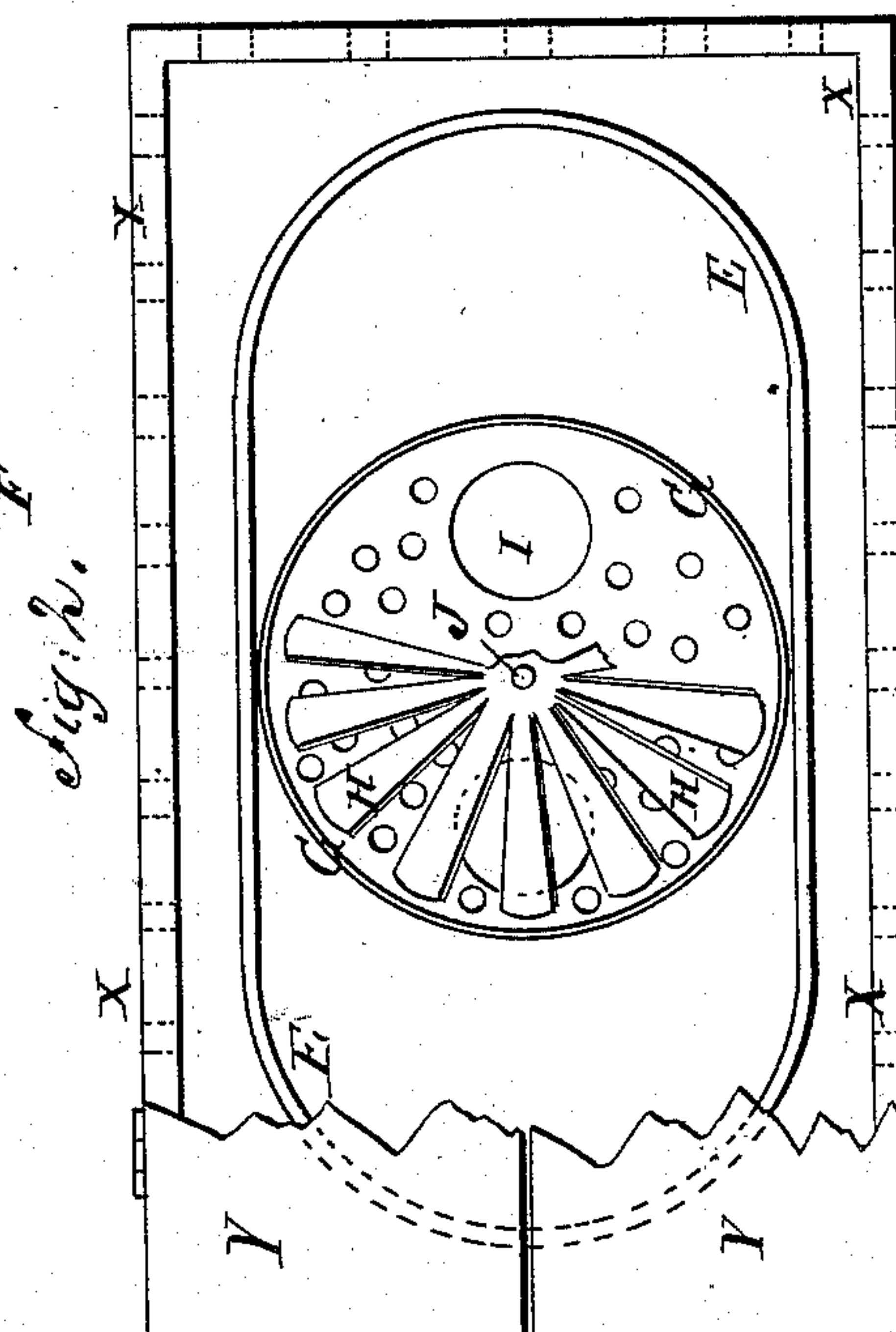
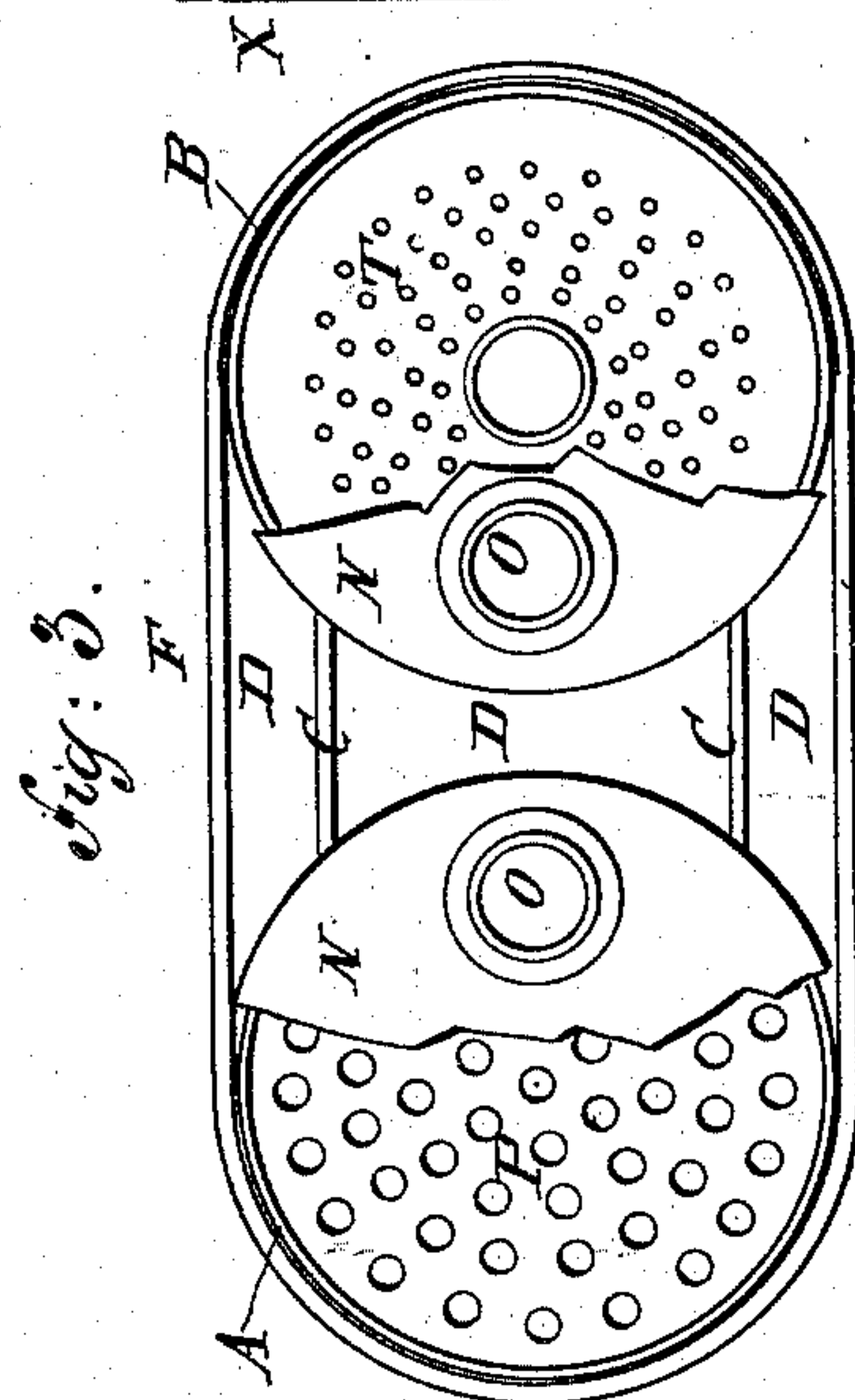
