

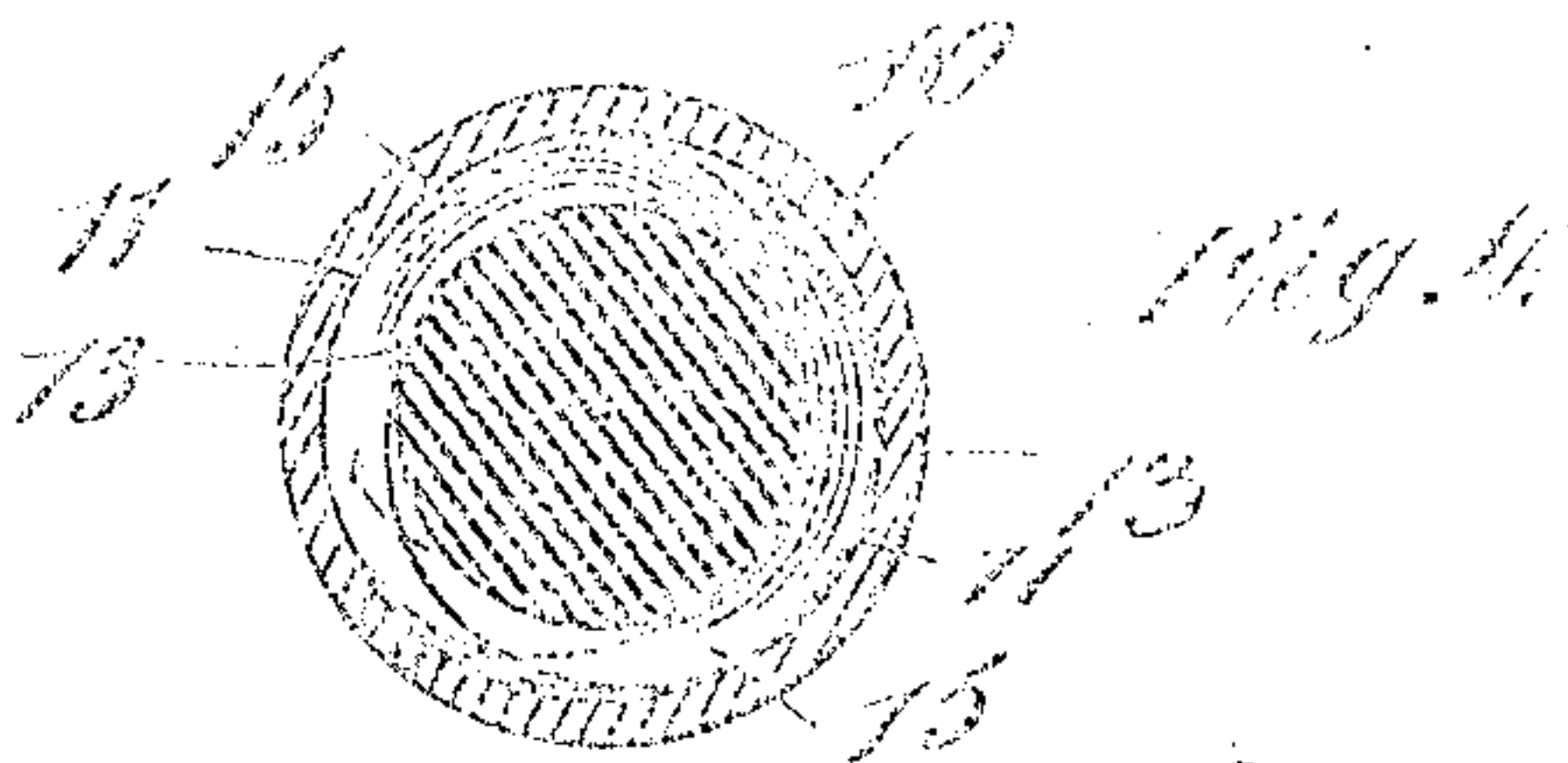
