No. 763,152. PATENTED JUNE 21, 1904.

G. D. BURTON.

APPARATUS FOR MAKING EXTRACTS BY ELECTRICITY.

APPLICATION FILED JUNE 27, 1898.

NO MODEL. 3 SHEETS—SHEET 1.

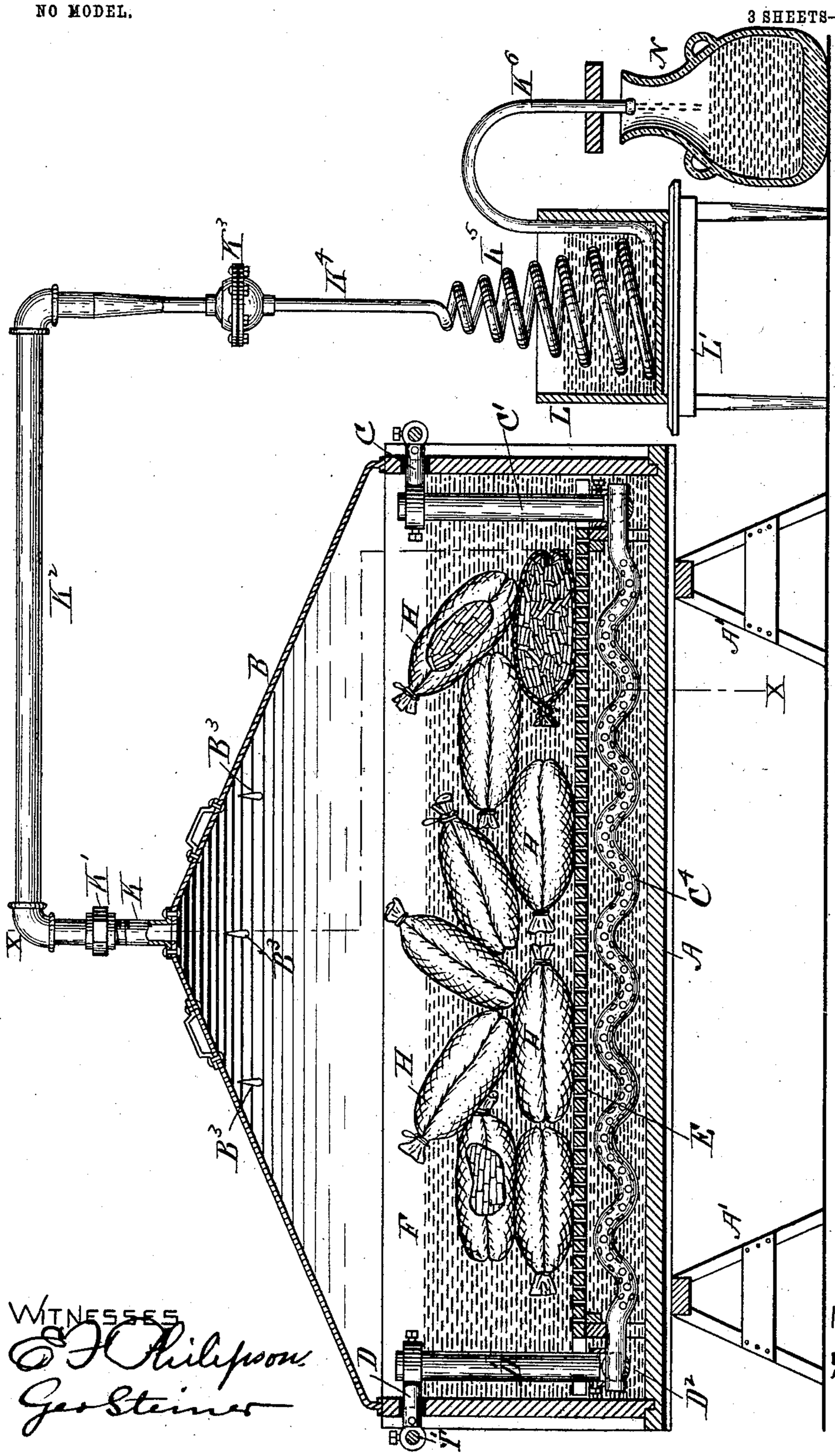

FIG. 1.

WITNESSES
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NO MODEL. 3 SHEETS—SHEET 2.

