

H. O. Demarest,
Steam-Boiler Water-Feeder,
N^o 63,227. Patented Mar. 26, 1867.

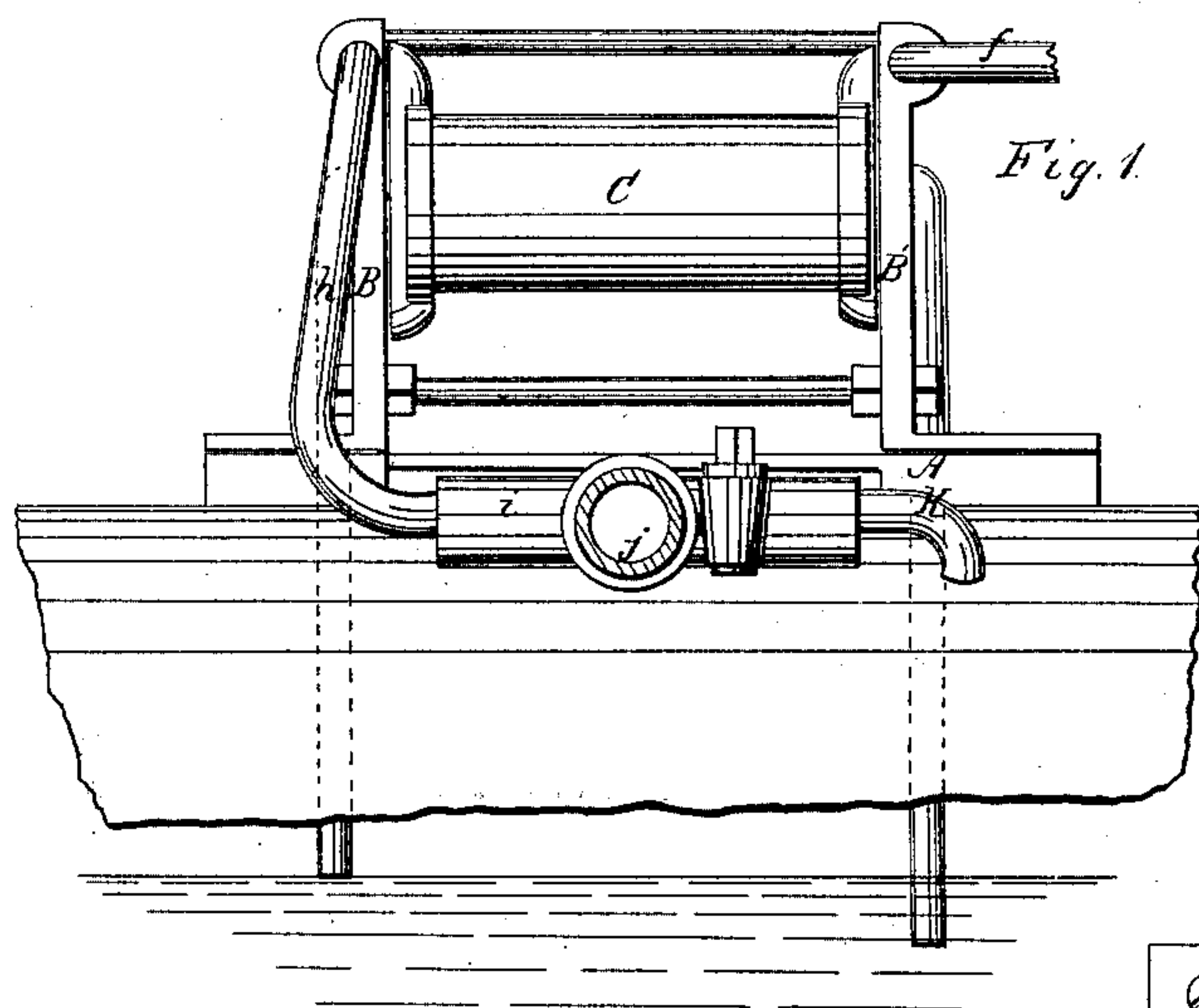


Fig. 1.

