

R. J. BARR.
Evaporating Pan.

No. 58,201.

Patented Sept. 25, 1866.

Fig. 5.

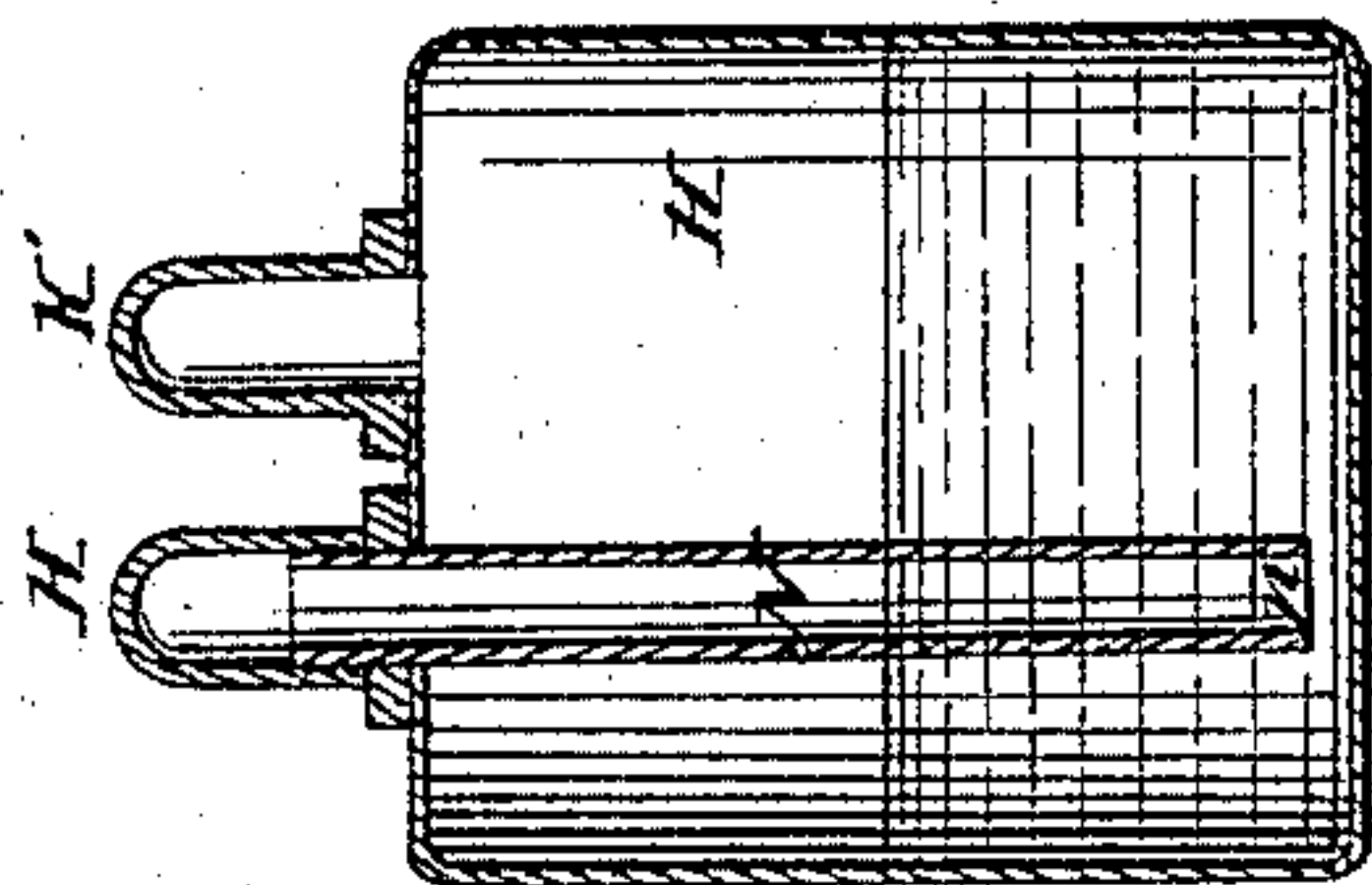


Fig. 3.

