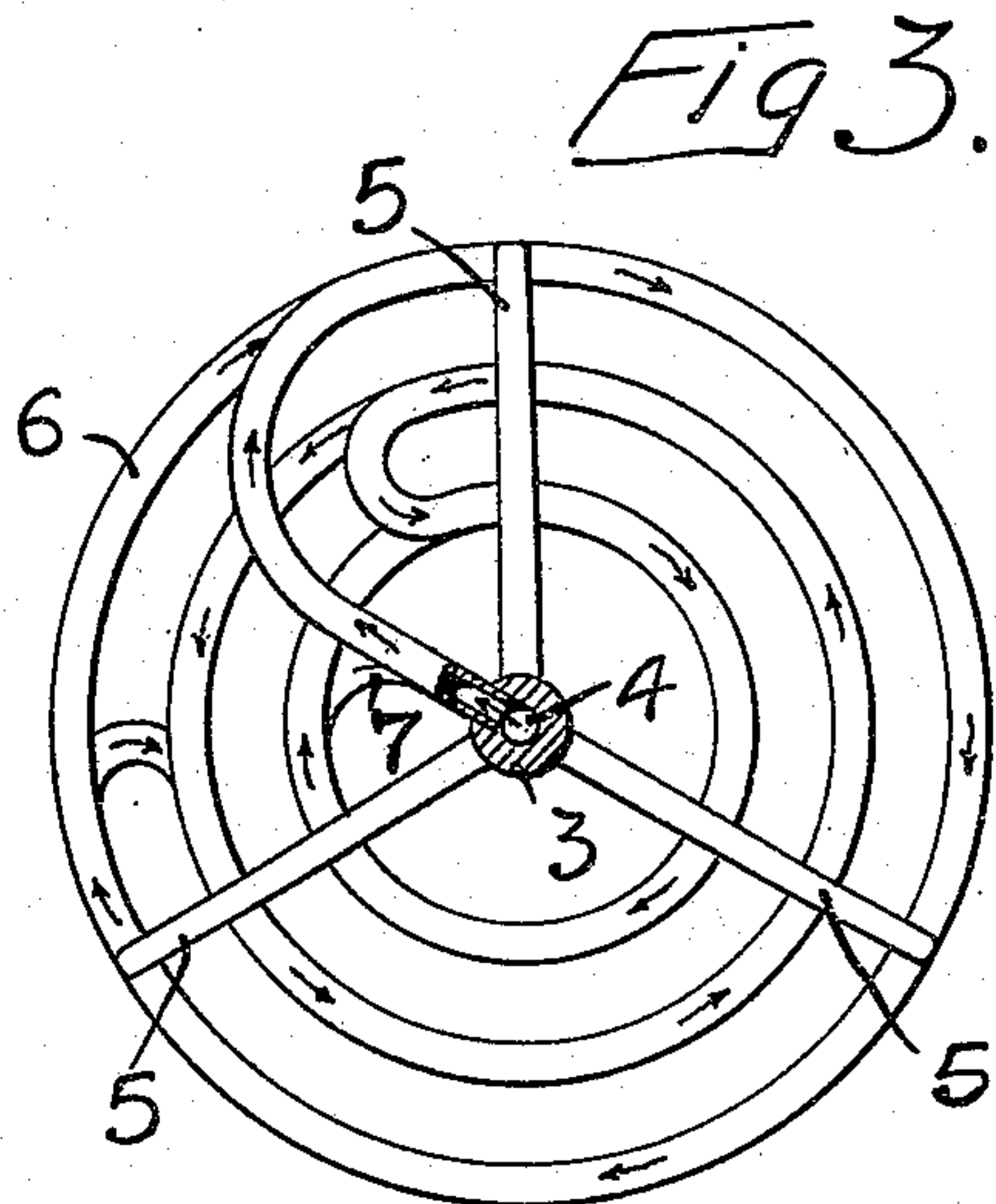