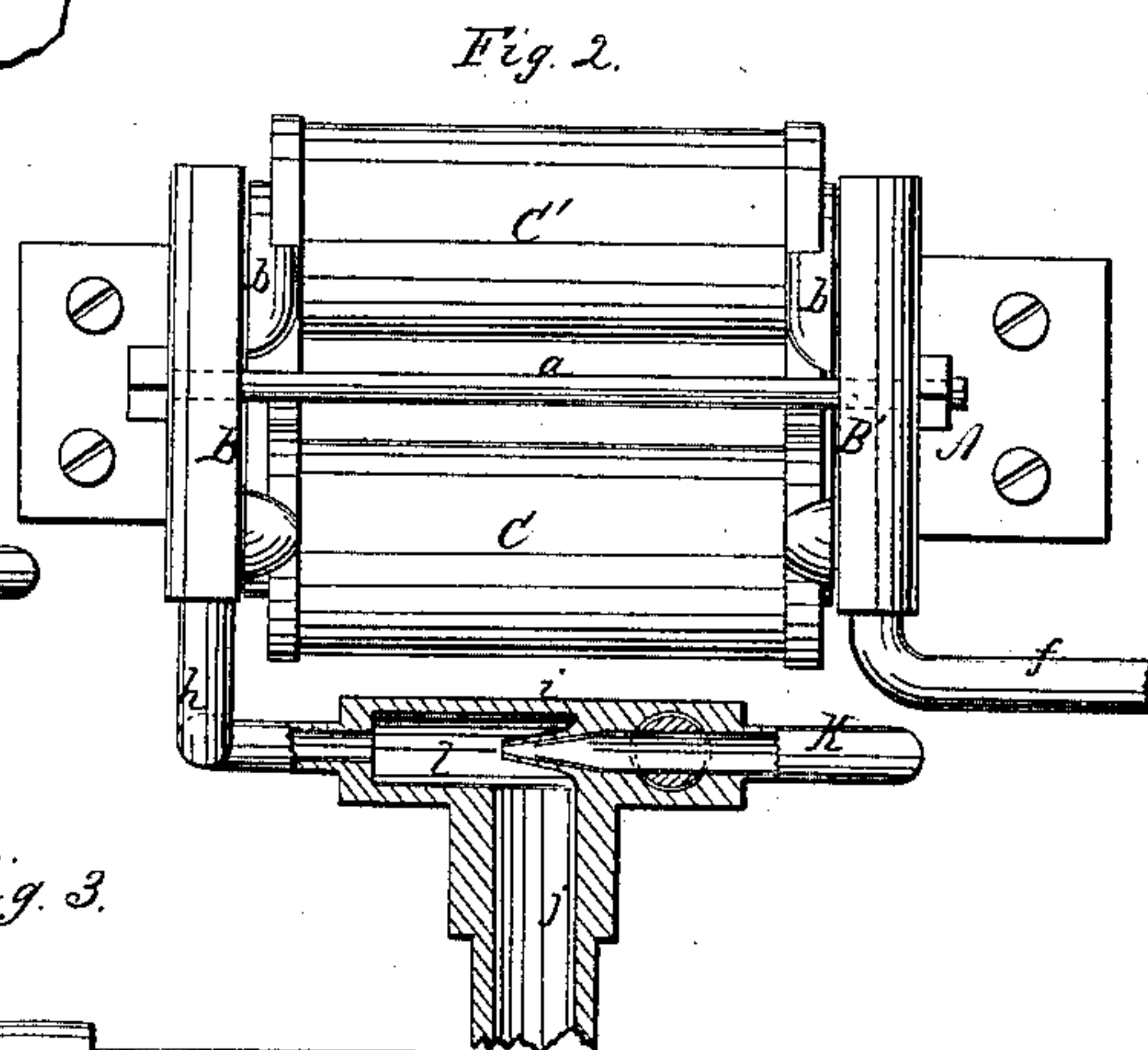


Fig. 2.