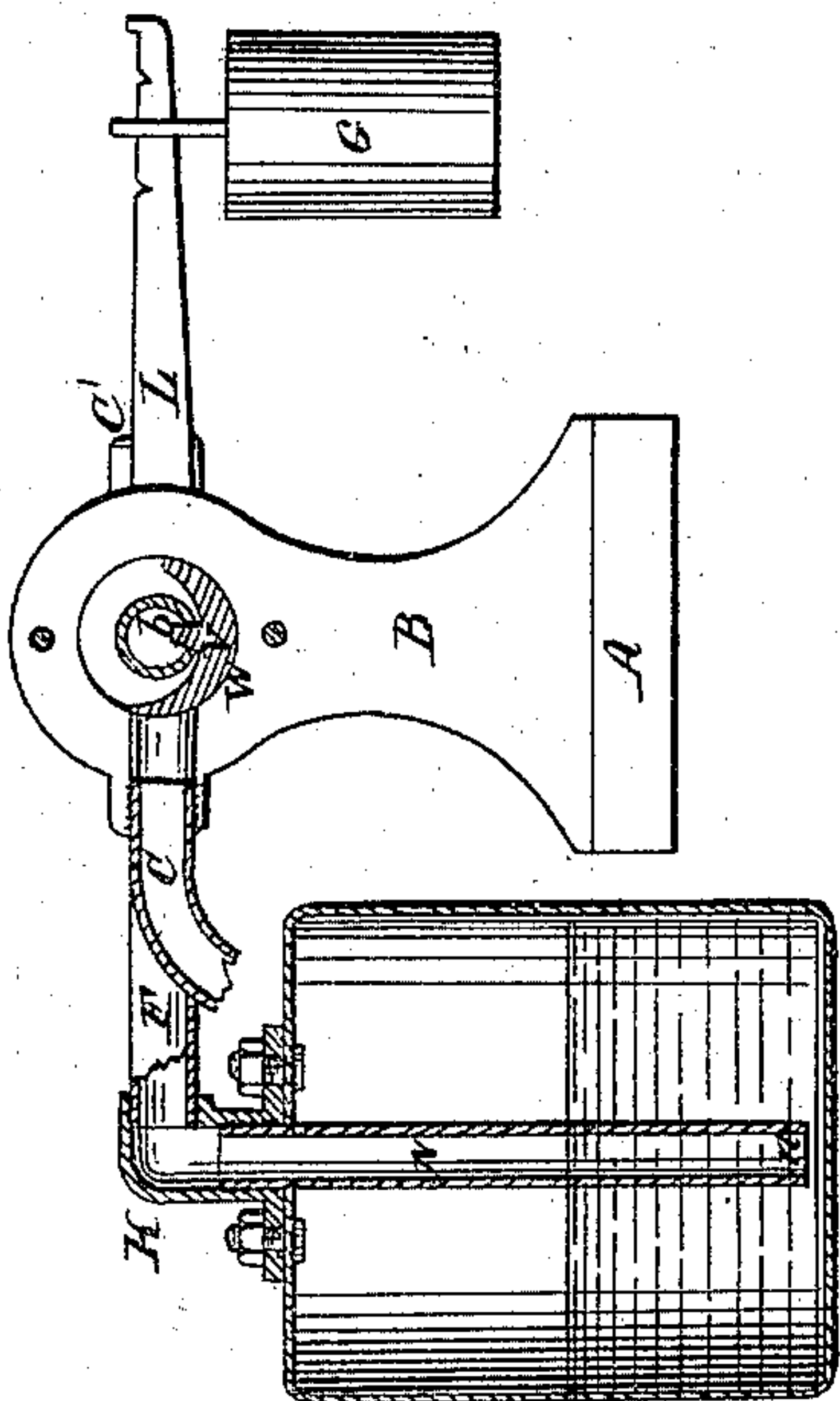


Fig. 4.

