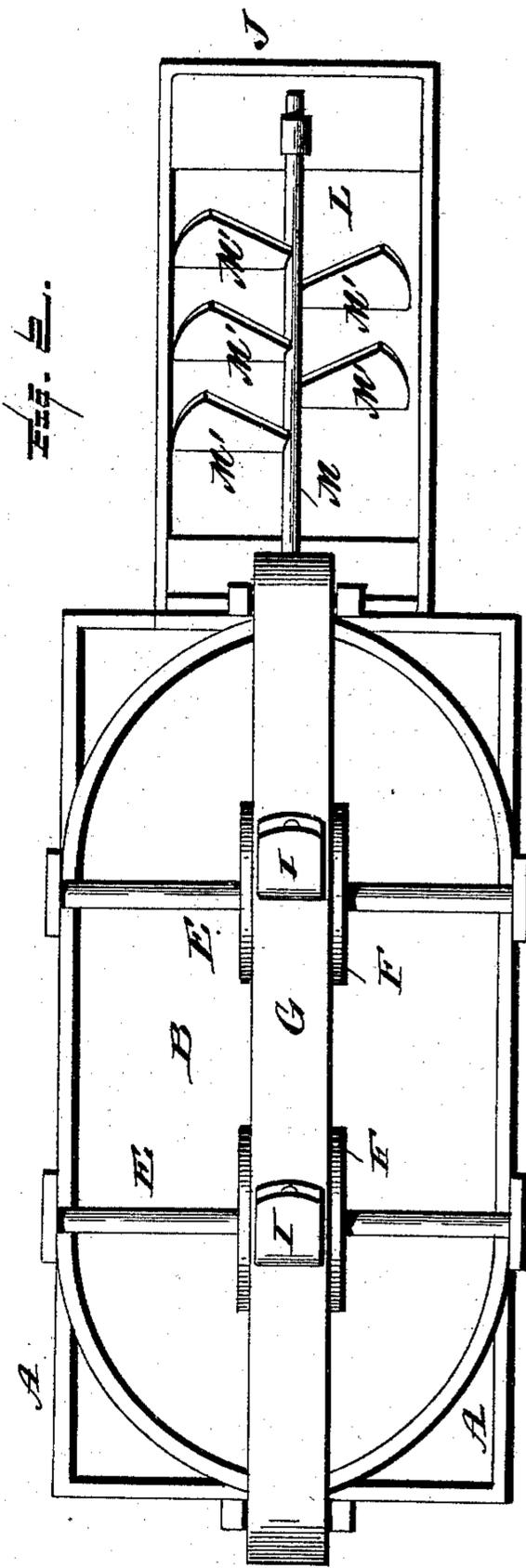
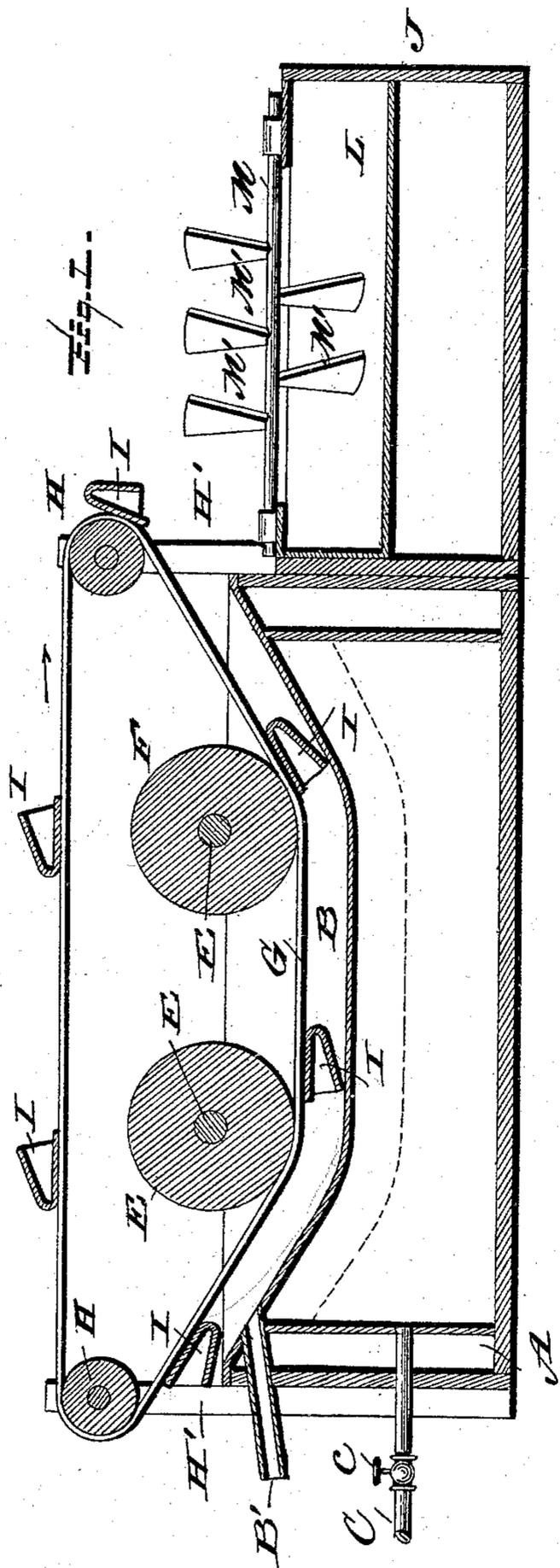


(No Model.)

J. DAVIS.  
PRECIPITATING APPARATUS.

No. 497,169.

Patented May 9, 1893.



Witnesses:  
L. C. Hills.  
E. H. Bond.