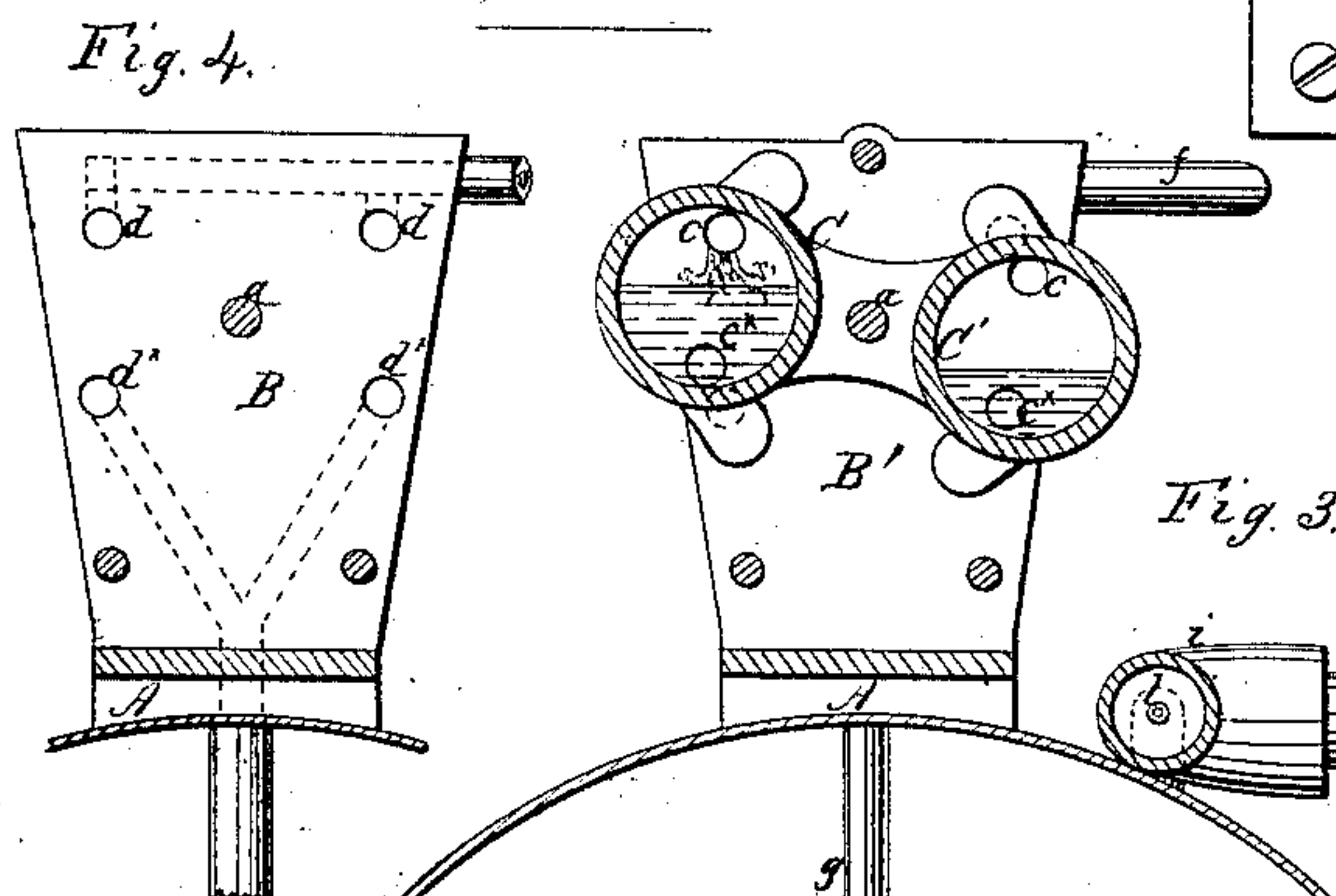


Fig. 4.

Fig. 3.

