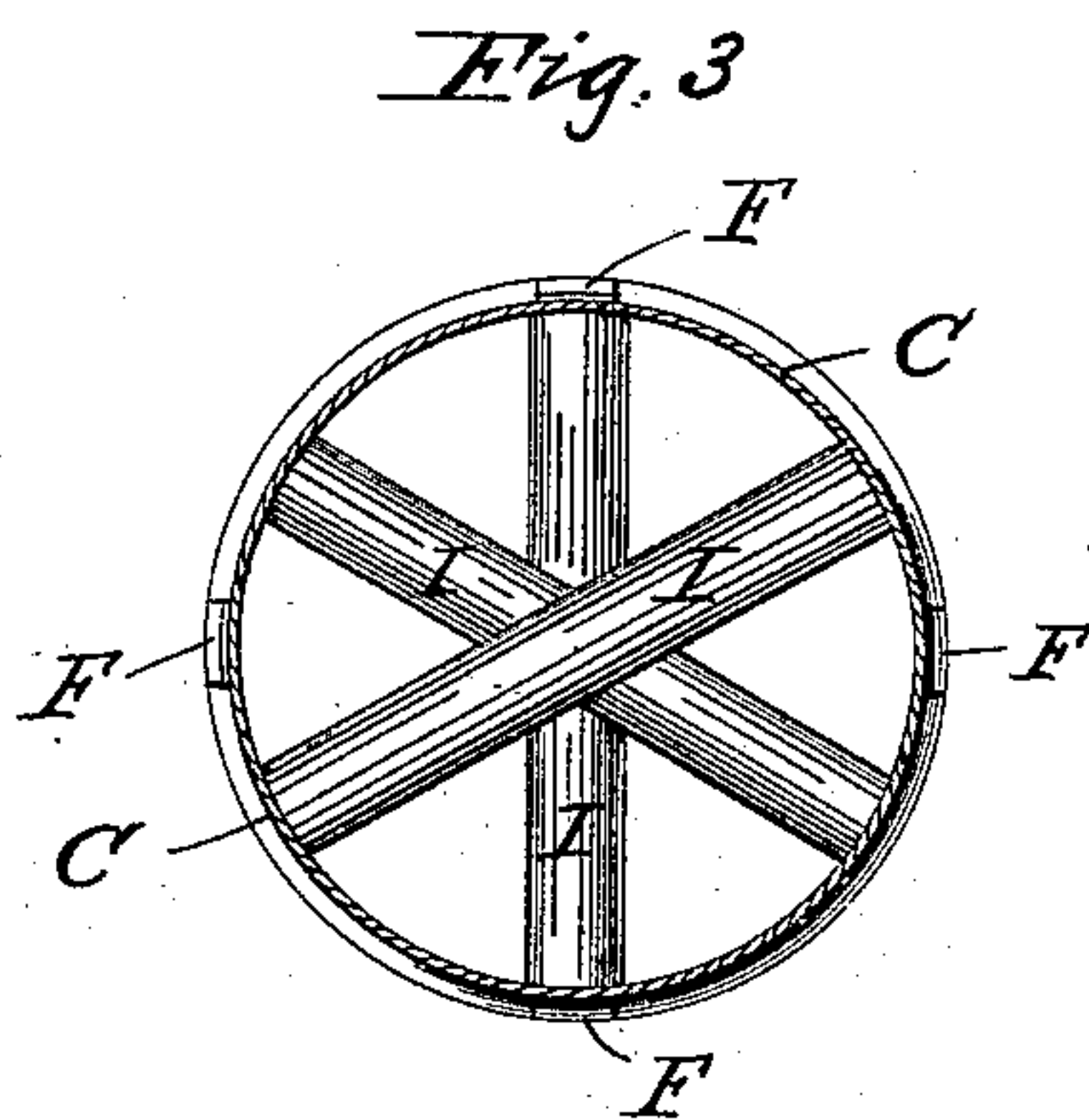