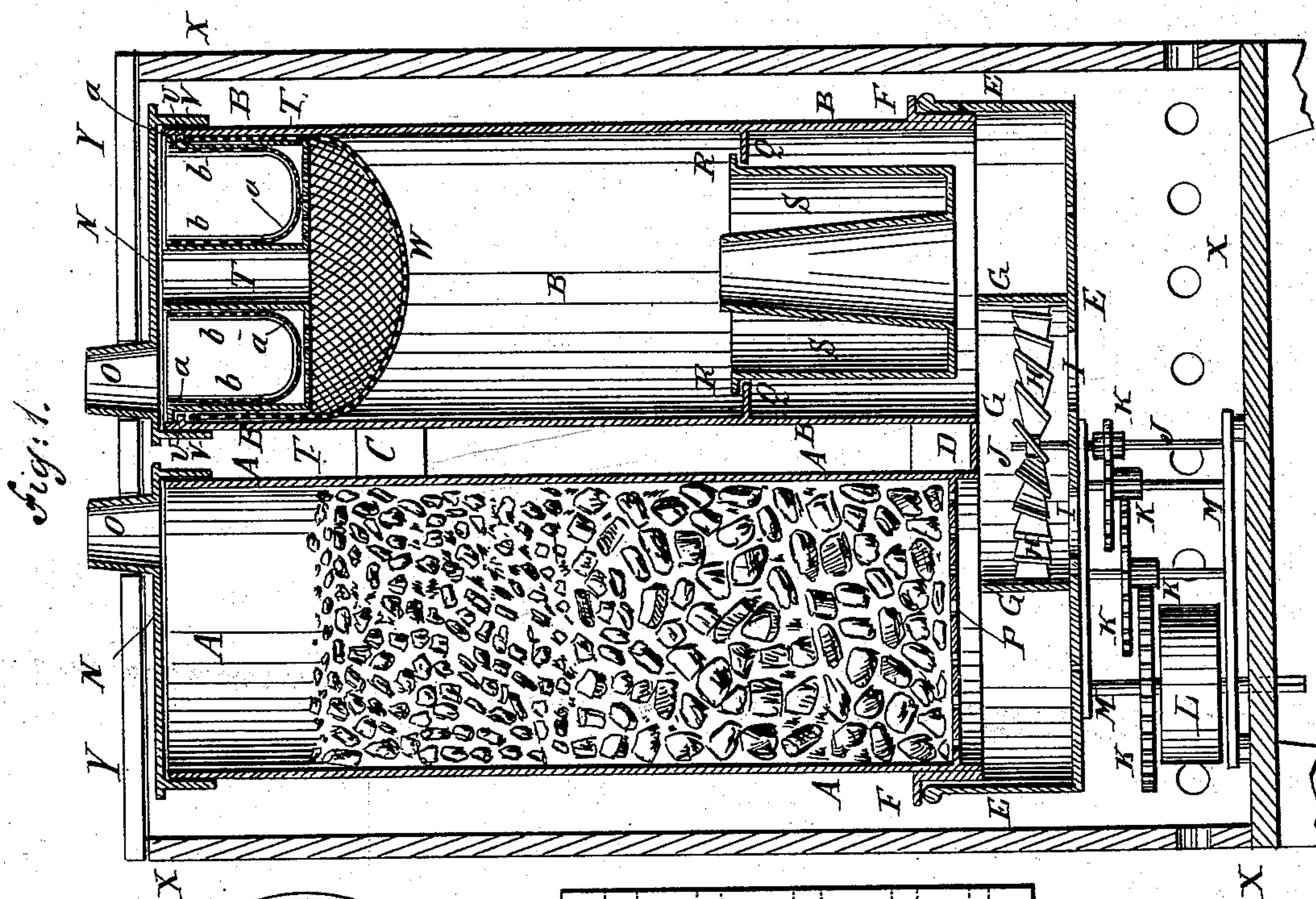