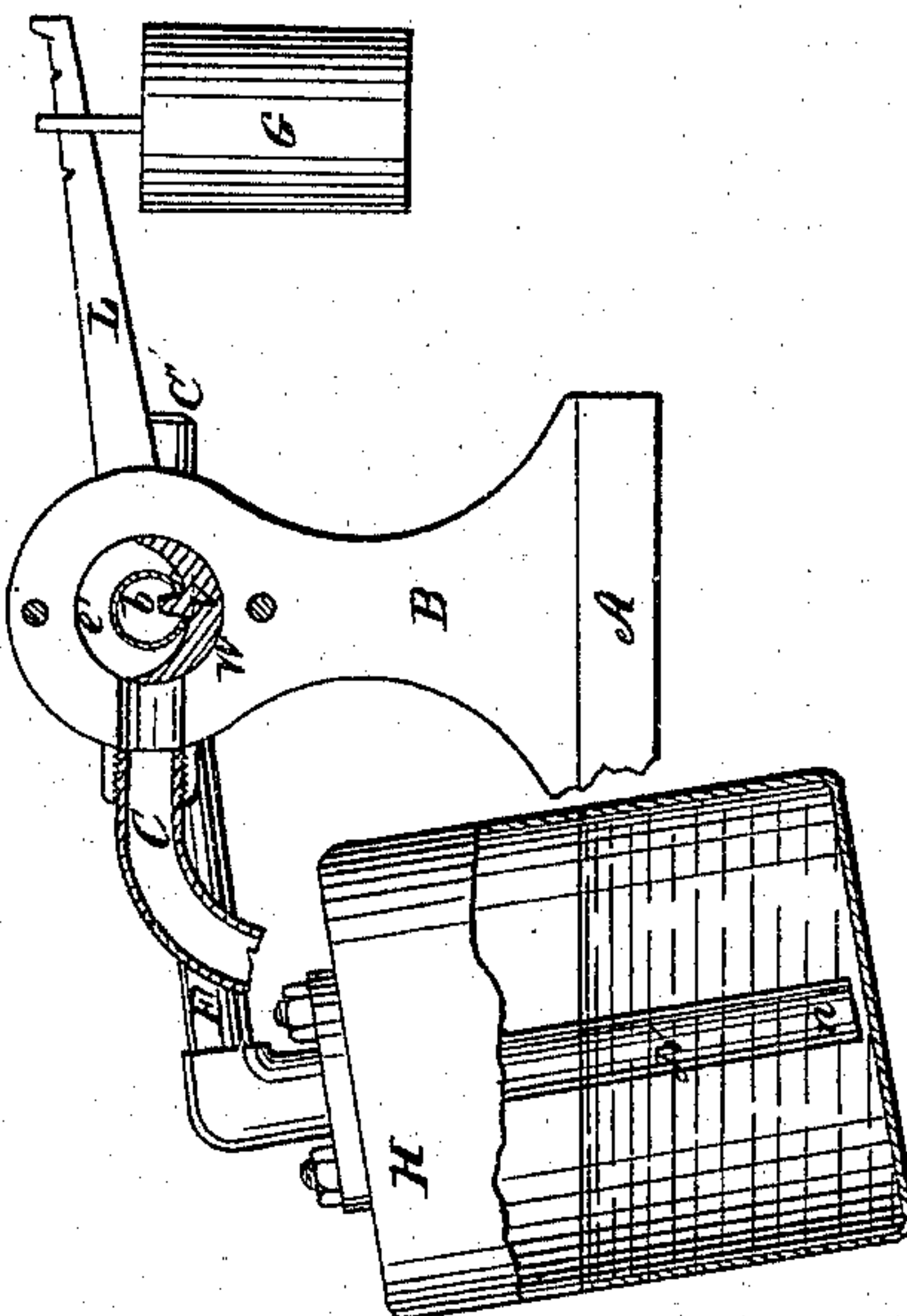


Fig. 1.

