

No. 661,110.

Patented Nov. 6, 1900.

H. SCHWERDFEGER & J. KAYSER.

COOLING APPARATUS.

(Application filed May 6, 1897.)

(No Model.)

Fig. 1.

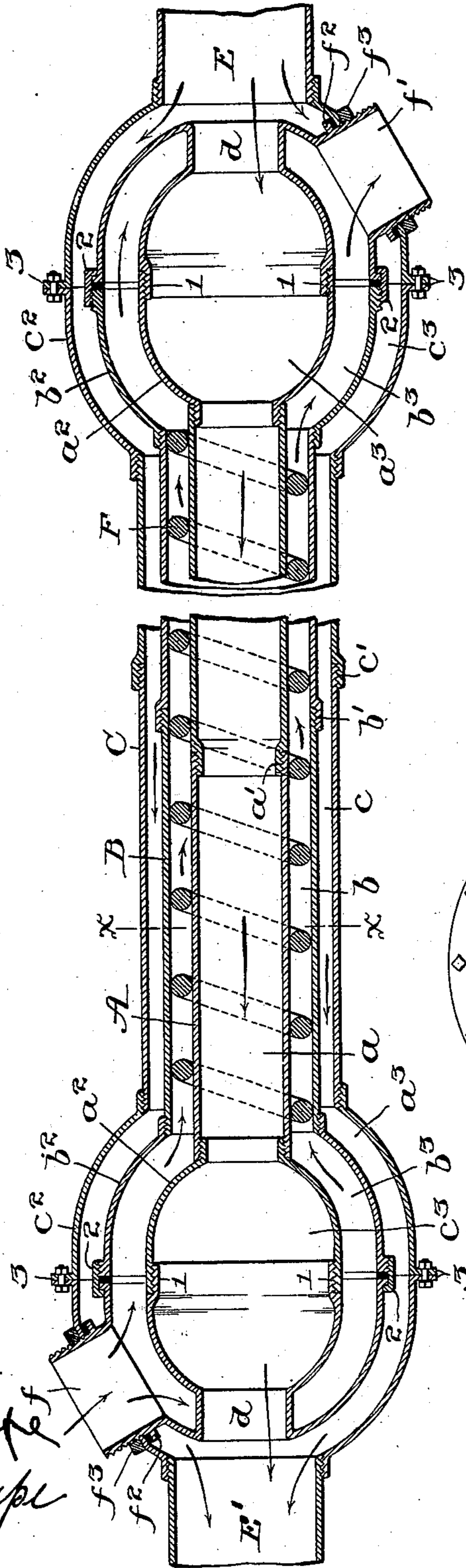


Fig. 3.