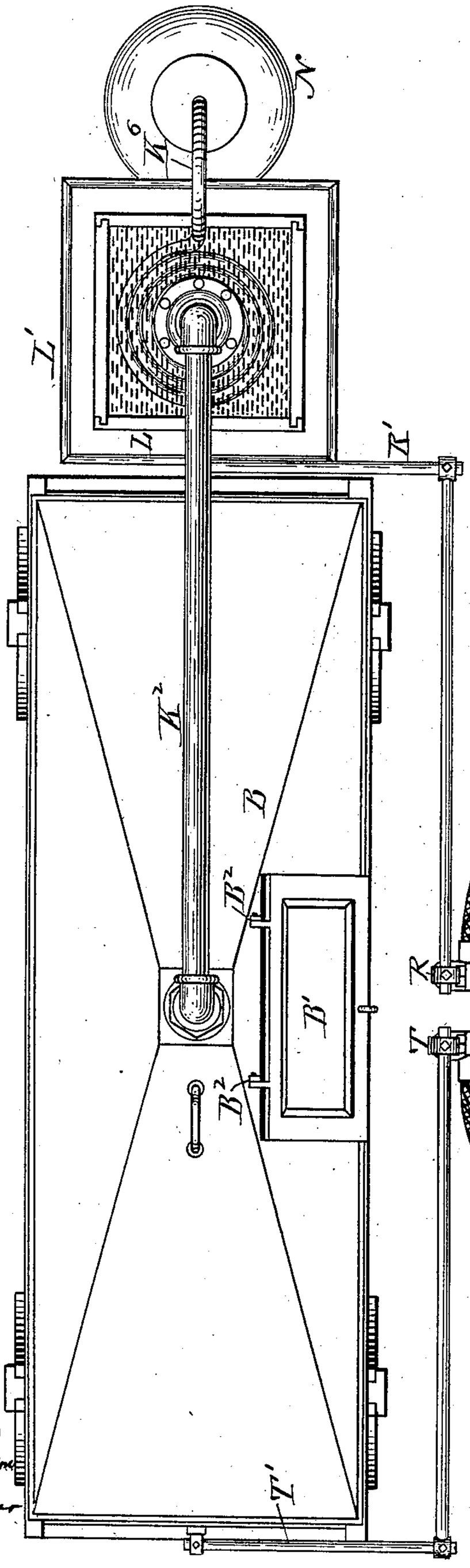
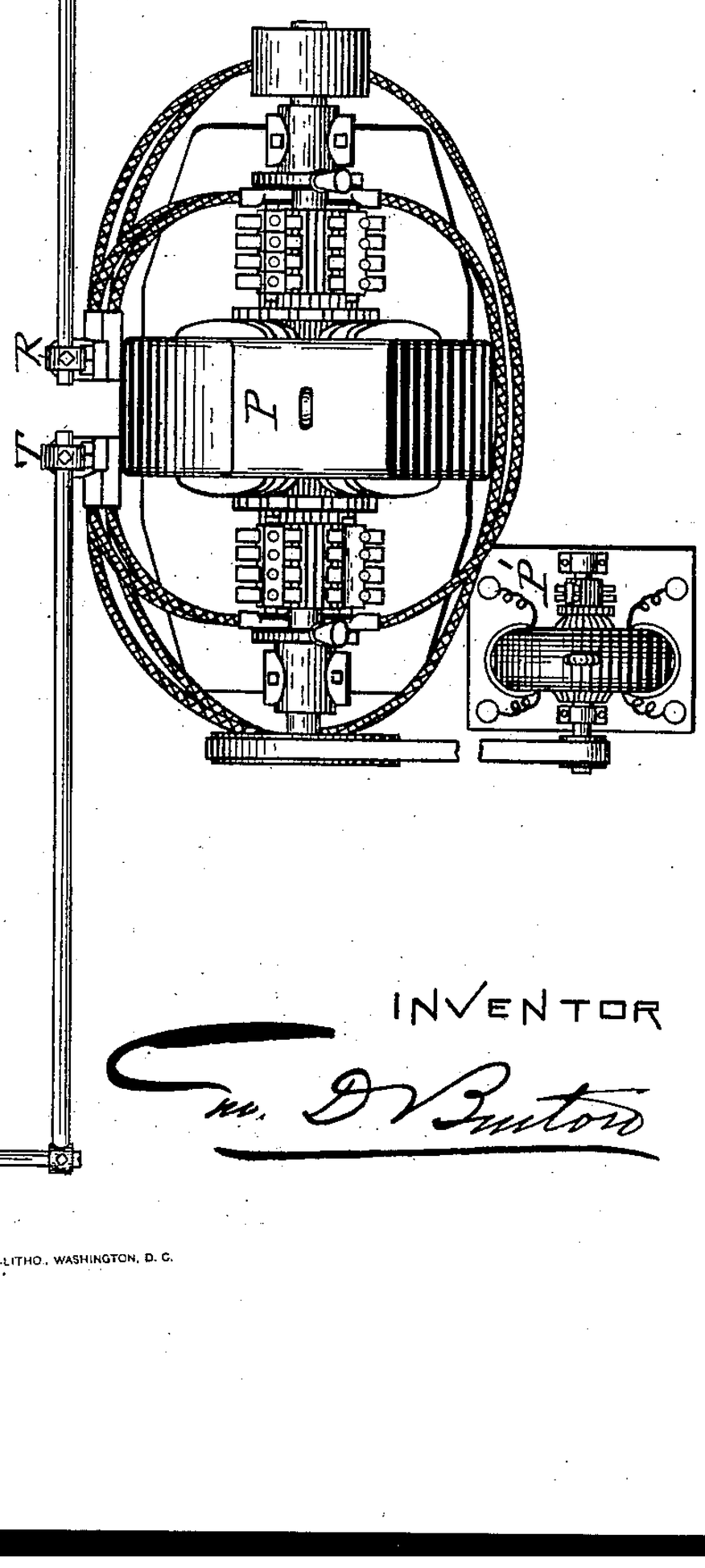


