

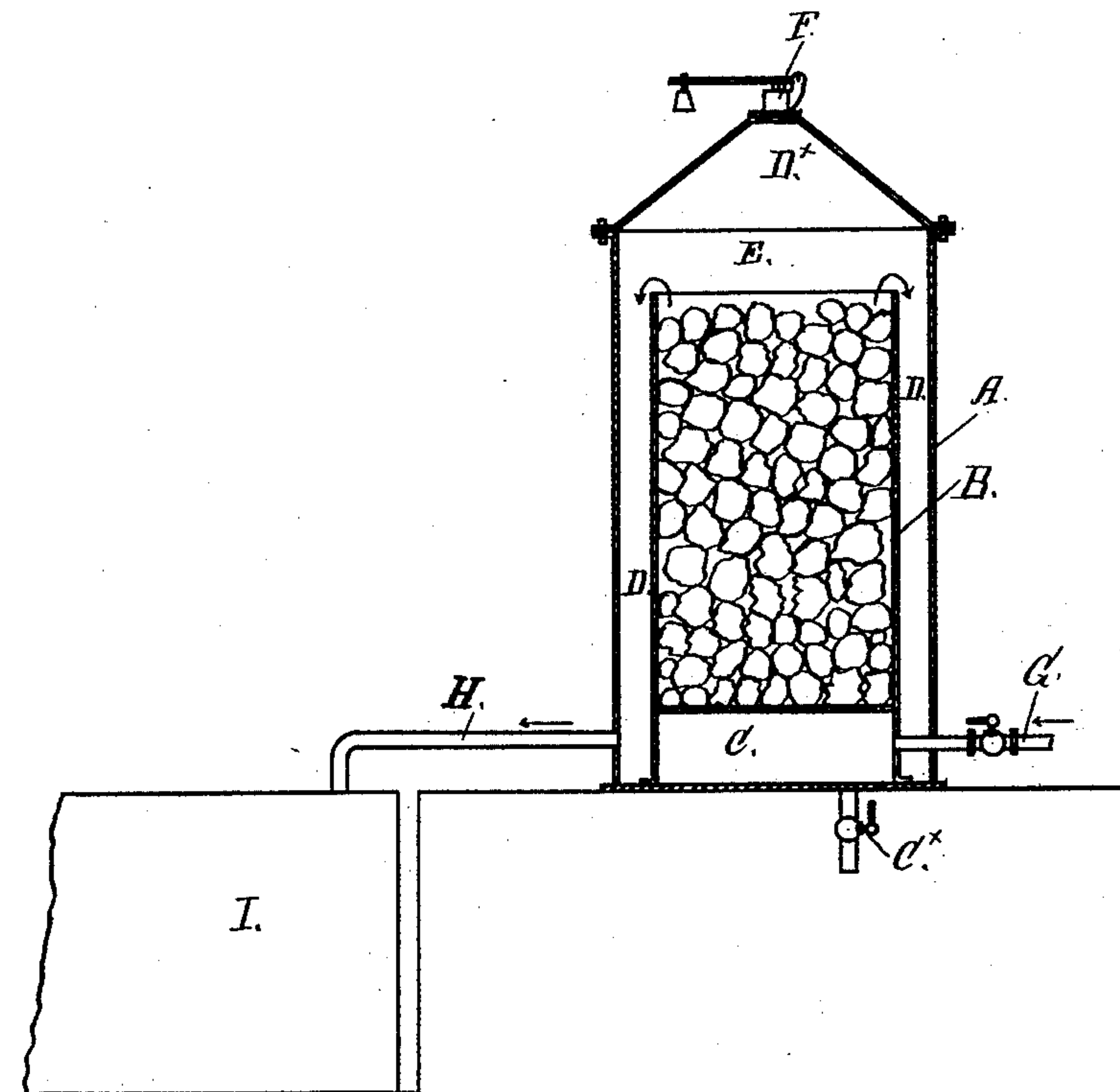
(No Model.)

S. T. HOLMES.

STEAM PURIFYING APPARATUS.

No. 360,591.

Patented Apr. 5, 1887.



Witnesses:

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UNITED STATES PATENT OFFICE.

SIDNEY T. HOLMES, OF ANN ARBOR, MICHIGAN.

STEAM-PURIFYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 360,591, dated April 5, 1887.