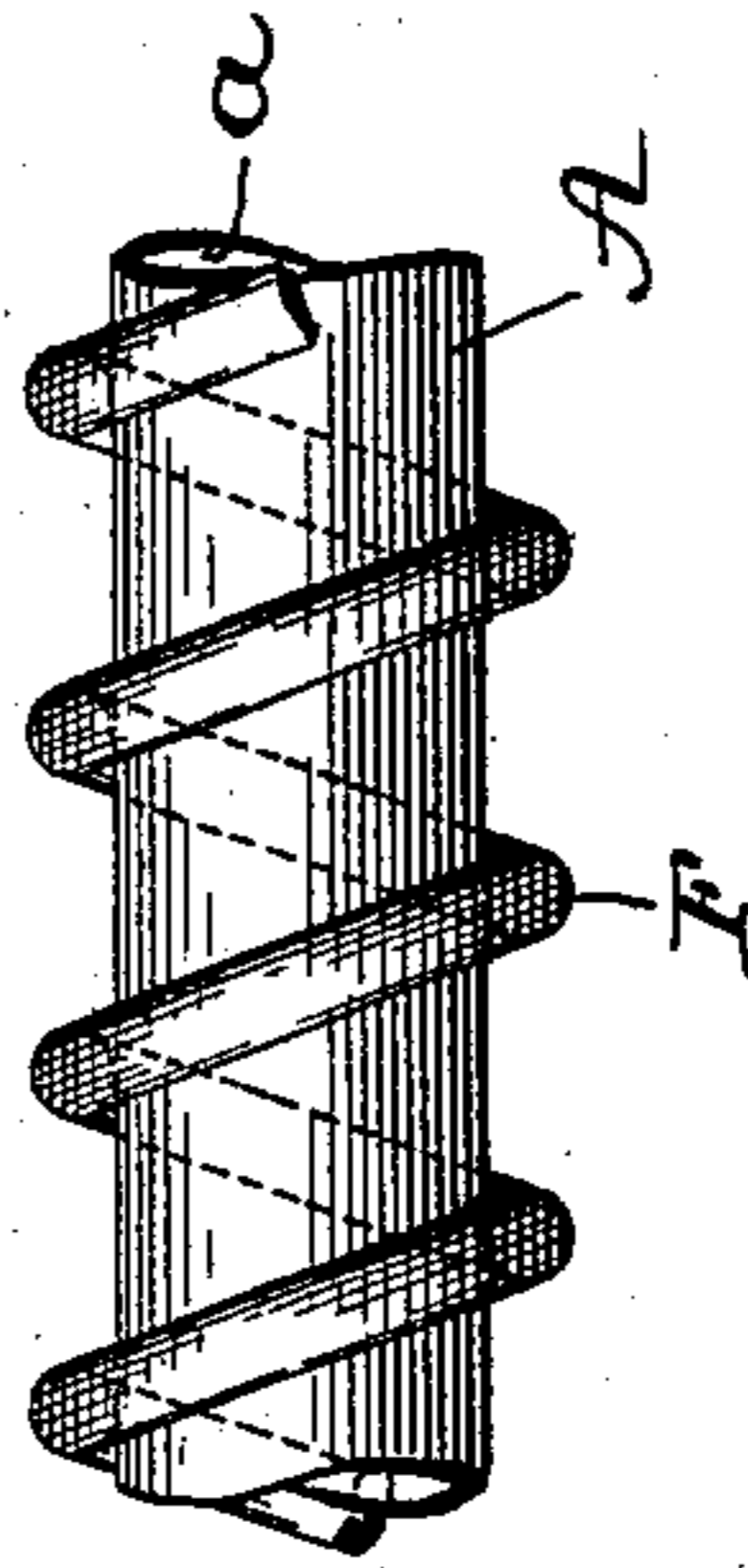
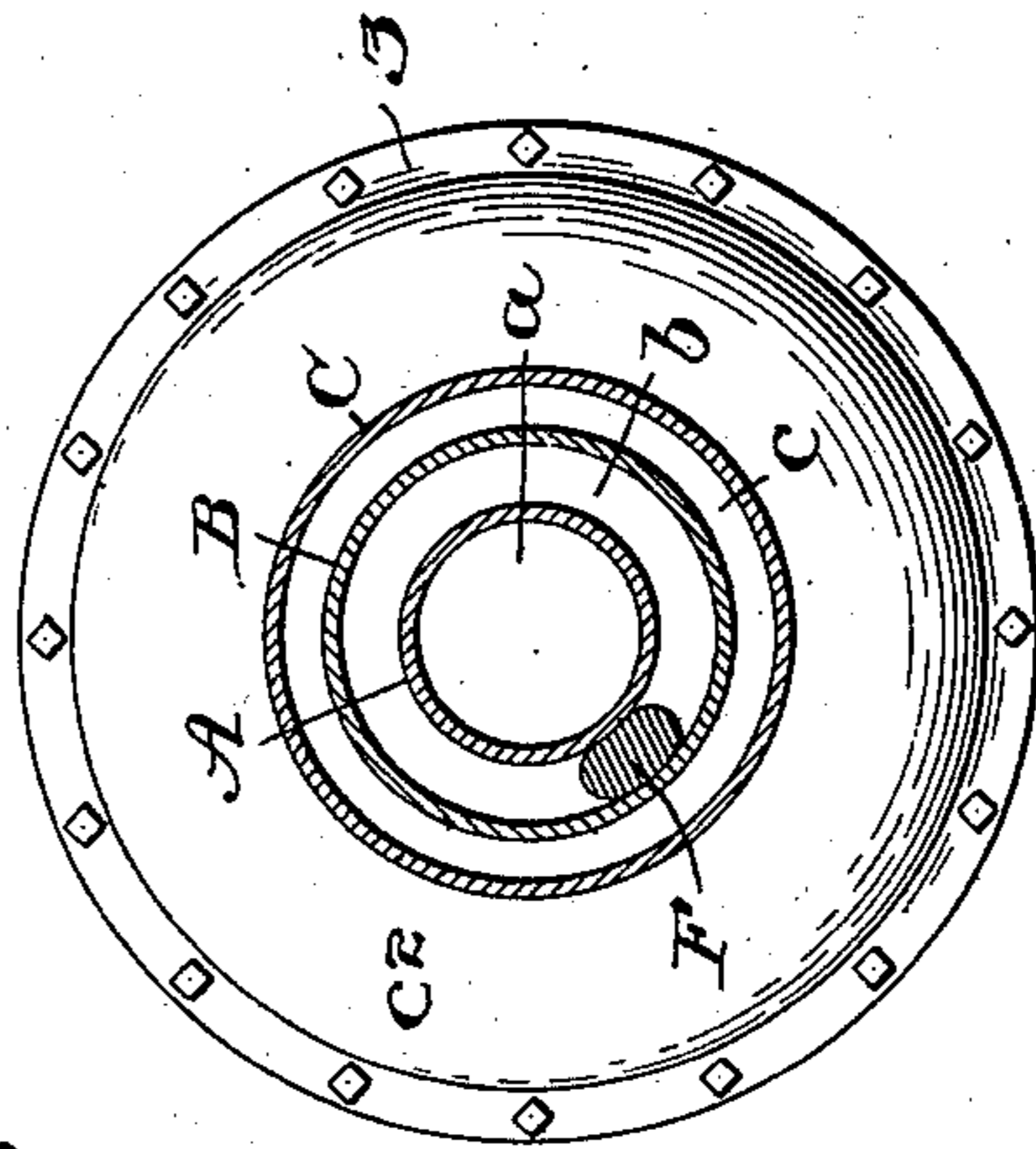


Fig. 2.