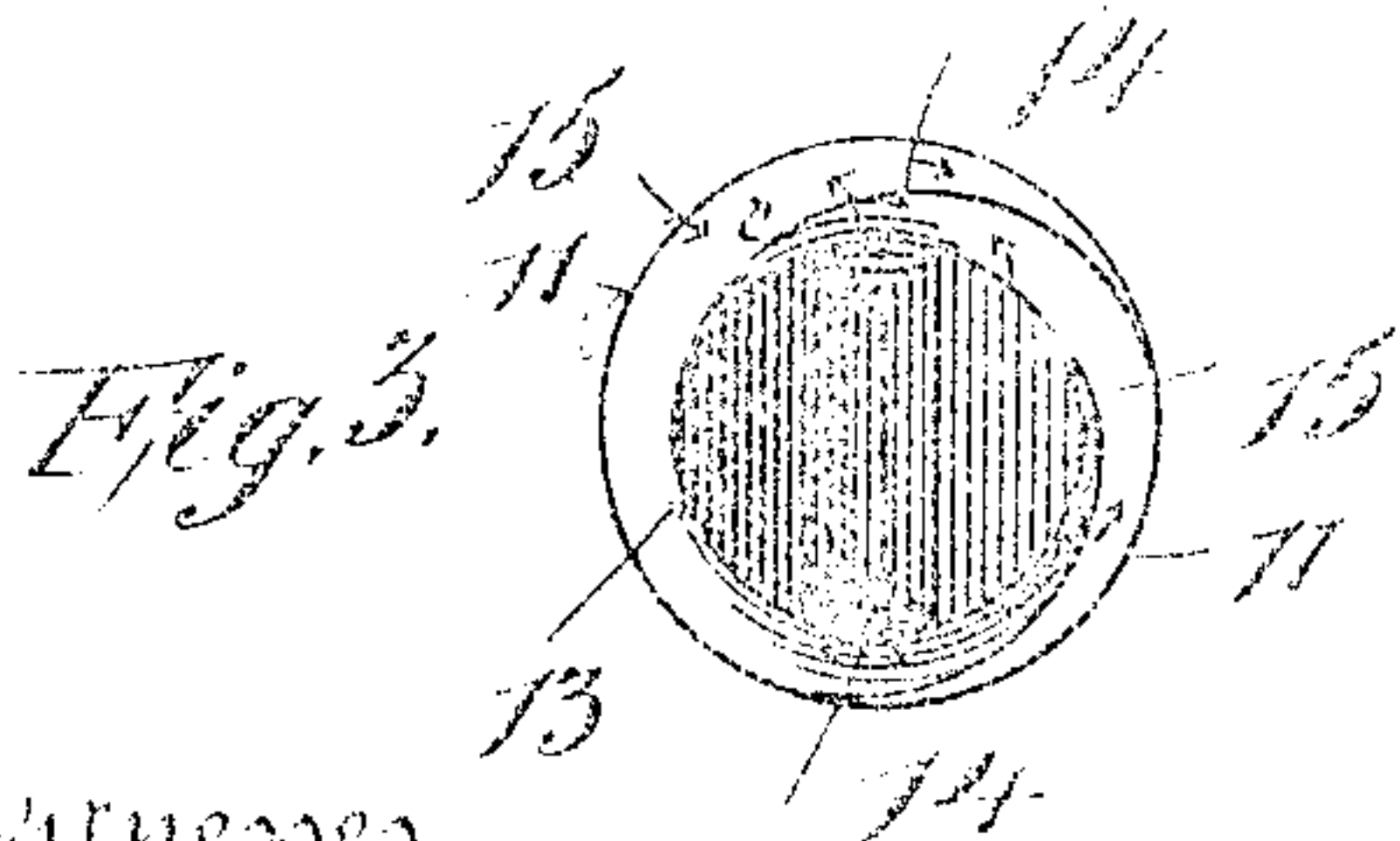
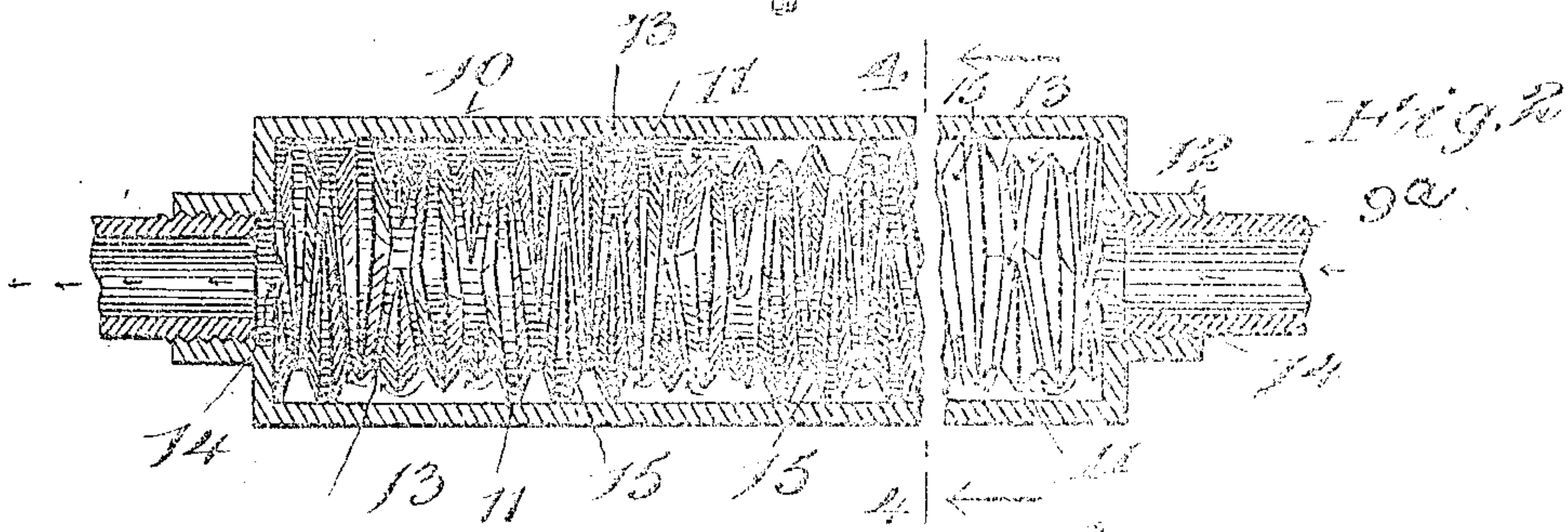
