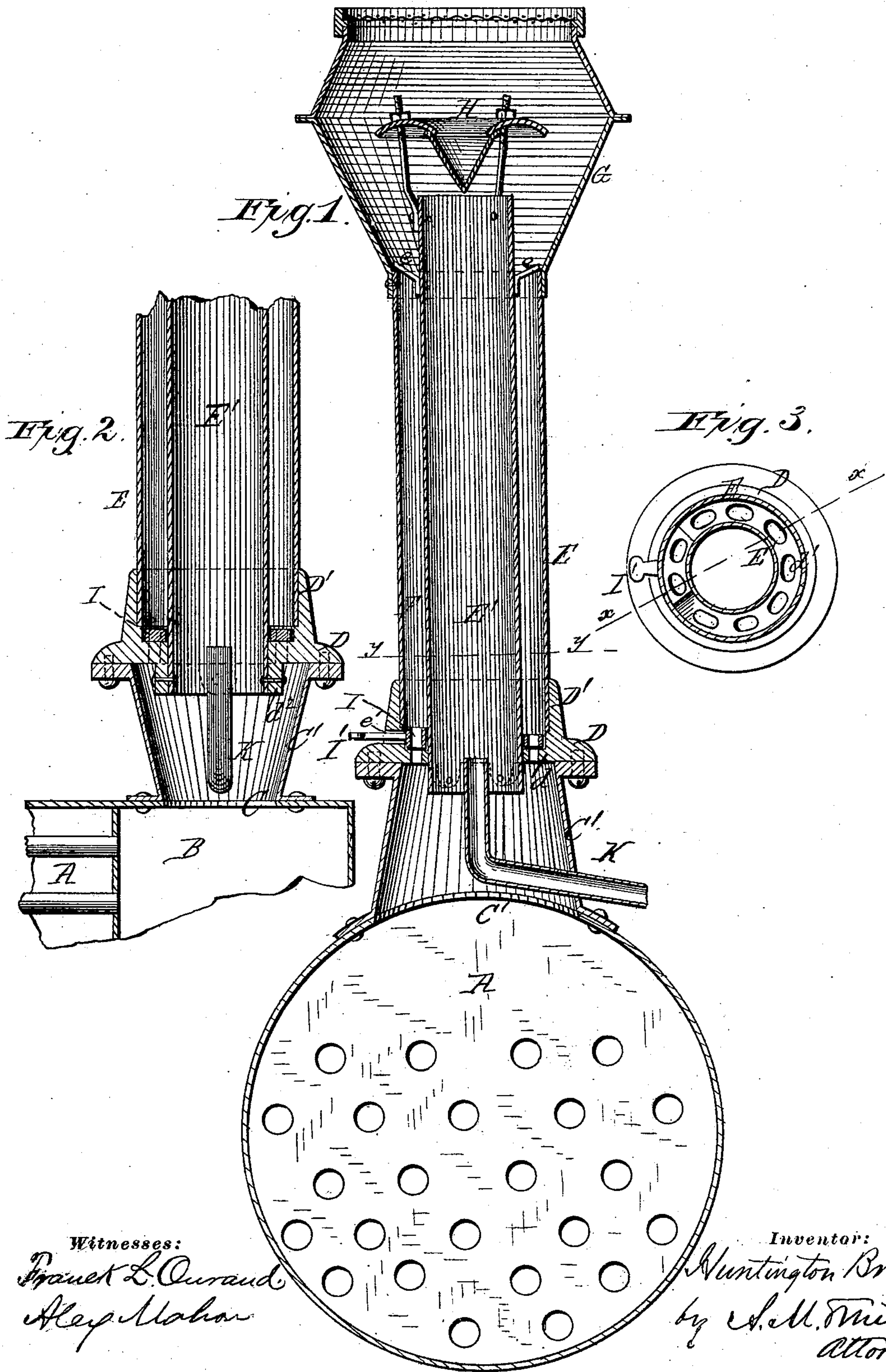


H. BROWN.
Smoke-Stack.

No. 226,439.

Patented April 13, 1880.



Witnesses:
Frank L. Curand
Alex. Mahon

Inventor:
Huntington Brown
by S. M. Smith
Attorney

UNITED STATES PATENT OFFICE.

HUNTINGTON BROWN, OF MANSFIELD, OHIO, ASSIGNOR TO THE AULTMAN
& TAYLOR COMPANY, OF SAME PLACE.

SMOKE-STACK.

SPECIFICATION forming part of Letters Patent No. 226,439, dated April 13, 1880.

Application filed February 12, 1880.

To all whom it may concern:

Be it known that I, HUNTINGTON BROWN, of Mansfield, county of Richland, and State of Ohio, have invented a new and useful Improvement in Smoke-Stacks, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

10 Figure 1 represents a vertical section through a smoke-stack, taken on line *x x*, Fig. 3, showing my improvements, and also showing the smoke-box in transverse section. Fig. 2 is also a vertical section through a portion of the smoke-stack, taken at right angles to the section shown in Fig. 1. Fig. 3 is a horizontal section taken on line *y y*, Fig. 1, giving a plan view of the annular base-plate and damper.

