(No Model.)

A. KLÖNNE.

GAS WASHER.

No. 380,040. Patented Mar. 27, 1888.

Fig. 1.

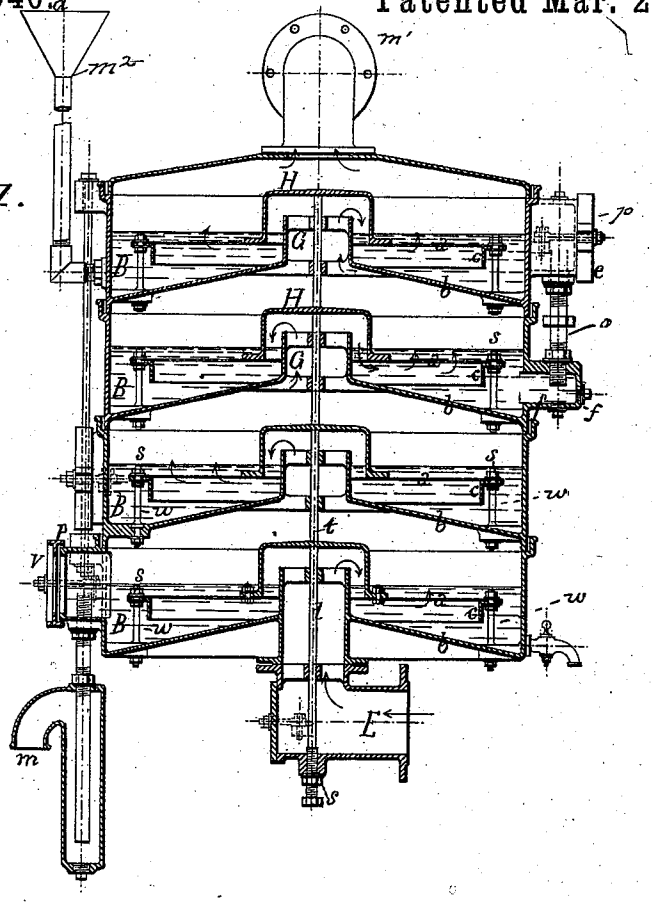
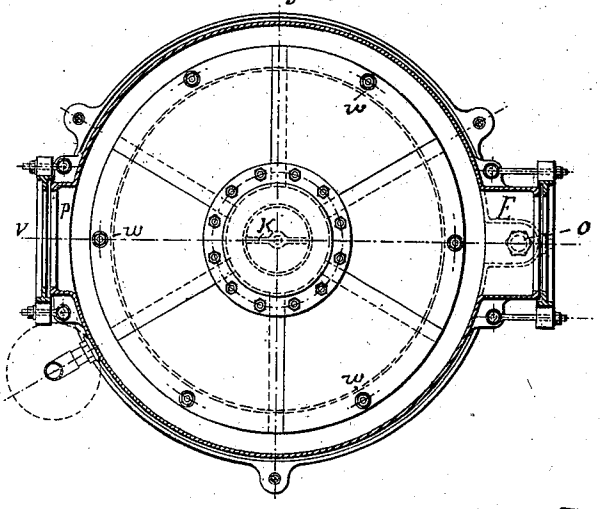


Fig. 2.



Witnesses:
Robt. Roy
Wm. A. Howe.

Inventor:
August Klönne
by his attorneys
Roeder & Briesen

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

AUGUST KLÖNNE, OF DORTMUND, PRUSSIA, GERMANY.

GAS-WASHER.

SPECIFICATION forming part of Letters Patent No. 380,040, dated March 27, 1888.

Application filed April 25, 1885. Serial No. 163,406. (No model.) Patented in Germany May 27, 1884, No. 31,058; in England April 10, 1885, No. 4,464; in Belgium April 14, 1885, No. 68,510; in France April 14, 1885, No. 168,249, and in Austria-Hungary July 10, 1885, No. 13,385 and No. 35,258.

To all whom it may concern:

Be it known that I, AUGUST KLÖNNE, of Dortmund, Germany, have invented a new and useful Improvement in Gas-Washers, (for which I have obtained the following patents: Germany, No. 31,058, dated May 27, 1884; England, No. 4,464, dated April 10, 1885; Belgium, No. 68,510, dated April 14, 1885; France, No. 168,249, dated April 14, 1885, and Austria-Hungary, No. 13,385 and No. 35,258, dated July 10, 1885,) of which the following is a specification.