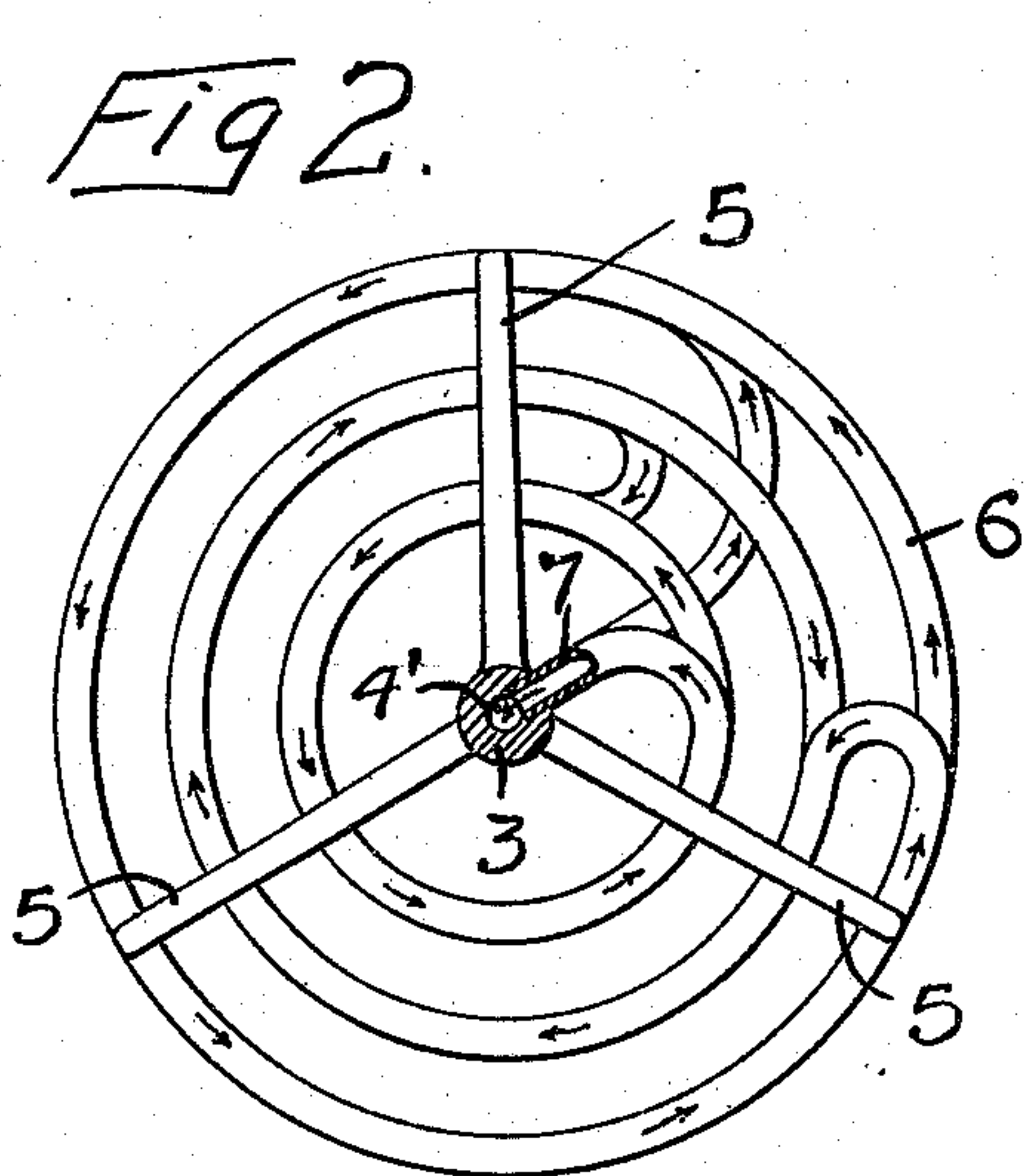
