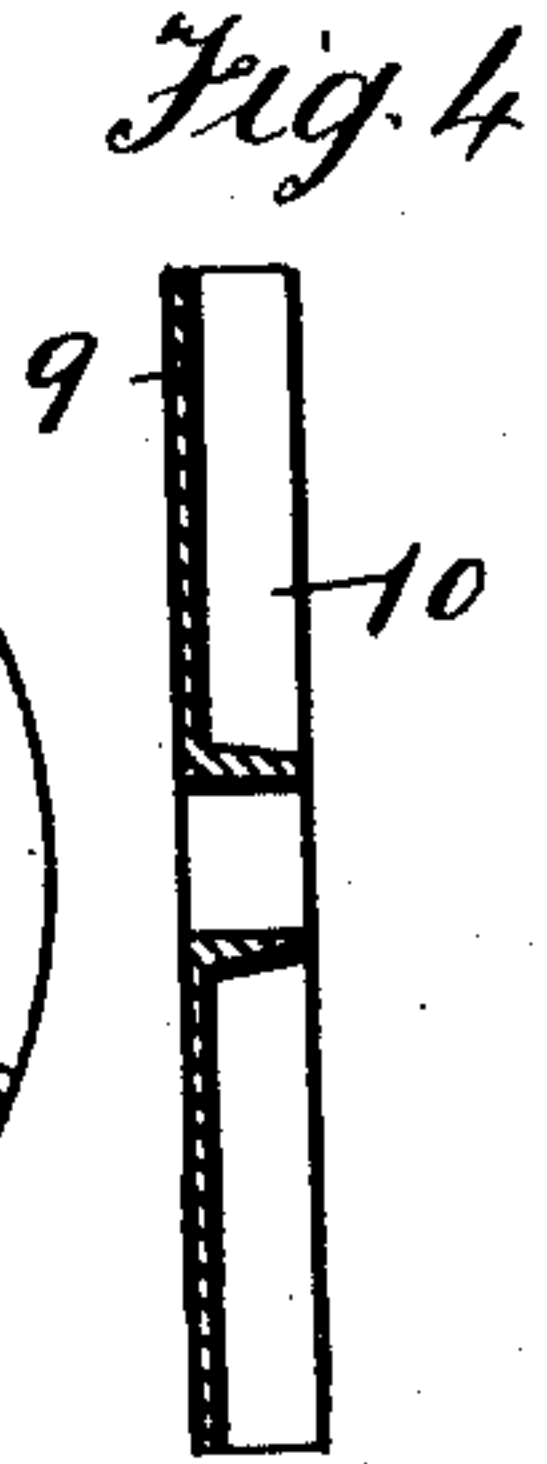