This invention relates to an apparatus for washing and purifying gas; and it consists in the various features of improvement more fully pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical section of the apparatus, and Fig. 2 a horizontal section of the same.

The letters *a a* represent a number of finely-perforated plates placed in the water-spaces B, and having at their periphery the angle-irons *c*.

Below each plate *a* there is placed a bottom plate, *b*, which slopes or inclines downwardly from the center, and is provided with a central tubular mouth or opening, G. Above each tube G there is a cap, H, placed on the perforated plate *a* and covering the tube G.

t is a vertical rod extending centrally through the tubes G, and secured to each of the caps H by means of suitable cross-bars, *k*, more clearly shown in Fig. 2. At the lower end the rod *t* is screw-threaded and surrounded by a nut, *s*. By loosening or tightening up the nut *s* the caps H may be raised or lowered, and thus the plates *a*, upon which such caps rest, may be curved to any desired extent at the center. In this way I am enabled to get the same area between the plates *a* and the water near the point where said plates *a* are connected with the caps H as between the water and said plates near the angle-iron *c*. Thus the gas will be under the same pressure below the whole area of the plates *a*, and will therefore pass through all the holes at the same time and in the same quantities. It will thus come in contact with the same amount of water driven around the angle-irons *c*, and rinsing the whole area of the perforated plates *a*.

w w are bolts or screws connecting the plates *a b* near their circumference, as shown. When these bolts are drawn up or released, the perforated plates *a* will be raised or lowered at their circumference, for the same reason as just above stated.

The washing-water, which is admitted through funnel m^2 at the top of the apparatus, is conducted alternately from shelf to shelf, and is finally discharged through pipe *m*. Its course is from the inlet and upper tier to a chamber, *p*, pipe *o*, and chamber *f* into the second tier, thence by similar chambers and pipe to the next tier, and so on until the discharge is reached.

The tube *o* projects some distance upward through the bottom of the upper chamber, *p*, and is screwed both into the bottoms of the upper and lower chambers. By revolving the tube it may be drawn more or less into the upper chamber, and in this way the height of the water may be readily adjusted.

The regulating devices *p o f* are applied at the outside of the apparatus, as shown, and thus the water may be adjusted while the apparatus is in working order. In order to permit the height of water to be readily observed, the chamber *p* may be provided with a glass window, *v*.

The operation of the device is as follows: The gas enters at E, and passes through lowermost tube, G, under the cap H, and thus (owing to the angle-iron *c*) a gas-space will be formed under the lowermost plate, *a*. From this space the gas passes upward through perforations of plate *a*, and being thus divided it passes through the water above plate *a* and separates itself from the ammonia that it originally contains. After clearing the water the gas rises, in the manner just described, from tier to tier until it is finally discharged properly purified from the exit-pipe *m'*.

The advantage of raising the bottom *b* at the center is, first, that the heavier condensing products—such as heavy tar, &c.—will be collected toward the circumference of the plates *a b*, and, secondly, to permit a smoother passage for the gas.

What I claim is—

1. The combination of perforated plate *a*,

with projections *c* at its periphery, and with elevated plate *b*, beneath plate *a*, and having upwardly-extending tubular mouth G, and with cap H, placed on plate *a*, above tube G, and with the central vertical rod, *t*, extending through tube G and secured to cap H, and provided with regulating-nuts *s*, substantially as specified.

2. The combination of perforated plate *a*, having projections *c* at its periphery, with the adjustable cap H, placed on plate *a*, and with plate *b*, beneath plate *a*, and having upwardly-extending tubular mouth G, and with the adjusting-bolts *w*, connecting plates *a b*, and adapted to raise and lower plate *a* at its circumference, substantially as specified.

3. The combination of perforated plates *a*, having caps H, and of plates *b*, having tubular mouths G, with the adjustable overflow-pipe *o*, having threaded ends that engage chambers *f p*, located at the outside of the apparatus, the upper end of pipe *o* extending into the chamber *p*, the parts *p o f* constituting water-ways between the several tiers of plates *a b*, substantially as specified.

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

AUGUST KLÖNNE.

Witnesses:
L. ROOT, Jr.,
A. NELLEGER.