Inventor:  
John Davis;  
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Attorney

# UNITED STATES PATENT OFFICE.

JOHN DAVIS, OF LARAMIE, WYOMING.

## PRECIPITATING APPARATUS.

**SPECIFICATION** forming part of Letters Patent No. 497,169, dated May 9, 1893.

Application filed September 19, 1892. Serial No. 446,322. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN DAVIS, a citizen of the United States, residing at Laramie, in the county of Albany, State of Wyoming, have invented certain new and useful Improvements in Precipitating Apparatus, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in precipitating devices of that class in which two jacketed kettles or tanks or receptacles are disposed adjacent to each other, the one to precipitate the semi-solid soda from the fluid, and the other to accumulate the solid soda and thoroughly dry the same.

It has for its objects among others to economize in the treatment of trona, or the natural deposits of sodium salts, so that the resulting product can be marketed at lower prices.

It has for a further object to so construct and arrange the parts that the liquid will be drained from the buckets as they gather the solid soda from the precipitating tank or receptacle and thus materially hastening the drying process. I provide a jacketed tank to which heat may be applied either directly or through the agency of steam, or a water jacket may be employed, the fluid receptacle having a conical bottom in which the raw material is deposited; a tube being provided to carry off the liquid, and an endless belt with buckets arranged to travel through the said receptacle, the buckets having an inclined bottom to facilitate the draining of the liquid therefrom as they travel in their upward direction from the receptacle.

Other objects and advantages of the invention will hereinafter appear and the novel features thereof will be specifically defined by the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a central vertical longitudinal section through my improved apparatus. Fig. 2 is a top plan thereof.

Like letters of reference indicate like parts in both of the views.

Referring now to the details of the drawings by letter, A designates a jacketed tank or receptacle upon which is supported the receptacle B which has sloping sides and ends sloping toward the longitudinal center, as seen best in Fig. 1. Any suitable means for heating this receptacle may be employed; it may be heated by a furnace arranged beneath the same, or by steam admitted through the pipe C adapted to be connected with any suitable source of steam and provided with a valve c whereby the flow may be regulated or shut off entirely when desired. I may sometimes provide a water receptacle or tank as indicated by dotted lines in Fig. 1; any of these or other means may be employed for heating.

The receptacle B is provided with an outlet tube B' for the discharge of the liquid or overflow, and this pipe is preferably inclined downwardly from its point of junction just below the upper edge of said receptacle as seen in Fig. 1 so that the buckets, as they travel along the bottom of the receptacle and up said forward inclined end, will force the liquid into the mouth of said tube and any liquid that has been forced up the incline by the preceding bucket will be caught by the next bucket as the liquid is falling back into the receptacle and thus be forced out of said discharge pipe as will be clearly understood from Fig. 1.

E are shafts suitably journaled on the side walls of the tank and carrying the rollers F beneath which the endless band or belt G passes, the said band or belt traveling over the smaller rollers H carried by shafts suitably journaled on uprights H' at opposite ends of the tank as seen best in Fig. 1, the rollers F being upon a lower plane than the rollers H and in a different vertical plane as seen in Fig. 1 to cause the belt or band to travel in a plane on its downward movement parallel with the bottom of the receptacle as seen in said Fig. 1.

I are buckets secured to the outer face of the endless belt or band with their faces adjacent to the belt parallel therewith and their outer walls inclined from the bottom of the bucket outward so that while in the act of gathering the solid soda from the bottom of the receptacle the liquid will run out of the buckets as will be readily understood from Fig. 1.

J is a jacketed tank or receptacle arranged adjacent to the tank A and provided with a receptacle L. M is a shaft suitably journaled thereon and carrying the radial blades M' spirally-arranged and designed to rotate in the said receptacle.

The operation will be apparent; the material is placed in the receptacle B heat having been applied and as the solid soda is precipitated it is gathered up by the buckets on the endless belt or band to which motion is imparted in the direction of the arrow in any suitable manner; as the buckets travel along the bottom of the receptacle B they gather up the solid soda, the liquid running out of the buckets; the solid matter is carried by the buckets up and deposited into the receptacle L as shown in Fig. 1 and the blades M' rotating therein keep the soda thoroughly stirred, thus assisting the drying operation and insuring complete evaporation.

I operate upon the natural deposits the crystals of which contain about sixty-five per cent. of water, and produce therefrom soda at a much less cost than from other processes and I also produce a much purer article.

If desired I may employ a plurality of vats, as I find that by running the liquid from the precipitating vat into a second or third vat it produces better results.

What I claim as new is—

1. The combination with the jacketed tank with sloping walls supported upon the walls of the tank and jacket and having inclined discharge, of the endless belt with its buck-

ets and supporting rollers mounted to keep said belt upon its lower portion in parallel relation with the bottom and sloping walls of the receptacle, the adjacent tank with its agitating means upon a lower plane than the upper rollers of the belt and means for heating said tank, as set forth.

2. The combination with the jacketed tank with sloping walled receptacle, and discharge pipe, of the endless belt with buckets having inclined outer walls and the rollers over which said belt passes and is supported, said rollers being arranged to cause the belt to travel in a plane parallel with the bottom of the receptacle, and with its inclined end walls as and for the purposes specified.

3. The combination with a receptacle having sloping walls and horizontal bottom, of the inclined discharge pipe communicating with said receptacle at the incline of one end at a point near the upper edge thereof and the endless belt with its buckets having inclined outer walls and means for causing said buckets to travel in a plane parallel with the horizontal bottom of the receptacle, and with the inclined end walls thereof whereby said buckets engage the same from their entrance to the receptacle until they leave the same substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN DAVIS.

Witnesses:

WM. H. ROOT,  
F. W. CHAMPION.