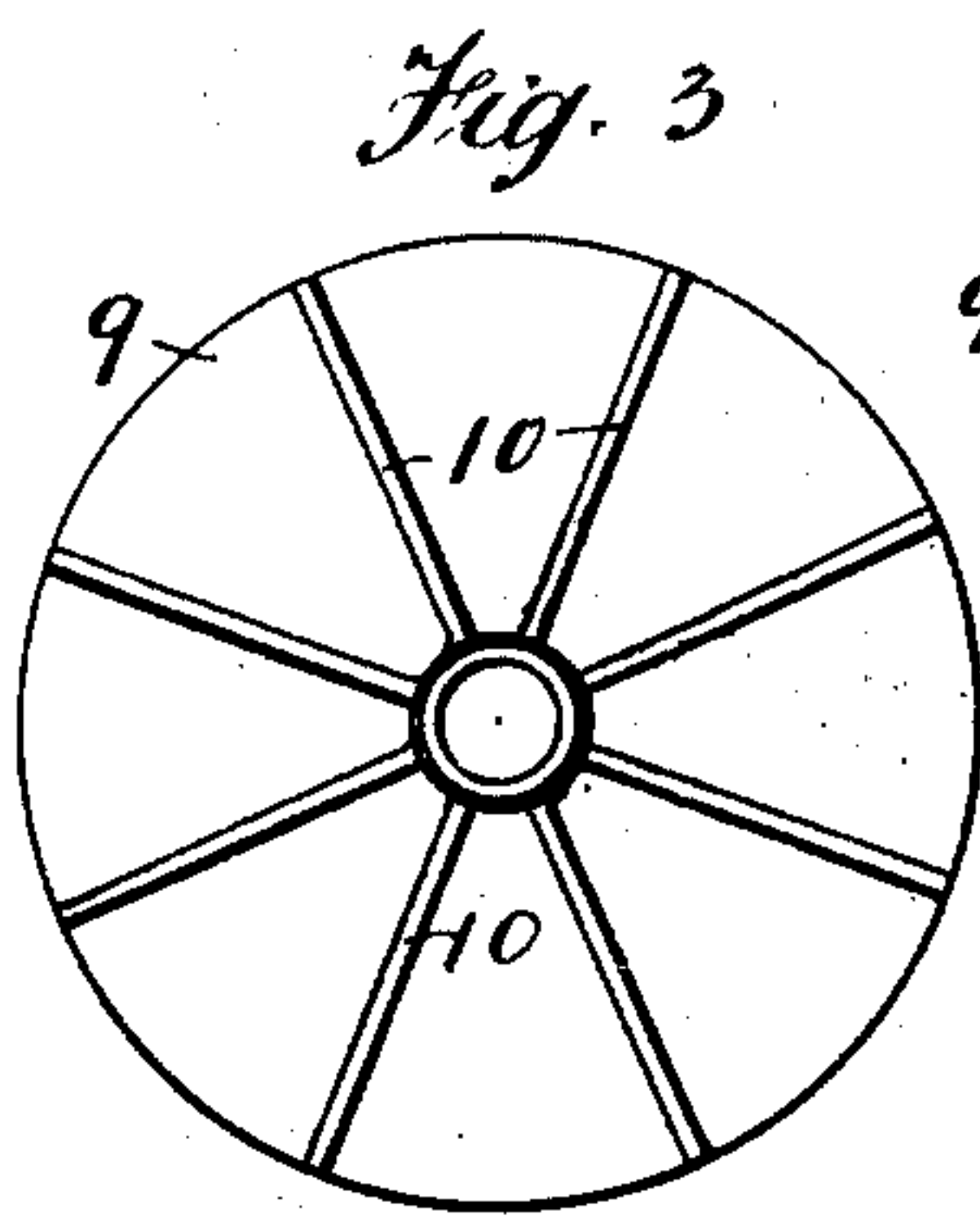
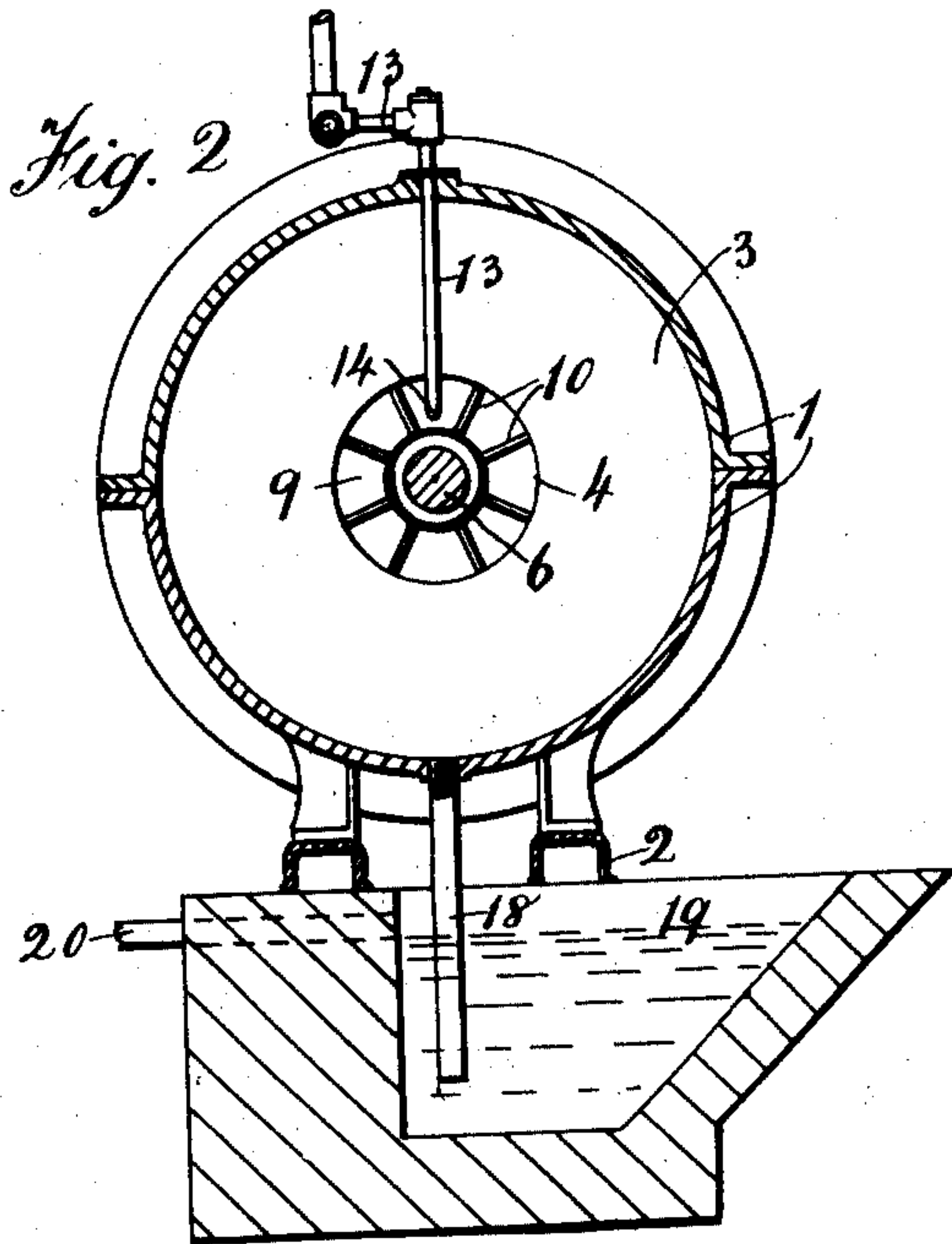
