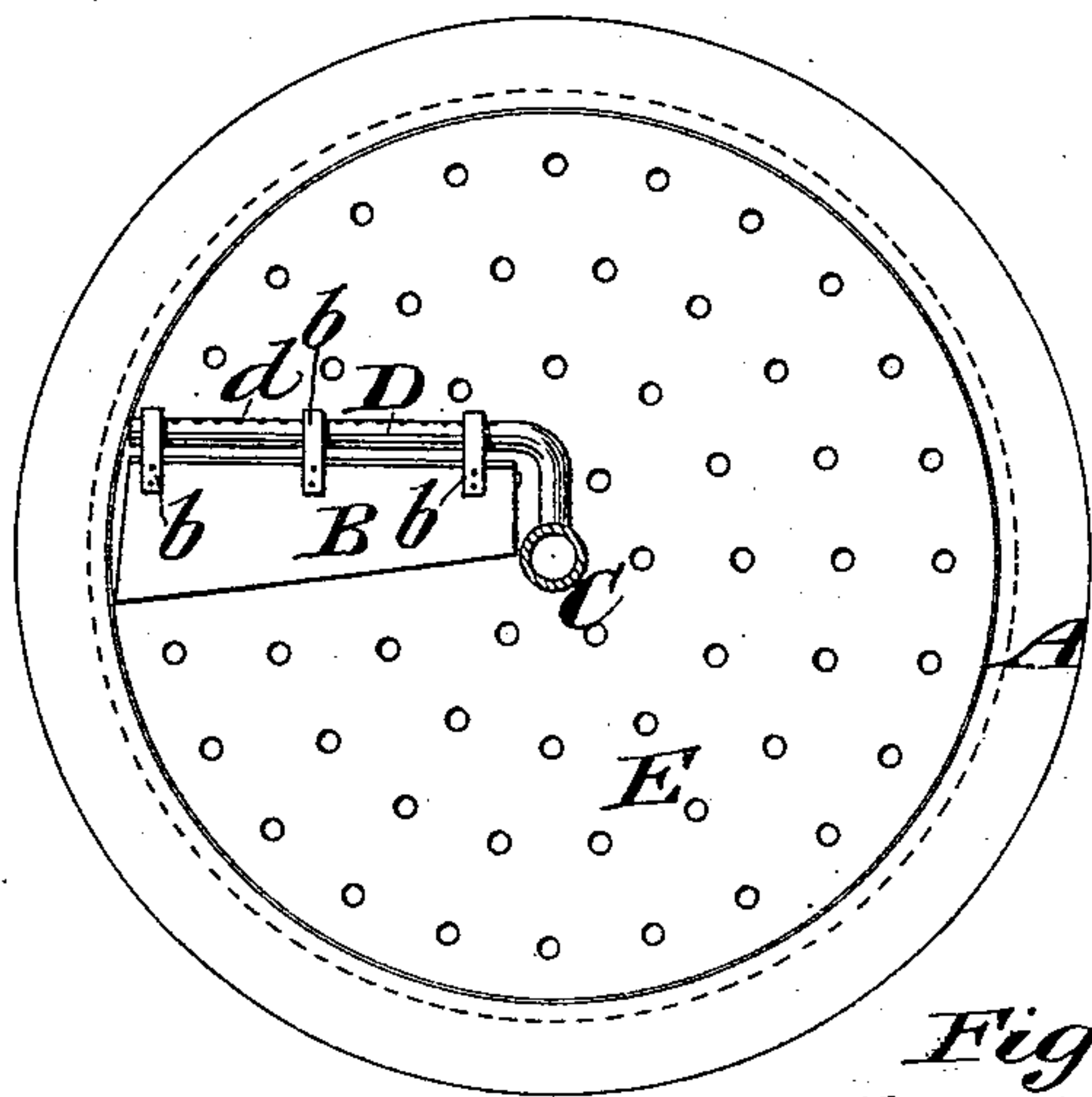
K. J. SUNDSTROM.  
APPARATUS FOR WASHING SODIUM BICARBONATE.

No. 488,702.