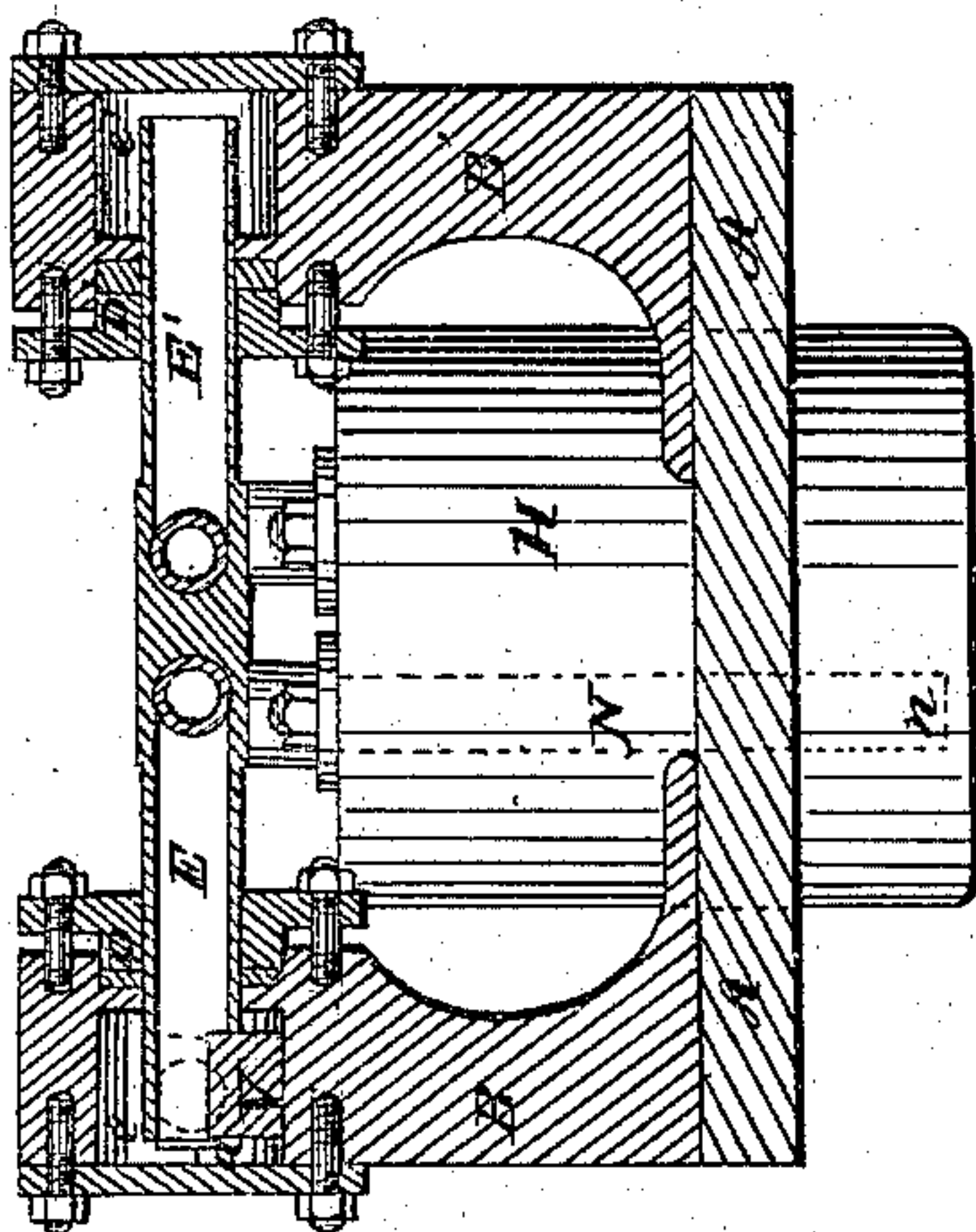
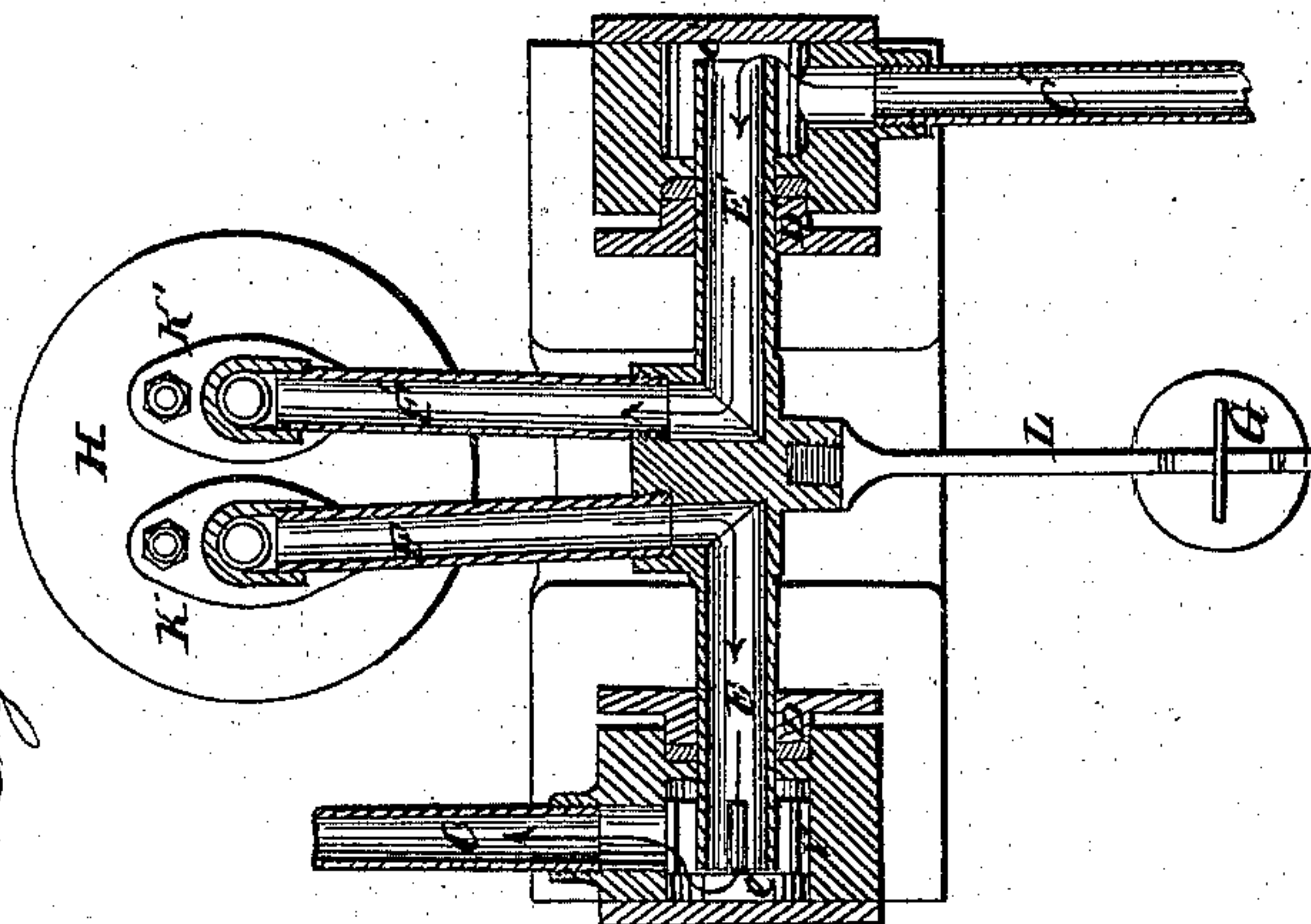