FIG. 2.



WITNESSES
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NO MODEL. 3 SHEETS—SHEET 3.

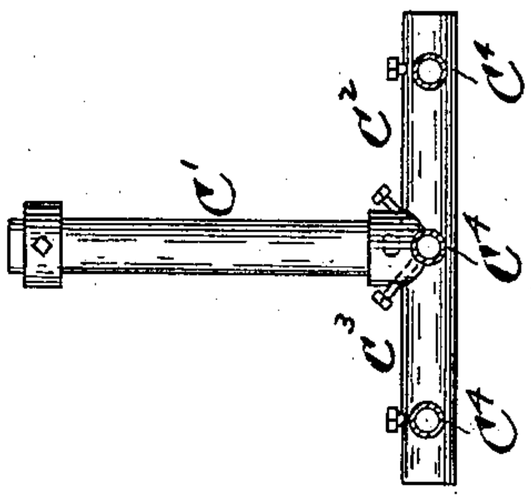

FIG. 5.

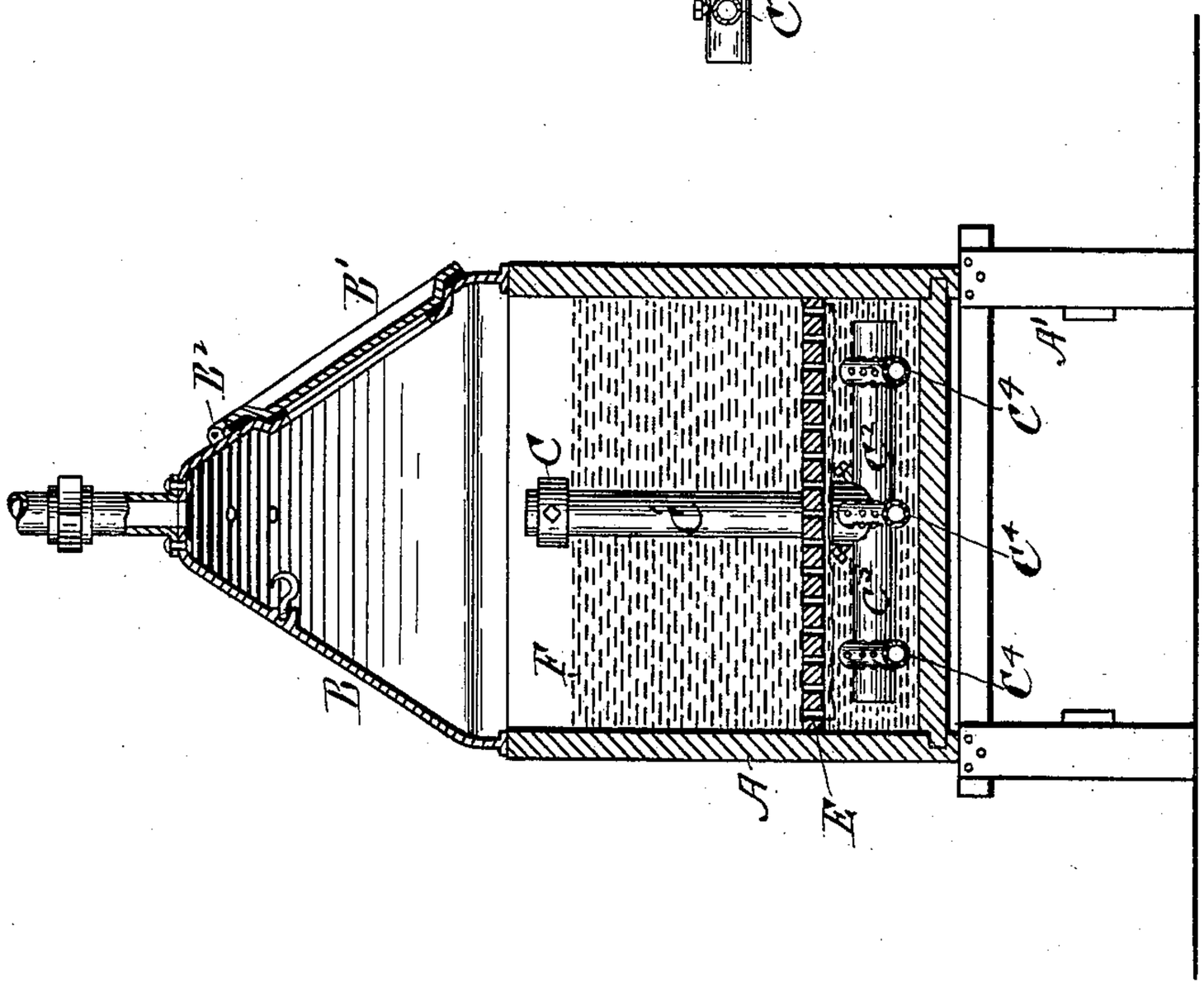

FIG. 3.

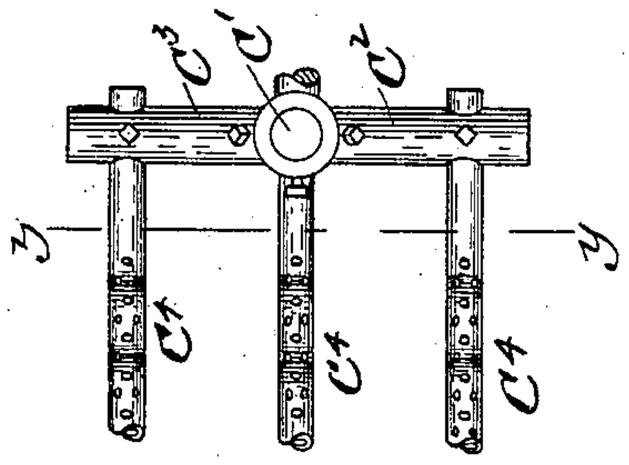

FIG. 4.

WITNESSES

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Geo Steiner

INVENTOR

Wm. D. Burton

No. 763,152. Patented June 21, 1904.

UNITED STATES PATENT OFFICE.

GEORGE D. BURTON, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO BOSTON LEATHER PROCESS COMPANY, OF PORTLAND, MAINE.

APPARATUS FOR MAKING EXTRACTS BY ELECTRICITY.

SPECIFICATION forming part of Letters Patent No. 763,152, dated June 21, 1904.

Application filed June 27, 1898. Serial No. 684,596. (No model.)

To all whom it may concern:

Be it known that I, GEORGE DEXTER BURTON, a citizen of the United States of America, residing in Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Apparatus for Electrically Extracting Essential Oils, of which the following is a specification.

This invention relates to an apparatus for obtaining essential oils from bark or other vegetable matter.

The object of the invention is to facilitate and hasten the operation.

Figure 1 of the accompanying drawings represents a longitudinal vertical section of an apparatus embodying one form of this invention in which the material to be treated is placed in porous bags. Fig. 2 represents a top plan view thereof. Fig. 3 represents a transverse section thereof. Fig. 4 represents a plan of a portion of the tubular electric conductors disposed in the extracting-tank. Fig. 5 represents a section of said conductors on line *y y* of Fig. 4.

The same reference characters indicate corresponding parts in the different figures.

The apparatus herein shown comprises an extracting-tank A, a condenser K^5, a pipe connecting the condenser with the tank, a receptacle N, and a pipe K^6, connecting said receptacle with the condenser.

The extracting-tank A may be of any suitable form and is preferably constructed of or lined with wood or other insulating material. This tank is mounted on benches A′ or other suitable supports and provided with a cover or hood B, which may be constructed in conical form, which is adapted to collect the vapors arising from the liquid in the tank and direct them to the exit-opening located at the apex of said hood. This cover is provided with an opening closed by a door B′, connected to the cover by hinges B^2 or otherwise. The cover is provided on its interior with hooks B^3 B^3, which serve as suspension devices on which the bags containing the material from which the extract is made may be hung up to drain.

