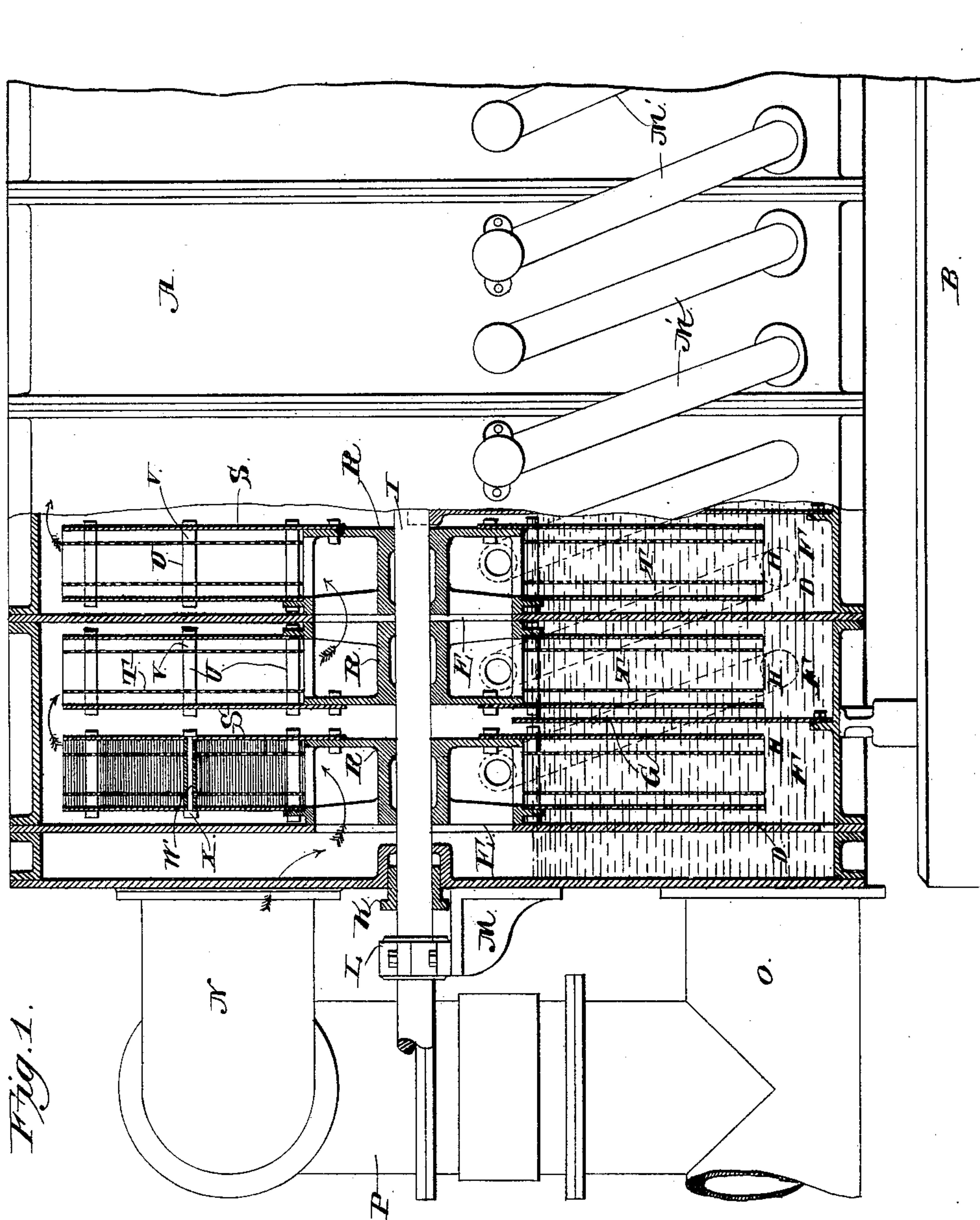


2 Sheets—Sheet 1.

APPARATUS FOR SCRUBBING AND WASHING GAS.

Patented July 16, 1889.



Inventor

Kerr M. Mitchell

By His Attorneys

Chas. A. Snowdon

(No Model.)

2 Sheets—Sheet 2.

K. M. MITCHELL.

APPARATUS FOR SCRUBBING AND WASHING GAS.

No. 407,025.

Patented July 16, 1889.