Fig. 2.



Witnesses:

Henry B. Myer
Alfred H. Rosenberg

Inventor:

Robert J. Barr

UNITED STATES PATENT OFFICE.

ROBERT J. BARR, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVED TRAP FOR REMOVING WATER FROM STEAM-HEATING AND EVAPORATING APPARATUS.

Specification forming part of Letters Patent No. 58,261, dated September 25, 1866.

To all whom it may concern:

Be it known that I, ROBERT J. BARR, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Apparatus for Desiccating Saccharine Solutions and for other purposes of a similar nature by the use of steam; and I do hereby declare that the following is a full and complete description of the construction and operation of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a vertical section through the center line of the double tube E E'. Fig. 2 is a horizontal section through the center line of the double tube E E'. Fig. 3 is a vertical section through the semicircular valve V, showing the vessel H as section through the pipe N. Fig. 4 is the same section as shown in Fig. 3, but showing the change of position in the vessel H, lever L, and valve V, caused by a rise in the water-line. Fig. 5 is a vertical section of vessel H through the two elbows K K'.

In this apparatus, A represents the bed-plate, and B and B' represent two standards that support the stuffing-boxes D D' and pipes C C' and E E'. The pipes E E' form hollow journals, which support the vibrating beam L and pipes F F'. The pipe F is joined to the pipe E, as shown in Fig. 2, and the pipe F' is joined to the pipe E', as shown in the same figure, the two having no connection, except as hereinafter explained.

D D' represent stuffing-boxes, in which the hollow journals rest. At the outer end of each of these, as shown at e e', is a chamber that communicates with their respective pipes E E'.