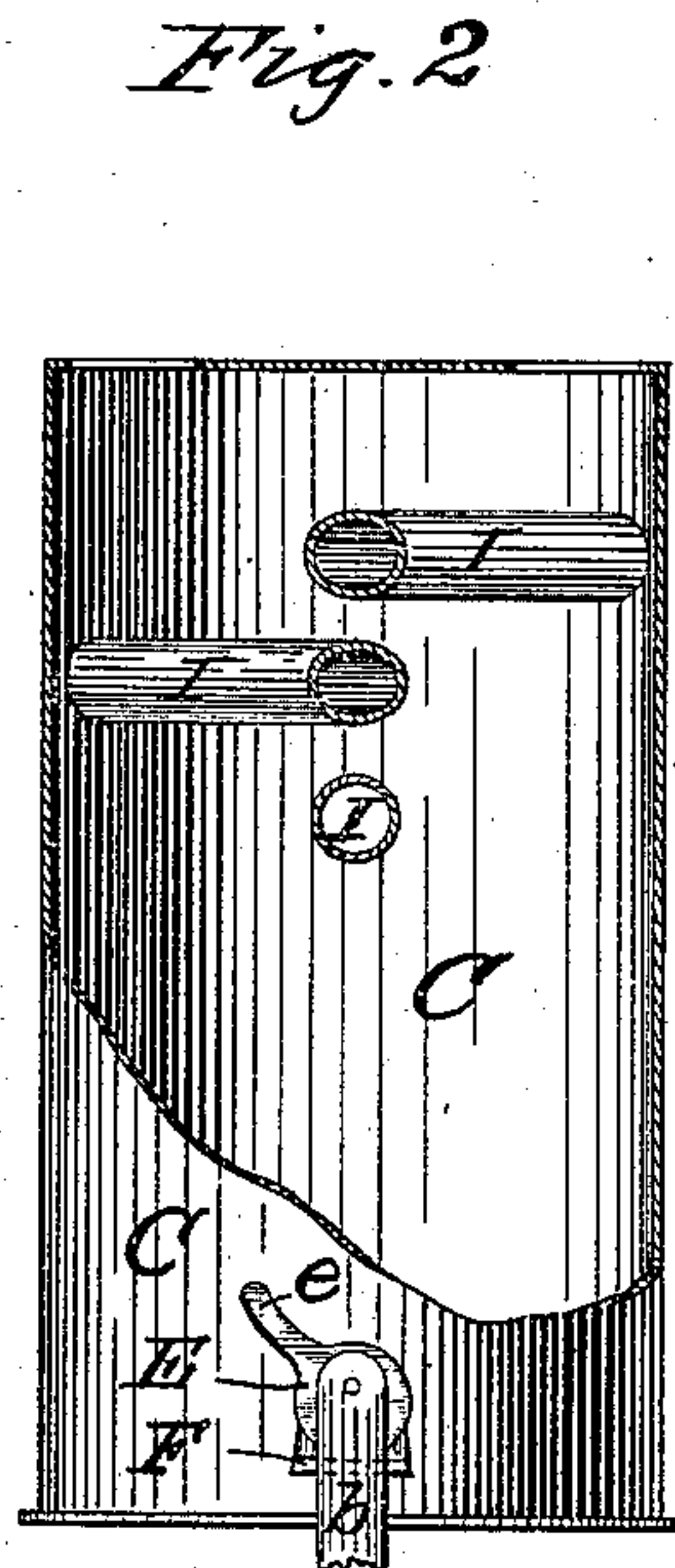