(No Model.)

F. H. HUBBARD.
DISINFECTING APPARATUS.

No. 282,195.

Patented July 31, 1883.



WITNESSES:

WITNESSES:
Chas. Nida
C. Sedgwick

INVENTOR:

J. H. Hubbard

BY

Mum Co

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UNITED STATES PATENT OFFICE.

FREDERICK H. HUBBARD, OF BROOKLYN, NEW YORK, ASSIGNOR TO HIMSELF AND HIRAM F. BEEBE, OF SAME PLACE.

DISINFECTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 282,195, dated July 31, 1883.

Application filed April 20, 1883. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK H. HUBBARD, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Chemical Air-Purifiers, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional front elevation of my improved apparatus. Fig. 2 is a plan view of the same, the casing being removed and parts of the cylinder-covers being broken away. Fig. 3 is a plan view of the same, the cylinders being removed and part of the casing-covering being broken away.

The object of this invention is to purify the air in ice-boxes, store-rooms, sleeping-rooms, water-closets, and other apartments and places by introducing into such apartments continuously air impregnated with suitable chemicals.

The invention consists in a chemical air-purifier consisting of a cylinder having a perforated bottom and a close cover provided with a discharge-pipe, with a cylinder provided with a close cover having a discharge-pipe, an upper annular cup, having a perforated bottom, a lower annular cup having a close bottom, and a box to support the cylinders, and provided with a fan-blower and a fan-driving mechanism. The upper annular cup is provided with a lining of asbestos cloth and of asbestos paper, and beneath it is suspended a diaphragm of asbestos cloth, whereby a liquid chemical will be brought into intimate contact with a current of air forced through the cylinder, as will be hereinafter fully described.

A B are two cylinders of any desired height and size, reference being had to the volume of air necessary to do the required work. The cylinders A B are made of sheet metal or other suitable material, and are connected at their upper parts by straps C, soldered or otherwise secured to the said parts, and at their lower ends by a plate, D, closing the space between the said cylinders, fitting into the top of the

fan-box E, and provided with a flange, F, to rest upon the upper edge of the said fan-box E and support the said cylinders A B. In the middle part of the fan-box E is formed a cylindrical compartment, G, within which is placed a fan-wheel, H, so formed as to draw air in through openings I in the bottom of the compartment or chamber G and force it up through the cylinders A B. The shaft J of the fan-wheel H passes down through the bottom of the chamber G, and is connected by a train of gear-wheels, K, with a coiled spring, L, by which motion is given to the fan-wheel. The shafts of the fan-wheel H, gear-wheels K, and spring L are journaled to a frame, M, placed below the fan-box E, and by which the said fan-box E and the cylinders A B are supported.