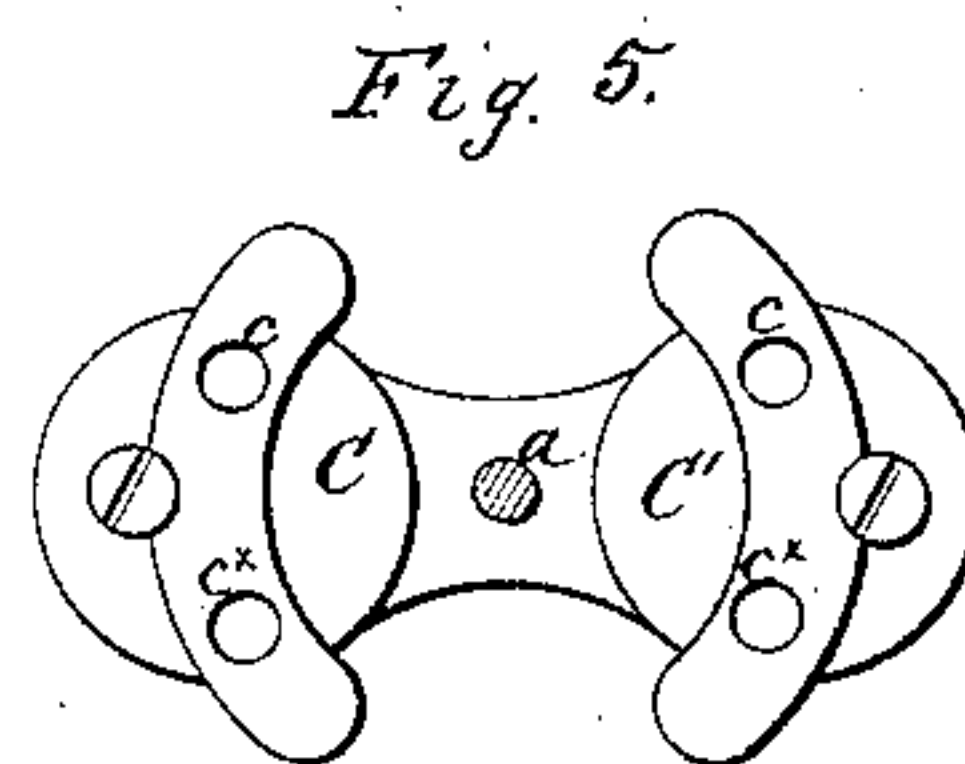
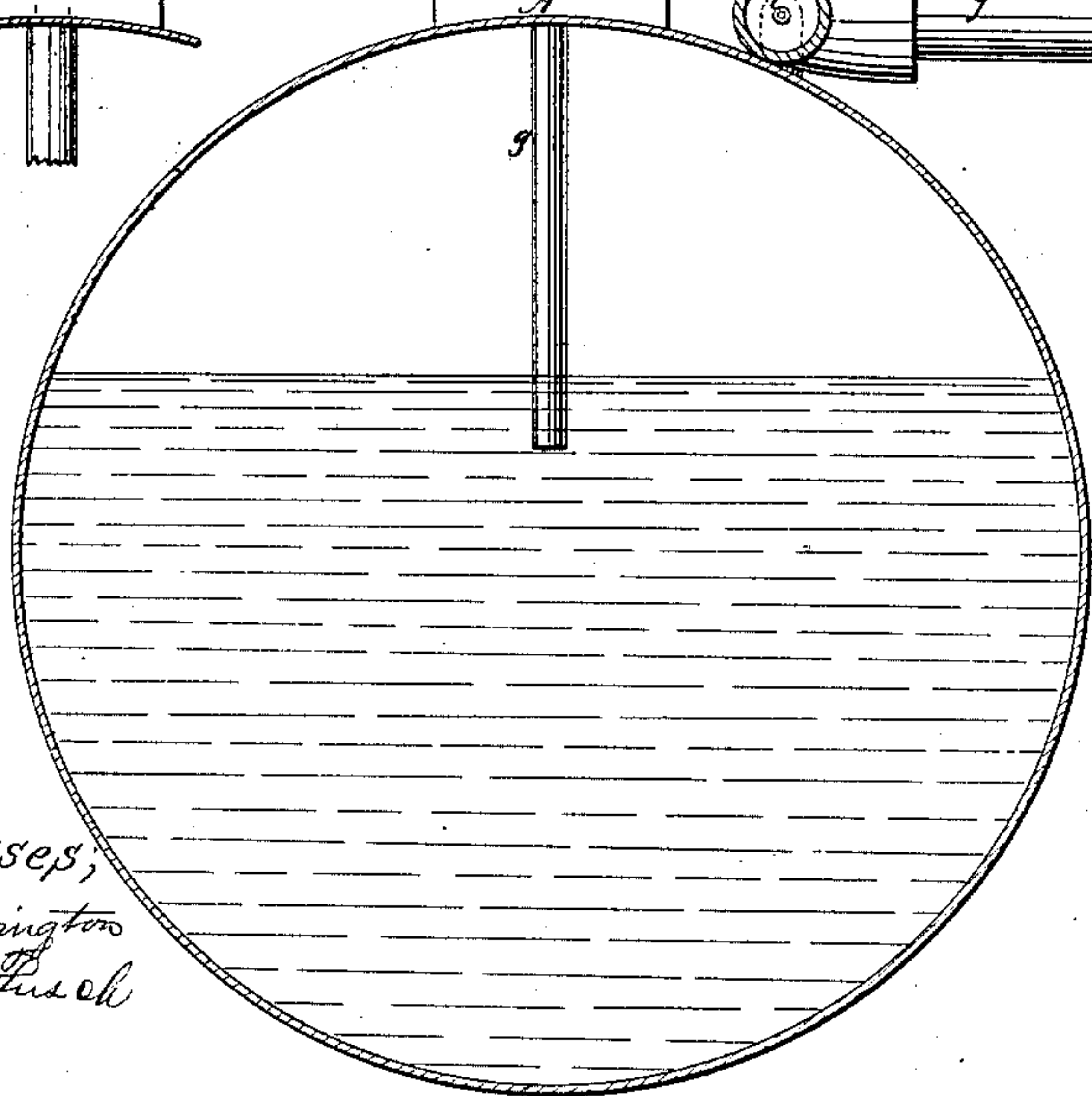


Fig. 5.

