

J. J. NIX.
GAS SCRUBBING APPARATUS.
APPLICATION FILED JAN. 17, 1908.

934,205.

Patented Sept. 14, 1909.

2 SHEETS—SHEET 1.

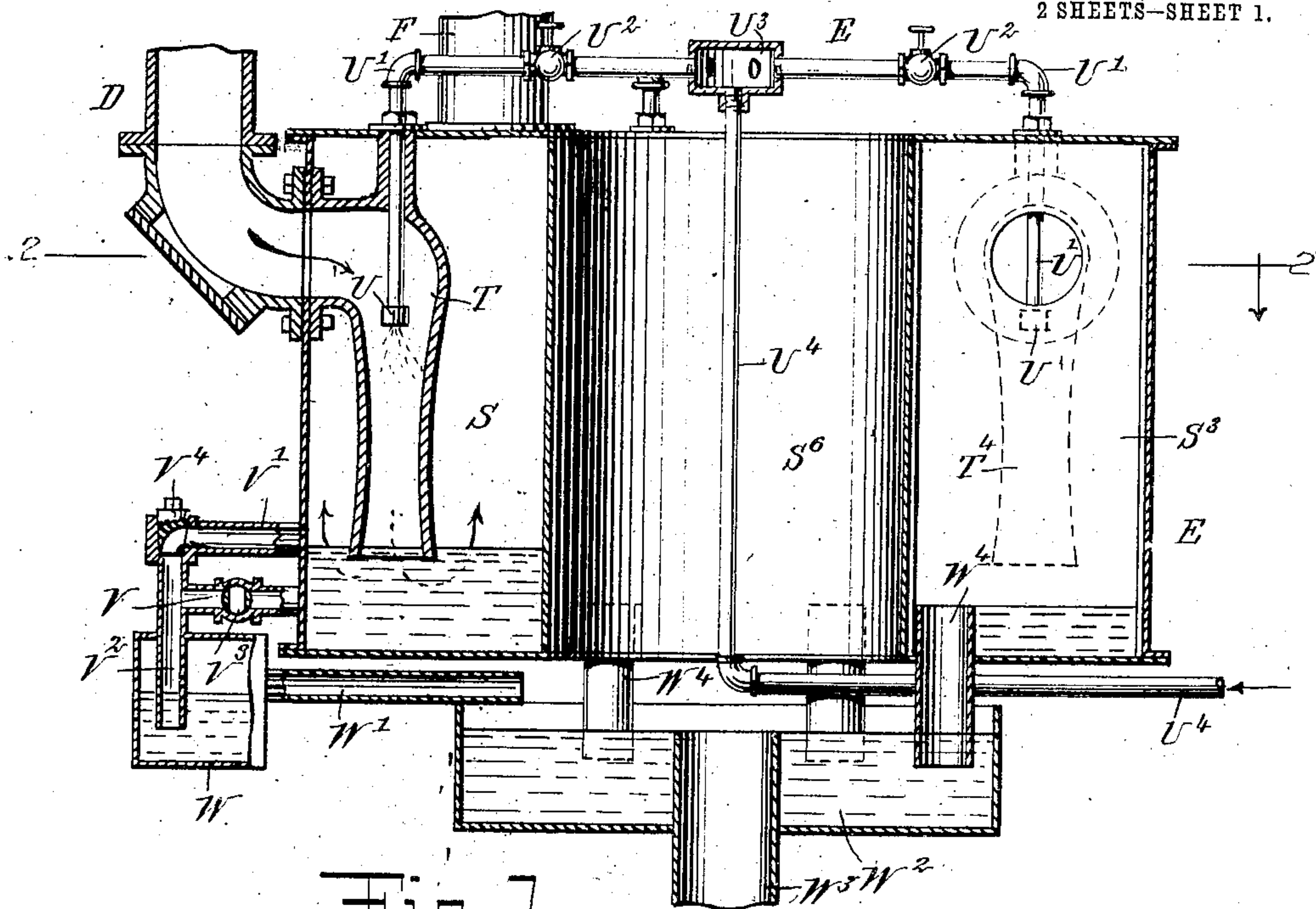


Fig. 1.