In case the apparatus should be too large for the fan-wheel H to be driven by a spring, it can be driven by a belt from a steam-engine or other convenient power.

The cylinders A B are provided with closely-fitting covers N, which are provided with discharge-openings, in which are secured pipes O, through which the air passes into the room, or into pipes leading to the apartments or places where the said air is to be used.

The cylinder A is made with a finely-perforated bottom, P, to allow the air to freely enter the said cylinder from the fan-box E, while preventing the substance placed in the said cylinder from escaping.

Upon the inner surface of the cylinder B, at a suitable distance from its lower end, is secured an annular flange, Q, upon which rests the annular flange R, formed around the upper edge of the annular cup S, so as to support the said cup and its contents. The inner wall of the cup S is tapered upward, so that the upper aperture may be as small as possible without obstructing the passage of air through the central opening of the said cup.

In the upper end of the cylinder B is placed an annular cup, T, which has a narrow outwardly-projecting flange, U, around its upper edge, to rest upon a narrow inwardly-projecting flange, V, upon the inner surface of the cylinder B, close to its upper edge. The bottom of

the cup T is finely perforated, and the said cup is lined with an outer layer, *a*, of asbestos cloth and an inner layer, *b*, of asbestos paper, to secure a slow and steady percolation of the liquids placed in the said cup T to and through its perforated bottom. Below the perforated bottom of the cup T is placed a diaphragm, W, of asbestos cloth, the edges of which are placed and clamped between the sides of the cup T and the sides of the cylinder B, so that the liquids that drip from the said cup T will fall upon, be detained by, and will percolate through the said diaphragm. By this arrangement the liquids escaping from the cup T will be minutely divided, and thus brought into contact with all the particles of air forced up through the cylinder B, so that the said air will become thoroughly charged with the vapors of the said liquids before it escapes from the said cylinder.

In using the apparatus the cylinder is filled with charcoal, which is then saturated with sulphuric acid or other liquid that the circumstances of the case may require. The charcoal, being very porous, will absorb a large quantity of the liquid chemical, and will give off the fumes of the said chemical gradually, which fumes will be taken up and carried into the room by the air forced through the cylinder by the fan-blower. As the charcoal parts with the liquid chemical it begins to absorb the poisonous gases, and will thus act as a powerful purifier. The cup T is supplied with permanganate of potash or chloride of zinc, and is then filled with water, and the air will be charged with the vaporized chemicals as it is forced up through the said cylinder, as hereinbefore described, and will carry the said vapors into and distribute them through the room.

By the means herein described the air in the room, rooms, or house will be deprived of its virulent odors, the poisonous gases will be absorbed, and the pestiferous germs will be destroyed, making the said air pure and health-producing.

The apparatus is designed to be inclosed in a casing, X, made of wood or other suitable

material, and provided at its lower part with apertures to admit air to the fan-box, and to receive a key for winding up the spring L, or the belt for driving the fan mechanism.

The casing X is provided with a cover, Y, made in two parts, hinged at their outer edges, to the upper edges of the sides of the said casing, so that the said cover can be readily turned back to give convenient access to the tops of the cylinders A B.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A chemical air-purifier constructed substantially as herein shown and described, and consisting of the combination of cylinder A, having a perforated bottom, and a close cover provided with a discharge-pipe, with the cylinder B, provided with a close cover having discharge-pipe, an upper annular cup having a perforated bottom, and a lower annular cup having a close bottom, and also with a supporting-box provided with a fan-blower and a fan-driving mechanism, as set forth.

2. In a chemical air-purifier, the combination, with the cylinder B, of the upper annular cup, T, having perforated bottom, the asbestos layers *a b*, and the diaphragm W, the lower annular cup, S, having close bottom, and the fan-blower G H, substantially as herein shown and described.

3. The cylindrical drip-cup T, having the perforated bottom covered with a layer of asbestos cloth and provided with an upper layer of asbestos paper, to secure a slow and steady percolation of the liquid placed in the said cup, as described.

4. In a chemical air-purifier, the combination, with the containing-cylinder, of the perforated drip-cup T and of the diaphragm W, formed of asbestos cloth and arranged under the bottom of said cup, to minutely subdivide the liquid, as described.

FREDERICK H. HUBBARD.

Witnesses:

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