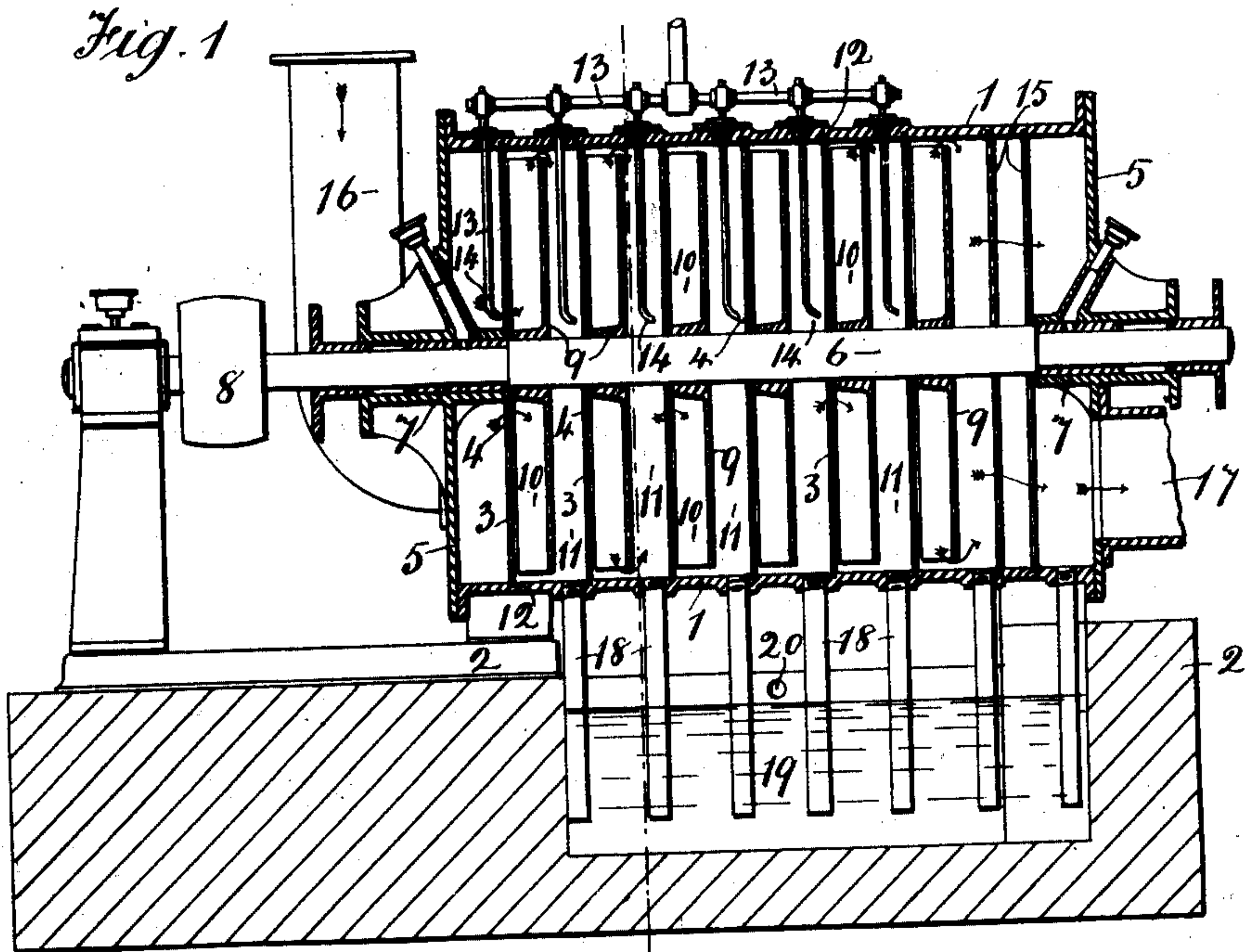