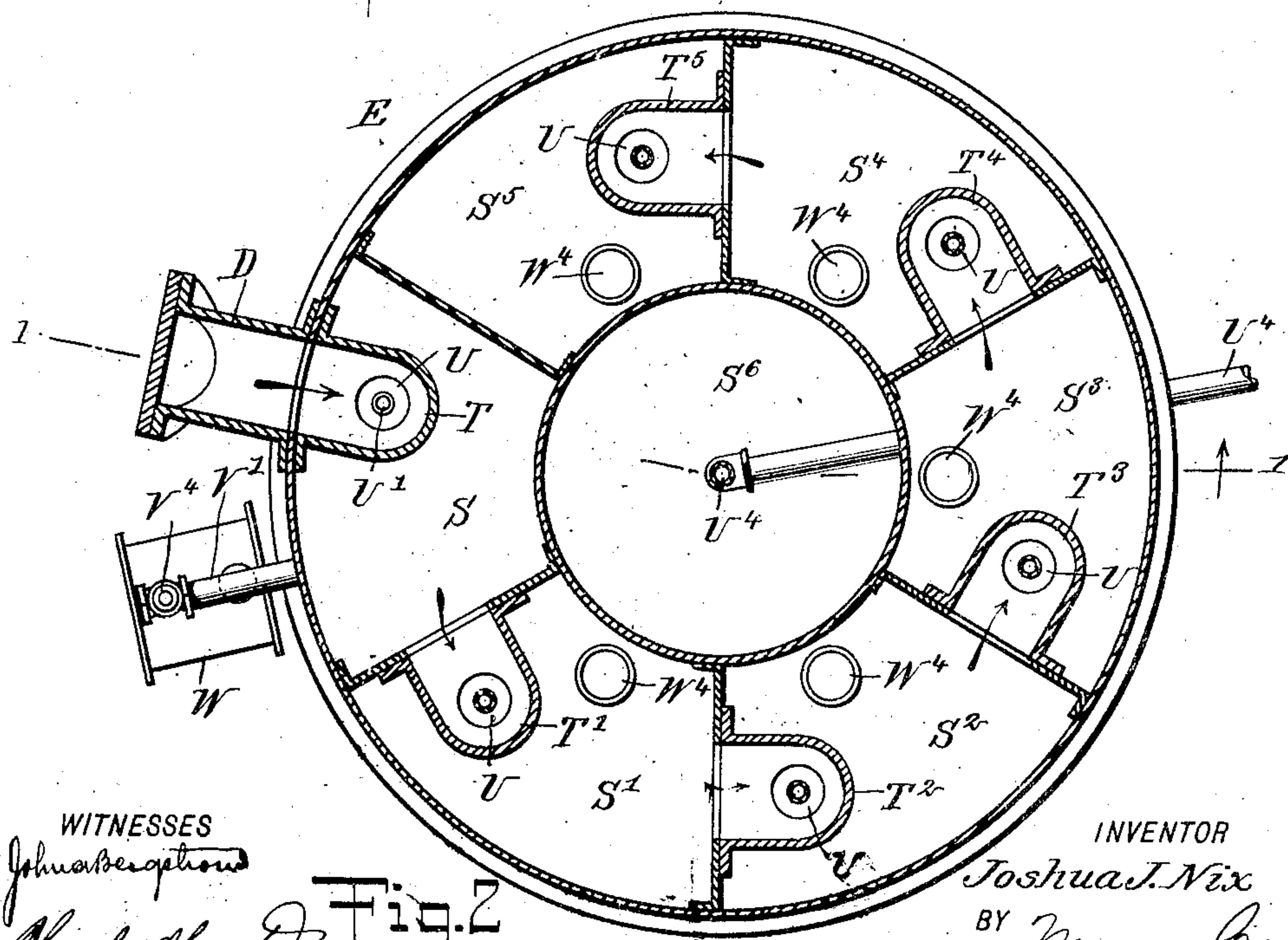


Fig. 2.