Witnesses;
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HENRY O. DEMAREST, OF NEW YORK, N. Y.

Letters Patent No. 63,227, dated March 26, 1867.

IMPROVEMENT IN AUTOMATIC BOILER-FEEDERS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, HENRY O. DEMAREST, of the city, county, and State of New York, have invented a new and improved Automatic Boiler-Feed; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a side elevation of this invention.

Figure 2 is a plan or top view of the same partly in section.

Figure 3 is a transverse vertical section of the same.

Figure 4 is an inside elevation of one of the end pieces or seats detached.

Figure 5 is an end view of the rocking-chambers detached.

Similar letters of reference indicate like parts.

This invention relates to a boiler-feed, which consists principally of two chambers which oscillate on a suitable rod, their ends being faced off and ground steam-tight against seats which are formed by the end pieces of a suitable frame. Suitable channels in the seats and chambers allow said chambers to fill and discharge alternately, each chamber when full being made to descend by its own gravity, and in descending it opens the communication with the steam boiler, and if the water in the boiler is below the desired level steam is admitted to said chamber and the water contained in it sinks down into the boiler, and while one chamber discharges the other fills, and an automatic boiler-feed is obtained, which, when once properly adjusted, requires no further attention.

A represents the bed-plate of my apparatus, from which rise two check pieces B B', the inner surfaces of which are planed off parallel to each other and form the seats for the ends of the oscillating chambers C C'. These chambers are supported by a central rod, *a*, on which they are perfectly balanced, so that if a certain weight is added to one of the chambers it will sink down, causing the other chamber to rise until one of the chambers comes in contact with a suitable stop, *b*. The ends of the chambers C C' are ground steam-tight against the seats B B', and said chambers are provided each with two apertures *c c** in each end, one near the top and one near the bottom of the chamber, as shown in figs. 3 and 5 of the drawing. The seats B B' are provided with passages *d d**, and the passages *d* in the seat B connect with the water-supply tank, while the passages *d** connect with a pipe, *e*, which extends down into the boiler, terminating at the level of the mean water line. The passages *d* in the seat B' connect with the waste pipe *f*, which may be made to return to the supply tank, and the passages *d** in said seat connect with a pipe, *g*, which extends down into the boiler. The apertures *d d** in the seats are so situated that if the apertures *c c* in the ends of the chambers C coincide with the apertures *d* in the seats B B', the apertures *c** in the ends of the chamber B' coincide with the apertures *d** in the seats B B', and *vice versa*, according to the position of the chambers. The connection between the seat B and the supply tank is effected by a pipe, *h*, which leads to a chamber, *i*, and from this chamber extends a pipe, *j*, to the supply tank, and another pipe *k* to the steam space of the boiler. This latter pipe is at right angles with the supply pipe *j*, and it is provided with a nozzle, *l*, (see fig. 2,) so that it acts on the principle of Giffard's injector, causing the water to flow into either of the chambers C or C' against any pressure which may yet exist in the same.

The operation is as follows: If the water in the boiler sinks below the mean water line, and if the chambers C C' are in the position shown in fig. 3, steam from the boiler passes up through the pipe *e* and fills the upper part of the chamber C', causing the water contained therein to sink down into the boiler through the pipe *g*. At the same time the chamber C is in communication with the supply tank and fills with water. As soon as the chamber C' is empty and the chamber C full, the latter, being now the heaviest, sinks down, and the connection between the chambers, the supply tank, and the boiler, is changed. The chamber C discharges into the boiler and the chamber C' fills. If the water in the boiler rises above the mean water line, the mouth of the pipe *e* is closed, and the water in the chambers is prevented from flowing down into the boiler. The oscillating motion of the chamber ceases and the water flowing into that chamber which happens to be up discharges through the waste pipe *f*, which may lead back to the supply tank. By these means a boiler-feed is obtained

which works perfectly automatically, which is not liable to get out of order, and which when once properly adjusted will keep up a uniform supply of water to the boiler without requiring any further attention.

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

The oscillating chambers *C C'*, with apertures *c c**, in combination with the seats *B B'*, apertures *d d**, pipes *e g*, and injector *h j k*, all constructed and operating substantially as and for the purpose described.

The above specification of my invention signed by me this 22d day of June, 1866.

HENRY O. DEMAREST.

Witnesses:

WM. F. McNAMARA,

ALEX. F. ROBERTS.