No. 879,219.

PATENTED FEB. 18, 1908.

W. TOWNS.  
PURIFIER FOR GASES.  
APPLICATION FILED JUNE 26, 1905.



Witnesses

Mr Johnson  
H. Lightfoot.

Inventor

William Towns.



# UNITED STATES PATENT OFFICE.

WILLIAM TOWNS, OF LIVERPOOL, ENGLAND.

## PURIFIER FOR GASES.

No. 879,219.

Specification of Letters Patent.

Patented Feb. 18, 1908.

Application filed June 26, 1905. Serial No. 267,006.

*To all whom it may concern:*

Be it known that I, WILLIAM TOWNS, a subject of the King of Great Britain, residing at Liverpool, in the county of Lancaster, England, have invented new and useful Improvements in Purifiers for Gases, of which the following is a specification, reference being had to the accompanying drawings, on which—

Figure 1 is a longitudinal central section and Fig. 2 a transverse section of a purifier constructed according to my invention. Figs. 3 and 4 are detail views at right angles to each other of one of the fans or dispersers.

The object of the invention is to provide simple and reliable apparatus whereby gases may be more thoroughly washed and the tar or other impurities removed to a greater extent than has been done hitherto. The apparatus is specially applicable to producer gas from bituminous coal but may be used for other gases where suitable.

In carrying out my invention I construct apparatus substantially as shown on the drawings where 1 is a cylindrical casing or chamber, supported by brackets upon a foundation 2. The chamber is preferably made in two parts so that the upper part can be removed for inspection.

3 are diaphragms in the chamber dividing it into several compartments.

4 are central or nearly central openings in the diaphragms.

5 are end covers to the chamber.

6 is a central shaft supported in bearings 7 in the end covers and rotatable by a pulley 8 or otherwise as convenient.