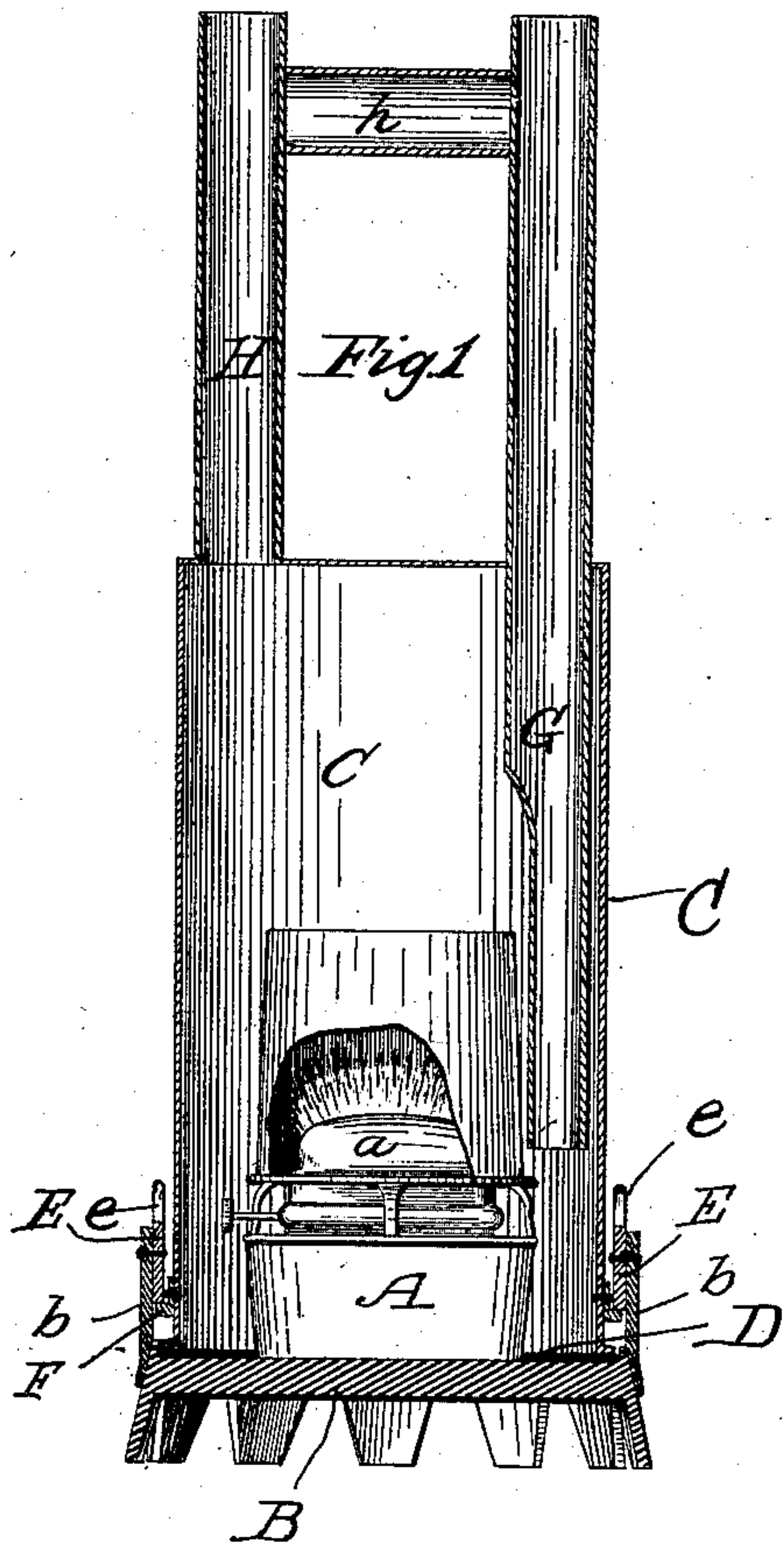