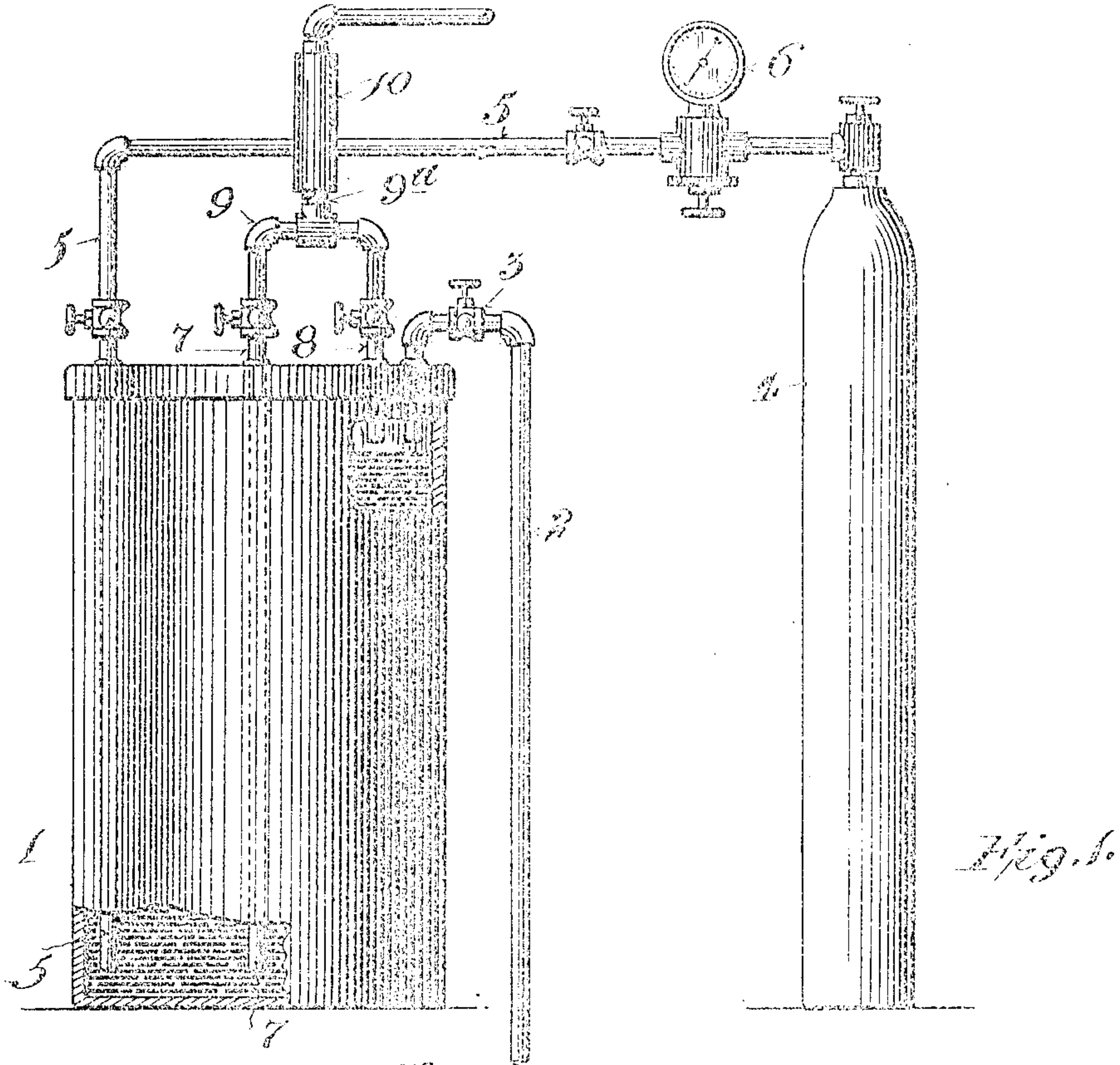
H. PEIN.