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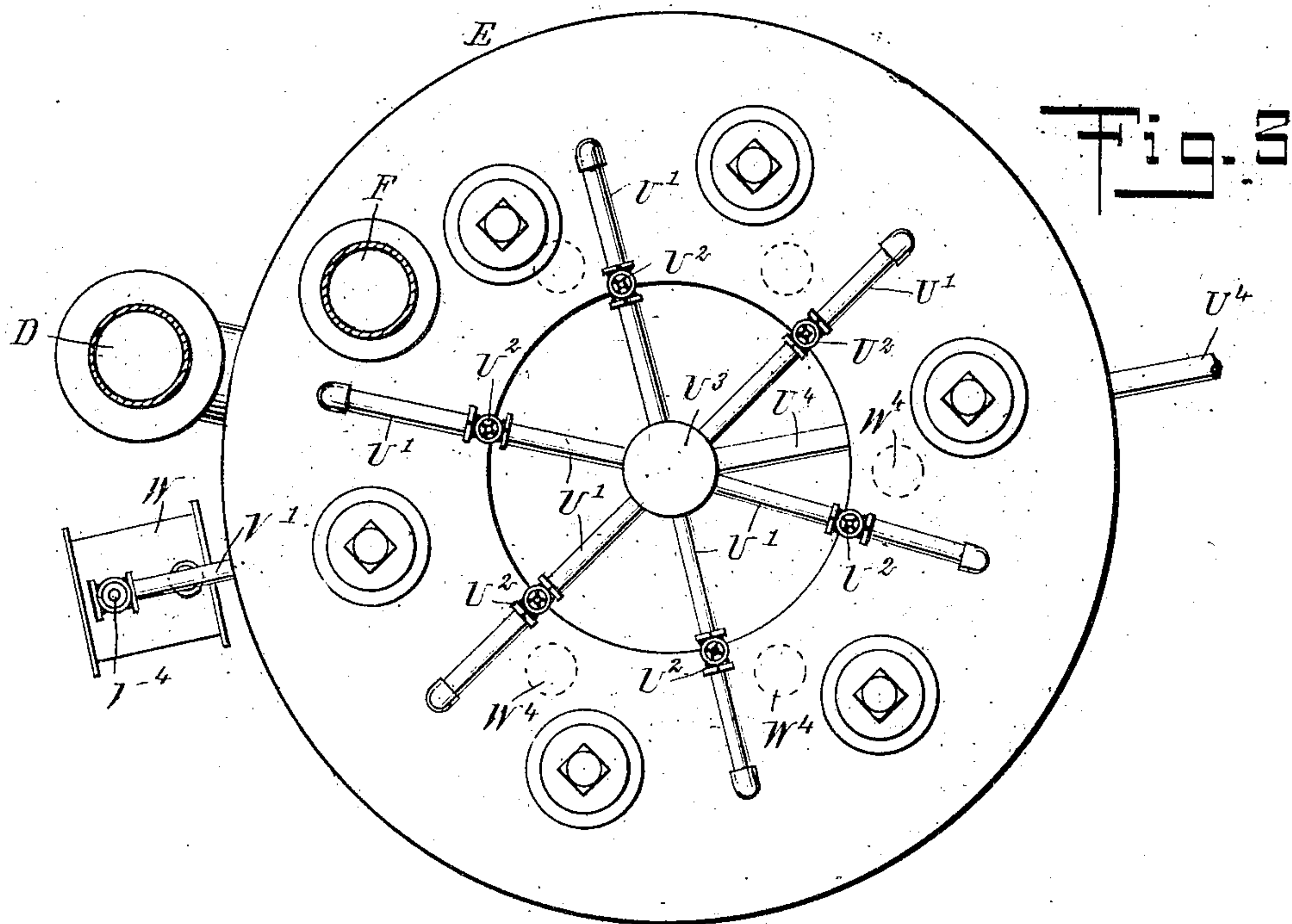
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UNITED STATES PATENT OFFICE.

JOSHUA J. NIX, OF LOS ANGELES, CALIFORNIA.

GAS-SCRUBBING APPARATUS.

934,205.

Specification of Letters Patent. Patented Sept. 14, 1909.

Application filed January 17, 1908. Serial No. 411,258.

To all whom it may concern:

Be it known that I, JOSHUA J. NIX, a citizen of the United States, and a resident of Los Angeles, in the county of Los Angeles and State of California, have invented a new and Improved Gas-Scrubbing Apparatus, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved scrubbing apparatus, more especially designed for purifying gas from crude oil.

The invention consists of novel features and parts and combinations of the same, which will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is an enlarged sectional side elevation of the scrubber, the section being on the line 1—1 of Fig. 2; Fig. 2 is a sectional plan view of the same, on the line 2—2 of Fig. 1; Fig. 3 is a plan view of the same.