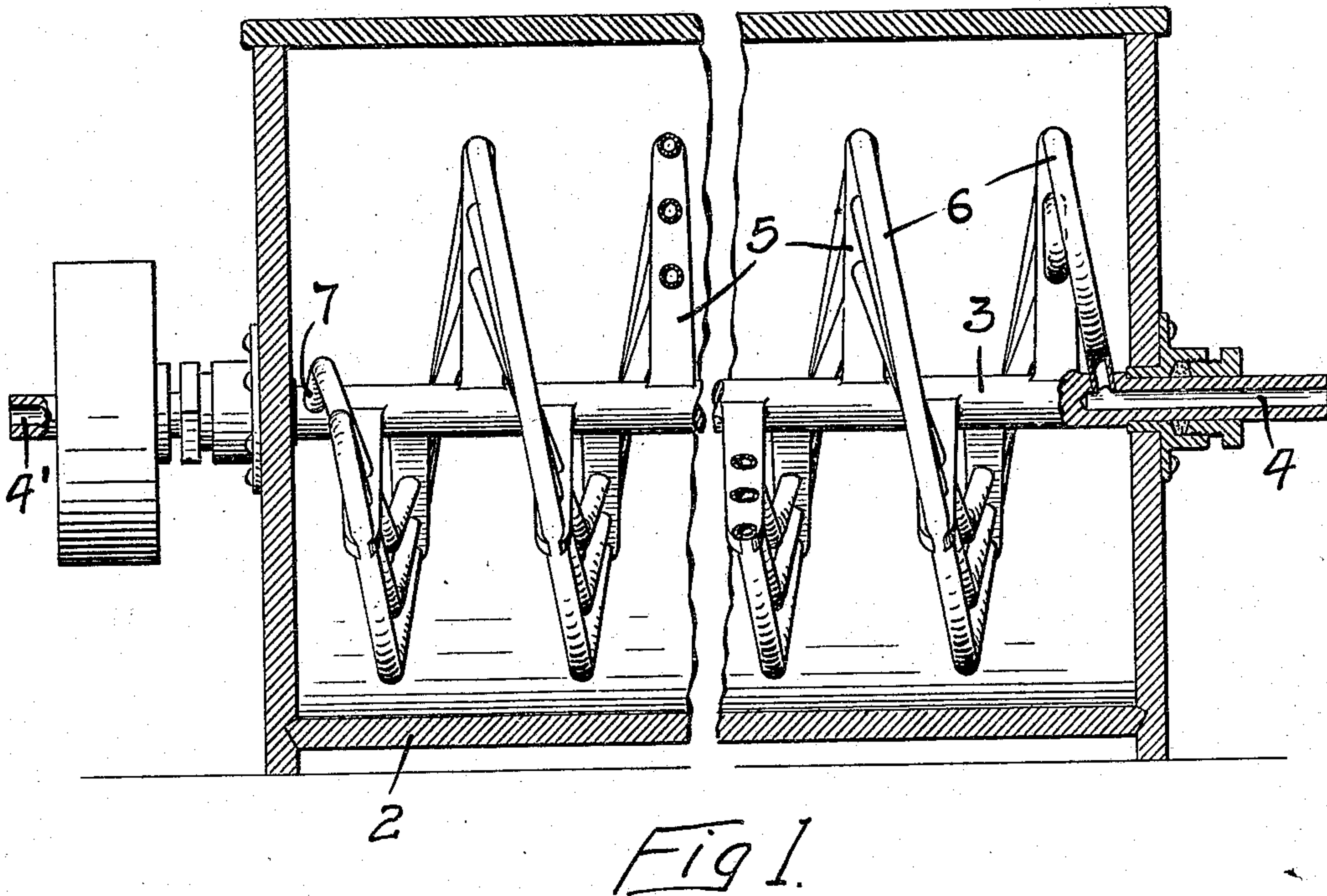