APPARATUS FOR CARBONATING LIQUIDS.

APPLICATION FILED OCT. 20, 1905. RENEWED MAY 23, 1908.

906,555.

Patented Dec. 15, 1908.



Witnesses
C. H. Benjamin
Phas L. Hensley

Inventor
Henry Pein.
By his attorney
Jack L. Boy

UNITED STATES PATENT OFFICE.

HENRY PEIN, OF JERSEY CITY, NEW JERSEY.

APPARATUS FOR CARBONATING LIQUIDS.

No. 908,555.

Specification of Letters Patent.

Patented Dec. 15, 1908.

Application filed October 20, 1905, Serial No. 283,578. Renewed May 22, 1908. Serial No. 434,587.

To all whom it may concern:

Be it known that I, HENRY PEIN, a citizen of the United States, and a resident of Jersey City, county of Hudson, and State of New Jersey, have invented certain new and useful Improvements in Apparatus for Carbonating Liquid, of which the following is a specification.

The object of my invention is to provide a more simple and efficient means for carbonating liquids than has heretofore been made, and one which requires no other force than the pressure of the gas to operate, thus permitting me to produce an apparatus for carbonating and dispensing liquids as is illustrated in my application No. 207869, filed May 13th, 1904, without the cumbersome mechanism ordinarily used for this purpose, and which previously has always required an operating force other than the gas pressure.

Further objects of my invention and details of construction will more readily appear from the description hereinafter.

In the drawings forming part of this specification—Figure 1 is an elevation of the reservoir of a carbonating machine and the various pipes connected therewith. Fig. 2 is a view of my improved mixing chamber, wherein the casing is shown in section for the purpose of illustrating the inclosed core. Fig. 3 is an end view of the core, and Fig. 4 is a section taken on the line 4—4 of Fig. 2.

My improved mixing chamber is adapted for use in any carbonating machine in which the liquid and gas may be forced therethrough, but I will describe it as used in the machine illustrated in the original application referred to herein.

In Fig. 1, I have illustrated an ordinary reservoir 1 for the storage of sufficient liquid to continuously operate the machine and for the purpose of primarily uniting the gas and liquid. Leading to the reservoir is a suitable liquid supply pipe 2, from which it is fed, and in which I provide a valve 3 to govern the flow of the liquid therethrough, which may be a valve permitting the liquid to flow but one way, so that there will be no back pressure in the pipe 2. This pipe is preferably made to discharge near the top of the reservoir for purposes which will be seen. To the reservoir is also connected a gas tank 4, in which the gas under extreme pressure is stored, and which is connected with the reservoir by means of the pipe 5; which passes to a point near the bottom of the reservoir

and is provided with various valves, and a gage 6 for the purpose of controlling and indicating the flow of gas through the pipe.

For the purpose of drawing off the liquid and gas from the reservoir for use, I employ a pipe 7 which is connected near the bottom of the reservoir and through which the liquid is forced and a pipe 8 attached near the top of the reservoir to receive the gas. It will be seen that in this way the water entering the top of the tank and the gas at the bottom, and being reversely taken off, that it must necessarily receive a primary mixing. The pipes 7 and 8 may be united in a single coupling 9, and above which may be attached to the pipe 9 a mixing chamber 10. Beyond the mixing chamber the latter has no peculiar relations to any particular machine, and I will therefore not describe its other connections.