The scrubber E is constructed in detail as follows, special reference being had to Figs. 1, 2 and 3. The scrubber E is divided into a plurality of compartments S, S', S², S³, S⁴ and S⁵, of which the compartment S is the entrance compartment and is provided with a downwardly-extending pipe T, connected at its upper end with the duct D, so that the cooled gas passes by way of the pipe T into the entrance compartment S, the gas being further cooled by a spray of water issuing through a nozzle U arranged within the pipe T and connected by a pipe U' having a valve U², with a water distributing chamber U³ connected by a pipe U⁴ with a suitable water supply. Pipes T', T², T³, T⁴ and T⁵ connect the several compartments with each other, and each of the said pipes is provided with a distributing nozzle U having its pipe U' connecting with the distributing chamber U³. The last compartment S⁵ is connected with the pipe F leading to the gas holder, engine or other machine in which the gas is used.

The entrance compartment S is provided with two overflow pipes V and V', the pipe V being arranged below the lower end of the pipe T and the pipe V' being arranged above the end of the pipe T, and the overflow pipes

V and V' lead to a common pipe V² discharging into a water chamber W connected by an overflow pipe W' with a tank W², from which leads an overflow pipe W³ to a sewer or other suitable place of discharge. The overflow pipes V and V' are provided with valves V³, V⁴, to permit of regulating the level of the water accumulating in the tank S and discharged by the nozzle U. Thus when the valve V³ is closed, the water level in the compartment S is above the lower end of the pipe T and consequently a water seal is provided for this pipe T, to retain the gas in the duct D and the retort C a sufficient length of time to insure the production of a high quality of gas. When the valve V⁴ is closed and the valve V³ is opened then the level of the water in the compartment S is below the lower end of the pipe T, and consequently the producer gas can more freely pass into the compartment S without hindrance of the water. The gas passes from the compartment S by way of the pipe T' into the compartment S' and by way of the pipe T² into the compartment S², and so on until the gas finally reaches the exit S⁵ connected with the pipe F. Now the gas in its passage through the several pipes T, T', T², T³, T⁴ and T⁵ is subjected to a water spray, and consequently the gas is washed and the solid carbon particles are precipitated, the gas when finally reaching the pipe F being in a thoroughly cooled clean state. The compartments S', S², S³, S⁴ and S⁵ are provided with overflow pipes W⁴ discharging into the tank W², as indicated in Fig. 1. By having the valves U², the amount of water passing into the nozzles to be sprayed can be regulated to a nicety.

The operation is as follows: The gas is cooled and passes into the scrubber E and through the several compartments thereof in the manner previously described, to wash the gas. By having the water seal for the pipe T, it is evident that the gas is retarded in its travel to the retort C and the duct D, and is thus properly fixed, and a uniform temperature is maintained to avoid local, intense and destructive heat. By subjecting the gas to successive sprays of water in the scrubber E, the gas is thoroughly washed and finally passes by way of the pipe F into a gas holder or to the engine or other machine, to be used therein in the usual manner for producing power.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A scrubber comprising an annular casing provided with radial partitions dividing the casing into a plurality of compartments, one of said compartments being an entrance compartment and having a communication with a source of gas supply and an adjoining compartment being the exit compartment and delivering the gas from the scrubber, pipes connecting one compartment with the other and having their discharge opening downward, a water spray nozzle in each pipe, the said entrance compartment being adapted to contain a fluid in the bottom thereof and pipes leading from said compartment at different levels, one above and one below the opening of the communication with the source of gas supply, and valves in the pipes for the purpose set forth.

2. A scrubber having an entrance compartment, an exit compartment, a plurality of compartments intermediate the said entrance and exit compartments, a pipe extending into the said entrance compartment and

connected with a gas supply, pipes connecting one compartment with the other, a water-spraying nozzle in each pipe, the entrance compartment being adapted to contain a fluid, and means for regulating the level of the fluid whereby to form a water seal for the pipe extending into the entrance compartment or to leave said pipe open.

3. A scrubber having an entrance compartment, an exit compartment, a plurality of compartments intermediate the said entrance and exit compartments, a pipe extending into the said entrance compartment and connected with a gas supply, pipes connecting one compartment with the other, a water-spraying nozzle in each pipe, a double water overflow for the said entrance compartment, and a single water overflow for each of the other compartments.

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

JOSHUA J. NIX.

Witnesses:

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THOMAS THEODORE FLETCHER.