F. R. NOONAN.
COOLER AND AERATOR.
APPLICATION FILED DEC. 22, 1908.

930,786.

Patented Aug. 10, 1909.



WITNESSES
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J. A. Bevington.

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UNITED STATES PATENT OFFICE.

FRANK R. NOONAN, OF ALEXANDRIA, MINNESOTA.

COOLER AND AERATOR.

No. 930,786.

Specification of Letters Patent.

Patented Aug. 10, 1909.

Application filed December 22, 1908. Serial No. 468,836.

To all whom it may concern:

Be it known that I, FRANK R. NOONAN, of Alexandria, Douglas county, Minnesota, have invented certain new and useful Improvements in Coolers and Aerators, of which the following is a specification.

My invention relates to devices for cooling or aerating cream, although capable of application for other purposes.

The object of my invention is to provide a maximum of radiating and agitating surface within a minimum space.

A further object is to increase the capacity of an ordinary cream ripener without materially increasing the size of the device or the space within which it operates.

My invention consists generally in a spiral coil turned back upon itself one or more times to compel the cooling liquid to travel back and forth through the coils before being discharged.

Further, the invention consists in increasing the agitating surface of the ripener, without increasing its size.

In the accompanying drawings, forming part of this specification, Figure 1 is a longitudinal sectional view of a vat with my invention applied thereto. Figs. 2 and 3 are transverse, sectional views of the coil.

In the drawing, 2 represents a vat, which may be used for ripening cream or to contain any other liquid to be cooled or aerated, and 3 is a shaft having bearings in the heads of said vat and extending therethrough. This shaft has a passage 4, through which the cooling liquid may be admitted to the coil. Upon the shaft I arrange at intervals a series of radiating arms 5 and carried by these arms is a coil 6 composed of tubing having one end communicating with the passage 4 and curved outwardly from this point and passing from arm to arm around the shaft spirally to the other end of the vat. When this end is reached, a loop is formed and the coil is returned through the arms to the starting point. Another loop is there formed and the coil carried through the arm again to the other end of the vat, where the end 7 is inserted into the shaft and communicates with the passage 4'. This carrying of the coil back and forth from one end to the other of the vat compels the cooling liquid entering the coil 6 to flow to the oppo-

site end of the coil and back again and then out to the opposite end again before it can pass into the hollow shaft. In this way, the contents of the vat will be thoroughly exposed to the radiation of the tubes and the cooling action will be far more efficient than where a single coil is employed. Furthermore, the series of coils will have the effect of agitating the contents of the vat more thoroughly than would be possible with a single coil. The capacity and efficiency of the apparatus is thus materially increased. At the same time, the space between the coils will be sufficient to allow the passage of the cream or other contents of the vat and allow free circulation, as the coil revolves.

The tubes may be of any suitable diameter and the spiral may of course be varied in size, according to the dimensions of the vat where it is to be used.

I claim as my invention:

1. A spiral cooler and aerator, comprising a shaft, arms radiating therefrom, a tube having one end connected with a passage in said shaft and coils spirally arranged therefrom passing through said arms around the shaft to the other end thereof, back again through said arms to the starting point and from thence through said arms again to the opposite end of the shaft, the end of said tube at that point having a connection with the discharge passage in said shaft, substantially as described.

2. A cooler and aerator, consisting of a tube coiled in a series of spirals back and forth and a shaft having passages connected with the ends of said tube and said tube compelling the liquid entering therein to flow back and forth before discharging therefrom.

3. A cooler and aerator, comprising a shaft, a series of arms radiating therefrom at intervals, a series of spiral coils concentrically arranged in said arms and spaced from one another, said coils being formed from a single, continuous tube and having intake and discharge openings, substantially as described.

In witness whereof, I have hereunto set my hand this 15th day of December 1908.

FRANK R. NOONAN.

Witnesses:

RICHARD PAUL,
C. G. HANSON.