C' represents a pipe, which connects with the steam-generator through the steam-chamber that surrounds the desiccating vessel or apparatus, which must be situated above the hollow journal-pipes E E', for purposes hereinafter stated. This pipe C' terminates in the chamber e', and thus communicates with the hollow journal-pipe E', and through this with the pipe F'.

H represents a strong air-tight vessel, through the upper wall of which the pipe F' passes, thus communicating with the interior of the vessel; but the pipe F' does not extend

any distance into the vessel H. It, however, in part sustains the weight of the vessel H with its contents. The pipe F, after leaving the hollow journal pipe E, passes also through the upper wall of the vessel H, to which it is firmly attached, and constitutes the balance of the support for the vessel H, which is thus permitted to rise and fall by the partial rotation of the hollow journal-pipe E E'. The positions of the pipes F and F' are nearly parallel and horizontal, as shown in Figs. 2 and 3.

From the center of the hollow journal E E' (the openings do not communicate with each other, except through the vessel H) there extends in a horizontal direction, and at right angles to the line of the hollow shaft, the bar or arm L, upon which is placed the balance-weight G, which can be graduated to any desired preponderance by placing it in different notches upon the beam L. This weight must be sufficient to balance the vessel H with its accumulated water and the pressure of the steam, as hereinafter stated. A pipe, N, connects with the pipe F just below the upper wall of the vessel H and extends to the bottom of the vessel H; but the lower end of the pipe N is open and does not come in contact with the bottom plate of the vessel H, as seen at n in Figs. 1, 3, 4, and 5. Thus there is a free communication between the bottom of the vessel H and the discharge-pipe C through the pipes F' E' and chamber e'.

V represents a valve that is connected to and operated by the hollow journal E. This valve has its outer surface semicircular, and fits accurately the semicircular valve-seat W. The valve is so adjusted that it will close or open the mouth of the pipe C, depending upon the position of the vessel H. If the vessel H is in the position shown in Fig. 3, the valve V closes the mouth of the pipe C; but when the vessel H is depressed, as seen in Fig. 4, the mouth of the pipe C, which communicates with the chamber e', is opened, as seen at e' in Fig. 4, which allows any water that may have accumulated in the vessel H to escape through the pipe C.

It is obvious that many modifications of this apparatus can be made without materially changing the invention. I will therefore state the leading feature thereof and the object I

have in view. This is mainly to prevent the discharge of steam when this method of applying heat is used for purposes of evaporation, cooking, heating, or similar purposes.

The operation of this apparatus is as follows: The steam is conducted from the steam-generator to the apparatus where the heat is designed to be expended for the object sought, a portion of which is of course condensed, and there being a free communication for either water or steam between the evaporating or heating apparatus and the chamber H through the pipes C', E', and F', as indicated by the arrows, the chamber H will become partially filled with water, which will rise above the lower end of the pipe N, and as long as the valve V is kept closed by the adjustment of the weight G, as seen in Fig. 2, even the water cannot escape through the pipes N F E C. But when the weight of the accumulating water in the vessel H, aided by the pressure of the steam, causes it to preponderate over the weight G, the weight will rise, thus partially rotating the hollow shaft E E' and opening the valve V, allowing the water to escape by being forced up the pipe N by the pressure of steam upon its surface in the vessel H; and as soon as an equilibrium is established the several parts of the apparatus will assume their former position, as seen in Fig. 3, thus closing the valve.

In Fig. 4 the preponderance of the vessel H is shown with the valve V open. A stop-piece, *a*, is shown in Fig. 1, which forms the lower section or wall of the chamber *e*. The valve V has a spur, *b*, projecting into a corresponding slot in the end of the pipe E, by which the valve is moved by the partial rotation of the shaft.

What I claim as my improvement, and desire to secure by Letters Patent, is—

1. The hollow journals E E', vessel H, beam L, and weight G, as and for the purpose specified.
2. The valve V, pipes C and E, and vessel H, as and for the purpose described.
3. The pipes E E' F F', vessel H, and pipe N, arranged and operating as set forth.
4. The chambers *e e'*, stop *a*, valve V, and pipe C, in combination, for the purpose set forth.
5. The herein-described steam-trap, when constructed and operating substantially as and for the purpose specified.
6. Operating the valve V—that is, opening and closing the same—by the accumulation and discharge of water, as specified.

ROBERT J. BARR.

Witnesses:

HENRY B. MYER,
ALFRED KUSENBERG.