An electrode is disposed in the tank A and adapted to carry a current of large amperage for heating the solution or liquid and drawing out the extracts. This electrode is preferably composed of transverse conductors, preferably in the form of rods or tubes C^2 and C^3, (see Fig. 4,) disposed at opposite ends of the tank, and longitudinal conductors C^4 C^4 C^4, connecting said transverse conductors. The longitudinal conductors are preferably tubular and perforated, as shown. The transverse conductor C^2 is connected by a vertical conductor C′ with an electrode C, which extends through one end of the tank A, and the transverse conductor C^3 is connected by a vertical conductor D′ with an electrode D, which extends through the other end of the tank, said electrodes being provided with clamps for grasping the upper ends of said vertical conductors. These clamps permit the vertical adjustment of the main electrode. The vertical conductors are in the form of rods or tubes of copper or other suitable metal.

A dynamo P, which may have its fields excited by the dynamo P′, is disposed adjacent to the tank A. A rod R′ connects the positive pole R of said tank with the electrode C at one end of the tank, and a rod T′ connects the negative pole T with the electrode D at the opposite end of the tank. The electrodes are preferably tubular, as that gives more contact-surface, and preferably perforated, as such construction permits the free circulation of the liquid and brings it more in contact with the conductors. A platform E is preferably disposed in the tank above the electrode to support the material being treated and prevent it from coming in contact with the electrode, this platform being perforated to permit a free circulation of the liquid therethrough.

Pipes K and K^2, united by joint K′, and K^4, connected by a hollow universal joint K^3, establish communication between the tank A and the condenser K^5. The condenser K^5 is provided with a cooling tank or jacket L, and an inverted-**U**-shaped pipe K^6, connected with the lower end of the condenser, is adapted to discharge into a receptacle N for collecting distillate.

In the use of this apparatus the material from which the essential oil is to be extracted—such, for instance, as tanbark—is placed in porous bags H, disposed in the tank A in a suitable liquid F therein. This liquid may consist of water and sodium chlorid or other suitable solvent, the solvent being sufficient in quantity to increase the specific gravity to from 1.03 to 1.05, more or less. Then a current of electricity of a comparatively low voltage and high amperage—say two and one-half to ten volts and from one thousand to fifteen hundred amperes, according to the size of the tank and quantity of the solution—is passed through the immersed electrode in the tank, whereby the electrode and then the liquid are heated, and the process of extraction takes place. The heated liquid gives off vapors which pass through the pipes into the condenser K^5, where they are condensed, and thence pass to the receptacle N. The kind of vapors condensed in the coil K^5 would depend upon the character of the substance from which the extract is made. If witch-hazel leaves and stems are used in the bags, a witch-hazel distillate will be obtained; if hemlock-bark, a hemlock distillate, &c. For convenience in draining the material contained in the bags after extracting operation the bags may be suspended upon the hooks B^3 in the cover or dome B.

I claim as my invention—

1. In the art of extracting essential oils from bark or other vegetable matter, the combination of a closed receptacle, an aqueous extracting liquid disposed in said receptacle and adapted to surround the vegetable matter from which the extract is to be made, means for passing through said liquid a dynamic electric current of sufficient voltage and amperage to effect the extraction, and a condenser connected with said receptacle.

2. In the art of extracting essential oils from bark or other vegetable matter, the combination of a closed receptacle, an aqueous extracting solution containing a solvent and adapted to surround the vegetable matter from which the extract is to be made, means for passing through said solution a dynamic electric current of sufficient voltage and amperage to effect the extraction, and a condenser connected with said receptacle.

3. In the art of extracting essential oils from bark or other vegetable matter, the combination of a closed receptacle, an aqueous extracting solution disposed in said receptacle and adapted to surround the vegetable matter from which the extract is to be made, a porous bag immersed in said liquid for containing said vegetable matter, means for passing through said solution a dynamic electric current of sufficient voltage and amperage to effect the extraction, and a condenser connected with said receptacle.

4. A tank for extracting essential oils from bark or other vegetable matter, provided with electrodes adapted to carry a dynamic electric heating-current and with an inclosing top provided with suspension devices for hanging up the spent material.

5. In the art of extracting essential oils from bark or other vegetable matter, the combination of a closed receptacle, an aqueous extracting liquid disposed in said receptacle and adapted to surround the vegetable matter from which the extract is to be made, means for passing through said liquid a dynamic electric current of sufficient voltage and amperage to effect the extraction, a condenser connected with said receptacle, and a collecting vessel connected with said condenser.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 24th day of June, A. D. 1898.

GEORGE D. BURTON.

Witnesses:
ALBERT W. MANN,
FRANK G. PARKER.