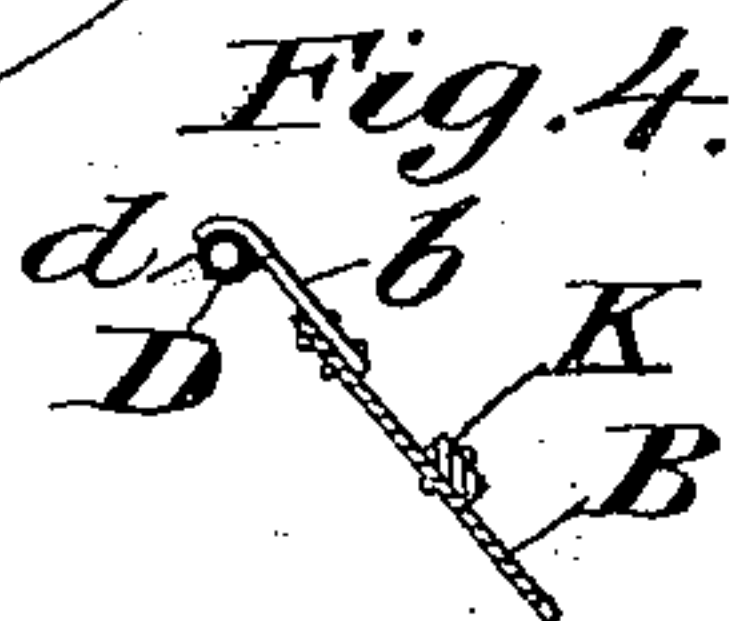
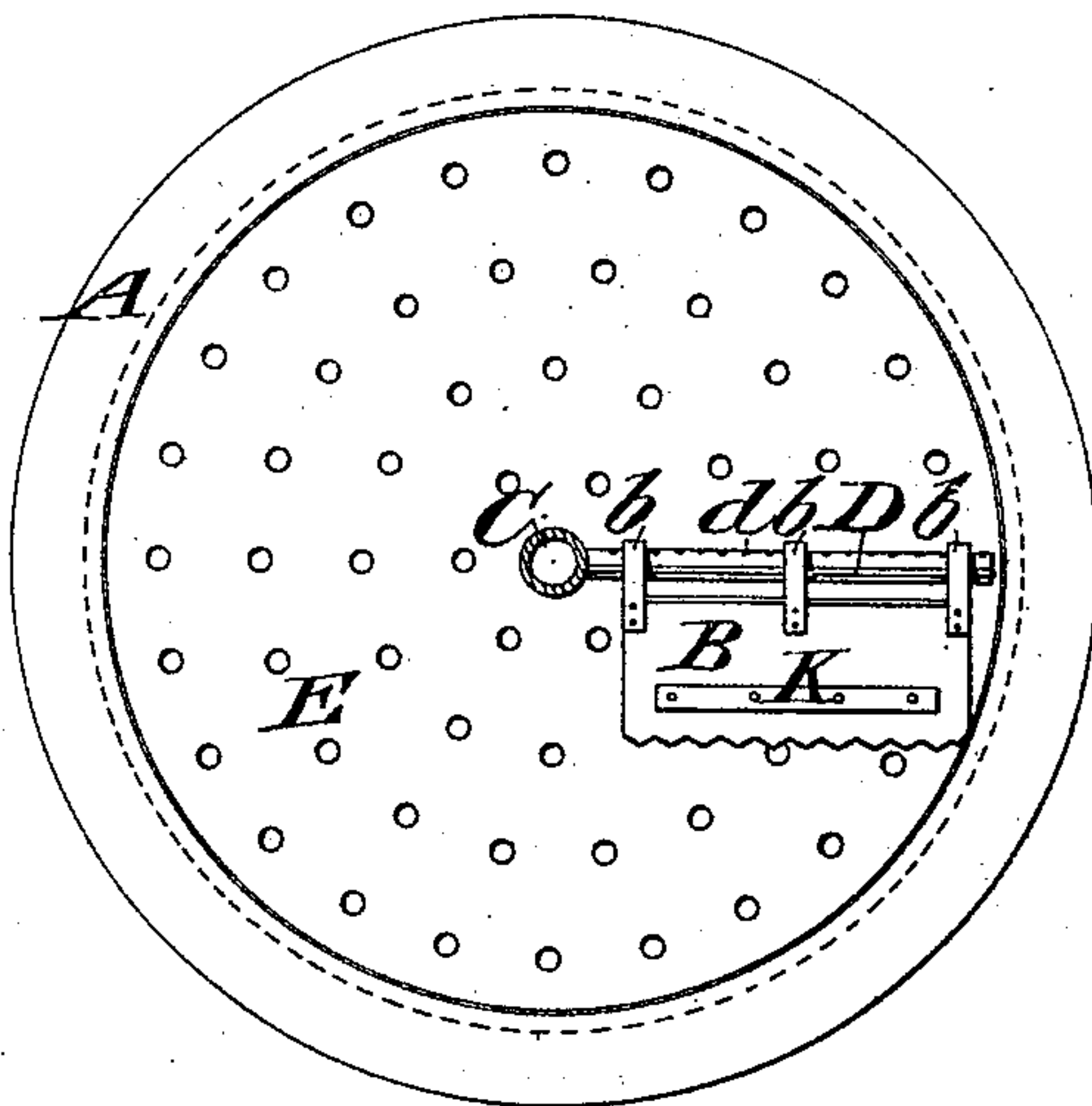
Patented Dec. 27, 1892.