The mixing chamber may also be attached to any part of the pipe as may be desired, so long as the gas and liquid are adapted to pass therethrough. The mixer or carbonator consists of a casing 10 which is cylindrical, preferably larger in diameter than the pipes to which it is connected, and it is provided with reduced ends 12, interiorly threaded, to receive the pipes at each end, or otherwise connected with the receiving and discharge pipes. Within the casing is a core 11, which is provided with an interrupted outer surface, on which the liquid passing through the chamber will become disturbed and properly mixed with the gas, and as I have specifically used it consists of a cylindrical piece having peripheral threads; one being a right-hand thread at 13, and the other a left-hand thread 15, which cross at short intervals, the outer edge of the threads fitting snugly against the inner bore of the casing. The threads 13 and 15 are of different pitch, so that the two will not intersect at the same point on the core and thus form a regular channel where the threads run down. One thread may be, say a 7 pitch and the other 4 so that the points of crossing will be irregular.

When the liquid and air enter from the reservoir, whether they be previously mixed or not, they pass into an angular slot 14 in the end of the core, and then into both threads, it being understood that the gas in the reservoir provides the necessary force so as to force the liquid through the alternate threads. The liquid and the gas at each half revolution are forcibly mixed, whether the liquid

and gas enter separately or if the gas has been partly united with the liquid, so that by the time they reach the ends of the threads, the gas and liquids have been so perfectly mixed that it is equal to or better than the mixture caused by various other devices now in general use. It will be seen that this is not only a very simple means for uniting the gas and liquid, but it also permits the utilization of the natural force of the gas to cause the proper mixing of the gas and water, which makes an automatic machine possible.

I do not desire to be limited in my invention in its broadest aspect to the details of the construction which I have illustrated, since I believe myself to be the first to provide a chamber having a core with an interrupted surface, whereby the liquid passing therethrough is forced into different channels. Wherever I refer to the peripheral surface of the core of the mixing chamber, I do not wish to limit myself to channels being formed by the integral threads or the like on the periphery of the core; the same may be formed on the interior of the casing with similar results.

After the liquid has passed through the mixing chamber, it has been properly mixed and is ready for such distribution as may be desired.

Some of the features of invention may be used independently without departing from the spirit of my invention.

Having described my invention, what I claim is:—

1. In a carbonating apparatus, the combination of a casing and a core in the casing having peripheral channels recurrently crossing each other.

2. In a mixing chamber for aerated liquids, the combination of a casing, a core within the casing, said core being provided with intercepting threads on its outer surface, the edges of which threads contacting with said casing, and inlet and outlet pipes for said threads.

3. In a mixing chamber for aerated liquids, the combination of a casing, a core

within the casing, said core being provided with intercepting threads, and inlet and outlet pipes for said threads.

4. In a mixing chamber for aerated liquids, the combination of a casing, a core within the casing, and intercepting threads on said core running in reverse directions, and inlet and outlet pipes for said threads.

5. In a mixing device for aerated liquids, the combination of a casing, a core within the casing, said core having spiral threads running in reverse directions and intercepting each other, the outer extremities of said threads being in contact with said casing, and inlet and outlet pipes for said threads.

6. In a mixing chamber for aerated liquids, the combination of a casing, a core within the casing, intercepting channels formed between the core and casing, and inlet and outlet pipes for said channels.

7. In a mixing chamber for aerated liquids, the combination of a casing, and core therein, and a plurality of intercepting channels running in reverse directions, formed between said core and casing, and inlet and outlet pipes for said channels.

8. In a mixing chamber for aerated liquid the combination of a casing, an inner core, oppositely disposed threads on the core, the core being provided with a slot, communicating with said threads.

9. In a mixing chamber for aerated liquids, the combination of a casing, a core therein, said core having a plurality of threads of different pitch formed therein, said threads intercepting each other, and inlet and outlet pipes for said threads.

10. In a mixing chamber for aerated liquids, the combination of a casing, a core therein provided with oppositely disposed intercepting threads of different pitch, and inlet and outlet pipes for said threads.

Signed this 17th day of October, 1905.

HENRY PEIN.

Witnesses:

CHARLES G. HENSLEY,
L. MARIE JURY.