Witnesses.

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COOLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 661,110, dated November 6, 1900.

Application filed May 6, 1897. Serial No. 635,295. (No model.)

To all whom it may concern:

Be it known that we, HARRY SCHWERDFEGER and JOSEPH KAYSER, citizens of the United States, residing at the city and county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Cooling Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

This invention has relation to apparatus for cooling beers and other liquids, and has for its object to provide a simple and efficient construction whereby the cooling operation shall be expeditiously effected without exposure of the liquid to the external atmosphere, as will hereinafter appear.

In the drawings, Figure 1 is a longitudinal vertical section of the cooling apparatus. Fig. 2 is a transverse vertical section thereof as on the line $x x$ of Fig. 1. Fig. 3 is a detail of the central pipe, showing a portion of the external coil thereon.

A, B, and C represent three concentric pipes arranged to form the central chamber a and the annular chambers b c . These pipes are of any suitable length and diameter for their intended purposes, and they may, if necessary or desirable, be made in sections coupled or jointed together, as at a' b' c' . The respective ends of the pipes have fitted thereto globe-like sections a^2 b^2 c^2 , respectively, which are so arranged that the central chamber terminates in enlarged chambers a^3 , while the annular chambers terminate in the expanded chambers b^3 c^3 , respectively. The sections a^2 , b^2 , and c^2 are preferably made each in two sections coupled together midway of its ends. In the present instance the parts of the inner section are connected by a screw lap-joint 1, those of the second section are connected by a screw coupling-ring 2, while those of the remaining or outer section are provided with external flanges 3, that are bolted together. By this construction the parts may be readily disconnected as occasion may require. The interior sections a^2 b^2 are connected at their outer extremities by a neck d , while the exterior sections c^2 have coupled thereto pipes E E', respectively, which

thus each communicate with the adjacent central and outer chambers, respectively. The pipe E is connected with a source of cold water or other cooling-agent supply, while the other pipe E' leads to a suitable point of discharge.

On each of the intermediate end sections b^2 is formed a neck $f f'$, which extends through the adjacent outer section and is clamped thereto, being provided with a flange f^2 and coacting screw-ring f^3 . One, f , of these necks is connected with a pipe leading from the beer-supply, say, while the other, f' , is connected with a pipe leading to a suitable point of discharge.

From the foregoing it will be seen that the beers, &c., enter by way of the neck f into the adjacent end chamber, thence into and along the chamber b to the other end chamber b^3 , and pass by way of the neck f' to the discharge-pipe; also, that the cold water, &c., will pass by way of the pipe E into the central end chamber a^3 and the outer chamber c^3 , thence through the central chamber a and the outer concentric chamber c , so as to reduce the temperature of the beer, &c., in the interposed chamber. The cold water, &c., passes onward to and through the communicating end chambers and thence to and through the discharge-pipe E'.

It will be observed that the cold and hot liquids flow in opposite directions and that therefore the temperature of the hot liquid has been considerably reduced before the initial action of the incoming water thereon, and, further, that by reason of the expanded end chambers a comparatively large cooling surface is presented to the hot liquid at its points of ingress and egress to and from the apparatus, thereby insuring a rapid and effective cooling of the liquid. It will also be observed that the beers, &c., during the cooling operation are entirely excluded from the atmosphere, thereby obviating all liability of infection or contamination from external sources.

As a simple and efficient means to retard the progress of the beer, &c., as it passes through the chamber b , and thereby subject it still more thoroughly to the action of the cooling agent, we prefer to encircle the cen-

tral pipe with a spiral F, which provides a serpentine course around which the beer, &c., is caused to flow during its traverse.

We claim—

- 5 A cooling apparatus comprising three concentric pipes having expanded or globe-like sections at the ends thereof, necks connecting the two inner sections together at each end, inlet and outlet pipes connected with the
10 outer sections respectively, and inlet and outlet pipes connected with the outer one of the two inner sections respectively and extended

through and clamped to the adjacent outer sections, the said sections being each made in two parts detachably coupled together in 15 the body thereof, substantially as described.

In testimony whereof we have hereunto affixed our signatures in the presence of two subscribing witnesses.

HARRY SCHWERDFEGER.

JOSEPH KAYSER.

Witnesses:

JOHN L. HARVEY,

JOHN R. NOLAN.