*Fig. 3.*



*Fig. 2.*



Witnesses:

O. Sundgren  
E. H. Hayworth

Inventor:  
Karl John Sundstrom  
by attorneys  
Brown & Howard



# UNITED STATES PATENT OFFICE.

KARL JOHN SUNDSTROM, OF BROOKLYN, NEW YORK, ASSIGNOR TO  
CHURCH & CO., OF SAME PLACE.

## APPARATUS FOR WASHING SODIUM BICARBONATE.

SPECIFICATION forming part of Letters Patent No. 488,702, dated December 27, 1892.

Application filed August 7, 1891. Serial No. 401,960. (No model.)

*To all whom it may concern:*

Be it known that I, KARL JOHN SUNDSTROM, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Filters, of which the following is a specification.

My invention relates to an improvement in filters and more particularly to an improvement in filters of the vacuum type and well adapted for use in connection with the separation of bi-carbonate of soda from its ammonia and sodium chloride combinations.

In obtaining bi-carbonate of soda by the ammonia soda process, it has been common to employ the well known vacuum filter, filter presses, centrifugal machines &c. The result of their use has been a considerable loss of bi-carbonate of soda in cases where a tolerably pure article is desired for commercial purposes.

The object of the present invention is to provide an inexpensive and simple apparatus for filtering and washing the bi-carbonate mud obtained from the ammonia soda process whereby it may be perfectly freed from all sodium chloride and the ammonia combinations reduced to a minimum with a very small loss of the bi-carbonate.

In the accompanying drawings, Figure 1 represents a vertical section of the apparatus, Figs. 2 and 3 represent plan views of the receptacle showing two different forms of scrapers or packers and Fig. 4 represents a view in transverse section through one of the scrapers or packers.

A represents the receptacle for the reception of the material to be operated upon and may be made of iron, wood or any other suitable material. An upright hollow shaft or tube C is mounted in suitable supports *c c'* so as to rotate freely and has its lower end projected a short distance into the upper portion of the receptacle A. A laterally extending tubular arm D communicates at one end with the interior of the tubular shaft C and is fixed thereto so as to rotate together with the shaft. The arm D is provided with numerous small perforations *d* through which water is allowed to pass in the form of fine spray within the receptacle. A scraper or packer consisting

of a blade B, is secured by means of suitable fastening devices *b*, in the present instance straps, to the laterally extending arm D so as to present its lower edge the desired distance above the bottom of the receptacle.

E represents a false perforated bottom located a short distance above the bottom of the receptacle A and intended to form a support for the material being operated upon. H represents a pipe leading from the bottom of the receptacle A through which the liquid drawn from the mass within the receptacle, is conveyed away. The bottom *a* of the receptacle A is preferably made so as to incline from the side of the receptacle downwardly toward the exit pipe H.

The tubular shaft C may be rotated from any source of power not shown and is here shown as provided with a bevel gear G for applying the power thereto. The pipe for conducting the water into the top of the tubular shaft C is represented by F. The scraper or packer is provided near its lower edge with a weight or iron rod or bar K for applying the necessary pressure thereto to force it more or less deeply into the material. I have shown the scraper in three different forms in the three Figs. 1, 2 and 3, and while, so far as my present experience has determined, the form represented in Fig. 3 is preferred, yet I would have it understood that I do not limit myself to any specific shape of blade or connection of the same with its supporting arm.

In operation the receptacle being once filled with the bi-carbonate mud or other material to be operated upon, the shaft C with its arm D and scraper or packer B are caused to rotate and the pipe H being connected with a vacuum apparatus, the liquid will be in a very short time sucked out of the material spread over the false bottom E, the scraper disposing the mass in a level even layer over the entire surface of the bottom. The water being now turned on issues from the perforations in the arm D in finely divided spray and is distributed evenly over the surface of the leveled material and rapidly sucked through the material and out through the exit pipe H. The material is in a very short time thoroughly washed and the bi-carbonate in a

nearly dry state may be emptied out of the receptacle and the receptacle again charged with a new mass of material.

What I claim, is:

- 5 1. The combination with the receptacle for the material to be operated upon, of an arm, means for rotating the arm over the surface of the material within the receptacle, and a scraper or packer supported from the arm in  
10 position to engage the material within the receptacle and free to exert its weight upon the material to spread the same evenly within the receptacle, substantially as set forth.
2. The combination with the receptacle for

the material to be operated upon, the said re- 15  
ceptacle being provided with an exit pipe for the attachment thereto of a vacuum apparatus, of a rotary water supply tube supported centrally above the receptacle, a perforated tubular arm secured to and radiating from the 20  
said rotary water supply tube and a scraper supported upon said perforated arm, substantially as set forth.

KARL JOHN SUNDSTROM.

Witnesses:

JOHN S. STETSON,  
EDGAR H. HAZELWOOD.