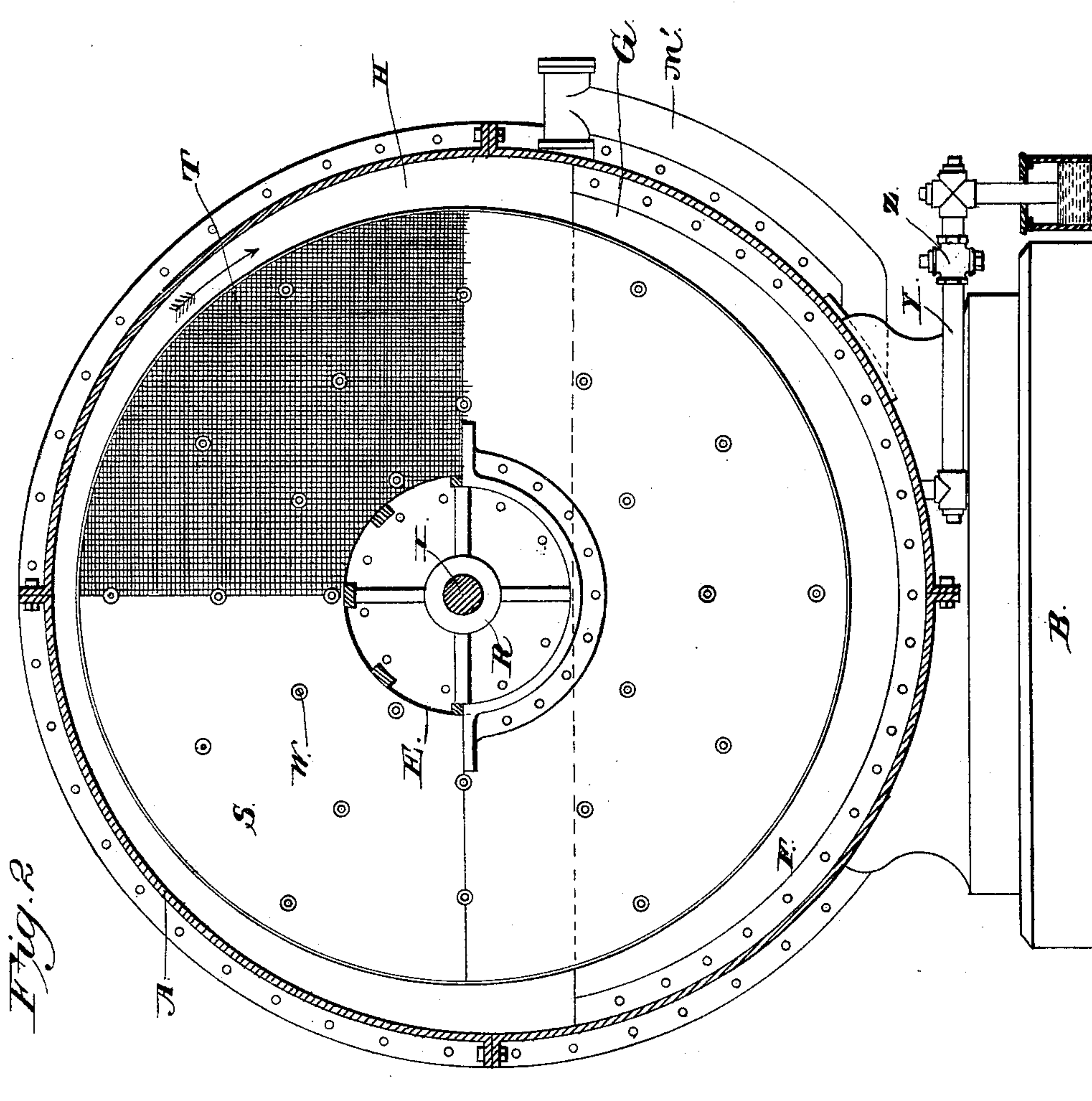


Fig. 2

Witnesses

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UNITED STATES PATENT OFFICE.

KERR M. MITCHELL, OF ST. JOSEPH, MISSOURI.

APPARATUS FOR SCRUBBING AND WASHING GAS.

SPECIFICATION forming part of Letters Patent No. 407,025, dated July 16, 1889.

Application filed June 28, 1888. Serial No. 278,454. (No model.)

To all whom it may concern:

Be it known that I, KERR M. MITCHELL, a citizen of the United States, residing at St. Joseph, in the county of Buchanan and State of Missouri, have invented a new and useful Improvement in Apparatus for Scrubbing and Washing Gas, of which the following is a specification.

My invention relates to an improvement in apparatus for scrubbing and washing gas; and it consists in the peculiar construction and combination of devices that will be more fully set forth hereinafter, and particularly pointed out in the claim.

In the accompanying drawings, Figure 1 is partly a side elevation and partly a vertical longitudinal sectional view of a gas scrubbing and washing machine embodying my improvement. Fig. 2 is a vertical transverse sectional view of the same.

A represents a cylindrical case, which is arranged in a horizontal position and supported upon a base B. The said cylindrical case is divided internally by vertical partitions D, which are arranged at regular intervals, and are provided with central openings E, chambers F being thereby formed between the said partitions.

G represents semicircular partition-plates, which are arranged in the lower side of the case A midway between the partitions D, chambers H being formed in the lower side of the inclosing-case by the said partitions.