Similar letters of reference denote corresponding parts wherever used.

My invention relates to a novel construction of smoke-stack for portable and other engines, whereby it is adapted to be used either with or without the artificial draft consequent upon the use of the exhaust-steam, as hereinafter described.

Where an artificial draft is employed, causing the rapid and forcible expulsion of the unconsumed products of combustion, it will be apparent that a smoke-stack of less diameter will answer the purpose of discharging said products than where only the natural draft due to the arrangement of parts is employed.

It is also well understood that where a strong artificial draft is employed large particles of unconsumed fuel in the form of cinder are frequently drawn off and mingled with the escaping products of combustion, and in many cases it is important to arrest these in order to prevent injury, which might result from such particles passing out in an ignited state, and in such case it is necessary to provide for the reception and retention of such cinder until such time as it can be safely withdrawn or removed.

The object of the present invention is to meet the conditions recited by providing a small inner pipe for use with the steam-exhaust or artificial draft, and a larger outer pipe to be used in connection with the smaller one

when only the natural draft is employed, the annular space between the two being provided with an annular perforated damper-plate and serving as the receptacle for the retention of the cinder when the artificial draft is employed, said damper serving to permit the escape of the cinder into the smoke-box, and also to open the outer pipe for the escape of the products of combustion when only the natural draft is employed.

In the accompanying drawings, A represents the boiler, which may be of any usual or preferred form. B is the smoke-box, and C the opening in the top of the same through which the products of combustion escape to the smoke-stack. Over said opening is secured the lower part, C', of the smoke-stack, made circular in form at its upper end to conform to the shape of the smoke-stack proper, but by preference drawn out transversely into elliptical form at its lower end, where it is secured through a flange to the top of the smoke-box, as shown. The upper end of part C' is provided with an annular flange, upon which is secured an annular base-plate, D, provided at its lower end with a rim or flange, through which it is secured to the part C', and with an internal perforated flange, *d*, the inner edge of which surrounds and snugly incloses the lower end of the inner pipe, E', and is provided with pendent lugs or ears *d*² through which the lower end of said pipe is secured to the plate D, as shown in Fig. 2. E is the outer pipe surrounding the pipe E', and secured at its lower end within the upright sleeve portion D' of the annular base-plate, as shown, the arrangement being such as to leave an annular space, F, between the two pipes over the perforations *d*' in the flange *d*.

The pipe E', near its upper end, has lugs or ears *e*, which rest upon the upper end of pipe E at its junction with the hood or bonnet G, serving to steady and support the upper end of pipe E' at a uniform distance from and in concentric relation to pipe E.

The hood or bonnet G and the conical arrester and deflector H may be constructed and arranged in the usual manner, as shown.

The perforated bottom *d* of the annular space F is provided with an annular damper,

I, which has a series of perforations corresponding to those at d' in flange d , and is operated by means of a handle, I' , passing out through a slot, e' , at the bottom of pipe E and sleeve D' . By partially rotating the damper the perforations d , opening from the smoke-box B into the annular space F , can be opened or closed at will.

When a strong artificial draft is employed the perforations will be closed, and the cinder forced outward by such draft and caught and deflected and turned downward will fall into and be retained in the annular chamber or receptacle F . If only the natural draft is to be employed, or it is desired to discharge the accumulated cinder, the damper I is turned, opening the perforations d' , and the cinder is discharged into the smoke-box B , whence it can be withdrawn in the usual way. While the damper is thus opened or withdrawn the products of combustion can escape not only through the inner pipe, E' , but also through the openings d and annular space F , thus giving the required additional capacity to the smoke-stack, adapting it to dispense with the artificial draft.

K represents the pipe or nozzle through which the exhaust-steam is made available, when required, for giving increased or artificial draft. Said pipe is shown passing through the side wall of the base or lower part, C' , of the smoke-stack to about its center, where it

is bent upward, terminating at or near the lower end of the inner pipe, E' , as shown. Any suitable arrangement may be employed for letting on or shutting off the exhaust-steam, as may be required, for promoting or retarding combustion.

Having now described my invention, I claim—

1. The smoke-stack composed of the outer and inner pipes, E E' , the latter terminating at its upper end within the hood or bonnet on the former, and both terminating at their lower ends in the smoke-box and communicating directly therewith, in combination with the interposed annular damper for cutting off the outer pipe when the exhaust is employed and adapting the annular space between the two pipes to act as a cinder-receptacle, all constructed and arranged substantially as described.

2. The combination of the outer and inner pipes, arranged as described, and both communicating directly with the smoke-box, the interposed annular damper, and the exhaust, all constructed and arranged for operation as described.

In testimony whereof I have hereunto set my hand this 3d day of January, A. D. 1880.

HUNTINGTON BROWN.

Witnesses:

J. H. MILLER,
BENJAMIN BAIR.