Application filed September 1, 1886. Serial No. 212,439. (No model.)

To all whom it may concern:

Be it known that I, SIDNEY T. HOLMES, a citizen of the United States, residing at Ann Arbor, in the county of Washtenaw and State of Michigan, have invented a certain new and useful Apparatus for Purifying Steam for Obtaining Water of Condensation, of which the following is a specification.

The object of my invention is to filter or separate from the exhaust or waste steam of steam-engines, steam-pumps, or other steam-generators the grease, oil, or other foreign matter held in suspension by the said exhaust-steam, and by condensation produce or obtain water in large quantities purified or freed from all impurities—such as mineral, animal, and vegetable substances—to be employed in the manufacture of artificial ice or other purposes for which distilled water can be used. I accomplish this object by the means of the apparatus illustrated in the accompanying drawing, to which reference is had, and in which is represented a transverse vertical section of steam-filter and connected condensing-tank embodying my invention.

Within the body of the steam-receiving apparatus or tank A is constructed the steam-purifier, which consists of an inner shell or cylinder, B, provided with upper and lower end perforated diaphragms or grate-bars. The latter will be preferable, however, for the lower end or bottom of the cylinder, in order that it may be of sufficient strength to uphold and support the mass of steam-filtering material placed thereon. In this shell or cylinder is placed the filtering material, which may consist of coke, pebbles, broken rock, iron slag, or other porous materials that will pack loosely and permit the steam to pass through it. The lower end of the shell or cylinder connects with the bottom of the tank A, to which it is bolted, and forms a chamber, C, for the deposit of debris and all impurities of infiltration which pass down from the filtering-cylinder during the operations. A draw-off pipe and cock, C*, connects with this chamber, through which the accumulated contents of the chamber pass.

Between the outer shell of the cylinder B and inner shell of the tank A is formed a

steam-jacket, D, and a dome or cap, D*, is bolted to the top of the tank A, which forms an upper steam-chamber, E, of considerable space, which connects at all points with the steam-jacket D. Upon the top of the dome or cap is placed the safety-valve F. A pipe, G, provided with a shut-off cock, connects with the exhaust-pipe of the engine, steam-pump, or boiler, and passes through the tank A and steam-jacket D, and enters the chamber C just below the diaphragm or grate. To the opposite side of the tank A is connected a pipe, H, communicating with the steam-jacket only at that point, and leads into the condenser I.

In practice with my steam-purifier steam is admitted to the chamber C in a continuous volume, and passes up through the filtering material contained within the shell or cylinder B into the steam-chamber E and steam-jacket D, which deprives or frees the steam of all impurities—such as grease, animal and vegetable matter—which latter falls by percolation or gravitates backward or downward into the receptacle or chamber, to be conveyed off through the drip-pipe from time to time, while the purified steam passes out of the tank into the condenser through the pipe H, to be condensed into pure water.

Any suitable condenser will answer for my purpose that will condense steam rapidly without mingling extraneous or impure water with the purified steam.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. An apparatus for purifying the exhaust-steam of engines, pumps, &c., and obtaining condensed water—the product of said purified steam—in large quantities, consisting of a shell or cylinder provided with a mass of filtering material, preferably coke, and supported between perforated diaphragms or grating, in combination with a surrounding steam-jacket and upper steam-chamber adapted to receive purified steam from the upper end of said infiltrating shell or cylinder and convey it to a condenser, as set forth and described.

2. In combination with an outer shell or tank for receiving the purified steam, and the

inner shell or cylinder provided with perforated diaphragms, and a filtering substance by which the steam is infiltrated, the chamber C, for receiving steam from the exhaust-pipe of an engine, boiler, steam pump or generator before it passes through the filtering substance and form a receptacle for the sediment of infiltration, as set forth and specified.

3. In a steam apparatus for obtaining pure water in large quantities from the introduced steam, the inner shell or cylinder provided with perforated end diaphragms or grates, containing a steam-filtering substance, and a sediment and steam chamber below the lower dia-

phragm or grate, into which steam from the exhaust-pipe of an engine, steam pump or generator is admitted before infiltration, and an outer surrounding tank, forming a steam-circulating jacket and chamber, with an outlet or escape pipe leading to a condenser, constructed, arranged, and operating substantially in the manner set forth and specified.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

SIDNEY T. HOLMES. [L. S.]

Witnesses:

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