9 are fans or dispersers fixed on the shaft 6 one in each compartment. The fans consist each of a disk slightly less than the internal diameter of the chamber and provided on one side with blades or ribs 10 leading from middle part of disk towards the periphery as shown in Fig. 3.

The fans are so disposed on the shaft that the blades 10 nearly touch the diaphragms 3 leaving clear spaces 11 between the disks and the next diaphragm. The diaphragms may be fitted loosely in grooves 12 in the chamber.

13 are pipes for the supply of water or other desired fluid the ends 14 of the pipes are diverted into the openings 4 in the diaphragms so that the jets of fluid will strike against the fan.

15 are perforated diaphragms disposed in the chamber on the exit side of the last fan.

16 is the inlet for the gas to the chamber.

17 is the outlet for the purified gas.

18 are discharge pipes for the tar &c. from the cylinder depending into liquid in a well 19 so that the pipes have a liquid seal. 20 overflow pipe from the well.

The action is as follows: The shaft 6 and fans 9 are caused to rotate at a high speed and the gas to be purified enters the chamber through the inlet 16 and passes through the central opening 4 in the first diaphragm where it is caught by the blades of the first fan or disperser and driven outwards by centrifugal action against the interior of the chamber walls where some of the tar or other liquid or solid particles in suspension in the gas are separated and travel around down the chamber walls to the discharge pipe 18. The gas after leaving the periphery of the first fan passes inwardly through the space 11 to the central opening 4 of the second diaphragm and comes into contact with the second fan whereby it is again driven out against the chamber walls and a further separation of impurities made, afterwards again passing inwards to the central opening of the third diaphragm and so on through the whole series, the gas finally passing through the perforations in the diaphragms 15 and thence through the outlet 17. In some cases the diaphragms 15 might be dispensed with where the purification by the fans is sufficient for the purpose.

To assist in the purification I may inject water or other suitable liquid through the pipes 13 against the fans 9 the blades of which beat such liquid into fine spray and thoroughly mingle it with the gases passing outwardly along the fan blades the spray being driven against the chamber walls, carrying with it in solution some of the impurities which are easily soluble and thence passing to the discharge pipes 18. The liquid spray also serves to wash off the fan disk or blades any impurities which may collect thereon. The liquid supply may however be dispensed with if the impurities in the gas are insoluble or non-adherent.

What I claim is:—

1. A purifier for gases consisting of a chamber divided into several compartments by diaphragms such diaphragms having approximately central openings, a rotating disperser in each compartment carried on a central shaft and formed of a solid disk with free-ended and free edged blades on one side



only and arranged with the free edges of the blades close to the diaphragm on one side of a compartment and facing the entering gas, and discharge pipes from the compartments, substantially as described.

2. A purifier for gases consisting of a chamber divided into several compartments by diaphragms such diaphragms having approximately central openings, a rotating disperser in each compartment carried on a central shaft and formed of a solid disk with blades on one side and arranged close to the diaphragm on one side of a compartment with the blades facing the entering gas, and discharge pipes from the compartments, and at least one perforated diaphragm arranged in the chamber between the last disperser and the outlet, substantially as described.

3. A purifier for gases consisting of a chamber divided into several compartments by diaphragms such diaphragms having approximately central openings, a rotating disperser in each compartment carried on a central shaft and formed of a solid disk with free ended and free edged blades on one side only and arranged with the free edges of the blades close to the diaphragm on one side of

a compartment and facing the entering gas, and discharge pipes from the compartments, and pipes for supplying liquid near the centers of the dispersers, substantially as described.

4. A purifier for gases consisting of a chamber divided into several compartments by diaphragms such diaphragms having approximately central openings, a rotating disperser in each compartment carried on a central shaft and formed of a solid disk with blades on one side and arranged close to the diaphragm on one side of a compartment with the blades facing the entering gas, and discharge pipes from the compartments, and at least one perforated diaphragm arranged in the chamber between the last disperser and the outlet, and pipes for supplying liquid near the centers of the dispersers, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM TOWNS.

Witnesses:

W. B. JOHNSON,  
H. LIGHTFOOT.