(No Model.)

A. A. PIERCE.
WATER HEATER.

No. 376,545.

Patented Jan. 17, 1888.



Witnesses.

A. M. Johnson
F. A. Mervill

Inventor.

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UNITED STATES PATENT OFFICE.

ABEL A. PIERCE, OF ST. JOHNSBURY, ASSIGNOR OF ONE-HALF TO J. C. EATON & CO., OF LYNDONVILLE, VERMONT.

WATER-HEATER.

SPECIFICATION forming part of Letters Patent No. 376,545, dated January 17, 1888.

Application filed February 19, 1887. Serial No. 228,195. (No model.)

To all whom it may concern:

Be it known that I, ABEL A. PIERCE, a citizen of the United States, residing at St. Johnsbury, in the county of Caledonia and State of Vermont, have invented certain new and useful Improvements in Water-Heaters, of which the following is a specification.

The object of this invention is to provide a portable heater which shall be simple and economical to manufacture and one more especially adapted for submersion in a tub or tank containing water for cows and other stock.

One of the greatest annoyances with which a farmer in a northern climate has to contend is the freezing of the water in winter from which his cows, &c., drink. Cattle will not drink as much as they really need if the water offered them is too cold, and more particularly is this true with respect to cows, for by actual trial or test I have found that my yield of milk and butter for a given period, where water which has been heated to a temperature of 40°, more or less, has been given them, was greatly in excess of the yield for the same period when they have been allowed to drink water at its normal temperature.

I am aware that wood or coal stoves have been placed in barns as a means of changing the temperature of the water for the stock; but their use has been quite limited in consequence of the large amount of fuel required to accomplish the purpose and of the danger from fire attending their use.

To overcome these and other faults is my aim in the present invention, which consists in combining with any ordinary oil or other lamp, or one which I may construct especially adapted to my purpose, a suitable water-tight case having provision for the required air-inlet for draft and smoke-exit while the same is submerged in a tank of water.

The device is fully described in the following specification and clearly illustrated in the accompanying drawings, forming part thereof, of which—

Figure 1 represents a sectional elevation of the entire heater. Fig. 2 is a view, partly in elevation and partly in section, of the heating-case modified, the tubes G and H not being shown. Fig. 3 is a sectional plan of the same.

Similar letters indicate like parts throughout the various views.

The lamp A may be provided with one or more burners, *a*, according to the quantity of water it is desired to heat. The said lamps are mounted firmly upon a suitable loaded base, B, made heavy enough to hold the whole device under water, as hereinafter explained. To the said base a suitable case, C, is fitted, and this union must be made water-tight by aid of one or more packing-rings, D, formed of rubber, leather, or other yielding or elastic material adapted to be interposed between the sides of the base B and the case C, provided the one should be made to overlap the other, or to rest upon the flat top of the said base and form a seat for the bottom of the said case, as shown in Fig. 1. Suitable tightening-clamps should be attached to either the base B or case C, for connecting the said parts and making a tight joint. A simple device for accomplishing this result is shown in Figs. 1 and 2. To the base B two or more arms, *b*, are firmly secured. These project vertically from the outside of said base, and each is provided with a cam, E, pivoted to its inner side near the top, adapted to bear upon lugs F. There are as many lugs F secured to the case C as there are arms *b* on the base B, and when the said case has been placed in position upon said base either cam E, by aid of its thumb-piece *e*, may be turned so as to draw the parts B C more closely together and form a water-tight joint, or vice versa.

I do not limit myself to the use of this identical clamping device, as there are many devices adapted for the purpose, and these of themselves are not a part of my invention.

Tubes G H enter the top of the case C, the tube G supplying air to give the necessary draft to the lamp A, and the tube H serving to conduct the air therefrom after it has passed upward by the wick or wicks and through the chimney. By this construction a perfect circulation of air is continuously kept up, entering by means of the cold-air tube G and discharging through the hot-air or smoke tube H.

The device may be submerged to such a depth that the surface of the water is very near to the top of said tubes G H, and when so

placed within a tank or trough containing about two hundred gallons of water the temperature of the latter will, in the course of two and a half to three hours, be rendered pleasant for the stock.

One or more transverse tubes, I, passed through the case C from side to side, through which the water may circulate and be brought nearer the flame of the lamp, will be found to facilitate the process of heating the water. The connection *h* serves the purpose of a handle.

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

1. A water-heater comprising a lamp, a suitable base upon which it is mounted, a case or air-chamber inclosing said lamp, suitable fastening devices whereby said air-chamber is secured perfectly water-tight to said base, tubes connected to the top of said case and ex-

tending a suitable distance above the same for the admission of cold and the discharge of hot air or smoke, and means whereby the water may circulate through said air-chamber without contact with the air contained therein, for the purpose set forth.

2. In a heater, the combination, with a lamp having one or more burners, of a base upon which said lamp is firmly mounted, a suitable case for inclosing the lamp, means for securing it water-tight to the said base, and tubes connecting with said case and extending a suitable distance above the same, all substantially for the purpose set forth.

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

ABEL A. PIERCE.

Witnesses:

J. B. THURSTON,
WILLIAM S. STREETER.