I represents a horizontal shaft, which extends through the center of the case A and is journaled in packing-boxes K in the ends of the case, and in bearings L, which are supported by arms M, that project from the ends of the case. On one side of the case, at the lower portion thereof, are a series of inclined curved pipes M', the ends of which communicate with the chambers H at their upper and lower portions alternately, the said pipes serving to connect each adjacent pair of said chambers.

Communicating with one end of the case, near the upper side thereof, is a pipe N, and communicating with the same end of the case, at the lower side thereof, is a pipe O. Said pipes O and N are connected by a vertical pipe P, in which is located a suitable valve, by

means of which communication may be cut off or established between said pipes O N.

R represents a series of hubs or castings, which are secured on the shaft I by means of keys or set-screws, and are provided each on one side with an opening that communicates with the opening E of the opposing partition-plate G.

S represents a series of circular plates, which are made of boiler-iron or other suitable material, and a pair of which are secured to outer sides of each hub or casting. Arranged between each pair of circular plates S, and at a suitable distance from the inner sides thereof, are perforated or wire-gauze plates T. Rungs U are arranged transversely between each pair of plates T, transfixing the same at suitable intervals apart, and between the plates T and the approximate plates S, and in line with the rungs U, are sleeves or collars V.

W represents transverse bolts, which pass through the plates S and T and through the collars or sleeves V and rungs U, and are provided at their ends with clamping-nuts X, which bear against the outer sides of each pair of plates S, and thereby secure the parts firmly together.

The operation of my invention is as follows: The gas enters the machine through the pipe N and travels in the direction indicated by the arrow in Fig. 1. The shaft I is rotated by suitable means, (not shown,) thereby causing the wheels on said shaft to rotate in the direction indicated by the arrow in Fig. 2. A suitable liquid—such as commonly employed for purifying gas—is contained in the lower portion of the case in the chambers H, and the wheels in revolving dip into the said liquid, become thoroughly wetted, and the gas, which has to make its way through the spaces between the rungs U contained in the wheels, is subjected thereby to a continuous scrubbing and washing. The surface of the liquid is normally below the upper ends of the pipes M', as shown in Fig. 1. When the wheels are rotated, they dash the liquid against the sides of the same to enter the pipes M', as will be readily understood, and the liquid is thus caused to pass from one chamber to the other through the pipes, and is kept in circulation

and maintained at the same level in all of the chambers.

5 A pipe Y is connected to the lower ends of the chambers H, and is provided with a stop-cock Z, by means of which the tar or liquid may be withdrawn from the said chambers when desired.

10 I am aware that machines for scrubbing gas have been constructed in which a hollow shaft revolving within a casing provided with transverse partitions or diaphragms has been provided with radially-extending wings or plates, forming sub-compartments or pockets, in which clusters of sticks held together by
15 foraminous plates have been placed and retained in operative position by radially-extending bolts having cross-pieces at their outer ends. By this construction, however, the gas during the operation of the machine
20 has been inclined to hug the forward sides of the radial partition-plates forming the sub-compartments or pockets, and the gas for this reason has come in contact with a portion of the scrubbing-sticks only, while a consider-
25 able portion of said sticks has perforce remained inactive. Moreover, the said radial plates would naturally offer considerable resistance to the liquid contained in the casing in which the shaft revolves, and the efficiency
30 of the machine would be correspondingly impaired.

35 I am also aware that gas-scrubbing machines have been constructed in which the scrubbing-surfaces have been formed by thin metallic disks suitably spaced and connected to a shaft revolving within a casing containing the purifying-liquid. In such machines there may have been no obstruction to the gas coming in contact with the entire scrub-
40 bing-surfaces, but the latter have been comparatively limited in extent and not of a na-

ture to submit the gas and the purifying-liquid to the thorough agitation and breaking-up process, whereby the particles shall be caused to come in contact with each other, 45 and which is mainly efficient in the process of purifying gas.

By my invention I have aimed to combine the advantages and to obviate the disadvantages in the two classes of machines to which 50 reference has just been made. The foraminous plates having the scrubbing-sticks have been retained, owing to the increased scrubbing-surface and the superior agitation and comminution of the particles produced there- 55 by. The radial wings or partition-plates forming the sub-compartments or pockets have, on the other hand, been dispensed with, and the machine which is the result of my improved construction will accordingly be found 60 to possess superior efficiency and general utility.

Having thus described my invention, I claim—

65 In a gas-scrubbing machine, the combination, with a shaft arranged to revolve in a suitable casing having transverse partitions, of the hubs mounted upon said shaft, the annular sheet-metal plates secured to the ends
70 of said hubs, the annular foraminous plates arranged between the said sheet-metal plates, the scrubbing-sticks extending through the said foraminous plates, the connecting-bolts, and the spacing-sleeves on the latter, sub-
75 stantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

KERR M. MITCHELL.

Witnesses:

H. W. BRAUN,
J. G. SCHNEIDER.