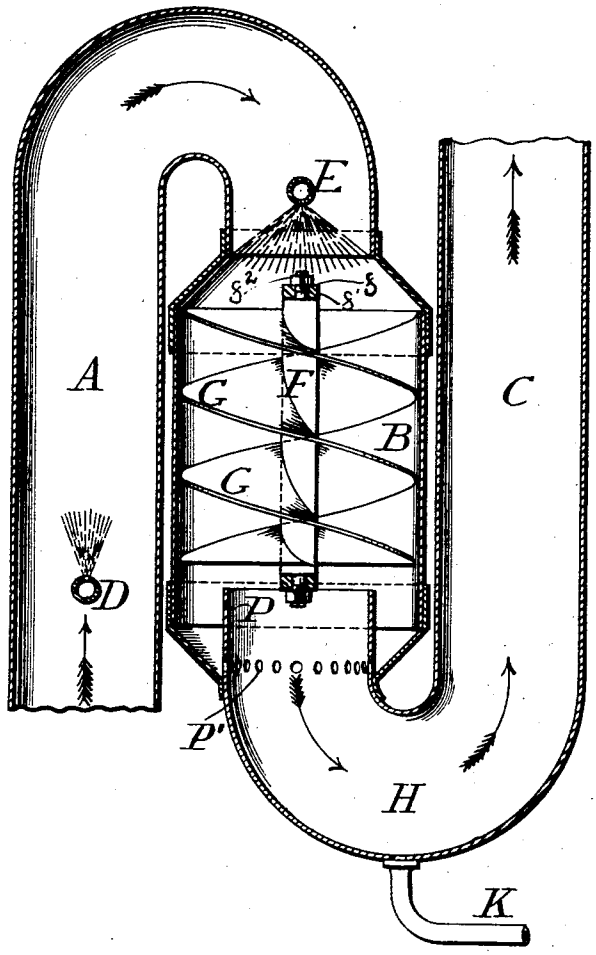
(No Model.)

E. E. DULIER.

APPARATUS FOR CLEARING SMOKE.

No. 590,516. Patented Sept. 21, 1897.



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UNITED STATES PATENT OFFICE.

EDWARD E. DULIER, OF RICHMOND, ENGLAND.

APPARATUS FOR CLEARING SMOKE.

SPECIFICATION forming part of Letters Patent No. 590,516, dated September 21, 1897.

Application filed January 11, 1897. Serial No. 618,874. (No model.)

To all whom it may concern:

Be it known that I, EDWARD EUGENE DULIER, a citizen of Belgium, residing at Clarence House, Richmond, in the county of Surrey, England, have invented certain new and useful Improvements in Apparatus for Clearing Smoke, of which the following is a specification.

My invention relates to apparatus for clearing smoke of its sooty and sulfurous ingredients, as I shall describe, referring to the accompanying drawing, which is a vertical section of a smoke-flue provided with apparatus according to my invention.

I bend the flue in S form, with an ascending limb A, an enlarged descending limb B, and another ascending limb C. In the limb A, I provide a nozzle D, distributing steam, which mingles with the ascending smoke. At the top of the descending limb B, I provide a nozzle E, distributing water, which mingles with the descending smoke and steam. In the enlarged part of B, I fix a core F, having projecting helical blades G, and under them an upwardly-projecting part P, perforated at its base. The core F is reduced and threaded at its ends, as at *f*, and said ends are passed through apertures formed in cross-bars or supports *f'*, fixed in any suitable manner in the upper and lower portions of the descending limb B. The core F is firmly fixed in the supports *f'* and securely held against rotation by nuts f^2, tapped over the threaded and reduced ends *f*. The blades G are fixed on the core F, so as to be held fixed or stationary on the latter. The mixture of smoke, steam, and water being caused to travel in a helical course between the blades G has its heavier particles driven by centrifugal action against the wall of the limb B, on which the sooty and sulfurous ingredients mixed with water are deposited. They descend through the perforations P' in the part P to the bend H, whence they are run off by a pipe K, leading to a drain or other discharge. The combustion-gases cleared from the sooty and sulfurous matters ascend the limb C.

Having thus described the nature of this invention and the best means I know of carrying the same into practical effect, I claim—

A smoke-clearing apparatus, consisting of an ascending limb provided with a steam-nozzle, a descending limb connected at its upper end with the ascending limb, an ascending limb having a drain at its base and connected with the said descending limb, a water-nozzle delivering water into the descending limb, fixed helical blades by which the smoke, steam and water are forced to travel in a helical path and the heavier particles are driven by centrifugal action against the wall of the descending limb, and means for withdrawing the deposits from the lower end of the limb containing the fixed helical blades, substantially as and for the purposes described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 29th day of December, A. D. 1896.

EDWARD E. DULIER.

Witnesses:
T. J. OSMAN,
FRED C. HARRIS.